## Request for Proposal

Power Island and Major Equipment

### DUE DATE: JUNE 30, 2016

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REQUEST FOR PROPOSAL (RFP) PACKAGE AND CONTRACT DOCUMENTS
Specification 3598

Power Island and Major Equipment

Scholl Canyon Landfill Power Project

CITY OF GLENDALE, CALIFORNIA

Dated as of May 11, 2016

Project Manager
Ramon Abueg, Assistant General Manager
141 N. Glendale Avenue, 4th level
Glendale, CA 91206
Phone:  (818) 548-3297
Fax:     (818) 552-2852
E-Mail:  rabueg@glendale.ca.gov
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NOTICE INVITING PROPOSALS

NOTICE is hereby given that the City of Glendale, through its municipal utility department, Glendale Water and Power (“GWP”) (together, the “City”) will receive sealed Proposals, until the deadline established below for the following work:

Specification 3598 Power Island and Major Equipment (PIME) – Scholl Canyon Landfill Power Project

Proposal Deadline: Submit before 2 p.m., local time, on June 30, 2016
NO LATE PROPOSALS WILL BE ACCEPTED.

Proposals shall be delivered in an envelope or box containing one (1) original, five (5) hardcopies and one (1) electronic copy to:

Ramon Abueg - Chief Assistant General Manager, Glendale Water and Power,
141 N. Glendale Avenue, Level 4,
Glendale, CA 91206-4496,

One copy shall be delivered in unbound format.

Glendale Water and Power Administration,
141 N. Glendale Avenue, Level 4
City of Glendale, CA 91206

Mandatory Pre-Proposal Conference & Optional Site Visit: May 19, 2016
Location: UOC Training Center, 800 Air Way, Glendale, CA 91201

City of Glendale Contact Person:
Ramon Abueg - Chief Assistant General Manager, (818) 548-3297
Other RFP Information:

1. This Work shall be a Material/Equipment Supply and Engineering and Technical Support Project.

2. **Acceptance or Rejection of Proposals:** The City reserves the right to reject any or all Proposals or any item of a Proposal, to award all or any individual part/item, and to waive any or all information or technical defects as the interest of the City may require. No late Proposals will be accepted, nor will any Proposals delivered orally, by facsimile, or by electronic means be accepted by the City.

3. **Proposal Forms and Security:** Each Proposal shall be accompanied by a proposal security in one of the following forms: (1) cash, a cashier’s check or certified check drawn on a solvent bank, payable to “City of Glendale”, for an amount equal to ten percent (10%) of the total maximum amount of the Proposal; (2) a satisfactory corporate surety proposal bond or a Letter of Credit in the form of Attachment 2.13.1 or 2.13.2 for an amount equal to ten percent (10%) of the total maximum amount of the Proposal may accompany the Proposal. Said security shall serve as a guarantee that the successful Proposer shall, within thirty (30) calendar days from the date of the award of the contract, enter into a valid contract with the City for said Work in accordance with the Contract Documents.

4. **Proposal Irrevocability.** PIME procurement Proposals shall remain open and valid for one-hundred and eighty (180) calendar days following the Proposal Deadline. The Long-Term Service Agreement (LTSA) procurement Proposal shall be valid through completion of start-up.

5. **Substitution of Securities.** Pursuant to California Public Contract Code Section 22300, substitution of securities for withheld funds is permitted in accordance therewith.

Dated this **May 11, 2016** City of Glendale, California.

Ramon Abueg  
Chief Assistant General Manager  
Glendale Water and Power  
City of Glendale, California
INSTRUCTION TO PROPOSERS

1. Introduction and Definitions

The City of Glendale, through its municipal utility department, Glendale Water & Power (GWP) (together, the “City”) is soliciting Proposals from Proposers to provide technical support and to supply the Power Island and Major Equipment (“PIME”) for the City’s proposed Scholl Canyon Landfill Power Project (“SCLPP) to be developed at the City’s Scholl Canyon Landfill (together, the “Proposed Project”).

The purpose of the Proposed Project will be to utilize as much of the naturally produced landfill gas (“LFG”) as practical to produce renewable electric power for the City.

The City’s governing body, the Glendale City Council, has directed GWP to proceed with the design and environmental reviews for the Proposed Project and the City has retained Stantec Engineering as the City’s Owner’s Engineer to assist with this effort. The final decision whether or not to proceed with the Proposed Project will be made by the City Council upon completion of California Environmental Quality Act (CEQA) review, SCAQMD permitting, and financing for the Proposed Project. In order to complete the environmental review and proceed with the application for permits for the Proposed Project, the City must identify and specify the PIME to be used for the Proposed Project.

Therefore, the City is soliciting Proposals for a PIME Contract to be accomplished in two phases, as described in further detail in Section 2 of this RFP:

(A) Phase I: LNTP Phase for Permitting and the Engineering, Procurement, and Construction (EPC) Request for Proposal Document (for which a Limited Notice to Proceed (LNTP) will be issued); and

(B) Phase II: FNTP Phase which includes the balance of the engineering design, fabrication of all equipment, and delivery (for which a Full Notice to Proceed (FNTP) will be issued, provided that the SCAQMD issues the necessary permits and the City Council approves an environmental document and authorizes the City to proceed with the Proposed Project. If the City does not receive the necessary permits from the SCAQMD or does not approve an environmental document and/or does not authorize the City to proceed with the Proposed Project, a FNTP will not be issued and the PIME Contract will be terminated following the LNTP Phase or at such time as the City Council elects not to proceed with the Proposed Project.
Terms and acronyms not otherwise defined shall have the meaning set forth in the “Definitions” attached as Attachment 1 to the RFP.

1.1 Scholl Canyon Landfill Background

Scholl Canyon Landfill (SCLF) is an existing Class III nonhazardous landfill facility that accepts municipal solid waste and is not a generator of, or repository for, hazardous wastes. The landfill site occupies approximately 535 acres with portions owned by the City of Glendale, the Sanitation District of Los Angeles County and by Southern California Edison Company. The active portion of the SCLF is 314 acres, within which refuse has been landfilled on 239 acres. At the current fill rate, the closing date of the landfill is estimated to be in the mid 2020’s. However documents are being prepared that would allow to increase the life of the landfill by an additional 22 to 32 years. The landfill permitted capacity is based on volume; therefore, the closing date of the landfill, including the request for increased life, could be sooner or later depending on disposal rates.

The quantity of LFG being generated at a landfill is partially dependent upon the quantity of disposable refuse being placed within the landfill. It is anticipated that the LFG generation rate has reached its peak and is not expected to increase. It is also likely that the LFG generation rate will decrease approximately 2 to 3% per year.

South Coast Air Quality Management (SCAQMD) requires the installation of a LFG collection system to minimize the emissions of LFG from the surface of the landfill. The LFG collection system at SCLF conveys the collected LFG to a central location, within the landfill property, where the LFG is compressed, liquids are removed and the raw LFG is piped to City’s Grayson Power Plant via an underground pipeline. The LFG is currently used in existing boilers to augment natural gas to generate electricity. The boilers are old and inefficient and not reliable. In order to provide environmental stewardship and capture the maximum renewable credits, new generation at the Scholl Canyon Landfill (SCLF) has been determined to be preferred alternative to utilize the LFG in power generation equipment as fuel. LFG is a source of renewable energy and the City proposes to build a power plant for the sole purpose of utilizing this renewable energy as fuel to generate electricity.
1.2 Project Location

The Proposed Project will be located completely within the boundaries of SCLF in the City of Glendale, Los Angeles County at 3001 Scholl Canyon Road, Glendale, California 91206. Regional access to the landfill is from the Ventura Freeway (State Route 134) at the Figueroa Street Exit.

1.3 Scholl Canyon Demolition

The Proposed Project will be located directly adjacent to the current location where the raw untreated LFG is presently collected and conditioned to be sent to the existing Grayson Power Plant. The Point of Connection (POC) to the existing LFG collection system will be at the discharge of existing LFG blowers and flares where the pressure fluctuates between 5.5” to 8” water column (WC) and the LFG temperature is near 160 degrees F. Existing flares, LFG blowers and other equipment belonging to Sanitation District of Los Angeles County will remain. Other existing equipment such as LFG compressors, condensate treatment system, knockout drums, coolers, and other equipment will be removed by others.

1.4 Scholl Canyon Raw LFG Composition

Attachment 5 provides laboratory analysis of the composition of unconditioned LFG. It is the responsibility of the Proposer to design the LFG conditioning system to remove all constituents detrimental to the operation of proposer’s equipment. All siloxane and sulfur compounds shall be removed to non-detect level.

1.5 Project Configuration

New generation for the Proposed Project to consist of either:
- All identical gas combustion turbine generators (CTGs), or
- All identical gas reciprocating engine generators (REGs)

1.6 Design Life

The design life of the Proposed Project is 20 years.
2. Scope of Work

The Power Island and Major Equipment (PIME) RFP includes the following scope of work:

2.1 Equipment Supply

The PIME contract will entail the following equipment scope:

- Provide identical gas turbine generators (CTGs) operating in simple cycle mode, or identical gas reciprocating engine generators (REGs) operating in simple cycle mode. Proposer shall not include different models or types of generation units in their Proposal. The number of CTGs or REGs shall be determined by the Proposer based on availability of 6,200 scfm of LFG. The quantity of LFG is not expected to increase over time, therefore the number of CTGs or REGs offered shall be based on each CTG or REG operating at 100% capacity based on the LFG composition provided in Attachment 5. The Proposer's configuration shall not be based on partial load operation. Proposer shall assume that any excess LFG not required by Proposer will be disposed of in existing flares. Proposer shall supply a minimum of two (2) generating units and no more than six (6) generating units. Total number of units must fit in the space provided.

- Process water is not available, all coolers shall be air cooled.

- Emissions Control Systems (ECS) with integral Selective Catalytic Reduction (SCR) and Carbon Monoxide (CO) oxidation catalysts, and utilizing 19% aqueous ammonia injection system for each unit as required to comply with SCAQMD regulations.

- Identical Continuous Emission Monitoring Systems (CEMS) for each Unit and a Data Acquisition and Handling System (DASH) for the site.

- Provide two (2) 50% capacity LFG compressors to compress 6,200 scfm of LFG with supply pressure of from 5.5” – 8” WC plus up to 200 scfm of natural gas at 20 psig to the pressure required by the gas conditioning system. The same two, or two additional compressors, at the discretion of the Proposer, shall be utilized to increase the gas pressure up to the pressure required by the REGs or CTGs.

- Provide LFG conditioning system to remove unwanted constituents from the LFG as required by this RFP and by the PIME supplier's CTGs or REGs and ECS to operate as designed by the RFP Proposer. The quality of the conditioned LFG required by the CTG’s or REGs shall be determined by the Proposer based on guaranteed performance of the CTGs or REGs throughout the warranty period, including emission control system and including regulatory compliance. All siloxane and sulfur compounds shall be removed to non-detect.
• Provide condensate treatment system that will comply with City of Glendale Industrial Waste Discharge Requirements for discharging Industrial Waste into City of Glendale municipal wastewater system (See Attachment 10).

• Provide instruments and controls for all equipment proposed by proposer. Overall plant control system shall be designed by and provided by PIME contractor.

• Supply first fill of all specialty fluids, filters, media, absorbents and others during commissioning. Replace all fluids, filters, media, absorbents and others utilized or consumed during commissioning and startup prior to substantial completion.

• Provide commissioning spares.

• Provide list of recommended spare parts, including price, to be stored at the City’s facility and list of spare parts that will be available at PIME proposers or other facilities. Include list of items, storage location and anticipated delivery time.

All supplied equipment shall be new. Gray market or used equipment is not acceptable.

2.2 Engineering and Technical Support

In addition to supply of the equipment, the PIME scope of work shall include technical and engineering support:

• Participation in a project kickoff meeting with the City. Participate in at least three progress meetings with City during LNTP phase of the project and participate in at least one detailed design review meeting prior to issuance of FNTP. Attend and participate in monthly project review meetings with the EPC contractor and the City during construction of the Proposed Project to clarify engineering, design, permitting and construction issues regarding PIME supplied equipment and systems.

• Design CTGs or REGs including accessories, ECS, LFG conditioning system, condensate treatment system, LFG compression systems and other systems and equipment within the PIME Proposer’s scope. Provide documentation and information as requested in Attachment 6.4.

• Provide Safety Data Sheets (SDS) and product manufacturer’s description and specifications of all fluids and media required by PIME supplied equipment including oils, filters, chemicals, absorbents, reactants, media and others.

• Provide support during the SCAQMD permitting phase of the Project.

• Provide punch list regarding installation of PIME’s equipment prior to startup. PIME Proposer and PIME supplier(s) are responsible for technical direction and oversight for
cold commissioning and PIME Proposer shall provide documentation to the City that cold commissioning is completed and individual components and systems have achieved Mechanical Completion and are ready for First Fire. The EPC contractor will be responsible for providing the necessary craft labor for performing the cold commissioning activities.

- Provide training to City operators and maintenance personal prior to startup.
- Prepare and submit to the City startup procedures and schedule to support the startup and commissioning of the project. Proposer shall be responsible for startup of the Proposed Project, providing the required technical advisors and managers.
- Provide equipment, supplies and material preservation and storage instructions for use by the City and the EPC Contractor.
- Provide rigging and installation manuals for use by the EPC Contractor.
- Provide technical advisors for PIME equipment during erection, construction and commissioning. It is the PIME suppliers responsibility to bring to the attention of the City any inconsistencies or errors in construction and installation of PIME’s supplied equipment and system. Provide personnel knowledgeable in the installation requirements of PIME supplied equipment and physically inspect the installation of PIME supplied equipment at least two times during installation. Prepare inspection reports to the City clarifying work that does not meet PIME supplier’s standards. Answer request for information by EPC Contractor or the City.
- Provide seven complete hard copy sets and one electronic set of O&M manuals for all PIME supplied equipment.

2.3 Operations and Maintenance Support

The Proposer shall include a Long-Term Service Agreement Proposal (not to exceed 15 years in duration) as part of their Supplemental Proposal, including pricing, for the REGs, CTG’s, and compressors. The City may, at its option, negotiate the Long-Term Service Agreement.

The Proposer may also offer, at its option, the following or other O&M services, each with separately identified pricing:

- Extended warranty coverage beyond the warranty requirement contained in the specification
- Reliability Guarantees
- Major Spare Parts Sharing/Inventory
Major Component Replacement/Interchange

2.4 Permitting Support

Additional data and information not contained in the response to this RFP may be required to support the City’s permitting efforts. This may include engineering and/or operating data for obtaining Permit to Construct (PTC) and Permit to Operate (PTO) documents from the South Coast Air Quality Management District (SCAQMD), supporting the City’s efforts to obtain CEQA compliance approval, and obtaining Building and Safety Plan Check approvals. The Proposer’s timely support will be required. No personal appearances or direct interfacing with regulatory agencies is anticipated. Information required during permitting shall be provided by Proposer to the City at no cost to the City. Requests for information by the City shall not constitute a Change Order.

2.5 Project Phases

The PIME Contract will proceed in two phases, and a separate notice to proceed will be issued for each phase. The first phase will be the LNTP Phase for permitting and preparation of the EPC document, for which a LNTP will be issued following award and contract execution. The second phase will be the FNTP Phase, which includes the balance of the engineering design, fabrication, delivery of the equipment and technical support for which a FNTP will be issued, provided that the CEQA process is completed and the City Council authorizes the Proposed Project and the City obtains necessary permits for the Proposed Project, including the SCAQMD permit(s). If the City Council does not approve an environmental document and/or does not authorize City to proceed with the Proposed Project, the PIME Contract will terminate after the LNTP Phase, or at such time as the City Council elects not to proceed with the Proposed Project.

2.5.1 LNTP Phase Scope and Proposal

The City will issue a LNTP following award and execution of the PIME Contract to develop the engineering deliverables defined in Attachment 2.5.1 LNTP Phase Scope and Proposal and Attachment 6.4 – Engineering Scope and Deliverables. The work performed and delivered will be relied upon for inclusion in the EPC RFP and to support the CEQA environmental process, project permitting with local agencies, and the permitting process with the SCAQMD.
2.5.2 FNTP Phase

Provided that the CEQA process is completed and the City Council authorizes the Proposed Project and the City obtains necessary permits for the Proposed Project, the City will issue a FNTP authorizing the PI ME Contractor to proceed with the FNTP Phase. The FNTP Phase shall include the balance of the engineering design, fabrication of all equipment, delivery of the equipment to the job site and technical support as provided for in the PIME Contract.

3. Obtaining Drawing and Documents

Proposers may obtain RFP Proposal Documents ONLY from the location specified in the Notice Inviting Proposals. City will maintain a list of Proposer’s who obtained RFP Proposal Documents (“Interested Proposer’s”). Only Interested Proposer’s will receive Addenda to this RFP, if so issued.

4. Mandatory Pre-Proposal Conference and Optional Site Visit

There will be a mandatory Pre-Proposal conference held at the UOC Training Center located at the Grayson Power plant site, 800 Air Way, Glendale, CA 91201, on May 19, 2016 at 9:00 AM. Immediately following the Pre-Proposal Conference, there will be an opportunity for Proposers to visit the site. Proposers must provide their own transportation and there will be City personnel available at the site to conduct site tours. If Proposer intends attending the Pre-Proposal Conference, please notify Mr. Carl Haase (carl.haase@stantec.com) at least three business days in advance of the conference. At this time, Proposers wanting to visit the site should notify Mr. Carl Haase of their intent to do so.

5. Notice of Intent to Propose

If the Proposer intends to submit a Proposal, the Proposer shall notify City by sending a letter or email containing a statement of its intent to submit a Proposal and the legal name of the proposing entity and the email address for which all notices and addenda will be sent by the deadline set forth in Section 11. Only prospective Proposers that have sent a letter containing a statement of its intent to submit a Proposal will receive addendum or clarification notices.

The letter shall be sent to:
Mr. Carl Haase
Project Manager
Stantec

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6. Clarification Requests and Addenda

If any Proposer contemplating submitting a Proposal is in doubt as to the true meaning of any part of the Proposal Documents, or finds discrepancies, errors or omissions therein or finds variances in any of the Proposal Documents with applicable law, codes, ordinances, or standards (LORS), such Proposer shall at once submit a written request via email for an interpretation or correction thereof to the City’s representative identified below in this section. All Proposers shall submit such written requests to the City’s representative by the date set forth in Section 11. The person or entity submitting the request shall be responsible for its prompt delivery to City’s representative identified below in this section.

Any interpretation or correction will be made only by Addendum issued by the City and a copy of such Addendum will be delivered to all Proposers who have submitted a notice of intent to submit Proposal as required in Section 5 herein. Any Addenda so issued must be acknowledged in the Proposal and the cost of performing Work described in the Addenda shall be included in the Proposal. Proposer’s failure to acknowledge receipt of all Addenda may result in rejection of the Proposal as nonresponsive. No person is authorized to render an oral interpretation or correction of any Proposal Documents and no Proposer may rely on any such oral interpretation or correction issued by the City or its designated representative. The City shall not be responsible for any other explanation or interpretation of the Proposal, or for any oral instructions.

City reserves the right to extend the Proposal Deadline by issuing an Addendum to Proposers who have submitted a notice of intent to submit a Proposal, no later than 72 hours prior to the Proposal Deadline.

Copies of Addenda will be made available for inspection wherever Proposal Documents are on file for that purpose. Each Proposer shall ascertain prior to submitting a Proposal that the Proposer has received all Addenda issued and the Proposer shall acknowledge such receipt in its Proposal.

All Clarification Requests by any Proposer related to doubt as to the true meaning of any part of the Proposal Documents, or who finds discrepancies, errors or omissions therein or finds
variances in any of the Proposal Documents with applicable law, codes, ordinances, or standards shall be submitted by email to:

Mr. Carl Haase
carl.haase@stantec.com

Clarification Requests will be reviewed and answered to all Interested Proposers by email. Clarification Requests are the only means by which Proposers may seek clarification of the RFP and its contents.

7. Proposal Content and Instructions

The Proposer shall submit its Proposal using the Proposal Forms found in Attachment 2.1 – 2.9 and 2-11 provided herein with all blank spaces properly filled in as well as preparing a Proposal Supplement addressing each of the items in Attachment 2.10. All Proposal Forms required to be submitted with the Proposal are listed below:

PROPOSAL FORMS:

1. Proposal Cover Sheet (Attachment 2.12)
2. Proposal Security (see Section 8 below for instructions; form of Proposal Security/Bond is set forth in Attachment 2.13.1 and 2.13.2)
3. Proposer’s Qualifications Statement (See Section 9 below for instructions; Attachment 2.14)
   a. Attach Statement of Violations of Federal/State/Local Law, if applicable;
   b. Attach Statement of Disqualification or Disbarment, if applicable.
4. Proposer’s Non-Collusion Affidavit (See Section 10 below for instructions; Attachment 2.15),
5. Proposer’s Campaign Disclosure Form (Attachment 2.16),
6. Commercial Exception Proposal Form (Attachment 2.1)
7. Technical Exception Proposal Form (Attachment 2.2)
8. Equipment Proposal Forms (Attachments 2.3.1 or 2.3.2 and 2.9)
9. Plant Performance Form (Attachment 2.4)
10. PIME Cost Form (Attachment 2.5.1 and 2.5.2)
11. Cost Adjustment Terms and Storage Costs – Proposal Form (Attachment 2.6)
12. Delivery and Payment Schedule Proposal Form (Attachment 2.7)
13. O&M Costs and Maintenance Schedules Proposal Form (Attachment 2.8)
14. Air Emissions Data Proposal Forms (Attachment 2.11.1 or 2.11.2)
15. General Interconnection Data Proposal Form (Attachment 2.11.3)

PROPOSAL SUPPLEMENT:

Proposers shall include a Proposal Supplement as part of their Proposal. At a minimum, the Proposal Supplement shall contain all of the additional information that the Proposal Supplement (Attachment 2.10) directs to be included in the Proposal. Information in the Proposal Supplement shall be tabbed or otherwise referenced back to the Proposal Supplement (Attachment 2.10) number to which it applies. Each of the items shall be addressed separately and so tabbed. The Proposal Forms and the Proposal Supplement (discussed herein) are the only acceptable forms of Proposal and will serve as the basis for evaluation of the Proposals and selection of the PIME Contractor.

If pricing is part of the Proposal Supplement for any of the Items, Pricing shall be clearly legible.

All of the CTGs or REG must be of the same model.

The phraseology in the Proposal Forms and Supplement shall not be changed, and no additions shall be made to the items mentioned herein. Any conditions, exemptions, limitations, or provisions attached to a Proposal may be cause for its rejection. All forms requiring specific information shall be completed with all applicable information for a Proposal to be considered responsive to this RFP.

The full name, business address, zip code, and business telephone number, with area code of the individual, partnership, joint venture, or corporation submitting the Proposal, shall be typewritten or legibly printed on the Proposal. A duly authorized signatory for the Proposer shall sign the Proposal with its usual wet ink signature in the presence of a Notary Public and the notarial acknowledgment shall be attached to the Proposal.

A partner shall sign for a partnership and the names and addresses of all partners shall be provided.

An officer shall sign for a corporation, the corporate name shall be attested by the corporate seal, and the names and titles of all offices of the corporation shall be provided. A signature other than a corporate officer’s will be accepted if an authenticated power of attorney is attached.
Proposals must not contain any erasures, interlineations, strike-through or other corrections unless the same are suitably authenticated by affixing in the margin immediately opposite such erasure or correction the initials of the person(s) signing the Proposal. If any Proposal, or portions thereof, is determined by the City to be illegible, ambiguous or inconsistent, the City may reject such a Proposal as being non-responsive.

In the case of a unit price item, the amount set forth as the item total shall be the product of the estimated quantity times the unit price Proposal. In the event of a discrepancy between the unit price Proposal and the item total, the unit price shall prevail; however, if the unit price is ambiguous, unintelligible, or uncertain for any cause, or is omitted, or is the same amount as the entry for the item total, then the item total shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price. Where so indicated by the makeup of the Proposal form, sums shall be expressed in both words and figures, and in case of discrepancy between the two, the amount written in words shall govern.

All requested Options shall be included in the Proposal. If no change in the Base Proposal is required by virtue of including an Option, enter No Change.

The City’s intent is to review and evaluate the Proposals and then recommend to the City Council the ranking of the firms for which the City will negotiate a contract. City will take all necessary steps to negotiate a contract with the selected PIME Proposer in a timely manner. Upon successful negotiation of a contract, the contract will be presented to the City Council for final approval. Proposer’s Proposal(s) must remain valid for a period of 180 days following the Proposal due date.

8. Proposal Security

Each Proposal shall be accompanied by Proposal Security (“Proposal Security”) in one of the following forms:

1) Cash,

2) a cashier’s check or a certified check, drawn on a responsible bank doing business in the United States payable to the City,

3) a satisfactory Proposal Bond in favor of the City executed by the Proposer as a principal and a California admitted surety company (as defined by California Code of Civil Procedure §§995.120 and 995.311) as surety, in the form attached hereto as Attachment 2.13.1 (“Proposal Bond”). The surety or sureties on a Proposal Bond must be satisfactory to the City Attorney. The City will reject a surety bond obtained from any company not holding...
Certificate of Authority from the U.S. Secretary of the Treasury under the Act of Congress approved July 30, 1947, (31 U.S.C., Secs. 39-01, etc., (as amended from time to time) as acceptable sureties on federal bonds. (Treasury Circular 570). The Proposal Bond shall be properly executed and acknowledged by the Proposer and by a corporate surety authorized to transact such business in the State of California. Such bond shall be accompanied by a power of attorney from the surety company authorizing the person executing the bond to sign on behalf of the company. If the bond is executed outside the State of California, all copies of the bond must be countersigned by a California representative of the surety. The signature of the person executing the bond shall be acknowledged by a Notary Public as the signature of the person designated in the power of attorney. Any alteration of said form of Proposal Bond, or imperfection in the execution thereof, as herein required, will render it informal and may, at the option of the City, result in the rejection of the Proposal under which the Proposal Bond is submitted, or

4) an irrevocable standby letter of credit naming the City of Glendale as the beneficiary, in the form attached hereto as Attachment 2.13.2 (“Letter of Credit”). The Letter of Credit must be issued by the U.S. office of a commercial bank or trust company with assets of at least $10 Billion and credit ratings of at least A- by Standard & Poor’s and at least A3 by Moody’s.

The Proposal Security shall be in an amount not less than 10% of the total amount of the Proposal, including alternative(s).

Any Proposal submitted without Proposal Security will be rejected as non-responsive. The Proposal Security shall be given as a guarantee that the successful Proposer shall execute the Contract and shall provide the insurance, bonds and other required forms within thirty (30) calendar days after award of the Contract.

Proposers will be entitled to return of Proposal Security provided, however, that a successful Proposer will forfeit Proposal Security in the event that the successful Proposer withdraws its Proposal prior to the expiration of one hundred and eighty (180) calendar days after award of the Contract; or attempts to withdraw its Proposal when the requirements of Public Contract Code §§5101 et seq. are not met; or refuses or fails to execute said Contract and provide the required bonds, insurance and certificates within thirty (30) calendar days after award of the Contract. In such event, if City awards the Contract to another Proposer, the amount of the initially-selected Proposer’s Proposal Security shall be applied to the Contract Price differential between the initially-selected Proposal and the second selected Proposal and the surplus, if
any, will be returned to the initially selected Proposer or to the bond company in accordance with the requirements of the California Public Contracts Code. If the City rejects all other Proposals presented and re-advertises, the initially-selected Proposer’s Proposal Security may be used to offset the City’s cost of re-advertising and receiving new Proposals and the surplus, if any, will be returned to the initially-selected Proposer or to the bond company in accordance with the requirements of the California Public Contracts Code.

The Proposal Security shall be held for one hundred and eighty (180) calendar days after award of the Contract or until posting by the successful Proposer of the payment and performance bonds, insurance policies, proof of insurance, return of executed copies of the Contract and necessary certification(s), whichever first occurs, at which time the Proposal Security will be returned to all Proposers.

9. Proposer’s Qualifications Statement

Each Proposer shall complete, execute and submit with its Proposal, the form entitled "Proposer’s Statement of Qualifications" contained in Attachment 2.14. Notwithstanding the provisions of Paragraph 21 herein, the Proposer’s qualifications statements shall not be a public record. All information required by a Proposer’s Statement of Qualification Form shall be completely and fully provided. If no information is to be filled in a blank space, then write "none". Any Proposal not accompanied by a Proposer’s Statement of Qualification form completed with all information required may render the Proposal non-responsive. If the City determines that any information provided by a Proposer in the Proposer’s Statement of Qualification is false or misleading, or is incomplete so as to be false or misleading, the City may reject the Proposal submitted by such Proposer as being non-responsive.

10. Declaration of Non-Collusion

A Non-collusion Affidavit in the form contained in Attachment 2.15 shall be signed under penalty of perjury, certifying that the Proposal is not the result of and has not been influenced by collusion. Proposer shall submit this form with its Proposal. Any Proposal made without such affidavit, or believed to be made in violation of the requirements set forth in the affidavit form, may be rejected.
11. Proposal and Project Schedule

Power Island and Major Equipment RFP Milestones

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFP Issue Date</td>
<td>May 11, 2016</td>
</tr>
<tr>
<td>Mandatory Pre-Proposal Conference for all Proposers, followed by Optional Site Visit</td>
<td>May 19, 2016 at 9:00 AM</td>
</tr>
<tr>
<td>Notice of Intent to Propose Due Date</td>
<td>May 26, 2016, 5:00 PM</td>
</tr>
<tr>
<td>Last Date for Clarification Requests</td>
<td>June 15, 2016,</td>
</tr>
<tr>
<td>Last Date for Responses to Clarification Requests</td>
<td>June 22, 2016,</td>
</tr>
<tr>
<td>Proposal Due Date (Proposal Deadline)</td>
<td>June 30, 2016 at 2:00 PM</td>
</tr>
<tr>
<td>Evaluate Proposals - CITY</td>
<td>July 5, 2016 to August 5, 2016</td>
</tr>
<tr>
<td>Formal PIME Presentation</td>
<td>July 18, 2016 to July 21, 2016</td>
</tr>
<tr>
<td>Approval by City Council to Negotiate PIME Contract</td>
<td>August 23, 2016</td>
</tr>
<tr>
<td>Negotiate Contract</td>
<td>August 24, 2016 to September 29, 2016</td>
</tr>
<tr>
<td>City Council Approval of Contract</td>
<td>October 18, 2016</td>
</tr>
<tr>
<td>Valid Contract Execution incl. Insurance, Bond &amp; other forms</td>
<td>Not more than 30 days after City Council Approval/Award of Contract</td>
</tr>
<tr>
<td>Issue PIME Contract LNTP</td>
<td>November, 2016</td>
</tr>
<tr>
<td>PIME Completes LNTP Scope</td>
<td>April, 2017</td>
</tr>
<tr>
<td>Issue FNTP PIME</td>
<td>October 2017</td>
</tr>
</tbody>
</table>

EPC Milestones

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPC RFP Issue Date</td>
<td>May 2017</td>
</tr>
<tr>
<td>City Council Approval of EPC</td>
<td>October 2017</td>
</tr>
<tr>
<td>Start Construction</td>
<td>December 2017</td>
</tr>
<tr>
<td>Equipment Foundation Complete</td>
<td>June 2018</td>
</tr>
<tr>
<td>Deliver Major Equipment</td>
<td>June – July 2018</td>
</tr>
<tr>
<td>Start Commissioning</td>
<td>December 2018</td>
</tr>
<tr>
<td>In Service</td>
<td>February 2019</td>
</tr>
</tbody>
</table>
12. Proposal Submission

All Proposals must include all Proposal forms and Proposal supplements, properly executed, intact and include one (1) original and five (5) photocopy form and one (1) electronic CD version containing the Proposal Forms, and Proposal Supplement properly executed and intact. Enclose the Proposal in a sealed envelope or box; type or print on the envelope or box “Proposal for” followed by the title and Specification Number and the date and time of Proposal Deadline as they appear on the cover of this RFP, and the Proposer’s name and address. Proposers shall use complete sets of Proposal Documents in preparing Proposals. City shall not assume responsibility for errors or misinterpretations resulting from the use of incomplete sets of Proposal Documents.

Proposals shall be submitted be delivered on or before the time and date designated for receipt of Proposals. Proposals shall be submitted to:

Mr. Ramon Abueg
Chief Assistant General Manager
Glendale Water & Power
141 N. Glendale Ave., Level 4
Glendale, CA 91206-4975

Proposals may be delivered in person, by express mail, by courier, by package delivery service, or via the United States Post Office.

City is not responsible for late deliveries. Proposals that are delivered late or delivered to any place other than listed above will not be considered. Prior to the stated Proposal Deadline, a Proposer may withdraw its Proposal without prejudice by submitting a written request for its withdrawing to the Chief Assistant General Manager at the above address.

13. Formal Presentation of Proposal

In addition to submitting Proposal, each Proposer will, if requested by City, also meet with City to provide a formal presentation of its Proposal to City and City’s Owner’s Engineer. City expects these presentations to take place approximately three weeks after the Proposal due date, but the schedule may be adjusted based on the number of Proposers. City reserves the right to develop a short list of Proposers/configurations to be presented based upon its review of the submitted Proposals.

Proposers should plan on a total of three hours for presentations, with 1.5 hours reserved for the Proposer and the remainder for City and City’s Owner’s Engineer to ask questions. Changes to the Proposal will not be accepted at these meetings. Technical representation by the
Proposer, CTG, or REG, ECS, gas compressor, gas conditioning system, and condensate treatment system vendors that can address technical issues at these presentations is required.

14. Evaluation Criteria

The Proposals will be evaluated using the following criteria. The elements of each criterion are explained in the following subsections.

- Conformance with Scope and Technical Requirements
- Conformance with Commercial and Contract Requirements
- Assessment of SCAQMD permitting and compliance risk
- Assessment of project technical risk including LFG compressor, LFG conditioning system and condensate treatment system performance, reliability, and maintainability
- Confirmation that PIME equipment arrangement will safely fit on the proposed site with room for non-PIME equipment and provide for constructability, maintainability, and accessibility to the individual skids and equipment.
- Plant performance per Attachment 2.4.
- Capital Cost
- O&M Cost

The following process will be used to evaluate the Proposer's Proposals:

1. An initial "fatal flaw" review will be performed of all Proposals looking at the individual Proposer's conformance with the scope and technical requirement and specifications, technical exceptions, commercial exceptions, SCAQMD permitting risk, project technical risk, and confirmation that all equipment will safely fit on the site and provide for project constructability and maintainability. Any Proposal deemed to have unacceptable exception(s) or pose undue permitting or technical risk for City will not be considered further.

2. Net Present Value (NPV) calculations will be performed on each Proposal using 20 year project life expectancy and based on the assumed LFG generation rate decrease of 2.5% per year. City will estimate the anticipated reduction in LFG over time and perform NPV calculations using Equipment Performance, Capital Cost and O&M Cost.
• The capital cost portion of the NPV calculations will utilize Proposers Capital Cost and anticipated EPC capital cost adjusted to take into consideration the difference between types of equipment proposed.

• The O&M portion of the NPV calculations will use Proposers Long Term Service Agreement including replacement of consumables and Proposer’s responses to Attachment 2.8 to be verified by City.

The contents of this RFP, RFP Addenda, and the Proposal document of the successful Proposer shall become contractual obligations as part of the contract if acquisition action ensues.

15. Exceptions

Technical exceptions are those Proposer comments on the material contained in City’s Scope of Work Requirements, General Requirements, and Equipment Technical Specifications. Unless comments and/or exceptions are provided by the Proposer in its Proposal, City will deem that all of the requirements contained in this RFP are accepted by the Proposer, and will be incorporated as part of the PIME Contract scope of supply, design, and performance guarantees. Exceptions raised after the Proposal due date may disqualify the Proposer. The Proposer’s exceptions will be considered as part of the overall Proposal evaluation. Depending on the nature of a specific comment or exception, City may agree to incorporate it into the contract, further discuss the comment with the Proposer, or deem it unacceptable and reject the Proposal.

Commercial and Contract exceptions are those Proposer comments on the material contained in the body of the RFP and the Contract and Commercial Terms and Conditions. The content of this RFP, RFP Addenda, and the Proposal document of the successful proposer shall become contractual obligations as part of the contract if acquisition action ensues. Unless comments and/or exceptions are provided by the Proposer in its proposal, City will deem that all of the requirements contained in this RFP and all the terms in the contract are accepted by the Proposer, and will be incorporated as part of the PIME Contract. Exceptions raised after the Proposal Deadline may disqualify the Proposer. Failure of successful Proposer to accept these obligations in the contract may result in the cancellation of the award. Proposer’s exceptions will be considered as part of the overall Proposal evaluation. Depending on the nature of a specific comment, City may agree to incorporate it into the contract, further discuss, the comment with the Proposer, or deem it unacceptable and reject the Proposal. Proposers will be notified by City as soon as practical of both the need to discuss and comment/exception and the rejection of their Proposal. Some terms of the City’s Contract terms are non-negotiable due to City Ordinances, State laws, and/or City policies. Proposers are advised that if such exceptions are found by the City to be unacceptable to the City, the Proposal may be rejected.
on that basis alone. The City reserves the right to negotiate provisions in addition to those stipulated in this RFP or proposed by respondent for the purpose of obtaining the best possible Proposal. The proposed PIME Contract is included in Attachment 16 to this RFP.

City’s assessment of the ability to permit the proposed equipment through SCAQMD will be based on a combination of information supplied by the Proposer as well as City’s and its consultant’s own discussions with SCAQMD. The Proposer’s response contained in Attachments as well as any referenced information in the Proposal Addendum or Supplement, will form the primary basis for City’s evaluation. City reserves the right to reject any Proposal, if in its sole opinion; the degree of permitting risk is too high. If City has a concern in this regard, City will contact the Proposer directly prior to the formal presentation.

16. City’s Rights

The City reserves all rights with respect to this RFP, including but not limited to the rights, in its sole discretion, to:

- Investigate the qualification of any Proposer or its subcontractor(s), require confirmation of information furnished by a Proposer, and may require additional evidence of qualifications to perform the work described in this RFP.
- Reject any or all of the Proposals, or any item of a Proposal, without further obligation or reimbursement to the Proposer(s).
- Modify this RFP.
- Cancel or withdraw this RFP.
- Issue a new Request for Proposals.
- Suspend or abandon the project.
- Approve or disapprove the use of particular subcontractors.
- Negotiate price of scope of work with the Proposer recommended for award at any time after receipt of the Proposals.
- Waive immaterial deficiencies, informalities and minor irregularities in Proposals.
- Waive any information or technical defects, as the interests of the City may require.
- Require a Proposer to provide a guarantee (or guarantees) of the contract by a third party.
- Terminate negotiations if City determines termination is in its best interests.
• Not issue a FNTP after execution of the contract or after LNTP.

In submitting a Proposal in response to this RFP, the Proposer is specifically acknowledging these City-held rights.

This RFP does not commit the City to enter into a contract, and allows the City to reject, in its sole discretion, all of the Proposals. The City is not liable for any costs incurred by any Proposer in preparation and submission of a Proposal, making presentations to the City, or any other activities or expenses in anticipation of award of a contract. By submitting a Proposal, the Proposer disclaims any right to be paid for such costs.

The City reserves the right to reject any and all Proposals, or any item or items of the Proposal, and to waive any informalities or technical defects as the interests of City may require.

17. Withdrawal of Proposals

Any Proposer may withdraw its Proposal either personally or by written request any time prior to the scheduled Proposal Deadline by notice to the City’s Contact Person designated in the Notice Inviting Proposals. Such notice shall be in writing signed by the Proposer and shall be received, date-stamped and time-stamped by City on or before the Proposal Deadline.

Withdrawn Proposals may be resubmitted on or before the Proposal Deadline provided that they are then fully in conformance with this Request for Proposal.

Once submitted, all Proposals are irrevocable, except as otherwise provided by law. Request for withdrawal of Proposals after the Proposal Deadline shall be made only in accordance with California Public Contract Code § 5100, et seq. If such notice is written, it shall be signed by the Proposer and shall be date-stamped and time-stamped by the City upon receipt. Withdrawn Proposals may be resubmitted before the Proposal Deadline provided that they are in full conformance with these Instructions to Proposers. Once submitted, all Proposals are irrevocable, except as otherwise provided by law. Proposer agrees by submitting a Proposal that its Proposal shall remain open, is irrevocable, and may not be modified, withdrawn or cancelled for a period of one-hundred and eighty (180) days following Proposal Deadline.

18. Award of Contract

The City reserves the right to reject any or all Proposals, to award a Contract for part of the work, and to waive any or all information or technical defects, as the interest of the City may require.
• Award of Contract, if any, will be to the Proposer offering the best overall value to the City, provided the Proposal has been submitted in accordance with the requirements of the RFP Documents and does not exceed the funds available for the work.

• The Proposer to be awarded the contract must be capable of performing the various items of work bid upon and must satisfy specific requirements contained in this RFP.

• At the time City’s recommendation is forwarded to the City Council, City will issue a Notice of Intent to Award to all Proposers, identifying all qualified Proposers, and the Proposer that will be recommended to City Council for an award.

• City will enter into negotiations with the highest ranked Proposer until an agreement is reached. If such agreement is not reached in a timely fashion, City will negotiate with the next highest ranked Proposer.

• City reserves the right to cancel the award before final execution of the agreement by all parties without any liability on the part of City.

19. Execution of Contract

The selected Proposer shall execute a written contract with City using the Form of Agreement included in the RFP documents and furnish good and approved completion bonds and insurance documents, as required by the RFP and contract, within thirty (30) calendar days from the date of receipt of final contract documents from City which occurs immediately after action by City Council. The selected Proposer shall deliver to the City the following documents:

1. Three (3) copies of the Agreement in the form included herein, properly executed by the selected Proposer and, if the selected Proposer is a corporation, evidence of its corporate existence and that the persons signing the Agreement are authorized to do so. All signatures must be notarized.

2. Properly executed originals, in triplicate, of the (a) Faithful Performance Bond, and (b) Payment Bond (Labor and Material) in accordance with the requirements set forth in the PIME Contract and in the form shown on Attachment 11 attached thereto. All signatures must be notarized.

3. Properly executed policies of insurance as required by the contract documents.
After receipt of said executed and notarized documents within said time period or any extension thereof granted by the City, the City shall execute the Agreement and return one (1) copy to the selected Proposer.

In no event shall the PIME selected Proposer commence work until the contract has been executed by City and the PIME selected Proposer, and a notice to proceed has been issued. The City will not execute the contract until the PIME selected Proposer has furnished the bonds and insurance documentation in forms acceptable to City.

20. Failure to Execute Contract

If the Proposer to whom the award is made fails to enter into the Contract as herein provided and furnish the said bonds and insurance, this shall be just cause for the annulment of the award and the forfeiture of the Proposal Security, and an award may, in the discretion of the City, be made to the Proposer whose Proposal is the next most acceptable to the City in the opinion of the City Council, and such Proposer shall fulfill every term, covenant and condition herein as if he/she were the party to whom the first award was made.

21. Proposals as Public Records; Release of Public Records

All material submitted in response to this RFP becomes the property of the City of Glendale and may be retained or disposed of accordingly, and will not be returned to the Proposer unless explicitly requested and agreed. Submitted Proposals may be reviewed and/or evaluated by persons internal or external to the City at the discretion of the City.

The City will consider Non-Disclosure Agreements (NDA) with Proposers to protect certain information from disclosure. Any such NDA must include a provision requiring Proposer to defend, indemnify, and hold the City harmless from any claim or lawsuit arising from the City’s refusal to disclose information subject to the NDA. Proposers are cautioned that not all information in the Proposal may be covered by an NDA and the City Attorney will need to evaluate what information the Proposer seeks to include within the scope of the NDA in order to determine whether it will agree to an NDA as to such information.

Upon completion of its evaluation of the Proposals, the City will present to the City Council the results of the RFP, including the identity of the Proposers, the Proposal prices, general information about the Proposals, and such other information as City Council may request. This presentation will be made in an open session City Council meeting. During that City Council meeting, City staff will seek City Council’s direction regarding such Proposals, which direction may include: (i) a direction to further evaluate one or more Proposals or to obtain further
information from one or more Proposers; or (ii) a direction to negotiate with one or more Proposers for a contract. Following the completion of contract negotiations, City staff intends to make a recommendation to City council for the award of a contract.

Except for such Proposal information that will be disclosed during the initial City Council meeting, Proposals will be kept confidential until such time as the City has completed negotiations for a contract and has published a City Council package recommending the award of a contract. At such time, interested proposers will be allowed to inspect all Proposals received (with the exception of the Statement of Qualifications, financial data regarding the Proposer, and such information as is covered by a Non-Disclosure Agreement between Proposer and the City). This date of inspection will be announced by the City before the recommendation for the award of a contract is presented to Council. Following completion of the City’s negotiation, and upon publication of the City Council package recommending the award of a Contract, the Proposals become subject to public review.

The Proposer is cautioned to identify on its Proposal any data that the proposer believes to be exempt from the publication under the Public Records Act. If the Proposer identifies in its Proposal certain data as exempt from disclosure, then if the City receives a request for a copy of the Proposal, the City will notify the proposer, so that the Proposer may, in its discretion and at the Proposer’s sole expense, timely seek a protective order to prevent or limit or condition the disclosure. The City will abide by the terms of the protective order, provided that the protective order is supplied to the City prior to the City’s deadline for responding to the request for records. By submitting a Proposal, the Proposer agrees that it shall indemnify, defend and hold the City harmless from all liability, claims, suits, demands, damages, fines, penalties, costs or expenses arising out of or alleging the City’s refusal to publicly disclose one or more records that the Proposer identifies as protectable, or asserts is protectable.

For ease of identification and processing, Proposers are encouraged to submit confidential information separately e.g., separate electronic folder and separate envelope in hard copy.

22. Campaign Contributions

Glendale Municipal Code Section 1.10.060 places limitations on the Proposer’s and its subcontractors’ ability to make campaign contributions to certain elected City of Glendale officials or candidates for elected City office. Specifically, Section 1.10.060 prohibits:

- A Proposer (including a subcontractor) — who has a contract with the City of Glendale and that contract is subject to approval by the City Council — from making a contribution to a City Council member, City Clerk, or City Treasurer, when the contract
has a total anticipated or actual value of $25,000 or more, or a combination or series of contracts having a value of $25,000 or more, in a fiscal year (July 1 – June 30) of City; and

- A City Council member from voting on a contract in which a Proposer (or its subcontractor) has provided a campaign contribution.

Proposer represents and certifies that:

- Proposer has read and fully understands the provisions of Municipal Code Section 1.10.060;
- Proposer and its subcontractors will fully comply with Municipal Code Section 1.10.060;
- Proposer will not: (i) make a prohibited campaign contribution to an individual holding City of Glendale elective office; or (ii) otherwise violate Municipal Code Section 1.10.060; and
- Proposer shall complete and return the disclosure form contained in Attachment 2.16 as part of Proposer’s Proposal.

23. **Proposer Representations and Acceptance of Conditions**

In submitting its Proposal, the Proposer acknowledges that it has reviewed the RFP in its entirety. In addition Proposer acknowledges that it has also reviewed all Clarification Requests submitted by Proposers to City, and City’s responses to those Clarification Requests.

Any failure by the Proposer to acquaint itself with the available information shall not relieve it from responsibility for properly estimating the difficulty or cost of successfully performing the work.

City assumes no responsibility for any conclusions or interpretations made by the Proposer on the basis of the information made available by City.

Each Proposer in preparing its Proposals shall use complete sets of the RFP documents. City assumes no responsibility for any errors, omissions or misinterpretations resulting from the use of incomplete sets of RFP documents by any Proposer or from Proposer’s failure to attend any site visit and/or pre-Proposal conference, or from Proposer’s failure to submit clarifying questions in a timely manner.
### Acronym or Term | Definition
--- | ---
AC or ac | Alternating Current refers to electrical systems with alternating polarity of voltage and current, typically 60 Hertz (cycles per second) in the US.
Acceptance Test | A test to demonstrate an aspect of the Unit’s ability to satisfy a performance guarantee.
Access Day | A day or days, for use by the Proposer beginning with Mechanical Completion/Readiness for First Fire and having the unit ready for plant acceptance testing for the purposes of performing Hot Commissioning and tuning of their Equipment. Access Day(s) do not provide for exclusive access to the plant and its systems; the EPC Contractor and others are allowed to work in parallel with the Proposer, but not interfere with the Proposer’s work. Days where the Proposer is precluded by the City or the EPC Contractor from performing their tuning and testing work shall not count as an Access Day.
ACFM | Actual Cubic Feet per Minute
AFCU | Ammonia Flow Control Unit
As-Built Drawing | A drawing prepared after the completion of fabrication or construction of a component, system, or facility that accurately reflects the completed status of the subject and includes any changes or modifications made during fabrication or construction.
BACT | Best Available Control Technology
Bidder | Is interchangeable with the term Proposer – individual, partnership, joint venture, or corporation submitting a Proposal for this RFP
BOP | Balance of Plant, equipment that is not being supplied by the PIME Proposer.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalyst</td>
<td>CO Catalyst or the NOx Catalyst, as the context may require. In general, this term refers to the blocks of catalyst, and does not include the supporting frame, ammonia injection grid, piping, etc. or other portions of the NOx and CO control systems.</td>
</tr>
<tr>
<td>CEMS</td>
<td>Continuous Emissions Monitoring System which includes gas analyzers, climate controlled enclosures, a DAHS, and calibration system</td>
</tr>
<tr>
<td>CEQA</td>
<td>California Environmental Quality Act</td>
</tr>
<tr>
<td>CEQA Guidelines</td>
<td>Refers to Chapter 3 of Division 6 of Title 14 of the California Code of Regulations.</td>
</tr>
<tr>
<td>City</td>
<td>Collectively, the City of Glendale, a chartered California municipal corporation, and its utility department, Glendale Water and Power</td>
</tr>
<tr>
<td>CO</td>
<td>Carbon Monoxide</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>COD</td>
<td>Commercial Operation Date</td>
</tr>
<tr>
<td>Cold Commissioning</td>
<td>All activities needed to commission individual components and systems and achieve Mechanical Completion (Readiness for First Fire).</td>
</tr>
<tr>
<td>Cold Start</td>
<td>A start of the unit after it has been shut down long enough to be near ambient temperature. The minimum shutdown period that defines the start of a Cold Start window is the maximum time that defines a Warm Start.</td>
</tr>
<tr>
<td>Contract Documents</td>
<td>Those documents that comprise the Contract between the selected Proposer and the City of Glendale, as specified in the Contract.</td>
</tr>
<tr>
<td>CT</td>
<td>Current Transformer</td>
</tr>
</tbody>
</table>
### Scholl Canyon Landfill Power Project

#### Power Island and Major Equipment Request for Proposals

#### Attachment 1 - Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTG</td>
<td>Combustion Turbine Generator – single gas turbine and its associated generator, together with those accessories associated only with that gas turbine.</td>
</tr>
<tr>
<td>DAHS</td>
<td>Data Acquisition and Handling System</td>
</tr>
<tr>
<td>Day, Days, day or days</td>
<td>Calendar days unless otherwise specifically noted in the Contract Documents</td>
</tr>
<tr>
<td>DC or dc</td>
<td>Direct Current refers to electrical systems with only one polarity of voltage or current.</td>
</tr>
<tr>
<td>DDP</td>
<td>Delivery Duty Paid</td>
</tr>
<tr>
<td>DOR</td>
<td>Division of Responsibility</td>
</tr>
<tr>
<td>ECS</td>
<td>Emissions Control System</td>
</tr>
<tr>
<td>EMT</td>
<td>Electrical Metallic Tubing</td>
</tr>
<tr>
<td>EPC Contractor</td>
<td>Engineering, Procurement and Construction Contractor who performs detailed engineering, procurement of the balance of plant, and construction of the entire facility.</td>
</tr>
<tr>
<td>Excusable Delay</td>
<td>Refer to Attachment 16 Section 9.4</td>
</tr>
<tr>
<td>Factory</td>
<td>Facilities for the design, manufacture, assembly, packaging, testing, and shipment of the Power Island and Major Equipment.</td>
</tr>
<tr>
<td>FAT</td>
<td>Factory Acceptance Testing</td>
</tr>
<tr>
<td>Factory Acceptance Test</td>
<td>The Proposer’s testing program, conducted as part of its quality assurance and control processes that are performed at the factory prior to shipment of the equipment.</td>
</tr>
<tr>
<td>FEED</td>
<td>Front End Engineering Design, typically the first 30% of detailed design engineering.</td>
</tr>
</tbody>
</table>
## Scholl Canyon Landfill Power Project
### Power Island and Major Equipment Request for Proposals
#### Attachment 1 - Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Completion</td>
<td>All remaining aspects of the SCLPP that were not needed for Substantial Completion are complete, and all plant documents have been completed and accepted by the City. Final Completion will be achieved after all work for all of the Units is completed.</td>
</tr>
<tr>
<td>Fired Hours</td>
<td>The total operating hours accumulated on a unit while fuel is being combusted.</td>
</tr>
<tr>
<td>First Fire</td>
<td>Initial combustion of fuel.</td>
</tr>
<tr>
<td>FNTP</td>
<td>Full Notice To Proceed – notification and authorization to proceed with the full scope of the contract.</td>
</tr>
<tr>
<td>Guarantee Plant Performance</td>
<td>As defined in Attachment 3</td>
</tr>
<tr>
<td>GWP</td>
<td>Collectively, the City of Glendale, a chartered California municipal corporation, and its utility department, Glendale Water and Power</td>
</tr>
<tr>
<td>HART Smart Instruments</td>
<td>Field process instrument transmitters and other devices using the Highway Addressable Remote Transducer protocol.</td>
</tr>
<tr>
<td>HHV</td>
<td>Higher Heating Value</td>
</tr>
<tr>
<td>Hot Commission</td>
<td>Commencing with First Fire, all activities need to commission, tune the control systems, perform functional testing, successfully complete Plant Acceptance Testing, and achieve Substantial Completion.</td>
</tr>
<tr>
<td>Hot Start</td>
<td>A restart of a Unit very shortly after a shutdown. The maximum shutdown time that qualifies as a Hot Start is provided by the Proposer as part of their proposal.</td>
</tr>
<tr>
<td>Hp</td>
<td>Horsepower</td>
</tr>
<tr>
<td>HV</td>
<td>High Voltage</td>
</tr>
<tr>
<td>HVAC</td>
<td>Heating, Ventilation, and Air Conditioning</td>
</tr>
</tbody>
</table>
### Definitions

<table>
<thead>
<tr>
<th>I/O</th>
<th>Input/Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO</td>
<td>International Standards Organization</td>
</tr>
</tbody>
</table>
| ISO Conditions | Temperature = 59°F  
                   Relative Humidity = 60%  
                   Pressure = Sea Level |
| Isochronous Operation | Stable operation of a generator isolated from the grid, (frequency established and maintained by the Unit’s own controller) often referred to as islanding. |
| Issued for Construction | Documents are issued for use by the City and the EPC Contractor and represent the final instructions for erection, installation, and assembly of the PIME supplied equipment. Drawings are stamped by a California Professional Engineer as required. |
| Issued for Design | Documents are issued for use by the City and the EPC Contractor and represent the final design of the PIME supplied equipment and services. Drawings and calculations are stamped by a California Professional Engineer as required. |
| Issued for Use | Documents are issued for use by the City and the EPC Contractor and represent the final instructions for storage, preservation, operation, and maintenance of the PIME supplied equipment. |
| kV          | Kilovolt, one thousand Volts. |
| kW          | Kilowatt, one thousand Watts. |
| LFG         | Landfill Gas |
| LHV         | Lower Heating Value |
| LNTP        | Limited Notice To Proceed – notification to proceed with a portion of the scope of work as agreed to by the City and the PIME Proposer. |
### Definitions

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LORS</td>
<td>Applicable Laws, Ordinances, Regulations, and Standards</td>
</tr>
<tr>
<td>LTSA</td>
<td>Long Term Service Agreement as described in Attachment 17</td>
</tr>
<tr>
<td>LV</td>
<td>Low Voltage</td>
</tr>
<tr>
<td>MCC</td>
<td>Motor Control Center</td>
</tr>
<tr>
<td></td>
<td>Mechanical Completion means the period of time when installation and construction of equipment and plant systems are complete, have been successfully tested and are ready for startup and integrated operation as a power plant unit, as well as operator training has been completed to allow First Fire of a Unit. Any outstanding punch list items have been determined by the City to not being an impediment to First Fire. Mechanical Completion will be achieved on a Unit basis.</td>
</tr>
<tr>
<td>MND</td>
<td>Mitigated Negative Declaration.</td>
</tr>
<tr>
<td>Must Meet Remedy</td>
<td>A shortfall in guaranteed performance that must be corrected. The shortfall cannot be mitigated by payment of Liquidated Damages.</td>
</tr>
<tr>
<td>MV</td>
<td>Medium Voltage</td>
</tr>
<tr>
<td>MW</td>
<td>Mega Watt – one million Watts, a unit of power MW-hr/hr (hr/hr implied).</td>
</tr>
<tr>
<td>NERC</td>
<td>North American Electric Reliability Corporation</td>
</tr>
<tr>
<td>NH₃</td>
<td>Ammonia.</td>
</tr>
<tr>
<td>NOx</td>
<td>Generic term for oxides of nitrogen (roughly 30 different chemical compounds e.g. NO, NO₂, N₂O₃ etc.) which are regulated emissions from all combustion processes.</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>Operation and Maintenance</td>
</tr>
<tr>
<td>OEM</td>
<td>Original Equipment Manufacturers</td>
</tr>
</tbody>
</table>
# Scholl Canyon Landfill Power Project
## Power Island and Major Equipment Request for Proposals
### Attachment 1 - Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owners Engineer</td>
<td>Firm retained by the City to act on its behalf with regards to the design and construction of the Proposed Project, Stantec Consulting Ltd.</td>
</tr>
<tr>
<td>Package</td>
<td>An assemblage of related equipment and components on one or more skids, with or without enclosures, that function together.</td>
</tr>
<tr>
<td>Performance Test</td>
<td>A test to demonstrate an aspect of the Unit’s ability to satisfy a functional requirement or performance guarantee.</td>
</tr>
<tr>
<td>PCS</td>
<td>Plant Control System which is the common distributed control system for all of the Units.</td>
</tr>
<tr>
<td>PDC</td>
<td>Power Distribution Center; supplied by the EPC Contractor, it is the nexus for plant electrical systems. Each contains the 12.47 kV generator breakers and switchgear, 4.16 kV switchgear, 480 V MCCs, Uninterruptible Power Supply for plant instrumentation, as well as other electrical equipment.</td>
</tr>
<tr>
<td>PFD</td>
<td>Process Flow Diagram as described in Attachment 6.4 E 7</td>
</tr>
<tr>
<td>PIME</td>
<td>Power Island and Major Equipment</td>
</tr>
<tr>
<td>Plant Acceptance Testing</td>
<td>The systematic testing that demonstrates that the Proposed Project meets the performance guarantees.</td>
</tr>
<tr>
<td>PLC</td>
<td>Programmable Logic Controller</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>Particulate matter less than 2.5 microns.</td>
</tr>
<tr>
<td>PM$_{10}$</td>
<td>Particulate matter less than 10 microns, a regulated emissions parameter.</td>
</tr>
<tr>
<td>POC</td>
<td>Point of Connection</td>
</tr>
<tr>
<td>POU</td>
<td>Publicly Owned Utilities</td>
</tr>
<tr>
<td>ppm</td>
<td>Parts per million</td>
</tr>
</tbody>
</table>
### Attachment 1 - Definitions

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ppm(_v)</td>
<td>parts per million on a volume (or mole) basis</td>
</tr>
<tr>
<td>ppm(_w)</td>
<td>parts per million on a weight basis</td>
</tr>
<tr>
<td>Proposal</td>
<td>Proposal Forms and Proposal Supplement submitted by Proposer in response to this RFP</td>
</tr>
<tr>
<td>Proposal Documents</td>
<td>PIME RFP, including the Proposal Forms and Proposal Supplement</td>
</tr>
<tr>
<td>Proposer</td>
<td>Is interchangeable with the term Bidder – individual, partnership, joint venture, or corporation submitting a Proposal for this RFP</td>
</tr>
<tr>
<td>PT</td>
<td>Potential Transformer</td>
</tr>
<tr>
<td>QAP</td>
<td>Quality Assurance Program</td>
</tr>
<tr>
<td>QCP</td>
<td>Quality Control Program</td>
</tr>
</tbody>
</table>
| Readiness for First Fire | All of the structures, systems, and components required for initial fired operation (e.g., combustion of fuel) of a Unit, including:  
  a) Operational control using the normal Plant Control System interface and facilities 
  b) Normal electrical auxiliary power is available as well as the normal path for exporting power is operable 
  c) Electrical protection and metering systems are operable 
  d) Fire detection and suppression systems are operable 
  e) Other plant supporting systems required for First Fire are operable |
| Ready to Ship | When an equipment package is complete and ready for loading and shipment from the PIME Proposer’s manufacturing/assembly facility(ies) for delivery. |
| Ready to Test | The Unit is ready for a test or testing. |
## Definitions

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>REG</td>
<td>Reciprocating Engine Generator (also referred to as Reciprocating Internal Combustion Engine (RICE))</td>
</tr>
<tr>
<td>RFI</td>
<td>Request for Information</td>
</tr>
<tr>
<td>RFP</td>
<td>Request for Proposal, including all its Attachments</td>
</tr>
<tr>
<td>scfm</td>
<td>Standard cubic feet per minute</td>
</tr>
<tr>
<td>SCAQMD</td>
<td>South Coast Air Quality Management District</td>
</tr>
<tr>
<td><strong>Scheduled Shipment Date</strong></td>
<td>The date by which the equipment, in its entirety if shipped all at one time, or the first portion if shipped in multiple packages, is scheduled to be shipped from the Factory.</td>
</tr>
<tr>
<td>SCLF</td>
<td>Scholl Canyon Landfill</td>
</tr>
<tr>
<td>SCLPP</td>
<td>Scholl Canyon Landfill Power Plant, also referred to as the “Proposed Project”</td>
</tr>
<tr>
<td>SCR</td>
<td>Selective Catalytic Reduction</td>
</tr>
<tr>
<td>Slide Along</td>
<td>Refers to multiple adjacent units, each of which has the same arrangement replicating the first.</td>
</tr>
<tr>
<td>SoCalGas</td>
<td>Southern California Gas Company, the utility providing natural gas to the Scholl Canyon site.</td>
</tr>
<tr>
<td>Startup, startup</td>
<td>Period of time between Mechanical Completion and Substantial Completion.</td>
</tr>
<tr>
<td><strong>Substantial Completion</strong></td>
<td>Substantial Completion means that a Unit has successfully completed and passed all Plant Acceptance Testing requirements and is available for unrestricted dispatch by the City. Any outstanding punch list items have been determined by the City to not be an impediment to declaring the plant commercially operable. Substantial Completion will be achieved on a Unit basis.</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Synchronous Condenser</td>
<td>Spinning of a generator synchronized with the grid but without power input or output. Utilized to adjust conditions on the electric power transmission grid. The generator’s field is controlled by a voltage regulator to either generate or absorb reactive power as needed to adjust the grid’s voltage, or to improve power factor.</td>
</tr>
<tr>
<td>System Codes</td>
<td>Refer to Attachment 6.2 Section C for the System Code definitions</td>
</tr>
<tr>
<td>TA or Technical Advisor</td>
<td>A representative of the Proposer, employed by the Proposer for their own equipment or by one of the Proposer’s subcontractors for the subcontracted equipment. The TA serves as the Proposer’s on-site representative to provide technical advice to City and the EPC Contractor during delivery, preservation on site, erection, Cold and Hot Commissioning, performance testing, and Plant Acceptance Testing.</td>
</tr>
<tr>
<td>Unit</td>
<td>One of the individual engine or turbine generating Units, including the common systems, in whole or in part, that are needed to support operation of a Unit.</td>
</tr>
<tr>
<td>VFD</td>
<td>Variable Frequency Drive</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile Organic Compounds, a regulated emissions parameter.</td>
</tr>
<tr>
<td>VT</td>
<td>Voltage Transformer</td>
</tr>
<tr>
<td>Warm Start</td>
<td>A restart of a Unit sometime after a shutdown. The minimum shutdown period that defines the start of a Warm Start window is the maximum time that defines a Hot Start. The maximum shutdown time that qualifies as a Warm Start is provided by the Proposer as part of their proposal.</td>
</tr>
</tbody>
</table>
COMMERCIAL EXCEPTION PROPOSAL FORM

A. Instructions

Please complete this form electronically. Add additional sheets as necessary.

- Item Number – a sequential number starting with 1 to uniquely number each item
- RFP Reference – reference the portion of the RFP where the Exception applies
- Proposer’s Exception – Proposer’s Exception to the RFP
- Proposed Resolution – Proposer’s Proposed Resolution for the Exception

Item Number: 35T
RFP Reference: 35T
Bidder Exception: Click here to enter text.
Proposed Resolution: 35T

Item Number: 35T
RFP Reference: 35T
Bidder Exception: Click here to enter text.
Proposed Resolution: 35T

Item Number: 35T
RFP Reference: 35T
Bidder Exception: Click here to enter text.
Proposed Resolution: 35T
TECHNICAL EXCEPTIONS PROPOSAL FORM

A. Instructions

Please complete this form electronically. Add additional sheets as necessary.

- Item Number – a sequential number starting with 1 to uniquely number each item
- RFP Reference – reference the portion of the RFP where the Exception applies
- Bidder Exception – Bidder’s Exception to the RFP
- Proposed Resolution – Bidder’s Proposed Resolution for the Exception

Item Number: 34T
RFP Reference: 34T
Bidder Exception: Click here to enter text.
Proposed Resolution: 34T

Item Number: 34T
RFP Reference: 34T
Bidder Exception: Click here to enter text.
Proposed Resolution: 34T

Item Number: 34T
RFP Reference: 34T
Bidder Exception: Click here to enter text.
Proposed Resolution: 34T
CTG UNITS EQUIPMENT PROPOSAL FORM

A. Instructions
Please complete this form electronically. Additional details for the proposed equipment, and other supporting information should be included in the Proposal Supplement Attachment 2.10. Use only US Engineering Units.

B. Overall Description of Proposer’s Offering
Provide a summary level description of the equipment the Proposer is proposing: Number of turbines, maximum fuel heat input rate (MMBTUH-HHV), minimum Methane content required for LFG, enclosure size and sound rating, exhaust stack diameter and height, lube oil & jacket water cooler, inlet air filter and other pertinent information.

C. Combustion Turbines
Turbine Manufacturer: 35T
Generator Manufacturer (if different): 35T
Turbine Manufacturing Location: 35T
Generator Manufacturing Location (if different): 35T
Turbine Model: 35T
Turbine Speed: 35T
Generator Speed: 35T
Number of Turbines: 35T
Inlet Air Cooling System (check one):

☐ Mechanical Chilling

☐ None

Combustion System (check one):

☐ Dry Low NOx
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 2.3.1 – Proposed Combustion Turbine Generator

☐ Other: Please explain 35T

**Required Landfill Gas Supply Pressure:**
Minimum required pressure at 100% load over operating temperature range:
35T psig
Minimum required pressure to start and achieve minimum stable load over operating temperature range:
35T psig

**Cold, Warm, and Hot Start Times:**
35T
Cold Start is defined as a start more than 35T hours since the last shutdown.
Warm Start is defined as a start more than 35T hours and less than 35T hours since the last shutdown.
Hot Start is defined as a start less than 35T hours since the last shutdown.

**Lockout Time:**
Does the turbine have a lockout time (check one): ☐ Yes ☐ No
If yes, what are the initiating condition(s): 35T
If yes, how long is the lockout period? 35T

**Package Configurations:**
What are the elements of the “the package” that require separate foundations, e.g., combustion turbine generator, lube oil skid, control skid, etc.? 35T

**Enclosure Ventilation, Dust Protection and Fire Detection and Suppression System:**
Describe key features of the turbine generator enclosure. 35T

**Noise attenuation:** Provide maximum anticipated (guaranteed) noise level (dB(A)) at 60 ft from the enclosure. Include inlet noise, exhaust noise and enclosure noise and air cooler noise as separate sources. 35T
Starting System Requirements:
35T

D. Emissions Control System (when required by SCAQMD)
Manufacturer: 35T
Catalyst Vendor(s):
- CO Catalyst 35T
- SCR Catalyst 35T

Ammonia Vaporization Method (check one):
☐ Electric
☐ Exhaust Heat

E. CEMS
Manufacturer: 35T

F. Landfill Gas Compressors
Manufacturer: 35T
Model: 35T
Number: 35T
Minimum Suction Pressure: 35T psig
Discharge Pressure: 35T psig
Nominal Horsepower Each: 35T HP
Operating Horsepower Each: 35T HP
Type:
☐ Reciprocating
☐ Screw
☐ Centrifugal

Lube Oil Volume: 35T Gallons
Lube Oil Consumption Rate: 35T Gallons

Explain method proposed to prevent oil carryover to the LFG Conditioning System

Noise attenuation: Provide maximum anticipated noise level (dB(A)) by frequency at 25 ft from compressor. Besides noise produced by each compressor, provide air cooler noise as separate sources. Identify intercooler, aftercooler, chillers and other noise sources.

G. Inlet Air Chiller (if proposed)
Manufacturer: 35T
Model: 35T
Refrigerant: 35T

Noise attenuation: Provide maximum anticipated noise level (dB(A)) by frequency at 25 ft from compressor.

H. SCAQMD Permit Risk

Provide Proposer’s basis for asserting that this equipment – CTG, ECS, and CEMS - can be successfully permitted through SCAQMD. Please include discussion as to other operating projects that support the emissions performance you are guaranteeing. Please include discussion as to how many sites and units have been permitted within SCAQMD using this equipment.

I. City Technical Risk

For any of the proposed equipment, are there three or less other sites operating on landfill gas in commercial service within the United States? ☐ Yes  ☐ No
For any equipment where there are three or less, explain what actions or other basis the Proposer is proposing to mitigate City’s technical, availability, and reliability risk.

35T
REG UNITS EQUIPMENT PROPOSAL FORM

A. Instructions
Please complete this form electronically. Additional details for the proposed equipment, and other supporting information should be included in the Proposal Supplement Attachment 2.10. Use only Standard US Engineering Units.

B. Overall Description of Proposer’s Offering
Provide a summary level description of the equipment the Proposer is Proposing: Number of cylinders, engine BHP, maximum fuel heat input rate (MMBTUH-HHV), minimum Methane content required for LFG, nominal speed (rpm), lube oil consumption and replenishing system, exhaust stack diameter and height, lube oil & jacket water cooler, inlet air filter and other pertinent information.

C. Reciprocating Engines
Engine Manufacturer: 35T
Generator Manufacturer (if different): 35T
Engine Manufacturing Location: 35T
Generator Manufacturing Location (if different): 35T
Engine Model: 35T
Number of Engines: 35T
Maximum allowable cooling water temperature: 35T
Maximum allowable lube oil temperature: 35T
Lube oil consumption all full load (gallon/hr): 35T
Raw exhaust gas sound level (without muffler/silencer) at 60 ft from exhaust stack dB(A) at various frequencies: 35T
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 2.3.2 – Proposed Reciprocating Engine Generator

Raw exhaust gas sound level (with most efficient muffler/silencer proposed) guaranteed at 60 ft from exhaust stack dB(A):

35T

Provide maximum guarantee near field noise level (dB(A)) for jacket water/lube oil cooler at 3 ft.

35T

Required Landfill Gas Supply Pressure:
Minimum required pressure at 100% load over operating temperature range:

35T psig

Minimum required pressure to start and achieve minimum stable load over operating temperature range:

35T psig

Cold, Warm, and Hot Start Times:

35T

Cold Start is defined as a start more than 35T hours since the last shutdown.

Warm Start is defined as a start more than 35T hours and less than 35T hours since the last shutdown.

Hot Start is defined as a start less than 35T hours since the last shutdown.

Describe Engine Accessories and Tools provided:

35T

Describe proposed engine sensors, indicators and actuators (control system):

35T

Provide information required per Attachment 6.8:

35T

Starting System Requirements:

35T

D. Landfill Gas Compressors

Scholl Canyon Landfill Power Project Specification No. 3958

05-10-16
Manufacturer: 35T
Model: 35T
Number: 35T
Minimum Suction Pressure: 35T psig
Discharge Pressure: 35T psig
Nominal Horsepower Each: 35T HP
Operating Horsepower Each: 35T HP

Type:
☐ Reciprocating
☐ Screw
☐ Centrifugal

Lube Oil Volume: 35T Gallons
Lube Oil Consumption Rate: 35T Gallons

Explain method of preventing oil carryover to the LFG conditioning system

35T

Noise attenuation: Provide maximum guaranteed noise level (dB(A)) at 25 ft from compressor. Besides noise produced by each compressor, provide guaranteed air cooler noise as separate sources. Identify other noise sources such as intercooler, aftercooler, chillers and others. 35T

E. Emissions Control System

Manufacturer: 35T

Catalyst Vendor(s):
- CO Catalyst 35T
- SCR Catalyst 35T

19% Aqueous Ammonia Vaporization Method (check one):
F. CEMS

Manufacturer: 35T

G. SCAQMD Permit Risk

Provide Proposer’s basis for asserting that this equipment – REG, ECS, and CEMS - can be successfully permitted through SCAQMD. Please include discussion as to other operating projects that support the emissions performance you are guaranteeing. Please include discussion as to how many sites and units have been permitted within SCAQMD using this equipment.

35T

H. City’s Technical Risk

For any of the proposed equipment, are there three or less other sites operating on landfill gas in commercial service within the United States? ☐ Yes ☐ No

For any equipment where there are less than three, explain what actions or other basis the Proposer is proposing to mitigate the City’s technical, availability, and reliability risk.

35T
SCLPP PLANT PERFORMANCE - PROPOSAL FORM

**A. Instructions**

“Attachment 3 - Site Condition” requires the PIME Proposer to Guarantee Equipment and Plant Performance at 100% load at the Annual Average Temperature that is defined as the Design Point. In addition, the same Attachment 3 requests Proposer to provide equipment and plant performance information for the equipment operating at 75%, 50% and at minimum load, including associated equipment parasitic and plant auxiliary loads, at five (5) additional ambient temperature conditions. Parasitic load refers to equipment required to operate an engines or turbine such as lube oil pumps, lube oil coolers and others associated with a particular engine or turbine. Auxiliary loads includes chillers, gas conditioning, condensate cleanup and other plant loads that are common to all the engines or turbines. Please provide gas compressor, balance of plant auxiliary loads including gas conditioning and condensate clean up system loads such as pumps, blowers, chillers, coolers and other Proposer provided equipment loads. The information provided below will be used by the City to perform life-cycle economic analysis. Please complete this form electronically. The Proposer shall also provide PFD and complete heat balances for PIME supplied equipment operating at 100% load at the Guaranteed Plant Performance Design Point. Attach PFD and heat balances to this document.

**B. Guaranteed Design Ambient Temperature**

<table>
<thead>
<tr>
<th>Guaranteed Plant Performance at Design Point</th>
<th>100% Load Design Point</th>
<th>75% Load</th>
<th>50% Load</th>
<th>Minimum Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>64.4°F DB-55.0°F WB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Power Generated at Generator Terminal per Turbine or Engine (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Parasitic Load per Turbine or Engine (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Net Power per Turbine or Engine (Gross – Parasitic) (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
</tbody>
</table>
### Guaranteed Plant Performance at Design Point

<table>
<thead>
<tr>
<th></th>
<th>100% Load Design Point</th>
<th>75% Load</th>
<th>50% Load</th>
<th>Minimum Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFG Consumed per Turbine or Engine (MMBTU-LHV)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Each Gas Compressors Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of Plant Auxiliary (gas conditioning, condensate and other) Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Plant Heat Rate (BTU LHV/KW)</td>
<td>34T</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Extreme Maximum Temperature

<table>
<thead>
<tr>
<th>Plant Performance at Extreme Maximum Temperature</th>
<th>100% Load</th>
<th>75% Load</th>
<th>50% Load</th>
<th>Minimum Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Power Generated at Generator Terminal per Turbine or Engine (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Parasitic Load per Turbine or Engine (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
</tbody>
</table>
### Scholl Canyon Landfill Power Project
#### Power Island and Major Equipment Request for Proposals
Attachment 2.4 – Proposed Turbine or Engine Plant Performance

#### Plant Performance at Extreme Maximum Temperature

<table>
<thead>
<tr>
<th></th>
<th>100% Load</th>
<th>75% Load</th>
<th>50% Load</th>
<th>Minimum Load</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>110.0°F DB-85.0°F WB</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Power per Turbine or Engine (Gross – Parasitic) (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>LFG Consumed per Turbine or Engine (MMBTU-LHV)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Each Gas Compressors Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of Plant Auxiliary (gas conditioning, condensate and other) Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Plant Heat Rate (BTU LHV/KW)</td>
<td>34T</td>
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</table>

#### D. 95 Percentile Temperature

<table>
<thead>
<tr>
<th></th>
<th>100% Load</th>
<th>75% Load</th>
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<tbody>
<tr>
<td><strong>86.8°F DB-65.7°F WB</strong></td>
<td></td>
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<tr>
<td>Gross Power Generated at Generator Terminal per Turbine or Engine (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Plant Performance at 95 Percentile Temperature</td>
<td>100% Load</td>
<td>75% Load</td>
<td>50% Load</td>
<td>Minimum Load</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>-----------</td>
<td>----------</td>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td>Parasitic Load per Turbine or Engine (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Net Power per Turbine or Engine (Gross – Parasitic) (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>LFG Consumed per Turbine or Engine (MMBTU-LHV)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Each Gas Compressors Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of Plant Auxiliary (gas conditioning, condensate and other) Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Net Plant Heat Rate (BTU LHV/KW)</td>
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### E. Summer Maximum Temperature

<table>
<thead>
<tr>
<th>Plant Performance at Summer Maximum Temperature</th>
<th>100% Load</th>
<th>75% Load</th>
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</tr>
</thead>
<tbody>
<tr>
<td>81.4°F DB-61.9°F WB</td>
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<td>34T</td>
<td>34T</td>
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</tr>
<tr>
<td>Gross Power Generated at Generator Terminal per Turbine or Engine (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Parasitic Load per Turbine or Engine (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Net Power per Turbine or Engine (Gross – Parasitic) (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>LFG Consumed per Turbine or Engine (MMBTU-LHV)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Each Gas Compressors Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of Plant Auxiliary (gas conditioning, condensate and other) Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Plant Heat Rate (BTU LHV/KW)</td>
<td>34T</td>
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</table>
### F. Winter Minimum Temperature

<table>
<thead>
<tr>
<th>Plant Performance at Winter Minimum Temperature</th>
<th>100% Load</th>
<th>75% Load</th>
<th>50% Load</th>
<th>Minimum Load</th>
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</thead>
<tbody>
<tr>
<td>51.9°F DB-47.0°F WB</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
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</tr>
<tr>
<td>Gross Power Generated at Generator Terminal per Turbine or Engine (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Parasitic Load per Turbine or Engine (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Net Power per Turbine or Engine (Gross – Parasitic) (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>LFG Consumed per Turbine or Engine (MMBTU-LHV)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Each Gas Compressors Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of Plant Auxiliary (gas conditioning, condensate and other) Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Plant Heat Rate (BTU LHV/KW)</td>
<td>34T</td>
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</tbody>
</table>

### G. 5 Percentile Temperature
### Scholl Canyon Landfill Power Project

**Power Island and Major Equipment Request for Proposals**

**Attachment 2.4 – Proposed Turbine or Engine Plant Performance**

<table>
<thead>
<tr>
<th>Plant Performance at 5 Percentile Temperature</th>
<th>100% Load</th>
<th>75% Load</th>
<th>50% Load</th>
<th>Minimum Load</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>45.8°F DB-42.1°F WB</strong></td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
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<td>Gross Power Generated at Generator Terminal per Turbine or Engine (KW)</td>
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<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Parasitic Load per Turbine or Engine (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Net Power per Turbine or Engine (Gross – Parasitic) (KW)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>LFG Consumed per Turbine or Engine (MMBTU-LHV)</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Each Gas Compressors Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of Plant Auxiliary (gas conditioning, condensate and other) Power Consumption (KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Plant Heat Rate (BTU LHV/KW)</td>
<td>34T</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### H. Start Time/Ramp Time

<table>
<thead>
<tr>
<th>Start time to full load (guarantee)</th>
<th>Cold Start to full load.</th>
<th>34T</th>
</tr>
</thead>
</table>

05-10-16
### Scholl Canyon Landfill Power Project
### Power Island and Major Equipment Request for Proposals
### Attachment 2.4 – Proposed Turbine or Engine Plant Performance

<table>
<thead>
<tr>
<th>Start time to full load (guarantee)</th>
<th>34T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm Start to full load.</td>
<td></td>
</tr>
<tr>
<td>Shut Down Time from full load (guarantee)</td>
<td>34T</td>
</tr>
</tbody>
</table>

#### I. Catalyst Life

<table>
<thead>
<tr>
<th>CO Catalyst Life, hours (guarantee)</th>
<th>34T</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCR Catalyst Life, hours (guarantee)</td>
<td>34T</td>
</tr>
<tr>
<td>19% Aqueous Ammonia Consumption Rate (guarantee) at full load</td>
<td>34T</td>
</tr>
</tbody>
</table>

#### J. NOx Emissions

<table>
<thead>
<tr>
<th>Start-up NOx Emissions at guarantee conditions, during cold start, lbs</th>
<th>34T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start-up NOx Emissions at guarantee conditions, during warm start lbs</td>
<td>34T</td>
</tr>
<tr>
<td>Shutdown NOx Emissions at guarantee conditions, lbs</td>
<td>34T</td>
</tr>
</tbody>
</table>

#### K. Siloxane Media Life

<table>
<thead>
<tr>
<th>Siloxane Media Life (guarantee)</th>
<th>34T</th>
</tr>
</thead>
</table>
LIMITED NOTICE TO PRECEDE PHASE SCOPE & PROPOSAL – PROPOSAL FORM

A. Instructions

Please complete this form electronically.

B. Scope of Work

City will issue a Limited Notice to Proceed (LNTP) following award of the contract to develop the following engineering deliverables for inclusion in the Engineering Procurement and Construction (EPC) RFP and to support the California Environmental Quality Act (CEQA) process and project permitting with local agencies and the SCAQMD. This engineering work is necessary during the permitting phase of the project after selection of the PIME Contractor. Milestone schedule is provided in Section 11 of the Instruction to Proposers as contained herein as part of this RFP.

The LNTP scope of work shall include:

1. Project kickoff meeting with the City and its Owner’s Engineer.
   a. Introductions.
   b. Review Scholl Canyon Landfill Power Project Scope.
   c. Review LNTP Phase Scope.
   d. Review LNTP Phase Schedule.
   e. Review project permitting status/needs.
   f. Review PIME equipment.
   g. Review PIME EPC Design Requirements.

2. Three (3) interim progress/design reviews with the City and its Owner’s Engineer. Meetings will take place after the City has had an opportunity to review the submitted Proposal documents and provide comments.

3. Final design review with the City and its Owner’s Engineer. Meeting will take place after the City has had an opportunity to review the Proposal documents and provide comments.

4. “Issued for Design” module outline drawings for all of the PIME equipment and subsystems.


7. Piping Interconnection Diagrams.

8. Equipment List in tabular format showing each equipment item as a separate line item.

9. Tie-in List in tabular format showing each tie-in number, description, reference Piping Interconnection Diagrams, and connection size, type, and pressure class.


11. Electrical motor and equipment load list.

12. Equipment noise data for any piece of equipment that will produce noise and the placement or location of equipment or components for use by the EPC Contractor to meet the site noise guarantee.


17. Participate with the City to answer questions that may arise during and after the EPC Contractor Pre-Bid meeting.

C. Schedule

Detailed schedule of deliverables has been provided in Attachment 6.4. Please provide any exceptions to the schedule.

D. Cost

Please provide the total cost and proposed payment milestones for the Engineering LNTP Scope.
PIME COSTS - PROPOSAL FORM

A. Instructions

Please complete this form electronically. Complete the tables for each type of Unit/Equipment. Cost is inclusive of the Proposer’s complete scope of supply. Sales tax is 9%. All pricing shall be in current US dollars. For clarifications, additional sheets may be attached.

B. Equipment Costs

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Cost Each</th>
<th>Sales Tax</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine or Turbine Generator</td>
<td>35T</td>
<td>35T</td>
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<tr>
<td>Coolers (Please List)</td>
<td>35T</td>
<td>35T</td>
<td>35T</td>
</tr>
<tr>
<td>Emission Control System</td>
<td>35T</td>
<td>35T</td>
<td>35T</td>
</tr>
<tr>
<td>CEMS</td>
<td>35T</td>
<td>35T</td>
<td>35T</td>
</tr>
<tr>
<td>LFG Compressor (Please list what is included)</td>
<td>35T</td>
<td>35T</td>
<td>35T</td>
</tr>
<tr>
<td>LFG Conditioning and Condensate Treatment System (Please list what is included)</td>
<td>35T</td>
<td>35T</td>
<td>35T</td>
</tr>
<tr>
<td>Control System (Please list what is included)</td>
<td>35T</td>
<td>35T</td>
<td>35T</td>
</tr>
<tr>
<td>Total Equipment Cost</td>
<td></td>
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<td>35T</td>
</tr>
</tbody>
</table>
### C. Optional Scope (options suggested or recommended by Proposer)

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Cost Each</th>
<th>Sales Tax</th>
<th>Total Cost</th>
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</thead>
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<tr>
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<td>35T</td>
<td>35T</td>
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</tbody>
</table>

### D. Site Staffing Costs (these costs will not be included in the capital cost evaluation, refer to Attachment 6.14 for scope of services)

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Erection, construction, and commissioning site personnel budget, man-hours</td>
<td>35T</td>
</tr>
<tr>
<td>Erection, construction, and commissioning site personnel labor budget, $</td>
<td>35T</td>
</tr>
<tr>
<td>Erection, construction, and commissioning site personnel expense budget, $</td>
<td>35T</td>
</tr>
</tbody>
</table>

### E. Termination Schedule & Cost
No termination cost shall be payable to Proposer by the City prior to issuance of FNTP.

<table>
<thead>
<tr>
<th>Month Following FNTP</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td>14</td>
<td>35T</td>
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<tr>
<td>15</td>
<td>35T</td>
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</tbody>
</table>
COST ADJUSTMENT TERMS & STORAGE COSTS – PROPOSAL FORM

A. Instructions
Please complete this form electronically. Complete the narrative/tables.

B. Cost Adjustment
A cost adjustment will apply only to the PIME FNTP Equipment Costs listed in Attachment 2.5.2 if there is an extension between the dates of contract execution and issuance of the FNTP as shown in the Project Schedule (Section 11 of the Instruction to Proposers).

Cost Adjustment of Site Services rates will be addressed by utilizing the then current field services rates when field services commence. Per Diem expenses will be based on the United States General Services Administration’s Per Diem rates then in effect.

Cost Adjustment does not apply to the LNTP Phase as it will commence very shortly after contract signing.

The period of time that is used as the basis for such cost adjustment will be reduced day for day by the number of days beyond the Proposer’s scheduled completion of the LNTP Phase.

Proposer’s escalation terms shall use standard published indexes including but not limited to CEP Cost Index, Consumer Price Index, US Dollar/Euro Exchange Rate, US Dollar/Yen Exchange Rate, etc.

C. Equipment Storage Costs
Storage cost pricing applies if the City does not take delivery as contracted. Costs are to be provided on a “per equipment” basis, e.g., the costs for storage of one piece of equipment (e.g. one turbine, one engine, one CEMS, one gas compressor, etc.).
## Scholl Canyon Landfill Power Project
### Power Island and Major Equipment Request for Proposals
#### Attachment 2.6 – Cost Adjustment Terms & Storage Costs

<table>
<thead>
<tr>
<th>Equipment</th>
<th>In to Storage Cost, $</th>
<th>Out of Storage Cost, $</th>
<th>Monthly Storage Cost, $/month</th>
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</thead>
<tbody>
<tr>
<td>Combustion Turbine</td>
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<tr>
<td>Reciprocating Engine</td>
<td>34T</td>
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<td>34T</td>
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<tr>
<td>Emissions Control System</td>
<td>34T</td>
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<td>34T</td>
</tr>
<tr>
<td>CO Catalyst</td>
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<tr>
<td>SCR Catalyst</td>
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<tr>
<td>Landfill Gas Compressor</td>
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<tr>
<td>Chiller</td>
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<td>CEMS</td>
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<tr>
<td>Gas Conditioning System</td>
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<tr>
<td>Others, please list</td>
<td>34T</td>
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</tr>
</tbody>
</table>
## DELIVERY AND PAYMENT SCHEDULE – PROPOSAL FORM

### A. Instructions
1. Please complete this form electronically. Complete the tables providing milestone dates for weeks after Limited or Full Notice to Proceed as appropriate.
2. Refer to Notice Inviting Proposal Section 11 for City proposed project schedule.
3. The delivery date for the catalyst shall be no earlier than 30 days before First Fire.
4. Document and Drawing requirements and delivery requirements are listed in Attachment 6.4.

### B. CTG or REG Units

<table>
<thead>
<tr>
<th>LNTP Documents</th>
<th>Mechanical, Electrical, and Control Interface Drawings</th>
<th>Balance of Structural Drawings</th>
<th>Balance of Mechanical Drawings, System Descriptions</th>
<th>Balance of Electrical Drawings, System Descriptions</th>
<th>Balance of I&amp;C Drawings, ECS Control Logic, Control Narratives</th>
<th>Storage, Erection, and Assembly Instructions</th>
<th>O&amp;M Manuals</th>
<th>Delivered to Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combustion Turbines</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Reciprocating Engines</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Gas Conditioning &amp; Condensate Treatment Systems</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Emissions Control System</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Catalyst</td>
<td>34T</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Landfill Gas Compressor</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>Chiller</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
<tr>
<td>CEMS</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
</tbody>
</table>
### Scholl Canyon Landfill Power Project
### Power Island and Major Equipment Request for Proposals
### Attachment 2.7 – Delivery and Payment Schedule

<table>
<thead>
<tr>
<th>LNTP Documents</th>
<th>Mechanical, Electrical, and Control Interface Drawings</th>
<th>Balance of Structural Drawings</th>
<th>Balance of Mechanical Drawings, System Descriptions</th>
<th>Balance of Electrical Drawings, System Descriptions</th>
<th>Balance of I&amp;C Drawings, ECS Control Logic, Control Narratives</th>
<th>Storage, Erection, and Assembly Instructions</th>
<th>O&amp;M Manuals</th>
<th>Delivered to Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control System</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
<td>34T</td>
</tr>
</tbody>
</table>
C. Milestone Payment Schedule

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Payment Percentage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNTP Phase</td>
<td>N/A</td>
<td>Lump sum amount as contained in Proposer’s LNTP proposal. Payment schedule/milestones as agreed to during contract negotiation.</td>
</tr>
<tr>
<td>Issuance of FNTP</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Mechanical, Electrical, and Control Interface Drawings</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Balance of Structural Drawings</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Balance of Mechanical Drawings, System Descriptions</td>
<td>2%</td>
<td>Payments are upon delivery and acceptance of Issued for Design documents.</td>
</tr>
<tr>
<td>Balance of Electrical Drawings, System Descriptions</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Balance of I&amp;C Drawings, ECS Control Logic, Control Narratives</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Storage, Erection, and Assembly Instructions</td>
<td>2%</td>
<td>Payments are upon delivery and acceptance of Issued for Construction documents.</td>
</tr>
<tr>
<td>O&amp;M Manuals</td>
<td>2%</td>
<td></td>
</tr>
</tbody>
</table>
## Delivery and Payment Schedule

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Payment Percentage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Conditioning System Factory Acceptance Testing Complete</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>CTG/REG Factory Acceptance Testing Complete</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Gas Compressor Factory Acceptance Testing Complete</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>CEMS Quality Assurance/Certification Plan</td>
<td>1%</td>
<td>Percentage to be broken down on an individual equipment basis as agreed to during contract negotiations.</td>
</tr>
<tr>
<td>Ready to Ship</td>
<td>10%</td>
<td>Percentage to be broken down between systems as agreed to during contract negotiations.</td>
</tr>
<tr>
<td>Delivered to Site</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Substantial Completion</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Final Completion</td>
<td>5%</td>
<td>Paid within 30 days of receipt of invoice following Final Completion</td>
</tr>
<tr>
<td>Retention</td>
<td>5%</td>
<td>Paid within 60 days of receipt of invoice following Final Completion</td>
</tr>
</tbody>
</table>
Engineering and Technical support and advisor services will be billed as agreed during contract negotiations and are not subject to the above milestone payment schedule.

The above is a suggested payment schedule. The City may consider alternative schemes as proposed or agreed to during contract negotiation. However, alternatives must:

1. The LNTP phase is a standalone lump sum amount.
2. Milestone payments are tied to accomplished work.
3. Include 5% retention for all milestone and T&M payments.
4. Include a Delivery to Site milestone that is at least equal to the value of the Ready to Ship milestone.
5. Include an Acceptance of Plant Performance Testing milestone that is worth at least 10%.
6. Include a Final Completion milestone that is worth at least 5% excluding payment of the retention amounts.
O&M COSTS & MAINTENANCE SCHEDULES – PROPOSAL FORM

A. Instructions

For each piece of the Proposers equipment listed below, please provide the information requested in the tables. Formal Long Term Service Agreement (LTSA) proposals shall be included in the Proposal Supplement. If remote monitoring is proposed, Proposer shall include, in the Proposal Supplement, a description addressing how their communications comply with NERC computer/information security requirements.

B. Combustion Turbine Units

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection/Maintenance Schedule (check all that apply)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Fired Hours Based</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Starts/Stops/Trips Based</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formula for converting fired hours and starts/stops/trips to</td>
<td>34T</td>
<td></td>
</tr>
<tr>
<td>equivalent operating hours for inspection/maintenance intervals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describe inspection/maintenance milestones and expected durations</td>
<td>34T</td>
<td></td>
</tr>
<tr>
<td>Estimated $/MWh non-fuel, non-labor operating and maintenance costs</td>
<td>34T</td>
<td></td>
</tr>
<tr>
<td>Does an LTSA provide enhanced or expedited access to OEM stocked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>spare parts?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>□ Requires LTSA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Available independent of LTSA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Not Available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote monitoring and diagnostics (check whichever applies)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Requires LTSA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Available independent of LTSA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Not Available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Describe any other O&M services that the Proposer is proposing. Include proposal(s) in the Proposal Supplement.

**C. Landfill Gas Compressors**

<table>
<thead>
<tr>
<th>Inspection/Maintenance Schedule (check all that apply)</th>
<th>☐ Operating Hours Based</th>
<th>☐ Starts/ Stops/Trips Based</th>
<th>☐ Other</th>
</tr>
</thead>
</table>

Describe inspection/maintenance milestones and expected durations

34T

**D. Reciprocating Engine Units**

<table>
<thead>
<tr>
<th>Inspection/Maintenance Schedule (check all that apply)</th>
<th>☐ Fired Hours Based</th>
<th>☐ Starts/ Stops/Trips Based</th>
</tr>
</thead>
</table>

Formula for converting fired hours and starts/stops/trips to equivalent operating hours for inspection/maintenance intervals

34T

Describe inspection/maintenance milestones and expected durations

34T

Estimated $/MWh non-fuel, non-labor operating costs (Example: oil consumption, others)

34T

Does an LTSA provide enhanced or expedited access to OEM stocked spare parts?

☐ Yes

☐ No
Remote monitoring and diagnostics (check whichever applies):

| ☐ Requires LTSA                     |
| ☐ Available independent of LTSA     |
| ☐ Not Available                     |

Describe any other O&M services that the Proposer is proposing. Include proposal(s) in the Proposal Supplement.

34T
GAS CONDITIONING SYSTEM

A. Instructions

For each of Proposer’s systems listed below, please provide the information requested in the tables.

B. Gas Conditioning System

<table>
<thead>
<tr>
<th>Pressure drop across Gas Conditioning System, psi</th>
<th>34T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe inspection/maintenance milestones and expected durations</td>
<td>34T</td>
</tr>
<tr>
<td>Estimated $/year non-labor operating and maintenance costs</td>
<td>34T</td>
</tr>
<tr>
<td>Auxiliary (Parasitic) Load (kW)</td>
<td>100% Load 34T</td>
</tr>
<tr>
<td>75% Load 34T</td>
<td></td>
</tr>
<tr>
<td>50% Load 34T</td>
<td></td>
</tr>
<tr>
<td>Minimum Load 34T</td>
<td></td>
</tr>
</tbody>
</table>

Describe any other O&M services that the Proposer is proposing. Include proposal(s) in the Proposal Supplement. | 34T |
### C. Water Removal

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of LFG cooler/chiller</td>
<td>34T</td>
</tr>
<tr>
<td>Chiller refrigerant</td>
<td>34T</td>
</tr>
<tr>
<td>Estimated cost of refrigerant inventory</td>
<td>34T</td>
</tr>
<tr>
<td>Chiller energy consumption, kW</td>
<td>34T</td>
</tr>
<tr>
<td>Type of coalescer filter/separator</td>
<td>34T</td>
</tr>
<tr>
<td>Coalescer filter element consumable?</td>
<td>☐ Yes</td>
</tr>
<tr>
<td>☐ No</td>
<td></td>
</tr>
<tr>
<td>Cost of replacement coalescer filter elements</td>
<td>34T</td>
</tr>
<tr>
<td>Describe any other O&amp;M services that the Proposer is proposing. Include proposal(s) in the Proposal Supplement.</td>
<td>34T</td>
</tr>
</tbody>
</table>

### D. H₂S Removal

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity of H₂S removal media, lb. H₂S/ft³ media</td>
<td>34T</td>
</tr>
<tr>
<td>Quantity of H₂S removal media in service, ft³</td>
<td>34T</td>
</tr>
<tr>
<td>Quantity of H₂S removal media in reserve, ft³</td>
<td>34T</td>
</tr>
</tbody>
</table>
### Cost of H2S removal media, $/ ft³

| 34T |

### Describe any other O&M services that the Proposer is proposing. Include proposal(s) in the Proposal Supplement.

| 34T |

### E. Siloxane Removal

<table>
<thead>
<tr>
<th>Capacity of siloxane removal media, lb. siloxane/ft³ media</th>
<th>34T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of siloxane removal media in service, ft³</td>
<td>34T</td>
</tr>
<tr>
<td>Quantity of siloxane removal media regeneration, ft³</td>
<td>34T</td>
</tr>
<tr>
<td>Cost of siloxane removal media, $/ ft³</td>
<td>34T</td>
</tr>
<tr>
<td>Expected life of siloxane removal media, years</td>
<td>34T</td>
</tr>
<tr>
<td>Type of siloxane polishing media</td>
<td>34T</td>
</tr>
<tr>
<td>Capacity of siloxane polishing media, lb. siloxane/ft³ media</td>
<td>34T</td>
</tr>
<tr>
<td>Quantity of siloxane polishing media in service, ft³</td>
<td>34T</td>
</tr>
</tbody>
</table>
### Attachment 2.9 – Gas Conditioning System

<table>
<thead>
<tr>
<th>Description</th>
<th>34T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of siloxane polishing media in reserve, ft³</td>
<td></td>
</tr>
<tr>
<td>Cost of siloxane polishing media, $/ ft³</td>
<td></td>
</tr>
<tr>
<td>Describe any other O&amp;M services that the Proposer is proposing. Include proposal(s) in the Proposal Supplement.</td>
<td></td>
</tr>
</tbody>
</table>

### F. Condensate Treating

<table>
<thead>
<tr>
<th>Description</th>
<th>34T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity of treated condensate surge storage, gallons</td>
<td></td>
</tr>
<tr>
<td>Capacity of separated oil storage, gallons</td>
<td></td>
</tr>
<tr>
<td>Type of treated condensate polishing filter</td>
<td></td>
</tr>
<tr>
<td>Estimated annual cost of filter elements/media</td>
<td>34T</td>
</tr>
</tbody>
</table>
PROPOSAL SUPPLEMENT

A. Instructions

The intent of this Attachment 2.10 is to provide the Proposer with opportunity to supplement information already provided in other Attachments and enhance Proposer’s proposal. Proposer shall include the following information in the Proposal Supplement.

1. Proposer’s Statement of Qualifications

2. A single point of contact with regards to the Proposer’s proposal.

3. An organization chart illustrating the relationship between and amongst the Proposer, engineering consultant company(s), major equipment suppliers providing equipment for the proposal, and any major subcontractors.

4. An organization chart illustrating the project organization that the Proposer would put in place to execute the project. While the City recognizes it may be premature for the proposer to assign personnel to the positions, the organization chart should identify key suppliers and consultants, geographically where key personnel will be located (project site, Proposer’s corporate office (inside or outside the United States), sub-contractor’s office, etc.).

5. The Proposer shall include a Master Project Schedule for their scope of work from contract execution through delivery of equipment to the site. The dates contained in the Schedule section of the RFP should be used as inputs by the Proposer for development of their Master Project Schedule. Proposer shall utilize Microsoft Project for the Master Project Schedule.


7. Equipment, accessories, and material description narratives for the CTG(s), REG(s), ECS, Chiller(s), Gas Conditioning System, and Fuel Gas Compressors. Include as a minimum descriptive catalogs and literature complete with appropriate illustrations describing the equipment, list of proposed accessories, and equipment data sheets including noise data.

8. Detailed narrative description of the landfill gas conditioning, sulfur and siloxane removal system being proposed by Proposer. Proposer shall indicate the maximum
allowable concentration of each constituent of the fuel gas as listed in Attachment 5 at the inlet to the REG, Second Stage Fuel Gas Compressor, CTG, and/or the ECS as appropriate. If, for any constituent, there is no maximum allowable concentration (i.e. methane, nitrogen, etc.), Proposer shall so indicate. Proposer shall also list the guaranteed concentrations of each constituent for which there is a maximum allowable concentration as measured at the outlet of the landfill gas conditioning system.

Proposer shall describe all key operating parameters of the landfill gas conditioning system including operating pressure, chemical requirements including replacement frequency based on purity level, any regeneration requirements including flaring, any disposal requirements and other information the Proposer feels would enhance its ability to obtain a Contract from the City.

9. Describe operating characteristics of landfill gas compressors being proposed. If flooded screw, provide sufficient information to assure the City that oil will not be carried over to contaminate downstream portions of the landfill gas conditioning system. If centrifugal, provide sufficient information to assure the City that the speed of the compressor will not detrimentally affect the life of the compressor. Provide staging, horsepower, partial load control and other information to satisfy the City that compressor chosen by Proposer is the best fit for the process.

10. Proposer shall provide equipment arrangement, outline, and elevation drawings for all equipment provided by proposer and recommended location and orientation for each skid on the enclosed Scholl Canyon Landfill Power Plant Equipment Location Plan, RFP Figure 2.1. Include labeled scaled drawing of every skid, cooler, CEMS, vessels, turbine enclosure or building and other equipment being supplied by Proposer, demonstrating that the PIME equipment along with equipment supplied by the EPC Contractor will fit on the site. REGs will be located in a building and CTGs shall be self-enclosed. Proposer shall recommend size and height of building(s). Larger equipment may be transported separately from the skid for field installation onto the skids at the job site. All proposer supplied equipment shall be mounted on individual skids and all skids shall safely fit on the site and provide for constructability of the facility and operations and maintenance of the facility by the City. Access to ammonia tanks, siloxane and sulfur holding tanks, etc. is essential. Interested Proposers may obtain Figure 2.1 in AutoCAD format as directed in Section 3 of Instruction to Proposers.
11. A detailed and dimensioned description of any equipment that will require weather enclosure. Any weather enclosure, other than those provided by Proposer, will be constructed by the EPC contractor.

12. Provide description of control system platform. See Attachment 6.8 for minimum information to be provided.

13. Provide additional equipment, engineering, operations, and maintenance data and information that would help the City better understand the Proposer’s offering.

14. Verify that the equipment proposed is capable of operating on the quality of landfill gas provided. Provide minimum methane concentration (percent of total fuel gas) that the engine or turbine proposed as capable of operating as guaranteed.

15. Current T&M Rates for erection and commissioning field services for the different vendors and personnel classifications.


17. Provide recommended list of 2 year spare parts, including pricing.

18. Provide Long-Term Service Agreement proposal for CTG, REG and compressor. Describe key points of LTSA scope, duration and cost of each.

19. Provide any other O&M service proposals that Proposer desires to offer.

20. Provide reference project(s) where Proposer provided major equipment utilizing landfill gas as fuel in California and particularly within SCAQMD jurisdiction, including contact information for the project owner or representative.

21. Provide both the near-field and far-field noise guarantees for the individual noise sources for the equipment included in Attachment 6-16.

22. Provide documentation of Proposer’s Quality Assurance Program (QAP) that meets requirements of ISO 9001 and Proposer’s Quality Control Program (QCP).
CTG AIR EMISSIONS DATA – PROPOSAL FORM

A. Instructions
This section is for information requested if you are proposing Combustion Turbine Generators only. All turbine generators shall be identical.

Please provide the information and data requested below:

Number of identical Turbine Generators Proposed: 35T

Each turbine’s exhaust stack diameter and height: 35T

Maximum total heat input per turbine (MMBTUH- HHV): 35T

Maximum gross electrical output of each turbine (KW): 35T

B. Catalyst Information Request (If required to meet the emission standards per Attachment 7)

Describe SCR Proposed, (Make, model, catalyst type and material, module size, total volume, other pertinent information): 35T

Describe Oxidation Catalyst Proposed, (Make, model, catalyst type and material, module size, total volume, other pertinent information): 35T

Guaranteed Ammonia Concentration at the outlet of the SCR Unit (Ammonia Slip) (PPMV, @ 15% O2): 35T

Performance Guarantee (% Reduction) on NOx, CO, and VOC: 35T

Ammonia Storage Information (Dimensions, capacity, pressure): 35T

C. Exhaust Parameters Guarantees for Full Load Operation (each turbine)

Maximum Exit Exhaust Flow (ACFM): 35T
Maximum Exit Exhaust Flow (SCFM): 35T
Exit Exhaust Temp (°F): 35T
Exit Pressure (inc. H2O): 35T
D. Emissions Rates Guarantees for each Turbine

For turbine operating at all loads, minimum to maximum, please provide the following guarantee information for all design conditions listed in Attachment 3 Site Design Condition.

<table>
<thead>
<tr>
<th>Contaminants</th>
<th>PPMV and Fuel Use MMBTUH HHV</th>
<th>Standard PPMV</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO (PPMV, @ 15% O2, dry)</td>
<td>35T</td>
<td>25</td>
</tr>
<tr>
<td>NOx (PPMV, @ 15% O2, dry)</td>
<td>35T</td>
<td>15</td>
</tr>
<tr>
<td>ROG (PPMV, as Hexane @ 3% O2, dry)</td>
<td>35T</td>
<td>20</td>
</tr>
<tr>
<td>Formaldehyde (PPMV, @ 15% O2)</td>
<td>35T</td>
<td></td>
</tr>
<tr>
<td>SOx (PPMV, @ 15% O2, dry)</td>
<td>35T</td>
<td></td>
</tr>
</tbody>
</table>

Landfill Gas CH4 Destruction Efficiency (%): 35T 99
Landfill Gas NMOC Destruction Efficiency (%): 35T 98

Lbs/MMBTU-HHV
PM 10 (Lbs/MMBTU - HHV): 35T

E. Emissions Guarantees for Start Up & Shut down for each Turbine

**Cold Start Event**

Define Cold Start: 35T  
Duration (Minutes): 35T

<table>
<thead>
<tr>
<th>Contaminants</th>
<th>Lbm /Event &amp; Lbm/MMBtu HHV During Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO (@ 15% O2, dry)</td>
<td>35T</td>
</tr>
<tr>
<td>NOx (@ 15% O2, dry)</td>
<td>35T</td>
</tr>
<tr>
<td>ROG (as Hexane @ 3% O2, dry)</td>
<td>35T</td>
</tr>
<tr>
<td>Formaldehyde (@ 15% O2)</td>
<td>35T</td>
</tr>
<tr>
<td>SOx (@ 15% O2, dry)</td>
<td>35T</td>
</tr>
<tr>
<td>PM 10</td>
<td>35T</td>
</tr>
</tbody>
</table>
## Warm Start Event

**Define Warm Start:** 35T  
**Duration (Minutes):** 35T

<table>
<thead>
<tr>
<th>Contaminants</th>
<th>Lbm /Event &amp; Lbm/MBtu HHV During Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO (@ 15% O2, dry)</td>
<td>35T</td>
</tr>
<tr>
<td>NOx (@ 15% O2, dry)</td>
<td>35T</td>
</tr>
<tr>
<td>ROG (as Hexane @ 3% O2, dry)</td>
<td>35T</td>
</tr>
<tr>
<td>Formaldehyde (@ 15% O2)</td>
<td>35T</td>
</tr>
<tr>
<td>SOx (@ 15% O2, dry)</td>
<td>35T</td>
</tr>
<tr>
<td>PM 10</td>
<td>35T</td>
</tr>
</tbody>
</table>

## Hot Start Event

**Define Hot Start:** 35T  
**Duration (Minutes):** 35T

<table>
<thead>
<tr>
<th>Contaminants</th>
<th>Lbm /Event &amp; Lbm/MBtu HHV During Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO (@ 15% O2, dry)</td>
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</tr>
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<td>35T</td>
</tr>
<tr>
<td>PM 10</td>
<td>35T</td>
</tr>
</tbody>
</table>

## Shut Down Event

**Define shut down:** 35T  
**Duration (Minutes):** 35T

<table>
<thead>
<tr>
<th>Contaminants</th>
<th>Lbm /Event &amp; Lbm/MBtu HHV During Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO (@ 15% O2, dry)</td>
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<td>35T</td>
</tr>
<tr>
<td>PM 10</td>
<td>35T</td>
</tr>
</tbody>
</table>
REG AIR EMISSIONS DATA – PROPOSAL FORM

A. Instructions
This section is for information requested if you are proposing Reciprocating Engine Generators only. All engine generators shall be identical.

Please provide the information and data requested below.

Number of identical Engine Generators Proposed: 34T
Each engine’s exhaust stack diameter and height: 34T
Maximum total heat input per engine (MMBTUH- HHV): 34T
Maximum gross electrical output of each generator (MW): 34T
Maximum brake horsepower rating of the engine (bhp): 34T

B. Catalyst Information Request
Describe SCR Proposed, (Make, model, catalyst type and material, module size, total volume, other pertinent information): 34T

Describe Oxidation Catalyst Proposed, (Make, model, catalyst type and material, module size, total volume, other pertinent information): 34T

Guaranteed Ammonia Concentration at the outlet of the SCR Unit (Ammonia Slip) (PPMV, @ 15% O2): 34T

Performance Guarantee (% Reduction) on NOx, CO, and VOC: 34T

Ammonia Storage Information (Dimension, capacity, pressure): 34T

C. Exhaust Parameters Guarantees for Full Load Operation (each engine)
Maximum Exit Exhaust Flow (ACFM): 34T
Maximum Exit Exhaust Flow (SCFM): 34T
Exit Exhaust Temp (°F): 34T
Exit Pressure (inc. H2O): 34T
D. Emissions Rates Guarantees for each Engine

For engines operating at all loads, minimum to maximum, please provide the following guarantee information for all design conditions listed in Attachment 3 Site Design Condition.

<table>
<thead>
<tr>
<th>Contaminants</th>
<th>PPMV and Fuel Use MMBTU HHV</th>
<th>Standard PPMV</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO (PPMV, @ 15% O2, dry) :</td>
<td>34T</td>
<td>25</td>
</tr>
<tr>
<td>NOx (PPMV, @ 15% O2, dry):</td>
<td>34T</td>
<td>15</td>
</tr>
<tr>
<td>ROG (PPMV, as Hexane @ 3% O2, dry):</td>
<td>34T</td>
<td>20</td>
</tr>
<tr>
<td>Formaldehyde (PPMV, @ 15% O2):</td>
<td>34T</td>
<td></td>
</tr>
<tr>
<td>SOx (PPMV, @ 15% O2, dry):</td>
<td>34T</td>
<td></td>
</tr>
<tr>
<td>Landfill Gas CH4 Destruction Efficiency (%):</td>
<td>34T</td>
<td>99</td>
</tr>
<tr>
<td>Landfill Gas NMOC Destruction Efficiency (%):</td>
<td>34T</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM 10 (Lbs/MMBTU - HHV):</td>
<td></td>
<td>34T</td>
</tr>
</tbody>
</table>

E. Emissions Guarantees for Start Up & Shut down for each Engine

**Cold Start Event**

Define Cold Start: 34T  
Duration (Minutes): 34T  

<table>
<thead>
<tr>
<th>Contaminants</th>
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</tr>
</thead>
<tbody>
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<td>34T</td>
</tr>
<tr>
<td>PM 10</td>
<td>34T</td>
</tr>
</tbody>
</table>
**Warm Start Event**

Define Warm Start: 34T  
Duration (Minutes): 34T

<table>
<thead>
<tr>
<th>Contaminants</th>
<th>Lbm /Event &amp; Lbm/MMBtu HHV During Event</th>
</tr>
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<tr>
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<tr>
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<td>SOx (@ 15% O2, dry)</td>
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</tr>
<tr>
<td>PM 10</td>
<td>34T</td>
</tr>
</tbody>
</table>

**Hot Start Event**

Define Hot Start: 34T  
Duration (Minutes): 34T

<table>
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<tr>
<th>Contaminants</th>
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<td>34T</td>
</tr>
<tr>
<td>PM 10</td>
<td>34T</td>
</tr>
</tbody>
</table>

**Shut Down Event**

Define shut down: 34T  
Duration (Minutes): 34T

<table>
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<tr>
<th>Contaminants</th>
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<td>PM 10</td>
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</tr>
</tbody>
</table>
GENERATOR INTERCONNECTION DATA – PROPOSAL FORM

A. Instructions
All generators proposed by Proposer shall be identical. Proposer shall complete the following tables. Proposer shall also furnish the diagrams and curves listed below.

B. Combustion Turbine and Reciprocating Engine Generators

<table>
<thead>
<tr>
<th>Generator Data</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Base used for per unit impedance</td>
<td>34T</td>
</tr>
<tr>
<td>Voltage rating of machine</td>
<td>34T</td>
</tr>
<tr>
<td>Winding Configuration (Delta, Grounded Wye)</td>
<td>34T</td>
</tr>
<tr>
<td>Neutral Impedance (if applicable)</td>
<td>34T</td>
</tr>
<tr>
<td>Direct- Axis Subtransient Reactance (Xd”) per unit</td>
<td>34T</td>
</tr>
<tr>
<td>Quadrature- Axis Subtransient Reactance (Xq’) per unit</td>
<td>34T</td>
</tr>
<tr>
<td>Direct - Axis Transient Reactance (X’d) per unit</td>
<td>34T</td>
</tr>
<tr>
<td>Quadrature Axis Transient Reactance (X’q) per unit</td>
<td>34T</td>
</tr>
<tr>
<td>Synchronous Reactance (Xs) per unit</td>
<td>34T</td>
</tr>
<tr>
<td>Negative Sequence Reactance (X2) per unit</td>
<td>34T</td>
</tr>
<tr>
<td>Zero Sequence Reactance (X0) per unit</td>
<td>34T</td>
</tr>
</tbody>
</table>
In addition the Proposer shall supply the following Block Diagrams and Generator Curves:

- Exciter Block Diagram and Model constants
- Governor Block Diagram and Model Constants
- Generator Block Diagram and Model Constants
- Estimated Reactive Capability Curves
- Estimated Vee Curves
- Estimated Saturation and Synchronous Impedance Curves
The undersigned submits this Proposal in response to the Notice Inviting Proposals issued by the City to provide the Power Island and Major Equipment for the Proposed Scholl Canyon Landfill Power Project in accordance with the Contract Documents:

Specification 3598 – Power Island and Major Equipment – Proposed Scholl Canyon Landfill Power Project

A. Enclosed herewith and by this reference incorporated herein and made a part of this Proposer’s Proposal are the following completed forms:

1. Proposal Forms (Attachments 2.1-2.9 and 2.11)
2. Proposal Supplement Forms (Attachment 2.10)
3. Proposal Security in the following form (check one):
   - Cashier’s Check
   - Certified Check
   - Proposal Bond
   - Letter of Credit

4. Proposer’s Statement of Qualifications
   a. Statement of violations of Federal, State, or Local laws, if applicable
   b. Statement of disqualifications or debarment, if applicable

5. Non-Collusion Affidavit

6. Proposer’s Campaign Disclosure Form

B. Acknowledgment of Addenda. The Proposer shall acknowledge the receipt of Addenda by placing an “X” by each addendum received:

   - Addendum No. 1
   - Addendum No. 2
   - Addendum No. 3
   - Addendum No. 4
   - Addendum No. 5

Scholl Canyon Landfill Power Project
Specification No. 3958

Page 1 of 4
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 2.12 – Proposal Cover Sheet

If an Addendum or Addenda have been issued by the City and not noted above as being received by the Proposer, the Proposal may be rejected.

C. Inspection of the Work and Contract Documents. Proposer certifies that it has carefully examined and is fully familiar with all of the provisions of the Request for Proposal Documents and said Request for Proposal Documents contain sufficient detail regarding the Work to be performed; that it has notified City of any errors or omissions in the Request for Proposal Documents; and that it has carefully checked all words, prices, and statements in this Proposal Form. Proposer hereby certifies that he/she and his/her subcontractors have reviewed the Request for Proposal and fully acquainted themselves with all conditions and matters which may in any way affect the Work, time of completion, or the costs thereof. Proposer also certifies he/she has observed the designated Contractor Work areas and access routes, if disclosed or shown, as part of the Work in this Contract. Proposer agrees that all costs of Work shown in the Request for Proposal Documents, including work reasonably inferable therefrom and necessary thereto are included in his/her Proposal. All Work shown in the Request for Proposal Documents for which a specific line item is not provided in the Proposal Form are included in the Total Base Proposal Price. Proposer agrees that City will not be responsible for any errors or omissions on the part of the undersigned in making this Proposal.

D. Forfeiture of Proposal Security. Proposer further agrees that, in case of his/her default in executing the required Contract and the required bonds, or furnishing the required insurance, the money payable under the Proposal Security accompanying this Proposal shall be applied by the City towards payment of the damage to the City on account of such default, as provided in the Proposal Documents.

E. Period of Irrevocability. Proposer agrees that this Proposal shall remain open and shall not be withdrawn for a period of not less than one-hundred and eighty (180) calendar days from the date of award of Contract, or until rejected by the City, whichever period is shorter.

F. Proposal Dispute Indemnification. In the event of a Proposal dispute based upon the Proposer’s submission of this Proposal and the City acceptance of same, the Proposer shall indemnify, defend, and hold harmless at its expense, including the provision of legal counsel, the City, its agents, employees, and officers from liability, claims, demands, damages, and costs if such dispute or action arises solely upon the award of a Contract in compliance with federal, state, and local laws.
I hereby certify under penalty of perjury under the laws of the State of California that the representations made herein are true and correct.

Executed this ___ day of ______ at _____________________, City State

Name of Proposer
COMPANY NAME: ____________________________________________

SIGNED: ___________________________________________________________________

PRINT NAME: _______________________________ TITLE: _______________________________

ADDRESS: _____________________________________________________________________

_____________________________________________________________________________

CONTACT PERSON: ___________________________________________________________________

TELEPHONE NUMBER: ( ) ______________________

FAX TELEPHONE NUMBER: ( ) ______________________

E-MAIL: ___________________________________________________________________

TAX IDENTIFICATION NO. ___________________________________________________________________

SURETY ___________________________________________________________________

Scholl Canyon Landfill Power Project 05-10-16
Specification No. 3958 Page 3 of 4
Form of Entity of Proposer

Corporation:
State of Corporation
Incorporation
President:
Secretary:

Partnership:
Name of all Partners:

Joint Venture:
Name of all Joint Venturers:

Sole Proprietorship:
All d/b/a's:

If the Proposer is a corporation or a limited liability company, enter state or county of incorporation in addition to the business address and include an incumbency certificate executed by a Secretary thereof in the form set forth on the following page listing each officer with signing authority and his/her corresponding office. If the Proposer is a partnership or joint venturer stating that the respective partner or joint venturer agrees to be held jointly and severally liable for any and all of the duties and obligations of the Proposer under the Proposal and under any contract arising therefrom. Attach evidence to the Proposal Form that the individual signing has authority to do so.
PROPOSAL BOND
(not necessary when cash, certified or cashier’s check accompanies Proposal)

KNOW ALL MEN BY THESE PRESENT,

That we, _________________________________, the undersigned Proposer, as Principal and ________________________________________________________, as Surety, our respective heirs, executors, administrators, successors and assigns, are jointly and severally and firmly bound, unto CITY OF GLENDALE, hereinafter “Obligee,” for payment of the penal sum hereof in lawful money of the United States, as more particularly set forth herein.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the Principal has submitted the accompanying Proposal for the __________________________ Project and the Proposal must be accompanied by Proposal security.

WHEREAS, subject to the terms of this Bond, the Surety is firmly bound unto the Obligee in the penal sum of $________________________________________________ (TEN PERCENT (10%)) of the total amount of the Proposal on the base contract work submitted by the Principal to the Obligee, as set forth above.

NOW THEREFORE, if the Principal shall not withdraw said Proposal within the period specified in the Proposal Documents, or, if no period be specified, for sixty (60) calendar days after award of the Contract for the Project; or if the Principal does not attempt to withdraw the Proposal when the requirements of Public Contact Code §5101 et seq. are not met; or if the Principal is awarded the Contract, and shall within the period specified therefore, or if no period be specified, within fourteen (14) calendar days after award of the Contract, enter into a written contract with the Obligee, in accordance with the Proposal as accepted, and give such bond(s) with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract and for the payment for labor and materials used for the performance of the Contract and the required insurance documentation, then the above obligation shall be void and of no effect, otherwise to remain in full force and effect.
In the event that suit or other proceeding is brought upon this Bond by the Obligee, the Surety shall pay to the Obligee all costs, expenses and fees incurred by the Obligee in connection therewith, including without limitation, attorneys’ fees and costs.

IN WITNESS WHEREOF, the Principal and Surety have executed this instrument this _____ day of ________________, 20_____ by their duly authorized agents or representatives

Proposer:
(Corporate Seal)

(Principal’s Name)

By: __________________________________________
(Signature)

(Typed or Printed Name and Title)

(Address)

[CONTINUED ON NEXT PAGE]
Surety:  
(Corporate Seal) 

(Surety’s Name) 

By:  
(Signature of Attorney-in-Fact for Surety) 

(Attach Attorney-in-Fact Certificate)  
(Typed or Printed Name) 

(Address of Surety’s Office where Bond is issued) 

(Area Code and Telephone Number of Surety) 

NOTARIAL CERTIFICATION OF ATTORNEY IN FACT AND SEAL OF SURETY MUST BE ATTACHED
City of Glendale
Glendale Water & Power Administration
141 N. Glendale Avenue, Level 4
Glendale, CA 91206

RE: Irrevocable Letter of Credit No. _____________

Ladies and Gentlemen:

We hereby issue in your favor this irrevocable Letter of Credit No. [______] (this “Letter of Credit”) for the account of ______________ (“Proposer”) in relation to Proposer’s Proposal(s) (hereinafter, the “Proposals”) submitted in response to the City of Glendale’s Request for Proposals for Power Island and Major Equipment for the Proposed Scholl Canyon Landfill Power Project, Specification 3598 (“RFP”), in the amount of [insert U.S. Dollar amount; must be 10% of Proposer’s highest cost Proposal amount].

This Letter of Credit is effective immediately and expires on the earlier of: (i) 180 calendar days after the deadline for submission of Proposals in response to the RFP or (ii) on the date that the Proposer to whom a contract (“Contract”) is awarded in response to the RFP (“successful Proposer”) submits the performance and payment bonds, proof of insurance, executed copies of the Contract, and all necessary submittals upon contract execution as specified in the RFP and Contract. Notwithstanding the foregoing, this Letter of Credit will automatically terminate upon its surrender to us for cancellation.

This Letter of Credit serves as a proposal security in lieu of those forms of security specified under Section 20170 of the California Public Contracts Code, and serves as a guarantee that the successful Proposer shall execute a Contract and shall provide the insurance, bonds and other required submittals upon contract execution as specified in the RFP and Contract within thirty (30) calendar days after award of the Contract.

Funds under this Letter of Credit are available against your demand made on us from time to time, such demand to be made by your submission of letter to us, stating that the conditions for payment under the Letter of Credit have been fulfilled. Multiple demands and multiple draw-downs may be made hereunder.

Presentation of such letter(s) may be made by facsimile or by manually signed documents presented by your agent. Any facsimile presentation shall be made to us at [fax number], or at such other number as shall be specified in a written notice given by us to you. Any manual presentation of documents shall be made at our [_____], office at [insert address]. If we
receive your letter(s) on or prior to the expiration or termination of this Letter of Credit, then, provided that we receive the same on or before [time] a.m., we will honor such demand on the same banking day; otherwise, we will honor your demand on the next banking day following presentation thereof in accordance with your payment instructions. If requested by you, payment under this Letter of Credit shall be made by wire transfer of immediately available funds to your account as set forth in the Certificate.

To the extent not contrary to the express provisions hereof, this Letter of Credit shall be governed by the Uniform Customs and Practice for Documentary Credits (2007 Revision) International Chamber of Commerce Publication No. 600 (the “UCP”). As to matters not addressed by the UCP, this Letter of Credit shall be governed by and construed in accordance with the law of California, without reference to any conflict of law provisions thereof that would dictate the application of the laws of any other state.

Communications with respect to this Letter of Credit shall be in writing (including fax) and shall be addressed to us at [__________] or at fax number: [____], specifically referring to the number of this Letter of Credit.

This Letter of Credit sets forth in full our undertaking. Except as stated herein, payment of demands made under this Letter of Credit is not subject to any condition or qualification. Our obligations hereunder are primary obligations that shall not be affected by the performance or nonperformance by Proposer of any obligations under any agreement between Proposer and us. Our obligations and liabilities hereunder shall not in any way be affected, modified, amended, reduced, impaired, amplified or limited by any amendment, renewal, extension, modification, compromise, release, discharge or reference of, under, to or in connection with the Agreement or any other document or agreement (except only the letter[s] referred to herein or an extension to the expiry date of this Letter of Credit pursuant to an amendment to the Agreement). Reference herein to the Agreement shall not be deemed to incorporate the same herein by reference.

Very truly yours,

[LETTER OF CREDIT BANK]
PROPOSER’S QUALIFICATION STATEMENT – PROPOSAL FORM

1. Organization

1.1 How many years has your organization been in business?

1.2 How many years has your organization been in business under its present name?

1.2.1 Under what other names has your organization operated?

1.3 If your organization is a corporation, answer the following:

1.3.1 Date of incorporation:

1.3.2 State of incorporation:

1.3.3 Corporate ID number:

1.3.4 President’s name:

1.3.5 Agent for Service of Process:

1.4 If your organization is a partnership, answer the following:

1.4.1 Date of organization:

1.4.2 Type of partnership (if applicable):

1.4.3 Name(s) of general partner(s):
1.5 If your organization is individually owned, answer the following:

1.5.1 Date of organization:

1.5.2 Name of owner:

1.6 If the form of your organization is other than those listed above, describe it and name the principals:

2. EXPERIENCE

2.1 Claims and Suits (If the answer to any of the questions below is yes, please attach details.)

2.1.1 Has your organization ever failed to complete any work awarded to it?

2.1.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

2.1.3 Has your organization filed any law suits or requested arbitration with regard to furnishing and delivering power transformers within the last five (5) years?

2.2 Within the last five years, has any officer or principal of your organization ever been an officer of another organization when it failed to complete a contract? (If the answer is yes, please attach details.)

2.3 On a separate sheet, list the utility companies that your organization has furnished Power Island Equipment to in the past ten years, giving the name of the utility company, utility contact person, equipment furnished, and the date the equipment was furnished.
3. **SURETY**

3.1 If a performance and/or payment bond is required by this bid, identify the bonding company if arrangements for the bond have been made; if not, identify the bonding company for the Contractor's most recent project:

________________________________________

________________________________________

3.2 Name and address of agent:

________________________________________

________________________________________

4. **MAJOR SUBCONTRACTORS**

Provide responses for questions 1.1, 1.2, 2.1.1, 2.1.2, 2.1.3, and 2.3 for each major equipment subcontractor.

All of the above statements as to experience, financial qualifications, and available plant and equipment are submitted in conjunction with the proposal, as a part thereof, and the truthfulness and accuracy of the information is guaranteed by the Bidder.

Signature of Proposer __________________________

Scholl Canyon Landfill Power Project 05-10-16
Specification No. 3958 Page 3 of 3
PROPOSER’S AFFIDAVIT OF NON-COLLUSION

STATE OF CALIFORNIA

COUNTY OF [Blank]

_________________________________________ being first duly sworn, deposes and says:

1. That he/she is the ________________________ (Title of office if a corporation: "sole owner," "Partner," or other proper title) of ________________________________________, (hereinafter called "Proposer") who has submitted to the City of Glendale a Proposal for the Specification 3598 – Power Island and Major Equipment – Scholl Canyon Landfill Power Project

2. That said Proposal is genuine; that the same is not sham; that all statements of fact therein are true;

3. That said Proposal is not made in the interest or behalf of any person, partnership, company, association, organization, or corporation not named or disclosed;

4. That Proposer did not, directly or indirectly induce, solicit, agree, collude, conspire or contrive with anyone else to submit a false or sham proposal, to refrain from Proposal, or withdraw his/her proposal, to raise or fix the proposal price of Proposer or of anyone else, or to raise or fix any overhead profit, or cost element of Contractor's price or the price of anyone else; and did not attempt to induce action prejudicial to the interests of the City of Glendale, or of any other Proposer, or anyone else interested in the proposed Contract;

5. That the Proposer has not in any manner sought by collusion to secure for himself an advantage over any other Proposer’s or induce action prejudicial to the interests of the City of Glendale or of any other Proposer, or anyone else interested in the proposed Contract;
6. That the Proposer has not accepted any proposal from any subcontractor or material supplier through any proposal depository, the bylaws, rules or regulations of which prohibit or prevent the Proposer from considering any proposal from any subcontractor or material supplier, which is not processed through said proposal depository, or which prevent any subcontractor or material supplier from Proposal to any Proposer who does not use the facilities of or accept Proposals from or through such proposal depository;

7. That the Proposer did not, directly or indirectly, submit the Proposer's proposal price or any breakdown thereof, or the contents thereof, or divulge information or data relative thereto, to any corporation, partnership, company, association, organization, proposal depository, or to any member or agent thereof, or to any individual or group of individuals, except to the City of Glendale, or to any person or persons who have partnership or other financial interest with said Proposer in his/her business.

Dated this ______ day of ______ at ______, Month/Year City State

________________________________________
Contractor

________________________________________
Title
PROPOSER’S CAMPAIGN DISCLOSURE FORM

In accordance with the City Campaign Finance Ordinance No. 5744, the following are the names and business addresses of the members of the board of directors, the chairperson, CEO, COO, CFO, Subcontractors and any person or entity with more than ten percent interest in the company proposed for contract in this agenda item report:

Officers of ______________________________

<table>
<thead>
<tr>
<th>Full Name</th>
<th>Title</th>
<th>Business Address</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
</tr>
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Board of Directors

<table>
<thead>
<tr>
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<th>Title</th>
<th>Business Address</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
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Ownership Interest in more than ten percent in _________________

<table>
<thead>
<tr>
<th>Full Name</th>
<th>Title</th>
<th>Business Address</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
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<tbody>
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</tbody>
</table>

None of these contractors has any applicable subcontractors.
SITE CONDITIONS

A. Project Location

The Proposed Project will be located completely within the boundaries of SCLF in the City of Glendale, Los Angeles County at 3001 Scholl Canyon Road, Glendale, California 91206. Regional access to the landfill is from the Ventura Freeway (State Route 134) at the Figueroa Street Exit.

The Proposed Project coordinates are 34.1533 degrees north and 118.1931 degrees west and the elevation is 1410 ft. above mean sea level.

B. Site Design Condition

Guaranteed Plant Performance is at LFG supply flow rate of 6,200 scfm at a pressure between 5.5” to 8” water column and at a temperature of 160 degrees °F. In addition, the PIME supplied equipment, systems and controls shall be designed to accept up to an additional 200 scfm of natural gas at 20 psig of pressure at the inlet of the first stage compressor.

Guaranteed Plant Performance will be at the Scholl Canyon Annual Average Dry Bulb temperature of 64.4 degrees F and Annual Average Wet Bulb temperature of 55.0 degrees F. Other design conditions that will be used for life-cycle economic analysis are:

<table>
<thead>
<tr>
<th></th>
<th>Dry Bulb Temperature °F</th>
<th>Wet Bulb Temperature °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extreme Max.</td>
<td>110.0</td>
<td>85.0</td>
</tr>
<tr>
<td>95 Percentile</td>
<td>86.8</td>
<td>65.7</td>
</tr>
<tr>
<td>Summer Max.</td>
<td>81.4</td>
<td>61.9</td>
</tr>
<tr>
<td>Annual Average</td>
<td>64.4</td>
<td>55.0 Design Point</td>
</tr>
<tr>
<td>Winter Min.</td>
<td>51.9</td>
<td>47.0</td>
</tr>
<tr>
<td>5 Percentile</td>
<td>45.8</td>
<td>42.1</td>
</tr>
</tbody>
</table>

Plant performance parameters at all six (6) above listed ambient temperature conditions shall be provided. Plant performance parameters include, gross generator power output, net plant power output to grid (gross power output - parasitic loads), energy input (btu/hr LHV) at 100%, 75%, 50% and minimum allowable load and maximum fluid temperatures (lube oil, cooling water). All equipment and auxiliary systems shall be sized to allow operations at 100% load at all six (6) ambient temperature conditions.
All equipment shall be located on skids and skid fabrication and assembly. Seismic Design Criteria shall be based on the upcoming 2016 California Building Code and ASCE 7-10.

The seismic design parameters for the site are as follows:
- Risk Category III
- Seismic Importance Factor $I_e = 1.00$
- Site Class C
- Short Period Spectral Response Acceleration, $S_s = 2.912$
- One-Second Period Spectral Response Acceleration, $S_1 = 1.016$

Design Wind Speed shall be 115 mph.
SITE INTERCONNECTIONS

A. Electricity - Transmission
The Proposed Project will connect to the GWP electrical distribution system at the Scholl Substation through an existing 12.47 kV radial distribution line. Additional electrical studies will be conducted by others to determine any possible modifications that would be required at Scholl Substation. The existing 12.47 kV distribution line will be relocated and the Power Plant will connect to this relocated distribution line via new switchgear by the EPC Contractor.

B. Electricity – Station Service
Station service will be supplied via new switchgear and a step down auxiliary transformer serving the new facilities. Both switchgear and transformer will be provided by the EPC contractor.

C. Black Start
No black start capability is required for this project.

D. Aqueous Ammonia
The aqueous ammonia used to activate the SCR catalyst is furnished as 19% (by weight) ammonia in demineralized water. The Aqueous Ammonia will be delivered by truck and the truck loading facility and the Ammonia Storage System will be designed and provided by the EPC Contractor.

E. Fuel – Landfill Gas
LFG is gathered from Scholl Canyon by the Sanitation District of Los Angeles County. The LFG discharge pressure from existing blowers is 5”- 8” WC and the discharge temperature is 160 degrees F. The point of connection will be at the LFG header connecting the existing blowers to existing flares. Connection will be provided by the EPC Contractor.

The typical composition is provided in Attachment 5. Attachment 10 provides additional information regarding landfill gas conditioning requirements.
F. Fuel – Natural Gas

Natural gas will be supplied to the Proposed Project by the Southern California Gas Company (SoCal Gas). The nearest SoCal Gas pipeline is located on Scholl Canyon Drive and a new pipeline from the SoCal Gas meter to the Proposed Project will be provided by the EPC contractor. The pressure at the SoCal Gas Meter can vary between 20 to 40 psig and the suction pressure at the fuel gas compressors to be supplied by the PIME Proposer is anticipated to be the same. The composition of the SoCal Gas will always be in compliance with SoCal Gas Rule 30 as approved by the California Public Utilities Commission (CPUC).

G. Water – Process and Potable

The Proposed Project shall not require the consumptive use of water. Potable water for domestic use, process make up and fire protection is available within one mile of the Project Site. A new water pipeline to the Power Plant Site will be constructed by the EPC contractor.

H. Process/Condensate Waste

Prior to disposal, oil shall be removed from any process water or condensate. The removed oil will be temporarily stored in tank and periodically removed off site. The oil collection tank shall be sized during the LNTP Phase by the PIME Proposer. Processed water and condensate shall be treated as required by Attachment 10 and after treatment disposed of in existing City sewer. Piping between the PIME Proposer’s condensate treatment system and the sewer will be provided by the EPC contractor.

I. Equipment Location Plan

Scholl Canyon Landfill Power Plant Equipment Location Plan, RFP Figure 2.1, is provided for Proposer’s benefit. It is very important for the Proposer to show that all of Proposer’s furnished equipment and skids can safely be arranged within the area provided in RFP Figure 2.1. The information provided by Proposer will be used by the EPC contractor to prepare final General Arrangement drawing. Refer to Attachment 2.10.

J. Water – Storm Water

Surface storm water flow is directed and routed to catch/debris basin operated and maintained by the L.A. County Flood Control Department. Equipment containing hazardous materials (oil, chemicals, etc.) shall be located within containments. Storm water drainage and containment will be designed by EPC contractor.
Water – Fire Protection

With the exception of gas turbine generator enclosure, fire protection system will be designed and provided by the EPC contractor.

K. Sanitary Waste

Permanent bathroom(s) will be provided on site by the EPC contractor. Waste will be disposed in the existing City sewer system.
### American Analytics Landfill Gas Analysis For Sample Collected On 01/06/16

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Method</th>
<th>Estimated Reporting Limit</th>
<th>Analytical Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen</td>
<td>EPA 3C (Mod)</td>
<td>0.1%</td>
<td>&lt;0.1%</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>EPA 3C (Mod)</td>
<td>0.1%</td>
<td>28%</td>
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<tr>
<td>Oxygen/Argon</td>
<td>EPA 3C (Mod)</td>
<td>0.1%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>EPA 3C (Mod)</td>
<td>0.1%</td>
<td>36.0%</td>
</tr>
<tr>
<td>Methane</td>
<td>EPA 3C (Mod)</td>
<td>0.1%</td>
<td>32.0%</td>
</tr>
<tr>
<td>Ethane</td>
<td>GC/FID</td>
<td>20 ppmV</td>
<td>&lt;100000 ppmV</td>
</tr>
<tr>
<td>Propane</td>
<td>GC/FID</td>
<td>20 ppmV</td>
<td>18 ppmV</td>
</tr>
<tr>
<td>Pentane</td>
<td>GC/FID</td>
<td>20 ppmV</td>
<td>&lt;10 ppmV</td>
</tr>
<tr>
<td>Hexane</td>
<td>GC/FID</td>
<td>20 ppmV</td>
<td>&lt;10 ppmV</td>
</tr>
<tr>
<td>Benzene</td>
<td>EPA 8260B (Mod)</td>
<td>1 ppmV</td>
<td>0.97 ppmV</td>
</tr>
<tr>
<td>Toluene</td>
<td>EPA 8260B (Mod)</td>
<td>1 ppmV</td>
<td>3.2 ppmV</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>EPA 8260B (Mod)</td>
<td>1 ppmV</td>
<td>1.1 ppmV</td>
</tr>
<tr>
<td>m,p-Xylene</td>
<td>EPA 8260B (Mod)</td>
<td>1 ppmV</td>
<td>1.5 ppmV</td>
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<tr>
<td>o-Xylene</td>
<td>EPA 8260B (Mod)</td>
<td>1 ppmV</td>
<td>0.48 ppmV</td>
</tr>
<tr>
<td>Styrene</td>
<td>EPA 8260B (Mod)</td>
<td>1 ppmV</td>
<td>&lt;0.23 ppmV</td>
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<tr>
<td>C3 Benzenes</td>
<td>EPA 8260B (Mod)</td>
<td>1 ppmV</td>
<td>&lt;0.4 ppmV</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>EPA 8260B (Mod)</td>
<td>1 ppmV</td>
<td>&lt;0.38 ppmV</td>
</tr>
<tr>
<td>C1 Naphthalene</td>
<td>EPA 8260B (Mod)</td>
<td>TIC*</td>
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</tr>
<tr>
<td>C2 Naphthalene</td>
<td>EPA 8260B (Mod)</td>
<td>TIC*</td>
<td>not found</td>
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<tr>
<td>Hydrogen Sulfide</td>
<td>ASTM D 5540-12</td>
<td>0.05 ppmV</td>
<td>39 ppmV</td>
</tr>
<tr>
<td>Carbonyl Sulfide</td>
<td>ASTM D 5540-12</td>
<td>0.05 ppmV</td>
<td>0.053 ppmV</td>
</tr>
<tr>
<td>Carbon Disulfide</td>
<td>ASTM D 5540-12</td>
<td>0.05 ppmV</td>
<td>0.032 ppmV</td>
</tr>
<tr>
<td>Methyl Mercaptan</td>
<td>ASTM D 5540-12</td>
<td>0.05 ppmV</td>
<td>1.0 ppmV</td>
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</tbody>
</table>
## Scholl Canyon Landfill Power Project

**Power Island and Major Equipment Request for Proposals**

### Attachment 5 – Landfill Gas Composition

<table>
<thead>
<tr>
<th>Dimethyl Sulfide</th>
<th>ASTM D 5540-12</th>
<th>0.05 ppmV</th>
<th>1.5 ppmV</th>
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<tbody>
<tr>
<td>Total Sulfur**</td>
<td>ASTM D 5540-12</td>
<td>0.05 ppmV</td>
<td>42 ppmV</td>
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<tr>
<td>1,1,3,3-tetramethyldisiloxane</td>
<td>GC/MS (ALS AQL111)</td>
<td>TIC*</td>
<td>not found</td>
</tr>
<tr>
<td>pentamethyldisiloxane</td>
<td>GC/MS (ALS AQL111)</td>
<td>TIC*</td>
<td>not found</td>
</tr>
<tr>
<td>hexamethyldisilane</td>
<td>GC/MS (ALS AQL111)</td>
<td>TIC*</td>
<td>not found</td>
</tr>
<tr>
<td>hexamethyldisiloxane (L2)</td>
<td>GC/MS (ALS AQL111)</td>
<td>200 ug/m3</td>
<td>580 ug/m3</td>
</tr>
<tr>
<td>Octamethyltrisiloxane (L3)</td>
<td>GC/MS (ALS AQL111)</td>
<td>200 ug/m3</td>
<td>&lt;0.27 ug/m3</td>
</tr>
<tr>
<td>Decamethyldisiloxane (L4)</td>
<td>GC/MS (ALS AQL111)</td>
<td>200 ug/m3</td>
<td>&lt;0.28 ug/m3</td>
</tr>
<tr>
<td>Dodecamethylpentasiloxane (L5)</td>
<td>GC/MS (ALS AQL111)</td>
<td>200 ug/m3</td>
<td>&lt;0.28 ug/m3</td>
</tr>
<tr>
<td>Hexamethylyclotetrasiloxane (D3)</td>
<td>GC/MS (ALS AQL111)</td>
<td>200 ug/m3</td>
<td>63 ug/m3</td>
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<tr>
<td>Octamethylyclotetrasiloxane (D4)</td>
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<td>120 ug/m3</td>
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<tr>
<td>Decamethylyclopentasiloxane (D5)</td>
<td>GC/MS (ALS AQL111)</td>
<td>200 ug/m3</td>
<td>52 ug/m3</td>
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<tr>
<td>Dodecamethylyclohexasiloxane (D6)</td>
<td>GC/MS (ALS AQL111)</td>
<td>200 ug/m3</td>
<td>&lt;0.28 ug/m3</td>
</tr>
<tr>
<td>Trimethyldisilanol</td>
<td>GC/MS (ALS AQL111)</td>
<td>200 ug/m3</td>
<td>3500 ug/m3</td>
</tr>
<tr>
<td>Total Silicon</td>
<td>GC/MS (ALS AQL111)</td>
<td>200 ug/m3</td>
<td>1400 ug/m3</td>
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<tr>
<td>Mercury</td>
<td>EPA 7471B (Mod)</td>
<td>0.5 ug/m3</td>
<td>&lt;0.5 ug/m3</td>
</tr>
<tr>
<td>Arsenic</td>
<td>EPA 6020B (Mod)</td>
<td>2 ug/m3</td>
<td>&lt;2 ug/m3</td>
</tr>
<tr>
<td>Beryllium</td>
<td>EPA 6020B (Mod)</td>
<td>2 ug/m3</td>
<td>&lt;2 ug/m3</td>
</tr>
<tr>
<td>Cadmium</td>
<td>EPA 6020B (Mod)</td>
<td>2 ug/m3</td>
<td>&lt;2 ug/m3</td>
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<tr>
<td>Copper</td>
<td>EPA 6020B (Mod)</td>
<td>2 ug/m3</td>
<td>&lt;2 ug/m3</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>EPA 6020B (Mod)</td>
<td>2 ug/m3</td>
<td>&lt;2 ug/m3</td>
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<tr>
<td>Lead</td>
<td>EPA 6020B (Mod)</td>
<td>2 ug/m3</td>
<td>&lt;2 ug/m3</td>
</tr>
<tr>
<td>Antimony</td>
<td>EPA 6020B (Mod)</td>
<td>2 ug/m3</td>
<td>&lt;2 ug/m3</td>
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</table>
### Selenium

<table>
<thead>
<tr>
<th>Selenium</th>
<th>EPA 6020B (Mod)</th>
<th>2 ug/m³</th>
<th>&lt;2 ug/m³</th>
</tr>
</thead>
</table>

*: Tentatively Identified Compound

### Zinc

<table>
<thead>
<tr>
<th>Zinc</th>
<th>EPA 6020B (Mod)</th>
<th>2 ug/m³</th>
<th>7.4 ug/m³</th>
</tr>
</thead>
</table>

**: Total Reduced Sulfur as Hydrogen Sulfide**
RESPONSIBILITIES

A. Introduction
This series of Attachments to the RFP, as well as the other equipment specific Attachments, provide the minimum requirements for the Proposer and their equipment to which they shall adhere.

B. Proposer Responsibilities
The Proposer has the sole responsibility for the design, manufacture, and delivery to the project site of the equipment described in this RFP. It is not the RFP’s intent to comprehensively define the design of the equipment as the design responsibility lies entirely within the Proposer’s scope. The technical requirements contained within the RFP should not be construed as providing the final design. The purpose of the RFP is to define a minimum set of contractual, functional, and technical requirements to which the Proposer shall adhere to provide assurance that the Proposer will satisfy City’s needs for the Proposed Project.

The Proposer shall adhere to Scope of Supply as provided in Sections 2.1 and 2.2 of the Instructions to Proposers and to Engineering Scope and Deliverables as provided in Attachment 6.4.

C. Warranty
Proposer shall provide a minimum 12 month warranty from the time the Unit achieves Substantial Completion except for the catalyst. The catalyst warranty shall be at least 5 years from Substantial Completion. If Recuperator is provided, recuperator warranty shall also be at least 5 years from Substantial Completion.

D. EPC Contractor Responsibilities
The EPC Contractor is responsible for the installation of PIME supplied equipment and for overall design and construction of the Scholl Canyon Landfill Power Project site and balance of plant not provided by PIME Proposer.

The EPC Contractor is responsible for the specification and procurement of all equipment needed for the Scholl Canyon Landfill Power Project except for that equipment that is within the PIME Contractor’s scope of supply.

The EPC Contractor is responsible for managing and implementing construction of the Scholl Canyon Landfill Power Project.
E. Division of Responsibility

The following table provides the division of responsibilities between City, the PIME Contractor, and EPC Contractor.
### Schedule A

#### Item Description

<table>
<thead>
<tr>
<th>Conceptual Engineering</th>
<th>Detail Design</th>
<th>Supply, Personnel or Materials</th>
<th>Construction</th>
<th>Comments</th>
</tr>
</thead>
</table>

#### PROJECT MANAGEMENT & SERVICES

- **Overall Program Management**
  - **GWP**
  - Includes all planning, cost and scheduling, insurances for liability, workers compensation, performance bonds, subcontractor management and tracking, quality assurance, site material coordinator, labor & TA supervision, request for information management, Labor safety monitoring and reporting.

- **PIME Project Management**
  - **PIME**
  - Includes all planning, cost and scheduling, insurances for liability, workers compensation, performance bonds, subcontractor management and tracking, quality assurance, fulfilling Scope of Supply requirement per Notice Inviting Proposals Section 2 and attachment 6.4.

- **EPC Management**
  - **EPC**
  - Includes all planning, cost and scheduling, insurances for liability, workers compensation, performance bonds, subcontractor management and tracking, quality assurance, fulfilling Scope of Supply requirement per Notice Inviting Proposals Section 2 and attachment 6.4.

- **Overall Construction Safety Program**
  - **EPC**

- **Overall Project Status Reports**
  - **GWP**
  - Input received from EPC and PIME contractor.

- **PIME Project Status Reports**
  - **PIME**
  - Weekly and monthly tracking reports.

- **EPC Project Status Reports**
  - **EPC**
  - Weekly and monthly tracking reports.

- **Project Master Schedule**
  - **PIME/EPC**
  - PIME responsible for Master Schedule up to completion of LNTP Phase, EPC responsible for remainder of project.

#### PERMITTING

- **CEQA Permits**
  - **PIME/GWP**
  - Environmental assessment, permitting for federal, state, and local agencies; PIME provides data needed by GWP to apply for and acquire environmental permits.

- **Plan Check and Building Permits**
  - **PIME/EPC**
  - City construction and building permits; PIME supplies information needed by EPC to apply for and acquire City building permits.

- **Fire Protection Permits – PIME Scope**
  - **PIME**
  - PIME provides information to EPC, EPC obtains Fire Department Approval.

- **Fire Protection Permits – EPC Scope**
  - **EPC**
  - EPC obtains Fire Department Approval and installs fire protection system.

#### ENGINEERING

- **PIME Limited Notice to Proceed (LNTP) and Full Notice to Proceed (FNTP)**
  - **GWP**

- **EPC Notice to Proceed (NTP)**
  - **GWP**

- **PIME Equipment performance**
  - **PIME**
  - Equipment performance at six temperature conditions including Design Point Guarantee condition.

- **PIME organization chart & schedule**
  - **PIME**

- **EPC Engineering, Permitting & Construction Schedule**
  - **EPC**

- **Site Survey and Geotechnical Report**
  - **GWP**
  - Including ground resistivity and corrosivity.

- **Prepare Equipment Location Plan**
  - **PIME**

- **LFG Engineering (PFD, Heat & Material Balance, j)**
  - **PIME**

- **LFG Conditioning system detail information & Data Sheet**
  - **PIME**
## Scholl Canyon Landfill Power Project
### Power Island and Major Equipment Request for Proposals
#### Attachment 6.1 – Responsibilities

**Schedule A**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Conceptual Engineering</th>
<th>Detail Design</th>
<th>Supply Personnel or Materials</th>
<th>Construction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condensate treatment system detail information &amp; Data Sheet</td>
<td>PIME</td>
<td>PIME</td>
<td>PIME shall conform to GWPGWP's numbering and tag system, instrument list and other lists.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process Logic Diagram &amp; Control System Architecture</td>
<td>PIME</td>
<td>PIME/IPC</td>
<td>EPC supplies BOP information to PIME.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOP Piping and Instrument Diagrams</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC shall conform to GWPGWP's numbering and tag system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PIME Fire Protection Design for CTG</td>
<td>PIME</td>
<td>PIME</td>
<td>For equipment located inside containers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Fire Protection Design</td>
<td>GWG</td>
<td>EPC</td>
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</tr>
<tr>
<td>Natural Gas Interconnect Design</td>
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<td>EPC</td>
<td>Includes water supply for fire protection.</td>
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<tr>
<td>Water Supply Interconnect Design</td>
<td>GWG</td>
<td>EPC</td>
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<td>PIME Mechanical Equipment List</td>
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<td>Overall Mechanical Equipment List</td>
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<td>EPC</td>
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<tr>
<td>Plot Plan for Environmental Permitting</td>
<td>GWG</td>
<td>PIME/GWP</td>
<td>GWG</td>
<td>PIME supplies data to GWPGWP for the design data that will be used for environmental permitting.</td>
<td></td>
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<tr>
<td>Lighting Plan</td>
<td>EPC</td>
<td>EPC</td>
<td>Permit by EPC.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size lube oil storage tank &amp; transfer pump</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size Ammonia Storage tank and transfer pump</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PIME Controls System including System &amp; Functional Descriptions</td>
<td>PIME</td>
<td>EPC</td>
<td>PIME supplied equipment and overall plant control system (PCS).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOP Controls System including System &amp; Functional Descriptions</td>
<td>PIME</td>
<td>EPC</td>
<td>Integrate EPC supplied equipment into a Plant Control System (PCS).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Scholl Canyon Landfill Power Project

Specification No. 3598

05-10-16
## Scholl Canyon Landfill Power Project
### Power Island and Major Equipment Request for Proposals
#### Attachment 6.1 – Responsibilities

**Schedule A**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Conceptual Engineering</th>
<th>Detail Design</th>
<th>Fabrication or Materials</th>
<th>Construction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPC Control Logic Diagrams</td>
<td>EPC</td>
<td>EPC</td>
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<tr>
<td>PIME Control &amp; Pressure Relief Valve Datasheets</td>
<td>PIME</td>
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<tr>
<td>EPC Control &amp; Pressure Relief Valve Datasheets</td>
<td>EPC</td>
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<tr>
<td>PIME Instrument and I/O List</td>
<td>PIME</td>
<td></td>
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</tr>
<tr>
<td>Overall Instrument and I/O List</td>
<td>PIME</td>
<td>EPC</td>
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<tr>
<td>PIME Instrument Data Sheets</td>
<td>PIME</td>
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<tr>
<td>EPC Instrument Data Sheets</td>
<td>EPC</td>
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<tr>
<td>PIME Instrument Installation Details</td>
<td>PIME</td>
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<tr>
<td>Overall One-Line Diagram</td>
<td>PIME</td>
<td>EPC</td>
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<tr>
<td>Electrical Load List</td>
<td>PIME</td>
<td>EPC</td>
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<tr>
<td>Electrical Equipment Location Drawings</td>
<td>PIME</td>
<td>EPC</td>
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<tr>
<td>Power Distribution Center (PDC)</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td></td>
<td>PIME supplies generator breakers, DC starter to EPC for incorporation into the PDC</td>
</tr>
<tr>
<td>PIME Terminal Box &amp; Panel Schedules</td>
<td>PIME</td>
<td></td>
<td></td>
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<tr>
<td>Combined Instrument and I/O List</td>
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<td>EPC</td>
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<tr>
<td>Combined Instrument and I/O List</td>
<td>PIME</td>
<td>EPC</td>
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<td>Grounding Design</td>
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<td>Power Distribution Center (PDC)</td>
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<td>EPC Cable Schedule</td>
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<tr>
<td>Overall Cable Schedule</td>
<td>PIME</td>
<td>EPC</td>
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<tr>
<td>PIME Schematic and Wiring Connection Diagrams</td>
<td>PIME</td>
<td>EPC</td>
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<tr>
<td>PIME Schematic and Wiring Connection Diagrams</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
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<tr>
<td>Facility Schematic and Wiring Connection Diagrams</td>
<td>EPC</td>
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<tr>
<td>Facility Schematic and Wiring Connection Diagrams</td>
<td>EPC</td>
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<td>Facility Schematic and Wiring Connection Diagrams</td>
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<td>Facility Schematic and Wiring Connection Diagrams</td>
<td>EPC</td>
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<tr>
<td>PIME Electrical Tie-In Interfaces Definition</td>
<td>PIME</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>EPC Electrical Tie-In Interfaces Definition</td>
<td>EPC</td>
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<tr>
<td>REGs &amp; CTG relay panel and relay settings that do not involve coordination with the external protection system</td>
<td>PIME</td>
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<tr>
<td>REGs &amp; CTG relay panel and relay settings that do not involve coordination with the external protection system</td>
<td>PIME</td>
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<tr>
<td>All other HV, MV, LV system &amp; auxiliary system protection and relay protection</td>
<td>EPC</td>
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<tr>
<td>On Skid Maintenance Lighting</td>
<td>PIME</td>
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<tr>
<td>EPC Indoor and Outdoor Lighting Design</td>
<td>EPC</td>
<td>EPC</td>
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<tr>
<td>EPC Indoor and Outdoor Lighting Design</td>
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<td>EPC</td>
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<tr>
<td>Cathodic Protection</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
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<tr>
<td>Lightning Protection</td>
<td>PIME/EPC</td>
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<tr>
<td>High Voltage Interconnection Design</td>
<td>GWP</td>
<td>EPC</td>
<td></td>
<td></td>
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<tr>
<td>High Voltage Interconnection Design</td>
<td>GWP</td>
<td>EPC</td>
<td></td>
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<tr>
<td>Switchyard Relay Setting</td>
<td>GWP</td>
<td>EPC</td>
<td></td>
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<tr>
<td>Transmission Lines Interconnection Design</td>
<td>GWP</td>
<td>EPC</td>
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<tr>
<td>PIME As-Built Drawings</td>
<td>PIME</td>
<td></td>
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<td></td>
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<tr>
<td>PIME Test Correction Curves</td>
<td>PIME</td>
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</table>
## Scholl Canyon Landfill Power Project

### Power Island and Major Equipment Request for Proposals

#### Attachment 6.1 – Responsibilities

#### Schedule A

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Conceptual Engineering</th>
<th>Detail Design</th>
<th>Fabricate, Purchase or Materials</th>
<th>Construction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start up and Commissioning Schedule and Manuals</strong></td>
<td>PIME</td>
<td>PIME</td>
<td>GWP/EPC/PIME</td>
<td>PIME</td>
<td>PIME is start up lead</td>
</tr>
<tr>
<td><strong>PIME Operating and Maintenance Manuals</strong></td>
<td>PIME</td>
<td></td>
<td></td>
<td></td>
<td>Standard manuals that are supplied with equipment</td>
</tr>
<tr>
<td><strong>PIME Startup Consumables List</strong></td>
<td>PIME</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>EPC Startup Consumables List</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>PIME Spare Parts List</strong></td>
<td>PIME</td>
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<tr>
<td><strong>EPC Spare Parts List</strong></td>
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</tbody>
</table>

### TEMPORARY FACILITIES:

<table>
<thead>
<tr>
<th>On-site Facilities</th>
<th>GWP</th>
<th>EPC</th>
<th>EPC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Off-site Facilities</strong></td>
<td>GWP</td>
<td>EPC</td>
<td>EPC</td>
</tr>
</tbody>
</table>

**Comments:** All on-site facilities including parking, laydown, trailers, first aid, site security, warehouse, and temporary services. All temporary facilities and services required to construct the project on-site. Off-site facilities including secure laydown areas, parking, worker transportation etc.

### LOGISTICS

| PIME Equipment Transportation to Construction Site or Site Storage | PIME |
| EPC Equipment Transportation to Construction Site or Site Storage | EPC |
| **Off Loading PIME & EPC Equipment at Site** | EPC |
| **PIME Equipment Inspection at Site** | PIME/EPC |
| **EPC Equipment Inspection at Site** | EPC |
| **PIME Equipment Storage Specifications** | PIME |
| **EPC Equipment Storage Specifications** | EPC |
| **PIME Equipment Storage at Site (if necessary)** | EPC |
| **EPC Equipment Storage at Site (if necessary)** | EPC |

### START-UP AND COMMISSIONING & GUARANTEES

| Develop Start up Procedure | PIME | PIME/EPC | PIME is the lead |
| EPC TAs for construction, commissioning and testing | PIME | | |
| **Plant Mechanical Completion** | PIME | EPC | EPC |
| | | EPC | EPC |
| **Consumables - initial fills for PIME equipment** | PIME | PIME | PIME |
| | | EPC | EPC |
| **PIME and EPC Equipment Flushing, Chemical Cleaning, Steam Blows, Gas Blows, Boil out** | PIME/EPC | EPC | EPC |
| **PIME Operating and Maintenance Personnel Training Materials & Program** | PIME | PIME | PIME trains on PIME equipment; |

**PIME is the lead**

**EPC leads construction with technical assistance from PIME for PIME equipment**

**EPC responsible for PIME equipment OS&D reports; primary responsibility is PIME, however EPC will discover items when getting ready to construct**

**EPC responsible for EPC equipment OS&D reports**

**EPC leads construction with technical assistance from PIME for PIME equipment**

**PIME and EPC design systems so they can be flush and cleaned**
### Schedule A

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Conceptual Engineering</th>
<th>Detail Design</th>
<th>Field Personnel or Materials</th>
<th>Construction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPC Operating and Maintenance Personnel Training Materials &amp; Program</td>
<td>EPC</td>
<td></td>
<td></td>
<td></td>
<td>EPC trains on EPC equipment</td>
</tr>
<tr>
<td>Cold and Hot Commissioning</td>
<td>PIME</td>
<td>PIMEA</td>
<td>EPC</td>
<td></td>
<td>PIME leads commissioning and includes line flushes and blows suppling of test instrumentation; EPC supplied equipment TAs consult, witness and approve; EPC provides construction support;</td>
</tr>
<tr>
<td>Plant operators and maintenance personnel</td>
<td>GWP</td>
<td></td>
<td></td>
<td></td>
<td>PIME and EPC equipment; operators will be available one month before first fire</td>
</tr>
<tr>
<td>Performance Correction Curves and Testing Protocol</td>
<td>PIME</td>
<td></td>
<td></td>
<td></td>
<td>PIME third party leads testing; PIME supplies testing protocol for tests it is responsible for; final reports, baseline testing and power island performance verification; EPC supplies craft support, consults, witnesses and approves with EPC equipment technical advisors and GWP supplies operators</td>
</tr>
<tr>
<td>Plant Performance, Emissions and Noise Tests</td>
<td>GWP/PIME</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td>PIME is responsible for defining GWP and EPC requirements for PIME guarantee conditions</td>
</tr>
<tr>
<td>PIME Plant Performance Guarantee</td>
<td>GWP</td>
<td>PIME</td>
<td></td>
<td></td>
<td>PIME is responsible for defining GWP and EPC requirements for PIME guarantee conditions</td>
</tr>
<tr>
<td>PIME Emissions Guarantee</td>
<td>GWP</td>
<td>PIME</td>
<td></td>
<td></td>
<td>PIME is responsible for defining GWP and EPC requirements for PIME guarantee conditions</td>
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<tr>
<td>PIME Noise Guarantee</td>
<td>PIME</td>
<td>PIME</td>
<td></td>
<td></td>
<td>PIME is responsible for defining GWP and EPC requirements for PIME guarantee conditions</td>
</tr>
<tr>
<td>EPC Guaranties and Warranties</td>
<td>EPC</td>
<td></td>
<td></td>
<td></td>
<td>EPC is responsible for defining GWP for EPC guarantee conditions</td>
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<tr>
<td><strong>COMBUSTION TURBINE GENERATOR PACKAGE (CTG)</strong></td>
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<tr>
<td>Combustion Turbine</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td>Includes compressor, combustor, expander and enclosure with HVAC, noise abatement, lighting within enclosure, etc.</td>
</tr>
<tr>
<td>Auxiliary Skids</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td>Includes lube oil system, control oil system, emission control system, power augmentation if proposed, fuel gas system and other aux systems supplied by CTG vendor</td>
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<tr>
<td>Air Cooling as required for skids</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td>Includes self cleaning filter, ducting and structure.</td>
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<tr>
<td>Option: Inlet Air Chilled Water System (CHW) (air cooled)</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td>If proposed by PIME Note: interconnecting piping outside the skids is by EPC</td>
</tr>
<tr>
<td>Generator Lube Oil System</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td>PIME provides lube oil tank, lube oil pumps, lube oil emergency pump, filtration, temperature control (cooling), pump out system and piping</td>
</tr>
<tr>
<td>CT exhaust diffuser and muffler</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td>Includes controls, governor, synchronization, excitation system, AVR, earthing including neutral grounding equipment, shaft bonding system, starting system, generator air cooling system and enclosure with HVAC, noise abatement, lighting, etc.</td>
</tr>
<tr>
<td>Generator Breaker</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td>PIME supplies breaker for PDC; PIME sets protective relays</td>
</tr>
<tr>
<td>Option: CT Intake Conditioning</td>
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<tr>
<td>Generator Lube Oil System</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td>PIME provides lube oil tank, lube oil pumps, lube oil emergency pump, filtration, temperature control (cooling), pump out system and piping</td>
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<td>CT exhaust diffuser and muffler</td>
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<td></td>
<td>Includes controls, governor, synchronization, excitation system, AVR, earthing including neutral grounding equipment, shaft bonding system, starting system, generator air cooling system and enclosure with HVAC, noise abatement, lighting, etc.</td>
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<td>EPC</td>
<td></td>
<td>PIME supplies breaker for PDC; PIME sets protective relays</td>
</tr>
<tr>
<td><strong>CTG Controls Interface to PCS</strong></td>
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<tr>
<td>CTG Control Logic and Configuration of Turbine Control Panel</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td>Includes AEC; CTG control panels by PIME</td>
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<tr>
<td>PIME Controls Interface to PCS</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td>Remote operation of PIME equipment in the EPC supplied control room; PIME supplies PCS</td>
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<tr>
<td>CTG Fire Detection and Suppression System</td>
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<td>EPC</td>
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<td>LFG Supply Meter for CTG</td>
<td>PIME</td>
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<td>EPC</td>
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<td>Meters are supplied with CTG package</td>
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<td>Gas Chromatograph</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td>EPC supplies design loads; EPC supplies anchor bolts</td>
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<tr>
<td>Foundations</td>
<td>PIME/EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td>PIME supplies design loads; EPC supplies anchor bolts</td>
</tr>
</tbody>
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## Scholl Canyon Landfill Power Project

### Power Island and Major Equipment Request for Proposals

#### Attachment 6.1 – Responsibilities

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<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>Special Embeds, Sole Plates, Shear Keys and Jacking Screws</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td>PIME</td>
<td>PME supplies hoses and interconnecting pipe inside PIME’s package</td>
</tr>
<tr>
<td>Interconnecting and on Skid Piping including Valves</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td>PIME</td>
<td>PME supplies insulation for pipe on its skids and its interconnecting pipe</td>
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<tr>
<td>Pipe insulation system</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td>PIME</td>
<td>PME supplies insulation for pipe on its skids and its interconnecting pipe</td>
</tr>
<tr>
<td>Skid Interconnecting and Electrical conduit and wiring</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies interconnecting electrical insides PIME’s package</td>
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<tr>
<td>Grounding</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
</tr>
<tr>
<td>Ac and DC motor starters</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies factory paint and paint for touch-up by EPC contractor such as field welded joints as an example</td>
</tr>
<tr>
<td>Painting</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies paint and paint for touch-up by EPC contractor such as field welded joints as an example</td>
</tr>
<tr>
<td>Source Inspections</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME arranges for shop inspections and witness testing</td>
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<tr>
<td>CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies interconnecting electrical insides PIME’s package</td>
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<tr>
<td>LNG CONDITIONING &amp; CONDENSATE CLEAN UP SYSTEM</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies interconnecting electrical insides PIME’s package</td>
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<tr>
<td>Conditioning System Design</td>
<td>PIME</td>
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<td>EPC</td>
<td>PME supplies electrical design data and EPC supplies starters located in the PDC</td>
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<tr>
<td>Fabrication and delivery</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies electrical design data and EPC supplies starters located in the PDC</td>
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<tr>
<td>Commissioning</td>
<td>PIME</td>
<td>PIME/EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Startup procedure</td>
<td>PIME</td>
<td>PIME/EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Foundations</td>
<td>PIME/EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Low and medium voltage motor starters</td>
<td>PIME/EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Electrical wiring within skids</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Electrical wiring between and external to the skids</td>
<td>PIME/EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Controls</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Piping on skids</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Piping between skids</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Fire Protection</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Condensate Clean up System</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PIME supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Condensate system connection to sewer system</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>RECIPIROCATING ENGINE GENERATORS (REGs)</td>
<td>GWP</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Auxiliary Equipment</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
<tr>
<td>Air Cooling</td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC supplies electrical design data and EPC supplies starters located in the PDC</td>
</tr>
</tbody>
</table>
## Schedule A

### Responsibilities

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Conceptual Engineering</th>
<th>Detail Design</th>
<th>Supply, Personnel or Materials</th>
<th>Construction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REG Air Intake Conditioning</strong></td>
<td>PIME</td>
<td>PIME</td>
<td>EPC</td>
<td></td>
<td>Includes filter, silencer, ducting and structure.</td>
</tr>
<tr>
<td><strong>Electric starting system</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td>Electric starting system provided by PIME</td>
</tr>
<tr>
<td><strong>Instrument air system</strong></td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td>Interface is at REG equipment</td>
</tr>
<tr>
<td><strong>REG Generator (air cooled)</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td>Includes controls, governor, synchronization, excitation system, AVR, earthing including neutral grounding equipment, shaft bonding system, starting system, generator air cooling system.</td>
</tr>
<tr>
<td><strong>Generator Breaker</strong></td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td>PIME supplies breaker in PDC; PIME sets protective relays</td>
</tr>
<tr>
<td><strong>REG vibration monitoring system</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td>Includes generator vibration monitoring</td>
</tr>
<tr>
<td><strong>REG Control Logic and Configuration of Engine Control Panel</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td>Includes AGC, REG local control panels by PIME</td>
</tr>
<tr>
<td><strong>REG Controls Interface to PCS</strong></td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td>Remote operation of PIME equipment in the EPC supplied control room; PIME supplies PCS</td>
</tr>
<tr>
<td><strong>REG Fire Detection and Suppression System</strong></td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td>Building sprinkler and lube oil fire protection system</td>
</tr>
<tr>
<td><strong>Fuel Gas Supply meter</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Foundations</strong></td>
<td>PIME/EPME</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td>PIME supplies loads; EPC supplies anchor bolts and embeds</td>
</tr>
<tr>
<td><strong>REG Base Spring and Seismic Supports</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Piping on skids and REG</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Piping between skids or REG</strong></td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pipe and Duct Insulation System</strong></td>
<td>EPC</td>
<td></td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Electrical conduit and wiring within skids</strong></td>
<td>PIME</td>
<td>PME</td>
<td>PME</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grounding</strong></td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td>EPC supplies grounding to connection lugs on PIME's equipment</td>
</tr>
<tr>
<td><strong>AC and DC motor starters</strong></td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td>Starters will be located in EPC PDC</td>
</tr>
<tr>
<td><strong>REG Exhaust Silencers</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>REG exhaust expansion Joints</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>REG Building Enclosure</strong></td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td>Includes HVAC, noise abatement, lighting, etc.; bldg. is one structure over all the REGs, aux equipment bridge crane &amp; fire protection</td>
</tr>
<tr>
<td><strong>REG Exhaust Ducting and Stack</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td>Stack, damper, access, transition duct, EPA &amp; CEMS Ports, ladders and platforms, silencers required, lightning arrestor system, jib crane, drains</td>
</tr>
<tr>
<td><strong>Painting</strong></td>
<td>PIME</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Source Inspections</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td>PIME arranges for shop inspections and witness testing</td>
</tr>
<tr>
<td><strong>Ammonia Storage Tank &amp; transfer pump</strong></td>
<td>EPC</td>
<td></td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EMISSIONS CONTROL SYSTEM (ECS)</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td>CO and SOR catalyst fill and test ports, ammonia vaporizer system, blowers, heater, and interconnecting piping, tempering air system (including all filters, blowers, ducting, and distribution), controls with interface to plant control system. Note: Ammonia supply by EPC</td>
</tr>
<tr>
<td><strong>CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td>Includes sample nozzles, sample lines, analyzers, monitoring and reporting system, and CEMS shelter</td>
</tr>
<tr>
<td><strong>LFG COMPRESSOR SYSTEM (FGC)</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td>Includes motors, recirculation system, filters, separators, air cooling, accumulator (if required to allow uninterrupted running on compressor trip), pressure regulators, relief valves, piping and electrical on skid</td>
</tr>
<tr>
<td><strong>LFG Gas Compressors</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Skid piping and Electrical</strong></td>
<td>PIME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Scholl Canyon Landfill Power Project

**Power Island and Major Equipment Request for Proposals**

**Attachment 6.1 – Responsibilities**

**Schedule A**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Conceptual Engineering</th>
<th>Detail Design</th>
<th>Supply, Perform or Materials</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interconnecting piping outside of skids</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>Insulation</td>
<td>PME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>Interconnecting electrical outside of skids</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>Foundations</td>
<td>PME/EPME</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>Compressor Acoustic Enclosure (if required, open top)</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>Knockout drums and drains tank</td>
<td>PME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>Painting</td>
<td>PME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>Source Inspections</td>
<td>PME</td>
<td>PME</td>
<td>EPC</td>
<td></td>
</tr>
</tbody>
</table>

**NATURAL GAS PIPELINE**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>EPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>19% ammonia tanks with pumps and truck unloading &amp; containment.</td>
<td>EPC</td>
</tr>
<tr>
<td>Ammonia piping from storage tanks to vaporization system</td>
<td>EPC</td>
</tr>
</tbody>
</table>

**AMMONIA SYSTEM (NH)**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>EPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes new storage tank</td>
<td></td>
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</tbody>
</table>

**ELECTRICAL SYSTEM**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>EPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switchyard</td>
<td></td>
</tr>
<tr>
<td>Medium Voltage System (4.160V, 3 phase)</td>
<td></td>
</tr>
<tr>
<td>Low Voltage System (480V, 3 phase)</td>
<td></td>
</tr>
<tr>
<td>Lighting System (120V, 1 phase)</td>
<td></td>
</tr>
<tr>
<td>Generator Breakers</td>
<td></td>
</tr>
<tr>
<td>Power Distribution Center</td>
<td></td>
</tr>
<tr>
<td>Electrical Metering &amp; Monitoring</td>
<td></td>
</tr>
<tr>
<td>ETO &amp; reco relay panel and relay settings that do not involve coordination with the external protection system</td>
<td></td>
</tr>
<tr>
<td>All other HV, MV, LV system &amp; auxiliary system protection and relay protection</td>
<td></td>
</tr>
<tr>
<td>Lightning protection</td>
<td></td>
</tr>
</tbody>
</table>

**PLANT CONTROL SYSTEM (PCS)**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>PME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Control System (PCS)</td>
<td></td>
</tr>
</tbody>
</table>

**Comments**

- Interconnecting piping outside of skids: EPC supplies insulation for pipe and equipment on its skids.
- Interconnecting electrical outside of skids: EPC supplies programmed PLC and is responsible for submittal of the functional requirements to EPC for implementation in plant control system.
- Compressor Acoustic Enclosure (if required, open top): EPC includes structural and acoustic insulation; EPC contractor supplies lighting, grounding, foundations with anchor bolts, etc.
- Knockout drums and drains tank: PME supplies insulation for pipe and equipment on its skids.
- Painting: PME supplies factory paint and paint for touch-up by EPC contractor; EPC paints EPC such as field-welded joints.
- Source Inspections: PME supplies anchor bolts; EPC supplies loads to EPC.
- Electrical System: EPC furnishes power for instruments, building lighting, and utility outlets.
- Power Distribution Center: EPC supplies generator breakers in PDC, PIME sets protective relays.
- Electrical Metering & Monitoring: EPC supplies the generators neutral grounding system.
- Lightning protection: EPC supplies the generators neutral grounding system.

**Other Items**

- **Construction Schedule**: A detailed plan outlining the construction process for the Scholl Canyon Landfill Power Project.
- **Schedule A**: A table detailing the responsibilities of various stakeholders for the project.

---

Scholl Canyon Landfill Power Project

Specification No. 3598

Page 8 of 10
### Scholl Canyon Landfill Power Project

**Power Island and Major Equipment Request for Proposals**

**Attachment 6.1 – Responsibilities**

**Schedule A**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Conceptual Engineering</th>
<th>Detail Design</th>
<th>Fabricate Personnel or Materials</th>
<th>Construction</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Shutdown System</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>Information systems connection.</td>
<td></td>
</tr>
<tr>
<td>EPC Instrument wiring</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>Instrument wiring for signals and instrument power not included elsewhere.</td>
<td></td>
</tr>
<tr>
<td>Communication System</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>Includes phone, internet, and local plant communications. All external connection to the phone or internet shall be on air gap equipment.</td>
<td></td>
</tr>
<tr>
<td>I/O Database</td>
<td>PMIE/EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>PMIE supplies data for PMIE scope of supply; EPC supplies the database.</td>
<td></td>
</tr>
<tr>
<td>Control Logic Diagrams</td>
<td>PMIE/EPC</td>
<td>PMIE</td>
<td>EPC</td>
<td>PMIE supplies data for PMIE scope of supply; EPC supplies the EPC logic diagrams and PMIE incorporates them into the overall control scheme.</td>
<td></td>
</tr>
<tr>
<td>Interface Equipment to Balancing Authority</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIRE PROTECTION SYSTEM (FP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Combustion Turbine</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG's</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>Includes fire department approval.</td>
<td></td>
</tr>
<tr>
<td>Facility Fire Protection Plan and Installation</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
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<td></td>
</tr>
<tr>
<td>Firewater Supply System</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>Includes water supply piping from existing GWP water system to facility. Design to be approved by GWP and installation witnessed by GWP.</td>
<td></td>
</tr>
<tr>
<td>Fire Monitoring / Fire Fighting</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>Includes fire panel, flame detectors, and smoke detectors, and firefighting equipment including extinguishers and hose reels as approved by fire department.</td>
<td></td>
</tr>
<tr>
<td>SERVICE AIR SYSTEM (SA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>INSTRUMENT AIR SYSTEM (IA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POTABLE WATER SYSTEM (PW)</td>
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<td></td>
</tr>
<tr>
<td>SANITARY SEWER</td>
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<td></td>
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</tr>
<tr>
<td>GRADING &amp; DRAINAGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>HVAC</td>
<td></td>
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</tr>
<tr>
<td>CEBS Buildings</td>
<td>PMIE</td>
<td>PMIE</td>
<td>EPC</td>
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<tr>
<td>CEMS Buildings</td>
<td>PMIE</td>
<td>PMIE</td>
<td>EPC</td>
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<td>BALANCE OF PLANT</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Demolition</td>
<td>GWP</td>
<td>EPC</td>
<td>EPC</td>
<td>Includes removal of existing equipment and relocation of existing piping and utilities.</td>
<td></td>
</tr>
<tr>
<td>Site Work</td>
<td>GWP</td>
<td>EPC</td>
<td>EPC</td>
<td>Grading, clearing and grubbing/rees of existing piles where possible, road paving/surfacing, and fencing/gates, security.</td>
<td></td>
</tr>
<tr>
<td>Storm water system</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>Includes containment, surface run off and obtaining permits.</td>
<td></td>
</tr>
<tr>
<td>Foundations</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>All foundations including structural foundations and building foundations, Plan Check approvals. EPC supplies anchor bolts. PMIE provides information.</td>
<td></td>
</tr>
<tr>
<td>PMIE Foundation Loads</td>
<td>PMIE</td>
<td>PMIE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPC Steel</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>Structural steel erection, pipe/utility racks, platforms/railing/ladders/stairs.</td>
<td></td>
</tr>
<tr>
<td>Control and Maintenance Building</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item Description</td>
<td>Conceptual Engineering</td>
<td>Detail Design</td>
<td>Supply Personnel or Materials</td>
<td>Construction</td>
<td>Comments</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>------------------------</td>
<td>---------------</td>
<td>-----------------------------</td>
<td>--------------</td>
<td>----------</td>
</tr>
<tr>
<td>REG Building</td>
<td>PME</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>EPC piping, valves, supports and piping specialty items</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>Includes piping, hangers, pipe supports, sleepers, anchors, insulation, manual valves, relief valves, control valves, and relief valves, fittings and specialty items, instrumentation and temporary steam blow equipment and silencers not included in PIME supplied equipment or skids.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPC conduit, tray, cable wiring</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>Includes all plant wiring not covered elsewhere, plant lighting, and electrical services as required.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPC instrumentation</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>Includes all local and remotely monitored instrumentation and instrument wiring not covered elsewhere.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPC Painting</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td>EPC</td>
<td></td>
</tr>
<tr>
<td>SPARE PARTS &amp; SPECIAL TOOLS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Startup spares</td>
<td>PME/EPME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational spares</td>
<td>GWP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GWP orders operational spares from PME and EPC; PME and EPC supply pricing at time of bid that is good for remainder of project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PME Special Tools</td>
<td>PME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPC Special Tools</td>
<td>EPC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PLANT SYSTEMS & TAGGING REQUIREMENTS

A. Tagging

The City utilizes the following tagging scheme:

**Identification Tag = Unit Number - System Code – Type – Sequence Number – Train**

**Unit Number** – refer to the Unit Numbering section below.

**System Code** – refer to the System Codes and Descriptions section below.

**Type** – use standard ISA abbreviations, e.g., FCV = Flow Control Valve. For pipe lines the Type is the EPC Contractor’s piping specification designation.

**Sequence Number** – a sequential number starting with one for different non-redundant components of the same type within a system. Each number should be unique, e.g., there should not be a PI-9050 and a PIT-9050 unless they are part of the same instrument loop. The same applies to pipe line and circuit numbering. Equipment numbering runs north to south and east to west (this requirement does not apply to pipe line or circuit numbering).

**Train** – a letter code, A, B, etc., used to identify redundant equipment. For pipe lines the Train designation is replaced by the line size and EPC Contractor’s insulation designation.

Examples:
- 1-CW-PP-01A and 1-CW-PP-01B are the two redundant Unit 1 cooling water pumps
- 0-FGC-TT-101A, 0-FGC-TT-101B, 0-FGC-TT-101C are the three redundant fuel gas compressor temperature transmitters

B. Unit Numbering

<table>
<thead>
<tr>
<th>Unit Number</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Common for the plant</td>
</tr>
<tr>
<td>1</td>
<td>First (Engine or Turbine)</td>
</tr>
<tr>
<td>2-X</td>
<td>Second &amp; Subsequent (Engines or Turbines)</td>
</tr>
</tbody>
</table>
C. System Codes and Descriptions

The equipment systems, CTG, ECS and REG, should only be used for those devices that are not part of one of the process or electrical systems and are specific to that equipment.

<table>
<thead>
<tr>
<th>System Code</th>
<th>System Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>12 kV Station Service - electrical power to serve non-power plant loads that share the site.</td>
</tr>
<tr>
<td>120</td>
<td>120 V AC System – electrical power for instrumentation and utilities. Supplied by both normal AC power and uninterruptible power supplies with automatic transfer switches.</td>
</tr>
<tr>
<td>125</td>
<td>125 V DC System – battery backed DC system for critical plant instrumentation loads. Some equipment may also have their own DC systems for DC lube oil pumps.</td>
</tr>
<tr>
<td>124</td>
<td>12.47 kV AC System – generator bus that ties the generators to the low side of the GSU transformers and the high side of the auxiliary transformers.</td>
</tr>
<tr>
<td>24</td>
<td>24 V DC for control and fire systems</td>
</tr>
<tr>
<td>480</td>
<td>480 V AC system - auxiliary power bus for other auxiliary electrical loads such as the pumps and valves.</td>
</tr>
<tr>
<td>4160</td>
<td>4.16 kV AC System – auxiliary power bus for large auxiliary electrical loads such as the fuel gas compressors and chillers.</td>
</tr>
<tr>
<td>CEMS</td>
<td>Continuous Emissions Monitoring System – measures stack emissions from the generating units. There is a CEMS for each CTG and REG unit.</td>
</tr>
<tr>
<td>System Code</td>
<td>System Description</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>CHW</td>
<td>Chilled Water System – if a chiller is used for the CTG units, this system provides chilled water to the CTG inlet air chilling coils. Each CTG may have its own dedicated chiller with 2x50% evaporator/condenser trains or a common chiller for a pair of CTGs with 3x50% evaporator/condenser trains.</td>
</tr>
<tr>
<td>CND</td>
<td>Condensate System – For condensate created during compression and cooling of the landfill gas.</td>
</tr>
<tr>
<td>CTG</td>
<td>Combustion Turbine Generator – systems contained within the boundaries of the CTG associated skids, e.g., lube oil, inlet air, water injection, CO₂, ventilation, water wash, etc.</td>
</tr>
<tr>
<td>ECS</td>
<td>Emissions Control System - systems contained within the boundaries of the ECS, e.g., tempering air, ammonia injection, SCR and CO catalysts, etc.</td>
</tr>
<tr>
<td>FP</td>
<td>Fire Protection System – comprised of appropriate detection and suppression systems including a yard loop with hydrants and Fire Department Connections supplied by the City’s potable water system. In addition, normally occupied spaces are provide with sprinklers or other suppression agents. This is a common system for the plant.</td>
</tr>
<tr>
<td>HVAC</td>
<td>Heating, Ventilation, and Air Conditioning System – HVAC systems for the various building conditioned spaces.</td>
</tr>
<tr>
<td>IA</td>
<td>Instrument Air System – receives compressed air from the Service Air system and provides clean, dry air to the plant I&amp;C systems. There is a separate instrument air receiver and header low pressure isolation valve for each unit.</td>
</tr>
<tr>
<td>System Code</td>
<td>System Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>LFGCS</td>
<td>Landfill Gas Conditioning System – meters, filters, LFG conditioning system including vessels, control system, and equipment to clean the LFG to prior to delivery to the CTG’s or REG’s. Also refer to LFGC for the fuel gas compressors themselves.</td>
</tr>
<tr>
<td>LFGC</td>
<td>Landfill Gas Compressors – compressors including systems contained within the boundaries of the compressors, e.g., lube oil, equipment and gas coolers, etc.</td>
</tr>
<tr>
<td>MD</td>
<td>Miscellaneous Drains System – gathers miscellaneous plant equipment drains, delivers them to the Oily Water Separator, the effluent of which goes to the Waste Water system. Portions of the system within a unit are unitized, with the remaining portion of the system being a common system for the plant.</td>
</tr>
<tr>
<td>NH</td>
<td>Ammonia System – stores and delivers 19% aqueous ammonia to the Ammonia Flow Control Units for the SCRs as well as water chemistry control (if utilized). This is both a common and unitized system for the plant.</td>
</tr>
<tr>
<td>PCS</td>
<td>Plant Control System – provides overall supervisory control of the plant for the operators interfacing with the CTG or REG control systems, as well as other skid mounted equipment control systems, and field instruments. The PCS incorporates a single pushbutton start and stop for the CTG or REG startup. In addition to supervisory control, the PCS also receives equipment performance data so the operators can monitor the status and health of plant equipment. This is a common system for the plant.</td>
</tr>
<tr>
<td>PW</td>
<td>Potable Water System – provides a source of supply to the fire protection system as well as potable water for domestic use including the safety showers. This is a common system for the plant.</td>
</tr>
</tbody>
</table>
System Code | System Description
--- | ---
REG | Reciprocating Engine Generator - systems contained within the boundaries of the engine such as starting air, jacket water, lube oil, etc.
SA | Service Air System – utilizing multiple compressors, provides a source of clean and dry compressed air to the unitized Instrument Air systems as well as for maintenance purposes. This is both a common and unitized system for the plant.
WW | Waste Water System – conducts clean (non-oily) process waste water for discharge to the Glendale sanitary sewer system. Sanitary wastes are also delivered to the Glendale sanitary sewer system. Portions of the system within a unit are unitized, with the remaining portion of the system being a common system for the plant.

D. Physical Tagging Requirements

1. Skid mounted or packaged equipment and instruments may use the Proposer’s standard tagging scheme.

2. Equipment and instruments that are skid mounted or packaged, and that the operators will directly interface with through the Plant Control System (PCS) or can be reasonably expected to use as clearance points for the skid or package, the Proposer shall utilize dual tagging (OEM and the City’s) for those devices, e.g., combustion turbine fuel gas isolation valve.

3. Equipment shall be marked with their equipment identification tag.

4. Pipe lines 2” and above in size shall be marked with their identification tag and flow direction. It is not necessary to include the pipe specification, size, or insulation designations.

5. Components (valves, instruments) shall have engraved stainless tags with their component identification. Lettering shall be at least ¼” tall.
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 6.2 – Plant Systems & Tagging Requirements

6. Electrical wiring within the PIME Proposer’s packaged equipment shall use the Proposer’s standard identification system. Once a wire is lifted, it shall be unambiguous to the City’s personnel as to where within a cabinet the wire needs to be correctly landed.

7. Field run electrical cables shall utilize a system to be proposed by the EPC Contractor, subject to review by the City, which uniquely identifies the cable and terminal points (location/panel/terminal block/terminal). Once a wire is lifted, it shall be unambiguous to the City’s personnel as to where within a cabinet the wire needs to be correctly landed.

E. Color Codes
The following system colors will be used for non-stainless steel uninsulated equipment and piping:

1. Fire Protection – Red
2. Compressed Air – Green
3. Ammonia – White
4. Reclaimed Water – Purple
5. Other Water Systems – Blue
6. Natural Gas – Orange
7. Waste Water – Brown
8. Other Hazardous Materials - Yellow
APPLICABLE CODES & STANDARDS

A. General

The following is a partial list of the major codes and standards that are applicable to the project. It is the responsibility of the Proposer to assure that their scope of supply is designed, analyzed, uses appropriate materials, inspected, fabricated, delivered, and tested in a manner that meets the project needs. Conformance with applicable codes and standards provides the minimum set of requirements to ensure safety – additional measures may be warranted to address the project needs. The current editions of codes and standards from the following organizations, unless otherwise stated, shall be used for the design, fabrication, erection, and testing of the equipment supplied as a part of the scope of this RFP.

B. Relevant Standards Organizations

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABMA</td>
<td>American Bearing Manufacturers Association</td>
</tr>
<tr>
<td>AGMA</td>
<td>American Gear Manufacturers Association</td>
</tr>
<tr>
<td>AHRI</td>
<td>Air-Conditioning, Heating, and Refrigeration Institute</td>
</tr>
<tr>
<td>AISC</td>
<td>American Institute of Steel Construction</td>
</tr>
<tr>
<td>AISI</td>
<td>American Iron and Steel Institute</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>API</td>
<td>American Petroleum Institute</td>
</tr>
<tr>
<td>ASHRAE</td>
<td>American Society of Heating, Refrigerating, and Air-Conditioning Engineers</td>
</tr>
<tr>
<td>ASME</td>
<td>American Society of Mechanical Engineers</td>
</tr>
<tr>
<td>ASTM</td>
<td>American Society for Testing and Materials</td>
</tr>
<tr>
<td>AWS</td>
<td>American Welding Society</td>
</tr>
<tr>
<td>Cal/OSHA</td>
<td>California Department of Industrial Safety, Division of Occupational Safety and Health</td>
</tr>
<tr>
<td>CARB</td>
<td>California Air Resources Board</td>
</tr>
<tr>
<td>CBC</td>
<td>California Building Code</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>FCI</td>
<td>Fluid Controls Institute</td>
</tr>
<tr>
<td>FM</td>
<td>Factory Mutual</td>
</tr>
<tr>
<td>HEI</td>
<td>Heat Exchange Institute</td>
</tr>
<tr>
<td>HI</td>
<td>Hydraulic Institute</td>
</tr>
</tbody>
</table>
### Scholl Canyon Landfill Power Project

#### Power Island and Major Equipment Request for Proposals

**Attachment 6.3 – Codes & Standards**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBC</td>
<td>International Building Code</td>
</tr>
<tr>
<td>ICBO</td>
<td>International Conference of Building Officials</td>
</tr>
<tr>
<td>IEC</td>
<td>International Electrotechnical Commission</td>
</tr>
<tr>
<td>IEEE</td>
<td>Institute of Electrical and Electronics Engineers</td>
</tr>
<tr>
<td>ISA</td>
<td>International Society of Automation</td>
</tr>
<tr>
<td>NACE</td>
<td>National Association of Corrosion Engineers</td>
</tr>
<tr>
<td>NEC</td>
<td>National Electrical Code</td>
</tr>
<tr>
<td>NEMA</td>
<td>National Electrical Manufacturers Association</td>
</tr>
<tr>
<td>NERC</td>
<td>North American Electric Reliability Corporation</td>
</tr>
<tr>
<td>NESC</td>
<td>National Electrical Safety Code</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>RCSC</td>
<td>Research Council on Structural Connections</td>
</tr>
<tr>
<td>SAMA</td>
<td>Scientific Apparatus Manufacturers’ Association</td>
</tr>
<tr>
<td>SCAQMD</td>
<td>South Coast Air Quality Management District</td>
</tr>
<tr>
<td>SSPC</td>
<td>The Society for Protective Coatings</td>
</tr>
<tr>
<td>TEMA</td>
<td>Tubular Exchanger Manufacturers Association, including TEMA Standards for Class &quot;C&quot; Heat Exchangers</td>
</tr>
<tr>
<td>UL</td>
<td>Underwriters Laboratory</td>
</tr>
<tr>
<td>WECC</td>
<td>Western Electric Coordinating Council</td>
</tr>
<tr>
<td>40 CFR 60</td>
<td>Volume 40, Part 60, of the Code of Federal Regulations</td>
</tr>
<tr>
<td>40 CFR 75</td>
<td>Volume 40, Part 75, of the Code of Federal Regulations</td>
</tr>
</tbody>
</table>

#### C. Electrical

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSI C50.41</td>
<td>Polyphase Induction Motors for Power Generating Stations.</td>
</tr>
<tr>
<td>ANSI C80.1 &amp; UL6</td>
<td>Steel conduit for electrical and instrument wiring shall comply with this standard.</td>
</tr>
<tr>
<td>ANSI C80.4 &amp; UL 514</td>
<td>Metallic conduit fittings shall comply with this standard.</td>
</tr>
</tbody>
</table>
## Attachment 6.3 – Codes & Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE Standard 383 or IEC 332 Part 3 Category C</td>
<td>EHC and TSI prefabricated connecting cable flame test requirements shall be in accordance with IEEE Standard 383 or IEC 332 Part 3 Category C.</td>
</tr>
<tr>
<td>NEMA 12 / IEC IP52</td>
<td>Electrical enclosures for the lube oil system, emergency bearing oil pump motor and starter shall comply with NEMA 12 / IEC IP52.</td>
</tr>
<tr>
<td>NEMA MG1</td>
<td>Motors and Generators</td>
</tr>
</tbody>
</table>

### D. Fire Protection

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Building and Fire Codes</td>
<td></td>
</tr>
<tr>
<td>NFPA 10</td>
<td>Standard for Portable Fire Extinguishers</td>
</tr>
<tr>
<td>NFPA 12</td>
<td>Standard on Carbon Dioxide Extinguishing Systems</td>
</tr>
<tr>
<td>NFPA 13</td>
<td>Standard for the Installation of Sprinkler Systems</td>
</tr>
<tr>
<td>NFPA 15</td>
<td>Water Spray Fixed Systems</td>
</tr>
<tr>
<td>NFPA 24</td>
<td>Standard for the Installation of Private Fire Service Mains and Their Appurtenances.</td>
</tr>
<tr>
<td>NFPA 25</td>
<td>Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems</td>
</tr>
<tr>
<td>NFPA 30</td>
<td>Flammable and Combustible Liquids Code</td>
</tr>
</tbody>
</table>
## E. Instrumentation & Controls

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>40CFR75</td>
<td>Continuous Emissions Monitoring Systems</td>
</tr>
<tr>
<td>ASTM A123 type 316</td>
<td>Control tubing for hydraulic oil and instrument air shall be fabricated of stainless steel 316.</td>
</tr>
<tr>
<td>FCI 70-2</td>
<td>Control Valve Seat Leakage</td>
</tr>
</tbody>
</table>


### Standard

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE C 37</td>
<td>Optical Interface and Generator Relay Protection</td>
</tr>
<tr>
<td>IEEE 802</td>
<td>Networks</td>
</tr>
<tr>
<td>IEEE 519</td>
<td>Harmonic Control for VFD</td>
</tr>
<tr>
<td>ISA 5.1</td>
<td>Instrumentation Symbols and Identification</td>
</tr>
<tr>
<td>ISA 5.4</td>
<td>Instrument Loop Diagrams</td>
</tr>
<tr>
<td>ISA 51.1</td>
<td>Process Instrumentation Terminology</td>
</tr>
<tr>
<td>ISA 75.05.01</td>
<td>Control Valve Terminology</td>
</tr>
<tr>
<td>ISA-77.13.01</td>
<td>Fossil Fuel Power Plant Steam Turbine Bypass System</td>
</tr>
<tr>
<td>ISA-77.14.01</td>
<td>Fossil Fuel Power Plant Steam Turbine Controls</td>
</tr>
<tr>
<td>ISA 77.70.02</td>
<td>Fossil Fuel Power Plant Instrument Piping Installation</td>
</tr>
<tr>
<td>ISA-77.82.01</td>
<td>Selective Catalytic Reduction (SCR) Control Systems</td>
</tr>
</tbody>
</table>

### F. Mechanical

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHRI 550/590</td>
<td>Performance Rating of Water-Chilling and Heat Pump Water-Heating Packages Using the Vapor Compression Cycle</td>
</tr>
<tr>
<td>AHRI 580</td>
<td>Non-Condensable Gas Purge Equipment For Use With Low Pressure Centrifugal Liquid Chillers</td>
</tr>
<tr>
<td>ANSI C50 and IEC 34</td>
<td>Rotating electrical machinery</td>
</tr>
<tr>
<td>Standard</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ANSI Z223.1 National Fuel Gas Code</td>
<td>Design and supply of all fuel gas piping from point of delivery to each fuel utilization device.</td>
</tr>
<tr>
<td>API 521</td>
<td>Pressure Relieving and De-Pressuring Systems</td>
</tr>
<tr>
<td>API 617</td>
<td>Axial and Centrifugal Compressors and Expander-compressors</td>
</tr>
<tr>
<td>API 618</td>
<td>Reciprocating Compressors for Petroleum, Chemical, and Gas Industry Services</td>
</tr>
<tr>
<td>API 619</td>
<td>Rotary-Type Displacement Compressors for Petroleum, Chemical, and Gas Industry Services</td>
</tr>
<tr>
<td>ASHRAE 15</td>
<td>Safety Standard for Refrigeration Systems and Designation and Classification of Refrigerants</td>
</tr>
<tr>
<td>ASHRAE 147</td>
<td>Reducing the Release of Halogenated Refrigerants from Refrigerating and Air - Conditioning Equipment and Systems</td>
</tr>
<tr>
<td>ASME Steam Tables, Thermodynamic and Transport</td>
<td>The 1997 ASME Steam Tables shall be the source of all steam and water properties used in steam cycle design and performance test calculations.</td>
</tr>
<tr>
<td>Properties of Steam</td>
<td></td>
</tr>
<tr>
<td>ASME B16 Series</td>
<td>Pipe Fittings</td>
</tr>
<tr>
<td>ASME B31.1</td>
<td>Power Piping</td>
</tr>
<tr>
<td>ASME B&amp;PV Code Section II</td>
<td>Materials</td>
</tr>
<tr>
<td>ASME B&amp;PV Code Section V</td>
<td>Non-Destructive Examination</td>
</tr>
<tr>
<td>ASME B&amp;PV Code Section VIII</td>
<td>Rules for Construction of Pressure Vessels</td>
</tr>
<tr>
<td>ASME PTC-4</td>
<td>Performance Test Code – Fired Steam Generators</td>
</tr>
</tbody>
</table>
### Standard

<table>
<thead>
<tr>
<th><strong>Standard</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>ASME PTC-6</td>
<td>Performance Test Code – Steam Turbines</td>
</tr>
<tr>
<td>ASME PTC-22</td>
<td>Performance Test Code – Gas Turbines</td>
</tr>
<tr>
<td>SCAQMD 1415.1</td>
<td>Reduction of Refrigerant Emissions from Stationary Refrigeration Systems</td>
</tr>
</tbody>
</table>

#### G. Structural

<table>
<thead>
<tr>
<th><strong>Standard</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>California Building Code 2016</td>
<td>The CBC will be available by June 2016 and the anticipated changes are already available on line. Seismic values are based on 2015 IBC. If there are additional code changes that cause a material change in design, those changes will be handled via a change order.</td>
</tr>
<tr>
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<td>ASTM A572, GR 50</td>
<td>High Strength Steel</td>
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<td>ASTM A500 GRB: ASTM A501</td>
<td>Structural Tubing</td>
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<td>ASTM A568</td>
<td>Steel Floor Grating</td>
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<tr>
<td>ASTM A786, Pattern No.4</td>
<td>Checkered Floor Plate</td>
</tr>
<tr>
<td>ASTM A53 GR B, ASTM A120 ERW, ASTM A500 GR B or ASTM A501</td>
<td>Pipe Handrail: 1 ½ in. Schedule 40</td>
</tr>
</tbody>
</table>
H. Conflicts Between this RFP and Codes & Standards

Where there is a conflict between the requirements of this RFP and applicable codes and standards, the more stringent requirement will apply.
ENGINEERING SCOPE AND DELIVERABLES

A. Engineering Scope

Proposer shall furnish all engineering information needed by City or the EPC Contractor to:

1. Permit, commission, operate, and maintain Proposer’s equipment
2. Design the supporting structure and interfacing systems to allow the Proposer’s and EPC Contractor’s equipment to harmoniously operate together to fulfill City’s objectives for the project.

Proposer shall be responsible for the process design and overall conceptual engineering of the Scholl Canyon Landfill Power Project. Proposer’s scope shall include but not be limited to:

1. Design of the Power Island and Major Equipment listed in Section 2.1 of the Instruction to Proposers.
2. Process design of the power plant from the LFG inlet through the REG or CTG exhaust stacks and the generator electrical terminals.
3. Design of all instruments and controls required for the proposed project.
4. Detailed engineering of all equipment skids and subsystems provided as part of the PIME scope. Detailed engineering means all engineering calculations, design drawings, specifications, and other engineering documents necessary to procure, build, test, permit, operate, and maintain the equipment and subsystems included in the PIME scope.
5. All documents necessary to support project permitting with local agencies and the SCAQMD.
6. All engineering deliverables for inclusion in the EPC RFP as herein described.
7. Participation in the project kickoff meeting(s) with City, and later with the EPC Contractor, as well as design reviews, and weekly and monthly project meetings depending on what stage the project is in (permitting, design, construction, commissioning, startup, testing).
8. Technical advisors for PIME equipment erection, construction and commissioning.
10. Training for City staff. See Attachment 6.15
Not included in the Proposer’s engineering scope are:

1. Detailed engineering of systems not in the PIME scope.
2. Civil engineering including site preparation, grading, design of site drainage, pavement, roads, and fences.
3. Electrical systems outside of the PIME scope including, switchgear, motor control centers, conduit and wiring between PIME subsystems, grounding, lighting, transformers, and substations.
4. Structural engineering of equipment foundations, pipe supports, miscellaneous platforms and stairways not part of the PIME scope, buildings, and shelters.
5. Detailed design of balance-of-plant (BOP) piping systems connecting PIME equipment, equipment skids, and subsystems. Detailed design of any piping systems external to the power island.
6. Architectural design of any buildings required for operations or maintenance.

B. Engineering Deliverable Submittals

Engineering documents shall be submitted throughout the course of the project. Certain documents are required at each project phase:

1. Those engineering documents required to be submitted with the proposal are detailed in the Instructions to Proposers Attachment 2.10 “Proposal Supplement”.
2. Engineering documents required as attachments to the PIME Contract. These will be determined during the contract negotiations. These may include but are not limited to:
   a. Conformed equipment specifications.
   b. Detailed equipment descriptions
   c. Conformed equipment data sheets.
   d. Performance correction data.
   e. Performance curves.
   f. Noise data
   g. Acceptance testing protocol.
   h. Priced recommended spare parts list.
3. Engineering documents submitted during the LNTP Phase. These documents are intended to support the environmental permitting activities and the EPC RFP. All documents listed below shall be labeled “Issued for Design”. They include but are not limited to:

<table>
<thead>
<tr>
<th>Documents Required</th>
<th>(Weeks after LNTP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Process Flow Diagrams (PFD’s)</td>
<td>6</td>
</tr>
</tbody>
</table>
b. Piping Interconnection Diagrams. 10

c. Single Line Diagrams (SLD’S). 6

d. Process Logic Diagrams (PLD’s). 12

e. Control System Architecture drawings. 8

f. Dimensioned Module Outline drawings 20

g. Equipment List. 10

h. Equipment noise data. 8

i. I&C I/O List. 10

k. Tie-in List. 10

l. Electrical motor and equipment load list. 10

m. Foundation load drawings. 16

n. Equipment Delivery Schedule. 20

4. Engineering documents submitted during the FNTP Phase. These documents are intended to support the detailed engineering and design of the project by the PIME contractor, the EPC contractor, and by City. They include but are not limited to:

Documents Required
(Weeks after FNTP)

a. Piping and Instrument Diagrams (P&ID’s). 4

b. Line List and Stream Data Sheets. 4

c. Valve and Piping Specialties List. 4

d. Instrument List. 4

e. Instrument Data Sheets, Installation Details, Loop Diagrams. 16

f. Structural calculations for equipment and structures provided by PIME contractor. 20

g. Control Narrative. 20

h. PLC specification, programming, and configuration. 20

i. Electrical Three Line Diagrams, Elementary Diagrams, and Wiring Diagrams. 16

j. Conduit and Cable Schedules. 16

k. Generator Impedance, Machine Constants, and Current Transformer Saturation Curves. 20

l. Surge Absorber and Neutral Grounding Resistor data. 20

m. Certified dimensioned Outline and General
Arrangement drawings of all equipment and subsystems provided by the PIME Contractor.

n. Anchor Bolt and Sole Plate data.
o. Equipment Preservation and Storage Instructions.
p. Rigging, Erection, and Commissioning Instructions.

5. Engineering documents submitted prior to project startup and commissioning. These documents provide the final “as built” documentation of the plant. These documents will be incorporated into the Plant Data books and Operating and Maintenance Manuals. They shall be submitted not later than 60 days before startup and commissioning. They include but are not limited to:
   a. All Code required documentation for pressure vessels and heat exchangers.
   b. Equipment test reports.
   c. Equipment parts list with sectional or exploded drawings.
   d. Pump performance curves and test data.
   e. Startup and Commissioning Procedures and Manuals.
   f. Technical and Service Bulletins.
   g. Startup Consumables List.
   h. Final Spare Parts List.
   i. As-Built drawings.
   j. Equipment Operating and Maintenance Manuals.

C. City Submittal Reviews

All engineering documents prepared during the LNTP and FNTP phases shall be submitted for review by City prior to being released for construction or fabrication. Upon LNTP, Proposer shall provide City a schedule of all document submittals. City will complete submittal reviews within three weeks of receiving each submittal, with the caveat that this review is predicated on the assumption that submittals are received in an orderly manner. Submittal of a large mass of documents contemporaneously shall trigger an extended review time for City.

The City will notify Proposer of any deviations from the contract or specifications, conflicts with other documents, or any other deficiencies. Proposer shall correct the deficiencies and resubmit the corrected document for review prior to continuing with construction or fabrication. No drawing or other document which is required to be submitted on or before a guaranteed date shall be considered submitted unless it conforms to the requirements of this section and any other applicable provisions of the Contract.
If after Proposer has submitted a document marked "Approved for Manufacture" by the Proposer, Proposer submits the same document with additional revisions which are not the result of an approved Change Order and such revisions materially affect the design, procurement, construction or commissioning of the Scholl Canyon Landfill Power Project facilities, then the submittal date for the purpose of determining liquidated damages shall be the date that the said revision is received.

D. Engineering Documents

This section gives the minimum requirements for engineering documents submitted by Proposer in accordance with the scope set forth in this section 6.4.

Drawings and Schematics

These are graphical documents prepared specifically for the Scholl Canyon Landfill Power Project. Standard vendor drawings, catalog cuts, descriptive literature, vendor brochures, and other pre-printed documents are described below. Subsection 1 gives general requirements applicable to all drawings and schematics. Subsections 2 through 9 give requirements applicable to various types of drawings. Requirements specific to particular types of equipment or engineering disciplines are further defined in their respective Attachments.

1. General Requirements:

   a. Each drawing shall be identified by a separate drawing number. The drawing numbers shall be in accordance with the Schedule A, Drawing Sheet Number Assignment attached to this Attachment 6.4. Where there are several sheets associated with a drawing number, each sheet shall be identified with the drawing number and a separate sheet number (shown as Sheet 1 of n, Sheet 2 of n, etc.).

   b. When a drawing is revised, revision numbers must be clearly legible, easily distinguishable from the drawing number and should be in or as close as possible to the title box. A short description of the change must be included.

   c. Proposer's name shall appear on each drawing submitted. Each drawing shall contain identifying information including, but not limited to customer name, project name, contract or purchase order number, manufacturer's order or shop number, equipment tag number(s) and serial number(s), drawing revision number and date.

   d. Drawing borders shall be triple weight.
e. No drawing, regardless of size or shape, shall exceed 22 inches in height or 34 inches in length. Equipment requiring drawings larger than 22 inches by 34 inches shall be multi-sheeted in order to maintain the maximum size. The following standard drawing sizes shall be used:

<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
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<td>17&quot; X 22&quot;</td>
</tr>
<tr>
<td>D</td>
<td>22&quot; X 34&quot;</td>
</tr>
</tbody>
</table>

2. General Arrangement Drawings:

General arrangement drawings are dimensioned scale drawings intended to show the spatial relationships between the various components of a unit or system. Elevations, sections, and details may be used as necessary to clearly convey the configuration of the unit or system.

a. Each component included in the general arrangement drawing shall be clearly identified.

b. Clearance requirements for operational and maintenance access shall be clearly indicated.

c. All piping and electrical connection points shall be clearly shown.

d. The drawings shall be made using an appropriate scale in U.S. engineering units. A graphic bar scale shall be shown on each drawing.

3. Site Plans:

Location plans, site plans, grading plans, etc. are dimensioned scale drawings intended to show the spatial relationships between the various components of the project to each other and to the features of the existing project site.

a. The drawings shall show project bench marks and the established plant coordinate grid. If the plant coordinate grid is not oriented to true North, the offset between true North and plant North shall be clearly indicated on the drawing.

b. Each component included in the plan drawing shall be clearly identified.

c. The drawings shall be made using an appropriate scale in U.S. engineering units. A graphic bar scale shall be shown on each drawing.
4. Equipment Outline Drawings:

Proposer shall supply outline drawings for the components of each system in his scope of supply. Equipment outline drawings are dimensioned scale drawings that show the details of individual equipment items. All outline drawings shall include but not be limited to the following items:
   a. Overall dimensions.
   b. Design conditions including pressure, temperature, test pressure, and any restrictions regarding testing or operation of the equipment.
   c. Materials of construction.
   d. Wall thickness and corrosion allowance.
   e. Applicable code, statement of code compliance, radiograph requirements and postweld heat treatment.
   f. Empty weight, operating weight, and weight full of water.
   g. Nozzle schedule including the identification mark (number or letter code), service, size, pressure rating, and facing. The outline drawing shall clearly show the location, orientation, and projection of all nozzles and couplings.
   h. Foundation plan, anchor bolt location, loading, and center of gravity.
   i. Appurtenances and internals (if applicable).
   j. Surface preparation and painting (if applicable).

5. Assembly Drawings:

Assembly drawings are an engineering drawing of a complete unit or subsystem that shows how the constituent parts fit together. Assembly drawings can be orthographic or exploded view. Assembly drawings shall:
   a. Contain a tabular schedule of all individual parts. The parts schedule shall describe each part and include a part number which shall also refer to the parts list.
   b. Clearly identify each part on the drawing.
6. Fabrication Drawings:

Fabrication drawings are dimensioned drawings shop drawings detailing the construction or fabrication requirements of an item. They are usually orthographic drawings. Fabrication drawings shall:
   a. Be fully dimensioned including fabrication tolerances.
   b. Show welding details (if applicable).
   c. Show connection details (if applicable).
   d. Include a parts list or material takeoff.
   e. Include detailed fabrication notes.

7. Plans and Elevations

Plans, elevations, sections, and details are dimensioned scale orthographic drawings used to define the field or shop construction of architectural, structural, civil, piping, or electrical systems. Plans, elevations, sections, and details shall:
   a. Be neat, uncrowded, orderly and legible.
   b. Drawings containing multiple scales shall clearly so indicate.
   c. All elevations, sections, cuts and details shall be clearly referenced to the main plan drawing.
   d. On piping drawings, pipe 10" and larger shall be shown double line.

8. Isometric Drawings

Isometric drawings are dimensioned, unscaled drawings intended to depict the three dimensional spatial arrangement of piping, electrical conduit, electrical cable tray, instrument installation details, etc. Isometric drawings shall:
   a. Be drawn single line.
   b. Each drawing shall include a complete bill of material.
   c. Isometric drawings that are too large or complex to be shown on a single sheet shall be shown in the same orientation on all sheets. Continuation from sheet to sheet shall be clearly indicated.
   d. Be referenced to plan drawings.
9. Schematic Drawings

Proposer shall supply schematic diagrams of each system in his scope of supply. Schematic diagrams such as process flow diagrams, piping and instrument diagrams, single line diagrams, logic diagrams or wiring diagrams shall:
  a. Be arranged so as to minimize crossing lines, sinuous or indirect line routings and lines continued to other sheets.
  b. Parallel lines shall be adequately spaced.
  c. Lines shall be of uniform weight with major process or electrical lines double weight.

Standard Drawings and Vendor Data

This category consists of standard vendor drawings, catalog cuts, descriptive literature, vendor brochures, and other pre-printed documents provided by Proposer during the duration of the project. Proposer shall submit standard drawings and vendor data in Adobe Acrobat (.pdf) format. Whenever possible, .pdf files shall be converted directly from the native document format and .pdf’s from scans shall be avoided.

If scans must be provided, the originals shall be clean, devoid of markings, of good contrast, squared to the margins, and legible when printed out at 8 ½ x 11 size. Multi-page documents shall be combined into a single .pdf file.

The document electronic file name shall contain descriptive text such that City can understand the purpose/application of the document without having to first open it up.

Specifications and Narrative Documents

This category consists of documents that are primarily text and prepared specifically for the Scholl Canyon Landfill Power Project. These documents shall be provided in Microsoft Word format. Each document shall have a distinguishing document number. Headers shall include the project name, Owner’s name, and document title. Footers shall include the page number, total number of pages, document number, revision number, and revision date.

Documents longer than five pages shall include a table of contents.
Data Sheets

This category consists of documents containing primarily numerical data contained in prepared forms describing equipment, instruments, or other tagged items.

1. Blank equipment data sheets are included in Attachment 6.7. A separate data sheet shall be prepared for each item listed in the Proposer’s Equipment List.

2. Instrument data sheets shall be provided for each item listed in the Instrument List. For simple field instruments such as pressure gauges or bimetallic thermometers, multiple items may be shown on each data sheet.

3. Electrical equipment data sheets shall be provided for all electric motors and other electrical equipment included within the PIME scope.

4. All data sheets shall be formatted for 8 ½” x 11” pages. Data sheets shall be completely filled out and shall show, as a minimum, the equipment or instrument tag number, service, manufacturer and model, process data, mechanical details, revision number, and revision date.

Tabular Data

This category consists of documents containing primarily data presented in tabular format (rows and columns) such as spreadsheets. It includes the equipment list, electrical equipment list, line list, instrument list, tie-in list, and similar items. The format of tabular data may be portrait or landscape in either 8 ½” x 11” or 11” x 17” size. Where necessary, multiple pages may be used.

Tabular data may be provided in either Microsoft Excel or Microsoft Word format. All tabular data shall be arranged with one row for each item and as many columns as necessary to fully describe each item. Each column shall have a descriptive title which shall be repeated at the top of each page of the document. All columns shall fit in one page width but as many pages as necessary can be used to accommodate all of the rows.
Calculations

This category consists of all formal calculations required for the project. It includes all calculations required by regulatory agencies and that are usually signed and stamped by a California Licensed Professional Engineer. Calculations shall be typewritten and not hand written.

General

1. All working documents prior to final completion and turnover shall be provided as PDF files.

2. Five hardcopies shall be provided of all final documentation as well as PDF and DWG files.

3. The document electronic file name shall contain descriptive text such that City can understand the purpose/application of the document without having to first open it up.

4. All documentation shall use the English language.

5. Manuals shall be legible when printed on letter paper (8½”x11”). Drawings shall be legible when printed on ledger paper (11”x17”) and preferably on letter paper (8½”x11”) as well.

6. Proposer shall utilize an electronic distribution system for submittals to City and its representatives and consultants. The distribution method shall be compatible with current day operating systems and software platforms, e.g., Microsoft Windows, 7, 8.1, 10, Internet Explorer 11, Edge, and Office Suite, AutoCAD, as well as Adobe Acrobat. Document submittal in electronic format should be sent in the document’s entirety, a complete document rather than individual pages.

7. Owner’s preferred document formats are as follows:
E. Engineering Deliverables

The details for engineering document requirements for various purposes are found in the following attachments:

1. Proposal documents – Attachment 2.10
2. Electrical documents – Attachment 6.5
3. I&C documents – Attachment 6.8
4. Mechanical documents – Attachment 6.9
5. Structural documents – Attachment 6.10
6. Equipment documents –
   a. Combustion Turbine Generator – Attachment 7
   b. Reciprocating Engine Generator – Attachment 8
   c. Gas Treating System – Attachment 9
   d. Emissions Control System – Attachment 10
e. Fuel Gas Compressor – Attachment 13
f. Miscellaneous equipment – Attachment 6.9

7. In addition, the requirements for the project definitional documents are:

a. Process Flow Diagrams (PFD’s). PFD’s shall include all major equipment items, major process streams including operational bypasses and recycle streams, and a stream data table for all process streams. The stream data table shall include, as a minimum, the fluid phase, temperature, pressure, mass flow, density, viscosity, and specific enthalpy for each stream, all in Standard English units. PFD’s shall be provided for Guaranteed Plant Performance Design Point at full load and minimum load operations as defined in Attachment 3. In addition, a Heat and Mass Balance (H&MB) table shall be provided showing, as a minimum, the total mass flow, component composition, and total enthalpy for each stream.

b. Piping and Instrument Diagrams (P&ID’s) for the PIME scope being supplied. P&ID’s shall include, as a minimum, equipment tag numbers, instrument tag numbers, piping line numbers, valve numbers, and tie-in numbers all in a mutually agreed format. An equipment legend showing basic equipment parameters shall be provided for each equipment item shown on the P&ID.

c. Piping Interconnection Drawings shall be prepared in the same manner as P&ID’s except that they shall only show the interconnecting piping between equipment modules that is outside of the PIME scope of supply (see Section A, above).

d. Equipment List in tabular format showing each equipment item as a separate line item. The equipment list shall include, as a minimum, equipment tag number, descriptive name, size, capacity, electrical power consumption, design and operating temperatures and pressures, P&ID reference, manufacturer, and model number.

e. Line List in tabular format showing each piping line shown on the P&ID as a separate line item. The line list shall include, as a minimum, line number, nominal size, service code, sequence number, material class code, pipe coating (or insulation class), P&ID reference, source and destination, design and operating temperatures and pressures, fluid identification and phase, and design flow rate.

f. Instrument List in tabular format showing each instrument item as a separate line item. The instrument list shall include, as a minimum, instrument tag
number, descriptive name, calibrated range with units, design and operating
temperatures and pressures, P&ID reference, associated line or equipment
number, manufacturer, and model number.
g. Tie-in List in tabular format showing each tie-in number, description, reference
P&ID, and connection size, type, and pressure class.
h. Single Line Diagram (SLD) for the PIME scope being supplied. The SLD shall
include, as a minimum, electrical equipment tag numbers, bus ratings, motor
loads, breaker ratings, and relay data.

8. The following documents shall be stamped by a California Professional Engineer:

a. Grading and Drainage drawings
b. Electrical 1-line drawings
c. Electrical 3-line drawings
d. Electrical protective relay settings
e. Fire protection drawings
f. Occupied structure drawings
g. Piping & Instrument Diagrams
h. Structural drawings
i. Structural calculations

F. Equipment Storage & Preservation Instructions

Proposer shall furnish, no later than 30 days prior to the equipment’s shipping date, a set of
instructions for use by City and/or the EPC Contractor for the storage and preservation of the
Proposer’s equipment after delivery, through storage, and after installation prior to operation.
The Proposer’s reference to the separate O&M manuals will not satisfy this requirement.

G. Equipment Rigging, Erection, and Commissioning Instructions

Proposer shall furnish, no later than 60 days prior to the equipment’s shipping date,
instructions for use by the EPC Contractor to rig the Proposer’s equipment for off-load, erection
of the equipment, and handling from installation through commissioning.
H. Equipment Operations & Maintenance Manuals

Proposer shall furnish instructions for use by:

1. the EPC Contractor to develop commissioning and operating procedures, and maintain equipment prior to commercial operation, as required, and

2. GWP to operate and maintain the equipment subsequent to commercial operation.

I. Technical and Service Bulletins

Proposer shall issue to City all technical and service bulletins commencing with the completion of manufacturing of the equipment at the factory. Proposer shall also implement all technical and service bulletins prior to commercial operation.
### 6.4 Schedule A

**Scholl Canyon Landfill Power Project**

**DRAWING SHEET NUMBER ASSIGNMENT**

<table>
<thead>
<tr>
<th>Station No.</th>
<th>Discipline</th>
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<td>Standard Finishes, Details &amp; Schedules</td>
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<td>Area Plans, Site Plans, Survey Drawings</td>
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<td>Steel Fabrication Drawings</td>
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ELECTRICAL SYSTEMS

A. Introduction

This Attachment provides the requirements for electrical systems and the electrical installation within the scope of the RFP. These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes and standards, as well as good practice. The electrical systems offered by the Proposer shall be designed and manufactured in a manner suitable for intended operation within a load serving municipal utility.

The purpose of this document is to define the basis for design, procurement, and construction of the electrical system for Scholl Canyon Landfill Power Project. It is not intended to be an all-inclusive specification but is a design standard which will ensure that the plant design and construction will meet specific goals such as safety, reliability, quality of construction, plant maintainability, efficiency, and operational flexibility.

Above all other considerations, safety in design shall be of paramount importance. Personnel safety shall be accounted for during all stages of the project, including construction, operation and maintenance.

B. Scope of Work

These requirements apply to all electrical systems provided by the Proposer exclusive of major equipment specified elsewhere in this RFP. This includes all components provided as part of equipment skids or provided as loose items within the overall scope of the RFP.

The Proposer shall develop a complete detailed engineering and design package for the entire scope of the RFP in accordance with all applicable codes and industry standards including drawings, plans, details, calculations and equipment specifications.

The Proposer's scope for equipment, material, and design services of the electrical plant and auxiliaries to make a complete plant installation comprises but is not limited to the following:

1. All electric motors within the scope of the RFP.
2. Cable, wiring and raceway systems, equipment and fittings.
3. Equipment and skid grounding systems and fittings.
4. Lighting and electrical receptacles for any enclosures provided within the RFP scope.
6. Proposer shall furnish, install, connect, test, and deliver all electrical components (including all on-skid wiring) required for the operation of the system provided as part of this RFP.

To the greatest extent possible, systems shall be shop fabricated on skids. Equipment skids shall be appropriately sized for ease of transportation, handling and field installation. The skid mounted systems shall be arranged so as to minimize the number of electrical and mechanical connections between skids.

Electrical and materials supplied and installed under this Specification shall be appropriate for the environment in which they shall be used, whether indoor, outdoor, or in classified areas as defined by Article 500 of the NEC.

C. References

All electrical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

- AEIC: Association of Edison Illuminating Companies
- ANSI: American National Standards Institute
- ASTM: American Society for Testing and Materials
- Cal-OSHA: California Occupational Safety and Health Administration
- ICEA: Insulated Cable Engineers Association
- IEEE: Institute of Electrical and Electronics Engineers
- IES: Illuminating Engineering Society
- ISA: Instrument Society of America
- NEC: National Electric Code
- NEMA: National Electrical Manufacturer's Association
- NESC: National Electrical Safety Code
- NETA: National Electrical Testing Association
- NFPA: National Fire Protection Association
- OSHA: Occupational Safety and Health Act
- UL: Underwriters Laboratories
D. Design Considerations

Engineering and Design

1. The electrical power system for the Plant will consist of:
   a. a high voltage system that will include generators, generator switchgear, a unit
      auxiliary power transformer, switchyard with isolation and grounding switches, and
      line breaker;
   b. a medium voltage system which will include medium voltage switchgear, and
      auxiliary transformers;
   c. a low voltage distribution system which will include switchgear and associated
      power distribution system.

   It will also include electrical controls, lighting, grounding, instruments and controls,
   communications, and data systems.

   Although the supply of much of the electrical equipment is outside the scope of this
   RFP, Proposer shall provide all necessary documents and data required by the EPC
   Contractor for the design and engineering of the overall electrical system.

2. All necessary engineering documents shall be delivered in accordance with Section M,
   below.

   shall be the basis of design for the plant electrical system.

4. The electrical system shall be designed on the basis of load flow studies, short circuit
   fault duty calculations, voltage impulse levels due to lightning or switching operations,
   voltage profiles, grounding studies and particular requirements of the City. These
   studies shall be performed by the EPC Contractor. Proposer shall provide to the EPC
   Contractor any data required for these studies for all equipment and systems provided
   under this RFP.

5. The electrical design shall provide for safety, constructability, operability, and
   maintainability. In order to ensure that the Plant electrical installation is safe and
   useable, the design shall comply with applicable codes, regulations, and standard
industry practices. The facility design shall be based on usual and customary construction materials and methods. Equipment placement shall provide adequate space to install, operate, and maintain the facility.

**Power Distribution Center**

The supply of the Power Distribution Center (PDC) is not in the RFP scope. However, so that Proposer may understand the overall design concept of the power plant, the following information is provided:

The PDC(s) will contain the following equipment:

- 12.47 kV generator breakers (for the PIME supplied generators)
- 5 kV switchgear including feeder and tie breakers (including starters for the PIME supplied motors)
- 480 V switchgear and motor control centers (including starters for the PIME supplied motors)
- Variable Frequency Drives (including those supplied by the PIME)
- PTs, CTs, metering, and relaying
- Turbine Control Panels (supplied by the PIME Proposer)
- Plant Control System I/O cabinets
- Uninterruptible power supply
- DC battery system
- Engineering work station

The PDC will include an HVAC system to maintain proper equipment operating temperatures.

**Area Classification**

1. In general, most plant areas are considered non-hazardous. In normal indoor areas, general purpose NEMA 1A enclosures shall be used. In normal outdoor areas, electrical control equipment shall be weatherproof, outdoor NEMA 4 (dust-tight and rain-tight). In corrosive areas, NEMA 4X shall be used.

2. The fuel used in the plant for the combustion turbines is landfill gas or natural gas. Landfill gas is classified as a Class 1 heavier-than-air vapor. Natural gas is classified as a Class 1 lighter-than-air vapor. The plant design shall be reviewed for identification of classified areas and the electrical equipment used in these areas shall be approved for
the classification in compliance with the National Electrical Code Article 500 (NFPA 70/ANSI C1).

3. In addition to defining hazardous areas by class and division, each hazardous element is also assigned a group classification (A, B, C, etc.). The group classifications of hazardous elements are specified in NEC Article 500 and NFPA Standard 497M.

4. Electrical equipment in areas classified as hazardous shall be constructed and installed in accordance with NEC Articles 501 and 502. Proposer’s electrical equipment supplied for use in hazardous areas shall be certified for use in such areas. City will not accept equipment for service in hazardous areas that is not certified.

5. An area classification study shall be performed and area classification plans and elevations shall be issued. The Proposer shall submit the hazardous area classification drawings for review and approval by City.

**Voltage Levels**

1. The voltage levels to be used for transmission, distribution and utilization will be as follows:
   a. Transmission (Utility) Voltage – 12.47 kV, 60 Hz, 3 phase, solidly grounded wye.
   b. On-Site Generation Voltage - 12.47 kV, 60 Hz, 3 phase, high-resistance grounded wye.
   c. Distribution Voltage - 4.16 kV, 60 Hz, 3 phase, low-resistance grounded wye.
   d. Secondary Distribution and Utilization Voltage - 480Y/277 VAC, 60 Hz, 3 phase, solidly grounded wye.
   e. Lighting and Outlets - 208Y/120 VAC, 60 Hz, 3 phase, 4 wire and 120 VAC, 60 Hz, single phase.
   f. Control - General - 120 VAC, 60 Hz, single phase.
   g. Control - 125 Vdc and 24 Vdc

2. Voltage Levels for Equipment:
   a. Motors 200 hp and above  
   b. Motors less than 200 hp  
   c. Motor Operated Valves  
   d. Non-process Motors less than 1 hp  
   e. Motor Control Circuit (with isolating transformer)  
   f. Lighting System  
   g. General Service Socket Outlets
   
   4160 V  
   460 V  
   460 V  
   230 V  
   120 V  
   120 V interior, 240 V exterior  
   120 V
**Noise and Separation**

<table>
<thead>
<tr>
<th>NOISE CLASS</th>
<th>EXAMPLES</th>
<th>TYPE OF CABLE</th>
<th>CONDUIT AND TRAY INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiet</td>
<td>Includes analog I/O signals, digital pulse inputs to high-speed counting circuits, and data</td>
<td>Shielded twisted pair</td>
<td>Conduit or tray must be bonded to plant ground. Trays with 85% metallic coverage on top, side, and bottom are recommended.</td>
</tr>
<tr>
<td>Low</td>
<td>24/48V digital I/O and contact input.</td>
<td>Twisted pair recommended.</td>
<td>Conduit or tray must be bonded to each ground.</td>
</tr>
<tr>
<td>Medium</td>
<td>Digital I/O greater than 48V.</td>
<td>Twisted pair recommended.</td>
<td>Conduit or tray must be bonded to each ground.</td>
</tr>
</tbody>
</table>
| High        | AC/DC power signals:  
• 110 VAC, 250 VDC under 15 A except brakes and fields.  
• Up to 100 A, 500 VDC or 460 VAC including brakes and fields.  
• Over 100 A, 500 VDC, 460 VAC.  
• 2.3 kV and over. | Cable type determined by voltage and current of circuit. | Both outgoing and return-carrying conductors to be pulled in same conduit or laid side by side in trays and secured in vertical runs. |
Table information is based on 400 ft. run.
All shielded cables must be jacketed.
Major cables shall maintain a three inch separation between conduits.
Communication and fire cables shall be routed in separate conduits.

**Design Temperature**

1. Although some equipment may be located in air-conditioned areas, it shall be suitable for operation for sustained periods without the benefit of the air-conditioning. Maximum design temperature shall be based on the maximum ambient temperature plus all temperature rises that can occur as a result of heat gains, flows and dissipation, which may affect the installation area.

2. In general, conductors shall be insulated on the basis of a normal maximum conductor temperature of 90° C in 40° C ambient air, with a maximum emergency overload temperature of 130° C and a short-circuit temperature of 250° C. In areas with higher ambient temperatures, larger conductors shall be used or higher temperature rated insulation shall be selected. Conductor size and ampacity shall be coordinated with circuit protective devices.

**Safety**

1. Electrical equipment shall be provided with suitable means for electrical disconnection, isolation and locking such that when an authorized person isolates a circuit it can be locked out and made safe for access and maintenance.

2. The design shall incorporate every reasonable safeguard and provision for the safety of all personnel concerned in the commissioning, operation and maintenance of the installations.

**Reliability**

The installation shall have the maximum possible level of reliability and availability in service. To this end, tried and proven equipment shall be used in the installation; prototype equipment is not acceptable.
E. Electrical Certification

All supplied electrical equipment shall be certified by at least one of the following:

- Factory Mutual
- Underwriters Laboratory
- Canadian Standards Association

If such certification is not available for a component, Bidder shall provide a basis for acceptance to GWP and obtain GWP’s approval prior to use of such component.

F. Wire and Cable

Scope

The cable design, procurement and installation to be provided by Proposer shall include all cables required for the power, control, indication, monitoring and data communications of all plant systems and equipment provided under the scope of this RFP. The installation shall be complete with all cable terminations, cable trays, cable tray fittings, conduits, all raceway supports, junction boxes, pull boxes, ferrules, lugs, numbered ferrules, cable markers, clips and all fixings, fittings, brackets, cleats, piping and accessories.

Codes and Standards

1. In general, except for thermocouple extension wire, wires and cables will be copper, class B stranded manufactured in accordance with ICEA S-68-516 or S-66-524 as applicable.

2. Grounding and shielding will be in accordance with control system manufacturer's recommendations, and with IEEE Standard 518-1982.

3. The maximum ampacities for any cable will be in accordance with the NEC.

Power Wiring

Power wire and cable shall be No. 12 AWG minimum, 600 volt Class B stranded copper conductor with a highly flame retardant insulation/jacketing system for power cables. Insulation shall be cross linked polyethylene (XLPE) per ICEA S-66-524, Ethylene Propylene Rubber (EPR) per ICEA S-68-516, or approved equal. Jacketing shall be Hypalon, Neoprene or XLPE compounds.
The conductors for power circuits shall be sized and installed in accordance with the National Electric Code (NEC) and ICEA.

**Control Wiring**

Control and secondary wiring shall be 600 V, Class B stranded copper, type SIS, minimum size No. 14 AWG. Wires for lighting circuits shall be stranded, tinned copper, type THWN rated 600 V, minimum size No. 14 AWG. Current transformer secondary wiring shall be No. 10 AWG.

**Instrument Wiring**

Instrumentation wiring shall be 2, 3 or 4 copper conductor, twisted cable, No. 16 AWG with an aluminum-mylar type shield. Multi-pair/triad/quad cable is acceptable.

Thermocouple extension wire conductors shall be No. 16 AWG and the conductor materials shall match the thermocouple element materials.

Insulation shall be flame-retardant 90°C PVC and each cable shield shall have a No. 18 AWG stranded copper drain wire.

**Installation**

1. All wiring, except lighting, shall be continuous from terminal to terminal without splices.

2. All wires, except lighting wires, shall be tagged at both ends with heat shrinkable plastic sleeve type wire markers. The labels shall be made of material that is resistant to corrosion, moisture, UV radiation and mechanical damage.

3. For all equipment, wiring shall be terminated using crimped ring-tongue type lugs.

   No more than two terminations are permitted on any one terminal block, excluding any special purpose jumpers.

   Terminal blocks shall be NEMA rated screw type. Terminal blocks for control wiring 120 V and below shall be rated 300 V and shall be capable of accepting terminal lugs for No. 10 AWG wire and smaller.
A provision for spare terminals shall be allowed for possible future modifications. Such a provision shall not be less than 20 percent of the total number of terminals.

Terminals shall bear clear, permanent identification as to the number, terminal location and terminal rows.

Terminal blocks shall be grouped according to function. Terminal blocks shall be mounted vertically wherever possible. The preferred minimum height to the bottom of terminals shall be 1.5 ft. above floor level.

Generator leads shall be brought to a terminal box which shall be sized to provide adequate space for high voltage stress cone termination of the generator phase conductors by the EPC Contractor.

4. Wiring shall be neatly run in wire ways filled not more than 40 per cent. The layout of all cables shall be arranged to have adequate clearance from other services. Proposer shall develop cable and conduit separation criteria for City approval. The separation criteria, once approved, shall be followed as the basis for all cable installation. Cables shall generally be routed to avoid hot or fire-risk areas, and to minimize the risk of damage from any source.

5. Cables shall be separated by service. Cables of different service shall not be run in the same cable tray or conduit. Wiring shall be installed in a manner that maintains minimum physical separation between power, control and instrumentation circuits. Within enclosures conduit shall be used to isolate power and control wiring from each other and from instrument wiring.

6. All internal wiring in panels, cubicles and equipment racks shall be carried out using 600 V grade multi-stranded copper wires. All wiring inside of enclosures shall be neatly bundled and secured by means of "tie-wraps" and/or plastic wire ways. Nylon ties shall be used to neatly lace together conductors entering panel-boards, control panels, and similar locations after the conductors have emerged from their supporting raceway and before they are attached to terminals.

7. When wiring passes through any sheet metal or barrier, mechanical protection shall be provided. Hinge wiring shall be extra-flexible stranded type.
8. All spare conductors of a multi-conductor cable shall be left at their maximum length for possible replacement of any other conductor in the cable. Each spare conductor shall be neatly coiled and taped to the conductors being used.

G. Conduit

Application
Generally, cable shall be carried in conduit above ground and in duct banks below ground. Above ground cable will be located primarily on shop assembled equipment skids. Cabling between skids shall be routed underground except when skids are adjoining. Cabling on equipment skids shall be shop fabricated to the greatest extent possible.

The use of cable tray shall be avoided except in specific applications with the prior approval of the City.

Conduit

1. All wiring supplied by Proposer external to any shelter shall be installed in rigid hot-dipped galvanized steel conduit (RGS). Minimum conduit size shall be 3/4 inch. Aluminum electrical metallic tubing (EMT) shall not be used in exterior locations. EMT may only be used for wiring installed in interior locations as allowed by code and where it is otherwise physically protected. Conduit shall be sized in accordance with the conduit fill requirements of the National Electrical Code.

2. For external junction boxes, conduit connections to junction boxes shall be made using watertight threaded hubs or factory threaded hubs.

3. Exposed conduit shall be run vertically, horizontally, or parallel to the structure line (plumb, square, and level). Long horizontal conduits in outdoor locations shall be sloped for drainage. A stainless steel breather shall be installed at the high point of the conduit system, and a stainless steel drain shall be installed at the low point of long vertical conduit runs. Conduit shall be routed at least 6 inches from the insulated surfaces of hot water, steam pipes, and other hot surfaces. All conduit shall be installed in a manner which assures permanent electrical continuity from all parts of the system to the plant grounding system.
4. Conduit shall be securely supported within 3 feet of connections to boxes and cabinets. Conduit larger than 1/2 inch and up to 1.25 inches shall be supported by supports with a maximum separation of 8 feet. Conduit 1.5 inches and larger shall be supported by supports located at least every 10 feet.

5. Conduit and cable entrances into all enclosures shall be positioned only for bottom or side entry. Conduit fittings materials shall be compatible with the conduit system. When area classification seals are required, they shall be poured at the Proposer’s facility. Proposer shall provide the sealing compound and packing for all installed seals.

6. Liquid-tight flexible metallic conduit (maximum length of 24 inches) shall be used to isolate the transmission of vibration to the conduit system, and/or for connection to equipment, which may be periodically removed.

**Duct Bank**

1. Although underground cabling is generally outside the scope of this RFP, Proposer shall arrange the conduit and cable connections on equipment skids with the location of inter-skid duct banks in mind.

2. Conduit and cable connections to Proposer’s equipment and enclosures shall be positioned so as to not require conduit risers in foundations. Connections shall be located on the sides of equipment at the foundation’s edge. Entry from the top is not acceptable.

**H. Enclosures and Boxes**

1. Large enclosures shall be NEMA Type 12 with neoprene gasketed doors for indoor, non-hazardous locations, and NEMA Type 3R or 4 with hinged doors for outdoor locations. Junction boxes shall be NEMA 3R or NEMA 4, with hinged doors.

2. UL approved NEMA Type 7 enclosures with stainless steel breathers and drains shall be used in Class I, hazardous locations, and UL approved NEMA Type 9 for Class II hazardous locations to house electrical arcing or sparking devices located in those areas. Conduit installation in hazardous locations shall comply with the National Electric Code.
3. Enclosures shall be located away from maintenance areas, excessive vibration and extreme temperature environments. All enclosures shall be accessible from the front leaving sufficient room for maintenance.

4. Outdoor electrical panels/cabinets shall be designed so that they do not require top access or conduit entry into the panels/cabinets. All conduit and access penetrations into the panel/cabinet shall be through the sides or bottom. The panels/cabinets shall be sized, and the internal components arranged, such that there is the necessary space for side or bottom entry of the cable with greater than the minimum bend radius for the needed cable. Penetrations that must be in the panel/cabinet top such as lifting lugs shall be weather tight.

5. Large enclosures such as local control panels, or enclosures with electronic components, shall be provided with thermostatically controlled space heaters adequate to preclude formation of condensation on working parts. Space heaters shall be rated at 240 V and shall be sized to prevent the accumulation of moisture within the enclosure when operated on a 120 V system.

6. Special filters, blowers or other suitable filtration or cooling devices shall be provided as required for proper operation of the apparatus housed in the panel or cabinet.

7. The following requirements shall apply to freestanding cabinets in addition to the appropriate requirements above:
   a. Height shall be between 80 and 90 inches and a minimum depth of 18 inches.
   b. Open frame enclosure cabinets house the CEMS equipment located in the shelter.
   c. No component shall be mounted less than 18 inches from the floor or 10 inches from the bottom of the panel, whichever is greater.
   d. Finish paint shall be polyurethane with rust inhibiting primer applied both inside and outside. Interior paint color shall be white, exterior paint color shall be gray (ANSI 70).
   e. Fluorescent interim lighting shall be provided and operated form a conveniently located switch and at least one readily accessible duplex grounded type 120 Vac receptacle shall be located within the enclosure.
   f. A one (1) inch by ¼ inch copper ground bus, extending the full length of any enclosure shall be provided to effectively ground the entire structure.
   g. The enclosure shall be completely assembled and wired to on-skid components at the factory so that the entire assembly is tested and shipped as an operating unit.
I. Controls

1. Operator’s push buttons shall be heavy-duty, industrial type, Square D or equal.
2. Control relays shall be heavy-duty industrial type, minimum rating, 300 Volts, with 120 Volts coils.
3. Local control stations for maintenance and testing shall be provided as required or for equipment that is subject to local control only.
4. Solenoid valves shall be encapsulated, rated 120 Volts.

J. Lighting and Receptacles

1. The plant lighting system shall consist of 240/120 V, 3 phase-4w loads as needed to supply adequate zone lighting in accordance with recommended lighting levels per the IES Handbook, 10th Edition.
2. Equipment skids, CTG enclosures, other enclosures shall require lighting to be installed. Interior lighting shall be florescent. Exterior lighting shall be high-intensity discharge (HID) with high pressure sodium lamps, enclosed and gasketed with integral ballast. Specific task lighting shall be provided to light the face of panels, cabinets or control boards, etc.
3. Lighting must conform to hazardous area requirements in Class 1 hazardous areas. Where areas are classified as hazardous areas in accordance NFPA all equipment and cabling within these areas shall be clearly UL listed for use in the area and the installation shall meet the requirements of Article 500 of NFPA 70.
4. The mounting position of lighting fixtures and other items shall be so arranged that safe access and control is afforded for repair and maintenance purposes.
5. Outdoor lighting shall be “dark sky” type and controlled by photocells.
6. Minimum lighting levels shall be as follows:
   a. Interior spaces 30fc
   b. Exterior platforms, decks, and ladders 15fc
   c. Panel faces 50fc
7. Electrical protective devices (fuses, breakers) shall be readily accessible for service and maintenance. Fuses shall be capable of being replaced without needing to remove a device from the circuit or lifting any leads.
8. Convenience receptacles shall be provided in all internal and external plant areas. Convenience receptacles shall be 20 A, 120 Vac, duplex. Receptacles shall comply with NEC and shall be installed to give adequate coverage of all buildings and plant included in this RFQ.

9. Receptacles mounted externally or in plant areas may be of the surface mounted type. Receptacles in all other areas shall be flush mounted. Receptacles mounted externally, or in wet or dusty internal areas, shall be of weather-tight design.

10. All receptacles shall be mounted at a minimum of 16 inches above floor, or finished grade, level. Receptacles shall be robust to withstand mechanical damage. Any additional protection required shall be provided. All external receptacles circuits shall be equipped with GFI protection. All receptacles shall be grounding type, and shall be in compliance with area classifications.

K. Grounding and Lightning Protection

1. Power system and equipment grounding shall be provided for personnel protection and to minimize plant damage due to ground faults, transient over voltages, static electricity, and lightning. Lightning protection systems shall be designed in accordance with NFPA 780.

2. A grounding system shall be designed to limit the ground potentials to safe values, as specified in the IEEE standards for the anticipated maximum short circuit currents, and from lightning related currents absorbed by the lightning arresters. The system consists of a plant ground grid covering the entire area of the new plant. Grounding conductors shall be sized in accordance with the current carrying capacity of the circuit conductors.

3. Proposer shall design and specify the grounding system in accordance with all applicable codes and standards. Installation of the grounding grid is outside the scope of this RFP.

4. The station grounding grid shall be designed for adequate capacity to dissipate heat from ground current under the most severe conditions in areas of high ground fault current concentrations, with grid spacing such that safe voltage gradients are maintained.

5. Power system neutrals shall be grounded as follows:
System Voltage | Neutral Grounding
---|---
Transmission systems | Solidly-grounded
12470 Volts | High Resistance Grounded
4160 Volts | Resistance Grounded
480 Volts | Solidly-grounded
208/120 Volts | Solidly-grounded
480/277 Volts | Solidly-grounded

6. All non-current carrying metallic parts of equipment shall be bonded together and directly connected to the ground grid. Two grounding pads shall be furnished at diagonally opposite corners at the edge of any equipment skid or major piece of equipment, for connection by the EPC Contractor to the area ground grid.

7. A separate instrument signal ground system shall be provided for grounding of instrument signal shields. The instrument signal ground system shall be isolated from the safety ground system with the exception of a single point of connection externally to the main station ground grid using PVC insulated copper conductor.

8. The bases of every column of all unit structures, buildings, structural steelwork shall be bonded together during construction and shall be connected using No. 4/0 AWG bare stranded copper conductor to the ground grid.

9. Connections to apparatus and structures shall be made clear of ground level, preferably to a vertical face and shall be protected against electrolytic corrosion.

10. Lightning protection air terminals shall be installed on all buildings and structures subject to lightning strike. The air terminals shall be tied together and to the ground grid with stranded, bare copper conductors.

L. Shop Fabrication

Workmanship

The electrical installation shall be made in a neat and workmanlike manner, shall conform to all applicable codes, and shall be satisfactory to the City or his authorized representative.
The control and instrument wiring shall be done by qualified journeymen electricians, fully capable of reading schematic wiring diagrams, experienced in heavy industrial wiring, and under competent supervision.

**Painting**

All raw surfaces of ferrous materials used for supports, fastenings, etc., shall be protected by one coat of rust resisting undercoat. EPC Contractor shall provide final coating.

All switchgear, panelboards, and similar equipment furnished with enameled or lacquered finish by manufacturers which are scratched or defaced by Proposer during construction shall be refinished and restored to the original finish.

**Identification and Tagging**

All electrical enclosures, equipment and devices shall be identified with nameplates. Operating handles, meters, control stations, limit switches, proximity switches, sensing elements and other like devices shall be provided with nameplates.

Nameplates shall be of machine-engraved phenolic, with black figures on white background and shall be attached with stainless steel self-tapping screws.

**Tests and Inspections**

1. Wire and cable shall be visually inspected prior to installation for faulty insulation. Before connecting to equipment, all wire shall be tested for resistance to ground.

2. Proposer shall visually inspect all connections for proper phasing and connections. Insulated conductors shall be continuity tested for correct conductor identification.

3. Proposer shall provide all test instruments required. Proposer shall test all wiring and connections for continuity, grounds, and short circuits before any equipment is energized.

4. Proposer shall furnish to the City all Certificates of Inspection and Approval for all phases of the work requiring such inspection and approved. Test information shall be
recorded on forms furnished by Proposer. Forms shall be submitted to the City and shall include the tester's signature and date of test in addition to the test information. The City may witness any tests and Proposer shall notify the owner at least two working days prior to each test.

5. Motors shall be tested for correct rotation and excessive vibration, bearing noise and temperature rise. With the coupling disconnected, the motor shall be checked for correct rotation, then run for a minimum of 15 minutes at no load.

6. The Electrical Contractor shall verify the correctness of all control wiring to ensure the proper sequence of operation.

7. The equipment shall be submitted to standard commercial factory tests to assure operational performance, correctness of all control and instrumentation circuits.

8. The manufacturer shall, if requested, provide the services of a field engineer to supervise any field tests and to make necessary adjustments or alterations required for the operation of the equipment in accordance with this specification.

M. Engineering Deliverables

In accordance with Attachment 6.4, Proposer shall submit documentation required per Attachment 6.4 and information listed below:

**LNTP Phase**
2. Electrical Equipment List
3. Electrical Load List

**FNTP Phase**
1. Electrical Three Line Diagrams
2. Elementary Diagrams
3. Wiring Diagrams
4. Conduit and Cable Schedules

“As-Built”

1. All Code required documentation
2. Electrical equipment catalog cuts
3. Electrical equipment test reports
4. Electrical spare parts list
5. As-Built drawings
ELECTRIC MOTORS

A. Introduction

This Attachment provides the requirements for electric motors within the scope of the RFP. These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes and standards, as well as good practice. The electric motors offered by the Proposer shall be designed and manufactured in a manner suitable for intended operation within a load serving municipal utility.

B. Scope of Work

These requirements apply to all electrical motors provided by the Proposer.

Electric motors supplied and installed under this Specification shall be appropriate for the environment in which they shall be used, whether indoor, outdoor, or in classified areas as defined by Article 500 of the NEC.

C. References

All mechanical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

- ABMA American Bearing Manufacturers Association
- ANSI American National Standards Institute
- ASTM American Society for Testing and Materials
- Cal-OSHA California Occupational Safety and Health Administration
- IEEE Institute of Electrical and Electronics Engineers
- NEC National Electric Code
- NEMA National Electrical Manufacturer's Association
- NESC National Electrical Safety Code
- NETA National Electrical Testing Association
- NFPA National Fire Protection Association
- OSHA Occupational Safety and Health Act
- UL Underwriters Laboratories
D. General Design Criteria

Safety Considerations for Motors

The OSHA rules shall be followed for personnel protection. Belt guards shall be specified for personnel safety and, when required, to prevent foreign objects from contacting belt surfaces. Guard screens shall be provided over motor enclosure openings to prevent direct access to rotating parts. Electrical motors shall be adequately grounded.

Motors in hazardous areas shall conform to applicable regulatory requirements and shall be UL labeled. Motor electrical connections shall be terminated within oversized conduit boxes mounted to the motor frame.

Testing Requirements

Each type of ac and dc machine shall be tested in accordance with the manufacturer's routine tests at the factory to determine that it is free from electrical or mechanical defects and to provide assurance that it meets specified requirements. Copies of reports of the quality control tests and inspections for each motor shall be submitted prior to shipment of the motor from the manufacturer's factory.

Testing shall be at the Proposer's expense with all associated costs being the responsibility of the Proposer. Proposer is responsible for all costs associated with correcting deficiencies and retesting in the event of a test failure.

Tests shall be conducted in compliance with the following standards:

- NEMA MG1
- IEEE 112
- ANSI C50.41

The following criteria and tests shall be used in testing each type of machine:

1. Integral horsepower, 3-phase, 460 volt induction motors to include the following:
   a. Routine tests listed in NEMA MG-1, Routine Tests for Polyphase Medium Induction Motors.
   b. Test procedures shall be in accordance with IEEE, Test Procedure for Polyphase Induction Motors and Generators.
2. Induction motors rated above 600 volts:
   a. Routine tests listed in NEMA MG-1, Large Machines Induction Machines Tests, shall be performed on each motor.
   
   b. The following additional tests and inspections shall be performed on each motor larger than 500 horsepower:
      • Locked rotor current at fractional voltage. Current balance.
      • Length of time of bearing test and final temperature rise of bearing.
      • A statement that bearings have been inspected and approved for shipment.
      • Insulation resistance time curve and polarization index for motors with formed coil stators.
      • Final value of motor noise levels including statement that there is no objectionable single frequency noise.
      • Final air gap measurements (single air gap).
   
   c. Motors that are specified to have complete tests performed on either the furnished motor or an electrically duplicate motor shall require the following tests:
      • Temperature.
      • Percent slip.
      • No load saturation curve.
      • Locked rotor saturation curve, including locked rotor torque, current, and power.
      • Speed-torque and speed-current curves at rated voltage and at minimum starting voltage.
      • Efficiency at full, three-fourths, and one-half loads.
      • Power factor at full, three-fourths, and one-half loads.

3. Direct current motors:
   a. The standard routine tests and inspections shall be performed on each motor. These shall include the following:
      • High potential dielectric test.
      • Measurement of resistance of all windings.
      • Inspection of bearings and bearing lubrication system including the following:
         o No load running armature current, shunt field current, and speed in revolutions per minute, at rated voltage.
Full load armature current, shunts field current, and speed in revolutions per minute, at rated voltage.

b. Test procedures shall be in accordance with NEMA MG-1 Tests and Performance of DC Small and Medium Motors.

**Preferred Equipment Manufacturers**

Please refer to Attachment 6.11 for a list of preferred manufactures.

**Assembly**

All motors shall be completely assembled with the driven equipment, lubricated, and ready for operation.

**E. Electrical Design Criteria**

**General**

This section details the electrical criteria that apply, in general, to all electric motors provided under this RFP. Requirements pertaining to specific classes or types of motors are given in the following sections, below.

**Rating**

1. **Service Factor** - The motor nameplate horsepower multiplied by the motor nameplate service factor shall be at least 15 percent greater than the driven equipment operating range maximum brake horsepower. For motors with 1.15 service factor, the maximum load horsepower will not exceed the motor nameplate.
2. **Voltage Classes** - Motor operating voltages (excluding motor-operated valves) are tabulated as follows:

<table>
<thead>
<tr>
<th>Voltage Horsepower</th>
<th>Nominal System Voltage</th>
<th>Motor Nameplate Voltage</th>
<th>Frequency (Hz)</th>
<th>Phase(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1/3</td>
<td>120</td>
<td>115</td>
<td>60</td>
<td>1</td>
</tr>
<tr>
<td>1/2 and less than or equal to 249 (except for special applications)</td>
<td>480</td>
<td>460</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>250 and above</td>
<td>4,160</td>
<td>4,000</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>dc motors</td>
<td>125</td>
<td>120</td>
<td>dc</td>
<td>--</td>
</tr>
</tbody>
</table>

This table is intended as a general guide; however, individual conditions such as distance from power source, voltage drop, etc., may dictate deviations from the stated horsepower/voltage criteria.

3. **Variations from Rated Voltage and Rated Frequency** - Unless specified otherwise, induction motors shall operate successfully under running conditions at rated load with a variation in the voltage or the frequency up to the following:

   a. Plus or minus 10 percent of rated voltage, with rated frequency.
   b. Plus 10 % through minus 50 % of rated frequency at rated voltage when driven by a variable frequency drive.

4. **Motor Starting** - Motors shall be designed for full voltage starting and frequent starting where required and shall be suitable for continuous duty in the specified ambient conditions. Starting current draw during a full voltage across-the-line start shall not exceed 650 % of the rated motor current.

5. **Torque** - The torque characteristics of all induction motors shall be as required to accelerate the inertia loads of the motor and driven equipment to full speed without damage to the motor or the equipment at any voltage from 90 percent to 110 percent of motor nameplate voltage.
Temperature Considerations

Motors shall be suitable for continuous operation at ambient temperatures ranging between 122°F (50°C) and 20°F (-6.7°C).

Enclosures

Enclosure parts for all motors (e.g., frames, bearing brackets, terminal housings, external fan covers) shall be made of cast iron, cast steel, sheet steel, or steel plates. Aluminum enclosure parts shall not be acceptable.

Totally Enclosed Motors

Totally enclosed motors shall be furnished with drain holes and rotating shaft seals. Drain holes shall be provided with combination water drain-breather plugs.

External cooling fans for fan cooled motors shall be fabricated of brass, bronze, aluminum alloy containing not more than 0.2 percent copper, malleable iron, or plastic. All plastic fans shall be fabricated of a reinforced thermosetting plastic.

Totally enclosed motors shall have all exposed metal surfaces protected with a sunlight and corrosion resistant polyester paint or coating and shall have enclosure interior surfaces and the stator and rotor air gap surfaces protected with a corrosion-resistant alkyd enamel or with polyester or epoxy paint or coating. Bolts, nuts, screws, and other hardware items shall be corrosion-resistant or zinc dichromate treated metal.

Terminal Housings

Oversized terminal housings for motor power leads and accessory leads shall be furnished on all motors.

All terminal housings shall be externally mounted on the motor frame enclosure.

Terminal housings for all motors shall be cast iron or sheet steel. Minimum protection requirements shall be equivalent to NEMA 4 (IEC IP 54).

All motor leads located in the housings shall be permanently marked for ease of identification. Location and dimensions of terminal housings shall be subject to approval by the Purchaser.

Leads

All leads, including motor power leads, space heater leads, and temperature sensing device leads, shall terminate inside the terminal housing.
Cable type leads shall be provided with compression type connectors.

Terminal identification shall be furnished and consistent with applicable wiring diagrams.

Termination blocks and terminal boards shall be fabricated of non-hygroscopic material.

Permanent instructions for making these connections shall be furnished inside the terminal housing or on the motor frame or nameplate.

All motors shall have the direction of rotation marked by an arrow mounted visibly on the stator frame near the terminal housing or on the nameplate and the leads marked for phase sequence to correspond to the direction of rotation and supply voltage sequence.

Cable motor leads shall utilize stranded copper conductors insulated with silicone rubber covered with a glass braid or acceptable equal.

All motors, including those with resilient mountings, shall be furnished with a ground connection. A ground connector shall be provided inside the motor terminal housing.

**Windings and Insulation**

All insulated windings will have a Class F non-hygroscopic insulation system with Class B temperature rise and ambient temperature in accordance with NEMA MG-1 standards. When ambient temperatures greater than 40°C are specified, the allowable temperature rise will be reduced in accordance with NEMA MG-1 standards. The stator insulation system shall include two dips and bakes of varnish. All insulated stator winding conductors and wound rotor motor secondary windings will be copper.

The insulation resistance corrected to 40° C will be not less than motor rated kV+1 megohms for all windings.

Where required, the windings will be treated with a resilient, abrasion resistant material.

**Capacitors**

Capacitors, as required, shall be furnished in removable metal enclosures mounted on the motor frame.

**Thermal Protection**

Manual reset thermal protection, for both stalled rotor and overload protection, shall be furnished on all motors.
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**Rotors**

All induction motors shall have squirrel-cage rotors. Rotors shall be adequately sized to avoid overheating during acceleration of the motor and driven equipment. Rotors shall be die-cast aluminum construction or shall have copper or copper alloy cage material except that aluminum cage materials will be considered on 2-pole motors only.

All fabricated cage rotors shall include a swaging or wedging method during the installation of rotor bars to prevent rotor bar vibration.

**Shafts**

All shafts shall be solid. Each shaft shall be furnished with a corrosion-resistant treatment or shall be made of a corrosion-resistant material.

All motors shall have shaft grounding systems.

**Bearings**

The Supplier shall determine the type of bearings to be furnished based upon the load, speed, and thrust conditions of the driven equipment.

All motors, which are supplied with ball or roller bearings, shall have the appropriate American Bearing Manufacturers Association (ABMA) number stamped on a nameplate to the motor. The selection of bearings for horizontal and vertical motors shall be based on ratings established by the ABMA. Bearings shall have a minimum life when operating under the load, speed, and thrust requirements of the driven equipment of not less than 50,000 hours.

Bearing lubricants shall contain a corrosion inhibitor. The type and grade of lubricant shall be indicated on a nameplate attached to the motor frame or end shield adjacent to the lubricant filling device. The Supplier shall furnish all lubrication information required to assure proper equipment startup and subsequent bearing maintenance.

**Critical Speeds**

Motors shall be designed to keep torsional and rotational natural frequencies of vibration at least 25 percent above or below, preferably above, the motor rated speed ranges to avoid resonant vibration over the operating speed range of the equipment-motor unit.

**Overspeeds**

Squirrel-cage and wound rotor induction motors, except crane motors, shall be so constructed that, in an emergency of short duration, they will withstand, without mechanical injury,
overspeeds above synchronous speed in accordance with the table as listed in NEMA MG-1, Overs speeds for Motors.

**Space Heaters**

1. Space heaters shall be sized as required to maintain the motor internal temperature above the dew point when the motor is idle. Motor space heaters shall not cause winding temperatures to exceed rated limiting values nor cause thermal protective device over-temperature indication when the motor is not energized. Heaters shall be located and insulated so they do not damage motor components or finish.

2. In general, all NEMA series 180 frame size motors or larger shall have 120 volt, single-phase, 60 hertz space heaters. The voltage rating of the heaters shall be at least twice their operating voltage of 120 volts.

3. All 4,160 volt motors shall have space heaters. Space heaters rated 10 amps and less shall be suitable for operation on 120 volts, single-phase, 60 hertz. Heaters rated above 10 amps shall be suitable for operation on 208 volts, three-phase, 60 hertz. Heaters shall be located and insulated so they do not damage motor components or finish. Space heater leads shall be stranded copper cable with 600 volt insulation and shall include terminal connectors. Space heater leads shall be wired to a separate terminal housing on 4,160 volt motors.

**Nameplates**

All motor shall be shipped with nameplates attached. Nameplates shall be of stainless steel. All motor nameplate data shall conform to NEMA MG-1 requirements. The following additional nameplate data shall be included:

1. Manufacturer's identification number.
2. Frame size number.
3. Insulation system class designation.
4. Maximum ambient temperature for which the motor is designed or the temperature rise by resistance.
5. Service factor.
7. Direction of rotation and voltage sequence.
8. ABMA bearing identification number for motors furnished with rolling element bearings.
9. Type and grade of bearing lubricant, attached adjacent to lubricant filling devices.
10. For motors with connections to an external lubricant recirculating system, or with an integral forced lubrication system, required oil pressure and oil flow.
11. For motors designed for service in hazardous areas, the following applies:
   a. Location class and group designation.
   b. Maximum operating temperature value or operating temperature code number.

Complete nameplate data shall be included on the motor dimensional drawing submitted for final review.

All motor nameplates and attachment pins shall be corrosion-resistant metal.

**Environment**

Location of individual motors within the plant will determine ambient temperature, atmospheric pressure, corrosive environment, hazardous environment, and humidity to be experienced by the motors. These conditions shall be considered in the purchase specification.

**Allowable Noise**

The motor sound level shall conform to the motor driven equipment assembly overall sound level requirements. In no case shall the average no load sound pressure level (reference level 20 micropascals) produced by the motor, exceed 85 dBA free field at 1 meter for motors rated 200 horsepower and less, and at 2 meters for motors rated above 200 horsepower.

**F. 4,160 Volt Induction Motors**

**General**

This specification applies to all 4,160 volt 60 Hertz motors (indoor, outdoor, and general purpose) with nameplate ratings 250 HP and above.

Motors, junction boxes and equipment enclosures located in hazardous areas shall be furnished with enclosures certified suitable for the area classification.

The Supplier shall submit Electrical One-Line and Three-Line Diagrams and protective relay settings stamped by a California Registered Electrical Engineer.

**Design and Construction**

1. Design and construction of 4,160 volt motors shall be coordinated with the driven equipment requirements.
2. Motor power lead terminal housings shall be adequately sized to terminate the power conductors. For 4,160 volt motors, the power lead terminal housing shall also be large enough to provide working space for field fabrication of stress cones within the housing and to contain the stress cones after installation.

Separate terminal housings shall be provided for the following:
   a. Motor power leads.
   b. Motor accessory leads.
   c. Motor temperature detector leads.

All leads shall be wired into their respective terminal housings. All motor leads and their terminals shall be permanently marked in accordance with the requirements of NEMA MG-1, Part 2. Each lead marking shall be visible after taping of the terminals.

3. Motors designed to rotate in only one direction shall have the direction of rotation marked by an arrow mounted visibly on the stator frame near the terminal housings or on the nameplate, and the leads marked for phase sequence T1, T2, and T3 to correspond to the direction of rotation and supply voltage sequence.

4. All outdoor motors shall be TEFC with NEMA waterproof features or WP Type II with filter. Indoor motors in wet areas shall be fully guarded, with dripproof enclosures.

5. A rotating labyrinth shaft seal shall be furnished on the shaft extension end of the motor. Weather protected Type II enclosures shall have standard space heaters and removable, re-cleanable, impingement type air filters.

6. Squirrel-cage induction motors shall have rotors of fabricated copper alloy, cast aluminum, or fabricated aluminum alloy. Fabricated aluminum alloy shall only be used where the manufacturer has demonstrated the reliability of his design and low inertia loads.

**Insulation**

All motors shall be furnished with Class F or Class H insulation systems, provided the temperature rise is based on Class B maximum. An insulation resistance time curve corrected to 40° C for determining the polarization index for motor stator windings shall be taken immediately before making the final high potential ground test.
Each stator phase shall be tested separately to ground, with other phases grounded. Motors shall be tested at not less than 5,000 VDC. The ambient temperature, winding temperature, and relative humidity values shall be included with the recorded data. The polarization index shall not be less than 3.0. An insulation-to-ground dielectric test shall be made on the motor windings at a value of two times rated voltage plus 1,000.

**Bearings**

Horizontal motors, except motors for belted drives, shall have split sleeve bearings of oil ring type, unless required otherwise.

Sleeve bearings on horizontal motors shall be designed and located centrally with respect to running magnetic center to prevent the rotor axial thrust from being continuously applied against either end of the bearing. The motors shall be able to withstand without damage the axial thrusts developed when the motor is energized.

When sleeve bearings are not specified, horizontal motors shall have antifriction bearings. Thrust bearings for vertical motors shall be able to operate for extended periods of time at any of the thrust loadings imposed by the specific piece of driven equipment during starting and normal operation, without damage to the bearings, the motor frame, or other motor parts.

Motors furnished with spherical roller thrust bearings shall also be furnished with ball or deep groove radial guide bearings. The guide bearings shall be locked to the shaft so that the guide bearing will take upward thrust and to assure that the thrust bearing is always loaded. If spring loading is furnished, the guide bearing shall not be preloaded during normal operation.

Bearing lubricants shall contain a corrosion inhibitor. The type and grade of lubricant shall be indicated on a nameplate attachment to the motor frame or end shield adjacent to the lubricant filling device.

Insulation shall be provided on bearing temperature detectors and on oil piping connections when required to prevent circulation of shaft current through bearings.

Bearings and bearing housings shall be designed to permit disassembly in the field for inspection of the bearings or removal of the rotor.
Temperature Detectors

1. **Bearings** - One Type E thermocouple per motor bearing, complete with detector head and holder assemblies as required, shall be furnished. Thermocouple lead wire insulation shall be color coded with standard colors to represent the thermocouple metals.

2. **Windings** - Two resistance platinum temperature detectors (RTDs) per winding shall be furnished, installed, and wired complete. Temperature detectors shall normally be 3 wire type RTDs.

3. **Terminal Blocks** - Temperature detectors shall be ungrounded, with detector leads wired to terminal blocks furnished in the accessory terminal housings. A grounding terminal for each temperature detector shall be included with the detector lead terminals. The grounding terminals shall be wired internally to a common ground connection in each terminal box. The internal wiring shall be removable.

G. 460 Volt Induction Motors

**General**

This specification applies to all 460 volt 60 Hertz motors (indoor, outdoor, and general purpose) with nameplate ratings between 0.5 Hp and 200 Hp.

Motors, junction boxes and equipment enclosures located in hazardous areas shall be furnished with enclosures certified suitable for the area classification.

The Supplier shall submit Electrical One-Line and Three-Line Diagrams and protective relay settings stamped by a California Registered Electrical Engineer.

**Design and Construction**

1. Design and construction of each 460 volt integral horsepower motor shall be coordinated with the driven equipment requirements and the requirements of NEMA MG-1 Standards.

2. Motors shall have TEFC enclosures unless they are located in hazardous areas. Motors for service in hazardous areas shall be individually considered for types of enclosure depending upon the classification, group, and division of the hazardous area in question.

3. Motor power lead terminal housing shall be sized to allow for ease in terminating the incoming power cable. Space heater leads shall also be in this terminal housing.
Bearing

The motor manufacturer shall determine the type of bearings to be furnished based upon the load, speed, and thrust conditions of the driven equipment. Anti-friction bearings shall be grease lubricated, designed to minimize the likelihood of over lubricating, sealed to protect against dust entry and loss of lubricant, and self-lubricating and regreaseable.

All bearing mountings shall be designed to prevent the entrance of lubricant into the motor enclosure of dirt into the bearings. Grease fittings for lubrication shall be arranged for safe, easy addition of lubricant from the outside of the motor while the motor is in service. Bearings and bearing housings shall be designed to permit disassembly in the field for inspection of the bearings or removal of the rotor.

Horizontal motor bearings shall have an L-10 rating life when operating under the load, speed, and thrust requirements of the driven equipment of not less than 50,000 hours for direct coupled or gear driven service and not less than 20,000 hours for belt or chain connected service. Vertical motor bearings shall have an L-10 rating life of not less than 50,000 hours.

H. Fractional Horsepower Motors

General

This specification applies to all motors (indoor, outdoor, and general purpose) with nameplate ratings below 0.5 Hp.

Motors, junction boxes and equipment enclosures located in hazardous areas shall be furnished with enclosures certified suitable for the area classification.

The Supplier shall submit Electrical One-Line and Three-Line Diagrams and protective relay settings stamped by a California Registered Electrical Engineer.

Rating, Design, and Construction

1. Type, design, and construction of each general, special, and definite purpose fractional horsepower motor shall be coordinated with the driven equipment requirements and will be in accordance with the requirements of NEMA MG-1.

2. Motors shall be provided with Class B or Class F insulation classification.
3. Motors shall be totally enclosed (TEFC or TENV) unless specified otherwise. Motors for service in hazardous areas shall be individually considered for type of enclosure depending upon the classification, group, and division of the hazardous area in question.

4. All bearings shall be self-lubricating, shall have provisions for relubrication, and shall be designed to operate in any position or at any angle.

I. Direct Current Motors

General

This specification applies to all direct current motors (indoor, outdoor, and general purpose). Motors, junction boxes and equipment enclosures located in hazardous areas shall be furnished with enclosures certified suitable for the area classification.

Design and Construction

All direct current machines shall be designed and constructed for continuous operation and in accordance with the requirements of NEMA MG-1.

Motors for operation on an ac rectified power source shall be rated, designed, and factory tested in accordance with NEMA MG-1 requirements for the form factor of the rectified power source. The rated form factor shall be obtained from the rectifier manufacturer.

Service Factor

For motors furnished with a service factor greater than 1.0, the motor nameplate shall indicate the horsepower rating at 1.0 service factor, and the service factor. The motor shall be designed to provide a continuous horsepower capacity equal to the rated horsepower at 1.0 service factor multiplied by the specified motor service factor without exceeding the total limiting temperature rise stated in these specifications for the insulation system and enclosure specified.

Insulation and Windings

All insulated windings shall have a minimum of Class B non-hygroscopic, or acceptable equivalent, sealed insulation system. All insulated winding conductors shall be copper.
Armatures and Brushes

Commutator bars shall be fabricated of silver bearing copper, free of cracks, pits, slivers, and similar imperfections. Bars shall be insulated with mica segments, assembled and seasoned as a unit, properly undercut, and securely mounted on the shaft. The area in back of the armature commutator risers shall be packed with an epoxy compound and cured. Coil end connections to the risers shall be soldered with high temperature pure tin solder, brazed, or tungsten inert gas welded.

Brush holders shall be fabricated of nonferrous materials, located accurately, and mounted securely to position the brushes on the armature. Brush holder pockets shall be sized to permit proper movement of the brushes. Means for adjusting brush pressures and brush assembly ring shall be provided. A stop device shall be furnished to prevent the brush terminal from scoring the commutator.

Brushes shall be carbon type and shall be furnished with insulated shunts sized for the rated brush current.

Successful commutation in accordance with NEMA standards shall be maintained over the load range encountered in service.

Extra large openings shall be provided for ease of inspection, pressure adjustment and replacement of brushes, and for brush assembly ring adjustment.

J. Motor Operators

General

The following requirements are applicable to all electric operators required for non-modulating motor operators.

Rating, Design, and Construction

Motors shall be designed for high torque, reversing service in a 40° C ambient temperature. Motors shall have Class F insulation classification. Requirements of NEMA MG-1 and MG-2 shall apply.

Motors shall be rated 460 volts, 3-phase, 60 hertz unless otherwise indicated. The dc motors shall be rated 120 volts dc to operate from a nominal 125 volt battery.
The motor time rating for normal opening and closing service shall be not less than whichever of the following is greatest:

- As required for three successive open-close operations.
- As required for the service.
- Fifteen minutes at maximum driven equipment torque in a 50° C (122° F) ambient temperature.

Sufficient torque shall be provided to operate against system torque at 90 percent nominal voltage for ac motors and at 85 percent nominal voltage for dc motors.

Motors shall be provided with NEMA 4 enclosures unless specified otherwise.

Motors for service in hazardous areas shall be individually considered for type of enclosure depending upon the classification, group, and division of the hazardous area in question.

**Bearings**

Double-shielded, grease prelubricated, regreaseable antifriction bearings shall be furnished. Motor leads shall be terminated in the limit switch compartment.

**Space Heaters**

All motor operators 7-1/2 horsepower and larger shall be supplied with 120 volt ac, single-phase space heaters. Space heater leads shall be terminated in the limit switch compartment.

**K. Engineering Deliverables**

In accordance with Attachment 6.4, Proposer shall submit documentation required per Attachment 6.4 and information Listed below:

**Included with Proposal**

1. Motor data sheets including noise data.
2. Recommended spare parts list with pricing.
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During Contract Negotiations
2. Conformed motor data sheets.
4. Motor noise data.

LNTP Phase
1. Motor List in accordance with Attachment 6.4.

FNTP Phase
1. Motor outline drawings (fully dimensioned). Motor dimensional drawings shall include, but not be limited to, the following information:
   a. Complete nameplate data.
   b. Rotor weight and motor total weight.
   c. Special requirements, if any, for provisions by others for control of shaft end float during starting, operating, or stopping of the motor.
2. Equipment Preservation and Storage Instructions.

“As-Built”
1. All motor test reports.
2. As-Built drawings.
3. Motor parts list with assembly drawings.
4. Final Spare Parts List.
5. Startup and Commissioning Manuals.
7. Motor Operating and Maintenance Manuals
Equipment

A. Introduction

This Attachment provides the requirements for supply of mechanical equipment within the scope of the RFP. These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes and standards, as well as good practice.

Each item of equipment offered by Proposer shall be suitable for the intended purpose and designed and fabricated in complete accordance with the standards referenced herein.

Each item of equipment offered by Proposer shall be documented by an equipment data sheet, completely filled out. Data sheets shall substantially conform to the examples provided at the end of this Attachment 6.7.

Equipment shall be designed to operate at a minimum ambient condition of 32 °F. Freeze protection is not required. Equipment shall be designed to operate at a maximum ambient condition of 110 °F.

B. Scope of Work

These requirements apply to all mechanical components provided by the Proposer exclusive of major equipment specified elsewhere in this RFP. This includes all components provided as part of equipment skids or provided as loose items within the overall scope of the RFP.

C. References

All mechanical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

ANSI B73.1 Horizontal End Suction Centrifugal Pumps
D. Pressure Vessels

Pressure vessels shall be designed in accordance with ASME BPVC Section VIII. Vessels shall be code stamped with all pertinent information legibly presented using the English language.

Submittals

In accordance with Attachment 6.4, Proposer shall submit:

1. Outline drawings in accordance with Attachment 6.4 Section D.4.

2. Proposer shall show on his drawings all the shell openings including nozzles, couplings, manholes, and skirt openings.

3. Fabrication drawings in accordance with Attachment 6.4 Section D.6., fabrication specifications including qualified welding procedures, and all Proposer’s standard drawings to be used in the fabrication and construction of the vessel. Drawings shall be
submitted to the purchaser for review before the start of fabrication. Detail drawings must show:

a. Nozzle reinforcement  
b. Equipment support details  
c. Weld details  
d. Completely dimensioned details of appurtenances, internals and their supports.

4. After fabrication Proposer shall provide final drawings and documents. Final drawings shall all be certified. Final drawings include:

a. Outline drawings  
b. Fabrication Drawings  
c. Calculations covering design of pressure data  
d. Calculations covering supports and their effect on the shell  
e. Calculations covering external loadings of wind, earthquake and pipe reactions  
f. Welding and weld overlay procedures (ASME Section IX or equal)  
g. Manufacturer's data report as required by ASME BPVC Section VIII

**Corrosion Protection**

1. The corrosion allowance for each carbon steel vessel shall be determined by its intended service with a minimum of 1/8” and shall be added to all pressure parts and non-removable internals on all surfaces exposed to the flowing medium, except such parts or surfaces which are fabricated of or surface protected with corrosion resistant material.

2. All pressure vessels exposed to untreated landfill gas shall be fabricated from appropriate corrosion resistant materials or be provided with a corrosion resistant liner attached to the pressure shell or be fabricated using integrally clad plate with 10% nominal cladding thickness.

3. All finished openings 10” nominal diameter and less located in lined or clad vessels or sections shall be provided with sleeve type liners. Flange faces and cover plates shall be alloy protected to within 1/4” of the outside diameter of the gasket surface.
E. Shell & Tube Heat Exchangers

All exchangers shall be designed and fabricated in accordance with TEMA Standard, Class "C", and ASME Section VIII, latest edition, and comply with all local codes and regulations.

Submittals

In accordance with Attachment 6.4, Proposer shall submit:

1. Outline drawings of each exchanger unit in accordance with Attachment 6.4 Section D.4. The drawings shall also include the following additional information:
   a. The dimensions and location of supports and the stacking arrangement.
   b. The tube-bundle removal clearance.
   c. Weight of the tube bundle.
   d. The specified corrosion allowance for each side of the exchanger.

2. After the exchanger is fabricated, the Proposer shall furnish the purchaser with the specified number of copies of the following:
   b. Manufacturer's data report (see Form U-1, Section VIII, Division 1 of the ASME Code)
   c. Nameplate rubbings
   d. Certified mill test reports or material certifications for all pressure parts
   e. Temperature-recording charts made during post weld heat treatment

Design

1. The heat exchanger unit shall be designed to operate at a maximum ambient condition of 110 °F and to meet the entire specified range of operating conditions as shown in Attachment 3.
2. The mechanical design of the heat exchanger shall be based on the assumption that pressure and temperature act on one side only. Designs based on the differential pressure acting simultaneously are not acceptable.

3. The heat transfer area and heat transfer coefficients shall be based upon the outside effective tube surface.

4. Minimum design temperature shall be 25 °F above maximum sustained operating temperature rounded up to the next 5 °F increment.

5. Minimum design pressure shall be the maximum sustained operating pressure plus 25 psi rounded up to the next 10 psi increment. In no case shall the design pressure be less than 75 psi.

Corrosion Protection

All carbon steel and low chrome pressure parts are to have a minimum corrosion allowance of 1/8 inch. The data sheet shall indicate when greater corrosion allowance is required. The specified corrosion allowance shall apply to all parts except the tubes.

F. Air-cooled Heat Exchangers

All exchangers shall comply with API Standard 661.

Submittals

In accordance with Attachment 6.4, Proposer shall submit:

1. Outline drawings for each air-cooled heat exchanger unit in accordance with Attachment 6.4 Section D.4. The drawings shall also include the following additional information:
   a. Dimensions and locations of supports, including size of bolts.
   b. Drive mounting details.
   c. Weights of the tube bundle, the exchanger unit empty and full of water, and the heaviest component or combination of components intended by the vendor to be handled in a single lift.
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d. Column loads (tube bundles empty and full of water).

2. After the exchanger is fabricated, the Proposer shall furnish the purchaser with the following documents:
   a. "As-Built" specification sheet, including material specification and grade for all pressure parts.
   b. Manufacturer's data report (Form U-1A, Section VIII, Division 1 of the ASME Code).
   c. Certified material test reports for all pressure parts.
   d. Fan and hub data (including shaft bore and keyway dimensions and coupling and sheave data).
   e. Installation, operation and maintenance instructions, including the type of bearing lubrication furnished.
   f. Certified parts list.
   g. Certified noise data sheet for the air-cooled heat exchanger with fans operating at rated speed and design conditions.
   h. Fan characteristic performance curve, showing the operating point and brake horsepower (kilowatts).

Design

1. Fouling factors are net. Tube side values shall be increased by ratio of outside to inside surfaces.
2. Air-cooled heat exchangers and radiators shall be designed for 110% of the design thermal duty.
3. Headers shall be of the plug type.
4. Fan selection at design conditions shall be such that at constant speed, the fan is capable of providing, by an increase in blade angle, a 10 percent increase in air flow with a corresponding pressure increase. Fans shall be of the axial-flow type.
5. Fans shall be sized so that the area occupied by the fan is a minimum of 40 percent of the bundle face area served by that fan.
6. Fan tip speed shall not exceed 10,000 feet per minute except that direct-driven fan tip speed shall not exceed 16,000 feet per minute with further limitations as required to meet the specified noise level objective.

7. Electric motor drivers shall have sufficient rated horsepower to drive the fans under the worst case combination of ambient conditions and fan blade pitch, with a remaining service factor of 1.15.

8. Proposer shall provide a vibration switch on each fan to shut off motor in case of severe vibration. Vibration cutout switches shall be of the manual externally reset type not requiring disassembly of the switch for resetting and shall have sensitivity adjustment.

9. All louvers shall be manually controlled.

10. The Proposer shall provide a plenum geometry that is properly coordinated with the ratio of the fan to bundle face area to assure uniform air flow across the tube bundles.

G. Centrifugal Pumps

All centrifugal pumps, horizontal or vertical in-line design, shall be designed and fabricated in accordance with ANSI B73.1 or B73.2 as appropriate. Pumps may also be designed and fabricated in accordance with API 610.

The vendor shall furnish each pump complete with driver mounted and aligned on a common baseplate, complete with coupling and guard. Pumps and drivers shall be shipped as integral units. Each pump shall be furnished complete with all required auxiliary piping such as seal flush, seal cooling and water cooling for pump, gear and driver.

Submittals

In accordance with Attachment 6.4, Proposer shall submit:

1. Outline drawings of each pump in accordance with Attachment 6.4 Section D.4.
2. Cross sectional drawings
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 6.7 – Mechanical Equipment

3. Allowable nozzle loadings
4. Completed data sheets
5. Manufacturer’s performance curves
6. Manufacturer’s noise data

Design

1. All pumps shall be suitable for continuous operation from minimum flow to pump run-out flow without vibration, cavitation and without undue noise under all operating conditions.
2. Pump design capacities at design head shall be determined based on an impeller diameter having at least 10% less capacity than the maximum unless otherwise specified.
3. The NPSH required (NPSHR) by the proposed pumps shall be applicable over the range of operation specified on the pump data sheets. NPSHR quoted, for any pump shall not exceed 25 feet.
4. All pumps shall be selected so that design conditions are within 10 percentage points of the pump maximum efficiency. Pump capacity at design conditions shall not be greater that at the point of maximum efficiency.
5. The head curve shall rise continuously from cut-off to shut-off. Shutoff head shall be between 20 and 60 percent greater than the head at design conditions.
6. Pump design shall be based on full voltage drive motor starting.
7. Horizontal ANSI pumps shall be furnished with a stainless steel drip pan under the pump. The drip pan shall be sloped to low point with tapped connections for drain pipe. Adequate access around the pump base plate shall be provided for grouting.
8. Lubricated anti-friction bearings with a minimum B-10 rating of 50,000 hours shall be provided.
9. Flexible couplings, suitable for the service intended, shall be provided for horizontal pumps. Rigid adjustable couplings shall be provided for vertical pumps. Spacer type couplings shall be provided when required to facilitate seal replacement, disassembly or maintenance. A CAL-OSHA approved coupling guard shall be provided for personnel protection.
10. All motor drivers shall be furnished in accordance with the Attachments 6.6 or 6.7. Motors 200 HP and less shall be furnished per Attachment 6.6.

H. Rotary Pumps

All rotary positive displacement pumps shall be designed and fabricated in accordance with ANSI/HI 3.1-3.5-2008.

The vendor shall furnish each pump complete with driver mounted and aligned on a common baseplate, complete with coupling and guard. Pumps and drivers shall be shipped as integral units. Each pump shall be furnished complete with all required auxiliary piping such as seal flush, seal cooling and water cooling for pump, gear and driver.

Submittals

In accordance with Attachment 6.4, Proposer shall submit:

1. Outline drawings of each pump in accordance with Attachment 6.4 Section D.4.
2. Cross sectional drawings
3. Details of pump supports including baseplate, bracing, "V" belt drive guard, shaft support and motor mountings.
4. Allowable nozzle loadings
5. Completed data sheets
7. Manufacturer’s performance curves
8. Manufacturer’s noise data

Design

1. Pump design capacity shall be determined based on a maximum of 420 RPM.
2. Pumps supplied under this specification shall be capable of both intermittent (start-stop) and continuous operation under the operating conditions specified.
3. Pumps shall be furnished with a totally guarded "V" belt drive, anti-friction bearing pillow block shaft support and motor slide rails or direct gear drive.
4. Pump design shall be based on full voltage drive motor starting.
5. Lubricated anti-friction bearings with a minimum B-10 rating of 15,000 hours shall be provided.
6. All motor drivers shall be furnished in accordance with the Attachments 6.6 or 6.7. Motors 200 HP and less shall be furnished per Attachment 6.6.

I. Technical Requirements

Painting

All raw surfaces of non-stainless ferrous materials shall be protected by one coat of rust resistant undercoat. EPC Contractor shall provide final coat.

Inspection and Testing

1. The responsibility for inspections rests with the manufacturer; however, the purchaser reserves the right to inspect at any time during fabrication and witness all tests. A visual inspection shall be made to insure that there are no gouges, defective welds, undercutting, and other evidences of poor workmanship.

2. All parts of the equipment and the material thereof shall be inspected by inspectors qualified in accordance with the requirements of the applicable codes, or other mandatory rules and regulations.

Safety

All moving parts shall be enclosed or covered with guard (grating or solid) to prevent personnel contact with any moving part.
Lube Oil Systems

Lubricating and control oil systems shall only use butt welded fittings or tubing. All oil systems will require a containment to limit the spread of any spills. Systems containing 500 gallons or more will also require fire detection and suppression with a consequent increase in the size of the containment. GWP uses Mobil products. Bidder shall specify Mobil equivalents for all lubricants.

Power Island Major Equipment Cooling

The following methods shall be used to cool the power island equipment thermal loads.

1. The reciprocating engine generator auxiliaries (jacket water cooling, lube oil cooling, generator cooling) shall be air-cooled.
2. The combustion turbine generator auxiliaries (lube oil cooling, generator cooling) shall be air-cooled.
3. Chillers for the combustion turbine generators shall not be water cooled. An air-cooled refrigerant chiller may be used.
4. Fuel gas compressors shall be air-cooled.

Condensate from the combustion inlet air cooling (condensate off the chiller coils or excess water from the evaporative cooler media) shall be conducted to the unit drain system.

J. Engineering Deliverables

In accordance with Attachment 6.4, Proposer shall submit documentation required per Attachment 6.4 and information listed below:
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 6.7 – Mechanical Equipment

Included with Proposal
1. Typical equipment arrangement, outline, and elevation drawings.
2. Equipment description narrative.
3. Equipment weather and/or noise enclosure description.
4. Equipment data sheets
5. Recommended spare parts list with pricing.

During Negotiations
1. Conformed Equipment List in accordance with Attachment 6.4.
2. Conformed equipment description and specification as provided in Attachment 2.10.
3. Conformed equipment data sheets.

LNTP Phase
1. Equipment performance curves.
2. Equipment noise data.

FNTP Phase
1. Certified dimensioned outline and fabrication drawings of all equipment and subsystems provided by the PIME Contractor.
2. Anchor Bolt and Sole Plate data.
3. Equipment Preservation and Storage Instructions.
4. Rigging, Erection, and Commissioning Instructions.
5. Pressure vessel calculations.
7. Equipment including pump and fan performance curves.

“As-Built”
1. All Code required documentation for pressure vessels and heat exchangers.
2. All equipment test reports.
3. Pump performance curves and test data.
4. As-Built drawings.
5. Equipment parts list with assembly drawings.
6. Final Spare Parts List.
7. Startup and Commissioning Manuals.
8. Technical and Service Bulletins.
9. Equipment Operating and Maintenance Manuals
### PRESSURE VESSEL DATA SHEET

**NOTE:** VENDOR TO COMPLETE ALL INFORMATION

**TYPE:**

**ITEM NO.:**

**PROJECT:**

**SPECIFICATION NO.:**

**DATE:**

**REVISION:**

**FOR:**

**SITE:**

**SERVICE:** GEOThERMAL CONDENSATE

**BY:** JRB

### DESIGN DATA

<table>
<thead>
<tr>
<th>OPERATING PRESSURE</th>
<th>PSI @ °F</th>
</tr>
</thead>
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<tr>
<td>DESIGN PRESSURE (INT)</td>
<td>PSI @ °F</td>
</tr>
<tr>
<td>DESIGN PRESSURE (EXT)</td>
<td>PSI @ °F</td>
</tr>
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</table>

**CORROSION ALLOWANCE:**

**JOINT EFFICIENCY:**

**SHELL:**

**HEAD:**

- 100% STRESS RELIEVE
- X-RAY
- RADIOGRAPH

### WIND LOAD:

### SEISMIC LOAD:

**ANCHORAGE LOADS SHALL INCLUDE VERTICAL ACCELERATION AND OVERALL STRENGTH FACTOR**

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<tr>
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<td>INT PIPE</td>
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<td>EXT BOLTS</td>
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<td>INT BOLTS</td>
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<td>DAVIT</td>
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<td>GASKETS</td>
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<td>FIREPROOFING: THICKNESS</td>
<td>SQ FT.</td>
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<td>INSULATION: THICKNESS</td>
<td>SQ FT.</td>
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<td>SURFACE PREPARATION</td>
<td>SEE ATTACHED SPECIFICATION</td>
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<tr>
<td>PAINTING</td>
<td>SEE ATTACHED SPECIFICATION</td>
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### NOZZLES

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**REMARKS:** * Vendor Data

### NOTES

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<th>OPER. WT.</th>
<th>TEST WT</th>
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</thead>
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---
## HEAT EXCHANGER SPECIFICATION

**JOB NO.**  SHEET  1 OF 1

**CUSTOMER**

**PLANT**

**LOCATION**

**SERVICE**

**SIZE TYPE** CONNECTED IN SERIES/PARALLEL

**SURFACE PER SHELL NO. OF SHELLS** TOTAL SURFACE

### PERFORMANCE

<table>
<thead>
<tr>
<th>SHELL SIDE</th>
<th>TUBE SIDE</th>
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<tbody>
<tr>
<td><strong>FLUID CIRCULATED</strong></td>
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<tr>
<td>TOTAL FLUID ENTERING</td>
<td>LB/HR</td>
</tr>
<tr>
<td>VAPOR (IN/OUT)</td>
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</tr>
<tr>
<td>LIQUID</td>
<td>LB/HR</td>
</tr>
<tr>
<td>STEAM</td>
<td>LB/HR</td>
</tr>
<tr>
<td>(1) NON-CONDENSABLES</td>
<td>LB/HR</td>
</tr>
<tr>
<td>STEAM CONDENSED</td>
<td>LB/HR</td>
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<tr>
<td>GRAVITY-LIQUID @ TEMP.</td>
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<tr>
<td>VISCOSITY-LIQUID @ TEMP.</td>
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<tr>
<td>MOLECULAR WEIGHT-VAPORS</td>
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<tr>
<td>SPECIFIC HEAT-LIQUIDS</td>
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</tr>
<tr>
<td>LATENT HEAT-VAPORS</td>
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</tr>
<tr>
<td>TEMPERATURE IN</td>
<td></td>
</tr>
<tr>
<td>TEMPERATURE OUT</td>
<td></td>
</tr>
<tr>
<td>OPERATING PRESSURE (IN/OUT)</td>
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</tr>
<tr>
<td>NUMBER OF PASSES PER SHELL</td>
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</tr>
<tr>
<td>VELOCITY</td>
<td></td>
</tr>
<tr>
<td>PRESSURE DROP (ALLOW/CALC.)</td>
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</tr>
<tr>
<td>FOULING FACTOR (MIN.)</td>
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<td>HEAT EXCHANGED - B.T.U./HR.</td>
<td>M.T.D. (CORRECTED)</td>
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<tr>
<td>TRANSFER RATE - SERVICE</td>
<td>CLEAN</td>
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</table>

### CONSTRUCTION

| **DESIGN PRESSURE** | |
| **TEST PRESSURE** | |
| **DESIGN TEMPERATURE/MDMT** | |
| **TUBES** NO. O.D. THK. LENGTH PITCH | |
| **TUBE TYPE** MATERIAL | |
| **SHELL MATERIAL I.D. O.D. THICKNESS** | |
| **SHELL COVER** FLOATING HEAD COVER | |
| **WATER BOX** CHANNEL COVER | |
| **TUBE SHEET - STATIONARY** TUBE SHEET - FLOATING | |
| **BAFFLES - CROSS** TYPE THICKNESS SPACING | |
| **BAFFLE - LONG** TYPE Thickness | |
| **TUBE TO TUBE SHEET** IMPINGEMENT PROTECT YES NO | |
| **GASKETS** Water Box Shell METAL JACKETED | |
| **CONNECTIONS - SHELL-IN** OUT SERIES | |
| **CHANNEL-IN OUT** SERIES | |
| **CORROSION ALLOWANCE-SHELL SIDE** TUBE SIDE | |
| **CODE REQUIREMENTS** TEMA CLASS | |
| **WEIGHTS - EACH SHELL** BUNDLE FULL OF WATER SHELL & TUBE SIDES | |

**REMARKS**

Approved by: Process Project Engineer/Project Manager
## Air-Cooled Heat Exchanger Specification

### Performance Data - Tube Side

<table>
<thead>
<tr>
<th>Fluid circulated</th>
<th>Total fluid entering</th>
<th>Density</th>
<th>Specific heat</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>IN LB/HR</td>
<td>OUT LB/HR</td>
<td>BTU/LB-°F</td>
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<table>
<thead>
<tr>
<th>Temperature</th>
<th>°F</th>
<th>Pour/freeze point</th>
<th>°F</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Vapor</th>
<th>LB/HR (MW)</th>
<th>Bubble/dew point</th>
<th>°F</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Noncondensibles</th>
<th>LB/HR (MW)</th>
<th>Latent heat</th>
<th>BTU/LB</th>
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</table>

<table>
<thead>
<tr>
<th>Steam</th>
<th>LB/HR</th>
<th>Pressure</th>
<th>PSIA</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Water</th>
<th>LB/HR</th>
<th>Pressure drop</th>
<th>PSI</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Viscosity</th>
<th>(LIQ/VAP) Cp</th>
<th>/</th>
<th>Fouling resistance, inside</th>
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### Performance Data - Air Side

<table>
<thead>
<tr>
<th>Air quantity</th>
<th>SCFM</th>
<th>Value</th>
<th>LB/HR</th>
<th>Altitude</th>
<th>FT.</th>
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<tbody>
<tr>
<td>Air quantity/fan</td>
<td>ACFM</td>
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<td></td>
<td>Temperature IN</td>
<td>°F</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Temperature OUT</td>
<td>°F</td>
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</table>

### Design - Materials - Construction

<table>
<thead>
<tr>
<th>Tube bundle</th>
<th>Header</th>
<th>Tubs</th>
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</thead>
<tbody>
<tr>
<td>Size</td>
<td>Type</td>
<td>Material</td>
</tr>
<tr>
<td>No.</td>
<td>Material</td>
<td>O.D.</td>
</tr>
<tr>
<td>Arrangement</td>
<td>No. passes</td>
<td>Slope</td>
</tr>
<tr>
<td>Tube rows</td>
<td>Plug type</td>
<td>Mat'l</td>
</tr>
<tr>
<td>Rows/pass</td>
<td>Gasket Mat'l</td>
<td>Fin type</td>
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<tr>
<td>Inlet nozzle</td>
<td>O.D.</td>
<td>IN.</td>
</tr>
<tr>
<td>Outlet nozzle</td>
<td>NO./IN.</td>
<td>Rating &amp; facing</td>
</tr>
<tr>
<td>Vent/drain</td>
<td>Radiograph</td>
<td>Heat trt.</td>
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<td>T/U/PI</td>
<td>Tube hole grooving</td>
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### Mechanical Equipment

<table>
<thead>
<tr>
<th>Fan</th>
<th>Mfg./model</th>
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<th>Speed reducer</th>
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<tr>
<td>No./bay</td>
<td>RPM</td>
<td>S.F.</td>
<td>Insul.</td>
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<tr>
<td>Diam.</td>
<td>FT.</td>
<td>Blades</td>
<td>Frame</td>
<td>HP</td>
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<tr>
<td>Pitch</td>
<td>Angle</td>
<td>RPM</td>
<td>Encl.</td>
<td>Support</td>
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<tr>
<td>Mat'l</td>
<td>Hub</td>
<td>Duty</td>
<td>V&amp;D</td>
<td>Vib. switch</td>
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<tr>
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<td>DB</td>
<td>V/ªC</td>
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### Structure

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<th>Notes</th>
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<tr>
<td>Inlet header</td>
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## Design Pressure

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<thead>
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<th>Test pressure</th>
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<th>300/60 °F</th>
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## Mechanical Equipment

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### Finish

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## Plot Area

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<tr>
<th>Weight/bundle</th>
<th>Total shipping weight</th>
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Approved by: Process Project Engineer/Project Manager
### CENTRIFUGAL PUMP SPECIFICATION

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<tr>
<th>OPERATING CONDITIONS</th>
<th>PUMP SPECIFICATIONS</th>
<th>MATERIALS OF CONSTRUCTION</th>
<th>CONSTRUCTION FEATURES</th>
<th>DRIVER DATA - MOTOR</th>
<th>DRIVER DATA - TURBINE</th>
<th>NET WEIGHT</th>
<th>SHIPPING WEIGHT</th>
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<td>PUMP, BASE, CPLG.</td>
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<td>LB.</td>
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<td>RISE</td>
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### Special Instructions or Features

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## ROTARY PUMP SPECIFICATION

<table>
<thead>
<tr>
<th>Customer Item No.</th>
<th>Plant No. Required</th>
<th>Location Motor Drive</th>
<th>Turbine Drive</th>
<th>Job No.</th>
<th>Item No.</th>
<th>Rev. No.</th>
<th>Date</th>
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### OPERATING CONDITIONS

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<tr>
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<th>@ °F</th>
<th>Disch. Pressure</th>
<th>P.S.I.G.</th>
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<tbody>
<tr>
<td>Capacity, At Temp., Normal</td>
<td>GPM</td>
<td>Design</td>
<td>GPM</td>
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<tr>
<td>Suct. Pressure</td>
<td>P.S.I.G.</td>
<td>Diff. Pressure</td>
<td>P.S.I.</td>
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<td>Atm. Pr.</td>
<td>P.S.I.A.</td>
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<tr>
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<td>Corr. Material</td>
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<tr>
<td>H Required</td>
<td>FT. (Water)</td>
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<tr>
<td>Erosive Material</td>
<td>%</td>
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<tr>
<th>Hydraulic H.P.</th>
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### PUMP SPECIFICATIONS

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<tr>
<th>Manufacturer</th>
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<td>Size &amp; Type</td>
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<tr>
<td>Performance Curve</td>
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<td>R.P.M.</td>
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<tr>
<td>BHP @ Design</td>
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<tr>
<td>Recommended Driver HP.</td>
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### MATERIALS OF CONSTRUCTION

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<thead>
<tr>
<th>Outer Case</th>
<th>Liner</th>
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<tbody>
<tr>
<td>Side Plate</td>
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</tr>
<tr>
<td>Rotor Or Gears</td>
<td></td>
</tr>
<tr>
<td>Rotating Vane</td>
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<tr>
<td>Idler</td>
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<tr>
<td>Timing Gear</td>
<td></td>
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<tr>
<td>Shaft &amp; Sleeves</td>
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<tr>
<td>Stuffing Box</td>
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<td>Seal</td>
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### CONSTRUCTION FEATURES

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<tr>
<th>Case Split:</th>
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<tr>
<td>Support:</td>
<td>C/L</td>
<td>Foot</td>
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<td>Gear:</td>
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<td>Mechanical Seal:</td>
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<tr>
<td>Model</td>
<td>Balanced</td>
<td>Unbalanced</td>
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<td>Packing:</td>
<td>No. Rings</td>
<td>Size</td>
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<tr>
<td>Relief Valve:</td>
<td>Internal</td>
<td>External</td>
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<td>Rotor Overhung:</td>
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<td>No</td>
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<tr>
<td>Flexible Coupling:</td>
<td>Make</td>
<td>Type</td>
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<td>Bearings:</td>
<td>Thrust</td>
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### DRIVER DATA - MOTOR

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<tr>
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<td>Phase</td>
<td>Cycle</td>
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<td>S.F.</td>
<td>Insul.</td>
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### DRIVER DATA - TURBINE

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<tr>
<td>Type</td>
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<td>Water Rate @ Design Load</td>
<td>LBS/HR.BHP.</td>
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<td>Steam Inlet</td>
<td>P.S.I.G.</td>
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<tr>
<td>Steam Exhaust</td>
<td>P.S.I.G.</td>
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### NET WEIGHT

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<tr>
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<th>LB.</th>
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</thead>
<tbody>
<tr>
<td>Motor</td>
<td>LB.</td>
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### SPECIAL INSTRUCTIONS OR FEATURES

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<th>Special Instructions or Features</th>
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### SHIPPING WEIGHT

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<tbody>
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<td>Motor</td>
<td>LB.</td>
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INSTRUMENTS AND CONTROLS REQUIREMENTS

A. Introduction

This Attachment provides the requirements for supply of instruments and controls within the scope of the RFP. These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes and standards, as well as good practice. The equipment offered by the Proposer shall be designed and manufactured in a manner suitable for intended operation within a load serving municipal utility.

The purpose of this document is to define the instrumentation and control design basis for design of the Scholl Canyon Landfill Power Project. It is not intended to be an all-inclusive specification but is a design standard which will ensure that the plant design and construction will meet specific goals such as high level of reliability, quality construction, plant maintainability, safety, efficiency, and operational flexibility.

B. Scope

These requirements apply to all instruments and controls designed and/or provided by the Proposer. This includes the overall design of the control system architecture as well as all components provided as part of equipment skids or provided as loose items within the overall scope of the RFP.

Proposer shall be responsible for the design, specification, and selection of all instruments and controls shown on the P&ID’s, Single-Line Diagrams, or other definitonal drawings prepared during the LNTP Engineering phase. If instruments and controls are provided by sub-suppliers as part of ancillary systems or equipment skids, Proposer shall be responsible for insuring that they meet the requirements stated herein and that they are compatible with and are correctly integrated into the overall plant control system.

C. References

All components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:
D. Control System Architecture

The control system architecture is described in RPF Figure 6.1 (drawing 6774-I-101). The Plant Control System (PCS) consists of several components. There will be Human-Machine Interface (HMI) terminals at the Scholl Canyon control room as well as a backup at a remote location. Communications between Scholl Canyon and a remote location will be over fiber optic lines and is not a part of this project.

Within the Scholl Canyon site the control of the major equipment systems (such as the engine generators) will be accomplished by local dedicated PLC’s. The balance of plant will be controlled by a central controller (PLC or multi-function controller (MFC)). Other components of the control system include a sequence-of-events recorder (SER), alarm printer, report printer, data historian, I/O cabinets, engineering work station, etc. all communicating on a 10/100 BASE-T Ethernet loop.

Communication between the process controllers (central or local) and the field instruments (transmitters, transducers, etc.) shall be by digital signals using an appropriate fieldbus protocol. Allen-Bradley PLC’s shall use DeviceNet or ControlNet protocols as appropriate.

To the extent practical, all physical layers shall be compatible for all local control devices.
E. Operator Interface

Interaction at the Operator Interface level is used to initiate start/stop sequences, initiate automated control functions, execute manual control functions, review plant performance, view reports, monitor PCS network health, and view alarm conditions. This is the primary “window” into the PCS for the Plant Operators.

The primary PCS components making up the Operator Interface level include two Operator Workstations (OWS) each with two 32” class LCD flat screens. One OWS will be located at the Scholl Canyon plant site and the other at a remote location.

The primary method of presenting information to the operator is through the HMI monitor. The monitor screen shall display information in the form of reports, alarm summaries, trend graphs, mimic displays and other operator interface displays as required.

Interaction at the packaged control systems will primarily occur at the PCS Operator Interface level. Display of critical control parameters and alarms will be performed at the PCS Operator Interface. Likewise, manual control functions will be initiated at the PCS Operator Interface. Direct interaction with the packaged control systems, wherein operators and technicians are located at the particular system will most likely occur during times of troubleshooting.

The PCS software package shall include, as a minimum, the following screens:

1. Main Menu: identifies the main elements of the PCS software configuration and provides single function key access to them.

2. Mimic Displays: Based upon the P&IDs, and Electrical One Lines, diagrammatic representations of specific areas of plant and switchyard equipment which include continuously updated analog parameters as follows:

   a. Animated objects depicting the analog value of the parameter associated with the device as follows:
      - Objects whose colors change depending on the state of the device:
      - Text areas, which state set points.
      - Control “hotspots” which shall change the state of the associated device when selected with the mouse cursor.

3. Mimic displays shall have subordinate screens, which provide additional details of specific parts of the parent diagram. Subordinate screens shall be mimic displays or any
other standard type of screen, and shall be accessible using context defined function keys or by clicking on the device symbol.

4. **Real time Trend:** All PCS system analog and discrete variables shall be available for trending in real time in user defined time bases of increments at least as often as once per second. Real time trend screens shall be able to display a minimum of six variables at the same time with both analog and discrete variables on the same screen.

5. **Historic Trend:** Stored performance data shall be available for the creation of trend graphs. Data stored on either the I/O serves or the historian shall be accessible for plotting.

6. **Alarm/Event History:** There are tabular configured screens of logged data with a minimum of date, time, channel numbers, tag numbers, current values in engineering units, and alarm status.

7. **Help Screen:** A context sensitive help screen shall be available which shall provide information regarding use of the PCS software as it applies to the specific part of the program that is in use at the time it is called up. The help screen shall be accessible by the use of a single function key.

8. **A password keyed security system shall be part of the software package installed on all system workstations. A firewall shall be provided on all computers to protect against unauthorized access. Latest computer equipment and software shall be provided.**

An Engineering Workstation (EWS) shall be located in the server room or electrical room, as appropriate. The EWS consists of a PC based graphical interface used for monitoring and control of the plant. Changes to control setpoints, tuning constants, alarm setpoints, and security configuration shall only be supported from the EWS. From the EWS, it is possible to obtain additional network health information for each Ethernet switch by connecting to the switch using Internet Explorer. Modifications to the control system configuration shall be completed from the Engineering Workstation (EWS).

Proposer shall provide two color laser report printers. Printers shall be capable of producing 8½x11 and 11x17 size output. The report printers shall be capable of printing output from any HMI device (including OWS, EWS, Historian, SER, etc.). One report printer shall be located at the Scholl Canyon site and one at a remote location.
F. Data Acquisition

The Data Acquisition system consists of a dedicated data historian PC (HSR) and a sequence-of-events recorder (SER). The historian PC shall use Rockwell Software FactoryTalk Historian or equivalent to archive plant data at a user-selected frequency. Sufficient data storage capacity shall be provided to allow at least six months of plant data to be accessible. Data shall be archived on removable media.

Stored data shall be based upon the Historical I/O list. Not all real time PCS data values will be stored. Discrete and analog registers allocated for historical data storage shall be stored as follows:

1. Discrete data: Stored on change of state
2. Critical Analog data: Stored on 1 minute intervals
3. Other Analog data: Stored on 5 minute intervals

A sequence-of-events recorder (SER) system shall provide 1ms stamp resolution and store a minimum of 100 stamps. Appropriate software shall be provided to allow SER data to be readily retrievable from the OWS, EWS or dedicated screen.

G. Control Systems

All process controllers, central and local, shall be fully redundant. Each PLC cabinet shall utilize redundant 24VDC power supplies fed from two different sources. The sources of feed are the 120VAC UPS and the 125VDC battery back-up system.

The central balance-of-plant (BOP) controller shall be an Allen Bradley ControlLogix PLC or equal with required Inputs/Outputs (I/O), 20% spares (except analog outputs, which shall include 40% spare capacity), complete with Ethernet, ControlNet and other communication capability, within an associated control panel with termination strips, to be mounted in the environmentally controlled common electrical room.

Analog and Discrete Inputs and Outputs (I/O) shall be connected to the PLCs via individually addressable I/O cards that are interchangeable, allowing PLC to be configured with any combination of I/O required by the process. Proposer shall state the arrangement and capacities of I/O cards and racks necessary to meet the requirements of this system. All I/O cards shall be hot swappable.

1. Discrete inputs are 24VDC, 125VDC and 120 VAC, isolated.
2. All Digital outputs shall be dry relay contact rated 2 A resistive at 24 VDC, 20A at 125 VDC, or 5A at 120 VAC.

3. Analog Inputs shall have isolated, high impedance input modules and be capable of direct wiring to 4 to 20 mA DC current loops supplied from externally powered devices. HART compatible analog input cards shall be used to interface to instruments. Resolution shall be 12 bit (or better), with at least 6 points per card.

4. Analog outputs shall be isolated 4 to 20 mA DC / unipolar or bipolar up to +10 volts full scale and can be individually configurable for current or voltage, ND resolution shall be 12 bit (or better), with at least 4 points per card. HART compatible analog output cards shall be used to interface to control valves to receive the valve position via HART.

5. If required, high-speed counter modules shall be used to interface to transformer metering pulse outputs. The module shall contain both inputs and outputs to support repeating the pulse inputs to an externally connected device.

The same control loop shall not be used for both control and protection of the same process.

H. Field Instruments

In general, all field instruments or their enclosures shall be NEMA 4X rated. HART smart instruments shall be used where applicable. All electric transmitters shall have local indication. Transmitters shall also be Rosemount smart transmitters.

An identification tag showing the identifying tag number as per the data sheets shall be attached to each field instrument. As a minimum the tag shall have the instrument tag number, manufacturer name, model number.

Control Panels

In general, all control panels shall be NEMA 4X rated. Sunshades/rain shields shall be provided for all outdoor panels.

Air purge shall be provided for all outdoor panels as appropriate to protect panel components from adverse atmospheric and hazardous conditions.

Control Valves
Control valves shall be selected considering the full range of expected operation (startup, part-load operation) and not just full-load operation. Control valves shall be sized in accordance with ANSI/ASA S75.01. Control valve sizing calculations shall be submitted to GWP for review prior to purchasing. Such features such as startup control valves in addition to the main control valve shall be provided where necessary. Valve characteristic (equal percentage, linear, quick opening, etc.) shall be correctly applied to maintain control loop stability.

Control valves shall be designed to avoid damaging noise levels. Valve noise shall not exceed an SPL of 110 dBA.

All control valves (or any other remotely operated valve) shall have open and closed position switches to provide remote and local indication of valve status. Control valves shall also have continuous remote and local indication of valve position. Motor operated valves shall be position seated in the closed direction and torque seated in the open position.

**Pressure Relief Valves**

Pressure relief valves shall be selected considering all potential causes of overpressure as shown in API RP 521 Section 2.3. Proposer shall submit calculations detailing its analysis of overpressure scenarios to GWP for review prior to selecting any pressure relief valves. All pressure relief valves shall be designed and selected in accordance with ASME BPVC Section VIII UG-125 et seq. Pressure relief valve sizing calculations shall be submitted to GWP for review prior to purchasing.

Non-reclosing pressure relief devices (i.e. rupture disks) shall not be used.

**Installation**

To the extent practical, instrument transmitters will not be mounted directly on process piping or vessels. In general instrument transmitters will be mounted on 2” galvanized steel pipe stands bolted to the ground.

Root valves shall be provided for all process instruments so that the run piping does not need to be shutdown to service the instrument. Pressure gauges shall be installed with a pipe tee inline directly after the root valve. A pipe plug shall be installed in the tee. In general the root valve shall be a ¾” ball valve.

Tubing used to connect instruments to process line shall be 1/2 inch OD x 0.049-inch wall seamless 316 stainless steel for primary instruments and sampling systems. Instrument tubing fittings shall be the compression type. Swagelok fittings shall be selected for use and shall be standardized as much as practical throughout the plant.
Differential pressure (flow) instruments shall be fitted with five-valve manifolds; two-valve manifolds shall be specified for other instruments as appropriate.

Instrument installation shall be designed to correctly sense the process variable. Taps on process lines shall be located so that sensing lines do not trap air in liquid service or liquid in gas service. Taps on process lines shall be fitted with a shutoff (root or gauge valve) close to process line. Root and gauge valves shall be mainline class valves.

Instrument tubing shall be supported in both horizontal and vertical runs as necessary. Expansion loops shall be provided in tubing runs subject to high temperatures. The instrument tubing support design shall allow for movement of the main process line.

I. Engineering Deliverables

In accordance with Attachment 6.4, Proposer shall submit documentation required per Attachment 6.4 and information listed below:

Include with Proposal

1. A general description of the control system platform including:
   a. HMI hardware
   b. HMI software and programming
   c. SER hardware
   d. Data historian hardware and software
   e. Engineering workstation hardware and software
   f. Control system hardware (PLC) and software
   g. Approximate I/O count (both analog and discrete)
   h. Ethernet hardware
   i. SCADA hardware (for interconnection with remote location)
   j. Local process controller hardware and software

LNTP Phase

1. Control System Architecture drawing
2. I/O List (AI, AO, DI, DO, RTD) by subsystem/module.

FNTP Phase

1. Instrument List in accordance with Attachment 6.4
2. Binary Logic Diagram for each plant system in accordance with ANSI/ISA 5.2 including the following information:
a. Discrete input signals
b. Logic gates
c. Discrete output signals

3. The Control Narrative which shall consist of the following elements:
   a. A written description of the overall control system configuration for the plant. The intent is to provide a written description to assist plant personnel in understanding the detailed operation of the power plant sub-systems. It also provides the basis for development of the PCS control logic and operator interface performance.
   b. Process Description – A narrative supplement to the PFD’s and P&ID’s that describes the main process subsystems, major process streams, and the normal operation of the power plant.
   c. Control Philosophy – A system by system description of the plant control which includes for each system:
      i. Referenced PFD’s, P&ID’s, and PLD’s
      ii. System overview
      iii. System equipment and control instruments
      iv. Normal operation of each control loop including control parameters, setpoints, operational limits, cascade controls, process overrides, etc.
      v. Abnormal operation showing the system response to critical events such as shutdowns, process deviations, abnormal operations of other systems, and protective safety systems.
      vi. A list of system alarm and shutdown values.
      vii. A description of the HMI screens controlling the system, the meaning of the graphic elements and how they relate to the process control, and how to make changes to the system operations through the HMI.
   d. Cause-and-Effect Chart – A tabular arrangement showing the discrete inputs (alarms, shutdowns, etc.) in the table rows and the discrete outputs (results) in the columns. At each intersection of a row and column there may be an action code (i.e. open, close, activate, shutdown, energize, de-energize, etc.) given.

For each input, the equipment involved, sensing device, I/O type, tag number, description, P&ID reference, and setpoint is shown. For each output, the same information is shown.

The arrangement of the table is similar to a SAFE Chart (API RP 14C).
4. PLC Specification
5. Control Valve calculations
6. Pressure Relief Valve calculations
7. Instrument Data Sheets (see Attachment 6.4)
8. Instrument Installation Details – One detail for each type of field instrument showing the necessary arrangement and fittings required for installation and a typical Material Take-Off (MTO)
9. Loop Diagrams – A schematic diagram of each control loop showing the elements of the loop, junction boxes, and the interconnecting wiring.

“As-Built”

1. Field instrument catalog cuts
2. PLC program listings
3. HMI program listings
4. Operation and Maintenance Manuals
RFP FIGURE - 6.1
MECHANICAL SYSTEMS

A. Introduction
This Attachment provides the requirements for supply of mechanical systems including piping, and insulation within the scope of the RFP. These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes and standards, as well as good practice. The mechanical systems offered by the Proposer shall be designed and manufactured in a manner suitable for intended operation within a load serving municipal utility.

B. Scope of Work
These requirements apply to all mechanical systems provided by the Proposer exclusive of major equipment specified elsewhere in this RFP. This includes all components provided as part of equipment skids or provided as loose items within the overall scope of the RFP.

C. References
All mechanical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

- ASME B16.5 Pipe Flanges and Flanged Fittings
- ASME B16.9 Buttwelding Fittings
- ASME B16.11 Forged Fittings, Socket-Welding and Threaded
- ASME B16.34 Valves - Flanged, Threaded and Welding End
- ASME B31.1 Power Piping
- ASME BPVC Section II - Materials
- ASME BPVC Section IX - Welding and Brazing Qualifications
- ASME BPVC Section V - Nondestructive Examination
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 6.9 – Mechanical Systems

D. Piping, Valves and Fittings

Each item of equipment offered by Proposer shall be suitable for the intended purpose and designed and fabricated in complete accordance with the standards referenced herein.

Design

Piping shall be designed, selected, and fabricated in accordance with the following criteria:

1. The design pressure and temperature for piping shall be consistent with conditions established for the design of the associated system.

   The design pressure of a piping system generally shall be based on the maximum sustained pressure that may act on the system plus 25 psi rounded up to the next 10 psi increment. The design temperature of a piping system generally shall be based on the maximum sustained temperature, which may act on the system, plus 25° F rounded up to the next 5° F increment.

2. Piping shall be designed in accordance with the requirements of the Code for Pressure Piping, ANSI B31.1 - Power Piping, and other codes and standards referenced in Section C, above. A stress analysis shall be performed on all piping operating at temperatures greater than 300°F or where required to ensure that allowable stresses on equipment or piping is not exceeded. Pipe stress analysis shall be performed in accordance with ANSI B31.1. All pipe supports shall be suitable to restrain the piping where subjected to external loads as stipulated by the Uniform Building Code - Seismic and Wind Load Criteria.

3. All piping components shall be assembled into compatible groups called material classes. The design pressure and temperature established for each line, together with
the medium in the line shall determine the material class. The Piping Line List shall show the material class for each line as well as the design temperature, pressure and other necessary information. The corrosion allowance shall be included as part of the description of each material class and shall be included in the pipe wall thickness calculations.

4. Material selection shall generally be based on the design temperature and service conditions in accordance with the following:
   a. Carbon steel piping materials will be used for design temperatures less than or equal to 750° F.
   b. ASTM A335 Grade P22 or P91 steel piping materials will be used for design temperatures greater than 750° F.
   c. Stainless steel piping materials will be used for piping applications requiring a high degree of cleanliness generally including landfill gas, air compressor inlet piping, miscellaneous lubricating oil system piping, instrument air tubing, and sampling piping after process isolation valves and other piping generally subjected to corrosive service applications.

5. The piping system shall be designed to resist the effects of loads imposed by the weight of the pipe, valve, fittings, insulation, and fluid in the lines. The additional loads imposed by wind and seismic loads shall be considered.

6. Schedule 10 piping shall not be used.

7. The minimum pipe size for process flow paths is 2", even if the flow rate may allow for a smaller size. Pipe and fittings of sizes 3/8", 1-1/4", 2-1/2", 3-1/2" and 5" shall be avoided. Where these sizes are required for equipment, the length of the transition shall be minimized.

8. The minimum size of non-process flow piping including drain, vent, and flushing connections shall be 3/4" except for instrument and heat tracing piping or as specifically noted. Stainless steel tubing shall be used for process instrument connections and
sampling lines. The minimum tubing size for process instruments and sampling lines is 3/8”.

9. Consideration shall be given to layout of piping above and around all equipment to facilitate operation and maintenance. Piping, tubing, or supports shall not impede access for operation, maintenance, or removal of components. Piping and tubing shall be routed and supported in a neat, orderly, and accessible manner. Piping or tubing shall not be routed under platforms or within structural steel such that it is no longer accessible for inspection or repair. Pipe routing and supports (location and type) shall allow for thermal growth and seismic movement of equipment.

Piping, Tubing, and Fittings

1. Piping materials shall be in accordance with applicable ASTM and ANSI standards. Materials to be incorporated in permanent systems shall be new, unused, and undamaged. Piping materials shall be in accordance with the following criteria:
   
   a. Steel and Iron Pipe - Carbon steel piping 2 inch nominal size and smaller shall be un-galvanized ASTM A106, Grade B minimum.
   
   b. Carbon steel piping 2.5 inch through 26 inch nominal size shall be un-galvanized ASTM A53 Grade B seamless or A106 Grade B, with the indicated grades as a minimum. Carbon steel piping larger than 26 inch nominal size shall be ASTM A134 (with ASTM A283 Grade C plate material), with the industrial grades as a minimum.
   
   c. Alloy steel pipe, including large diameter special wall pipe, will be un-galvanized seamless type. Alloy steel pipe with 1½ % chromium content shall conform to ASTM A335, Grade P11. Alloy steel pipe with 2¼ % chromium content shall conform to ASTM A335, Grade P22. Alloy steel pipe with 5 % chromium content shall conform to ASTM A335, Grade P5. Alloy steel pipe with 9 % chromium content shall conform to ASTM A335, Grade P91.
   
   d. Stainless steel pipe shall be ASTM A312 Grades TP 304, TP 304L, TP 316, or TP 316L, seamless piping. All stainless steel piping materials shall be fully solution annealed prior to fabrication. The Type 316 materials shall be utilized for high resistance to
corrosion. The Type 316L materials shall be utilized for applications requiring hot working (welding, etc.). Schedule numbers, sizes, and dimensions of all carbon steel and alloy steel pipe shall conform to ANSI B36.10. Sizes and dimensions of stainless steel pipe designated as Schedule 5S, 10S, 40S, or 80S shall conform to ANSI B36.19. Schedule numbers, sizes, and dimensions of stainless steel pipe not designed as 5S, 10S, 40S, or 80S shall conform to ANSI B36.10.

e. Galvanized carbon steel piping shall be ASTM A53 Grade B. The piping shall be hot-dip galvanized. The use of galvanized steel pipe shall be limited to systems where a high degree of cleanliness is required or where codes require the use of galvanized steel pipe rather than black steel pipe.

f. Rubber Lined Pipe - Lining materials for rubber lined carbon steel pipe, method of application, and lining manufacturer shall be chosen in accordance with service requirements.

g. Copper Alloy Pipe - Copper alloy pipe shall conform to ASTM B43, Seamless Red Brass Pipe.

h. Polypropylene Lined Pipe - Polypropylene lined pipe shall be ASTM A53 steel pipe with an applied liner of polypropylene.

i. Fiberglass Reinforced Plastic Pipe - Fiberglass reinforced plastic pipe shall be chosen in accordance with the specific service requirements.

j. Polyvinyl Chloride Pipe - PVC pipe shall conform to ASTM D1785 or ASTM D2241.

k. Chlorinated Polyvinyl Chloride Pipe - Chlorinated polyvinyl chloride pipe shall conform to ASTM F441.

l. High Density Polyethylene Pipe - High density polyethylene pipe shall conform to ASTM D3350 with a Plastic Pipe Institute rating of PE 3406 or 3408.

2. Tubing materials shall generally be in accordance with the following criteria:

a. Copper Tubing - Copper tubing 3/8 inch and smaller shall be light drawn temper tubing conforming to ASTM B75. Copper tubing 1/2 inch and larger shall be ASTM B88 Type K drawn temper. Copper tubing shall be oxygen free or phosphorus deoxidized copper.
b. Stainless Steel Tubing - Stainless steel tubing shall conform to ASTM A213, Type 316. All stainless steel tubing shall be of the fully annealed type, with a carbon content greater than 0.04 percent. Stainless steel tubing for use with tubing fittings shall not exceed Rockwell B80 hardness.

c. Tubing Wall Thickness - Wall thickness for tubing shall be as required for specific design pressure and temperature conditions.

3. Fittings shall be constructed of materials equivalent to the pipe with which they are used, except for special cases such as polypropylene lined steel pipe and rubber lined steel pipe, as follows:

   a. Steel Fittings - Steel fittings 2.5 inches and larger shall be of the butt welding type and steel fittings 2 inches and smaller will be of the socket welding type, except galvanized steel fittings shall be threaded.
   b. Butt Welding Fittings - The wall thicknesses of butt welding fittings shall be equal to the pipe wall thickness with which they are used. The fittings shall be manufactured in accordance with ANSI B16.9, ANSI B16.28, and ASTM A234 or ASTM A403.
   c. Forged Steel Fittings - Forged steel fittings shall be used for socket weld and steel threaded connections and shall conform to ANSI B16.11.
   d. Cast Steel Ranged Fittings - Cast carbon steel flanged fittings shall conform to ANSI B16.5 and will be of materials conforming to ASTM A216 WCB.
   e. Adapters - Reducing outlet tees should be used in lieu of specially designed adapters for branch piping 2.5 inches and larger whenever possible. Branch connections 2 inches and smaller shall be made with special reinforced welding adapters.
   f. Rubber Lined Pipe Fittings - Flanged cast iron or ductile iron fittings used with rubber lined pipe shall be lined with the same materials as the pipe with which they are used.
   g. Brass and Bronze Fittings - Screwed brass and bronze pipe fittings shall conform to ANSI B16.15. Flanged brass and bronze pipe fittings shall conform to ANSI B16.24.
4. Flanged joints shall be in accordance with the following requirements:
   a. Flanges mating with flanges on piping, valves, and equipment shall be of sizes, drillings, and facings which match the connecting flanges of the piping, valves, and equipment.
   b. Flange class ratings shall be adequate to meet the design pressure and temperature values specified for the piping with which they are used.
   c. Flanges shall be constructed of materials equivalent to the pipe with which they are used.
   d. Steel flanges shall conform to ANSI B16.5.
   e. Carbon steel flanges shall be of ASTM A105 material. Carbon steel flanges shall not be used for temperatures exceeding 750° F.
   f. Chromium alloy steel and stainless steel flanges shall conform to ASTM A182.
   g. Brass and Bronze Flanges - Brass and bronze screwed companion flanges shall be plain faced and will conform to Class 150 or Class 300 classifications of ANSI B16.24. Drilling shall be in accordance with ANSI Class 125 or Class 250 standards.
   h. Compressed fiber gaskets shall be used with flat face flanges and raised face slip on flanges.
   i. Spiral wound gaskets shall be used with raised face flanges, except for raised face slip on flanges. Gaskets containing asbestos are not acceptable.
   j. Gaskets shall be suitable for the design pressures and temperatures.
   k. Compressed fiber gaskets shall be in accordance with ANSI B16.21, and materials will be suitable for a maximum working pressure of 600 psi and a maximum working temperature of 750° F.
   l. Spiral wound gaskets shall be constructed of a continuous stainless steel ribbon wound into a spiral with non-asbestos filler between adjacent coils.
   m. Rubber gasket materials shall be cloth inserted sheet rubber and shall conform to ANSI B16.21.

5. Where required, underground piping shall be electrically isolated from aboveground piping and other steel components to allow the underground piping to be cathodically
protected. Isolation shall be achieved by installation of isolation flanges with insulating
gaskets, tubes, and washers.

6. Piping Fabrication

a. Piping fabrication shall generally be in accordance with the requirements of the
   Piping Fabrication Institute (PFI).
b. Welding procedures, welders, and welding operators shall be qualified in accordance
   with code requirements.
c. Backing rings shall not be used for shop or field welds except where specifically
   permitted.

7. Inspection and Testing

a. Inspection and testing of piping shall be performed in accordance with the
   requirements of the applicable code.
b. Nondestructive testing shall generally include the following visual, radiographic,
   magnetic particle and liquid penetrant, and ultrasonic examinations:
   i. Visual examination of welds shall be performed by personnel qualified
      and certified in accordance with AWS QC1, Standard for Qualification and
      Certification of Welding Inspectors.
   ii. Radiographic examination shall be performed on welds requiring
       examination under the applicable code.
   iii. Magnetic particle and liquid penetrant examination shall be performed as
        required by the applicable code.
   iv. Ultrasonic tests shall be performed as required by the applicable code.

8. Pipe Supports and Hangers.

a. The term "pipe supports" includes all assemblies such as hangers, floor stands,
   anchors, guides, brackets, sway braces, vibration dampeners, positioners, and
   any supplementary steel required to attach pipe supports.
b. All support materials, design, and construction shall be in accordance with the latest applicable provisions of the Power Piping Code, ANSI B31.1.

c. Seismic design of piping systems shall be in accordance with criteria as stipulated by the Uniform Building Code.

9. In accordance with Attachment 6.4, Proposer shall submit:
   a. Valve List in tabular format showing each valve shown on the P&ID as a separate line item. The valve list shall include, as a minimum, valve number, nominal size, pressure class, end connection type, valve type, material class code, P&ID reference, line number reference, type of operator (i.e. hand wheel, motor, gear, chain, etc.), manufacturer, and model.

   b. Piping Specialties List in tabular format showing each piping specialty item shown on the P&ID as a separate line item. The piping specialties list shall include, as a minimum, specialty item tag number, line number, P&ID reference, description, manufacturer, and model.

   c. Piping stress analysis calculations.


   e. “As Built” piping plans, elevations, sections, details, and isometric drawings, as appropriate.

Valves

Each valve shall be identified on the P&ID by a sequential tag number and a valve code which shall include the valve type (i.e. gate, globe, ball, etc.), pressure rating, connection type, material, and trim material.

The type of valve used for a function shall be consistent with its function. Separate isolation and check valves are to be used instead of stop-check valves.

Valves shall be motor operated, air operated, or manually operable depending on function. Manual valves shall be limited to those required for maintenance isolation purposes and shall be mounted where they are accessible and operable without the use of ladders or lifts.
In selecting check valves, minimum flow conditions shall also be considered to preclude excessive disk flutter and valve wear.

Valve pressure classes, sizes, types, body materials, and end preparations shall generally be as described herein:

1. Special features and special application valves shall be utilized where required.
2. Steel body gate, globe, angle, and check valves shall be designed and constructed in accordance with ANSI B16.34 as applicable.
3. Iron body gate, globe, and check valves shall have iron bodies and shall be bronze mounted. The face-to-face dimensions will be in accordance with ANSI B16.10.
4. Rubber seated butterfly valves shall be generally constructed in accordance with AWWA C504 Standard for Rubber Seated Butterfly Valves. The valves shall also generally conform to the requirements of MSS Standard Practice SP-67, Butterfly Valves. Valves of the wafer or lug-wafer type shall be designed for installation between two ANSI flanges. Valves with flanged ends shall be faced and drilled in accordance with ANSI B16.1. The selected use of butterfly valves shall be in accordance with the pressure temperature ratings specified in AWWA C504, the pressure temperature ratings specified by the manufacturer.

E. Insulation

Heat insulation serves two purposes - heat conservation and personnel protection. The temperature used to determine the need for insulation or insulation thickness shall be the metal temperature which is generally the normal operating fluid temperature.

Heat Conservation

Insulation for heat conservation is required on all steam piping, including all in line fixtures such as valves, expansion joints, purifiers, and instruments. Removable insulating covers shall be used on the valves and expansion joints. Equipment and piping requiring heat conservation insulation shall be indicated on the P&ID.
Personnel Protection
Where the operating temperature of lines is 140 °F or above and insulation is not required for conservation of heat, the pipe only shall be insulated within the limits defined below for personnel protection. Equipment, apparatus, flanges, and valves shall be insulated for personnel protection only if location presents a safety hazard. Equipment and piping requiring personnel protection shall be indicated on the P&ID.

Cold Services
Chilled water piping shall be provided with insulation with an anti-sweat vapor barrier.

Materials
Insulation shall be pre-formed fiberglass or calcium silicate in accordance with ASTM C585 and ASTM C547 or ASTM C533 as appropriate. Thermal insulating and finishing cement shall be in accordance with ASTM C449. All pipe and equipment insulation shall be protected by aluminum jacketing in accordance with ASTM C921 with Type 304 stainless steel jacket banding.

Insulation materials shall be inhibited and of low halogen content so that the insulation meets the requirements of MLL-1-24244 Amendment 3 regarding stress corrosion cracking of austenitic stainless steel. Insulation materials shall contain no asbestos.

Insulation thickness for heat conservation insulation shall be:

<table>
<thead>
<tr>
<th>Nominal Pipe Size</th>
<th>70 °F – 200 °F</th>
<th>201 °F – 450 °F</th>
<th>451 °F – 600 °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 ½”</td>
<td>1”</td>
<td>1 ½”</td>
<td>2”</td>
</tr>
<tr>
<td>2”</td>
<td>1”</td>
<td>2”</td>
<td>2”</td>
</tr>
<tr>
<td>3” – 20”</td>
<td>2”</td>
<td>2 ½”</td>
<td>3”</td>
</tr>
</tbody>
</table>
Personnel protection insulation shall be 1 ½” thick for operating temperatures less than 450 °F and 2” for operating temperatures above 450 °F.

F. Engineering Deliverables

In accordance with Attachment 6.4, Proposer shall submit documentation required per Attachment 6.4 and information listed below:

LNTP Phase
1. Tie-in List in accordance with Attachment 6.4.

FNTP Phase
1. Valve List in accordance with this Attachment 6.9
2. Piping Specialties List in accordance with this Attachment 6.9.
3. Welding procedures.
4. Piping stress analysis calculations.

“As-Built”
1. Piping hydrostatic test reports.
2. As-Built drawings.
3. Valve and piping specialties catalog cuts.
A. General

1. This specification supplements other specifications for fabricated process equipment contained elsewhere in the RFP. It covers structural information for the design of mechanical and electrical equipment and associated structural components supplied with the equipment, including supporting skids and frames, anchorage and bracing. Methods of analysis and design shall be in accordance with industry established principles of mechanics and engineering practice. When this specification and any reference standard conflict, this specification shall govern.

2. All structural steel shall conform to the American Institute of Steel Construction Specification for Design, Fabrication, and Erection of Structural Steel for Buildings, latest edition. In addition, all structural steel work shall be fabricated in accordance with the AISC Code of Standard Practice for Steel Buildings and Bridges, latest edition. All structural framing shall be fabricated in an AISC approved fabrication shop. The design of steel supports and framing for supplier furnished equipment shall be made under the supervision of a professional engineer registered in the State of California. The registered professional engineer shall be qualified in structural engineering. Structural drawings and calculations signed and stamped by the California registered professional engineer shall be submitted for review.

B. Scope of Work

1. Proposer shall clearly document in the prepared calculations and drawings all foundation loading information including dead, live, wind, seismic and any other sustained or transient loads.

2. A State of California Registered (licensed) Structural engineer or Civil engineer qualified to perform structural engineering work shall stamp and sign structural drawings and calculations, as follows:
   a) Structural support and framing for all major pieces of equipment and skids
   b) Foundation loading for all major pieces of equipment and skids
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 6.10 – Structural Requirements for Equipment Design

c) Anchor bolt layout and location and required anchor bolt hole size for all major pieces of equipment, skids and control cabinets. Proposer shall furnish certified dimensional drawings for anchor bolt location and size as part of the limited notice to proceed (LNTP) engineering. Anchor bolt design for Proposer furnished equipment and structures shall be the responsibility of the EPC Contractor. In the event that the EPC Contractor determines that a bolt size different from that initially specified by the Proposer is required, Proposer shall modify the anchor bolt hole size prior to shipping the piece of equipment to GWP at no additional cost. The EPC contractor shall furnish all anchor bolts, cast-in-place or post-installed. The EPC Contractor shall be responsible for the anchorage design (embedment and embedment provisions).

d) Outlet stacks

3. All equipment and structures shall be designed for wind and seismic forces per 2016 California Building Code requirements with Risk Category III classification under ASCE 7-10 guidelines.

C. Structural Steel

1. All structural and miscellaneous steel design shall be in accordance with the requirements of AISC Specification 360 “Specification for Structural Steel Buildings” ASD design method and the AISC 341 “Seismic Provisions for Structural Steel Buildings”, as required, and any other local code or regulation. All support steel shall be provided as required to support platforms, stairs, SCR/CO catalyst systems, ductwork and piping.

2. In transferring large shear loads onto concrete foundations, the Proposer shall provide shear lugs welded to the bottom of the base plates. Baseplates shall be shop welded to the columns.

3. All structural components shall be stiffened and braced in such a manner as to prevent detrimental distortion, deformation or an objectionable level of vibration. Stress analysis shall consider the most severe load combinations for pipe routing design and restraint location.

4. Structures, equipment, and the top surfaces of horizontal ducts shall be designed so that the surfaces are self-draining. Special attention shall be attributed to drainage of horizontal structural members. Suitable drain holes shall be provided for any structural member or pocket created by structural members which can potentially hold standing water.
5. Shop connections shall be either welded or bolted. Field connections shall be bolted. If field welding is required, the Proposer shall identify size, location and types of field welds on the engineering drawings. With the exception of ladders, stairway treads and guardrail posts, all structural bolted connections shall be made using ASTM A325 bolts, bearing type, unless slip-critical joints are required.

6. Slip–critical type bolts shall be used at all moment connections and at framing subject to normal operating vibratory loads. The use of high-strength bolts shall conform to the RCSC Specification for Structural Joints. A minimum of one washer per bolt shall be placed under the part turned when tightening A325 bolts. All ASTM A325 slip critical bolts shall be installed with load indicator washers and shall be inspected by Special Inspector.

7. All structural steel welding shall be in accordance with AWS D1.1. All components and equipment shall be designed with due consideration to the forces due to contraction or expansion resulting from temperature changes, shrinkage, moisture changes, creep in components materials, or combination thereof.

8. All structural steel (columns, beams, plates), including over size equipment that will be field assembled by the EPC Contractor shall be delivered fully detailed with all holes drilled in the fabrication shop. Exterior structural steel shall be hot-dip galvanized.

9. Proposer shall submit the steel shop and erection drawings for review prior to start of fabrication.

10. Materials

   o Structural Steel Shapes (W and WT) – ASTM A992
   o Structural Steel Shapes (L, C, S, HP, Plates, Bars) – ASTM A36 or ASTM A572, Grade 50
   o Structural Pipe – ASTM A53, Type E or S, Grade B. Alternately, ASTM A500, Grade B is acceptable
   o Structural Tubing (Square or Rectangular) – ASTM A500, Grade B
   o High Strength Bolts, Nuts and Washers
     i. Bolts – ASTM A325, Type 1
     ii. Nuts – ASTM A563, Grade DH
     iii. Washers – ASTM F436
D. Ladders, Platforms, and Stairways

1. Ladders, platforms, stairways and railing shall comply with the requirements of the U.S. Occupational Safety and Health Standards (29 CFR 191000), the Industrial Safety Requirements of the State of California (Cal OSHA) and 2016 California Building Code requirements.

2. All exterior ladders, platforms, and stairs shall be hot dipped galvanized steel. If interior ladders, platforms, and stairs that are fully protected from the weather are not hot dipped galvanized, they must be constructed of corrosion resistant material that does not need periodic re-coating. Walking/wearing surfaces may not be painted.

3. Entrances to equipment enclosure doors shall be via stairs with a landing outside the door unless permitted otherwise by the specific equipment specification.

4. Platforms, with ladders or stairways to access them, shall be provided on and within the Proposer supplied equipment to allow access to doors, manways, hatches, panels, valves, instruments, etc. without the use of portable ladders. Platforms shall be a minimum of three (3) feet wide except as required in the specific equipment specifications.

5. All ladders, ladder cages, and stairways shall be shop assembled and shipped in the largest sections suitable for transportation and erection without disassembly. Stairway and ladder connections shall be bolted wherever possible for ease of field installation.

6. Grating shall be of welded, rectangular, serrated, hot-dipped galvanized steel. Bearing bars shall be 1 ⅛ inch x 3/16-inch, with spacing of 1 13/16 inch center to center. Grating shall be attached to structural steel using saddle clips with fine thread self-tapping screws. Grating openings at pipe penetrations or column cutouts shall be reinforced as required. Platform grating shall span no more than 4 feet.
7. Hand railing shall consist of 1½ inch minimum Schedule 40 galvanized pipe with a 4 inch high kick plate. Handrail system shall have one mid rail and adequate clearance on both sides of the rail for a gloved hand to pass without hitting structural steel or other equipment supplied by the Proposer.

8. Minimum headroom over platforms, walkways and stairways shall be 7’-0” to the lowest point of any overhead obstruction.

E. Anchor Bolts

Anchor bolts shall be sized as follows:

1. Use load combinations per ASCE 7-10, Section 2.4 (ASD) for seismic load combinations, including the vertical acceleration component to obtain anchor bolt net tensile and shear loads.

2. Use AISC 360 “Specification for Structural Steel Buildings”, Section J.3 to size anchor bolts, using ASTM F1554 Grade 36 or Grade 105 if necessary with nominal anchor bolt cross sectional area.

3. Size of the anchor bolts shall also be checked for adequacy using the bolt sizing formulations in ACI 318 Appendix D, grouted base plates.

F. Equipment and Anchor Attachment Ductility Requirements

Supporting structures and equipment shall be designed per ASCE 7, Chapter 15 design requirements.

Equipment base plates and anchor bolt chairs, including their welding, shall be designed using the corresponding ASCE load combination that includes the vertical acceleration component as well as the over-strength factor. The anchor bolt itself does not need to be sized using the over-strength factor.

G. Design Loads

Equipment shall be designed structurally for the following loading conditions:

1. Dead Loads (D) - Dead load shall consist of the total weight of all permanent equipment including, but not limited to, fixed equipment, framing, piping, floors, walls, roofs, partitions, insulation, stairways, handrails, ladders, platforms, ductwork, and other permanent attachments. Hydrotest dead load is the empty weight of the equipment
plus the weight of water required to fill the equipment completely. Operating dead load for process or other equipment and piping is the empty weight plus the maximum weight of contents during normal operating conditions.

2. Live Loads (L) – Live loads shall be considered as loading not permanently fixed to the structure and occurring over areas not occupied by equipment. Equipment lay down loads shall be considered as live loads. However, no live load reduction will be permitted in areas where lay down loads are considered.

The following is a guide to the minimum required live loads:

<table>
<thead>
<tr>
<th>STRUCTURAL ELEMENT/LOCATION</th>
<th>LIVE LOAD (PSF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stairways</td>
<td>100</td>
</tr>
<tr>
<td>Ladders &amp; Walkways</td>
<td>100</td>
</tr>
<tr>
<td>Operating/Access Platforms</td>
<td>125</td>
</tr>
<tr>
<td>Walkways, not used as operating platforms</td>
<td>100</td>
</tr>
<tr>
<td>Storage, determine from use but never less than</td>
<td>125</td>
</tr>
<tr>
<td>Roofs and Casings</td>
<td>20</td>
</tr>
</tbody>
</table>

3. Wind Load (W) - All pieces of equipment and their attachments shall be designed to withstand the effect of wind from any direction in accordance with ASCE 7-10 Standard. Enclosures shall be designed for the wind speed and factors/coefficients in accordance with the 2010 ASCE 7. Wind pressure to be applied to all wind exposed system components and equipment shall be determined in accordance with the ASCE 7-10. Allowance shall not be made for the effect of shielding by adjacent structures. The wind design parameters are found in Attachment 3 - Site Conditions.

4. Seismic Loads (E) – All equipment and support structures shall be designed to withstand the effect of seismic load in accordance with ASCE 7-10 standard. Equipment anchorages and foundations shall be adequate to prevent overturning, displacement, and dislocation in accordance with the CBC, Chapters 18 and 19. Piping and ductwork
shall be designed to resist seismic loading and shall be restrained accordingly. The seismic design parameters for the site are found in Attachment 3 - Site Conditions.

5. Thermal Loads (T) - Full provision shall be made so that each component can expand and contract under the operating cycle of temperatures without damage to itself or to any adjoining component, and without the leakage of any gas outward or of air inward. Piping system flexibility, expansion joints, guides, braces, stiffeners, etc., shall be provided by the Proposer as required so that the thermal expansion/contraction and related pipe stresses are kept within allowable limits.

6. Vibration - All equipment and appurtenances which are subject to vibration forces shall be designed to withstand the effect of these forces. The Proposer is responsible for identifying the internal sources of vibrating forces, and determining the size and location of unbalanced forces as well as maintaining the vibration amplitudes to an acceptable level.

7. Lifting Equipment - Jib cranes, davits, booms, and their supports shall be designed for the heaviest load they are expected to lift, plus impact, plus any pull on lead lines to the hoisting equipment. The design of lifting equipment shall comply with the requirements of the U.S. Occupational Safety and Health Standards (29 CFR 1910) and the Industrial Safety Requirements of the State of California (Cal OSHA).

8. Load Combinations – Support structures, equipment and components shall be designed using the following criteria for combining design loads:
   - Applicable load combinations from ASCE 7 and CBC
   - Industry applicable design standard
   - Any other probable and realistic load combination of loads

H. Painting and Coatings

Exterior structural steel and finished items such as platforms and ladders shall be delivered with a hot-dipped galvanized coating and fabricated such that field fit and modifications are not required.

Interior structural steel for finished equipment may be delivered either with a hot-dipped galvanized coating or finish painted. All other equipment shall be shop finish painted prior to shipment.
The painting system shall be in accordance with the requirements set forth in Attachment 6.17 and shall include a primer coat and finish coat paint system.

Surface preparation, priming and painting shall be done in accordance with the Steel Structure Painting Council specifications. Galvanizing shall meet ASTM A123, A153 and A875 requirements.

I. Lifting and Handling

All equipment, components, and shop assembled structural steel shall be of sufficient strength and rigidity for lifting and handling. Before shipment the supplier shall install sufficient permanently attached braces, struts, and/or lifting lugs to permit handling and erection at the jobsite with conventional slings or hooks without damage to the equipment. Equipment and components shall be adequately braced and restrained to prevent damage and distortion during shipping.

Lifting design shall be checked for impact load.

J. Submittal Requirements During FNTP Phase

1. For light rotating and reciprocating machinery (less than 5,000 pounds of weight), the Proposer shall provide the following information for the design of concrete foundations and anchorage:

   a. Outline drawing of the machine assembly with dimensions of base frame, location and size of the anchor bolt holes. Required grip for anchor bolts shall be clearly shown on outline.

   b. On the outline drawing, the weight of the complete machine assembly and its center of gravity shall be provided. Alternately, the weight of individual components (such as drives, skid, pump, compressor, etc.) and locations can be specified with respect to a common base point to allow others to determine overall center of gravity.

   c. A plan showing the skid/base frame footprint requiring support/grout underneath. For skid mounted machinery, requirements for field grout filling, and the location and size of grout holes.
d. Recommended anchor bolt post tension stress (if required), type of grout, and minimum foundation footprint.

e. On the outline drawing, specify the driver type, horsepower, and operating speed.

2. For heavy rotating machinery (more than 5,000 pounds of weight), the Proposer shall provide the following information for the design of concrete foundations and anchorage:

   a. Outline drawing of the machine assembly with dimensions of base frame, location and size of anchor bolt holes. Required grip for anchor bolts shall be clearly specified.

   b. On the outline drawing, weight of machine rotor components, the center of gravity of each component and the dynamic unbalanced force.

   c. Short-Circuit load if motor-driven.

   d. Location of rotor bearings.

   e. Range of machine speeds and operating speed.

   f. Equivalent static load at each bolt corresponding to peak machine loads.

   g. For turbo generators, condenser flange/vacuum load.

   h. Design torque load.

   i. Vertical and horizontal impact loads.

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Attachment 6.10 – Structural Requirements for Equipment Design

k. Turbine accidental load.

l. Mass moment of inertia of the total machine about the CG (Center of Gravity) of the machine or sufficient data on individual components and their center of gravity to calculate the mass moment of inertia about 3 axes.

m. Required anchor bolt post tension stress.

3. For heavy reciprocating machinery (more than 5,000 pounds of weight), the Proposer shall provide the following information for the design of concrete foundations and anchorage:

a. Outline drawing of the machine assembly with dimensions of base frame, location and size of anchor bolt holes. Required grip for anchor bolts shall be clearly specified.

b. Magnitude, direction, point of application, and frequency of primary and secondary unbalanced forces and moments, both vertical and horizontal.

c. Required anchor bolt post tension stress.

d. Equivalent static load at each bolt corresponding to peak machine loads.

e. Mass moment of inertia about the center of gravity of the machine or sufficient data on individual components and their center of gravity to calculate the mass moment of inertia.

f. Range of machine speeds and operating speed.

4. Non-Vibratory Equipment and Supporting Structures for Equipment

a. General Arrangement drawing with plans and elevations of equipment, supporting structure, sizes of the structural members, and any platform, stair, and ladder locations and related attachment
details. All structural framing drawings for platforms that are to be supplied by equipment vendor shall be stamped and signed by a Civil or Structural Engineer registered in the State of California and shall be designed to withstand dead, live, wind and seismic loading as prescribed by the building code.

b. Identify and detail all interface points with supporting structures or foundations as well as the size, location, and grip of all required attachment/anchor bolts.

c. Tanks, vertical vessels and stacks shall incorporate the requirements of ASCE 7, section 15.7. Anchor bolt chairs and bottom plates shall be checked for seismic load combinations that include the over-strength factor.

d. A tabulation of the magnitude of equipment loads at each support point shall be submitted for all multiple column supported equipment. These loads shall include but not be limited to: dead, operating, live, wind and earthquake loads. Design of the structure to support equipment shall be performed in accordance with ASCE 7, Chapter 15 loads and AISC 360 design as well as AISC 341 requirements, as it applies.

e. Magnitude of the anticipated thermal expansion movement at each support.
PREFERRED EQUIPMENT, SPARES & TECHNICAL SUPPORT

A. Equipment Technical and Parts Support

All equipment, including sub-components such as valves and field instruments, supplied by the Proposer shall have technical and parts support located within the continental United States. It is understood that some of the equipment may be manufactured outside of the continental United States, however the point of contact for technical and parts support shall located within the continental United States at least during the warranty period and preferably beyond. Additionally, having field service personnel located within the continental United States is also strongly preferred.

B. Preferred Equipment

The City prefers that the Proposer incorporate the following brands of equipment and bulk commodities as part of their equipment:

1. Tubing – Swagelock
2. CEMS – Horiba stack gas analyzers
3. Lubricants - Mobil
4. Control System – Allen Bradley
5. Vibration Monitoring – Bentley Nevada 3500
6. Transmitters – Rosemount
7. Low Voltage Motors
   a) ABB
   b) Baldor
   c) General Electric
   d) Reliance
   e) Siemens
8. Medium Voltage Motors
   a) ABB
   b) General Electric
   c) Reliance
   d) Siemens
   e) TECO – Westinghouse
9. Generator Metering, Protection and Synchronization – SEL
10. HMI Software - Wonderware
C. Operating Spare Parts

A recommended list of two year spare parts, including pricing, shall be provided as a part of the scope of this RFP (Item 15, Proposal Supplement, Attachment 2.10)

An allowance for spare parts will be included in the PIME Contract. The exact amount of spare parts to be purchased will be agreed upon after FNTP. If the actual purchase amount is less than the allowance, then a credit will be applied to the contract amount. If the actual purchase amount is greater than the allowance, then the City will process a change order for the difference.

D. Commissioning Spare Parts

Required and recommended commissioning spares for each piece of equipment included as a part of the scope of this RFP shall be delivered at the same time as the equipment is delivered.

Ownership of unused commissioning spares will revert to City at Substantial Completion of the power project.
TESTING AND QUALITY REQUIREMENTS

A. Quality Assurance

Proposer shall have in place a Quality Assurance Program (QAP) that meets the requirements of ISO 9001 and includes the following elements as a minimum:

1. Ensures that qualified personnel are utilized to perform the work necessary to furnish the equipment within the scope of this RFP.
2. Ensures sub-suppliers provide quality materials through the use of appropriate specifications and source inspections.
3. Ensures that work is performed using procedures and processes that implement the Proposer’s own requirements, applicable codes and standards, and the requirements of this RFP.
4. Ensures that configuration control is maintained to assure that the requirements of this RFP are transferred through design engineering and into the manufacturing process, and that when changes occur, their impact is understood and other portions of the design modified, documented in the drawings and calculations, implemented in the finished product, and communicated to the appropriate project stakeholders in a timely manner.
5. Addresses the reporting of anomalies and defects, identification and implementation of the proper corrective action for when they occur, as well as assessing the generic implications and actions necessary to prevent recurrence for other portions of the Proposer’s work under this RFP.

B. Quality Control

Proposer shall have in place a Quality Control Program (QCP) where:

1. Worker qualification is tested and documented.
2. Important engineering and manufacturing steps are checked or inspected prior to work proceeding further.
3. Material and assemblies received from sub-suppliers are inspected and appropriately tested for conformance with the Proposer’s requirements.
4. Tests required by the Proposer, as well as appropriate codes and standards, are performed, the results recorded, and unacceptable results are identified for correction and corrected.

C. Required Factory Inspections and Testing

Proposer shall implement the following:

1. Proposer shall perform all of their inspections and tests as required by their Quality Control Program and applicable codes and standards. Deviations shall be dispositioned under the Proposer’s Quality Assurance Program. A testing schedule shall be submitted to the City.

2. Shop welds shall have been inspected (visual, PT, radiograph) in accordance with code requirements.

3. Piping and ducts shall have been cleaned and all foreign material removed prior to shipping, and durably protected from the introduction of foreign materials during shipment and storage prior to installation.

4. Lube oil systems that are wholly contained on-skid shall be shop cleaned and flushed and then inerted.

5. On-skid piping systems shall be shop hydrotested.

6. Rotating elements shall be dynamically balanced prior to final assembly of the equipment.

7. All seals on assembled rotating equipment shall be shop installed prior to shipment.

D. City Inspections and Factory Acceptance Testing

With appropriate notice, the City shall have the right, but not the obligation, to visit the Proposer or their vendors for the purposes of reviewing the equipment design, witnessing inspections or testing, or participating Factory Acceptance Testing. Proposer shall provide the City notice of each test a minimum of thirty (30) days in advance of the start of the test. The City shall have the right to reject any portion of the equipment which is not in accordance with the drawings and specifications.
E. Cold Commissioning

The EPC Contractor will have overall responsibility to manage and perform the Cold Commissioning activities to achieve Mechanical Completion including:

1. Clean and flush water and oil systems,
2. Clean and blow air and gas systems,
3. Calibrate all relays and test electrical equipment,
4. Calibrate all instruments and shoot loops to ensure process inputs are correctly transmitted to the Plant Control System,
5. Commission systems, and
6. Perform all activities to demonstrate that the plant structures, systems, and components are complete and ready for operation.

Proposer shall provide technical advisory services to support the EPC Contractor’s efforts to clean and flush, align rotating equipment, and otherwise ready the Proposer’s equipment for Mechanical Completion.

As part of Cold Commissioning, the Proposer shall perform a concentration test of the CTG CO₂ system. If adequate concentration levels are not maintained, the Proposer will be responsible for performing a re-test as well as the replacement CO₂ for the re-test. Re-supply of the CO₂ after a successful test is the responsibility of City.

Once the PIME Proposer’s equipment and systems are functioning correctly, and the EPC Contractor is satisfied that their equipment and systems are also functioning correctly, then the Unit will be ready for Mechanical Completion.

There will be separate Readiness for First Fire dates for each CTG or REG Unit.

F. Proposer Access Days

Proposer shall state in its Proposal the required number of Access Days, beginning with Mechanical Completion/Readiness for First Fire required to tune Proposer’s equipment and ready the Units for Startup and Plant Acceptance Testing. The EPC Contractor may also perform commissioning work in parallel with the Proposer’s commissioning and testing work as long as it does not unreasonably impact the Proposer (not allowing the EPC Contractor to do any of their own commissioning and testing work is not considered reasonable). Days where the Proposer is precluded by the City or the EPC Contractor from performing their tuning and testing work shall not count as an Access Day.
G. Startup and Hot Commissioning

The Proposer shall have overall responsibility to manage and perform the Startup and Hot Commissioning activities and to perform the necessary operational checks and tuning of the plant mechanical, electrical, and control systems in preparation for Plant Acceptance Testing. The EPC Contractor will provide the necessary craft labor and supervision to perform any plant modifications necessary to support Startup and Hot Commissioning, as well as supporting the Proposer’s efforts to commission the integrated PIME Proposer/EPC Contractor plant systems. The City will provide the plant operators and supervision during the Startup and Hot Commissioning period.

Once the PIME Proposer’s equipment and systems are tuned and functioning correctly, and the City is satisfied that their equipment and systems, as well as the overall integrated Unit, is tuned and functioning correctly, then the Unit will be ready for Plant Acceptance Testing.

There will be separate Readiness for Test dates for each CTG or REG Unit.

H. Plant Acceptance Testing

Proposer shall prepare a project specific test procedure, including correction and degradation curves, for each test including the test reporting. The procedure shall be in general conformance with ASME PTC 46. The test procedures shall be acceptable by the City and the EPC Contractor. The actual test will be performed by a 3rd party under contract to the EPC Contractor.

The following acceptance testing will be performed as part of Hot Commissioning and prior to Substantial Completion. Failure to successfully complete a test will necessitate a re-test after corrections or additional tuning is performed within the allowed fourteen day cure period.

1. **Fuel Consumption – All Units - 100% Power** – demonstrate that the fuel consumption of the individual CTGs and REGs is less than or equal to proposed performance at guarantee conditions when corrected to site test conditions and that the gas compressor can deliver the required gas flow and pressure.

2. **Fuel Consumption – All Units - Minimum Load** – demonstrate that the fuel consumption of the individual CTGs and REGs is less than or equal to proposed performance at guarantee conditions when corrected to site test conditions and that the gas compressor can turn down in stable operations.
3. **Heat Rate – All Units - 100% Power** – demonstrate that the gross heat rate of each CTG or REG is less than or equal to the proposed gross heat rate at guarantee conditions when corrected to site test conditions. This test shall be run concurrently with the Output Test at 100%. Emissions shall not exceed Proposer’s guaranteed emissions limits during the test.

4. **Heat Rate – All Units – Minimum Load** – demonstrate that the gross heat rate of each CTG or REG is less than or equal to the proposed gross heat rate at guarantee conditions when corrected to site test conditions. This test shall be run concurrently with the Output Test at Minimum Load. Emissions shall not exceed Proposer’s guaranteed emissions limits during the test.

5. **Output – All Units - 100% Power** – demonstrate that the output of each CTG or REG cycle unit is greater than or equal to sum of the proposed gross output less the proposed auxiliary loads at guarantee conditions when corrected to site test conditions. This test shall be run concurrently with the Heat Rate Test at 100% Power. Emissions shall not exceed Proposer’s guaranteed emissions limits during the test.

6. **Output – All Units – Minimum Load** – demonstrate that the output of each CTG or REG unit is greater than or equal to sum of the proposed gross output less the proposed auxiliary loads at guarantee conditions when corrected to site test conditions and remaining in stable operations. This test shall be run concurrently with the Heat Rate Test at Minimum Load. Emissions shall not exceed Proposer’s guaranteed emissions limits during the test.

7. **Startup Emissions – All Units** – demonstrate that the startup emissions of the individual CTGs and REGs are less than or equal to the proposed startup emissions.

8. **Operating Emissions – All Units** – demonstrate that the operating emissions of the individual CTGs and REGs are less than or equal to the proposed emissions levels.

9. **Shutdown Emissions – All Units** – demonstrate that the shutdown emissions of the individual CTGs and REGs are less than or equal to the proposed shutdown emissions.

10. **Start to Minimum Load – All Units** – demonstrate that the CTG’s or REG’s can start, go to the proposed minimum load with emissions compliance, and then achieve emissions compliance.

11. **Full Load Trip – All Units** – demonstrate that the CTG’s or REG’s can trip from full load with no damage and subsequently restart.
12. **Reliability Test** – operate for a one week period with no unplanned trips or emissions exceedances. If there is a planned shutdown during the Reliability Test period, the test period will not be extended by the length of the shutdown, and no start failures will be allowed upon restart. The test shall demonstrate the reliability of Proposer’s equipment. Unplanned trips, start failures, or emissions exceedances while operating within performance limits will constitute a start failure and re-performance of the test.

13. **Maximum Electrical Output** – demonstrates the capability of the inlet air conditioning equipment to meet the proposed gross output. The test will be performed the same as the Output Test at 100% Power with the inlet air conditioning equipment operating.

14. **Power Factor Test** – demonstrates that the generators can operate for a sustained period of time at the maximum proposed power factor. Depending on system conditions at the time of the test, the City may elect to waive this test.

15. **Noise Test** – demonstrates that the normal operations noise of the individual pieces of Proposer’s equipment is equal to or less than the Proposer’s noise guarantee.
SHIPPING REQUIREMENTS

A. Packaging

1. Equipment shall be durably packaged for the mode of transport and expected environmental conditions.

2. Packing lists shall identify in detail the entire contents of the shipped item. Where a piece of equipment is shipped in multiple packages, each package shall have its own unique packing list. Packing lists shall be accessible from outside of the package.

3. A three-axis impact recorder shall be provided for each motion sensitive equipment shipment, e.g., rotating equipment, fragile loads, etc. All rail shipped loads shall require inclusion of impact recorders.

B. Shipping

1. The Proposer shall deliver its equipment to the Scholl Canyon Landfill Power Project in Glendale, CA in accordance with Incoterms DDP (Delivery Duty Paid) 2010.

2. Proposer is responsible for all transportation permits, escorts, traffic studies for their loads, etc.

3. Proposer shall maintain tracking of their shipments and provide at least 72 hours of impending delivery.

4. The Proposer is responsible for getting their equipment “under the hook” for offload by the EPC Contractor

5. Proposer shall not deliver equipment after 2:00 PM local time. An exception is made for small packages delivered by express mail, e.g., US Post Office, FedEx, UPS, etc.

6. City shall have the right to modify the delivery location for shipments up to 90 days prior to the equipment’s Ready to Ship (RTS) date.

7. Title will transfer to City upon delivery to the site and ready for unloading.

C. Storage

1. If the City requests the Proposer to place a piece or pieces of equipment into storage that are otherwise ready for shipment in all respects, Proposer will be entitled to invoice the City the milestone payment associated with the Ready to Ship date.
2. Proposer will also be entitled to an “In to Storage” charge, a monthly storage charge, and a “Out of Storage” charge. Risk of loss shall remain with Proposer. The Proposer shall also remain responsible for performing all actions needed for preservation of the equipment as contained in its manuals delivered to the City.

3. Proposer shall remain responsible for shipment to the site, including risk of loss.

4. Title will transfer to the City upon delivery to the site.
SITE STAFFING SUPPORT

A. Scope of Services
The PIME contractor is responsible for providing Technical Advisors for the erection and construction of the PIME scope of supply. The EPC contractor is responsible for all installation and construction and support of commissioning and plant performance testing. The Proposer shall have overall responsibility to manage and perform the Startup and Hot Commissioning activities.

The only exception to the foregoing is any work that the PIME Proposer or its suppliers requires to be performed in the field that is proprietary and must be performed by the PIME Proposer of its supplier(s). In the event, such work shall be performed by the PIME Proposer or its suppliers(s) and they shall comply with applicable work requirements including but not limited to California Contractor’s license, business license, etc.

B. Initiation of Site Staffing
Field staffing support shall commence when equipment deliveries to the site begin.

C. Commissioning Manager
The Proposer’s Commissioning Manager shall be mobilized to the site at least one month prior to the start of Cold Commissioning of the Proposer’s equipment. The exact timing will be established in conjunction with EPC Contractor.

D. Technical Advisors
The Proposer shall provide Technical Advisors for its own equipment as well as Technical Advisors for equipment that is being provided on a sub-contracted basis. Technical Advisors shall be available to provide advice to the City and its EPC Contractor during erection, installation, and commissioning of the Proposer’s equipment.

E. Authorized Inspector
The Proposer shall provide the Authorized Inspector for any work they perform.
F. Performance Test Engineers

The Proposer shall provide, as needed to supplement the Technical Advisors, Test Engineers for tuning of the power island equipment and performance as well as participation in the plant performance test and source testing that demonstrates the Proposer’s compliance with their performance guarantees.

G. General Requirements for Site Staff

Proposer’s and Proposer’s vendor’s, site staff, whether long-term or temporary, or whether employees or contractors, shall fulfill the following requirements:

- Comply with the City’s and the EPC Contractor’s site safety protocols.
- Be experienced with the specific equipment the Proposer is providing.
- Shall work harmoniously with the City and the EPC Contractor.
- Shall be conversant in the English language.

H. Billing Rates

Site Staff time will be billed on a T&M basis.

Living expenses will be billed on a per Diem basis using the then current United States General Services Administration Per Diem rates.

If billed, all travel time will be billed at straight time rates.
A. Training Content
The Proposer shall provide training material and on-site classes for the City engineering, operations, and maintenance staff. The training shall address all of the equipment provided by the Proposer. Training course(s) shall cover:

1. Description of the equipment
2. Theory of operation
3. Familiarization with the installed equipment
4. Startup, operation, shutdown, and upset conditions
5. Routine inspections and maintenance

B. Training Class Makeup and Size
The City’s operations, maintenance, and engineering staff will attend the training classes. The plant staff totals approximately 40 People. The operations staff is expected to be approximately 25 people and shall be trained in two sessions. The Proposer shall provide separate training sessions for the operations, maintenance, and controls staff. The City will furnish the conference room and organize access to the installed equipment during construction and commissioning.

C. Training Schedule
Training will start after at least one example of each of the equipment being supplied by the Proposer is substantially completed. Training must be completed prior to First Fire. This is to allow the training classes to tour the equipment and become familiar with the equipment and yet still have the training fresh in their mind before beginning to utilize it.

The final schedule for training will developed in conjunction with the EPC once their final schedule is established.
NOISE REQUIREMENTS

A. City Requirements

Following are the City’s noise standards required by Chapter 8.36 (Noise Control) of the Municipal Code and Noise Element of the General Plan.

<table>
<thead>
<tr>
<th>Zoning</th>
<th>Presumed Equivalent Sound Level (Leq dbA)</th>
<th>Community Noise Equivalent Level (dbA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Daytime</td>
<td>Nighttime</td>
</tr>
<tr>
<td>Residential</td>
<td>55¹</td>
<td>45¹</td>
</tr>
<tr>
<td>Commercial</td>
<td>65²</td>
<td>65²</td>
</tr>
<tr>
<td>Industrial</td>
<td>70²</td>
<td>70²</td>
</tr>
</tbody>
</table>

Notes:
1. Applies to both interior and exterior noise standards.
2. Applies to exterior noise standards.

Additionally, Section 8.36.050 of the Municipal Code specifies the following in relation to minimum and maximum ambient noise levels that can be considered when establishing baseline conditions when applying the above noise standards:

1. Where the actual ambient is less than the presumed ambient, the actual ambient shall control and any noise in excess of the actual ambient, plus five dbA, shall be a violation.

2. Where the actual ambient is equal to or more than the presumed ambient, the actual ambient shall control and any noise may not exceed the actual ambient by more than five dbA; however, in no event may the actual ambient exceed the presumed noise standards by five dbA.

3. At the boundary line between two zones, the arithmetic average of the presumed ambient noise levels shall be used. (Ord. 4973 § 5, 1991: prior code § 11-54).
B. Noise Compliance Responsibilities

The PIME Proposer will be responsible for meeting the following requirements for Proposer supplied equipment:

1. Near Field: ≤85 db(A) A-weighted sound power level at 5’ above grade and 3’ from the Power Island and Major Equipment during normal operation.

2. Far Field: Refer to the table in Section C.

The EPC Contractor will be responsible for meeting the following noise requirements:

1. Near Field: ≤85 db(A) A-weighted sound power level at 5’ above grade and 3’ from the EPC Contractor supplied equipment during normal operation.

2. Far Field: Refer to the table in Section C.

C. Power Island Equipment Noise Requirements

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Near Field</th>
<th>Far Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Gas Compressor</td>
<td>≤85 dbA at 3’ distant and 5’ above grade from the operating equipment.</td>
<td>None, part of the EPC Contractor’s scope of supply will be to provide an open topped outdoor acoustic enclosure that surrounds the fuel gas compressors and complies with the EPC Contractor Far Field noise requirements.</td>
</tr>
<tr>
<td>Combustion Turbine Generator</td>
<td>≤85 dbA at 3’ distant and 5’ above grade from the CTG enclosure and any external auxiliary operating equipment supplied as part of the package.</td>
<td>≤70 dbA at 60’ from the CTG enclosure and any external auxiliary operating equipment supplied. CTG package shall include outdoor enclosure(s), acoustic enclosure, as well as inlet, gas vent, and other silencers.</td>
</tr>
</tbody>
</table>
### Scholl Canyon Landfill Power Project

**Power Island and Major Equipment Request for Proposals**

**Attachment 6.16 – Noise**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Near Field</th>
<th>Far Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reciprocating Engine Generator</td>
<td>≤130 dbA at 3’ from the REG located inside Engine Hall.</td>
<td>≤70 dbA at 60’ from equipment that is supplied as part of the REG equipment package that is located external to the Engine Hall such as engine exhaust stack, radiators. Part of the EPC Contractor’s scope of supply will be to provide an Engine Hall that complies with the EPC Contractor Far Field noise requirements.</td>
</tr>
<tr>
<td>Gas Conditioning System</td>
<td>≤85 dbA at 3’ distant and 5’ above grade from the operating equipment.</td>
<td>≤65 dbA at 60’ from the Gas Conditioning System, including compressors and radiators.</td>
</tr>
<tr>
<td>Emissions Control System</td>
<td>≤85 dbA at 3’ distant and 5’ above grade from the ECS equipment and any external auxiliary operating equipment supplied as part of the ECS equipment package.</td>
<td>≤65 dbA at 60’ from the ECS. ECS package shall include an exhaust silencer. ECS package shall include noise treatment for the tempering air fans, AFCU, and ductwork.</td>
</tr>
<tr>
<td>Chiller</td>
<td>≤85 dbA at 3’ distant and 5’ above grade from the Chiller package.</td>
<td>≤60 dbA at 60’ from the chiller package.</td>
</tr>
</tbody>
</table>
OTHER REQUIREMENTS

A. Accessibility and Maintenance

Sufficient isolating devices (breakers, switches, valves) shall be provided so that where redundant components exist, one can be worked on while the other remains in service.

Design shall implement safe maintenance access by providing, for example electrical de-energization and lock tag out of electrical systems, and de-energization and/or mechanical protection from stored energy systems.

Operator interface panels and mechanical/electrical panels shall be located along the periphery of skids to facilitate easy access for operation and maintenance.

Piping for skid mounted equipment shall be routed, and valves and field devices located, so that they are accessible for operation and maintenance from outside the skid. If the size of the skid so necessitates that such devices must be located within the skid, a clear access path from the skid boundary to the valve/field device shall be provided for operation and maintenance.

If acoustic enclosures or barriers are provided for a skid, their design shall allow for inspections, testing, and minor maintenance (lubrication, etc.) without requiring removal of portions or all of the enclosure or barrier other than for removal or opening of access doors.

If acoustic enclosures or barriers are provided for a skid, their design shall allow for piping and conduit to penetrate the enclosure or barrier without encumbering removal of the enclosure or barrier for major maintenance (if so needed).

B. Coatings

All enclosures and large outdoor equipment shall be delivered with a “light cream” finish color. Equipment located within enclosures may be vendor’s standard color. Enclosure and equipment colors shall be:

- Material Specifications
  - Paint for finishing shall be Dulux Professional 2406 acrylic semi-gloss finish, or equivalent.

- Color Scheme
  - Structures shall be ICI Master Palette-10YY 63/162 (Light Cream).
  - Doors, Railings, and Ladders shall be ICI Master Palette-90GY 16/151 (Green Cream) trim.
Uninsulated equipment and piping components, including those that are skid mounted, shall utilize the paint colors specified in “General Requirements - Plant Systems & Tagging Requirements.” (Attachment 6.2)

Paint coatings exposed to the weather shall be sunlight and weather resistant.

Paint coatings exposed to chemical splashing or environments shall be chemically compatible and chemically resistant.

Surfaces to be coated shall be prepared and the coatings applied in accordance with the coating manufacturer’s instructions and SSPC standards.

Stainless steel shall be left unpainted.

Exposed unpainted and uncoated surfaces shall be of a corrosion-resistant metal.

Refer to the Structural Requirements for coating requirements for structural steel (columns, beams, plates) that will be field assembled by the EPC Contractor.

C. Maximize Shop Fabrication

In order to minimize field assembly time and cost, the Proposer shall fabricate and assemble their equipment in the shop to the maximum feasible extent prior to delivery to the Site. Examples include:

1. Pipe ends shall be delivered cut to length, prepped, and covered to protect them and prevent intrusion of foreign material during shipping

2. Columns shall be delivered with baseplates already welded to the column

3. Field assembled structural steel shall be galvanized and delivered with holes pre-drilled and ready for assembly.

4. Piping shall be furnished as spools with field fit up minimized.

5. Small truck-shippable enclosures shall be delivered assembled and ready for off-load onto their foundation
COMBUSTION TURBINE GENERATOR SPECIFICATION

A. Introduction
This Specification provides the requirements for supply of combustion turbine generators within the scope of the RFP. These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes and standards, as well as good practice. The equipment furnished by the Proposer shall be designed and manufactured in a manner suitable for intended operation within a load serving municipal utility.

Landfill gas (LFG) is the primary fuel for the Scholl Canyon Landfill Power Project (see Attachment 5). The fuel gas system receives landfill gas from the Los Angeles Sanitation District Scholl Canyon Landfill. Natural gas is the secondary fuel for the Scholl Canyon Landfill Power Project. In addition to LFG, the fuel gas system receives Public Utility Commission Rule 30 quality natural gas from the Southern California Gas Company (SCGC) as needed.

B. Scope of Supply
Self-Contained packaged combustion turbine generator scope of supply:
1. Turbine
   a. Landfill gas fueled, augmented by up to 10% (as total heat content) PUC Rule 30 quality natural gas fuel.
   b. Self-cleaning inlet air filtration system.
   c. As an option, a mechanical chilling inlet air cooling system.
   d. Anti-icing system (if required as determined by Proposer).
   e. Water wash system for off-line water washes.

2. Generator
   a. 12.47 kV with 0.85 Power Factor in accordance with Attachment 9.
   b. Electrical Protection PTs, CTs, and relays.
   c. Neutral Grounding Transformer and Resistor.
d. Digital Generator Protection Relay System and settings.

e. Automatic Synchronizer.

f. Generator metering including MW, MVAR, Frequency, Voltage and Field Amperage.

g. Generators shall be air cooled.

3. Exciter

a. Brushless.

b. Automatic Voltage Regulator.

4. Starting System

Turbines may rely upon back feed from the grid for starting. 4.16 kV and 480 V will be available.

5. Inlet Air Ductwork

a. Silencer.

b. Self-cleaning filtration.

c. Inlet air cooling, if supplied, shall be by mechanical chilling. If a mechanical chiller is selected, also refer to the Inlet Air Mechanical Chiller Specification, Attachment 14.

d. Support structure including ladders, stairs, and platforms for maintenance and operational access.

e. Internal lighting in the filter house to facilitate inspection and service.

6. Fuel Gas System

a. Final Fuel Duplex Coalescing Gas Filter for each turbine.

b. Fuel Gas Block and Bleed Valves.

c. Fuel gas metering.

d. Fuel gas control valve.

e. Gas vents.

7. Turbine and Generator Lube Oil Skid
a. Stainless steel off skid air-cooled lube oil cooler.
b. Stainless steel oil tank with heater.
c. Oil tank vent separator and flame trap.
d. Stainless steel duplex lube oil filter system.
e. Stainless steel piping system.
f. Turbine driven main lube oil pump.
g. AC motor driven lube oil pump.
h. DC motor driven backup lube oil pump.
i. Oil level, pressure and temperature indication.
j. Pressure and temperature regulators.

8. Control system for supervisory control, monitoring and protection of the combustion turbine generator and its related auxiliaries including:
   a. On-skid local operator interface.
   b. Equipment status.
   c. Process variables.
   d. Fire and combustible gas monitoring.
   e. Vibration monitoring

   In addition, the control system shall include a local HMI and interface with the Plant Control System (PCS) to integrate the combustion turbine generator control into the overall plant system as well as providing information on the health of the turbine to the PCS. If the Proposer is supplying a Turbine Control Panel to serve as the I/O interface with the Plant Control System, it shall be shipped to the EPC Contractor’s Power Distribution Center (PDC) vendor for installation in the PDC prior to its delivery to the site.

9. Where Variable Frequency Drives are furnished for any motors, the Proposer shall also supply the VFDs as well as any specialty cable needed for the VFDs. The VFDs shall be shipped to the EPC Contractor’s Power Distribution Center (PDC) vendor for installation in the PDC prior to its delivery to the site and the specialty cable shipped to the project site.
10. Auxiliary Skids as needed for Local Control, Starting, Variable Frequency Drives, etc. As an alternative, local control of the turbine may also be implemented via Proposer’s Turbine Control Panel in the PDC.

11. Fire detection and suppression system, including interface with the plant fire alarm system. If refillable bottles (CO₂ or otherwise) are used as a part of the suppression system, they shall utilize standard United States connections for their connection and refilling.

12. Turbine and equipment enclosures to provide weather and dust protection, noise mitigation, and serve as boundaries to aid in the detection and suppression of fires. The enclosures shall be provided with AC lighting to provide illumination for access and egress at all times. Ventilation shall be provided to maintain an environment suitable for the equipment as well as a habitable for periodic inspections during operation. Inlet and exhaust vents shall be silenced. Stairs shall be utilized as the primary means of access to all enclosure entrances with doors. Upper levels of the inlet air system may be accessed via ladders.

13. Sole plates, shear keys, and jacking screws shall be in the PIME scope of supply.

14. Special tools and lifting devices needed for maintenance of the combustion turbine generator shall be furnished as part of the PIME scope. Where multiple units of the same model are supplied, only one set need be supplied.

15. Proposer shall furnish correction curves to correct observed performance back to guarantee conditions.

16. Proposer shall furnish performance degradation curves that illustrate performance degradation from “new and clean” conditions.

17. Proposer shall furnish permitting information as required by the City, and their consultants and representatives, for permitting the Proposed Scholl Canyon Landfill Power project.

18. Proposer shall furnish engineering information for use by the City, their consultants and representatives, and their EPC Contractor for design and construction of the Proposed Scholl Canyon Landfill Power Project.

19. Rigging, installation, and commissioning instructions for use by the EPC Contractor.
**Work Not Included**

The following items will be furnished by others:

1. External power and control wiring.
2. Compressed air.
3. Foundations and anchor bolts.
4. Unloading and storage.
5. Installation.

**Scope Boundaries/Terminal Points/Interfaces**

The following terminal points define the boundaries of the Scope of Supply:

1. Combustion Air – the Inlet Air Duct Entrance
2. Inlet Air Cooling (Mechanical Chilling) – the flanges at the skid boundary upstream and downstream of the Chilling Coil Supply and Return Isolation Valves respectively
3. Inlet Air Cooling Condensate Drain – the flange at the skid boundary at grade
4. Water Wash Supply - the flange at the skid boundary upstream of the Water Wash Pump Suction Isolation Valve
5. Water Wash Drain - the flange at the skid boundary for the water wash drain
6. Fuel Gas - the prepped weld connection at the skid boundary. If the other fuel gas scope equipment is upstream of this point such as the fuel gas isolation/block and bleed valves, then they shall be shipped loose for installation by the EPC Contractor.
7. Turbine Exhaust – the Turbine Exhaust Flange
8. 12.47 kV – the 12.47 kV generator breaker connections for the customer
9. 480 V – the 480 V Motor Control Center(s) Customer connections and Variable Frequency Drives (if utilized)
10. 120 VAC/125 VDC – the 120 VAC and 125 VDC Customer supply connections. Note that the batteries are supplied by the EPC Contractor and are located in the PDC.
11. Grounding – the Customer ground connections
12. Controls – Turbine Control Panel(s) supplied by Proposer that serve as the I/O interface with the Plant Control System.
13. Electrical Protection - Relay Protection Panels supplied by the Proposer that serve as the interface with the plant electrical protection system.

14. Service Air – the flange at the skid boundary upstream of the supply isolation valve

15. Instrument Air – the flange at the skid boundary upstream of the supply isolation valve

Commodities (piping, tubing, cable, conduit, raceway, etc.) within the package boundary (combustion turbine and associated skids that are a part of the package) are within the Proposer’s scope of supply.

C. References

All mechanical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

- ANSI: American National Standards Institute
- API: American Petroleum Institute
- ASTM: American Society for Testing and Materials
- Cal-OSHA: California Occupational Safety and Health Administration
- IEEE: Institute of Electrical and Electronics Engineers
- ISA: Instrument Society of America
- NEC: National Electric Code
- NEMA: National Electrical Manufacturer’s Association
- NFPA: National Fire Protection Association
- OSHA: Occupational Safety and Health Act
- UL: Underwriters Laboratories

The requirements contained within the following RFP Attachments are incorporated into this Specification by reference:

1. Site Conditions – Attachment 3
2. Site Interconnections – Attachment 4
3. LFG Composition – Attachment 5
4. General Requirements – Attachment 6.1 – 6.17
D. Systems Design Criteria

This section describes requirements in addition to those contained in the Site Conditions, Site Interconnections, Functional Requirements, and General Requirements attachments to the RFP.

General

1. Turbine shall be capable of operating on 100% landfill gas as specified in Attachment 5. However, under low methane content the landfill gas will be augmented with up to 10% natural gas, based on total fuel high heating value.

Arrangement

1. The CTG’s shall be of modular design with shop assembly to maximum extent possible. Modules shall be shipped as complete assemblies. Field assembly and welding shall be minimized.

2. CTG’s of the same model shall be laid out identically and use identical components.

Design Features

1. The inlet air filter system shall be self-cleaning.

2. The water wash system shall be capable of off-line water washes.

Lube Oil System

1. The lube oil system shall be constructed of stainless steel (tank, piping, and lube oil cooler tubes).

2. The main lube oil pump shall be turbine driven.

3. The standby lube oil pump shall be 1 x 100%. It shall be AC motor driven.

4. The emergency lube oil pump shall be DC motor driven. It shall be sized to provide adequate lube oil flow for the entire duration of turbine roll down after a trip.

5. Resettable circuit breakers and not fuses shall be used for the lube oil pumps.

6. The lube oil system shall include a duplex oil filter that can be swapped on line.

7. The lube oil system shall include a thermostatically controlled electric heater to maintain minimum lube oil temperature.
8. Key parameters such as pump status, temperatures, and lube oil tank level shall be available through the Plant Control System.

Fire Protection System

1. The fire detection system shall comply with NFPA code and utilize gas detection, fire eyes, and heat detectors to detect the presence of elevated gas concentration in the enclosure or a fire.

2. A detectable gas concentration level, below the Lower Explosive Limit (LEL) shall cause the ventilation to increase to maximum and generate an alarm to the Plant Control System.

3. A gas concentration above the LEL shall trip the turbine and trip the fuel gas supply.

4. If a fire is detected (flame or excess heat), the detection system shall trip the turbine, trip the fuel gas supply, isolate the enclosure, initiate a CO₂ discharge, and send a signal to the plant Fire Alarm Panel as well as the Plant Control System. Sufficient CO₂ bottle capacity shall be provided to allow for two discharges within 1 hour.

Gas Vents, Bleeds, and Purges

1. Aside from operation of the block and bleed system for the fuel gas valves, the CTG’s shall not release fuel gas to atmosphere during any normal operating scenario.

2. Emergency gas relief from a pressure safety valve (if required) to a safe location shall be included in the plant design.

3. The capability to vent compressed fuel gas shall be included as an operator initiated hard-wired E-stop, but it shall not be permissible to utilize emergency relief for contingent or regular operation of the combustion turbines.

4. The safe discharge location shall follow the recommendations of API 521 for radiative heat assuming ignition of the release and jet mixing of the unburned gas for dispersion.

5. The design of the routing, placement, and support of any fuel gas vent/purge/bleed piping shall be provided by the Proposer. Any required silencers shall also be supplied by the Proposer. Material for the pipe and supports will be provided by the EPC Contractor.
Control System

1. The micro-processor based control system shall provide for control, monitoring, and protection of the CTG package (turbine, generator, auxiliaries) with:
   a. On-skid local operator interface.
   b. On-package field devices for temperature, flow, pressure, valve position, etc.
   c. Interface with the Plant Control System through the Turbine Control Panel to provide the control room remote operation and monitoring of the CTG package.
   d. Hard-wired interface with the CEMS.
   e. Hard-wired E-stops for manual actuation by the control room operator.

SCAQMD Compliance Requirements

The gas turbine and Proposer shall comply with SCAQMD requirements as follows:

1. At least 60 days prior to start of installation of turbine generator equipment, the Proposer shall provide to the City to deliver to SCAQMD:
   a. Gas Turbine final design drawings.
   b. P&I Diagrams.
   c. Control Diagrams.
   d. Equipment Specifications (Make, Model, Dimensions, Size and Maximum Capacity).

2. Continuous flow indicating and recording device to measure and record quantity of landfill gas (scfm) supplied to each turbine.

3. Sampling ports and welded nipples with caps, in the exhaust stack and provide safe access to the sampling ports in accordance with SCAQMD rule 217.

4. Continuous combustion chamber temperature monitoring and recording system as per 40 CFR Part 64.7. Such system shall have accuracy within +/- 1% of the temperature being monitored and capable of recording at least every 15 minutes.

5. Each turbine shall meet the following emission requirements:
a. CO: 25 PPMV, @ 15% O2, Dry  
b. NOx: 15 PPMV, @ 15% O2, Dry  
c. PM: Combustion Contaminant, 0.1 Grain/DSCF of Gas, Calculated @ 12% CO2,  
   Averaged over 15 consecutive minutes  
d. ROG: 20 PPMV as Hexane, @ 3% O2, Dry or 98% (by wt.) destruction efficiency  
e. SOx: 150 PPMV H2S, .9 LB/MWh or .15 lb/MMBTU, .2%  
f. Formaldehyde: 91 PPMV, @ 15% O2, Dry

E. Spare Parts

Operational Spare Parts

Operational spare parts are not included in Proposer’s current scope of supply, but shall be quoted by Proposer once City’s spares lay-in philosophy has been finalized.

Operational Spare parts quotation shall:

1. Be inclusive for and applicable to all equipment components, auxiliaries, accessories, materials, and lubricants being furnished under the Contract with respect to the RFP scope.

2. Include for each recommended spare part, the unit price, quantity, description, part number references, etc., to completely identify the item and the equipment component for which it is recommended.

3. Be based upon EX-W, supplier facility lead times. Proposer shall indicate the point of shipment, and the estimated lead-time required for delivery the spare parts after an order is placed. Actual lead-time shall be finalized upon placement of order, dependent upon stock/inventory).

All requirements regarding quality control and documentation that apply to the original parts of the specified equipment shall apply equally to the spare parts of the specified equipment.

A spare parts list shall include the part number for all parts.
Startup Spare Parts

Proposer shall provide a list of startup spare parts that they shall supply. Compensation for the listed startup spare parts shall be included in the Contract Price.

Consumable Parts

Proposer shall provide a list of startup consumable parts that shall be supplied. Compensation for the startup consumable parts shall be included in the Contract Price.

F. Field Services

Proposer shall provide technical supervisory services, which shall include technical advice, assistance and guidance in the unloading and erection of the CTG’s furnished under this specification. The technical personnel shall cooperate with the City’s erector in relation to the CTG’s.

Proposer shall provide startup supervision services, which shall include instruction, advice, and training of City’s personnel in correct startup, safe operation, maintenance procedures, testing, and placing of the equipment into service.

Proposer shall provide necessary technical services as required to resolve preliminary operating problems as they develop until satisfactory operation is achieved and the City accepts the unit. All technical services required to correct design or manufacturing errors will be at the Proposer’s expense.

G. Testing

Factory Tests

1. Factory tests shall include the manufacturer’s tests which shall be witnessed by the city or the city’s representative. Factory tests shall be performed after a minimum 10 business day notification to the City.

2. Proposer shall perform all factory testing, including alignment, adjustment, and calibration to prepare the CTG’s for shipment and subsequent installation.
3. Project specific, detailed test procedures shall be submitted to the City or their designated representative for approval no less than fourteen (14) working days prior to the beginning of any testing.

4. Proposer shall furnish without delay and before shipment of the units a complete report covering all factory tests, and shall also submit with the test report a tabulation showing any revised performance data. Revised figures shall be based on the actual tests.

5. Six certified copies of the above test report and data shall be furnished to City.

Field Tests

1. City reserves the right to make any acceptance tests found necessary.

2. Warranty Testing

   Field tests will be conducted to check performance of the equipment furnished. Using data from shop tests, the logged field data will be compared with calculated expected performance at the field conditions. Any variance in performance will invoke the warranty provisions.

   Proposer’s field representative shall be present during the tests.

3. Should it be determined that the equipment does not comply with the requirements of this specification, the Proposer shall, in accordance with agreed warranty, make any adjustments and/or modifications necessary for compliance.

H. Engineering Deliverables

In accordance with Attachment 6.4, Proposer shall submit documentation required per 6.4 and information listed below:

Included with Proposal

1. Description of all equipment, accessories and materials. Descriptive catalogs and literature complete with appropriate illustrations describing the equipment shall also be included.

2. List of proposed accessories.
Scholl Canyon Landfill Power Project  
Power Island and Major Equipment Request for Proposals  
Attachment 7 – Combustion Turbine Generator Specification

3. Typical outline drawings.
4. CTG data sheets including noise data.
5. Recommended spare parts list with pricing.

During Negotiations
1. Conformed CTG specifications.
2. Conformed CTG data sheets.
3. CTG performance curves.
4. CTG noise data.

LNTP Phase
1. Module outline drawings (fully dimensioned).
2. Foundation loads

FNTP Phase
1. CTG outline drawings (fully dimensioned). CTG dimensional drawings shall include, but not be limited to, the following information:
   a. Complete nameplate data.
   b. Lifting data and center of gravity.
   c. CTG total weight.
2. Certified dimensioned outline and fabrication drawings of all equipment and subsystems provided by the PIME Contractor.
3. Anchor Bolt and Sole Plate data.
4. Equipment Preservation and Storage Instructions.
5. Rigging, Erection, and Commissioning Instructions.
6. Pressure vessel calculations.
7. Welding procedures.
8. CTG performance curves.

“As-Built”
1. All Code required documentation for pressure vessels and heat exchangers.
2. All equipment test reports.
3. CTG and pump performance curves and test data.
4. As-Built drawings.
5. Equipment parts list with assembly drawings.
6. Final Spare Parts List.
7. Startup and Commissioning Manuals.
8. Technical and Service Bulletins.
Reciprocating Engine Generator Specification

A. Introduction

This Specification provides the requirements for supply of reciprocating engine generators (REG) within the scope of the RFP. These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes and standards, as well as good practice. The equipment furnished by the Proposer shall be designed and manufactured in a manner suitable for intended operation within a load serving municipal utility.

Landfill gas (LFG) is the primary fuel for the Scholl Canyon Landfill Power Project (see Attachment 5). The fuel gas system receives landfill gas from the Los Angeles Sanitation District Scholl Canyon Landfill. Natural gas is the secondary fuel for the Scholl Canyon Landfill Power Project. In addition to LFG, the fuel gas system receives Public Utility Commission Rule 30 quality natural gas from the Southern California Gas Company (SCGC) as needed.

B. Scope of Supply

Proposer shall propose complete skid mounted packaged reciprocating engine generators to burn landfill gas as fuel to provide electricity at guarantee Design Point and at all other conditions as provided for in Attachment 3. The complete packaged reciprocating engine generator scope of supply includes:

1. Reciprocating Engine
   a. Air intake.
   b. Inlet air filtration.
   c. Turbocharging.
   d. Turbocharger aftercooler (air cooled).
   e. Fuel injection system.
   f. Engine.
   g. Ignition system.
   h. Starting system.
   i. Lube oil (air cooled) including startup and backup lube oil pumps and lube oil replenishment tank and piping.
   j. Engine Governor/Control System.
   k. Engine cooling radiators (air cooled jacket water).
l. Exhaust sound attenuation.
m. Exhaust emissions control system (oxidation and NO\textsubscript{x} control and associated equipment including exhaust temperature control if required and exhaust particulate control as specified in other Sections and Attachments).

n. Exhaust ducting.
o. Stack.
p. All ladders and platforms required for regular maintenance of the engine and components.

q. Coupling and or gear connection to the generator.
r. Permanent assembly base for engine and generator.
s. Instrumentation and control system, local panel and remote supervision.
t. Assembly and shipping preparation.

2. Generator

a. Generator (12.47 kV with 0.85 power factor).
b. Digital Generator Protection Relay System and settings.
c. Electrical Protection PTs, CTs, and relays.
d. Neutral Grounding Transformer and Resistor.

e. Shaft bonding system.
f. Generator shall be air cooled.
g. Generator instrumentation and control (local panel and remote supervision).
h. Automatic synchronizer.

3. Exciter

a. Brushless.
b. Automatic Voltage Regulator.

4. Starting System

Engines may rely upon back feed from the grid for starting. 4.16 kV and 480 V will be available.

5. Inlet Air Ductwork

a. Silencer.
b. Self-cleaning filtration.
c. Support structure including ladders, stairs, and platforms for maintenance and operational access.

6. Fuel Gas System
a. Final fuel duplex coalescing gas filter for each turbine.
b. Fuel gas pressure regulation system including pressure relief as required.
c. Fuel gas block and bleed valves.
d. Fuel gas metering.
e. Fuel gas injection system.

7. Engine Lube Oil System
The engine lube oil system shall be the Proposer’s standard. It will typically include:

a. Engine or motor driven main lube oil pump.
b. Air-cooled lube oil cooler.
c. Lube oil replenishing reservoir.
d. Lube oil filtration utilizing a duplex filter allowing change out of filters while in operation.
e. Instrumentation for pressure maintenance, and temperature control.
f. Lube oil systems shall include pre-lubrication, aftercooling, and emergency lube oil pumps. Pre-lubrication and aftercooling may be accomplished by the same pump.

8. Generator Lube Oil System
If the generator lube oil system is separate from the engine lube oil system, it shall include:

a. Stainless steel off skid air-cooled lube oil cooler.
b. Stainless steel oil tank with heater.
c. Oil tank vent separator and flame trap.
d. Stainless steel duplex lube oil filter system.
e. Stainless steel piping system.
f. AC motor driven main lube oil pump.
g. DC motor driven backup lube oil pump.
h. Oil level, pressure and temperature indication.
i. Pressure and temperature regulators.

9. Miscellaneous
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 8 – Reciprocating Engine Generator Specification

a. Auxiliary skids as needed for control, lube oil, water injection, starting, variable frequency drives.
b. Equipment shall be located in a building provided by the EPC Contractor.
c. Proposer shall furnish access stairs and platforms around each engine/generator set.
d. Sole plates, shear keys, and jacking screws.
e. Proposer shall furnish correction curves to correct observed performance back to guarantee conditions.
f. Proposer shall furnish performance degradation curves that illustrate performance degradation from “new and clean” conditions.

Work Not Included
The following items will be furnished by others:

1. External power and control wiring.
2. Compressed air.
3. Foundations and anchor bolts.
4. Unloading and storage.
5. Installation.

Scope Boundaries/Terminal Points/Interfaces

1. Combustion Air – Inlet Air Duct Entrance
2. Generator Cooling - Air cooled
3. Engine Exhaust – Stack discharge
4. 12.47 kV – 12.47 kV generator customer connection
5. 480 Volt, 3 phase, 60 Hz house power to the Supplier’s terminals
6. Controls – On skid or PDC mounted local panels with Modbus Ethernet and/or fiber optic communication links to the Plant Control System.
7. Fuel Gas - the flange at the skid boundary. If the other fuel gas scope equipment is upstream of this point such as the fuel gas isolation/block and bleed valves, then they shall be shipped loose for installation by the EPC Contractor.
C. References

All mechanical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

- ANSI American National Standards Institute
- API American Petroleum Institute
- ASTM American Society for Testing and Materials
- Cal-OSHA California Occupational Safety and Health Administration
- IEEE Institute of Electrical and Electronics Engineers
- ISA Instrument Society of America
- NEC National Electric Code
- NEMA National Electrical Manufacturer's Association
- NFPA National Fire Protection Association
- OSHA Occupational Safety and Health Act
- UL Underwriters Laboratories

The requirements contained within the following RFP Attachments are incorporated into this Specification by reference:

1. Site Conditions – Attachment 3
2. Site Interconnections – Attachment 4
3. LFG Composition – Attachment 5
4. General Requirements – Attachment 6.1 – 6.17

D. Systems Design Criteria

General

1. The engine shall be a stationary, liquid cooled, spark ignited low speed engine (operating at 1800 rpm or less) four-cycle design with either vertical in-line or V-type arrangement of piston cylinders. Engines using a pilot fuel for ignition, other than landfill gas are unacceptable.

2. The engines will be located in a building. The supply of the building is within the EPC Contractor’s scope of supply.

Engine Package
1. Reciprocating engine generators shall be delivered assembled and skid mounted. If needed, due to shipping limitations, the generator may be shipped separately. Auxiliary equipment shall also be shipped on the engine skid or on separate skids. If any equipment is shipped separately Proposer shall provide assembly instructions, including assembly inspection.

2. A base isolation system shall be furnished for installation between the generator set base and the mounting surface to prevent transference of vibration from the reciprocating engine generator to the foundation. The isolator components shall be resistant to heat and age, and impervious to oil, water, antifreeze, and cleaning compounds.

3. Stairs and platform access to the equipment furnished with each engine-generator shall be compliant with CalOSHA rules and regulations.

**Starting System**

Proposer shall furnish an engine starting system based on backfeed AC electric power or compressed air. If proposed starting system is based on compressed air, Proposer shall also provide a compressed air system capable of 2 starts per engine. Proposer may utilize plant DC power, as required, to run the lube oil system and controls.

**Intake Air**

1. The engine shall be furnished with a complete air intake system including inlet filter, pressure differential monitoring across the air intake filter.

2. Proposer shall furnish the engine with the manufacturer’s standard turbocharging system.

3. The turbocharger exhaust shall be cooled, if required, by an air cooled aftercooler. Aftercooler surfaces shall be manufactured from corrosion resistant materials.

**Exhaust System**

1. The engine exhaust system shall be installed to discharge combustion gases with minimum restriction. The exhaust system, including silencer, filter, and emissions reduction catalysts shall be designed for minimum restriction.

2. Proposal shall include exhaust silencer, filter, exhaust temperature reduction (if required), catalyst housing, oxidation and selective catalytic reduction catalyst, aqueous ammonia (19%) vaporization system, exhaust gas ammonia injection system, exhaust stacks, stack
support system, and ducting. Exhaust silencer furnished shall be an in-line type. City’s intent is that each REG has its own exhaust stack.

3. Exhaust ducting shall be installed with 10 inches minimum clearance from combustible material or incorporate appropriate insulation and/or shielding. Exhaust piping shall be shielded or insulated for personnel protection.

4. Exhaust ducting shall be supported and braced to prevent weight or thermal growth being transferred to the engine connections. Flexible expansion fittings shall be furnished to accommodate thermal growth. Support dampers and springs shall be included where necessary to isolate vibration. Proposer shall furnish manufacturer’s recommended exhaust piping installation details.

5. It is the responsibility of the Proposer to assure that the exhaust system is installed to the satisfaction of the Proposer.

**Fuel Gas System**

1. Engines shall be furnished with manufacturer’s standard fuel gas and air mixing system designed to utilize 100% landfill gas. In addition, the engine shall be capable of accepting up to 10% natural gas and mixing this natural gas with landfill gas.

2. At a minimum, the fuel gas system shall include a filter-coalescer, liquid trap, fuel pressure monitoring and control, and manufacturer’s standard fuel forwarding system to fuel the engine. Proposer shall assume that the fuel gas is saturated with water at the inlet to the pressure reduction station.

**Lube Oil System**

1. The engine lubrication system shall be designed assure positive lubrication of wear components to ensure long life. The lubrication system shall be furnished with one (1) 100% capacity AC motor driven startup and one DC motor driven emergency back-up lubrication pump, lubricating oil reservoir, oil reservoir heater, lubricating oil air cooler, shaft driven or ac power motor driven main lubrication pump, with local and remotely monitored instrumentation for essential parameters at key locations to assure proper function of the lubrication system.
2. The main lubrication oil system shall incorporate a full flow duplex filter with divert valve to maintain lubricant filtration during filter replacement. The duplex filters shall feature separate filter housing drains to the oil reservoir to facilitate filter replacement. Lubricating oil shall have instrumentation for local and remote supervision of pressure and temperature at critical points in the lubrication system.

3. Due to consumption of lubricating oils, sufficient size replenishment tank shall be provided to assure sufficient quantity of oil make up for the engines.

**Cooling System**

1. The engine cooling systems shall be an air-cooled closed loop design with provision for filling, coolant replacement, expansion, and de-aeration.

2. Instrumentation shall be provided to allow local and remote supervision of coolant temperature entering and leaving the engine and generator components being cooled.

3. Coolant shall utilize only propylene glycol based antifreeze protection. Ethylene glycol shall not be utilized.

4. Heat absorbed by the engine cooling systems shall be discharged to the atmosphere through a radiator (an air cooled heat exchanger). The radiator shall be sized to not exceed the maximum permissible coolant temperature for the engine generator is operating at full rated load over the range of site conditions (see Attachment 3 – Site Conditions).

5. The radiators will be installed remotely from the engine skid. Performance of remotely installed radiators shall remain the responsibility of the Proposer. Coolant pumping systems shall be sufficient for remotely installed radiators located up to 100 feet away from the engine.

6. Proposer shall inspect each radiator and provide acceptance document to the City prior to start up. Performance of the radiators shall remain the responsibility of the Proposer.

**Control System**

1. The engine Governor/Control System shall be manufacturer’s standard equipment. The controls, protection and monitoring systems of the generator set and its operation shall be the responsibility of the Proposer.
2. The control system shall be capable of interfacing with and providing engine and generator status information to the Plant Control System (PCS) as well as receiving control inputs (start, stop, load) from the PCS.

3. Proposer shall furnish a local control panel mounted on the engine skid or in the PDC with communications linkage for remote monitoring and control in the Plant Control System. Local panel shall include all supervisory, troubleshooting, equipment protective intervention and emergency shutdown. The local control panel shall have local and remote annunciation of alarms and diagnostic indication of the alarms and alarm history.

4. During engine or generator shut down, individual red lights on the annunciator shall signal operational faults indication reason for shut down such as high water temperature, vibration, low oil pressure, over-speed, over-crank and others. Each individual engine shall have its own annunciator and shall be capable of communicating with the plant control room.

5. ISO red emergency stop pushbutton shall be provided, and all controls, annunciation, and monitors labeled with ISO symbols. The engine controls shall be arranged to stop the engine if a remote maintained contact emergency stop switch is depressed.

6.

**Generator**

The generator shall be Proposer’s standard, rated for continuous service and meets the requirements specified in Attachment 9, Synchronous Generators.

**Air Quality Compliance Requirements**

The engine emissions shall not exceed the following limits (except during periods of start-up and shutdown which shall not exceed 15 minutes per incident):

1. Volatile Organic Compounds (VOC): 30 ppmv @15%O2, Dry, average over sampling time
2. Oxides of Nitrogen (NOX): 11 ppmv @15%O2, Dry, 15 minute average
3. Carbon Dioxide (CO): 250 ppmv @15%O2, Dry, 15 minute average
4. Sulfur Oxides (SOX): 60 ppm sulfur as H2S (inlet) averaged monthly
A sampling port shall be installed at the inlet gas line to each engine to allow the collection of landfill gas samples per SCAQMD Rules 1150.1, 217, & 431.1

Two sampling ports shall be installed in the engine exhaust, 8 to 10 duct diameters downstream and two duct diameters upstream of any flow disturbance, at 90 degrees apart, and shall consist of two 2-1/2 inch welded nipples with caps. Adequate and safe access to the test ports shall be provided.

Additional SCAQMD requirements are provided in Attachment 12, Continuous Emission Control System specifications.

Proposer shall furnish one continuous flow indicator at each engine to measure and record the volumetric flow rate (SCFM) of landfill gas and a separate flow indicator to measure and record the volumetric flow rate (SCFM) of natural gas. The recording device shall be capable of recording gas flow rate at least every 15 minutes.

E. Spare Parts

Operational Spare Parts

Operational spare parts are not included in Proposer’s current scope of supply, but shall be quoted by Proposer once City’s spares lay-in philosophy has been finalized.

Operational Spare parts quotation shall:

1. Be inclusive for and applicable to all equipment components, auxiliaries, accessories, materials, and lubricants being furnished under the Contract with respect to the RFP scope.

2. Include for each recommended spare part, the unit price, quantity, description, part number references, etc., to completely identify the item and the equipment component for which it is recommended.

3. Be based upon EX-W, supplier facility lead times. Proposer shall indicate the point of shipment, and the estimated lead-time required for delivery the spare parts after an order is placed. Actual lead-time shall be finalized upon placement of order, dependent upon stock/inventory).
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 8 – Reciprocating Engine Generator Specification

All requirements regarding quality control and documentation that apply to the original parts of the specified equipment shall apply equally to the spare parts of the specified equipment.

A spare parts list shall include the part number for all parts.

**Startup Spare Parts**

Proposer shall provide a list of startup spare parts that they shall supply. Compensation for the listed startup spare parts shall be included in the Contract Price.

**Consumable Parts**

Proposer shall provide a list of startup consumable parts that shall be supplied. Compensation for the startup consumable parts shall be included in the Contract Price.

**F. Field Services**

Proposer shall provide technical supervisory services, which shall include technical advice, assistance and guidance in the unloading and erection of the REG’s furnished under this specification. The technical personnel shall cooperate with the City's erector in relation to the REG’s.

Proposer shall provide startup supervision services, which shall include instruction, advice, and training of City's personnel in correct startup, safe operation, maintenance procedures, testing, and placing of the equipment into service.

Proposer shall provide necessary technical services as required to resolve preliminary operating problems as they develop until satisfactory operation is achieved and the City accepts the unit. All technical services required to correct design or manufacturing errors will be at the Proposer’s expense.

**G. Testing**

**Factory Tests**

1. Factory tests shall include the manufacturer’s tests which shall be witnessed by the city or the city’s representative. Factory tests shall be performed after a minimum 10 business day notification to the City.
2. Proposer shall perform all factory testing, including alignment, adjustment, and calibration to prepare the REG’s for shipment and subsequent installation.

3. Project specific, detailed test procedures shall be submitted to the City or their designated representative for approval no less than fourteen (14) working days prior to the beginning of any testing.

4. Proposer shall furnish without delay and before shipment of the units a complete report covering all factory tests, and shall also submit with the test report a tabulation showing any revised performance data. Revised figures shall be based on the actual tests.

5. Six certified copies of the above test report and data shall be furnished to City.

**Field Tests**

1. City reserves the right to make any acceptance tests found necessary.

2. Warranty Testing

   Field tests will be conducted to verify the performance of the equipment furnished. Proposer’s field representative shall be present during the tests.

3. Should it be determined that the equipment does not comply with the requirements of this specification, the Proposer shall, in accordance with agreed warranty, make any adjustments and/or modifications necessary for compliance.

**H. Engineering Deliverables**

In accordance with Attachment 6.4, Proposer shall submit documentation required in 6.4 and information listed below:

**Included with Proposal**

1. Description of all equipment, accessories and materials. Descriptive catalogs and literature complete with appropriate illustrations describing the equipment shall also be included.
2. List of proposed accessories.
3. Typical outline drawings.
4. REG data sheets including noise data.
5. Recommended spare parts list with pricing.

During Negotiations
1. Conformed REG specifications.
2. Conformed REG data sheets.
3. REG performance curves.
4. REG noise data.

LNTP Phase
1. Module outline drawings (fully dimensioned).
2. Foundation loads.

FNTP Phase
1. REG outline drawings (fully dimensioned). REG dimensional drawings shall include, but not be limited to, the following information:
   a. Complete nameplate data.
   b. Lifting data and center of gravity.
   c. REG total weight.
2. Certified dimensioned outline and fabrication drawings of all equipment and subsystems provided by the PIME Contractor.
3. Anchor Bolt and Sole Plate data.
4. 
5. Equipment Preservation and Storage Instructions.
6. Rigging, Erection, and Commissioning Instructions.
7. Pressure vessel calculations.
8. Welding procedures.
9. REG performance curves.
“As-Built”

1. All Code required documentation for pressure vessels and heat exchangers.
2. All equipment test reports.
3. REG and pump performance curves and test data.
4. As-Built drawings.
5. Equipment parts list with assembly drawings.
6. Final Spare Parts List.
7. Startup and Commissioning Manuals.
8. Technical and Service Bulletins.
SYNCHRONOUS GENERATORS

A. Introduction

This Attachment provides the requirements for synchronous generators within the scope of the RFP. These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes and standards, as well as good practice. The synchronous generators offered by the Proposer shall be designed and manufactured in a manner suitable for intended operation within a load serving municipal utility.

The purpose of this document is to define the basis for design, fabrication, and testing of synchronous generators for the Scholl Canyon Landfill Power Project. It is not intended to be an all-inclusive specification but is a design standard which will ensure that the plant design and construction will meet specific goals such as safety, reliability, quality of construction, plant maintainability, efficiency, and operational flexibility.

Above all other considerations, safety in design shall be of paramount importance. Personnel safety shall be accounted for during all stages of the project, including construction, operation and maintenance.

B. Scope of Supply

This specification covers the overall scope of work and the technical requirements for the design, fabrication, and testing of synchronous generators complete with all necessary apparatus and accessories.

All apparatus and materials furnished by Proposer shall be suitable for the specified duty and shall be subject to review by the City. All materials and components not manufactured by the Proposer shall be products of qualified manufacturers.

The Proposer shall provide synchronous generators for each gas turbine or reciprocating engine supplied within the scope of this RFP including equipment, material, and design services of the synchronous generators and auxiliaries to make a complete plant installation comprising, but not limited to the following:

1. Synchronous Generator 12.47 kV (0.85 power factor).
2. Generator Breaker.
3. Electrical Protection PTs and CTs.
5. Shaft Bonding System.
6. Generator instrumentation and controls (local panel and remote supervision including MW, MVAR, Frequency, Voltage and Field Amperage).
7. Automatic Synchronizing System including synchronizing check relay.
8. Vibration Monitoring System for the generator bearings.
10. Generator comprehensive multifunction type Relay Protection System.
13. At the Proposer’s option, a base isolation system for installation between the generator set base and the mounting surface to prevent transference of vibration from the reciprocating engine generator to the foundation.

Electrical materials supplied and installed under this Specification shall be appropriate for the environment in which they shall be used, whether indoor, outdoor, or in classified areas as defined by Article 500 of the NEC.

C. References

All mechanical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

- ANSI  American National Standards Institute
- ASTM  American Society for Testing and Materials
- Cal-OSHA  California Occupational Safety and Health Administration
- ICEA  Insulated Cable Engineers Association
- IEEE  Institute of Electrical and Electronics Engineers
- ISA  Instrument Society of America
- NEC  National Electric Code
- NEMA  National Electrical Manufacturer’s Association
- NESC  National Electrical Safety Code
- NETA  National Electrical Testing Association
- NFPA  National Fire Protection Association
- OSHA  Occupational Safety and Health Act
D. Service Conditions

**General**

The generator shall be an air-cooled, salient pole rotor synchronous machine with wye connected windings rated for continuous service. The operating speed shall be 900 RPM or 1800 RPM depending on the driver characteristics. Rating of generator and all outdoor accessories shall be based on a 110°F maximum ambient temperature.

**Nameplate Rating**

The generator shall have a nameplate rating, at specified site conditions, as follows:

- kW (@50 °F): TBD
- kVA: TBD
- Power Factor: 0.85
- Terminal Voltage: 12.47 kV
- Phases: 3
- Frequency: 60 Hz
- Insulation Class: Class F
- Temperature Rise: Class B

E. Performance

**Engineering and Design**

The generator shall be close coupled to the power transfer gear, air cooled (IC 01), Open Drip Proof (IP 22 or better), and guarded, constructed to NEMA I standards. The generator MVA shall be 120% of the maximum driver output at the maximum lagging power factor under all operating conditions.

The generator shall also be mechanically and electrically capable of performance in accordance with the capability vs. ambient temperature shown in Table 1.
Table 1

<table>
<thead>
<tr>
<th>Air Temperature, °F</th>
<th>Minimum Generator Output, kW</th>
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<tbody>
<tr>
<td>30</td>
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</table>

In addition, the generator shall be able to operate at an off-design condition of 105% of the output shown in Table 1.

Generator efficiency shall be not lower than 96.4% at 0.85 power factor at 100% Full Load. Generator efficiencies shall be calculated according to IEC 34-2 Section 4, with all $I^2R$ losses corrected to 115°F.

F. Design Considerations

General

1. The generator shall be capable of operating successfully in parallel with other units of similar type, of the same capacity or inductive or non-inductive loads, constant or fluctuating loads with leading or lagging currents, within the specified capacity of the generator, in an outdoor location having unusual site service conditions described in Attachment 3 of this RFP.

2. The generator shall operate at all loads and endure sudden changes of load of any amount between zero and the extreme limit of the capacity of the generator without damage. The sudden opening of the external circuit shall not result in injury to the generator.
3. The generator shall be capable of withstanding 25 percent overspeed without mechanical injury.

4. The telephone influence factor and the residual component telephone influence factor shall not exceed the values given in ANSI C50.12, measured in accordance with IEEE Standard 115.

5. Sound pressure levels shall not exceed 85 dBA at 3 feet.

6. Space heaters shall be provided within the frame to prevent moisture condensation when the machine is not running. Surface temperature in accordance with Class 1, Group D, Division 2 requirements.

7. Generated wave form shall have a deviation factor of less than 10%. Harmonic content shall not exceed 5% total and 3% for any individual harmonic at no load.

8. Generator shall accommodate a variation of system voltage of ±5%.

9. All necessary engineering documents shall be delivered in accordance with Section J, below.

**Generator Frame and Bearings**

1. The stator frame shall be designed so that the natural period of vibration will not produce resonance, and so that there will be no undue vibration or distortion under any operating conditions.

2. Generator bearings shall be split sleeve type with an oil ring, and arranged for external oil supply from the common lube oil system furnished by Proposer. Temperature detectors shall be supplied in each bearing. Bearing insulation shall be supplied to prevent the flow of shaft current.

3. In addition One (1) 120 ohm @ 0 °C platinum resistance temperature detector shall be provided in each bearing.
4. Openings with removable covers in the stator frame shall be provided to permit external viewing of the stator end turns. Lifting lugs shall be provided on the generator frame.

**Generator Stator**

1. Stator laminations shall be fastened to the stator frame so as to prevent loosening in service or causing undue noise or vibration. The stator core shall be designed to limit eddy current losses.

2. The stator coils shall be insulated with multiple layers of mica tape and vacuum pressure impregnated to eliminate any voids. The end connections of the stator coils shall be rigidly supported and braced to prevent vibration or deformation under stresses due to short circuit conditions.

3. Six (6) 120 ohm @ 0 °C platinum resistance type temperature detectors shall be provided in the stator winding (2 per phase).

**Generator Rotor**

1. Individual laminated pole assemblies shall be held on the shaft block forging by means of "T" tails.

2. Shafts forging shall be supplied with a square block center section precision machined to accept the pole assemblies.

3. Pole assemblies shall be wound with rectangular copper wire or strap with appropriate bonding agents to ensure the integrity of the winding.

4. Pole faces shall include an amortisseur winding.

5. Shorting rings between the pole sections shall be supplied.

6. Ventilating fans shall be supplied on each end of the rotor assembly to move the cooling air through the generator. Any contact between fan and air baffle shall be non-sparking.
7. Provision shall be made in the design of the unit for easy access for repairs and for the removal of the rotor.

**Insulation**

The stator and rotor winding insulation and associated supporting materials shall be NEMA Class F and shall be capable of satisfactorily withstanding the temperatures and high-voltage tests specified by ANSI C50.12. The generator shall be capable of continuous operation at rated frequency and from 95 percent to 105 percent of rated kVA and at power factor from 0.75 lagging to 0.95 leading without exceeding the guaranteed temperature rises or causing harmful localized heating, or other injurious effects of heating.

**Temperature Rating**

1. The stator or armature winding shall not exceed 125 °C Class B total temperature as measured by embedded detector at nameplate rating when operating at 110 °F ambient temperature conditions as described in Attachment 3.

2. The rotor or field winding shall not exceed 120 °C Class B total temperature as measured by resistance method at nameplate rating when operating at 110 °F ambient temperature conditions as described in Attachment 3.

**Overload and Short Circuit Capability**

1. The generator shall be capable of withstanding a three phase load of 300% rated current for 10 seconds, and sustaining 150% of continuous load current for 2 minutes with field set for normal rated load excitation.

2. Short circuit capability shall be sufficient to withstand, without injury, a 30-second, 3-phase short circuit at the machine terminals when operating at rated kVA, rated power factor, at 105% rated voltage with fixed excitation.

3. The per unit negative-phase-sequence current ($I_2$) expressed in terms of rated stator current, and the duration (t) of the fault in seconds shall be limited to values that give an integrated product ($I_2t$) less than or equal to 40.
Generator Terminals and Current Transformers Capability

1. The generator terminal bushings shall be suitable for connection to City’s power cable. Facilities shall be provided for termination.

2. All generator output winding leads shall exit from the left side when facing the exciter (outbound) end and terminate by means of bushings which shall be suitable for external connections. Either end of each three phase winding shall be suitable for grounding or for use as the generator main power terminals. Necessary interphase connectors shall be provided to complete wye connection.

3. Proposer shall provide grounding current transformer (1 each) with rating of 200/5A ANSI C57.3 accuracy classification C-100 on each generator neutral ground.

4. Proposer shall provide a 1200A, 5KV disconnect switch on each generator from the neutral phase link to a ground side cable lug pad to be run to a grounding transformer cubicle including transformer for grounding the generator neutral.

5. Current transformers for differential protection and metering shall be provided as following:

   Bushing mounted-
   Window type 2000/5 A 3 each

   Reactive current transformer: Ratio 2000/5 1 each

All current transformer wiring shall be #10 AWG with ring-type insulated lugs and shall be brought to weather-tight terminal box(es) on the outside of the generator housing and shall terminate in a shorting type test block.

6. All current transformer windings shall have ANSI C57.13 accuracy classification of C-400 or better for relaying purposes. The current transformers shall be capable of withstandling, without injury, the maximum mechanical and electrical forces which may be produced by a short circuit on the main generator.
Generator Synchronizing System

A generator synchronizing system shall be provided which shall include, but not be limited to, the following features:

1. Manual and automatic synchronization capabilities, and all associated equipment. The remote operator interface in the Plant Control System shall have the capability to both manually and automatically synchronize the generator.

2. The automatic synchronizing feature shall include automatic matching speed and voltage capability.

3. The synchronizing system shall include a synchronizing check relay

Generator Excitation System

A direct connected brushless exciter with a Permanent Magnet Generator (PMG) pilot exciter shall be provided with but not limited to the following features:

1. A rotating rectifier assembly mounted on the shaft shall convert the excited revolving armature AC output to DC for the main generator field. Rectifiers shall consist of a 3-phase, full-wave design.

2. PMG output shall be sufficient to provide adequate power for the voltage regulator during short circuit and load transient conditions.

3. Winding insulation shall be Class F with a Class B temperature rise under steady state conditions.

4. Electrical control device of PMG Contactor (or relay) shall be provided in order to trip generation excitation in case of fault.

Automatic Voltage Regulating System

1. The automatic voltage regulator (AVR) shall be a static solid state device capable of ±1/2% steady state voltage regulation and shall include:
a. Single (or three) phase voltage sensing.
b. Cross Current Compensation (CCC) for paralleling.
c. Under-frequency protection to protect the regulator and the exciter components during periods of sub-synchronous operation.

2. Generator output voltage shall be maintained within +/- 1% of rated value for any load variation between no load and full load

3. Generator output voltage shall drift no more than +/- 1/2% of rated value at constant temperature.

4. Generator output voltage drift shall be no more than +/- 1% of rated value within a 40 °C change over ambient temperature range of -40° C to 70° C.

5. Generator frequency change shall not exceed ¼ cycle no load to full load and back.

6. Generator frequency response time shall not be less than 20 milliseconds.

7. The regulator shall include the following features:
   a. Voltage level rheostat to provide generator output voltage adjustment of - 25% to +10% of nominal.
   b. Gain adjustment to provide output voltage compensation for changes in load or frequency.

8. The voltage regulator and voltage adjusting, with raise-lower switch shall be provided loose for mounting in the generator control panel by others.

9. A VAR/PF controller shall be provided.

**Surface Finish**

1. Surfaces to be painted shall be completely free of rust, mill scale, dirt, oil, grease, or other surface contaminants which are to be removed by washing, blasting or other mechanical means. Coating shall be applied immediately after completion of the cleaning cycle.

2. All surfaces shall be coated with an epoxy based prime coat and a finish coat. Details of the manufacturer's paint system for the application shall be available for review.
3. System to be used shall be appropriate for environment in which equipment is to be installed.

G. Spare Parts

Operational Spare Parts

Operational spare parts are not included in Proposer’s current scope of supply, but shall be quoted by Proposer once City’s spares lay-in philosophy has been finalized.

Operational Spare parts quotation shall:

1. Be inclusive for and applicable to all equipment components, auxiliaries, accessories, materials, and lubricants being furnished under the Contract with respect to the synchronous generator scope.

2. Include for each recommended spare part, the unit price, quantity, description, part number references, etc., to completely identify the item and the equipment component for which it is recommended.

3. Be based upon EX-W, supplier facility lead times. Proposer shall indicate the point of shipment, and the estimated lead-time required for delivery the spare parts after an order is placed. Actual lead-time shall be finalized upon placement of order, dependent upon stock/inventory).

All requirements regarding quality control and documentation that apply to the original parts of the specified equipment shall apply equally to the spare parts of the specified equipment.

A spare parts list shall include the part number for all parts.

Startup Spare Parts

Proposer shall provide a list of startup spare parts that they shall supply. Compensation for the listed startup spare parts shall be included in the Contract Price.
Consumable Parts

Proposer shall provide a list of startup consumable parts that shall be supplied. Compensation for the startup consumable parts shall be included in the Contract Price.

H. Field Services

Proposer shall provide technical supervisory services, which shall include technical advice, assistance and guidance in the unloading and erection of the synchronous generators furnished under this specification. The technical personnel shall cooperate with the City's erector in relation to the synchronous generators.

Proposer shall provide startup supervision services, which shall include instruction, advice, and training of City's personnel in correct startup, safe operation, maintenance procedures, testing, and placing of the equipment into service.

Proposer shall provide necessary technical services as required to resolve preliminary operating problems as they develop until satisfactory operation is achieved and the City accepts the unit. All technical services required to correct design or manufacturing errors will be at the Proposer’s expense.

I. Testing

Factory Tests

1. Factory tests shall include the manufacturer’s tests which shall be witnessed by the City or the City’s representative. Factory tests shall be performed after a minimum 10 business day notification to the City.

2. Proposer shall perform all factory testing, including alignment, adjustment, and calibration to prepare the synchronous generator for shipment and subsequent installation. Factory tests shall include, but not be limited to, the following NEMA/IEEE/ANSI Standard Tests:
   a. Resistance of armature and field.
   b. Polarity of field coils.
   c. High potential test of field and armature.
   d. Measurement of air gap checking bore of stator and diameter of rotor.
   e. Check exciter no-load field current at normal voltage and frequency.
   f. Mechanical balance.
3. Project specific, detailed test procedures shall be submitted to the City or their designated representative for approval no less than fourteen (14) working days prior to the beginning of any testing.

4. Proposer shall test to establish generator efficiency, to determine losses, and to develop saturation and impedance curves (no load and short circuit). Tests shall be made on one generator selected by the City to establish typical baseline data for field warranty tests.

5. Proposer shall furnish without delay and before shipment of the units a complete report covering all factory tests, and shall also submit with the test report a tabulation showing any revised performance data. Revised figures shall be based on the actual tests.

6. Six certified copies of the above test report and data shall be furnished to City.

Field Tests
1. City reserves the right to make any acceptance tests found necessary, but the following tests shall be performed in any event, after erection, to insure integrity after shipment, in accordance with applicable sections of ANSI Standard and IEEE Test Code:

   a. High potential tests on the generator windings:

      i. AC high potential test of the winding at twice rated voltage plus 1000 volts for one minute, or;

      ii. DC high potential test of the winding, performed as follows:

         • Ground two phases of the winding and connect a DC high voltage source between the remaining phase and ground.

         • Raise DC voltage at rate of 3 kV per minute to a voltage of 1.7 times the AC high potential test voltage (twice rated voltage plus 1000 volts) and hold for one minute.

         • Reduce voltage to zero and repeat the test for the remaining combination of phases.
b. Field winding AC high potential test shall be made at ten times rated exciter voltage, but with a minimum value of 1500 volts, for one minute.

c. Resistance measurements of generator stator and field windings shall be made.

d. Proposer's field representative shall conduct standard tests, inspect bearings, and assure proper clearances to assure smooth start-up.

2. Warranty Testing

Field tests will be conducted to check performance of the equipment furnished. Using data from shop tests and power factor curves, the logged field data will be compared with calculated expected performance at the field conditions. Any variance in performance will invoke the warranty provisions.

Proposer's field representative shall be present during the tests.

3. Should it be determined that the equipment does not comply with the requirements of this specification, the Proposer shall, in accordance with agreed warranty, make any adjustments and/or modifications necessary for compliance.

J. Engineering Deliverables

In accordance with Attachment 6.4, Proposer shall submit documentation required per 6.4 and information listed below:

Included with Proposal

1. Description of all equipment, accessories and materials. Descriptive catalogs and literature complete with appropriate illustrations describing the equipment shall also be included.
2. List of proposed accessories.
3. Typical outline drawings.
4. Generator data sheets including noise data.
5. Recommended spare parts list with pricing.

Contract Phase
1. Conformed generator specifications.
2. Conformed generator data sheets.
4. Generator noise data.

FNTP Phase

1. Generator outline drawings (fully dimensioned). Generator dimensional drawings shall include, but not be limited to, the following information:
   a. Single Line Drawing of generator and accessories including all protective relays and controls.
   b. Complete nameplate data.
   c. Lifting data and center of gravity.
   d. Rotor weight and generator total weight.
   e. Special requirements, if any, for provisions by others for control of shaft end float during starting, operating, or stopping of the generator.

2. Elementary Diagrams.
3. Wiring Diagrams.
5. Conduit and Cable entrances.
7. Current Transformer Saturation Curves.
8. Test Reports.
10. Generator performance curves.

“As-Built”

1. All test reports.
2. As-Built drawings.
3. Parts list with assembly drawings.
4. Final Spare Parts List.
5. Startup and Commissioning Manuals.
7. Operating and Maintenance Manuals.
GAS CONDITIONING SYSTEM

A. Introduction

This Specification provides the requirements for the supply of the Gas Conditioning System within the scope of the RFP. These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes as well as best practice. The equipment furnished by the Proposer shall be designed and manufactured in a manner suitable for the intended purpose and operation with a load serving municipal utility.

The gas conditioning system consists of process equipment designed to remove water, hydrogen sulfide (H₂S), siloxanes, and other contaminants from the landfill gas that are detrimental to the performance and operating life of the power generation equipment. The gas conditioning system shall also provide for the safe disposal of the removed contaminants. The system shall consist of proven processes selected to minimize the life cycle cost of gas conditioning and insure the long-term low maintenance operation of the power plant.

To the greatest extent feasible, the gas conditioning equipment shall be assembled on skids for ease of field installation. The skids shall be designed for ease of transportation and handling. The skids shall be located and arranged to minimize the interconnecting piping and electrical wiring in the Scholl facility.

B. Scope of Supply

This specification establishes the minimum requirements for the design, fabrication, testing, delivery, and performance of a complete Gas Conditioning System for the Proposed Scholl Canyon Landfill Power Project.

All apparatus and materials furnished by Proposer shall be suitable for the specified duty and shall be subject to review by the City. All materials and components not manufactured by the Proposer shall be products of qualified manufacturers.

The equipment and services provided by the Proposer for the Gas Conditioning System shall include, but not be limited to, the following:
1. Condensate removal equipment including, but not limited to:
   a. Inlet gas cooler/chiller
   b. Separator vessel
   c. Control instrumentation

2. Hydrogen sulfide (H₂S) removal equipment

3. Siloxane removal equipment including, but not limited to:
   a. Siloxane removal vessels including regenerable media
   b. Polishing vessels including non-regenerable media
   c. Regeneration gas blowers
   d. Regeneration gas heaters
   e. Enclosed regeneration gas disposal flare

4. Condensate treating system including, but not limited to:
   a. Condensate collection tank
   b. Condensate forwarding pumps
   c. Oil removal equipment
   d. Oil storage tank
   e. Treated water pumps
   f. Activated carbon filter(s)

5. Monitoring and diagnostic instrumentation including, but not limited to:
   a. Composition analyzer at inlet to Gas Conditioning System
   b. Composition analyzer at outlet of Gas Conditioning System
   c. Moisture analyzer at outlet of dehydration system
   d. Siloxane analyzer at inlet to removal media
   e. Siloxane analyzer at inlet to polishing media
   f. Siloxane analyzer at outlet of polishing media
   g. H₂S analyzer at inlet to H₂S removal media
   h. H₂S analyzer at outlet of H₂S removal media
**Scholl Canyon Landfill Power Project**

**Power Island and Major Equipment Request for Proposals**

**Attachment 10 – Gas Conditioning System**

**Work Not Included**

The following items will be furnished by others:

1. External (off skid) power and control wiring
2. Compressed air
3. Foundations and anchor bolts
4. Unloading and storage
5. Installation
6. Off-skid piping

**Scope Boundaries/Terminal Points/Interfaces**

The following terminal points define the boundaries of the scope of supply:

1. Fuel Gas – the prepped weld ends at the skid boundary for the inlets to and outlets from the Fuel Gas Inlet Scrubbers, Fuel Gas Compressors, and Fuel Gas Coalescing Filters
2. Gas Liquids – the prepped weld ends at the skid boundary.
3. 4160 V Power Supply – a separate 3 phase connection from the Power Distribution Center for each compressor (if 4160 V compressor motors) to each compressor driver.
4. 480 V Power Supply – a separate 3 phase connection from the Power Distribution Center for each compressor (if 480 V compressor motors) to each compressor driver.
5. 120/480 V Power Supply – a single 3 phase connection to the customer interface panel for off-skid electrical/control panels/enclosures.
7. Controls – customer interface panel for data connection with the Plant Control System.
8. Instrument Air – the flange at the skid boundary upstream of the supply isolation valve.

On-skid commodities (piping, tubing, cable, conduit, raceway, etc.) within these boundaries is within the Proposer’s scope of supply.
C. References

All mechanical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

- ANSI American National Standards Institute
- ASTM American Society for Testing and Materials
- Cal-OSHA California Occupational Safety and Health Administration
- IEEE Institute of Electrical and Electronics Engineers
- ISA Instrument Society of America
- NEC National Electric Code
- NEMA National Electrical Manufacturer's Association
- NFPA National Fire Protection Association
- OSHA Occupational Safety and Health Act
- UL Underwriters Laboratories

D. Service Conditions

**General**

The purpose of the gas conditioning system is to remove water vapor and harmful contaminants from the landfill gas and dispose of them safely and responsibly. The harmful contaminants are principally hydrogen sulfide, particulate solids, and siloxanes. In order to dispose of the contaminants safely, the volatile components (i.e. siloxanes and VOC’s) will be incinerated in an enclosed flare. The soluble contaminants (i.e. organic compounds and toxic chemicals) will be removed from the condensed water and segregated for offsite disposal.

**Landfill Gas**

Landfill gas will be fed to the Gas Conditioning System from the first stage compressors (see Attachment 13) at a pressure suitable for the efficient and economical operation of the Gas Conditioning System. The Gas Conditioning System inlet pressure shall be determined by Proposer. The typical composition of the landfill gas (LFG) is given in Attachment 5. However, for design purposes, the Gas Conditioning System shall be designed to accommodate LFG with the following ranges of characteristics:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Weight</td>
<td>25.0 – 35.0</td>
</tr>
<tr>
<td>Temperature, °F</td>
<td>50 – 130</td>
</tr>
</tbody>
</table>
### Inlet Pressure, psig

10 – 100

### CO₂ Content, vol %

20 – 60

### H₂S Content, ppmv

10 – 100

### Total Silicon, µg/m³

500 – 10,000

### VOC, ppmv

20 – 100

All equipment shall be designed for optimum efficiency and low maintenance. All materials shall be selected and the system shall be designed to minimize corrosion and erosion of equipment in contact with the landfill gas.

All equipment shall be designed for continuous 24 hours per day operation.

#### Condensate

Liquids will be removed from the gas stream at several points during the gas conditioning process. It is expected that liquids will be removed from the first stage compressor outlet scrubber, the gas chiller, and the second stage compressor outlet scrubber (if a second stage compressor is required). Liquids may also be drained from the compressor inlet scrubbers. These liquids are expected to be primarily water but may also contain hydrocarbons, toxic chemicals, and suspended solids.

Proposer shall supply the necessary equipment and media to clean the discharge condensate to meet the applicable discharge regulations and permit requirements. Liquid contaminants will be stored on site for periodic removal. Contaminants absorbed on solid media will be removed for disposal. Onsite storage shall be sized to allow the contaminant materials to be shipped off-site in truckload quantities.

#### E. Performance

The Gas Conditioning System shall be designed to produce a gas stream suitable for long term use as fuel for the prime movers supplied by Proposer (see Attachments 7 and 8). All contaminants shall be removed to a level that is not more than 50% of the maximum allowable concentration for Proposer’s equipment (as identified by Proposer in Attachment 2.10). All siloxane and sulfur compounds shall be removed to non-detect. The maximum allowable contaminant concentration shall allow a minimum continuous operation of 8,000 hours between maintenance outages and at least 25,000 hours between major overhauls.

Condensate discharge as wastewater to sewer shall not exceed the following:
### LOCAL DISCHARGE LIMITATIONS

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Units</th>
<th>Instantaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>mg/l</td>
<td>3.0</td>
</tr>
<tr>
<td>Cadmium</td>
<td>mg/l</td>
<td>15.0</td>
</tr>
<tr>
<td>Chromium (Total)</td>
<td>mg/l</td>
<td>10.0</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/l</td>
<td>15.0</td>
</tr>
<tr>
<td>Cyanide (Free) [1]</td>
<td>mg/l</td>
<td>2.0</td>
</tr>
<tr>
<td>Cyanide (Total)</td>
<td>mg/l</td>
<td>10.0</td>
</tr>
<tr>
<td>Lead</td>
<td>mg/l</td>
<td>5.0</td>
</tr>
<tr>
<td>Nickel</td>
<td>mg/l</td>
<td>12.0</td>
</tr>
<tr>
<td>pH</td>
<td>Standard Units (S.U.)</td>
<td>5.5-11.0</td>
</tr>
<tr>
<td>Silver</td>
<td>mg/l</td>
<td>5.0</td>
</tr>
<tr>
<td>Zinc</td>
<td>mg/l</td>
<td>25.0</td>
</tr>
<tr>
<td>Dissolved Sulfides</td>
<td>mg/l</td>
<td>0.1</td>
</tr>
<tr>
<td>Dispersed Oil &amp; Grease</td>
<td>mg/l</td>
<td>600.0</td>
</tr>
<tr>
<td>TTO [2]</td>
<td>mg/l</td>
<td>2.0</td>
</tr>
</tbody>
</table>

**Footnotes to Discharge Limitations**

1. Cyanide (Free) shall mean cyanide amenable to chlorination as defined by 40 CFR 136.
2. Total Toxic Organics (TTO) shall be the summation of all quantifiable values greater than 0.01 milligrams per liter for the following toxic organics:

**Toxic Organics**

- Acenaphthene
- Acrolein
- Acrylonitrile
- Benzene
- Benzidine
- Carbon tetrachloride (tetrachloromethane)
Chlorobenzene
1,2,4-Trichlorobenzene
Hexachlorobenzene
1,2-Dichloroethane
1,1,1-Trichloroethane
Hexachloroethane
1,1-Dichloroethane
1,1,2-Trichloroethane
1,1,2,2-Tetrachloroethane
Chloroethane
Bis (2-chloroethyl) ether
2-Chloroethyl vinyl ether (mixed)
2-Chloronaphthalene
2,4,6-Trichlorophenol
Parachlorometacresol
Chloroform (trichloromethane)
2-Chlorophenol
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
3,3-Dichlorobenzidin
1,1-Dichloroethylene
1,2-Trans-dichloroethylene
2,4-Dichlorophenol
1,2-Dichloropropane
1,3-Dichloropropylene (1,3-dichloropropene)
2,4-Dimethylphenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
1,2-Diphenylhydrazine
Ethylbenzene
Fluoranthene
4-Chlorophenyl phenyl ether
Indeno (1,2,3-cd) pyrene
(2,3-o-phenylene pyrene)
Pyrene
Tetrachloroethylene
Toluene
Trichloroethylene
Vinyl chloride (chloroethylene)
Aldrin
Dieldrin
Chlordane (technical mixtures and metabolites)
4,4-DDT
4,4-DDE (p,p-DDX)
4,4-DDD (p,p-TDE)
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide (BHC-hexachlorocyclohexane)
4-Bromophenyl phenyl ether
Bis(2-chloroisopropyl)ether
Bis(2-chloroethoxy) methane
Methylene Chloride (dichloromethane)
Methyl Chloride (chloromethane)
Methyl Bromide (bromomethane)
Bromoform (trilbromomethane)
Dichlorobromomethane
Chlorodibromomethane
Hexachlorobutadiene
Hexachlorocyclopentadiene
Isophorone
Naphthalene
Nitrobenzene
2-Nitrophenol
4-Nitrophenol
2,4-Dinitrophenol
4,6-Dinitro-o-cresol
N-nitrosodimethylamine
N-nitrosodi phenylamine
N-nitrosodi-n-propylamine
Pentachlorophenol
Beta-BHC
Bis(2-ethyl hexyl) phthalate
Butyl benzyl phthalate
Di-n-butyl phthalate
Di-n-octyl phthalate
Diethyl phthalate
Dimethyl phthalate
1,2-Benzanthracene (benzo(a)anthracene)
Benzo(a)pyrene (3,4-benzopyrene)
3,4-Benzofluoranthene (benzo(b)fluoranthene)
11,12-Benzofluoranthene (benzo(k)fluoranthene)
Chrysene
Acenaphthylene
Anthracene
1,12-Benzoperylene (benzo(ghi)perylene)
Fluorene
Phenantrone
1,2,5,6-Dibenanthracene (dibenzo(a,h)anthracene)
Gamma-BHC
Delta-BHC
(PCB-polychlorinated biphenyls)
PCB-1242 (Arochlor 1242)
PCB-1254 (Arochlor 1254)
PCB-1221 (Arochlor 1221)
PCB-1232 (Arochlor 1232)
PCB-1248 (Arochlor 1248)
PCB-1260 (Arochlor 1260)
PCB-1016 (Arochlor 1016)
Toxaphene
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
F. Systems Design Criteria

Safety

Above all other considerations, safety in design shall be of paramount importance. Personnel safety shall be accounted for during all stages of the project, including construction, operation and maintenance.

1. Accessibility – The Gas Conditioning System equipment skids shall be arranged to permit access to controls, instrument displays, operating valves, etc. from a safe location. The preferable operating position is the edge of the skid (i.e. the operator can stand on the pavement adjacent to the skid). If that is not practical, then safe access by means of stairways, walkways, or access platforms shall be provided. In no case shall normal operating activities require the operator to step over piping, equipment, electrical conduit, or structural elements.

   All operating positions or pathways shall provide safe body and head clearance from any obstructions.

2. Rotating Equipment – All rotating equipment shall be provided with a CAL-OSHA approved guard for personnel protection.

3. Thermal Hazards – All surfaces where the temperature can exceed 140 °F shall be insulated for personnel protection.

4. Hazard Monitors – Equipment skids shall be provided with flame detection and hazardous gas detection (CO₂, H₂S, flammable vapors) and alarms.
Modularity

The Gas Conditioning System shall be built on transportable skids for ease of handling and installation in the field. Each module shall be completely shop fabricated such that no valves, instruments, etc. and a minimum of piping, electrical wiring, or instrument wiring is required in the field. The modules shall be designed to assure the highest degree of safety, operability, and maintainability.

Proposer shall submit the proposed general arrangement of each module as well as the site layout of the modules to the City for review and comment prior to beginning fabrication of the modules.

To the extent practicable, the modules shall be tested for functionality in the shop prior to shipping. The City shall be given two weeks advance notice of any shop tests.

Operability

1. The Gas Conditioning System shall be designed for unattended operation. The facility operations will normally be monitored locally and from a remote control room at the Glendale Water and Power Grayson power plant which is about eight (8) miles from the Scholl Canyon site. In the event of plant outages, the plant shall automatically assume warm standby status with the LFG gas diverted to the landfill flare system. All startups (cold or warm) will occur while an operator is in attendance. Cold shut-downs will also occur while an operator is present.

2. The Gas Conditioning System shall be designed such that consumables shall not need to be replenished more often than monthly. Media requiring periodic regeneration shall be capable of operating at least 24 hours between regenerations. All temporary storage (i.e. condensate) shall have at least 48 hours surge capacity.

3. The Gas Conditioning System shall be designed such that it can operate efficiently at 50% of design capacity. The Gas Conditioning System shall be capable of operating continuously at 110% of design capacity while meeting all performance requirements.

4. There shall be adequate local instrumentation so that an operator can determine the status of any equipment without returning to the control room. This includes temperature and pressure of all process streams. There shall be sufficient flow indicators or meters to establish flow of all process and auxiliary streams. All equipment normally containing liquids
shall have local level indication. Any composition analyzers (i.e. Siloxane, Gas Composition, H₂S monitors) shall have local readouts.

5. Composition analyzers shall be provided at appropriate locations in the process to allow continuous monitoring of the performance of the gas conditioning system. Instrumentation and analyzers shall be designed to protect the various conditioning media from damage due to plant upsets or operator error. The control system shall issue alarms and shutdowns as necessary to protect the media from damage. Trend reports shall be available to allow operators to assess the degradation of media. All composition analyzers (i.e. H₂S, CH₄, H₂O, CO₂, O₂, Siloxane, VOC, etc.) shall be capable of field calibration.

**Maintainability**

1. The Gas Conditioning System shall be arranged to allow maintenance access to all components. Any component weighing more than 25 pounds shall be accessible by crane or forklift. There shall not be overhead obstructions to this access. Skids or modules shall be accessible on at least one side by plant road.

2. All equipment shall be redundant such that the plant can continue to operate in the event of the failure of any single equipment item. Redundancy may be 2 x 100% for small equipment items or 3 x 50%, 4 x 33%, etc. in the case of larger items. Non-essential equipment items need not be redundant providing that the facility can continue to operate at design performance during the period that said item is under repair.

3. All equipment items and control valves shall have bypasses and isolation valves so that they can be repaired without affecting the operation of the facility.

**Environment**

The Gas Conditioning System will be located adjacent to an active municipal landfill. The equipment will be subject to the dust, vibration, noise, and airborne contaminants typical of such facilities. The design shall take these conditions into account.

The facility will also be located in a seismically active area. In addition to the seismic structural design requirements given in Attachments 3 and 6.10, equipment, instruments, and controls shall be mounted and supported so as to resist damage during seismic events.
G. Design and Fabrication

The Gas Conditioning System shall be fabricated in a neat and workmanlike manner, shall conform to all applicable codes, and shall be satisfactory to the City or its authorized representative. The system shall be available for inspection by City or its authorized representative at any time during fabrication.

Prior to the beginning of fabrication, Proposer shall submit detailed fabrication drawings and other engineering documents to the City or its authorized representative for review and comment. Proposer shall also submit its shop schedule and QA/QC procedures. Proposer shall be available for project status meetings at intervals appropriate for the stage of fabrication.

All design and fabrication work on the Gas Conditioning System shall be in accordance with the following Attachments to this RFP:

   6.5 Electrical Systems
   6.6 Electric Motors
   6.7 Equipment
   6.8 I&C Requirements
   6.9 Mechanical Systems
   6.10 Structural Requirements for Equipment Design
   6.11 Preferred Equipment, Spares & Technical Support
   6.12 Testing and Quality Requirements
   6.13 Shipping Requirements
   6.17 Other Requirements

H. Spare Parts

Operating Spare Parts

A recommended list of two-year spare parts, including pricing, shall be provided as a part of the scope of this RFP (Item 15, Proposal Supplement, Attachment 2.10).

The operating spare parts quotation shall:

1. Be inclusive of and applicable to all equipment components, auxiliaries, accessories, materials, and lubricants furnished under the Contract with respect to the Gas Conditioning System equipment scope.
2. Include for each recommended spare part, the unit price, quantity, description, part number references, etc., sufficient to completely identify the item and the equipment component for which it is recommended.

3. Be based upon EX-W, supplier facility lead times. Proposer shall indicate the point of shipment, and the estimated lead-time required for delivery of the spare parts after an order is placed.

All requirements regarding quality control and documentation that apply to the original parts of the specified equipment will apply equally to the spare parts of the specified equipment.

Commissioning Spare Parts

Required and recommended commissioning spares for each piece of equipment included as a part of the scope of this RFP shall be delivered at the same time as the equipment is delivered.

I. Field Services

Proposer shall provide technical supervisory services, which include technical advice, assistance and guidance in the unloading and erection of the Gas Conditioning System equipment furnished under this specification. The technical personnel shall cooperate with the City's erector in relation to the Gas Conditioning System equipment.

Proposer shall provide startup supervision services, which include instruction, advice, and training City's personnel in correct startup, safe operation, maintenance procedures, testing, and placing of the equipment into service.

Proposer shall provide necessary technical services as required to resolve preliminary operating problems as they develop until satisfactory operation is achieved and the City accepts the unit. All technical services required to correct design or manufacturing errors shall be at the expense of Proposer.

J. Commissioning & Testing

Proposer shall assemble modules at the factory insure critical fits and clearances, alignment, weld connection, mating surfaces and bolt hole alignment.
Proposer shall conduct all required factory inspections and testing in accordance with Attachment 6.12 of this RFP.

Proposer shall conduct all field inspections and testing in accordance with Attachment 6.12 of this RFP.

Proposer shall conduct all required commissioning and startup activities in accordance with Attachment 6.12 of this RFP.

Proposer shall supply all initial fills of filter elements, media, refrigerants, lubricants, chemicals, and other consumables required for the proper operation of the Gas Conditioning System.

K. Engineering Deliverables

In accordance with Attachment 6.4, Proposer shall submit documentation required in 6.4 and information listed below:

Included with Proposal
1. Typical equipment arrangement, outline, and elevation drawings.
2. Equipment description narrative.
3. Equipment weather and/or noise enclosure description.
4. Equipment data sheets.
5. Recommended spare parts list with pricing.

During Negotiations
1. Conformed equipment specifications.
2. Detailed equipment descriptions.
3. Conformed equipment data sheets.
4. Equipment performance curves.
5. Equipment noise data.

LNTP Phase
1. Module outline drawings (fully dimensioned).
2. Equipment List in accordance with Attachment 6.4.
3. Foundation Loads.

FNTP Phase
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 10 – Gas Conditioning System

1. Equipment outline drawings (fully dimensioned).
2. Certified dimensioned outline and fabrication drawings of all equipment and subsystems provided by the PIME Contractor.
3. Anchor Bolt and Sole Plate data.
4. Equipment Preservation and Storage Instructions.
5. Rigging, Erection, and Commissioning Instructions.
6. Pressure vessel calculations.
7. Welding procedures.

“As-Built”

1. All Code required documentation for pressure vessels and heat exchangers.
2. All equipment test reports.
3. Pump performance curves and test data.
4. As-Built drawings.
5. Equipment parts list with assembly drawings.
6. Final Spare Parts List.
7. Startup and Commissioning Manuals.
8. Technical and Service Bulletins.
EMISSIONS CONTROL SYSTEM SPECIFICATION

A. Introduction

This Specification provides the requirements for supply of the Emissions Control System (ECS) for the CTG or REG units within the scope of the RFP. Due to the lower mass flow of reciprocating engines, their ECS’s are not expected to be as large as for CTG’s. However, the same requirements contained herein still apply. Some CTG’s that are specifically tailored for LFG use may not require an ECS.

These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes and standards, as well as best practice. The equipment furnished by the Proposer shall be designed and manufactured in a manner suitable for intended operation within a load serving municipal utility.

B. Scope of Supply

ECSs for service with the simple cycle units proposed by the Proposer. The following scope description is for one ECS.

1. Inlet Transition Duct
   a. Duct work to connect between the CTG/REG and ECS.
   b. Expansion joint.
   c. Flow distribution grid.
   d. Acoustic enclosure (if needed)

2. Emissions Control System
   a. Structural steel frame.
   b. Outer casing, insulation, and stainless steel inner liner plates.
   c. CEMS sample port(s) for emissions/ammonia control.
   d. Gas path test ports for the SCR and CO catalyst.
   e. CO catalyst support frames.
   f. Ammonia injection nozzle grid.
g. SCR catalyst support frames.
h. CO and SCR catalyst.
i. Outlet Transition Duct.
j. Acoustic enclosures and barriers (if required).

3. Stack
a. Silencer.
b. EPA emissions test ports.
c. CEMS sample ports.
d. Jib crane.
e. Platforms and ladders for access to the CEMS ports and EPA emissions test ports.
f. Stack drain(s).
g. Foundation anchoring as required, which may include but is not limited to, sole plate (or ring), and anchor chairs. Guy-wires shall not be used to support or stabilize the stack structure.

4. Ammonia System
a. Ammonia Flow Control Unit (AFCU) skid including vaporizer for 19% aqueous ammonia.
b. 2x100% capacity blowers.
c. Coriolis meters for ammonia flow.
d. Stainless steel ammonia piping (piping and support design and materials) from AFCU to ammonia injection nozzles.
e. Ammonia injection nozzle grid.

5. Catalyst
a. CO catalyst, 5 year guarantee.
b. SCR catalyst, 5 year guarantee.

6. Tempering Air Fans
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 11 – Emissions Control System Specification

a. 2x100% tempering air fans for CTG units
b. Tempering air fans are not expected to be needed for REG units, but that determination is the responsibility of the Proposer
c. Fans shall have variable frequency drives (VFD) as determined by Proposer. If VFDs are used, the VFD shall be supplied by the Proposer as well as any specialty electrical cable that may be required. The VFDs shall be shipped to the EPC Contractor’s Power Distribution Center vendor for installation in the PDC.
d. The ECSs for the CTG’s will be located side by side. All four tempering air fans (two for each unit) shall be located between the ECS’s.

7. Instrumentation and Controls
a. Sufficient installed instrumentation to:
   • Allow the operator to operate the ECS.
   • Troubleshoot and diagnose operating problems.
   • Perform performance testing.
   • Perform monitoring of SCR operation.
 b. Algorithm (if control is to be implemented in the Plant Control System) or Programmable Logic Controller (if supplied as part of ECS scope) for control of the Ammonia Flow Control Unit.
   c. Connections required for performance testing instrumentation.

8. Base plates (welded to columns), sliding pads, sole plates, and shear keys.

9. Stairs, Platforms, and Ladders
 a. Platforms and ladders for access to casing entry doors.
 b. Platforms and ladders for access to EPA test ports.
 c. Platforms and ladders for access to all components, valves, and field instruments.

10. Special tools and lifting devices needed for maintenance of the SCR and AFCU.

11. Correction curves to correct observed performance back to guarantee conditions.
12. Permitting information for use by the City, and their consultants and representatives, for permitting the Scholl Canyon Landfill Power project.

13. Engineering information for use by the City, their consultants and representatives, and their EPC Contractor for design and construction of the Proposed Grayson Repowering Project.

14. Rigging, installation, and commissioning instructions for use by the EPC Contractor.

15. Operating instructions.

**Work Not Included**

The following items will be furnished by others:

1. External power and control wiring.
2. Compressed air.
3. Foundations and anchor bolts.
4. Unloading and storage.
5. Installation.

**Scope Boundaries/Terminal Points/Interfaces**

The following terminal points define the boundaries of the SCR scope of supply:

1. Exhaust Gas – the upstream face of the ECS gas path expansion joint
2. 19% Aqueous Ammonia - weld prepped end connection at the Ammonia Flow Control Unit skid boundary
3. CEMS Sample Connections – flanges on the ECS stack and casing
4. Instrument Air - flanged or welded connection at the Ammonia Flow Control
5. 480V power – motor connections on the tempering air fans, AFCU skid, and valves on the ECS

**C. References**

All mechanical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

- ANSI American National Standards Institute
- ASTM American Society for Testing and Materials
- Cal-OSHA California Occupational Safety and Health Administration
The requirements contained within the following RFP Attachments are incorporated into this Specification by reference:

1. Site Conditions – Attachment 3
2. Site Interconnections – Attachment 4
3. LFG Composition – Attachment 5
4. General Requirements – Attachment 6.1 – 6.17

**D. System Design Criteria**

This section describes requirements in addition to those contained in the Site Conditions, Site Interconnections, Functional Requirements, and General Requirements attachments to the RFP. This specification was written with a CTG application in mind.

**Design**

1. Proposer shall utilize computational flow modeling to design the exhaust transition for each combustion turbine to assure uniform flow of exhaust gas through the oxidation and SCR catalyst beds. Uniform flow shall be defined to mean flow variation from one area to another across the face of the catalyst shall not vary more than ±10% and shall not exhibit reverse flow in any area.

2. The ECSs for the generating units shall be laid out identically and use identical components.

**Casing Penetrations**

1. Casing penetrations on the bottom of the casing shall be provided with dams so that the risk of flooding of the penetration expansion joints and their insulation is minimized.

2. For casing penetrations, the casing liner will cover the annular space between the pipe and expansion joint/casing enclosing the insulation.
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 11 – Emissions Control System Specification

Piping

1. The proposer is responsible for all of the ECS piping and support design, and materials within the terminal point boundaries.
2. Short stiff sections of piping between adjacent elements with differing thermal expansion is not allowed.
3. The ammonia balancing header shall be accessible from grade.
4. The piping allowable loads for the EPC Contractor at the pipe interfaces will be based on NEMA allowable loads. The Proposer and EPC Contractor will need to work together to arrive at the best solution for the project.
5. Casing drains shall use a minimum of 2” diameter pipe.

Liner Design

1. The liner shall be constructed of stainless steel. The floor of the casing shall use a heavier gauge liner, designed to support the installation of scaffolding, if needed, for future repairs or inspections. The liner plates shall be lapped so the downstream plate is under the upstream plate. The liner design shall also accommodate thermal expansion.
2. The use of crimped studs is prohibited.
3. If threaded studs are used, the welds between the nut and stud as well as between the nut and the liner washer must be 360° and not just along one flat of the nut.

Construction

1. The ECS casing shall be of modular design with shop assembly to maximum extent possible. Modules shall be shipped as complete assemblies. Field assembly and welding shall be minimized.
2. The SCR design shall leave open pathways for the EPC Contractor to route and install raceway, conduit, and tubing to service process instrumentation, valves, and lighting.
3. Access doors shall only be located on the sides of the SCR. Doors shall be capable of being opened by one person. Doors shall be sufficiently sized, along with their associated platforms, and free of impediments from other SCR elements to allow necessary equipment and scaffolding for inspection and maintenance to be carried inside. Casing access doors shall be a minimum of 36 inches by 24 inches. Access doors shall be located to allow access to:
a. The inlet duct before and after the flow distribution screen.
b. Before and after the SCR and CO catalyst.
c. Ammonia injection grid/lances.
d. Upstream of the stack.

**Catalyst**

1. Conventional temperature range catalysts shall be furnished. High temperature catalysts are not acceptable.
2. Both the CO and SCR catalyst shall each have at least nine core samples, equally distributed across the face of the catalyst that can be removed for periodic testing to assess remaining life.

**CEMS Ports**

1. CEMS ports shall be installed following best practices and code requirements but in no case shall they be closer to the stack outlet than one half of the stack diameter.
2. The EPA test port platform shall be a minimum of four (4) feet wide. Overhead clearance for personnel shall be a minimum of 7 feet. The elevation of the EPA test ports shall be 6” to 12” above the top of the platform handrails allowing the test probes to be easily inserted without interfering with handrails.

**Stack**

Stack height shall be at least as tall as required for required dispersion of the exhaust gases.

**E. Spare Parts**

**Operational Spare Parts**

Operational spare parts are not included in Proposer’s current scope of supply, but shall be quoted by Proposer once City’s spares lay-in philosophy has been finalized.

Operational Spare parts quotation shall:

1. Be inclusive for and applicable to all equipment components, auxiliaries, accessories, materials, and lubricants being furnished under the Contract with respect to the ECS scope.
2. Include for each recommended spare part, the unit price, quantity, description, part number references, etc., to completely identify the item and the equipment component for which it is recommended.

3. Be based upon EX-W, supplier facility lead times. Proposer shall indicate the point of shipment, and the estimated lead-time required for delivery the spare parts after an order is placed. Actual lead-time shall be finalized upon placement of order, dependent upon stock/inventory).

All requirements regarding quality control and documentation that apply to the original parts of the specified equipment shall apply equally to the spare parts of the specified equipment.

A spare parts list shall include the part number for all parts.

**Startup Spare Parts**

Proposer shall provide a list of startup spare parts that they shall supply. Compensation for the listed startup spare parts shall be included in the Contract Price.

**Consumable Parts**

Proposer shall provide a list of startup consumable parts that shall be supplied. Compensation for the startup consumable parts shall be included in the Contract Price.

**F. Field Services**

Proposer shall provide technical supervisory services, which shall include technical advice, assistance and guidance in the unloading and erection of the ECS furnished under this specification. The technical personnel shall cooperate with the City's erector in relation to the compressors.

Proposer shall provide startup supervision services, which shall include instruction, advice, and training of City's personnel in correct startup, safe operation, maintenance procedures, testing, and placing of the equipment into service.

Proposer shall provide necessary technical services as required to resolve preliminary operating problems as they develop until satisfactory operation is achieved and the City accepts the unit.
All technical services required to correct design or manufacturing errors will be at the Proposer’s expense.

G. Testing

Factory Tests

1. Factory tests shall include the manufacturer’s tests which shall be witnessed by the city or the city’s representative. Factory tests shall be performed after a minimum 10 business day notification to the city.

2. Proposer shall perform all factory testing, including alignment, adjustment, and calibration to prepare the ECS for shipment and subsequent installation.

3. Project specific, detailed test procedures shall be submitted to the City or their designated representative for approval no less than fourteen (14) working days prior to the beginning of any testing.

4. Proposer shall furnish without delay and before shipment of the units a complete report covering all factory tests, and shall also submit with the test report a tabulation showing any revised performance data. Revised figures shall be based on the actual tests.

5. Six certified copies of the above test report and data shall be furnished to City.

Field Tests

1. City reserves the right to make any acceptance tests found necessary.

2. Warranty Testing

Field tests will be conducted to check performance of the equipment furnished. Using data from shop tests, the logged field data will be compared with calculated expected performance at the field conditions. Any variance in performance will invoke the warranty provisions.

Proposer’s field representative shall be present during the tests.
3. Should it be determined that the equipment does not comply with the requirements of this specification, the Proposer shall, in accordance with agreed warranty, make any adjustments and/or modifications necessary for compliance.

H. Engineering Deliverables

In accordance with Attachment 6.4, Proposer shall submit documentation required per attachment 6.4 and information listed below:

Included with Proposal

1. Description of all equipment, accessories and materials. Descriptive catalogs and literature complete with appropriate illustrations describing the equipment shall also be included.
2. List of proposed accessories.
3. Typical outline drawings.
4. Recommended spare parts list with pricing.

During Negotiations

1. Conformed ECS specifications.

LNTP Phase

1. ECS module outline drawings (fully dimensioned).
2. Foundation loads.

FNTP Phase

1. ECS outline drawings (fully dimensioned). ECS dimensional drawings shall include, but not be limited to, the following information:
   a. Complete nameplate data.
   b. Lifting data and center of gravity.
   c. ECS total weight.
2. Certified dimensioned outline and fabrication drawings of all equipment and subsystems provided by the PIME Contractor.
3. Anchor Bolt and Sole Plate data.
4. Equipment Preservation and Storage Instructions.
5. Rigging, Erection, and Commissioning Instructions.
6. Pressure vessel calculations.
7. Welding procedures.

“As-Built”
1. All equipment test reports.
2. As-Built drawings.
3. Equipment parts list with assembly drawings.
4. Final Spare Parts List.
5. Startup and Commissioning Manuals.
7. Equipment Operating and Maintenance Manuals.
CONTINUOUS EMISSIONS MONITORING SYSTEM SPECIFICATION

A. Introduction

This Specification provides the requirements for the supply of Continuous Emissions Monitoring System (CEMS) within the scope of the RFP. These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes as well as best practice. The equipment furnished by the Proposer shall be designed and manufactured in a manner suitable for the intended purpose and operation with a load serving municipal utility.

B. Scope of Supply

General

This specification establishes the minimum requirements for the design, fabrication, delivery and performance of a complete CEMS for each of the proposed generating units to be provided to the City, for the Proposed Scholl Canyon Landfill project. Proposer to supply required design data loads as part of LNTP Phase in order for the EPC Contractor to be able to design and construct the required foundation for the CEMS analyzer enclosures. Reference to codes, standards and regulations shall be interpreted as an integral part of this specification.

Base Work Included

The equipment and services to be provided by the Proposer for the CEM shall include, but not be limited to, the following:

1. One complete CEMS for each CTG or REG generating unit.

2. There shall be a common data acquisition and handling system (DAHS) for the plant incorporating all CEMS units plus spare capacity.

3. The CEMS for each unit shall include but not necessarily be limited to the following:
   a. Analyzer console
   b. Sample probes
   c. Sample lines
   d. Heat tracing for sample lines from the sample probes to the sample conditioning system
e. Sample filtering system
f. Sample conditioning system
g. Two (2) oxides of nitrogen analyzers (inlet and outlet)
h. Carbon monoxide analyzer
i. Oxygen analyzer
j. Zero and span gas systems including calibration gas cylinders and regulators.
k. EPA protocol calibration gases as required for startup, testing and two (2) sets of gas bottles for initial operation of the CEM system.
l. Programmable logic controller (PLC) for process control, automatic sample back flush, automatic calibration and system status, complete with programming and monitoring interface software
m. Analog and digital alarm signals
n. Local/remote CEMS activation controls
o. Automatic calibration system
p. Provide complete power conditioning equipment to step down from Purchaser furnished 480 volt, 3 phase, 60 Hz power supply. This equipment shall include a dry transformer, distribution panel and UPS to protect vital process equipment.
q. Provide complete DAHS with plant specific programming and configuration, backup data storage and reporting software tools necessary to fulfill all air permit, EPA, SCAQMD and CARB regulatory requirements pertaining to the facility.
r. All weather walk-in shelters to house all analyzers, sample conditioning equipment, PLC and power supplies complete with HVAC system
s. Guaranteed certification and provide onsite startup and CEMS certification assistance in addition to GWP’s initial unit source testing.
t. Prepare the 40CFR75 Monitoring Plan
u. Prepare the 40CFR60 / 40CFR75 / SCAQMD Rule 218.1 QA/QC Plan for plant use
v. Complete drawings and documentation to allow GWP to troubleshoot, test, remove, and replace defective components in a minimum of downtime.
w. Special services including on site field support, QA support, start-up support
x. Initial LNTP drawings for EPC RFP, final drawings for construction, data, maintenance manuals and other information as may be required.
y. Shelter Temperature Monitoring
z. Sample Cooler Temperature Monitoring
aa. Moly Converter on Stack NOx Analyzers
bb. Stack Probe Upgrade for SCAQMD Multi-Point Arrangement
cc. CEMS equipment startup spares
dd. Submittal of monitoring plan to regulatory agencies, if required

**Work Not Included**

The following items will be furnished by others:

a. External power and control wiring
b. Initial source testing with a separate independent contractor
c. Compressed air
d. Foundations and anchor bolts
e. Unloading and storage
f. Installation

**C. References**

**Laws and Regulations**

The equipment specified herein shall be designed and constructed in accordance with all Federal, State, and Local laws, ordinances, regulations, and standards (LORS). These include but are not limited to:

- CARB California Air Resources Board
- CFR Code of Federal Regulation, Volume 40, Parts 60 and 75
- EPA Environmental Protection Agency
- RECLAIM SCAQMD Rule 2012 and associated sub-rules
- SCAQMD South Coast Air Quality Management District including Rule 218 and 218.1

**Codes and Standards**

The CEMS shall be designed, in accordance with latest issue of applicable codes, standards, and recommended practices applicable to the furnished equipment. Proposer shall be responsible for complying with all applicable codes and standards whether listed below or not.

All mechanical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

- ANSI American National Standards Institute
ASHRAE American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASTM American Society for Testing and Materials
Cal-OSHA California Occupational Safety and Health Administration
FM Factory Mutual
IEEE Institute of Electrical and Electronics Engineers
ISA Instrument Society of America
NEC National Electric Code
NEMA National Electrical Manufacturer's Association
NFPA National Fire Protection Association
OSHA Occupational Safety and Health Act
SAMA Scientific Apparatus Manufacturers' Association
UL Underwriters Laboratories

**RFP Requirements**

The requirements contained within the following RFP Attachments are incorporated into this Specification by reference:

1. Site Conditions – Attachment 3
2. Site Interconnections – Attachment 4
3. LFG Composition – Attachment 5
4. General Requirements – Attachment 6.1 – 6.17

**D. Service Conditions**

**Site Conditions**

The equipment specified herein will be installed outdoors in Glendale California. Refer to the Site Conditions - Attachment 3, for detailed information.

The Proposer shall incorporate site data, local building code requirements and other relevant data for the equipment and enclosures furnished.
**General Service Conditions**

New CEMS are required to monitor the emissions from the CTG or REG generation equipment proposed for proposed Scholl Canyon Landfill Power Project.

The sampling equipment and other equipment mounted on the exhaust stack and SCR system ductwork shall be designed for an outdoor, dusty and humid environment. The electronic analyzers, PLC, and other electronic equipment shall be mounted indoors in self-contained air-conditioned enclosures provided by the Proposer. The common DAHS equipment will be located in the remote plant central control room.

All equipment shall be designed for optimum efficiency and low maintenance. All materials shall be selected and the system shall be designed to minimize corrosion and erosion of equipment in contact with the hot exhaust gas.

The exhaust gas to be sampled can range in temperature from ambient temperature to a maximum of approximately 870 degrees F. The sample cooling systems shall be sized as necessary for the most severe exhaust gas temperature conditions.

All equipment shall be designed for continuous 24 hours per day operation as well as daily startup and shutdown cycles.

The CEMS supplier shall have single source responsibility for the complete system including all auxiliaries. Supply of this system shall be coordinated with the Emission Control Module (ECM) system.

**E. Guaranteed Performance**

Without prejudice to the warranties under the Contract, as long as the CEMS are maintained by the City in accordance to the Proposer’s O&M and QA/QC Manuals:

1. The Proposer shall guarantee that the CEM systems and associated DAHS will comply with the system performance.

2. The Proposer shall guarantee that the CEM systems shall operate continuously within the accuracy limits set forth herein.

3. The Proposer shall further hereby warrant and guarantee that operation of the CEM systems shall satisfy the performance, hardware, software, and reporting requirements
specified herein with an up-time service record of 95 percent or greater during the warranty period.

F. Design and Fabrication

General

Each emission monitoring system shall consist of one (1) inlet and one (1) outlet monitoring system. At the Emissions Control System (ECS) inlet, the CEMS shall analyze and monitor the emissions of oxides of nitrogen (NOx) with the sample probe being located in the ductwork upstream of the CO catalyst. The stack (outlet) CEMS shall analyze and monitor the emissions of oxides of nitrogen (NOx), carbon monoxide (CO), and Oxygen (O2) in the ECS system exhaust stack outlet. Carbon dioxide (CO2) shall be calculated by the DAHS based upon fuel consumption rates and emission factors. Time-shared sample systems shall not be allowed.

The CEMS shall utilize a direct extractive process and incorporate an automatic calibration procedure utilizing EPA Protocol 1 gases. Both CEMS sample systems shall clean and dry the sample before presenting it to the analyzers. The CTG exhaust (ECS inlet duct) reference NOx level (approximately a constant 25 ppmvd) upstream of the SCR will be used along with the stack measurements for control of the SCR ammonia injection system and calculation of SCR system ammonia slip using a SCAQMD approved calculation.

The outlet NOx and CO analyzers shall be designed and set up for dual range monitoring and calibration for controlled and uncontrolled emissions. Uncontrolled turbine emissions typically occur during turbine startup periods when CO and NOx emission rates are high. Controlled emissions occur when the CO catalyst is at design operating temperature and the SCR systems are in normal operation. The CEMS shall provide for NOx and CO calibrations at both ranges using separate calibration gas standards. The system shall comply with EPA 40 CFR 60 and EPA 40 CFR 75, SCAQMD Rule 218, 218.1 and 1110.2 requirements, as well as the SCAQMD air permit (to be provided later) requirements.

Each exhaust stack and ECS inlet monitoring system shall be a stand-alone system consisting of all required equipment and materials necessary to analyze, monitor and alarm. The CEMS shall have an OIT (Operator Interface Terminal) panel. The DAHS system shall log in and store all information and produce a printout of all data on demand.
The 480 VAC step down transformer shall have a safety switch and fuses on the transformer’s primary side. All three phases are to be used by the CEMS. The loads on all three phases are to be balanced to within 10% of the total load for each CEMS building.

The Proposer shall prepare the CEM 40CFR60 / 40CFR75 and Rule 218.1 QA/QC Plan for plant use. The QA/QC Plan prepared by the CEMS supplier will be submitted by the City to the SCAQMD for their approval. The CEMS supplier shall make any changes to the QA/QC plan required by the City or the SCAQMD. City/SCAQMD suggested changes must be provided at least 30 calendar days prior to certification so as not to impact the process.

The Proposer shall prepare the CEM systems SCAQMD required “Application for Certification” documentation, which shall then be submitted by City to the SCAQMD. The CEMS supplier shall make any modification necessary to the documentation required by the SCAQMD to get SCAQMD approval of the proposed CEM systems before the systems are built and installed.

The CEMS supplier shall conduct RATA, 7 day drift, linearity calibration testing as specified by the current US EPA and SCAQMD requirements for this facility to obtain CEMS certification.

**Sampling**

Flange-mounted high temperature design sampling probes that incorporate particulate filters with compressed air filter purge system shall be provided.

Sample probe system shall be designed such that it can pass the EPA’s “Off-Line” calibration test as defined in 40 CFR Part 75 Appendix B.

All piping or tubing and intermediate equipment between the stack and ECS inlet duct probes and analyzer console shall be heat traced and insulated.

All equipment required to condition the sample gas for analysis shall be provided.

**Sample Conditioning and Analysis Console**

A sample conditioning and analysis console complete with all materials, instrumentation and equipment required to condition and analyze the sample gas from the SCR stack and ECS inlet duct shall be provided. Analysis shall be performed on a continuous basis to determine the concentrations of oxygen, carbon monoxide and oxides of nitrogen as required.

The sample conditioning system shall have the capability of injecting calibration gases both locally (CEMS Enclosure) as well as at the sample probe.
The Data Acquisition and Handling System (DAHS) shall provide for the following alarms:

a. System failure/trouble
b. Sample contaminated by moisture
c. Sample line obstructed
d. Sample vacuum alarm
e. Probe-filter unit plugged
f. Failure of heat tracing
g. Analyzer console power failure
h. High analyzer console temperature
i. Low analyzer console temperature
j. NOx analyzer trouble alarm (provided by analyzer)
k. CO analyzer trouble alarm (provided by analyzer)
l. Low instrument air pressure
m. Failure of analyzer calibration for each calibration range
n. High and high-high emission levels for each measured parameter
o. High and high-high ammonia slip
p. Sample conditioner temperature alarm
q. Shelter smoke alarm
r. Four additional spare digital inputs

The following alarms shall be provided with one set of DPDT contacts to be used for remote alarming by others:

a. System failure/trouble
b. High and high-high emission levels for each measured parameter
c. High and high-high ammonia slip
d. Four additional spares
e. The analysis console shall include a PLC to provide the following:
f. Manual and automatic controls of the sampling and analytic functions
g. Automatic calibration of each gas analyzer at each (high and low) calibration ranges
h. Automatic range change capability
i. Automatic purging and cleaning of the sampling system
j. Automatic correction of output for loss of calibration
k. Automatic conversion of units of measure
l. Self analysis, diagnosis, and outcome display
The stack and ECS inlet duct monitoring systems may be controlled by the same PLC but must be programmed to operate completely independently.

The PLC shall be an Allen Bradley or equivalent PLC with fiber optic Ethernet communications capability. The CEMS PLC must monitor and record the CEMS enclosure’s temperature. The CEMS enclosure shall incorporate a fire/smoke alarm system. The communication link between the CEMS PLC’s and the DAHS computer shall be a fiber optic system.

The analysis console shall include an OIT panel to provide the following functions:

- A menu tree designed for the OIT to be well thought out and have a sense of organization rather than a seemingly random pattern
- Manual control of all valves and hardware within the CEMS
- The ability to place either the stack or inlet SCR CEMS in and out of maintenance independently
- The ability to start or stop automatic calibrations
- The ability to input calibration gas values
- The ability to see the actual analog input values for all analog input channels
- The ability to see the status of all digital inputs
- The ability to see the status of all digital outputs
- The ability to force digital outputs
- The ability to force analog outputs
- The ability to see the calibration status of all analyzers

The analysis console shall be constructed with the following features:

- Free standing with bolt down support frame
- Condensate drain piping
- Roof level gas vent system
- Easy accessibility to all pipe and tubing connections
- UL listed electrical equipment
- Manufacturers' standard painting system, inside and outside, with standard colors with the exception of the exterior surfaces that shall be painted ‘sand’ color

The analysis console shall provide continuous isolated 4 to 20 mA output signals for use by others for each of the following:

- Exhaust stack oxides of nitrogen in ppmvd, dry, corrected
b. Exhaust stack carbon monoxide in ppmvd, dry, corrected

c. Exhaust stack oxygen in percent

d. Turbine exhaust mass flow pounds per hour (calculated)

e. Ammonia slip ppm, dry (calculated)

f. Four additional spares

The analysis console shall also provide the following discrete output signals for use by others:

a. Stack NOx analyzer high range / low range status

b. Stack CO analyzer high range / low range status

The analysis console shall include all required materials and equipment necessary to provide all levels of electrical power and signal voltage utilized. All power circuits shall be individually protected with disconnects, circuit breakers, and grounding. All 120 VAC wall outlets less than eight (8) feet above grade are to be GFI protected. Low voltage analog and digital signals are to be routed in separate conduits or wire trays from all AC power circuits.

**Analyzers**

The NOx and CO analyzers shall be Horiba ENDA 7000, or equivalent and the NOx analyzer shall have Horiba type ENDA 7000 NOx converter. Additionally, the NOx analyzer shall convert no more than 2% of the NH₃ present in the sample stream into NOx.

The O₂ analyzer shall be a Horiba parametric analyzer or equivalent.

**Data Acquisition and Handling System (DAHS)**

The DAHS shall include all necessary data acquisition, display, storage and reporting of emissions to meet 40 CFR 60, 40 CFR 75 and SCAQMD requirements for the new power plant. The DAHS shall provide a report generator that will generate hourly, daily, monthly semiannual and annual reports, including all reports required by SCAQMD and the EPA.

A single common DAHS for the plant shall serve all the CEMS systems. The DAHS computer shall include a RAIT 1 data storage system incorporating at least two hard drives.

The DAHS computer shall incorporate a dual display video card and programmed to allow the operator to view two different monitors (screens) at the same time.

The DAHS hardware shall include the following as a minimum:
### QTY | DESCRIPTION
--- | ---
1 | Dell XPS or equivalent, Xeon E5 processor 2.0GHz min., 2GB RAM min., dual SATA Raid 1 - 80 GB HD min., USB ports, CD ROM 48X, Ethernet port, serial port, keyboard, mouse, Windows Server 2012
2 | DELL E193FP 19-inch Flat Panel Monitor
1 | Data Backup/Restoration System: Two (2) External 80 GB USB hard drives
1 | External Modem
1 | Printer, HP color Laser Printer

#### DAHS SOFTWARE

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<th>QTY</th>
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<tr>
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<td>1</td>
<td>Adobe Acrobat 12.0</td>
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</tbody>
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The DAHS software shall include the following as a minimum:

- Emission Monitoring, Data Reduction (Main Program)
- Reporting
- RTU transmittal
- Initial I/O Set-Up
- Default Set-Up (Alarms)

The DAHS shall automatically generate hourly, daily, monthly and quarterly, semiannual, & annual reports for the plant which shall include but not be limited to:

- Excess Emissions
- CEMS Downtime (when the CTG unit is operating)
- CTG Operating Hours
d. Unit Out of Service

e. NOx ppmvd, Dry Corrected to 15 Percent O2 based on SCAQMD permit integration period (Hour, 15 minute, Daily)
f. NOx pounds per hour
g. NOx pounds per day
h. NOx tons per year
i. CO ppmvd, dry, corrected to 15 percent O2 based on SCAQMD permit integration period
j. CO pounds per hour
k. CO pounds per day
l. CO tons per year
m. SO2 pounds per hour
n. SO2 pounds per day
o. SO2 pounds per year
p. VOC pounds per hour
q. VOC pounds per day
r. VOC pounds per year
s. PM10 pounds per hour
t. PM10 pounds per day
u. PM10 pounds per year
v. Calculated NH3 slip -ppmvd, dry corrected to 15 percent O2
w. Calculated CO2 and CO2e metric and dry tons per year
x. NH3 injected, pounds per hour
y. NH3 injected, pounds per day
z. NH3 injected, pounds per year
aa. CTG electrical power output
bb. Plant electrical power output (MW)
c. CTG fuel consumption based on SCAQMD permit integration period

The DAHS shall automatically generate a quarterly report in compliance with EPA 40 CFR Parts 60 and 75 and daily transmittals to SCAQMD. This shall also include all necessary software to generate the EPA acid rain report using the latest EPA approved EDR software.

The DAHS shall provide data logging to accomplish 40 CFR Part 60 & Part 75, and SCAQMD Rule 218.1 relative accuracy audits.
The DAHS shall include a digital recorder in compliance with the requirements of the SCAQMD. The Proposer’s DAHS must be capable of meeting SCAQMD’s acceptance and certification of the supplied recorder.

Exhaust gas flow monitoring shall be accomplished in the software package using CTG fuel flow and F-factor calculations.

**CEM Analyzer All-Weather Enclosure**

Provide one (1) enclosure for each CEM system. The enclosures will be located adjacent to each exhaust stack. (Note, the DAHS equipment will be located in the Scholl Canyon Landfill Power Project control room).

Each all-weather shelter shall be an 8-foot by 10-foot minimum all metal, insulated, pre-tubed and pre-wired, walk-in shelter designed for installation directly onto a concrete foundation.

Shelter door shall be provided with panic exit hardware and external lighting over the door on a photocell control circuit.

Climate control shall include air conditioning, heating, and ventilation.

Shelter shall be equipped with the following as a minimum:

- Smoke alarm
- Fire extinguisher
- Fluorescent lighting
- Utility outlets
- 480V, 3-phase power distribution sub-system & UPS for critical equipment
- Calibration gas cylinder rack for storage of two (2) sets of daily calibration gas cylinders; one (1) active, one (1) spare

**G. Field Services**

Proposer shall provide technical supervisory services, which include technical advice, assistance and guidance in the unloading and erection of the CEMS equipment furnished under this specification. The technical personnel will cooperate with the City's erector in relation to the CEMS equipment.

Proposer shall provide startup supervision services, which include instruction, advice, and training Purchaser's personnel in correct startup, safe operation, maintenance procedures, testing, and placing of the equipment into service.
Proposer shall provide necessary technical services as required to resolve preliminary operating problems as they develop until satisfactory operation is achieved and the City accepts the unit. All technical services required to correct design or manufacturing errors will be at the expense of the CEMS supplier, as contracted by Seller.

H. Spare Parts

Operational Spare Parts

Operational spare parts are not included in Proposer current scope of supply, but can be quoted by Proposer once Purchaser’s spares lay-in philosophy has been finalized.

Operational Spare parts quotation shall:

a. Be inclusive for and applicable to all equipment components, auxiliaries, accessories, materials, and lubricants being furnished under the Contract with respect to the CEMS equipment scope.

b. Include for each recommended spare part, the unit price, quantity, description, part number references, etc., to completely identify the item and the equipment component for which it is recommended.

c. Be based upon EX-W, supplier facility lead times. Proposer shall indicate the point of shipment, and the estimated lead-time required for delivery the spare parts after an order is placed. Actual lead-time will be finalized upon placement of order, dependent upon stock/inventory).

All requirements regarding quality control and documentation that apply to the original parts of the specified equipment will apply equally to the spare parts of the specified equipment.

A spare parts list needs to include the part number for all parts.

Startup Spare Parts

Proposer shall provide a list of startup spare parts that they will supply. Compensation for the listed startup spare parts shall be included in the Contract Price.

Consumable Parts

Proposer shall provide a list of startup consumable parts that will be supplied. Compensation for the startup consumable parts shall be included in the Contract Price.
I. Shop Testing

General
Proposer shall insure that if it is beneficial for any of the equipment to be factory assembled as required to establish critical fits and clearances, alignment, weld connection, mating surfaces and bolt hole alignment, to minimize field adjustments and fitting by the erector, then a factory assembly of such components shall be conducted by the CEMS supplier, as contracted by Proposer.

Factory Acceptance Testing
The CEMS Proposer shall perform all factory testing, including alignment, adjustment, and calibration to prepare the CEMS for shipment and subsequent installation and certification testing. The CEMS Contractor shall, as part of their quality assurance program, conduct a thorough and complete factory test of each portion of the CEMS, and of the CEMS as a whole. Standard CEMS factory acceptance test (FAT) procedures shall be provided by Proposer

Project specific, detailed test procedures shall be submitted to the City or their designated representative for approval no less than fourteen (14) working days prior to the beginning of any testing.

J. Engineering Deliverables

In accordance with Attachment 6.4, Proposer shall submit documentation required per attachment 6.4 and information listed below:

Included with Proposal
1. Description of all equipment, accessories and materials. Descriptive catalogs and literature complete with appropriate illustrations describing the equipment shall also be included.
2. List of proposed accessories.
3. Typical outline drawings.
4. Recommended spare parts list with pricing.

During Negotiations
1. Conformed CEMS specifications.
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 12 – CEMS Specification

LNTP Phase
1. CEMS module outline drawings (fully dimensioned).
2. Foundation Loads.

FNTP Phase
3. CEMS outline drawings (fully dimensioned). CEMS dimensional drawings shall include, but not be limited to, the following information:
   a. Lifting data and center of gravity.
   b. CEMS total weight.
4. Certified dimensioned outline and fabrication drawings of all equipment and subsystems provided by the PIME Contractor.
5. Anchor Bolt and Sole Plate data.
7. Rigging, Erection, and Commissioning Instructions.

“As-Built”
1. All CEMS test reports.
2. As-Built drawings.
3. Equipment parts list with assembly drawings.
4. Final Spare Parts List.
5. Startup and Commissioning Manuals.
7. Equipment Operating and Maintenance Manuals.
FUEL GAS COMPRESSOR SPECIFICATION

A. Introduction

This Specification provides the requirements for the supply of the Landfill Gas Compressor System within the scope of the RFP. These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes as well as best practice. The equipment furnished by the Proposer shall be designed and manufactured in a manner suitable for the intended purpose and operation with a load serving municipal utility.

Landfill gas (LFG) is the primary fuel for the Scholl Canyon Landfill Power Project. The fuel gas system receives landfill gas from the Los Angeles Sanitation District Scholl Canyon Landfill. Natural gas is the secondary fuel for the Scholl Canyon Landfill Power Project. In addition to LFG, the fuel gas system receives Public Utility Commission Rule 30 quality natural gas from the Southern California Gas Company (SCGC) as needed.

LFG compression will occur in two stages. The first stage takes the LFG from the LFG collection system blowers at a pressure of about 5.5” to 8” w.c. and raises to a sufficient pressure to pass through the Gas Conditioning System (see Attachment 10) and feed the REG’s at their required inlet pressure. In the event that CTG’s are used, the second stage of compression will take the LFG from the outlet of the Gas Conditioning System to feed the CTG’s at their required inlet pressure. In this case, the second stage inlet pressure will be determined by consideration of the most economical and efficient pressure for operating the Gas Conditioning System as well as the best load distribution between the first and second stage compressors.

The Proposer shall provide an arrangement of gas compressors that meets the following requirements:

1. A spare compressor(s) must be provided to allow full power operation with one compressor out of service. If multiple stages of compression are used, this requirement applies to each stage.

2. The fuel gas compressors shall be sized to deliver the required volume of fuel to allow full power operation across the full range of operating conditions.

3. The largest capacity second stage compressor shall not exceed the flow requirement of the largest combustion turbine.
B. Scope of Supply

First Stage Compressors

The equipment and services provided by the Proposer for the first stage fuel gas compressors shall include, but not be limited to, the following:

1. Inlet Precooler including:
   a. Air-cooled heat exchanger.

2. First stage inlet scrubbers including:
   a. Two (2) 50% capacity ASME inlet utility gas filter scrubbers, each shall be identical and mounted on a skid in accordance with Attachment 6.7.
   b. Scrubbers shall have provision for an automatic drain on all vessels to the Condensate Collection Tank (see Attachment 10).
   c. Instrumentation and controls in accordance with Attachment 6.8.

3. First Stage Gas Compressors:
   a. Two (2) 50% first stage compressors.
   b. Proposer shall furnish either reciprocating, screw, or centrifugal type compressors as appropriate for the Proposer's Gas Conditioning System and REG’s.
   c. Compressor drivers shall be in accordance with Attachment 6.6.
   d. The compressors shall be skid mounted.
   e. If inter-stage and/or discharge gas coolers, or a recycle line, are required to meet the requirements of the RFP, the Gas Conditioning System, or the Proposer’s REG’s, then the Proposer shall include these within their scope of supply.
   f. All equipment shall be air-cooled. The air coolers are within the PIME scope of supply.
   g. PLC or micro-processor based control system that provides for control, monitoring, and protection of the fuel gas compressors with 1) on-skid field devices for pressure, temperature, flow, vibration, valve position, etc., 2) on-skid HMI providing for local indication of system status, operation, and local control by a plant operator, and 3) interface with the Proposer’s Plant Control System to provide the control room remote start, stop, operation and monitoring of the fuel gas compressors all in accordance with Attachment 6.8.
h. On-skid piping, valves and trim in accordance with Attachment 6.9.

i. On-skid conduit and wiring in accordance with Attachment 6.5.

4. First stage gas compressor discharge Coalescing Filters:
   a. Two 50% capacity Coalescing filters used to prevent gas compressor lube oil carryover into the piping system supplying the Gas Conditioning System in accordance with Attachment 6.7. If a compressor after-cooler is provided, the coalescing filter shall be sized to remove the expected water condensate.

   b. Filter separator shall each have 10 to 1 or better turndown capability and be rated at 0.3 microns for particulates and aerosols.

   c. The two filters shall be identical and mounted on the compressor skid.

   d. Filters shall have an automatic drain to the Proposer’s Condensate Collection Tank (see Attachment 10).

**Second Stage Compressors**

If proposer supplies CTG’s, then equipment and services provided by the Proposer for the second stage fuel gas compressors shall include, but not be limited to, the following:

1. Second stage inlet scrubbers including:
   a. Two (2) 50% capacity ASME inlet utility gas filter scrubbers, each shall be identical and mounted on a skid in accordance with Attachment 6.7.

   b. Scrubbers shall have provision for an automatic drain on all vessels to the Condensate Collection Tank (see Attachment 10).

   c. Instrumentation and controls in accordance with Attachment 6.8.

2. Second Stage Gas Compressors:
   a. Two (2) 50% second stage compressors.

   b. Proposer shall furnish either reciprocating, screw, or centrifugal type compressors as appropriate for the Proposer’s CTG’s.

   c. Compressor drivers shall be in accordance with Attachment 6.6.

   d. The compressors shall be skid mounted.
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e. If inter-stage and/or discharge gas coolers, or a recycle line, are required to meet the requirements of the RFP or the Proposer’s CTG’s, then the Proposer shall include these within their scope of supply.

f. All equipment shall be air-cooled. The air coolers are within the PIME scope of supply.

g. PLC or micro-processor based control system that provides for control, monitoring, and protection of the fuel gas compressors with 1) on-skid field devices for pressure, temperature, flow, vibration, valve position, etc., 2) on-skid HMI providing for local indication of system status, operation, and local control by a plant operator, and 3) interface with the Plant Control System to provide the control room remote start, stop, operation and monitoring of the fuel gas compressors (the Plant Control System will be supplied by the EPC Contractor) all in accordance with Attachment 6.8.

h. On-skid piping, valves and trim in accordance with Attachment 6.9.

i. On-skid conduit and wiring in accordance with Attachment 6.5.

3. Second stage gas compressor discharge Coalescing Filters:

a. Two 50% capacity Coalescing filters used to prevent gas compressor lube oil carryover into the piping system supplying the CTGs in accordance with Attachment 6.7. If a compressor after-cooler is provided, the coalescing filter shall be sized to remove the expected water condensate.

b. Filter separator shall each have 10 to 1 or better turndown capability and be rated at 0.3 microns for particulates and aerosols

c. The two filters shall be identical and mounted on the compressor skid.

d. Filters shall have an automatic drain to the Condensate Collection Tank (see Attachment 10).

General

1. Off skid components including:

a. A single free standing control panel containing all system control and monitoring components including the system PLC mounted in a self-contained heated and air-conditioned enclosure

b. Free standing instrument panel containing compressor related instrumentation, e.g., with local gauges, to eliminate vibration-related instrumentation reliability problems
2. Special tools and lifting devices needed for maintenance of the fuel gas compressor package

3. Permitting information for use by the City, and their consultants and representatives, for permitting the Scholl Canyon Landfill Power Project.

4. Engineering information for use by the City, their consultants and representatives, and their EPC Contractor for design and construction of the Scholl Canyon Landfill Power Project.

5. Rigging, installation, and commissioning instructions for use by the EPC Contractor

6. Operating and Maintenance instructions.

**Work Not Included**

The following items will be furnished by others:

1. External (off skid) power and control wiring.
2. Compressed air.
3. Foundations and anchor bolts.
4. Unloading and storage.
5. Installation.
6. Off-skid piping

**Scope Boundaries, Terminal Points, and Interfaces**

The following terminal points define the boundaries of the scope of supply:

1. **Fuel Gas** – the flanges at the skid boundary for the inlets to the Fuel Gas Inlet Scrubbers, the outlets from the Fuel Gas Compressors to the inter- and after-coolers, inlet to the Fuel Gas Coalescing Filters from the inter- and after-coolers, and the outlet from the Fuel Gas Coalescing Filters.

2. **Gas Liquids** – the flanges at the skid boundary from the Fuel Gas Inlet Scrubbers and Fuel Gas Coalescing Filters.

3. **4160 V Power Supply at the Proposer’s Skid** – a separate 3 phase connection from the Motor Control Center (by EPC Contractor) for each compressor (if 4160 V compressor motors) to each compressor driver.
4. 480 V Power Supply at the Proposer’s Skid – a separate 3 phase connection from the Power Distribution Center (by EPC Contractor) for each compressor (if 480 V compressor motors) to each compressor driver.

5. 120/480 V Power Supply – a single 3 phase connection to the EPC Contractor interface panel for off-skid electrical/control panels/enclosures.

6. Grounding – the EPC Contractor ground connections

7. Controls – customer interface panel for data connection with the Plant Control System.

8. Instrument Air – the flange at the Proposer’s skid boundary upstream of the supply isolation valve.

On-skid commodities (piping, tubing, cable, conduit, raceway, etc.) within these boundaries is within the Proposer’s scope of supply.

C. References

All mechanical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

- ANSI American National Standards Institute
- API American Petroleum Institute
- ASTM American Society for Testing and Materials
- Cal-OSHA California Occupational Safety and Health Administration
- IEEE Institute of Electrical and Electronics Engineers
- ISA Instrument Society of America
- NEC National Electric Code
- NEMA National Electrical Manufacturer’s Association
- NFPA National Fire Protection Association
- OSHA Occupational Safety and Health Act
- UL Underwriters Laboratories

The requirements contained within the following RFP Attachments are incorporated into this Specification by reference:

1. Site Conditions – Attachment 3
2. Site Interconnections – Attachment 4
3. LFG Composition – Attachment 5
D. Service Conditions

Design flow is 8,700 acfm (wet basis) of raw LFG (see Attachment 5) at 5.5” water column pressure and at a temperature of 160 °F at the inlet of the precooler. The analysis given in Attachment 5 is on a dry basis. The inlet gas shall be considered to be saturated with water vapor at the landfill interior temperature and pressure (120 °F, 13.97 psia). The ambient temperature will vary according to Attachment 3. The inlet gas precooler shall reduce the inlet gas to a temperature not more than 10 °F higher than the ambient air temperature. The inlet gas scrubber shall be sized to accommodate the condensate produced under the full range of ambient conditions (35 °F to 110 °F).

The first stage compressor shall be sized to accommodate the gas from the precooler. This is estimated to be 7,343 acfm at 75 °F at the design ambient temperature (64.4 °F). However, the maximum first stage inlet flow can be as much as 8,770 acfm at the minimum design inlet pressure (5.5” w.c.) and the maximum inlet temperature (120 °F at an ambient air temperature of 110 °F). Proposer shall confirm these values as a part of LNTP engineering.

The first stage discharge pressure shall be determined by Proposer based on the pressure drop though the Gas Conditioning system and the required inlet pressure to either the REG units or the second stage compressors.

The second stage compressor discharge pressure shall be determined by Proposer based on the requirements of the CTG units.

E. System Design Criteria

This section describes requirements in addition to those contained in the Site Conditions, Site Interconnections, General Requirements, and Performance Guarantees attachments to the RFP.

General

1. The fuel gas compressors shall supply fuel gas to the facility in the quantity and at the pressure required for continuous and simultaneous full load operation of all of the units over the range of operating conditions.
2. The maximum allowable operating pressure of the fuel gas inlet scrubbers, fuel gas compressors, and fuel gas coalescing filters shall adhere to the following:
   a. The second stage inlet scrubbers and suction side of the second stage compressors shall be designed for the maximum discharge pressure of the first stage compressor.
   b. The minimum second stage compressor discharge pressure shall be the sum of the minimum required gas pressure at the CTG upstream of the block and bleed valves plus the maximum allowable second stage coalescing filter operating differential pressure plus 20 psi to accommodate pressure drop through the intervening piping.
   c. In addition to the foregoing, in order to minimize the periodic discharge of gas from vessel reliefs due to transient pressure fluctuations, the inlet scrubbers, fuel gas compressors, and coalescing filters shall be designed for a pressure 100 psi greater than the maximum expected operating pressure.
3. The fuel gas compressors and ancillary skids, including the pressure reduction station, will be located inside an open-topped acoustic enclosure. The acoustic enclosure is within the EPC Contractor’s scope of supply.
4. Gas compressor, coalescing filters, fuel gas scrubbers, etc. supplied by the Proposer shall be suitable for outdoor service without being located inside an enclosed acoustic or weather enclosure.
5. All equipment shall meet the requirements for service in a Class 1 Division 2 Group D application.
6. The Gas Compressor System shall be built on transportable skids for ease of handling and installation in the field. Each module shall be completely shop fabricated such that no valves, instruments, etc. and a minimum of piping, electrical wiring, or instrument wiring is required in the field. The modules shall be designed to assure the highest degree of safety, operability, and maintainability.

**Compressors**

1. The Fuel Gas Compressors shall be skid mounted with all of their ancillary equipment (power and control interface panels, coolers, etc.). Each compressor shall be on its own skid. Other equipment (suction scrubbers, coalescing filters, pressure reduction station) shall also be skid mounted.
2. The magnitude and frequency of pressure pulsations (if any) at the discharge of the fuel gas compressors shall be less than the Proposer’s requirements for the Fuel Gas Coalescing Filters or REG’s or CTG’s supplied by the Proposer.

3. The standby compressor unit shall be capable of rapid starting and loading in the event of an operating compressor trip.

4. The compressors and associated equipment shall meet ≤85 dbA at 3 feet distant and 5 feet above grade from the operating equipment. See Attachment 16.6

**Scrubbers and Coalescing Filters**

1. The fuel gas system design shall anticipate the precipitation of liquids and/or entrainment of lubricating oil by including provisions for liquids capture and removal.

2. Each Fuel Gas Inlet Scrubber shall include as a minimum:
   a. Level transmitter to provide level indication locally and to the Plant Control System.
   b. A separate Hi-level switch.
   c. An automatic drain.
   d. Pressure relief valve.
   e. Other instrumentation and valves needed to meet the requirements of this RFP.

3. Each Fuel Gas Coalescing Filter shall include as a minimum:
   a. Differential pressure transmitter to provide level indication locally and to the Plant Control System.
   b. Level transmitter to provide level indication locally and to the Plant Control System.
   c. A separate Hi-level switch.
   d. A manually operated drain.
   e. Pressure relief valve.
   f. Other instrumentation and valves needed to meet the requirements of this RFP.

4. The cleanliness of the fuel gas leaving the Fuel Gas Coalescing Filters shall exceed the Proposer’s requirements for the Gas Conditioning System and the CTG’s being supplied by the Proposer.
Gas Coolers
1. Proposer shall supply precoolers, intercoolers, and aftercoolers as necessary to limit the
temperature entering any compressor stage. This will serve to minimize the size of each
compressor stage and minimize the outlet temperature of each stage. It will also allow
water vapor to be condensed and removed from the gas stream.

2. All coolers shall be air coolers designed for the maximum ambient temperature (110 °F) and
designed in accordance with the requirements of Attachment 6.7.

3. The air coolers shall be designed to produce an outlet gas temperature of not greater than
10 °F above the ambient air temperature. The coolers shall have sufficient cooling duty to
account for the latent heat of condensation of any water condensed by the cooler.

4. The coolers may be arranged as multiple bundles on a shared frame and fans.

Lube Oil System
1. The Fuel Gas Compressor lube oil system shall include as a minimum:
   a. Two redundant motor driven lube oil pumps.
   b. A dual element lube oil filter that can be switched during operation.
   c. All stainless steel construction.
   d. Instrumentation and valves needed to meet the requirements of the RFP.

Control System
1. The fuel gas compressor’s control system shall include sufficient installed instrumentation
to:
   a. allow the operator to operate the compressors and associated skids,
   b. troubleshoot and diagnose operating problems locally and remotely,
   c. perform performance testing and monitoring.

Emissions and Discharges
1. The fuel gas compressors shall not release fuel gas to atmosphere during any normal
operating scenario. Emergency gas relief to a safe location will be included in the plant

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design as an operator initiated hard-wired E-stop, but it shall not be permissible to utilize emergency relief for contingent or regular operation of the REG’s or CTG’s.

2. Safe discharge of vents and relief valves shall follow the recommendations of API 521.

3. The design of vessels, piping, flanges, and equipment closures shall minimize the leakage of fuel gas through appropriate design of the mating surfaces and sealing element.

F. Spare Parts

Operational Spare Parts

Operational spare parts are not included in Proposer’s current scope of supply, but shall be quoted by Proposer once City’s spares lay-in philosophy has been finalized.

Operational Spare parts quotation shall:

1. Be inclusive for and applicable to all equipment components, auxiliaries, accessories, materials, and lubricants being furnished under the Contract with respect to the compressor scope.

2. Include for each recommended spare part, the unit price, quantity, description, part number references, etc., to completely identify the item and the equipment component for which it is recommended.

3. Be based upon EX-W, supplier facility lead times. Proposer shall indicate the point of shipment, and the estimated lead-time required for delivery the spare parts after an order is placed. Actual lead-time shall be finalized upon placement of order, dependent upon stock/inventory).

All requirements regarding quality control and documentation that apply to the original parts of the specified equipment shall apply equally to the spare parts of the specified equipment.

A spare parts list shall include the part number for all parts.

Startup Spare Parts

Proposer shall provide a list of startup spare parts that they shall supply. Compensation for the listed startup spare parts shall be included in the Contract Price.
Consumable Parts

Proposer shall provide a list of startup consumable parts that shall be supplied. Compensation for the startup consumable parts shall be included in the Contract Price.

G. Field Services

Proposer shall provide technical supervisory services, which shall include technical advice, assistance and guidance in the unloading and erection of the compressors furnished under this specification. The technical personnel shall cooperate with the City's erector in relation to the compressors.

Proposer shall provide startup supervision services, which shall include instruction, advice, and training of City's personnel in correct startup, safe operation, maintenance procedures, testing, and placing of the equipment into service.

Proposer shall provide necessary technical services as required to resolve preliminary operating problems as they develop until satisfactory operation is achieved and the City accepts the unit. All technical services required to correct design or manufacturing errors will be at the Proposer’s expense.

H. Testing

Factory Tests

1. Factory tests shall include the manufacturer’s tests which shall be witnessed by the City or the City's representative. Factory tests shall be performed after a minimum 10 business day notification to the city.

2. Proposer shall perform all factory testing, including alignment, adjustment, and calibration to prepare the compressors for shipment and subsequent installation.

3. Project specific, detailed test procedures shall be submitted to the City or their designated representative for approval no less than fourteen (14) working days prior to the beginning of any testing.
4. Proposer shall furnish without delay and before shipment of the units a complete report covering all factory tests, and shall also submit with the test report a tabulation showing any revised performance data. Revised figures shall be based on the actual tests.

5. Six certified copies of the above test report and data shall be furnished to City.

**Field Tests**

1. City reserves the right to make any acceptance tests found necessary.

2. Warranty Testing

   Field tests will be conducted to check performance of the equipment furnished. Using data from shop tests, the logged field data will be compared with calculated expected performance at the field conditions. Any variance in performance will invoke the warranty provisions.

   Proposer's field representative shall be present during the tests.

3. Should it be determined that the equipment does not comply with the requirements of this specification, the Proposer shall, in accordance with agreed warranty, make any adjustments and/or modifications necessary for compliance.

**I. Engineering Deliverables**

In accordance with Attachment 6.4, Proposer shall submit documentation required per Attachment 6.4 and information listed below:

**Include with Proposal**

1. Description of all equipment, accessories and materials. Descriptive catalogs and literature complete with appropriate illustrations describing the equipment shall also be included.
2. List of proposed accessories.
3. Typical outline drawings.
4. Compressor data sheets including noise data.
5. Recommended spare parts list with pricing.

**During Negotiations**

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1. Conformed compressor specifications.
2. Conformed compressor data sheets.
3. Compressor performance curves.
4. Compressor noise data.

**LNTP Phase**

1. Compressor module outline drawings (fully dimensioned).
2. Foundation Loads.

**FNTP Phase**

1. Compressor outline drawings (fully dimensioned). Compressor dimensional drawings shall include, but not be limited to, the following information:
   a. Complete nameplate data.
   b. Lifting data and center of gravity.
   c. Compressor total weight.
2. Certified dimensioned outline and fabrication drawings of all equipment and subsystems provided by the PIME Contractor.
3. Anchor Bolt and Sole Plate data.
4. Equipment Preservation and Storage Instructions.
5. Rigging, Erection, and Commissioning Instructions.
6. Pressure vessel calculations.
7. Welding procedures.
8. Compressor performance curves.

**“As-Built”**

1. All Code required documentation for pressure vessels and heat exchangers.
2. All equipment test reports.
3. Compressor and pump performance curves and test data.
4. As-Built drawings.
5. Equipment parts list with assembly drawings.
6. Final Spare Parts List.
7. Startup and Commissioning Manuals.
8. Technical and Service Bulletins.
INLET AIR MECHANICAL CHILLER SPECIFICATION

A. Introduction
This Specification provides the requirements for supply of the combustion turbine inlet air mechanical chilling system(s). The use of a chiller is at the Proposer’s discretion in conjunction with their overall selection of the PIME configuration.

These are minimum requirements and are not inclusive of all requirements that may be contained within accepted national and industry codes and standards, as well as good practice. The equipment furnished by the Proposer shall be designed and manufactured in a manner suitable for intended operation within a load serving municipal utility.

There are two options available to the Bidder with respect to the number and arrangement of the chiller(s):

1. Individual chiller packages for each CTG
2. A common chiller package for all CTG’s.

B. Scope of Supply
Mechanical chilling system for the inlet air on each combustion turbine generator including but not limited to:

Mechanical Chiller Package
1. Skid mounted chiller package.
2. Weather/acoustic enclosure.
3. 2x50% capacity evaporator/condenser trains.
4. Initial charge of refrigerant.
5. 2 x 100% Chilled water circulating pumps.
6. Chilled water expansion tank.
7. On skid piping.
8. Control valves to modulate/bypass the chilled water flow to/around the turbine inlet air chilling coils, as well as to each unit if a common chiller package is used.
9. Refrigerant monitor.
10. Refrigerant leak detection system, that is consistent with and supports City’s ability to comply with SCAQMD 1415.1, with an external audible/visual alarm as well as an alarm input to the Plant Control System.

**Controls**

PLC or micro-processor based control system that provides for control, monitoring, and protection of the chiller package with:

1. On-skid field devices for temperature, flow, pressure, valve position, etc.
2. On-skid HMI providing for local indication of system status, operation, and local control by a plant operator.
3. Inputs from off-skid field devices for temperature, flow, pressure, valve position, etc. via the Plant Control System.
4. Interface with the Plant Control System to provide the control room remote operation and monitoring of the chiller package.

**General**

1. Special tools and lifting devices needed for maintenance of the chiller package.
2. Correction curves to correct observed performance back to guarantee conditions.
3. Permitting information for use by the City, and their consultants and representatives, for permitting the proposed Scholl Canyon Landfill Power Project.
4. Engineering information for use by the City, their consultants and representatives, and their EPC Contractor for design and construction of proposed Scholl Canyon Landfill Power Project.
5. Rigging, installation, and commissioning instructions for use by the EPC Contractor.
6. Operating instructions that allow the desired operating flexibility.

**Work Not Included**

The following items will be furnished by others:

1. External (off skid) power and control wiring.
2. Compressed air.
3. Foundations and anchor bolts.
4. Unloading and storage.
5. Installation.
6. Off-skid piping

**Scope Boundaries/Terminal Points/Interfaces**
The following terminal points define the boundaries of the scope of supply:
1. Chilled Water – the flanges at the skid boundary for the chilled water supply and return
2. 4160 V Power Supply – Motor terminal housings.
4. 120 V Power Supply – a single 3 wire connection to the customer interface panel.
5. Grounding – the Customer ground connections.
6. Controls – customer interface panel for data connection with the Plant Control System.
7. Instrument Air – the flange at the skid boundary upstream of the supply isolation valve.

Commodities (piping, tubing, cable, conduit, raceway, etc.) within these boundaries are within the Proposer’s scope of supply.

**C. References**
All mechanical components shall be provided in full accordance with applicable Codes and Standards as detailed in Attachment 6.3. Specifically:

- ANSI  American National Standards Institute
- API    American Petroleum Institute
- ASTM  American Society for Testing and Materials
- Cal-OSHA California Occupational Safety and Health Administration
- IEEE  Institute of Electrical and Electronics Engineers
- ISA  Instrument Society of America
- NEC  National Electric Code
- NEMA National Electrical Manufacturer's Association
- NFPA  National Fire Protection Association
- OSHA  Occupational Safety and Health Act
- UL    Underwriters Laboratories
The requirements contained within the following RFP Attachments are incorporated into this Specification by reference:

1. Site Conditions – Attachment 3
2. Site Interconnections – Attachment 4
3. LFG Composition – Attachment 5
4. General Requirements – Attachment 6.1 – 6.17

D. Technical Requirements

1. Inlet chilling systems for CTGs of the same model shall be laid out identically and use identical components.

2. The chiller systems shall be of modular design with shop assembly to maximum extent possible. Modules shall be shipped as complete assemblies. Field assembly and welding shall be minimized.

3. The chilled water system shall preferably use water. If an anti-freeze is necessary, propylene glycol shall be utilized. Ethylene glycol shall not be utilized.

4. Sufficient isolation valves shall be provided to allow for isolation of any of the evaporator/condenser units or chilled water pumps, and still allow the remaining components to continue to operate. Failure of any single component shall not lead to complete loss of chiller functionality.

5. If the chiller is provided with an acoustic/weather enclosure, then the enclosure shall be provided with:
   a. Interior wall and ceiling surfaces shall be finish painted white.
   b. “Anti-sweat” insulation shall be provided on chilled surfaces to preclude excessive condensation.
   c. All water drains shall be routed to common a location.
   d. Sufficient floor drains to collect any spills.
   e. Lighting to provide illumination for access and egress at all times.
   f. HVAC shall be provided to maintain an environment suitable for the equipment as well as a habitable for periodic inspections during operation and maintenance.
g. Electrical receptacles (120 VAC) to provide power for tools and task lighting during maintenance.

h. If the chiller is shipped in multiple sections or splits, materials to join/seal the interfaces shall be provided.

i. Sufficient space shall be provided within the enclosure for operational and maintenance access to all components. Removal of components from the chiller package shall not be needed for normal maintenance. Overhead monorails shall be provided to facilitate removal of heavy components during maintenance activities.

j. In the event removal of an evaporator condenser or chilled water pump is needed, access doors and overhead monorails for their removal. There shall be a clear pathway for removal of any one of the components without having to first remove others.

6. The refrigerant selected for the chiller shall:
   a. Have low Green House Gas Warming Potential relative to other refrigerants.
   b. Have a demonstrated successful history in industrial chillers.

7. The control system shall include sufficient installed instrumentation to:
   a. Allow the operator to operate the chiller.
   b. Troubleshoot and diagnose operating problems.
   c. Perform performance testing and monitoring.

8. If the Proposer is utilizing Variable Frequency Drives for any of its motor loads, the Proposer shall also supply the VFDs as well as any specialty cable needed for the VFDs. The VFDs shall be integral to the chiller package.

9. Stairs shall be utilized as the primary means of access to all chiller/coolant system skid entrances.

10. If needed, the Proposer shall furnish sole plates and shear keys to secure the chiller package to the foundations.

11. All components shall be finish painted.
E. Spare Parts

Operational Spare Parts

Operational spare parts are not included in Proposer’s current scope of supply, but shall be quoted by Proposer once City’s spares lay-in philosophy has been finalized.

Operational Spare parts quotation shall:

1. Be inclusive for and applicable to all equipment components, auxiliaries, accessories, materials, and lubricants being furnished under the Contract with respect to the Chiller scope.

2. Include for each recommended spare part, the unit price, quantity, description, part number references, etc., to completely identify the item and the equipment component for which it is recommended.

3. Be based upon EX-W, supplier facility lead times. Proposer shall indicate the point of shipment, and the estimated lead-time required for delivery the spare parts after an order is placed. Actual lead-time shall be finalized upon placement of order, dependent upon stock/inventory).

All requirements regarding quality control and documentation that apply to the original parts of the specified equipment shall apply equally to the spare parts of the specified equipment.

A spare parts list shall include the part number for all parts.

Startup Spare Parts

Proposer shall provide a list of startup spare parts that they shall supply. Compensation for the listed startup spare parts shall be included in the Contract Price.

Consumable Parts

Proposer shall provide a list of startup consumable parts that shall be supplied. Compensation for the startup consumable parts shall be included in the Contract Price.
F. Field Services

Proposer shall provide technical supervisory services, which shall include technical advice, assistance and guidance in the unloading and erection of the Chillers furnished under this specification. The technical personnel shall cooperate with the City’s erector in relation to the chillers.

Proposer shall provide startup supervision services, which shall include instruction, advice, and training of City's personnel in correct startup, safe operation, maintenance procedures, testing, and placing of the equipment into service.

Proposer shall provide necessary technical services as required to resolve preliminary operating problems as they develop until satisfactory operation is achieved and the City accepts the unit. All technical services required to correct design or manufacturing errors will be at the Proposer’s expense.

G. Testing

Factory Tests

1. Factory tests shall include the manufacturer’s tests which shall be witnessed by the City or the City’s representative. Factory tests shall be performed after a minimum 10 business day notification to the city.

2. Proposer shall perform all factory testing, including alignment, adjustment, and calibration to prepare the chillers for shipment and subsequent installation.

3. Project specific, detailed test procedures shall be submitted to the City or their designated representative for approval no less than fourteen (14) working days prior to the beginning of any testing.

4. Proposer shall furnish without delay and before shipment of the units a complete report covering all factory tests, and shall also submit with the test report a tabulation showing any revised performance data. Revised figures shall be based on the actual tests.

5. Six certified copies of the above test report and data shall be furnished to City.
Field Tests

1. City reserves the right to make any acceptance tests found necessary.

2. Warranty Testing

   Field tests will be conducted to check performance of the equipment furnished. Using data from shop tests, the logged field data will be compared with calculated expected performance at the field conditions. Any variance in performance will invoke the warranty provisions.

   Proposer's field representative shall be present during the tests.

3. Should it be determined that the equipment does not comply with the requirements of this specification, the Proposer shall, in accordance with agreed warranty, make any adjustments and/or modifications necessary for compliance.

H. Engineering Deliverables

In accordance with Attachment 6.4, Proposer shall submit documentation required per Attachment 6.4 and information listed below:

Include with Proposal

1. Description of all equipment, accessories and materials. Descriptive catalogs and literature complete with appropriate illustrations describing the equipment shall also be included.
2. List of proposed accessories.
3. Typical outline drawings.
4. Chiller data sheets including noise data.
5. Recommended spare parts list with pricing.

During Negotiations

1. Conformed chiller specifications.
2. Conformed chiller data sheets.
3. Chiller noise data.
LNTP Phase
1. Chiller module outline drawings (fully dimensioned).
2. Foundation Loads.

FNTP Phase
1. Chiller outline drawings (fully dimensioned). Chiller dimensional drawings shall include, but not be limited to, the following information:
   a. Complete nameplate data.
   b. Lifting data and center of gravity.
   c. Chiller total weight.
2. Certified dimensioned outline and fabrication drawings of all equipment and subsystems provided by the PIME Contractor.
3. Anchor Bolt and Sole Plate data.
4. Equipment Preservation and Storage Instructions.
5. Rigging, Erection, and Commissioning Instructions.
6. Pressure vessel calculations.
7. Welding procedures.

“As-Built”
1. All Code required documentation for pressure vessels and heat exchangers.
2. All equipment test reports.
3. Compressor and pump performance curves and test data.
4. As-Built drawings.
5. Equipment parts list with assembly drawings.
6. Final Spare Parts List.
7. Startup and Commissioning Manuals.
8. Technical and Service Bulletins.
<table>
<thead>
<tr>
<th>Guarantee</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engineering Document Submitted During LNTP Phase</strong></td>
<td></td>
</tr>
<tr>
<td>Delivery of documents agreed to and listed in Attachment 6.4B3 during</td>
<td>$1,500/day</td>
</tr>
<tr>
<td>the 20 week LNTP Phase. Documents must be complete and accurate.</td>
<td></td>
</tr>
<tr>
<td><strong>Equipment Deliveries</strong></td>
<td></td>
</tr>
<tr>
<td>Deliver PIME furnished equipment to the project site or to an agreed</td>
<td>$7,500/day</td>
</tr>
<tr>
<td>alternative location by the “Guaranteed Delivery Date”. Assessed</td>
<td></td>
</tr>
<tr>
<td>separately for each piece of equipment based on final delivery day in</td>
<td></td>
</tr>
<tr>
<td>Milestone Schedule.</td>
<td></td>
</tr>
<tr>
<td><strong>Startup Emissions</strong></td>
<td></td>
</tr>
<tr>
<td>Start and achieve emissions compliance within guaranteed startup time</td>
<td><strong>Must Meet</strong></td>
</tr>
<tr>
<td>and guaranteed total start up emission.</td>
<td></td>
</tr>
<tr>
<td><strong>Minimum Operating Load</strong></td>
<td></td>
</tr>
<tr>
<td>Start and operate at guaranteed minimum MW load while achieving and</td>
<td><strong>Must Meet</strong></td>
</tr>
<tr>
<td>maintaining emissions compliance.</td>
<td></td>
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<tr>
<td><strong>Stack Emissions</strong></td>
<td></td>
</tr>
<tr>
<td>Maintain stack emissions compliance during both steady state operations</td>
<td><strong>Must Meet</strong></td>
</tr>
<tr>
<td>and changing load within all guaranteed operational ranges.</td>
<td></td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td></td>
</tr>
<tr>
<td>Remain below guaranteed noise levels for all equipment supplied.</td>
<td><strong>Must Meet</strong></td>
</tr>
<tr>
<td>**Auxiliary Load – Total PIME Including Gas Conditioning (Note the EPC</td>
<td></td>
</tr>
<tr>
<td>Contractor’s Parasitic Are Not Included)**</td>
<td><strong>Must Meet</strong></td>
</tr>
<tr>
<td>Remain below guaranteed auxiliary load when corrected to test conditions</td>
<td><strong>$2,500 per kW excess</strong></td>
</tr>
<tr>
<td>Guarantee</td>
<td>Remedy</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td><strong>Net Plant Power Output (Gross-PIME Parasitic) (Note the EPC Contractor’s Parasitic Are Not Included)</strong>&lt;br&gt;Achieve or exceed guaranteed output at design point (guaranteed design ambient temperature at 100% load) when corrected to test conditions, 6,200 SCFM of LFG &amp; 32% CH4.</td>
<td>$2,500 per kW shortfall</td>
</tr>
<tr>
<td><strong>Heat Rate at Plant Net Power Output</strong>&lt;br&gt;Achieve guaranteed heat rate, based upon CTG/REG gross output less PIME Auxiliary Loads, when corrected to test conditions</td>
<td>$5,000 per Btu/kWH HHV excess</td>
</tr>
<tr>
<td><strong>Excess Access Days</strong>&lt;br&gt;Complete PIME Proposers plant startup and acceptance testing within proposed number of Access Days.</td>
<td>$2,500 for each additional calendar day attributable to the PIME scope of supply until all equipment achieve Substantial Completion</td>
</tr>
<tr>
<td><strong>Gas Conditioning System Performance</strong>&lt;br&gt;Achieve and maintain guaranteed performance requirement for the gas stream discharge from the gas conditioning system specified in Attachment 10 – Section E</td>
<td>Must Meet</td>
</tr>
</tbody>
</table>
CONTRACT FOR THE SALE OF EQUIPMENT AND SERVICES

BETWEEN THE CITY OF GLENDALE
AND
[SELLER NAME]

THIS CONTRACT FOR THE SALE OF EQUIPMENT AND SERVICES ("Contract"), effective ___________, 20___ ("Effective Date"), is between the City of Glendale ("City" or "Purchaser"), a chartered California municipal corporation, and _____________________ ("Seller"), a ______________ [type of business and state of incorporation, if applicable] (collectively, the "Parties" or individually, a "Party").

RECITALS

A. City is a public entity organized and existing under its Charter and the State of California’s Constitution.

B. Seller represents that Seller is, and will continue to be for this Contract’s duration, a ______________ [describe business status] in good standing which engages persons and entities who are duly registered or licensed as necessary to perform the Services in the State of California.

C. City, through its municipal utility department, Glendale Water & Power ("GWP") is preparing for the proposed construction of the Scholl Canyon Power Project (the “Proposed Project”). As of the Effective Date, the Proposed Project has not been approved by City’s governing body, the City Council; however, the City Council has directed GWP to proceed with design and environmental reviews for the Proposed Project. The City intends to apply for permits for the Proposed Project, prepare an environmental analysis for the Proposed Project under the California Environmental Quality Act ("CEQA"), and solicit proposals for an Engineering, Procurement and Construction Contractor ("EPC Contractor") for the Proposed Project. While not an obligation of the City under this contract, following completion of the CEQA process, project permitting, and evaluation of the EPC Contractor proposals, it is GWP’s intent to request the City Council’s approval to proceed with full execution of the Proposed Project.

D. In order to proceed with the planning and permit applications for the Proposed Project,
the City seeks to retain Seller to procure the Power Island and Major Equipment ("Equipment") and perform the services specified in this Contract, including but not limited to, providing final design information for the Equipment and technical advisory services in connection with the planning, permitting, design, construction, commissioning, and testing for the Proposed Project, and perform long term maintenance services. If the City’s City Council authorizes GWP to proceed with the Proposed Project, the Seller will 1) supply such Equipment as specified in this Contract and provide technical advisory services during the implementation of the Proposed Project, and (2) warrant the Equipment in accordance with the terms and conditions specified herein, and (3) provide long-term maintenance services.

E. Seller possesses the competence, experience, expertise, skill, facilities, equipment, personnel, financial wherewithal, and other resources necessary to perform this Contract’s tasks in a professional and competent manner and to deliver the Project as specified.

F. Seller desires to furnish and perform services for, and design, supply and warrant the Equipment for City, on the terms and conditions described in this Contract. Seller has the legal authority to provide, engage in, and carry out the professional services and to supply the Equipment and materials as set forth in this Contract.

**AGREEMENT**

**THEREFORE,** City engages Seller and in consideration of the Parties’ mutual promises, the Parties agree as follows:

1.0 **INCORPORATION OF RECITALS; DEFINITIONS**

1.1 The Recitals constitute the factual basis upon which City and Seller have entered into this Contract. City and Seller acknowledge the Recitals’ accuracy and, therefore, incorporate them into this Contract.

1.2 Capitalized terms not otherwise defined herein shall be defined as set forth in Attachment 1 hereto.

2.0 **TERM; CONTRACT PHASES**

2.1 Unless terminated earlier as provided herein, this Contract begins on the Effective Date, and continues until completion of the Project, unless this Contract ends sooner in accordance with the terms elsewhere in this Contract. Notwithstanding the foregoing, the term of any license provided by Seller or warranty hereunder shall be as set forth in the provision granting such license or warranty, as
2.2 This Contract shall be performed in two phases:

A. Phase I: for which a Limited Notice to Proceed ("LNTP") will be issued; and

B. Phase II: for which a Full Notice to Proceed ("FNTP") will be issued, provided that City obtains permits for the Proposed Project, City certifies an environmental document for the Proposed Project under CEQA, and the City Council, in its sole discretion, directs the City to proceed with the Proposed Project.

2.3 Seller expressly acknowledges and agrees that City makes no guarantee that this Contract will proceed beyond Phase I. If City fails to obtain permits for the Proposed Project, or does not certify an environmental document under CEQA, or if the City otherwise fails to authorize GWP to proceed with the Proposed Project, this Contract will terminate in accordance with Section 19.4 hereof.

3.0 SCOPE OF WORK AND SCOPE OF SUPPLY

3.1 Seller shall perform the Phase I scope of work and Phase II scope of work in accordance with the terms and conditions of this Contract and the Scope of Work ("SOW") attached hereto as Attachment 1 and by this reference incorporated herein. Subject to 19.3 and 19.4, a separate notice to proceed will be issued for each phase:

3.1.1 Phase I – LNTP Phase

Following issuance of the LNTP, the Seller shall provide the engineering services and support as specified in the SOW.

3.1.2 Phase II – FNTP Phase

Provided that: (i) the City successfully obtains Permits; (ii) successfully completes the CEQA review; and (iii) obtains the approval of City’s City Council to proceed with the Proposed Project (such provisos, referred to herein as the “Phase II Conditions”), and subject to Article 19, then City shall issue a FNTP to the Seller. If the Phase II Conditions are not fulfilled or City elects not to proceed with the Proposed Project, then City will issue a Notice of Termination of Contract to Seller and the Contract shall terminate, in accordance with Section 19.4 except as otherwise specified in Section 21.14

Following issuance of the FNTP, Seller shall (a) provide the balance of the engineering design, fabrication of the Equipment and System (E&S), and deliver the E&S and commissioning spare parts to the City of Glendale Scholl Canyon Power Plant, Power Plant, 3001 Scholl Canyon Road, Glendale, CA
91206 (Site) as specified in Attachment 3 hereto; (b) provide all technical advisory services in connection with the erection, construction, commissioning, start-up and testing of E&S; (c) provide the as agreed to capital spare parts at the prices listed in Attachment 3 (as such list may be modified by the City following FNTP); (d) provide operation and maintenance manuals and training; and (e) provide long term service agreement as may be agreed to between Seller and the City, all in accordance with and subject to the terms and conditions as set forth in this Contract and the SOW attached hereto.

With regard to the Phase II technical advisory services, Seller shall ensure that there will be an adequate number of advisors present at the Site, as coordinated by the Parties, when necessary in order to support inspection, commissioning, start-up and testing of the Seller’s E&S. The Parties will hold a pre-installation meeting no later than sixty (60) days (or such later date as the Parties may agree) prior to the then-scheduled date of Ready to Ship for the first item of E&S. During this meeting, the Parties will coordinate and agree upon the schedule for the arrival, work-schedule and support of Seller’s technical advisors at the Site in connection with erection, inspection, commissioning, start-up, and testing of the E&S.

3.2 Equipment Service and Maintenance

Notwithstanding anything in this Contract to the contrary, Seller shall, during the manufacture and fabrication of each item of E&S and until delivery to Site, perform standard E&S service and maintenance as set forth in the user’s manual published by Seller or the Equipment manufacturer(s), that are applicable to such E&S and have been issued on or before the Effective Date, without any additional charge to City.

3.3 Cooperation with City’s Contractors

In conducting any activities relating to this Contract at the Site, Seller shall coordinate its activities with, and cooperate with, City and its other contractors (including the EPC Contractor). Seller shall reasonably promptly provide such information and assistance as such parties may reasonably request, including meeting with such parties for the purpose of clarification of any interfaces between the E&S and the activities and works of such parties; provided, however, that during the LNTP Phase, Seller shall not communicate directly with permitting agencies, the EPC Contractor or EPC proposers, subcontractors, financing agencies, or any third parties unless expressly directed to do so by the City.

3.4 Standardization of Equipment

Seller will standardize the supply of all like E&S to be delivered under the Contract, such that all like components furnished as part of each E&S shall be interchangeable with those furnished as part of the other like E&S.
3.5 Seller is responsible for making an independent evaluation and judgment of all conditions affecting performance of this Contract. Except as otherwise expressly provided in this Contract, data, calculations, opinions, reports, investigations, or any other information or documents that City provides relating to Site, local, or other conditions are not warranted or guaranteed, either expressly or implied, by City. If Seller becomes aware of any claimed conflicts, errors or omissions in the specifications or other information provided by City or City’s separate contractors, Seller shall immediately notify City in writing.

3.6 Compliance with Laws. The Seller shall perform its obligations hereunder and perform the services in compliance with all applicable laws.

3.7 Subject to City’s responsibilities under the Scope of Work, Seller acknowledges that it has in its possession all applicable plans, specifications, descriptions, drawings, data and all other documents to which reference is made in this Contract and in all other accompanying documents or attachments. Seller acknowledges that the plans, specifications, descriptions, drawings, data and other documents are or, when combined with materials or information to be provided by the City pursuant to the Scope of Work, will be adequate to enable Seller to determine fairly its ability to design and procure the items ordered, and/or to perform the services specified in the Contract, at the price and in accordance with the specified delivery date(s) and/or performance schedule(s) set forth in the Contract.

3.8 When the Scope of Work requires permits or City’s review, approval, conditional approval, or disapproval, Seller acknowledges that City’s review, approval, conditional approval, or disapproval is not to be construed as a waiver of any breach. City does not accept any responsibility, professional or otherwise, for Seller’s services, E&S or work product. The City’s inspection, approval, acceptance, use of, or payment for all or any part of the item ordered shall not affect City’s warranty rights, regardless of whether a breach of warranty was evident at the time.

4.0 CHANGE ORDERS

4.1 Except as provided in Section 4.3, Seller shall not make changes in the SOW, perform any additional work, or provide any additional E&S or substitute any items ordered, without prior written authorization from City in the form of a Change Order. If Seller provides additional Services or E&S without a Change Order or if Seller exceeds the Contract Price, then Seller proceeds at Seller’s own risk and without payment.

4.2 Subject to Section 4.3, City shall have the right to make changes including, but not limited to: the SOW; the quantity of items; the plans, specifications, descriptions, drawings, data, schedules; the time, method, place of delivery; the method of shipment or packaging.
4.3 Upon receipt of the City’s notice of change(s), Seller shall proceed promptly to make the change(s) in accordance with the notice’s terms. If any change causes an increase or decrease in the cost of performance, or in the time required for performance, the City and Seller promptly shall negotiate a cost adjustment and upon the parties’ reaching an agreement, the parties shall execute a Change Order. As promptly as possible, but in any event within fourteen (14) days after receipt of the City’s notice of changes, Seller shall deliver to the City an initial written statement showing the effect of any change in the price(s) and in the delivery or performance date(s). Within seven (7) days from the date of the initial statement, Seller shall supplement the initial statement by delivery to the City a detailed, written specification of the amount of the price adjustment and supporting cost figures. Seller’s failure to submit the statements within the time limits stated above shall constitute Seller’s consent to perform the change(s), without increase in price, without claim for material rendered obsolete, and without change in delivery.

5.0 SHIPMENT AND DELIVERY

5.1. Except as otherwise expressly provided herein, Seller’s sale of goods to the City shall be governed by the California Commercial Code.

5.2 Passage of Title

Title to each item of Equipment or materials to be provided under this Contract shall pass to City upon delivery to the City’s Site and ready for unloading. Title to services shall pass to the City as performed. As of the time of title transfer of an item, Seller hereby warrants that such item will be free of defects in title and that such title will be and is marketable and clear and free of any liens, charges or encumbrances whatsoever. Seller will indemnify, defend and hold City harmless for any claims, demands or losses arising out of any breach of the foregoing warranty.

5.3 Shipment and Delivery

(a) With respect to each item of Equipment, no later than thirty (30) days prior to the date on which Seller intends to start packaging the equipment for shipment, Seller will (i) notify City of such status in writing, such notification (the “Advanced Notice of Ready to Ship [RTS]”) to include accurate information as to which item of Equipment is to be shipped, and (ii) allow City and its representatives access to inspect such item during that thirty (30) day period.

(b) Once an item is ready to be shipped, Seller will notify City of such status in writing, such notification (the “Notice of RTS”) to include (i) a description of the item, (ii) a statement that the item is ready for shipment, and (iii) a statement regarding where the item is then located. City shall have the right to modify the delivery location for shipments up to ninety (90) days prior to an item’s Guaranteed
Delivery Date.

(c) Ready to Ship (RTS). An equipment item will be “Ready to Ship” for purposes of this Contract when all of the following have occurred as with respect to that item: (i) Seller has given City an Advanced Notice of RTS with respect to such item and has allowed City thirty (30) days of access for inspection of such item, as described in Section 5.3(a); (ii) City has inspected and accepted the condition of the item which inspection and acceptance must take place in the aforesaid thirty (30) day period (provided, that if City fails to so inspect within such thirty (30) day period, then this condition to Ready to Ship for such item shall thereby be deemed to have been waived by City; and provided, further that Seller shall not be required to delay manufacturing or other activities to accommodate City’s inspection); (iii) such item has achieved the state of being Complete, and (iv) Seller has issued a Notice of RTS with respect thereto, as described in Section 5.3(b). For purposes of this Contract, “Complete” means, with respect to an item, that such item has been manufactured, assembled (such that neither abnormal assembly nor modifications to such item will be required after delivery to the Site), Factory tested, and packaged, so as to be complete, so that such item is fully ready to be loaded and subsequently shipped from a warehouse or factory to the Site. Additionally, for the Catalyst, delivery shall not occur more than 30 days prior to First Fire.

(d) Seller guarantees that all items of each item of Equipment will be delivered to the Site by its applicable Guaranteed Delivery Date as set forth in Attachment 4. Subject to Section 5.5 below, if any item of Equipment is not delivered to the Site on or before the applicable Guaranteed Delivery Date for such Unit, for reasons not attributable to City and that are not excused under Article 9.4 of this Contract, then Seller shall pay City, as liquidated damages and not as a penalty, the applicable amount as set forth in Attachment 5.

(e) Shipment

(i) Subject to the further provisions of this paragraph and unless otherwise directed by the City in writing, Seller will deliver all items, material and Equipment DDP Site (Incoterms 2010). Notwithstanding anything in the Incoterms 2010 to the contrary, Seller will be responsible, at its own expense (and without reimbursement by CITY), to: (A) obtain and maintain all export and import licenses and other official authorizations or documents necessary for, and shall carry out all customs formalities necessary for, the export and import of all goods into and/or out of any country, and their transit to the Site, and (B) to pay all duties, taxes and any other costs and charges relating to or associated with the import, export, transit or delivery of the goods to, and the unloading of the same at, the point of shipment, and (C) to pay all transport costs to the Site. (ii) Notwithstanding anything in the Incoterms 2010 to the contrary, if any item of Equipment is damaged, destroyed or is lost for any reason prior to being
delivered to, and unloaded at, the Site, then Seller will promptly repair or replace the same, including delivery of such repair or replaced item (again pursuant to the DDP, Site (Incoterms 2010) delivery term described herein).

(ii) Delivery to site shall occur between the hours of 8:00 AM and 2:00 PM local time.

5.4 Passage of Risk of Loss

Notwithstanding anything in the Incoterms 2010 to the contrary and Section 5.3(e)(ii) (clarification regarding risk of loss concept): (a) Seller will bear the risk of loss on all Equipment prior to the time when title thereto transfers to City under Section 5.2, and (b) City shall bear the risk of loss thereafter. Seller shall procure and maintain property and cargo insurance providing complete replacement coverage for all items shipped.

5.5 Shipment to Storage

(a) If any item of Equipment is Ready to Ship on or after the scheduled date for shipment of such item as set forth in the Phase II Schedule (the “Scheduled Shipment Date”), but City cannot take delivery at the Site by the time after the Scheduled Shipment Date that such item is estimated to be delivered to the Site, due to any cause not attributable to Seller, then, Seller if directed by City shall place any such item into storage. The site of such storage shall be mutually agreed by the Parties, such agreement not to be unreasonably withheld or unreasonably delayed. If such item (including a Catalyst) is placed (or kept, as applicable) in storage, including storage at the facility where it is manufactured, the following conditions shall apply:

(i) Risk of loss (including responsibility for insurance coverage) shall remain with Seller;

(ii) Seller will be responsible for preparing the items for, and placing them into, storage in such a manner as to be compliant with Seller’s standard guidelines and requirements for storage of such items;

(iii) City shall pay Seller storage fees as specified in Attachment 6. Such storage fees shall be documented in a Change Order executed by the Parties and payable on a monthly basis following submission of the Seller’s invoice(s);

(b) Upon City’s notice to Seller of City’s ability to accept delivery of the item(s) and
payment of all amounts due under this Section, the Seller shall resume transportation of the item to the Site in accordance with Section 5.3 and 5.4.

5.6 No Effect on Warranties or Other Liabilities

No reference to a transfer of “risk of loss” to City hereunder shall relieve Seller of its warranty or other obligations under this Contract or for liability for property damage, which is subject to Article 17.

5.7 Hazardous Materials Communication Program

(a) Seller will notify City when materials that contain Hazardous Materials are provided as part of the Equipment. A “Safety Data Sheet” as described in Section 5194 of Title 8 of the California Code of Regulations shall be requested by Seller from the manufacturer of any such materials provided by Seller, and such Safety Data Sheets will be provided to City at or prior to the time of delivery of such Equipment.

(b) Material usage shall be accomplished with strict adherence to California Division of Industrial Safety requirements and all manufacturer’s warnings and application instructions listed on the Safety Data Sheet and on any product container labels.

(c) The applicable Safety Data Sheets shall accompany the material being shipped.

5.8 Seller shall keep all items free and clear of all liens and encumbrances.

6.0 INSPECTION AND FACTORY ACCEPTANCE TESTS

6.1 All items provided by seller are subject to Factory Acceptance Test, and inspection at the City’s discretion. City shall have the right to be present at any Factory Acceptance Tests, and Seller shall provide City with 30 days’ notice in the advance of the start of any such test. For each item of Equipment delivered, Seller shall provide City with documentation evidencing that such Equipment has undergone and satisfied acceptance tests and inspection criteria. If the City rejects any item or items for nonconformance with the specifications, Seller agrees to bear all reasonable or otherwise agreed upon test and inspection charges, plus packaging and return freight to the manufacturer’s plant.

6.2 Inspections and Tests at Seller’s Facilities

The City, or its authorized agent or agents, at all times, shall have the right to inspect all parts of the facility where such materials are being manufactured or the work performed. Upon the City’s request, City’s personnel and/or agents shall be provided reasonable access to the Seller’s facilities to obtain
6.3 Inspections and Tests at Suppliers’ Facilities

Subject to the conditions set forth in the foregoing paragraph, the Seller will make reasonable efforts to obtain for the City’s access to its suppliers’ facilities for the purposes described in the paragraph above.

6.4 Inspection Not Acceptance

The City’s or its designee’s inspection of the Equipment or its failure to inspect does not relieve the Seller of its obligation to fulfill the requirements of this Contract, nor is it to be construed as acceptance by the City. Inspection by City or its designee shall not be deemed to be supervision by City of Seller or its Personnel. Work, material or Equipment that does not conform to the specifications, although accepted through oversight, may be rejected at any stage of the work.

6.5 Certified Test Reports

Seller shall furnish City certified test reports of the Factory Acceptance Tests.

7.0 PERFORMANCE, EMISSIONS AND NOISE TESTING

7.1 Development of Testing Procedures and Protocols

(a) Commencing upon the Effective Date, and continuing on a regular basis thereafter, the Parties will regularly meet and work together in good faith to develop and agree in writing upon the final, applicable testing procedures and protocols. These shall be based upon the information in Attachment 8, as well as any relevant testing information in Attachment 1 [SOW], and shall be subject to the review and approval of City and the EPC Contractor. When such agreement has been reached, the Parties will execute an amendment to this Contract that becomes Attachment 7 of this Contract (the “Agreed Testing Procedures and Protocols”).

(b) The tests to demonstrate a Unit’s compliance with the Guarantees and Minimum Performance Criteria (“Performance Tests”) shall be arranged and conducted by the City or its designee unless specifically stated below.

7.2 Achievement of Readiness for First Fire; Access to Achieve Ready to Test
(a) Once City believes that it has caused a Unit or system to achieve Readiness for First Fire, it will notify Seller of that status. Seller will then, by no later than three (3) days after its receipt of such notice, and provided that it has reasonably unrestricted access to such Unit as reasonably necessary to do so, complete a check-out of such Unit to confirm that such Unit has achieved Readiness for First Fire. If Seller determines that a Unit has not in fact achieved Readiness for First Fire, it will notify City of this, and City will at its own expense take such actions as are necessary to cause the Unit to achieve Readiness for First Fire and re-notify Seller of the same, apply the foregoing sentences (except that Seller will perform the re-check within two (2) days after receipt of the re-notification) until Readiness for First Fire has, as so confirmed by Seller, been achieved. For purposes of this Contract, if and when Seller confirms that Readiness for First Fire has been achieved, then the date of City’s notice as described above, as was confirmed by Seller, shall be the date on which Readiness for First Fire was achieved.

(b) After Readiness for First Fire of a Unit has been achieved, City will allow Seller a maximum of ____ Access Days of access to each the simple cycle Units, and a maximum of ___ Access Days of access to each of the combined cycle units, so that Seller may perform such activities as may be required in order for Seller to declare that the Units are in a state of being ready to commence the Performance Tests (“Ready to Test”), such declaration to be in a written notice to City.

7.3 Plant Performance Testing

The Performance Tests for each Unit shall be performed using the Agreed Testing Procedures and Protocols and subject to conditions set forth in Attachment 6.12, and shall be conducted by City following Seller’s declaration that the Unit has achieved Ready to Test, as described in Section 7.2(b). City will use reasonable and prudent efforts in accordance with standard industry practices to minimize the time between the commencement of the Performance Test relating to the first-to-be-tested performance guarantee and the commencement of the Performance Test for the last-to-be-tested performance guarantee so as not to adversely affect Seller’s rights to cure, in the event that a Must Meet Remedy applies, under Section 8.2.

7.4 Results of Testing

If, when first tested for the same, a Unit does not meet all of the Guarantees and Minimum Performance Criteria specified in Attachment 8, then the City will provide written notice to Seller. Seller shall have fourteen (14) days from the date of such notice (the “Cure Period”) to cure the deficiency(ies) and pass the applicable tests. At the end of the Cure Period, Seller shall pay the applicable liquidated damage payments pursuant to Attachment 5 or shall meet the remedy and pay the applicable rate for Excess Access Days, as specified in Section 8.2 and Attachment 5 hereto.
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 16 – Form of Contract

When all Performance Tests for a Unit have been satisfactorily performed such that all Guarantees and Minimum Performance Criteria have been met, the City shall issue a written Notice of Acceptance of Plant Performance Testing for such Unit constituting the Seller having achieved Substantial Completion for that Unit.

7.5 **Cost of Tests and Re-Tests**

City shall perform each of the initial Performance Tests at its cost. Seller shall be notified of, and may be represented at all such tests. If any re-test is required, and Seller or the Equipment or any component thereof caused the requirement for such re-test (including failure of a Unit to comply with any guarantee for any reasons attributable to Seller or its Personnel), the actual cost of the re-test will be borne by the Seller.

7.6 **Access Days**

If Seller in good faith disputes that a period that City intends to be an Access Day has failed to meet the requirements hereof, then Seller will notify City in writing within two (2) days of such dispute; and if Seller fails to provide this notice within this time, then Seller will have waived its right to contend that such period did not constitute an Access Day.

8.0 **GUARANTEES AND MINIMUM PERFORMANCE CRITERIA**

8.1 When tested in accordance with the Agreed Testing Procedures and Protocols specified in Attachment 7 the Seller guarantees that each Unit will achieve the Guarantees and Minimum Performance Criteria as set forth in Attachment 8.

    (a) If a Unit fails to achieve any or more of the following Performance Guarantees: (i) the Gross Output Guarantee, (ii) the Auxiliary Load Guarantee or (iii) the Heat Rate Guarantees as set forth in Attachment 8 after Performance Testing and the Cure Period, if any, then Seller shall pay to the City the applicable liquidated damages calculated in accordance with Attachment 5 for each Unit and for each Performance Guarantee that has not been met.

    (b) Payment of any liquidated damages hereunder shall be due and payable as described in Attachment 5 and may be set off against any amounts due to Seller or, if invoiced to Seller, shall be paid by Seller within thirty (30) days of receipt of the City’s invoice. The liquidated damage amounts set forth above, which do not constitute a penalty, represent a reasonable endeavor by the Parties to estimate a fair compensation for the foreseeable losses resulting from deficiencies in achieving the Performance Guarantees and, without prejudice to Article 19, shall be applicable regardless of the actual losses incurred.
8.2 Must Meet Remedy

In addition to the Guarantees and Minimum Performance Criteria specified in Section 8.1 above, when tested in accordance with Attachment 7, the Seller guarantees that each Unit will meet the 10-Minute Start Guarantee, the Startup Emissions Guarantee, the Minimum Operating Load Guarantee, the Stack Emissions Guarantee, the Ramp Rate Guarantee, the Noise Level Guarantee as specified in Attachment 8. If when first so tested, a Unit fails to meet any of the foregoing criteria and guarantees, then Seller shall have an absolute obligation to take all actions necessary, including adjusting or repairing or replacing any Equipment, in order to cause such Unit to achieve the same (the “Must Meet Remedy”) and after the Cure Period, shall pay the applicable amount for Excess Access Days specified in Attachment 5 hereto. Such payments for Excess Access Days may be set off against any amounts due to Seller or, if invoiced to Seller, shall be paid by Seller within thirty (30) days of receipt of the City’s invoice. The Parties acknowledge that the Must Meet Remedy is a one-time obligation, meaning that once Seller has successfully provided the Must Meet Remedy so that all guaranteed levels are met, it will not have a continuing obligation to cause a Unit to continually meet the guaranteed levels.

8.3 The Parties further acknowledge that City has certain termination rights under Article 19 that relate to the extended failure of a Unit to achieve any of the foregoing Guarantees and Minimum Performance Criteria as described in this Article.

9.0 TIME FOR PERFORMANCE; DELAYS; MECHANICAL, SUBSTANTIAL AND FINAL COMPLETION; LIQUIDATED DAMAGES

9.1 Contract Time. Subject to Section 9.4 (Excusable Delays), Seller shall perform the SOW and deliver the Phase I Deliverables according to the Phase I Project Time Schedule set forth in Attachment 4, and will deliver the Equipment to the Site by the Guaranteed Delivery Dates set forth in Attachment 4 hereto, unless such time is extended by mutual agreement of the Parties. The estimated Phase II milestones are attached hereto as Attachment 4. By executing this Contract, Seller confirms that, to its knowledge, the deadlines specified in Attachment 4 (Phase I Time Schedule and Guaranteed Delivery Dates) are a reasonable period of time for performing the SOW, and completing the Phase I and Phase II Deliverables for the Equipment. Time is of the essence in completing this Contract.

9.2 Notice to Proceed. Seller is not authorized to perform any work until it has received from the City an official Notice to Proceed. Seller shall commence work within seven (7) calendar days after the date the Notice to Proceed is issued. A Notice to Proceed shall not be issued until the Contract is properly executed, and current proof of insurance documentation, and the required performance and payment securities have been submitted and approved by the City. A LNTP will be issued for the Phase I Work, and, provided that City elects to proceed with Phase II, a FNTP will be issued for Phase II.
9.3 Prosecution of the Contract. The Seller shall take reasonable precautions to foresee and prevent delays to the work. In the event of any delay to the work Seller shall revise his/her sequence of operations, to the extent possible under the terms of the Contract, to offset the delay.

9.4 Excusable Delays and Extensions of Time

(a) Excusable Delays. Neither Party shall have liability or be considered to be in breach or default of its obligations under this Contract to the extent that performance of such obligations is delayed or prevented due to any of the following (an “Excusable Delay”): acts of God, acts (or failures to act) of governmental authorities, fires, lighting strikes, arson, severe weather conditions, earthquakes, floods, war (declared or undeclared), epidemics, civil unrest, or riots. Further, Seller shall not have any liability or be considered to be in breach or default of its obligations under this Contract to the extent that performance of such obligations is delayed or prevented due to (these also constituting, for Seller, an “Excusable Delay”) the City’s failing to timely:

(i) Provide the Seller with information and approvals as are required of City under this Contract and are necessary to permit the Seller to proceed with work immediately and without interruption, or

(ii) Comply with the terms of payment.

(b) Excluded Events. Notwithstanding anything herein to the contrary, in no instance will the following be considered Excusable Delay events for Seller: (a) strikes or labor disturbances involving employees of Seller or its Personnel (other than nationwide strikes); (b) price fluctuations with respect to materials, supplies or components of equipment related to items to be supplied by Seller under this Contract; (c) economic hardship of Seller or its Personnel; and (d) causes or circumstances within the control of Seller, its Personnel, and/or agents.

(c) Notice of Event. If a Party believes that an Excusable Delay event has occurred that is preventing or delaying its performance of its obligations under this Contract, then such Party shall notify the other Party thereof (the “Excusable Delay Notice”) within no later than seven (7) Days after becoming aware of the occurrence of the event. The affected Party shall include in its Excusable Delay Notice a description of the Excusable Delay event and its impact upon such Party’s obligations based on the available information. The affected Party shall provide timely updates as further information becomes available and provide such additional information as the other Party may reasonably request regarding the event and its current and expected impact on affected Party’s Contract obligations. An affected Party hereunder shall at all times strive to mitigate any delays caused by an Excusable Delay event, to the extent commercially reasonable.
(d) **Delay Claim Deadline.** Any claim for an extension of time due to delay shall be made in writing to the City not more than 30 days after the ending of such delay. No extension of time will be permitted unless the delay affects the timely completion of the overall work under the Contract or the timely completion of the portion of the work for which a time of completion is specified. Failure of the Seller to give written notice of a delay, or to submit or document a claim for an extension of time or for damages resulting from delay in the manner and within the times stated above shall constitute a waiver of the right to claim an extension of time for such delay.

(e) An extension of time for delays other than delays due to Excusable Delay Events must be approved by the City in a written Change Order to be effective.

(f) An extension of time, whether with or without consent of the sureties or the banks providing letters of credit hereunder ("Guarantors"), shall not release the Guarantors from their obligations, which shall remain in full force until the discharge of the Contract.

9.5 Mechanical Completion/Readiness for First Fire

(a) Equipment and plant systems are construction complete, have been successfully tested at the system level and are now ready for integrated operation as a power plant, as well as operator training has been completed to allow First Fire of a Unit. Any outstanding punch list items have been completed and agreed upon by the City to not be an impediment to First Fire. Mechanical Completion for the simple cycle units (as a group) can be achieved separately from Mechanical Completion for the combined cycle units (as a group).

9.6 Substantial Completion

(a) Substantial Completion of a Unit will occur when, per testing as described in Attachment 7, the item of Equipment has met the Guarantees and Minimum Performance Criteria set forth in Attachment 8 and the City has issued written Notice of Acceptance of Plant Performance Testing as to that Unit.

(b) When Seller considers that it has achieved Substantial Completion of a Unit, Seller shall prepare and submit to the City a request for inspection and a comprehensive punch list of items to be completed or corrected prior to the milestone payment. Failure to include an item on such punch list does not alter the responsibility of the Seller to complete the SOW in accordance with the Contract Documents.

(c) Upon receipt of the Seller’s punch list, the City will make an inspection to determine whether the SOW or designated portion thereof is Substantially Complete. If the inspection discloses
any item, whether or not included on the Seller’s punch list, which is not sufficiently complete in accordance with the Contract Documents, Seller shall complete or correct such item upon notification by City.

(d) When the SOW or designated portion thereof is substantially complete, the City will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, and shall fix the time within which the Seller shall finish all items on the Seller’s punch list accompanying the Certificate.

9.7 Final Completion

For purposes of this Section 9.7, Final Completion will be achieved when:

(a) Substantial Completion for all Units has been achieved;

(b) All punch list items have been completed;

(c) Seller has paid to City any liquidated damages due and payable under the Contract; and

(d) City has received from Seller all Deliverables as described in Attachment 1.

When Seller believes that Final Completion has been achieved, it will notify City in writing of the same, and City will promptly either confirm or dispute the same. If, in the City’s opinion, the SOW has been completed and all conditions of the Contract Documents have been met, the City will issue a “Notice of Acceptance”. Within ten (10) Days after issuing the Notice of Acceptance, the City will file with the County Recorder a “Notice of Completion.”

9.8 Liquidated Damages

(a) The Parties acknowledge and agree that (i) the actions or omissions of Seller or its Personnel during Phase I and/or Phase II of the Project, and/or defects or performance issues with the Equipment comprising such Unit (“Seller Causes”) may cause or contribute to delays in achieving Substantial Completion, and (ii) in this event, City may suffer financial losses, (iii) it would be impracticable or extremely difficult to fix the actual value of such losses at this time, and (iv) accordingly, the Parties have agreed upon the following liquidated damage provision shall serve as a mechanism for allocating risks in relation to the foregoing:

(b) Seller will pay to City as liquidated damages and not as a penalty, the amounts specified in Attachment 5 hereto for each day that a Performance Milestone is delayed beyond the specified
delivery dates therefor, for reasons attributable to Seller or it’s Personnel (and that are not excused under Section 9.4 of this Contract [Excusable Delays]). Such sums, which are not a penalty, represent a reasonable endeavor by the Parties to estimate a fair compensation for the foreseeable losses resulting from late delivery of a Performance Milestone and shall be applicable regardless of the actual losses incurred.

(c) Any liquidated damages owed to City may be set-off against any amounts due to Seller, or, if invoiced to Seller, shall be paid by Seller within thirty (30) days of receipt of such invoice.

10.0 WARRANTIES

10.1 Seller shall warrant the Equipment as specified in Attachment 9. Seller shall replace malfunctioning or damaged Equipment or components thereof.

10.2 Services Warranty. Seller warrants to City that it shall perform the services under this Contract with reasonable care and in a diligent, competent and workmanlike manner, consistent with the generally accepted professional practices and principles and in a manner consistent with the generally accepted practices of the electric power producing industry in the United States. Without additional compensation to Seller, and at no additional cost to City, Seller shall correct all errors or mistakes in its work product, studies, reports, drawings, specifications or other services.

10.3 By delivering the completed services and Equipment, Seller represents and certifies that the services and Equipment fully conform to the requirements of this Contract and all applicable (federal, state, county, local) laws, ordinances, regulations, and standards (LORS).

10.4 Remedy

(a) If the Equipment delivered or services performed hereunder do not meet the above warranties during the Warranty Period, the City shall promptly notify the Seller in writing and make the Equipment available for correction as soon as reasonably practical. Upon confirmation by the City that the Equipment is available to make the necessary corrections, the Seller shall thereupon, at its expense, as promptly as practically possible correct any defect by:

(i) With respect to defective services, if possible, re-performing the services at issue in a non-defective manner; provided, that if this is impossible, City will be entitled to an equitable price reduction to account for the defective service; and

(ii) With respect to any part of defective Equipment, either, at its option:
(A) Repairing it so as to eliminate the defect; or

(B) Replacing it with a new part that is not defective; provided, that if Seller does not have a new part readily available at that time (and City does not elect to wait for one), then Seller will inform City of that fact (and will provide information as to when Seller anticipates a new part will be available), and, provided that City does not respond that it elects to wait for a new part to become available, Seller may then provide a refurbished part that is not defective.

(b) In addition to all of the foregoing, the Seller shall, at its expense and without reimbursement under this Contract, be responsible for:

(i) Providing all technical advisory services as may be reasonably necessary in connection with any such repair and/or replacement, including without limitation as reasonably necessary in connection with (A) the removal and subsequent replacement of structures or components of the Equipment originally provided by Seller as must be removed in order to gain access to the defective part(s); and (B) the removal of the defective part(s) and installation of the replacement (or repaired) parts; and

(ii) Transportation and use of parts, components and any special tools or instruments needed to perform such obligations.

(c) For the avoidance of doubt, Seller would be required to provide and bear the expense of any craft labor required in connection with the removal and subsequent replacement of structures or components of the Equipment originally provided by Seller as must be removed in order to gain access to the defective part(s), and the removal of the defective part(s) and installation of the replacement (or repaired) parts.

(d) Any post-repair tests of the defective part of the Equipment that was repaired under the Warranty will be at Seller’s expense and the condition of the same shall be mutually agreed upon and the Seller shall be notified of and may be represented at, all tests that may be performed.

10.5 Warranty on Remedial Work

Any re-performed service or repaired or replacement part furnished under this warranty shall carry warranties on the same terms as set forth above.

11.0 PERSONNEL

11.1 Seller shall provide an Organizational Chart identifying Seller’s key Personnel and shall
11.2 Project Manager. As part of its work scope hereunder, Seller will, within five (5) days after the Effective Date, confirm the individual who will serve as a representative of Seller in connection with the administration and implementation of this Contract (the “Project Manager”). The Project Manager shall meet with the City as required to coordinate, review, and ensure each Party’s performance under this Contract. City’s Project Manager will oversee the administration of Seller’s tasks under this Contract. The Seller Project Manager’s time is included in the Contract Price and will not be charged as part of the technical advisory services.

11.3 Site Manager. As part of its work scope hereunder, Seller will, by such date as will be determined by the Parties at the beginning of Phase II, designate an individual who will serve as representative of Seller during Phase II (the “Site Manager”). The Site Manager will report to the Site by such date as agreed by the Parties during the kickoff meeting at the beginning of Phase II.

11.4 Key Personnel. Seller’s project team shall work under the direction of the Project Manager identified in 11.2 herein. Seller shall make commercially reasonable efforts to minimize changes to its key personnel. City may request key personnel changes, and City may review and approve key personnel changes (other than the termination of key personnel by Seller) proposed by Seller. City will not unreasonably withhold approval of key personnel assignments and changes.

11.5 Use of Agents or Assistants. With City’s prior written approval, Seller may employ, engage, or retain the services of persons or entities (“Personnel”) that Seller may deem proper to aid or assist in the proper performance of Seller’s duties. City is an intended beneficiary of all work that Seller’s Personnel perform for purposes of establishing a duty of care between such Personnel and City. Seller is as responsible for the performance of its Personnel as it would be if it had rendered the Services itself. All costs of the tasks performed or the expenses incurred by Seller’s Personnel are chargeable directly to Seller. Nothing in this Contract constitutes or creates a contractual relationship between City and anyone other than Seller.

11.6 Prevailing Wages. Services by persons deemed to be employees or agents of Seller possibly may be subject to prevailing wages, if applicable, under California Labor Code Sections 1770-1781. It is Seller’s sole responsibility is to comply with those requirements, should they apply. If a dispute based upon the prevailing wage laws occurs, Seller, at its expense, shall indemnify, defend (including Seller’s providing and paying for legal counsel for City), and hold harmless City, its officers, agents, employees, and representatives from and against all liability, claims, suits, demands, damages, fines, penalties, wages, costs, or expenses pertaining to the prevailing wage laws.
11.7 Independent Contractor.

(a) Seller understands and acknowledges that Seller is an independent contractor, not an employee, partner, agent, or principal of City. This Contract does not create a partnership, joint venture, association, or employer-employee relationship between the Parties. At its own expense, Seller is responsible for providing compensation; employment benefits; disability, unemployment, and other insurance; workers’ compensation; training; permits and licenses; and office space for Seller and for Seller’s employees and Personnel. Seller has, and shall retain, the right to exercise full control over the employment, direction, compensation, and discharge of all persons whom Seller uses in performing the SOW. Seller shall perform the SOW in Seller’s own manner and method, except as this Contract specifies. Seller shall treat a provision in this Contract that may appear either to give City the right to direct Seller as to the details of doing the work, or to exercise a measure of control over the work, as giving Seller direction only as to the work’s end result.

(b) Seller shall indemnify, defend (including Seller’s providing and paying for legal counsel, of City’s reasonable choosing, for City), and hold harmless City for any obligation; claim; suit; demand for tax or retirement contribution, including any contribution or payment to the Public Employees Retirement System (PERS); social security; salary or wages; overtime, penalty, or interest payment; or workers’ compensation payment that City may be required to make on behalf of Seller, an employee of Seller, or any employee of Seller construed to be an employee of City, for the work done under this Contract.

11.8 Non-Discrimination in Employment. Seller shall not discriminate against any employee or person who is subject to this Contract because of race, color, religion, religious belief, national origin, ancestry, citizenship, age, sex, sexual orientation, marital status, pregnancy, parenthood, medical condition, or physical or mental disability.

11.9 Workers’ Compensation. Seller understands and acknowledges that all persons furnishing services to City under this Contract are, for the purpose of workers’ compensation liability, employees solely of Seller and not of City. In performing the SOW under this Contract, Seller is liable for providing workers’ compensation benefits to Seller’s employees, or anyone whom Seller directly or indirectly hires, employs, or uses. City is not responsible for any claims at law or in equity caused by Seller’s failure to comply with this Paragraph.

12.0 PAYMENT

12.1 Contract Price. City shall pay to Seller the following amounts in consideration of the Equipment and services performed in accordance with the Contract. Payment of the Contract Price shall be made in accordance with the Payment Schedules set forth in Attachment 6 and in accordance with
the payment terms and conditions set forth in this Article.

(a) **Phase I - LNTP.** City shall pay Seller an amount not to exceed $____________ for the Phase I Work (the “Phase I Contract Price”), payable in accordance with the Phase I Payment Schedule attached hereto as Attachment 6.

(b) **Phase II - FNTP.** Provided that City proceeds with the FNTP, City shall pay Seller an amount not to exceed $____________ (the “Phase II Contract Price”) for the Phase II Work, payable in accordance with the Phase II Payment Schedule attached hereto as Attachment 6.

(c) **Costs Not Allowed.** City shall not be liable for payment of hours spent on technical advisory services expended for resolving issues attributable to Seller, such as factory mistakes or replacement of missing or damaged parts. Also, any maintenance events which occur during the erection, startup and commissioning phase shall not be chargeable to the City shall be confirmed by the Seller and recorded on the technical advisors’ timesheet.

12.2 **Pricing Adjustments**

(a) **Cost Adjustment.** In the event that the FNTP is not issued by [                      ], a cost adjustment on the Equipment costs shall apply as provided in Attachment 6. The period of time that is used as the basis for any upward cost adjustment will be reduced day for day by the number of days beyond the Seller’s scheduled completion of the LNTP Phase. Any such cost adjustment shall be documented in a Change Order.

(b) **Storage Costs.** In the event that items of Equipment are placed into storage pursuant to Section 5.5, Seller shall be entitled to payment of storage fees in accordance with Attachment 6 hereto. Any such storage costs shall be documented in a Change Order.

(c) **Spare Parts.** The Contract Price for Phase II includes a $____________ allowance for spare parts and pricing for the spare parts is set forth in Attachment 3 hereto. If the City Council proceeds with the Proposed Project, then following FNTP, the City will determine the final list of spare parts that it will purchase. If the purchase amount is less than the allowance, a credit will be applied to the contract amount. If the actual purchase amount is greater than the allowance, the City will process a Change Order and pay Seller the difference.

Except for the cost escalations specified in (a), (b) and (c) of this Section, the Contract Price is fixed and shall be adjusted only to take account of Change Orders as set forth in Article 4.
12.3 Except as itemized in Attachment 6 Seller shall pay for all expenses, including reimbursable or out-of-pocket expenses that Seller incurs in performing the services and such expenses are included in the not-to-exceed price.

12.4 Taxes

(a) The Contract Price includes:

(i) Applicable corporate and individual taxes that are measured by net income or profit and are imposed by any governmental authority of any country on the Seller, its employees, and Personnel due to the execution or performance of this Contract.

(ii) Export or import or customs duties, fees or other charges. Seller shall be responsible for all property taxes applicable to an item of Equipment that arise prior to transfer of the title of such item to City.

(iii) Any sales, use, excise, value added or other similar taxes imposed by law upon a purchaser of property of the type which is the subject matter of this Contract (“Sales Taxes”). Seller shall provide City, at least sixty (60) days prior to the Scheduled RTS Date of the relevant item(s) of Equipment, with a statement setting forth an estimate of all applicable Sales Taxes which Seller intends to collect from City as with respect to such item(s) of Equipment. Seller shall itemize separately any applicable sales or use tax and shall deduct all Federal taxes from all charges. Under excise tax regulations 48.4221-5, 48.4222(a)-1, 48.4222(b)-1 and Internal Revenue Code Section 4221(a), the City is not required to provide Form 637.

(b) Upon request by the City, and without additional cost to City, Seller will provide reasonable assistance if the City is asked to verify payment of applicable taxes. Without additional cost to City, Seller and its subcontractors, as applicable, shall procure a sales tax sub-permit from the California Board of Equalization to ensure allocation to the City of Glendale of the 1% sales and use taxes for payments made under the Contract.

12.5 Invoices. Seller shall submit an original, itemized invoice to City for approval, before receiving compensation. All invoices must include a summary of total costs, description of the services performed or Equipment provided, a brief itemization of costs associated with each task or phase, and the total phase or Project costs to date. Seller shall invoice City in accordance with the fee schedule set forth in Attachment 6. Undisputed invoices will be due and payable 30 days following the date of invoice. City shall pay all amounts owing under this Contract in U.S. Dollars.

12.6 Retention. A sum equal to five percent (5%) of the amount invoiced for the Equipment
and services (all as identified on Attachment 6) (the "Retention") shall be withheld by the City from payment of each invoice. The Retention shall be released within 60 days following the date of the City’s Notice of Completion of the Project, provided that Seller has provided the following documentation:

(a) An affidavit that payrolls, bills for materials, equipment, services, and other indebtedness connected with the Project for which City or City’s property or funds might be liable have been paid or otherwise satisfied;

(b) A certificate evidencing that the insurance required by the Contract is in force;

(c) Submission of any other documents or information required by the Contract as a condition to progress or final payment, as applicable, or final completion of the work.

12.7 Disputed Amounts

(a) City may deduct and withhold from any progress payment or from the retention payment any disputed amounts, including without limitation, amounts to protect the City against any loss caused or threatened as a result of Seller’s failing to fully perform its obligations under the Contract. Alternatively, City may elect, in its sole discretion, to accept the work or Equipment without correction or completion and adjust the contract price. The partial payment, withholding or retention by City in good faith of any disputed portion of a payment, whether ultimately determined to be correctly or incorrectly asserted, shall not constitute a breach by City of the Contract and shall not be grounds for an adjustment of the contract price or contract time.

(b) In addition to any other amounts which City may have the right to retain under the Contract, City may withhold a sufficient amount of any payment otherwise due to Seller as City, in its sole discretion, may deem necessary to cover actual or threatened loss due to any of the following:

(i) Third party claims or stop notices filed or reasonable evidence indicating probably filing of such claims or stop notices;

(ii) Defective Equipment or services not remedied;

(iii) Nonpayment of subcontractors or suppliers;

(iv) Reasonable doubt that the Equipment can be delivered or that the services can be completed for the then unpaid balance of the Contract Price within the contract time;

(v) Failure of Seller or its Personnel to comply with applicable laws or lawful
orders of governmental authorities;

(vi) Any claim or penalty asserted against City by virtue of Seller’s failure to comply with applicable laws or lawful orders of governmental authorities;

(vii) Any damages which may accrue as a result of Seller failing to meet the Project schedule or perform within the contract time;

(viii) Any reason specified elsewhere in the Contract or under applicable law as grounds for a withholding offset or set off or that would legally entitle City to a set-off or recoupment;

(ix) Additional vendor, professional or inspection services required due to Seller’s failure to comply with the Contract;

(x) Liquidated damages assessed against Seller;

(xi) Materials ordered by City pursuant to the Contract;

(xii) Loss caused by Seller or its Personnel to the City or to any third party or entity under contract with City;

(xiii) Clean up performed by City and chargeable to Seller pursuant to the Contract;

(xiv) Failure of Seller to pay contributions due and owing to employee benefits funds pursuant to applicable collective bargaining Contracts or trust Contracts; or

(xv) Failure of Seller to timely submit proper and sufficient documentation, as required by the Contract.

(c) If and when City determines, in its sole discretion that the above grounds for withholding have been removed and that all losses incurred or threatened have been paid, credited, or otherwise satisfied, then payment shall be made for amounts withheld because of them.

(d) City may apply sums withheld pursuant to Section 12.7 or 12.8(b) in payment of any loss or threatened loss as City determines, in its sole discretion, to be appropriate. Such payments may be made withhold a prior judicial determination of City’s actual rights with respect to such loss. Seller agrees and hereby designates City as its agent for such purposes, and agrees that such payments
shall be considered as payments made under the Contract to the Seller. City shall submit to Seller an accounting of such funds disbursed on behalf of Seller. As an alternative to such payment, City may, in its sole discretion, elect to exercise its right to adjust the contract price.

(e) Neither the payment, the withholding, nor the retention of all or any disputed portion of any payment claimed to be due and owing to Seller shall operate in any way to relieve Seller from its obligations under the Contract. In addition, no payment by City or partial or entire use of the work by City shall be construed as an approval or acceptance of the work or materials any portion thereof.

13.0 AUDIT

13.1 During this Contract’s Term and for a period of three (3) years after the expiration, cancellation, or termination of this Contract, or any extension of it, both parties shall (1) keep and maintain, in their original form, all records, books, papers, or documents necessary to confirm its compliance with this Contract (the "Audit Documents"); and (2) permit the other Party or its authorized representatives, at all reasonable times (upon not less than five days’ notice), to have access to, examine and audit, all Audit Documents. Except as described below, each Party will bear all costs and expenses associated with the exercise of its audit rights. Any errors in payments identified, and verified by the other Party’s auditor, will be corrected by appropriate adjustment. In the event of a payment error of more than five percent (5%), which error is verified by the other Party’s auditor, the Party causing the error will reimburse or credit the other Party in the amount of the underpayment, plus reasonable costs associated with the audit, and interest on the overdue amount at the maximum allowable interest rate from the date the obligation accrued. Seller will require its Personnel and insurance agents to comply with this provision and to cooperate fully in furnishing or in making available to City such information, materials, data and access to any Personnel as may be required by CITY in connection with an audit of this Contract.

14.0 DATA, RECORDS, PROPRIETARY RIGHTS, AND CONFIDENTIALITY

14.1 Copies of Data; Software Licenses Seller shall provide City with copies or originals of all data that Seller generates, uses, collects, or stores in relation to all work associated with this Contract. For purposes of this Contract, Data that Seller generates, uses, collects, stores, or provides must be in a form acceptable to, and agreed upon by, City. Seller to provide the City with perpetual licenses to use the software provided by Seller as part of the Equipment.

14.2 Ownership and Use

Unless City states otherwise in writing, each document – including, but not limited to,
14.3 Intellectual Property

(a) If Seller uses or incorporates patented, trademarked, or copyrighted work, ideas, or products, in whole or in part, into Seller’s work product, Seller represents that:

(i) Seller holds the patent, trademark, or copyright to the work, idea, or product; or

(ii) Seller is licensed to use the patented, trademarked, or copyrighted work, idea, or product.

(b) Seller shall indemnify, defend (including Seller providing and paying for legal counsel for City), and hold harmless City, its officers, agents, employees, and representatives from and against all liability, claims, suits, demands, damages, royalties, fines, penalties, costs, or expenses arising out of or alleging any infringement or misappropriation of a patent, copyright, trade secret, trade name, trademark, or other intellectual property right or proprietary right pertaining to the Equipment or Services to be provided by Seller hereunder. City will notify the Seller promptly of the receipt of any such claim, and will not take any position adverse to the Seller regarding such claim and will give the Seller information, assistance and exclusive authority to settle and defend the claim. The Seller shall, at its own expense and option, either settle or defend the claim or any suit or proceeding and, in any event, pay all damages and costs awarded in it against the City. In addition, if in any suit arising from such a claim, the continued use of the work product or Equipment for the purpose intended is forbidden by any court of competent jurisdiction, the Seller also, at its option, either:

(i) Procure for the City the right to continue using the work product, Equipment, or both permanently,

(ii) Modify the work product or Equipment or both so that it becomes non-infringing, or

(iii) Replace the work product or Equipment or both with non-infringing
The foregoing states the entire liability of the Seller for patent infringement under this Agreement.

14.4 **Confidentiality.** Except as required by law (and in such event, upon notice to City), Seller shall not disclose or publish— or authorize, permit, or allow others to disclose or publish— any information pertaining to the Project or other information to which Seller has had access during the term of this Contract, without the prior written approval of the City during the term of this Contract and for a period of five (5) years after the termination of this Contract.

14.5 **Public Records Act**

(a) Seller acknowledges that this Contract is a public record. This Contract, its Attachments, and all documents produced under this Contract are subject to the California Public Records Act (Government Code Sections 6250 et seq.), including its exemptions.

(b) If City receives a Public Records Act request, City will immediately notify Seller. Seller shall identify— within the time period City specifies— all records, or portions of them, that Seller believes are exempt from production under the Public Records Act.

(c) If Seller claims a privilege against public disclosure or otherwise objects to the records’ disclosure, then Seller may, at its expense, seek protection from disclosure by timely applying for relief in a court of competent jurisdiction.

(d) If Seller fails to identify one or more protectable documents, or if Seller fails to respond to City within the time period that City sets, or fails to obtain a court order preventing or limiting the disclosure, then the City, in City’s sole discretion, and without its being in breach of this Contract or its incurring liability to Seller, may produce the records— in whole, in part, or redacted— or may decline to produce them.

(e) Seller shall indemnify, defend (including Seller’s providing and paying for legal counsel for City), and hold harmless City, its officers, agents, employees, and representatives from and against all liability, claims, suits, demands, damages, fines, penalties, costs, or expenses arising out of or alleging City’s refusal to publicly disclose one or more records that Seller identifies as protectable, or asserts is protectable.

15.0 **CONFLICT OF INTEREST**

15.1 Seller represents and certifies that:
16.0 INSURANCE

16.1 When Seller signs and delivers this Contract to City, and during this Contract’s term, Seller shall furnish City with insurance forms that fully meet the requirements of the "Insurance Requirements," set forth in Attachment 10 to this Contract.

16.2 This Contract’s insurance provisions are separate and independent from the indemnification and defense provisions of the Contract; and do not limit, in any way, the applicability, scope, or obligations of the indemnification and defense provisions in the Contract.

17.0 INDEMNITY

17.1 Indemnification. To the maximum extent permitted by law, including, but not limited to, California Civil Code Sections 2778 and 2782.8, Seller, its agents, subcontractors, and persons whom Seller employs or hires (individually and collectively, “Seller Indemnitor”) shall indemnify, defend, and hold harmless City, its officers, agents, employees, and representatives (individually and collectively, “City Indemnitee”) from and against a “liability” [as defined in Subparagraph (A) below], or an “expense” [as defined in Subparagraph (B) below], or both, that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of Seller Indemnitor:

(A) “Liability” means claims, suits, actions, causes of action, proceedings, judgments, decrees, awards, settlements, liens, losses, damages, injuries, or liability of any kind, whether the liability is:

(1) Actual or alleged;

(2) In contract or in tort; or
(3) For bodily injury (including accidental death), personal injury, advertising injury, or property damage.

(B) “Expense” means fees, costs, sums, penalties, fines, charges, or expenses of any kind, including, but not limited to:

(1) Attorney’s fees;

(2) Costs of an investigation, litigation, arbitration, mediation, administrative or regulatory proceeding, or appeal;

(3) Fees of an accountant, expert witness, Seller, or other professional; or

(4) Pre or post: judgment interest or settlement interest.

17.2 Under this Article, Seller Indemnitor’s defense and indemnification obligations:

(A) Apply to a liability, or an expense, or both, that arise out of, pertain to, or relate to the actual or alleged passive negligence of a City Indemnitee; but

(B) Do not apply to a liability, or an expense, or both, that arise out of, pertain to, or relate to the sole active negligence or willful misconduct of a City Indemnitee.

17.3 To the extent that Seller Indemnitor’s insurance policy provides an upfront defense to City, Seller Indemnitor’s obligation to defend a City Indemnitee under this Article:

(A) Means that Seller Indemnitor shall provide and pay for legal counsel, acceptable to CITY, for the City Indemnitee;

(B) Occurs when a claim, suit, complaint, pleading, or action against a City Indemnitee arises out of, pertains to, relates to, or asserts an act, error, or omission of Seller Indemnitor; and

(C) Arises regardless of whether a claim, suit, complaint, pleading, or action specifically names or identifies Seller Indemnitor.

17.4 Paragraph 18.3 does not limit or extinguish Seller Indemnitor’s obligation to reimburse a
City Indemnitee for the costs of defending the City Indemnitee against a liability, or an expense, or both. A City Indemnitee’s right to recover defense costs and attorney’s fees under this Article does not require, and is not contingent upon, the City Indemnitee’s first:

(A) Requesting that Seller Indemnitor provide a defense to the City Indemnitee; or

(B) Obtaining Seller Indemnitor’s consent to the City Indemnitee’s tender of defense.

17.5 If Seller subcontracts all or any portion of the Services under this Contract, Seller shall provide City with a written Contract from each subcontractor, who must indemnify, defend, and hold harmless City Indemnitee under the terms in this Article.

17.6 Seller Indemnitor’s obligation to indemnify, defend, and hold harmless City will remain in effect and will be binding upon Seller Indemnitor whether the liability, or the expense, or both, accrues or is discovered before or after this Contract’s expiration, cancellation, or termination and notwithstanding the term of any warranty provided under the Contract.

17.7 Except for Paragraph 18.3, this Article’s indemnification and defense provisions are separate and independent from the insurance provisions set forth in this Contract. In addition, the indemnification and defense provisions in this Article are neither limited to nor capped at the coverage amounts specified under the insurance provisions in this Contract; and do not limit, in any way, the applicability, scope, or obligations of the insurance provisions in this Contract.

18.0 PERFORMANCE AND PAYMENT SECURITY

18.1 Seller shall furnish either (1) bonds or (2) letters of credit to the City meeting the Performance and Payment Security requirements set forth in Attachments 11 hereto, before the City executes this Contract.

(a) If Seller elects to provide bonds:

(i) Seller shall furnish a Faithful Performance Bond in the form shown in Attachment 11-1, attached hereto and by this reference incorporated herein; and

(ii) Seller shall furnish a Payment Bond in the form shown in Attachment 11-1, attached hereto and by this reference incorporated herein;
(b) If Seller elects to provide letters of credit:

(i) Seller shall furnish a letter of credit in the form shown in Attachment 11-2, attached hereto and by this reference incorporated herein, to guarantee the faithful performance of the Contract by Seller and its agents; and

(ii) Seller shall furnish a letter of credit in the form shown in Attachment 11-2, attached hereto and by this reference incorporated herein, to guarantee payment of Seller’s subcontractors, agents and suppliers of every tier in connection with the Contract.

18.2 The forms of performance and payment security shall each be in the following amounts:

(a) 100% of the Phase I Contract Price for each of the forms of security provided for the LNTP Phase;

(b) 100% of the Phase II Contract Price for each of the forms of security provided for the FNTP Phase.

18.3 Such forms of security shall be provided (i) prior to the City’s execution of the Contract for the LNTP Phase; and (ii) upon City’s notice to Contractor of its intent to proceed with FNTP, for the FNTP Phase.

19.0 DEFAULT, REMEDIES, SUSPENSION AND TERMINATION

19.1 Grounds for Termination by City

(a) This Contract will be considered materially breached, and City shall thus have the right to terminate this Contract for cause (and without CITY’s payment of any termination charges) in the event that:

(i) Seller becomes insolvent, makes an assignment for the benefit of its creditors, has a receiver or trustee appointed for the benefit of its creditors, or files for protection from creditors under any bankruptcy or insolvency laws; or

(ii) Seller otherwise substantially breaches and fails to comply or perform any material obligations under this Contract, provided that:
19.1 Termination for Breach of Contract. (A) City shall first have provided the Seller with written notice of the nature of such breach and of the City’s intention to terminate the Contract as a result of such breach, and

(B) Seller shall have failed within thirty (30) days after receipt of such notice to cure such breach; provided that if such breach cannot possibly be cured within such thirty (30) days, then Section 19.1(a)(iii) shall apply; or

(iii) Seller substantially breaches and fails to comply or perform any material obligation under this Contract, which such breach or failure cannot possibly be cured within the thirty (30) day period described above, and Seller either (i) fails to diligently, without ceasing, pursue such cure throughout and after such thirty (30) day period, or (ii) ultimately fails to cure such breach within such time as may be reasonable under the circumstances.

19.2 Remedy in the Event of Termination by City. If City terminates this Contract as provided above, then City shall be entitled to assert and enforce all rights that it may have at law or in equity in connection with such breach of contract by Seller.

19.3 Suspension of Contract. The City shall have the right to unilaterally suspend all or any part of the services upon notice to Seller and subject to a reasonable adjustment, if necessary, to the Project schedule and subject to the cost adjustment specified in Section 12.2(a) and Attachment 6, if such cost adjustment rates are applicable. Any such suspension shall be memorialized in the form of a Change Order.

19.4 Termination for Convenience. Independent of the remedies provided elsewhere in this Contract, City may elect to terminate this Contract, in its entirety, or in part, or with respect to one or more of the Units, at any time for its convenience.

(a) Such termination for convenience shall be effective upon:

(i) Receipt by the Seller of written Notice of Termination of Contract, and

(ii) Receipt by the Seller the applicable termination charges in accordance with the Termination Cost Schedule attached to this Contract as Attachment 12, less any amounts already paid by City to Seller under this Contract for such Unit(s) (where the Contract is terminated as to one or more Units).

(b) Sole and Exclusive Liability. Payment of the termination charges set forth in the Termination
Scholl Canyon Landfill Power Project
Power Island and Major Equipment Request for Proposals
Attachment 16 – Form of Contract

Cost Schedule shall be the sole and exclusive liability of City, and the sole and exclusive remedy of Seller, with respect to termination of this Contract pursuant to this Article. City will not be liable to Seller, any supplier or subcontractor or any other party for any damages or indirect costs resulting from such termination, including without limitation, prospective profits on work not performed or other consequential or incidental damages. The Parties recognize, agree and acknowledge that City's termination right hereunder is a permitted action under this Contract (and not a breach hereof or a default hereunder), which right carries with it the obligation to pay the termination charges. Termination for cause is addressed in Section 19.1 of this Contract.

(c) It is expressly agreed that the Seller shall have no right to terminate this Contract for convenience.

19.5 Immediately upon receipt of a notice of termination or notice of suspension, Seller shall:

(i) Cease performance of the Services and supply of the Equipment under this Contract to the extent specified in the notice;

(ii) Take actions necessary or that the City may direct, for the protection and preservation of the Project;

(iii) Settle outstanding liabilities, as directed by the City; and

(iv) Transfer title and deliver to City the work in progress and Equipment ordered;

(v) Except as otherwise directed by the City, incur no further costs or expenses; and

(vi) At the option of City, all or any of the subcontracts entered into by the Seller prior to the date of termination shall be terminated or shall be assigned to City.

20.0 DISPUTE RESOLUTION

20.1 Referral to Senior Management

Any and all controversies, disputes or differences between the Parties to this Contract, if not amicably settled by the Parties with twenty (20) days following written notice of dispute, shall be referred to senior management of the Parties for resolution. In the event the dispute has not been resolved within thirty (30) days following referral to senior management, or such longer period as the Parties may mutually agree, then either Party may pursue such rights and remedies as may be available under law or in equity. The Parties may, upon mutual agreement, engage in nonbinding mediation or nonbinding...
20.2 Continuing Obligations

Notwithstanding the existence of any dispute hereunder, and except as otherwise provided herein, the Parties will continue to perform their respective obligations under this Contract unless the Parties otherwise mutually agree in writing.

20.3 Injunctive or Equitable Relief

Notwithstanding anything in this Contract to the contrary, nothing in this Contract is intended to, nor shall it, prevent the Parties from seeking injunctive or equitable relief at any time as may be available under law or in equity.

21.0 GENERAL PROVISIONS

21.1 Entire Contract. This Contract and any attachments hereto represent the entire and integrated Contract between the Parties with respect to the subject matter hereof and supersede all previous Contracts pertaining to such subject matter. This Contract supersedes all prior and contemporaneous communications, negotiations, understandings, promises and contracts, either oral or written. Neither Seller nor City has made any promises or representations, other than those contained in this Contract and each Party represents and acknowledges that it has not relied on any representation or warranty other than those explicitly set forth in this Contract in connection with its execution of this Contract. Except as set forth in an amendment or Change Order executed by both Parties, neither Party shall be bound by terms and conditions imprinted on or embedded in purchase orders, order acknowledgments, statements of work not attached hereto or other communications between the Parties subsequent to the execution of this Contract.

21.2 Contract Documents. The following documents shall comprise the Contract, and shall together be referred to as the “Contract Documents”:

(a) This Contract document (i.e., Articles 1 through 21),

(b) The enumerated Attachments 1 through 13 hereto (all of which shall be incorporated herein by this reference), and

(c) The Request for Proposal, the Proposal, and any related and appropriate addenda or documents added thereto.
In case of any conflict between the Contract Documents, the controlling provision shall be that which is found in the document with higher precedence in accordance with the following order of precedence:

[ADD ORDER OF PRECEDENCE ONCE CONTRACT FINAL LIST OF DOCUMENTS IS DETERMINED]

21.3 Amendment. The Parties may modify this Contract, or any part of it, by a written amendment with City’s and Seller’s signature.

21.4 Interpretation. This Contract is the product of negotiation and compromise by both Parties. Every provision in this Contract must be interpreted as though the Parties equally participated in its drafting. Therefore, despite the provisions in California Civil Code Section 1654, if this Contract’s language is uncertain, the Contract must not be construed against the Party causing the uncertainty to exist. In interpreting this Contract and resolving any ambiguities, this Contract will take precedence over any cover page or attachments. If a conflict occurs between a provision in this Contract and a provision in an attachment, the provisions contained in the Contract shall prevail.

21.5 Headings. All headings or captions in this Contract are for convenience and reference only. They are not intended to define or limit the scope of any term, condition, or provision.

21.6 Governing Law. California’s laws govern this Contract’s construction and interpretation. Unless this Contract provides otherwise, any reference to laws, ordinances, rules, or regulations include their later amendments, modifications, and successor legislation.

21.7 Waiver of Breach. If a Party waives the other Party’s breach of a term in this Contract, that waiver is not treated as waiving a later breach of the term and does not prevent the Party from later enforcing that term, or any other term. A waiver of a term is valid only if it is in writing and signed by the Party waiving it. This Contract’s duties and obligations are cumulative (rather than alternative) and are in addition to (rather than a limitation on) any option, right, power, remedy, or privilege, and (B) are not exhausted by a Party’s exercise of any one of them.

21.8 Attorney’s Fees. If City or Seller brings an action at law or in equity to enforce or interpret one or more provisions of this Contract, the prevailing party is entitled to reasonable attorney’s fees in addition to any other relief to which the prevailing party may be entitled. A "prevailing party" has the same meaning as that term is defined in California Code of Civil Procedure Section 1032(a)(4). "Reasonable attorney’s fees" of the City Attorney’s office means the fees regularly charged by private attorneys who practice in a law firm located in Los Angeles County; and have an equivalent number of years of professional experience in the subject matter area of the law for which the City Attorney’s services were rendered.
Further Assurances. Upon City’s request at any time, Seller shall promptly take further necessary action and sign, acknowledge, and deliver all additional documents as may be reasonable, necessary, or appropriate to carry out this Contract’s intent, purpose, and terms.

Assignment. This Contract does not give any rights or benefits to anyone, other than to City and Seller. All duties, obligations, and responsibilities under this Contract are for the sole and exclusive benefit of City and Seller, and are not for the benefit of another person, entity, or organization. Notwithstanding the foregoing, the City may, in its sole discretion, assign a collateral interest in the Contract to a financing party as collateral security for a loan for the acquisition of the Equipment or services. Without prior written authorization from the other Party, which shall not unreasonably be withheld or delayed, Seller shall not do any one or more of the following:

- Assign or transfer a right or interest—whether in whole, in part, temporarily, or otherwise—in this Contract, or

- Delegate a duty or obligation owed—whether in whole, in part, temporarily, or otherwise—under this Contract.

Except as otherwise expressly permitted herein, any actual or attempted assignment of rights or delegation of duties by Seller, without the City’s prior written authorization, is wholly void and totally ineffective for all purposes; and does not postpone, delay, alter, extinguish, or terminate the City’s duties, obligations, or responsibilities under this Contract. If consent to an assignment of rights, or a delegation of duties, or both, is granted hereunder, the assignee or legal representative shall agree in writing to personally assume, perform, and to be bound unconditionally by the covenants, obligations, terms, and conditions in this Contract.

Notwithstanding the foregoing, upon notice to the City, Seller may assign this Contract to its successor in a merger, consolidation or comparable transaction or to the purchaser of all or substantially all of its assets so long as such successor or purchaser agrees in writing to comply with the terms and conditions of this Contract.

Successors and Assigns. This Contract is binding on the heirs, executors, administrators, successors, and assigns of the respective Parties.

Time is of the Essence.

(a) Except when this Contract states otherwise, time is of the essence in this Contract. Seller acknowledges that this Contract’s time limits and deadlines are reasonable for Seller’s performing the Services under this Contract.
(b) Unless this Contract specifies otherwise, any reference to "day" or "days" means calendar and not business days. If the last day for giving notice or performing an act under this Contract falls on a weekend, a legal holiday listed in either Glendale Municipal Code Section 3.08.010 or California’s Government Code, or a day when City Hall is closed, the period is extended to and including the next day that City is open for business. A reference to the time of day refers to local time for Glendale, California.

21.13 Notices. The Parties shall submit in writing all notices and correspondence that this Contract requires or permits, and shall deliver the notices and correspondence to the places set forth below. The Parties may give notice by:

(a) Personal delivery;

(b) U.S. mail, first class postage prepaid; or

(c) "Certified" U.S. mail, postage prepaid, return receipt requested.

All written notices or correspondence sent in the described manner will be presumed "given" to a Party on whichever date occurs earliest:

(a) The date of personal delivery;

(b) The third (3rd) business day following deposit in the U.S. mail, when sent by "first class" mail; or

(c) The date on which the Party or its agent either signed the return receipt or refused to accept delivery, as noted on the return receipt or other U.S. Postal Service form, when sent by "certified" mail.

At any time, by providing written notice to the other Party, City or Seller may change the place, or facsimile number, for giving notice.

CITY: City of Glendale
Dept.: Glendale Water & Power
141 N. Glendale Avenue, Level 4
Glendale, CA 91206
Tel. No. (818)
Email Address: szurn@glendaleca.gov and rabueg@glendaleca.gov
Attn: Steven M. Zurn, General Manager
21.14 **Survival.** Any provision of this Contract that contemplates performance or observance subsequent to termination or expiration of this Contract, shall survive termination or expiration and continue in full force and effect for the period so contemplated including, but not limited to, provisions relating to Software licensing, including the grant of a license, warranties and warranty disclaimers, intellectual property ownership, payment terms, confidentiality and indemnification.

21.15 **Severability.** The invalidity, in whole or in part, of any term of this Contract will not affect this Contract’s remaining terms.

21.16 **Counterparts.** This Contract may be executed in counterparts, each of which is an original, but all of which constitutes one and the same document. The Parties shall sign a sufficient number of counterparts, so that each Party will receive a fully executed original of this Contract.

21.17 **Representations – Authority.** The Parties represent that:

(a) They have read this Contract, fully understand its contents, and have received a copy of it;

(b) Through their duly authorized representative, they are authorized to sign this Contract, and they are bound by its term; and

(c) They have executed this Contract on the date opposite their signature
Agreed to and accepted:

CITY OF GLENDALE:

By ___________________________                     Date: ________________, 20__
(Name) ___________________________
(Title) ___________________________

SELLER:

By ___________________________                     Date: ________________, 20__
(Name) ___________________________
(Title) ___________________________

APPROVED AS TO FORM:

____________________________    __________________    ______________
City Attorney                      Date
SCHEDULE OF CONTRACT ATTACHMENTS

1. Definitions
2. Scope of Work (including list of Deliverables)
3. Spare Parts Lists
   3-1 Commissioning Spare Parts
   3-2 Capital Spare Parts List and Pricing
4. Project Schedules
   4-1 Phase I Project Time Schedule
   4-2 Guaranteed Delivery Dates
   4-3 Estimated Phase II Schedule
5. Liquidated Damages
6. Payment [include Retentions]
   a. Phase I Payment Schedule
   b. Phase II Payment Schedule
   c. Cost Escalation Schedule
   d. Storage Fee Schedule
7. Agreed Testing Procedures and Protocols
8. Guarantees and Minimum Performance Criteria (Stamped Guarantee Sheet)
9. Warranties
10. Insurance Requirements
11. Performance and Payment Security Requirements and Forms
12. Termination Payment Schedule
13. Seller’s Organization Chart
### ATTACHMENT 1
### DEFINITIONS

[Parties to add definitions as needed]

<table>
<thead>
<tr>
<th>Acronym or Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance Test</td>
<td>A test to demonstrate an aspect of the Unit’s ability to satisfy a functional requirement or performance guarantee.</td>
</tr>
<tr>
<td>Access Day</td>
<td>A day or days, for use by the Seller between Mechanical Completion (when the Unit is ready for First Fire) and when the Unit is ready for Plant Acceptance Testing for the purposes of performing Hot Commissioning and tuning. Access Day(s) do not provide for exclusive access to the plant and its systems; the EPC Contractor and others are allowed to work in parallel with the Seller, but not interfere with the Seller’s work.</td>
</tr>
<tr>
<td>Catalyst</td>
<td>CO Catalyst or the NOx Catalyst, as the context may require</td>
</tr>
<tr>
<td>CEMS</td>
<td>Continuous Emissions Monitoring System which includes gas analyzers, climate controlled enclosures, a DAHS, and calibration system</td>
</tr>
<tr>
<td>CEQA</td>
<td>California Environmental Quality Act</td>
</tr>
<tr>
<td>Change Order</td>
<td>A written confirmation of a change in the Services, Deliverables or cost thereof that is executed by authorized representatives both Parties</td>
</tr>
<tr>
<td>Cold Commissioning</td>
<td>All activities needed to commission individual components and systems and achieve Mechanical Completion (Readiness for First Fire).</td>
</tr>
<tr>
<td>Cold Start</td>
<td>A start of the unit after it has been shut down long enough to be near ambient temperature. The minimum shutdown period that defines the start of a Cold Start window is the maximum time that defines a Warm Start.</td>
</tr>
<tr>
<td></td>
<td>A combustion turbine generator operating in conjunction with a heat recovery steam generator to use the waste heat to generate steam for use by a steam turbine generator, along with associated balance plant equipment</td>
</tr>
<tr>
<td>Contract Price</td>
<td>The not-to-exceed amount payable to the Seller pursuant to the Contract.</td>
</tr>
<tr>
<td>CTG</td>
<td>Combustion Turbine Generator – single gas turbine and its associated generator, together with those accessories associated only with that gas turbine</td>
</tr>
<tr>
<td>Day, Days, day or days</td>
<td>Calendar days unless otherwise specifically noted in the Contract Documents</td>
</tr>
<tr>
<td>Deliverable</td>
<td>Any product, reports, results, studies or other documentation identified as a &quot;Deliverable&quot; to be provided by Seller in the SOW.</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DDP</td>
<td>Delivery Duty Paid</td>
</tr>
<tr>
<td>DOR</td>
<td>Division of Responsibility</td>
</tr>
<tr>
<td>ECS</td>
<td>Emissions Control System</td>
</tr>
<tr>
<td>EPC Contract</td>
<td>The Engineering, Procurement and Construction Contract between the EPC Contractor and the City to perform the detailed engineering, procurement of the balance of the plant, and construction of the entire facility.</td>
</tr>
<tr>
<td>EPC Contractor</td>
<td>Engineering, Procurement and Construction Contractor who performs detailed engineering, procurement of the balance of plant, and construction of the entire facility</td>
</tr>
<tr>
<td>Equipment</td>
<td>The equipment to be supplied by Seller during Phase II of the Project and identified in Attachment 2.</td>
</tr>
<tr>
<td>Excess Access Day(s)</td>
<td>The number of days beginning with the last Access Day for the simple cycle Units and the combined cycle Units, respectively, and ending upon the date that such Unit(s) achieve Substantial Completion, and for which a daily liquidated damages payment is specified in Attachment 5. Excess Access Days are calculated separately for the simple cycle Units and the combined cycle Units.</td>
</tr>
<tr>
<td>Factory</td>
<td>Seller’s facilities for the design, manufacture, assembly, packaging, testing, and shipment of the Equipment.</td>
</tr>
<tr>
<td>FAT</td>
<td>Factory Acceptance Testing</td>
</tr>
<tr>
<td>Factory Acceptance Test</td>
<td>The Seller’s testing program, conducted as part of its quality assurance and control processes, that are performed at the factory prior to shipment of the equipment.</td>
</tr>
<tr>
<td>Final Completion</td>
<td>Means that point in time when the SOW has been completed and accepted by the City and all conditions to Final Completion have been achieved in accordance with Section 9.7 of the Contract. Final Completion is only achieved on a combined basis for all Units.</td>
</tr>
<tr>
<td>First Fire</td>
<td>Initial combustion of fuel.</td>
</tr>
<tr>
<td>FNTP</td>
<td>Full Notice to Proceed – notification and authorization to proceed with the full scope of the contract.</td>
</tr>
<tr>
<td>Guarantees and Minimum Performance Criteria</td>
<td>Those guarantees and minimum performance criteria specified in Attachment 8.</td>
</tr>
<tr>
<td><strong>Guaranteed Delivery Date</strong></td>
<td>The date specified for delivery of any item or service, as specified in Attachment 4-2.</td>
</tr>
<tr>
<td><strong>Hazardous Materials</strong></td>
<td>Solid, liquid, or gaseous materials that can harm people, other living organisms, property, or the environment that are radioactive, flammable, explosive, corrosive, oxidizing, asphyxiating, biohazardous, toxic, pathogenic, or allergenic.</td>
</tr>
<tr>
<td><strong>Hot Commissioning</strong></td>
<td>Commencing with First Fire, all activities need to commission, tune the control systems, perform functional testing, successfully complete Plant Acceptance Testing, and achieve Substantial Completion.</td>
</tr>
<tr>
<td><strong>Hot Start</strong></td>
<td>A restart of a Unit very shortly after a shutdown. The maximum shutdown time that qualifies as a Hot Start is provided by the Proposer as part of their proposal.</td>
</tr>
<tr>
<td><strong>HRSG</strong></td>
<td>Heat Recovery Steam Generator</td>
</tr>
<tr>
<td><strong>LNTP</strong></td>
<td>Limited Notice To Proceed – notification to proceed with a portion of the scope of work as agreed to by the City and the PIE Proposer.</td>
</tr>
<tr>
<td><strong>LORS</strong></td>
<td>Applicable Laws, Ordinances, Regulations, and Standards</td>
</tr>
<tr>
<td><strong>Mechanical Completion</strong></td>
<td>Mechanical Completion means the period of time when the Equipment and plant systems are construction complete, have been successfully tested at the system level and are ready for integrated operation as a power plant unit, as well as operator training has been completed to allow First Fire of a Unit. Any outstanding punch list items have been determined by the City to not being an impediment to First Fire. Mechanical Completion will be achieved on a Unit basis.</td>
</tr>
<tr>
<td><strong>Minimum continuous load</strong></td>
<td>Generation minimum net output while remaining in compliance with permitted operation for indefinite durations.</td>
</tr>
<tr>
<td><strong>Must Meet Remedy</strong></td>
<td>A shortfall in guaranteed performance must be corrected. The shortfall cannot be mitigated by payment of Liquidated Damages.</td>
</tr>
<tr>
<td><strong>Non-Spining Reserve</strong></td>
<td>The off-line generation capacity that can be synchronized and ramped to capacity within 10 minutes of a dispatch instruction.</td>
</tr>
<tr>
<td><strong>OEM</strong></td>
<td>Original Equipment Manufacturers</td>
</tr>
<tr>
<td><strong>Personnel</strong></td>
<td>Anyone that the Seller directly or indirectly employs to perform Work, perform Services, or to supply materials, labor or Equipment, or any component thereof, in connection with this Contract, including Seller’s employees, subcontractors, suppliers, agents.</td>
</tr>
<tr>
<td><strong>Phase I</strong></td>
<td>The LNTP Phase of the Contract.</td>
</tr>
<tr>
<td><strong>Phase II</strong></td>
<td>The FNTP Phase of the Contract.</td>
</tr>
<tr>
<td><strong>Plant Acceptance Testing</strong></td>
<td>The systematic testing that demonstrates that a Unit meets a) its functional requirements and b) performance guarantees.</td>
</tr>
<tr>
<td>----------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Project</strong></td>
<td>The Seller’s performance of the Services and the supply of the Equipment, Materials and Deliverables in accordance with the terms of the Contract.</td>
</tr>
<tr>
<td><strong>Proposal</strong></td>
<td>Proposal Forms and Proposal Supplement submitted by Seller in response to this RFP</td>
</tr>
<tr>
<td><strong>Proposal Documents</strong></td>
<td>Power Island Equipment RFP, including the Proposal Forms and Proposal Supplement and other required documents</td>
</tr>
<tr>
<td><strong>QAP</strong></td>
<td>Quality Assurance Program</td>
</tr>
<tr>
<td><strong>QCP</strong></td>
<td>Quality Control Program</td>
</tr>
<tr>
<td><strong>Readiness for First Fire</strong></td>
<td>All of the structures, systems, and components required for initial fired operation (e.g., combustion of fuel) of a Unit, including:</td>
</tr>
<tr>
<td></td>
<td>a) Operational control using the normal Plant Control System interface and facilities</td>
</tr>
<tr>
<td></td>
<td>b) Normal electrical auxiliary power is available as well as the normal path for exporting power is operable</td>
</tr>
<tr>
<td></td>
<td>c) Electrical protection and metering systems are operable</td>
</tr>
<tr>
<td></td>
<td>d) Fire detection and suppression systems are operable</td>
</tr>
<tr>
<td></td>
<td>e) Other plant supporting systems required for First Fire are operable</td>
</tr>
<tr>
<td><strong>Ready to Ship</strong></td>
<td>When an equipment package is complete and ready for loading and shipment from the Seller’s manufacturing/assembly facility(ies) for delivery.</td>
</tr>
<tr>
<td><strong>Ready to Test</strong></td>
<td>The Unit is ready for a test or testing.</td>
</tr>
<tr>
<td><strong>REG</strong></td>
<td>Reciprocating Engine Generator (also referred to as Reciprocating Internal Combustion Engine (RICE))</td>
</tr>
<tr>
<td><strong>SCR</strong></td>
<td>Selective Catalytic Reduction</td>
</tr>
<tr>
<td><strong>Simple Cycle Unit</strong></td>
<td>A combustion turbine generator or a reciprocating engine generator operating in simple cycle along with associated balance of plant equipment</td>
</tr>
<tr>
<td><strong>Site</strong></td>
<td>The Proposed Grayson Power Plant, located at 800 Air Way, Glendale, California.</td>
</tr>
<tr>
<td><strong>SOW or Scope of Work</strong></td>
<td>The written statement of work describing the activities, tasks and responsibilities of Seller and the City that, at the time of execution, is attached hereto as Attachment 1 or that, subsequent to execution, references this Contract and is executed in the form of a Change Order by authorized representatives of the Parties.</td>
</tr>
<tr>
<td><strong>STG</strong></td>
<td>Steam Turbine Generator</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Substantial Completion</td>
<td>Substantial Completion means that a Unit has successfully completed and passed all Plant Acceptance Testing requirements and is available for unrestricted dispatch by the City. Any outstanding punch list items have been determined by the City to not be an impediment to declaring the plant commercially operable. Substantial Completion will be achieved on a Unit basis.</td>
</tr>
<tr>
<td>TA or Technical Advisor</td>
<td>A representative of the Seller, employed by the Seller, for their own equipment or by one of the Seller’s subcontractors for the subcontracted equipment. The TA serves as the Seller’s on-site representative to provide technical advice to GWP and the EPC Contractor during delivery, preservation on site, erection, Cold and Hot Commissioning, performance testing, and Plant Acceptance Testing.</td>
</tr>
<tr>
<td>Unit</td>
<td>One of the individual simple cycle or combined cycle Units, including the common systems, in whole or in part, that are needed to support operation of a Unit.</td>
</tr>
<tr>
<td>Warm Start</td>
<td>A restart of a Unit sometime after a shutdown. The minimum shutdown period that defines the start of a Warm Start window is the maximum time that defines a Hot Start. The maximum shutdown time that qualifies as a Warm Start is provided by the Proposer as part of their proposal.</td>
</tr>
<tr>
<td>Warranty Period</td>
<td>With respect to a Unit, the period of time beginning upon Substantial Completion and concluding when the Seller’s obligation to remedy defects at their expense concludes.</td>
</tr>
</tbody>
</table>
ATTACHMENT 2
SCOPE OF WORK
[To be finalized prior to contract execution]
ATTACHMENT 3
SPARE PARTS LISTS

3-1 Commissioning Spare Parts
3-2 Capital Spare Parts List and Pricing
PROJECT SCHEDULES

To include:
- Phase 1 LNTP Project Time Schedule
- Phase II Guaranteed Delivery Dates
- (Estimated) Phase II FNTP Schedule
ATTACHMENT 6
PAYMENT SCHEDULES

To include:
Phase I LNTP Payment Schedule
Phase II FNTP Payment Schedule
Cost Escalation Schedule
Storage Fee Schedule
Mechanical Completion
Substantial Completion
Final Completion
Notice of Completion
ATTACHMENT 10
INSURANCE REQUIREMENTS

Seller’s Insurance

In connection with this Contract, Seller shall maintain during the term of the Contract and for the longer of: (1) the period of time specified herein as to a specific policy or (2) where no such term is specified, for a period of two (2) years after the end of the latest expiring Warranty Period under the Contract Documents, insurance (or self-insurance) as specified below:

Workers’ Compensation

Seller shall comply with workers’ compensation laws (or equivalent) in each jurisdiction where work is performed, and shall maintain a Workers’ Compensation and Employer’s Liability insurance policy. If any work is to be performed on or near navigable waters, the policy shall include coverage for United States Longshoreman’s and Harbor Worker’s Act, Death on the High Seas Act, Jones Act, or their equivalent as required by the applicable law in the jurisdiction where such work is performed. The limits of such insurance shall be as follows:

- Workers’ Compensation – Statutory
  - Employer’s Liability – $10,000,000 each accident and in the aggregate
    - $10,000,000 per disease each employee

Commercial General Liability

Seller shall maintain commercial general liability insurance on an occurrence basis to provide coverage for: Bodily Injury; Personal Injury and Death, Property Damage, Explosion, Collapse and Underground hazards; Contractual Liability; and Ongoing Operations and Products and Completed Operations with limits no less than:

- $10,000,000 each occurrence and in the aggregate.

Business Automobile Liability

Seller shall maintain business automobile liability insurance which shall include coverage for all owned, non-owned and hired vehicles with limits no less than:

- $10,000,000 for each person per occurrence and $10,000,000 Combined Single Limit Bodily Injury and Property Damage.

Professional Liability

Seller shall maintain professional liability insurance, including errors and omissions coverage or malpractice coverage, written on a project specific basis, and covering claims arising out of the performance of professional services and advice by Seller and its Personnel, with limits not less than:

- $5,000,000 per claim and $5,000,000 in the aggregate.
The Professional Liability Policy shall provide coverage for the duration of this Contract and at least three (3) years after the termination of the Contract. Such policies shall include an extended reporting period to allow City to report a claim for a period not less than three years following the term of the Contract. Alternatively, Seller shall maintain successive renewal policies of professional liability insurance with prior acts coverage and a retroactive date on or before the effective date of the Contract.

**Aggregate Limits**

All aggregate limits in the insurance policies required herein shall apply separately to this Project.

**Umbrella Liability**

Seller may satisfy the insurance requirements of this Article through a combination of primary and umbrella policies.

**Transit Insurance**

Seller shall provide and maintain transit insurance written on an “all-risk basis” insuring against any damage to or loss of the Equipment as transported, whether over water or land, while in transit to and prepared for unloading at the Site, as provided in section 5.3(e) and 5.4 of the Contract.

**Additional Insureds/Waiver of Subrogation/ Severability**

Coverages required to be carried by Seller hereunder, except for the Workers’ Compensation and Employer’s Liability, and Professional Liability shall be endorsed to name City and its officers, agents and employees (“City’s Personnel”) as additional insureds to the extent that bodily injury, death, advertising injury, or third party property damage arise out of the actions, omissions or misconduct of Seller or its Personnel. The additional insured endorsement shall provide coverage at least as broad as I.S.O. Form CG 2010 11 85. Coverage afforded to City and City’s Personnel must be at least as broad as that afforded to Seller. If Seller has higher limits than the limits specified in these insurance requirements, or has additional broader coverage, or has both, the insurer shall make available the higher limits and broader coverage to City and City’s Personnel. All policies of insurance maintained by Seller hereunder waive any right of subrogation against City and City’s Personnel. Seller’s insurance policies must apply separately to each insured or additional insured who is seeking coverage, or against whom a claim is made or suit is brought, except that the naming of multiple insureds will not increase an insurance company’s limits of liability. Seller’s insurance policy shall apply to a claim or suit brought by an additional insured against a Named Insured or other insured, arising out of bodily injury, personal injury, advertising injury, or property damage.

**Certificates of Insurance, Additional Insured Endorsements, and Proof of Insurance**

Prior to the City’s execution of the Contract, and as a condition to the City’s issuance of any Notice to Proceed, Seller shall furnish City with certificates of insurance, additional insured and waiver of subrogation endorsements, policy declarations pages, documents comprising Seller’s self-insurance program, and such other documents as may be requested by City to evidence that insurance has been provided to meet the requirements contained herein. At any time upon City’s request, Seller shall provide
certified copies of the insurance policy or policies required herein. Insurance documents shall be subject to the review and approval of the City’s City Attorney and Risk Manager. Certificates of insurance shall include a statement that no material change, reduction in or cancellation of coverage can be effected without thirty (30) days prior written notice to the City. The insurance company or its authorized representative must state either on the certificate of insurance or in a separate correspondence the amount of any deductible and/or self-insured retention. Such deductibles and self-insured retentions are subject to the City’s review and approval, in its sole discretion.

Primary Coverage

The coverage provided by all policies of insurance or self-insurance required herein shall be primary over and pay without contribution from any other coverage or self-insurance procured or maintained by City.

Premiums and Deductibles

For coverages required to be carried by Seller herein, Seller shall bear all costs of all premiums and deductibles.

With respect to the loss of or damage to property incorporated in or intended to be incorporated in the power plant facility, property at the site, including, without limitation, Equipment once delivered and other City property whether on or off the Site, to the extent arising out of a warranty non-conformity or Seller or its suppliers’, subcontractors’ or agents’ acts, omissions or willful misconduct, Seller shall be responsible to City for any deductible under the Builder’s Risk policy.

Failure to Maintain and Cancellation

In the event Seller neglects, refuses or fails to provide or maintain any of the insurance required under this Contract, or if such insurance is canceled for any reason, City shall have the right, but not the obligation, to procure or maintain the same. In the event City does procure or maintain such insurance, City shall have, in addition to any and all other available remedies, the right to recover from Seller all of the costs associated with procuring or maintaining such insurance. Seller’s failure to comply with an insurance provision in this Contract constitutes a material breach of the Contract upon which City may immediately terminate or suspend Seller’s performance of this Contract, or invoke another remedy that this Contract or the law allows. At its discretion, City may obtain or renew the insurance and City may pay all or part of the premiums. Upon demand, Seller shall repay City for all sums or monies that City paid to obtain, renew or reinstate the insurance, or City may offset the cost of the premium against any sums or monies that City may owe Seller.

No Violation of Policies

Seller shall not violate or knowingly permit any violation of any conditions or terms of the policies of insurance described herein.

Subcontractors and Subconsultants

If Seller employs or uses a subcontractor or subconsultant to perform work, services, operations or activities on Seller’s behalf, Seller shall ensure that the subcontractor or subconsultant (i) meets and

Scholl Canyon Landfill Power Project

Specification No. 3598

05-10-16

Page 56 of 70
complies with this Contract’s insurance requirements; (ii) delivers to City for its review and approval proof of the insurance required by this Contract and (iii) furnishes City, upon its request, with copies of the subcontractor’s or subconsultant’s insurance policies.

**Acceptable Insurance Companies**

At all times the insurance company(ies) issuing the Seller’s insurance policies required herein must:

1. Be an “admitted” insurer by the State of California Department of Insurance or must be listed on the California Department of Insurance’s “List of Eligible Surplus Line Insurers;” and
2. Must carry an minimum A.M. Best Financial Strength Rating of “A:VI” or better.

**City’s Reservation of Right to Review Insurance Requirements**

At any time during the duration of this Contract, City may review the Contract insurance requirements and require that Seller (i) pay for and maintain more or less insurance depending upon the City’s assessment of the risk exposure arising out of City’s services under this Contract, the nature or number of accidents, claims or lawsuits arising out of this Contract; (ii) reduce or eliminate a deductible or self-insured retention as it applies to City, or (iii) obtain, pay for, and maintain a bond as a replacement for an insurance policy from a California corporate surety, guaranteeing payment to City for liability and costs that City incurs during City’s investigation, administration or defense of a claim or suit arising out of this Contract.

**Option for Owner Controlled Insurance Programs**

City reserves the right but not the obligation, to place owner controlled insurance programs to provide general liability and/ or workers’ compensation insurance required herein. If City procures an owner-controlled insurance program, the City shall be entitled to a credit off of the Contract Price in the amount specified in Attachment 6 hereto.

**City’s Insurance**

In connection with this Contract, City shall purchase and maintain (or cause to be purchased and maintained) insurance as specified below:

**All Risk Builders Risk**

City shall purchase and maintain (or cause to be purchased and maintained) throughout construction of the project, “All Risk” Builders Risk insurance for the Site. Such insurance shall be purchased and in effect at least ten (10) calendar days before the start of any Services at the Site or the arrival of the first item of Equipment at the Site, whichever first occurs. Seller and its suppliers and subcontractors shall also be insureds, with a waiver of subrogation, for physical loss or damage to the property at the Site (including the Equipment once prepared for unloading at the Site, and City’s property) on such All Risk Builders Risk policy. The cost to repair or replace damage to the equipment not covered by the All Risk Builders Risk policy pursuant to LEG 2 or similar defects exclusions shall be the sole responsibility of Seller.

With respect to the loss of or damage to property incorporated in or intended to be incorporated in the power plant facility, property at the site, including, without limitation, Equipment once delivered and other City property whether on or off the Site, to the extent arising out of a warranty non-conformity or Seller or
its suppliers’, subcontractors’ or agents’ acts or omissions or willful misconduct, Seller shall be responsible to City for any deductible under the Builder’s Risk Policy.

**Insurance Separate from Indemnity Obligation**

The insurance requirements set forth herein: (i) are separate and independent from the indemnification and defense provisions in Article 17 of this Contract and (ii) do not limit, in any way, the applicability, scope or obligations of the indemnification and defense provisions in the Contract.
Seller may meet its obligation to provide performance and payment security instruments by providing either: (A) both a Performance Bond and a Payment Bond, or (B) two Letters of Credit, one in lieu of a performance bond, and one in lieu of a payment bond, as provided herein. Such performance and payment security instruments shall be provided at the following times:

For the LNTP Phase, the security instruments shall be provided upon Seller’s execution of the Contract, and prior to the City’s execution of the contract.

If the City elects to proceed with the FNTP Phase, the security instruments for the FNTP Phase shall be provided upon City’s notice to Seller that City will proceed with the FNTP Phase, and prior to City’s issuance of a notice to proceed for the FNTP Phase.

Each of the security instruments must be issued with a value no less than the following amounts:

During the LNTP Phase, each security instrument shall be valued at 100% of the Phase I Contract Price.
During the FNTP Phase, each security instrument shall be valued at 100% of the Phase II Contract Price.

The security instruments are subject to the review and approval of the City Attorney and City’s Risk Manager.

**Bond Requirements and Forms:**

If Seller elects to satisfy the performance security and payment security requirements with surety bonds, Seller shall provide a performance bond and a payment bond meeting the following requirements.

1.01 Power of Attorney.
All bonds shall be accompanied by a power of attorney from the surety company authorizing the person executing the bond to sign on behalf of the company. If the bonds are executed outside the State of California, all copies of the bonds must be countersigned by a California representative of the surety. The signature of the person executing the bond shall be acknowledged by a Notary Public as the signature of the person designated in the power of attorney.

1.02 Approved Surety.
All the bonds shall be executed by a California admitted surety with an A.M. Best’s Company rating satisfactory to the City. If an A.M. Best’s rating is not available, the proposed surety must meet comparable standards of another rating service satisfactorily to City. Bonds issued by a California admitted surety listed in the latest versions of the U.S. Department of Treasury Circular 570 must be accompanied by all of the documents enumerated in California Code of Civil Procedure § 995.660(a).

1.03 Required Provisions.
Every bond must display the surety’s bond number and incorporate the Agreement by reference. The terms of the bonds shall provide that the surety agrees that no change, extension of time, alteration, or
modification of the Agreement or the work to be performed or obligations thereunder shall in any way affect its obligations and shall waive notice of any such change, extension of time, alteration, or modification of the Agreement.

1.04 New or Additional Sureties. 
If, during the continuance of the Agreement, any of the sureties, in the opinion of the City, are or become non-responsible or otherwise unacceptable to City, City may require other new or additional sureties, which shall be furnished to the satisfaction of City within ten (10) days after notice. Failure to do so shall constitute a default under the Agreement.

1.05 Waiver of Modifications and Alterations. 
No modifications or alterations made under the Agreement or the time of performance or Lease Term shall operate to release any surety from liability on any bond or bonds required to be given herein. Notice of such events shall be waived by the surety.

1.06 Approval of Bonds. 
City's decision as to the acceptability of all sureties and bonds is final. No substitution of the form of the documents will be permitted without the prior written consent of City.
PERFORMANCE BOND

WHEREAS, the City of Glendale ("City") has awarded to _________________ designated as the “Principal” (Seller) herein, Contract No. __________ (the “Contract”) for the work described as follows:

______________________________________________________________________________________

WHEREAS, on or about _____________, 20__, the Principal entered into a Contract with the City for the above Contract, which Contract and all Contract Documents set forth therein are incorporated herein and made a part hereof by this reference;

WHEREAS, Principal is required to furnish a bond guaranteeing the faithful performance of its obligations under the Contract Documents concurrently with delivery to City of the executed Contract.

NOW, THEREFORE, Principal and ________________ ("Surety"), a duly admitted surety in the State of California, are held and firmly bound to the City for payment of the penal sum of $___________________ ("the Bonded Sum"), in lawful money of the United States, for payment of which sum Principal and Surety jointly and severally bind themselves and their heirs, executors, administrators, successors and assigns.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT if Principal shall promptly and faithfully perform all of its obligations under the Contract Documents, including any and all amendments and supplements thereto, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The following terms and conditions shall apply with respect to this Bond:

1. This bond specifically guarantees the performance of each of every obligation of Principal under the Contract Documents, as they may be amended and supplemented, including but not limited to its liability for liquidated damages and warranties as specified in the Contract Documents, but not-to-exceed the Bonded Sum.

2. The guarantees contained herein shall survive the final completion of the scope of work called for in the Contract Documents with respect to those obligations of Principal which survive such final completion.

3. No alteration, modification or supplement to the Contract Documents or the nature of the Work performed thereunder, including without limitation, any extension of time for performance, shall in any way affect the obligations of Surety under this Bond. Surety hereby waives any notice of alteration, modification, supplement or extension of time.

4. Whenever Principal shall be, and is declared by City to be, in default under the Contract Documents, provided that City is not then in material default thereunder, Surety shall promptly: (a) remedy such default; (b) complete the Project in accordance with the terms and conditions of the Contract Documents then in effect; or (c) select a contractor(s) to complete all Work for which a Notice to Proceed has been issued in accordance with the terms and conditions of the Contract Documents then in effect, using a procurement methodology approved by City, arrange for a contract between such contractor(s)
and City, and make available, as Work progresses, sufficient funds to pay the cost of completion, unless the balance of the Contract price, including other costs and damages for which the Surety is liable hereunder, but not exceeding the Bonded Sum.

5. Correspondence or claims relating to this Bond should be sent to Surety at the following address:

[SURETY ADDRESS AND CONTACT]

6. No right of action shall accrue on this Bond to or for the use of any entity other than City or its successors and assigns.

7. In the event any suit, action or proceeding is instituted to recover on the Bond, said Surety will pay, and does hereby agree to pay, City’s reasonable attorneys’ fees and costs incurred, with or without suit, in addition to the Bonded Sum.

IN WITNESS WHEREOF, three (3) identical counterparts of this instrument, each of which shall for all purposes be deemed an original hereof, have been duly executed by Principal and Surety on the date set forth below, the name of each corporate party being hereto affixed and these presents duly signed by its undersigned representative(s) pursuant to authority of its governing body. Principal and Surety have caused this Bond to be duly executed and delivered as of this ____ day of ____________, 20__.

Surety

By:

(Signature and Title)

Principal

By:

(Signature and Title)

Attorney-in-Fact

________________________

(Printed Name)

Its:______________________

________________________

(Signature)

(Attach Attorney-in-Fact Certificate, Corporate Seal and Surety Seal)

APPROVED AS TO SURETY AND PRINCIPAL AMOUNT

By:_______________________________

City Risk Manager

By:_______________________________

City Attorney

APPROVED AS TO FORM:

Note: This bond must be executed in triplicate and dated, all signatures must be notarized, and evidence of the authority of any person signing as attorney-in-fact must be attached.

Scholl Canyon Landfill Power Project

Specification No. 3598
PAYMENT BOND
(Labor and Material Bond)

WHEREAS, City of Glendale ("City") has awarded to _____________________ designated as the “Principal” (Seller) herein, Contract No. ____________ (the “Contract”) for the work described as follows:

_______________________________________________________________________________________

WHEREAS, on or about _____________, 20__, the Principal entered into a Contract with the City for the construction of the work of improvement, which Contract and all Contract Documents set forth therein are incorporated herein and made a part hereof by this reference;

WHEREAS, by terms of the Contract, as well as California Civil Code § 3247, Principal is required to furnish a bond guaranteeing payment of claims.

NOW, THEREFORE, Principal and ________________ ("Surety"), a duly admitted surety in the State of California, are held and firmly bound to the City for payment of the penal sum of $___________________ ("the Bonded Sum"), in lawful money of the United States, for payment of which sum Principal and Surety jointly and severally bind themselves and their heirs, executors, administrators, successors and assigns.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT if Principal shall fail to pay any of the persons named in California Civil Code § 3181 for all labor, materials, equipment or services used or reasonably required for use in performance of the Work of the Project, then Surety shall pay for the same in an amount not-to-exceed the Bonded Sum, otherwise this obligation shall be null and void.

The following terms and conditions shall apply with respect to this Bond:

1. In case suit is brought upon this bond, the said Surety will pay reasonable attorney’s fees and costs incurred by City, to be fixed by the Court in addition to bonded sum;

2. No alteration, modification or supplement to the Contract Documents or the nature of the Work to be performed thereunder, including without limitation, any extension of time for performance,

3. shall in any way affect the obligations of Surety under this Bond. Surety hereby waives notice of any alteration, modification, supplement or extension of time.

4. Correspondence or claims relating to this Bond should be sent to Surety at the following address:

[SURETY ADRESS AND CONTACT]

5. This bond shall inure to the benefit of any of the persons named in California Civil Code § 3181 as to give a right of action to such persons or their assigns in any suit brought upon this Bond.
IN WITNESS WHEREOF, three (3) identical counterparts of this instrument, each of which shall for all purposes be deemed an original hereof, have been duly executed by Principal and Surety on the date set forth below, the name of each corporate party being hereto affixed and these presents duly signed by its undersigned representative(s) pursuant to authority of its governing body. Principal and Surety have caused this Bond to be duly executed and delivered as of this ____ day of ____________, 20__. 

Surety

By: _________________________
   (Signature and Title)

Principal

By: _________________________
   (Signature and Title)

Attorney-in-Fact

_______________________
   (Printed Name)

Its: _______________________

(Attach Attorney-in-Fact Certificate, Corporate Seal and Surety Seal)

APPROVED AS TO SURETY AND PRINCIPAL AMOUNT

By: _________________________
   City Risk Manager

By: _________________________
   City Attorney

APPROVED AS TO FORM:

Note: This bond must be executed in triplicate and dated, all signatures must be notarized, and evidence of the authority of any person signing as attorney-in-fact must be attached.
Letter of Credit Requirements and Forms

If Seller elects to satisfy the performance security and payment security requirements with letters of credit, Seller shall provide two (2) irrevocable standby letter of credit, each naming the City of Glendale as the beneficiary, in the following format (“Letters of Credit”). The Letters of Credit must be issued by the U.S. office of a commercial bank or trust company with assets of at least $10 Billion and credit ratings of at least A- by Standard & Poor’s and at least A3 by Moody’s. The value of each Letter of Credit shall be 100% of the Contract Price.

Letter of Credit Forms:

Letter of Credit to Guarantee Performance

City of Glendale
Glendale Water & Power Administration
141 N. Glendale Avenue, Level 4
Glendale, CA 91206

RE: Irrevocable Letter of Credit No. ____________

Ladies and Gentlemen:

We hereby issue in your favor this irrevocable Letter of Credit No. [_____] (this “Letter of Credit”) for the account of ______________ (“Seller”) in relation to Contract No. ______ between the City of Glendale and the Seller (hereinafter, the “Contract”), in the amount of ___________________ (“LC Amount”).

This Letter of Credit is effective immediately and expires upon surrender to us for cancellation.

This Letter of Credit serves as a performance security in lieu of a performance surety bond, and serves as a guarantee the Seller’s performance of each of every obligation under the Contract Documents, as they may be amended and supplemented, including but not limited to its liability for liquidated damages and warranties as specified in the Contract Documents, but not-to-exceed the LC Amount, except as otherwise specified herein.

The guarantees contained herein shall survive the final completion of the scope of work called for in the Contract Documents with respect to those obligations of Seller which survive such final completion.

No right of action shall accrue on this Letter of Credit to or for the use of any entity other than City or its successors and assigns.

In the event any suit, action or proceeding is instituted to recover on the Letter of Credit, we will pay, and do hereby agree to pay, City’s reasonable attorneys’ fees and costs incurred, with or without suit, in addition to the LC Amount.

Funds under this Letter of Credit are available against your demand made on us from time to time, such demand to be made by your submission of letter to us, stating that the conditions for payment under the Letter of Credit have been fulfilled. Multiple demands and multiple draw-downs may be made hereunder.
Presentation of such letter(s) may be made by facsimile or by manually signed documents presented by your agent. Any facsimile presentation shall be made to us at [fax number], or at such other number as shall be specified in a written notice given by us to you. Any manual presentation of documents shall be made at our [______], office at [insert address]. If we receive your letter(s) on or prior to the expiration or termination of this Letter of Credit, then, provided that we receive the same on or before [time] a.m., we will honor such demand on the same banking day; otherwise, we will honor your demand on the next banking day following presentation thereof in accordance with your payment instructions. If requested by you, payment under this Letter of Credit shall be made by wire transfer of immediately available funds to your account as set forth in the Certificate.

To the extent not contrary to the express provisions hereof, this Letter of Credit shall be governed by the Uniform Customs and Practice for Documentary Credits (2007 Revision) International Chamber of Commerce Publication No. 600 (the “UCP”). As to matters not addressed by the UCP, this Letter of Credit shall be governed by and construed in accordance with the law of California, without reference to any conflict of law provisions thereof that would dictate the application of the laws of any other state. Communications with respect to this Letter of Credit shall be in writing (including fax) and shall be addressed to us at [___________] or at fax number: [_____], specifically referring to the number of this Letter of Credit.

This Letter of Credit sets forth in full our undertaking. Except as stated herein, payment of demands made under this Letter of Credit is not subject to any condition or qualification. Our obligations hereunder are primary obligations that shall not be affected by the performance or nonperformance by Seller of any obligations under any agreement between Seller and us. Our obligations and liabilities hereunder shall not in any way be reduced, impaired or limited by any amendment, renewal, extension, modification, compromise, release, discharge or reference of, under, to or in connection with the Contract or any other document or agreement (except only the letter[s] referred to herein or an extension to the expiry date of this Letter of Credit pursuant to an amendment to the Contract). No alteration, modification or supplement to the Contract Documents or the nature of the Work performed thereunder, including without limitation, any extension of time for performance, shall in any way affect our obligations under this Letter of Credit. We hereby waive any notice of alteration, modification, supplement or extension of time. Reference herein to the Contract shall not be deemed to incorporate the same herein by reference.

Very truly yours,

[LETTER OF CREDIT BANK]
Letter of Credit to Guarantee Payment

City of Glendale
Glendale Water & Power Administration
141 N. Glendale Avenue, Level 4
Glendale, CA 91206

RE: Irrevocable Letter of Credit No. _____________

Ladies and Gentlemen:

We hereby issue in your favor this irrevocable Letter of Credit No. [______] (this “Letter of Credit”) for the account of ______________ (“Seller”) in relation to Contract No. _______ between the City of Glendale and the Seller (hereinafter, the “Contract”), in the amount of ___________________ (“LC Amount”).

This Letter of Credit is effective immediately and expires upon surrender to us for cancellation.

This Letter of Credit serves as a payment security in lieu of a payment surety bond pursuant to California Civil Code section 3247, and serves as a guarantee of the Seller’s payment to any of the persons named in California Civil Code section 3181 for all labor, materials, equipment or services used or reasonably required for us in the performance of the Scope of Work of the Project, but not-to-exceed the LC Amount, except as otherwise specified herein.

The guarantees contained herein shall survive the final completion of the scope of work called for in the Contract Documents with respect to those obligations of Seller which survive such final completion.

No right of action shall accrue on this Letter of Credit to or for the use of any entity other than City or its successors and assigns.

In the event any suit, action or proceeding is instituted to recover on the Letter of Credit, we will pay, and do hereby agree to pay, City’s reasonable attorneys’ fees and costs incurred, with or without suit, in addition to the LC Amount.

Funds under this Letter of Credit are available against your demand made on us from time to time, such demand to be made by your submission of letter to us, stating that the conditions for payment under the Letter of Credit have been fulfilled. Multiple demands and multiple draw-downs may be made hereunder. Presentation of such letter(s) may be made by facsimile or by manually signed documents presented by your agent. Any facsimile presentation shall be made to us at [fax number], or at such other number as shall be specified in a written notice given by us to you. Any manual presentation of documents shall be made at our [_____], office at [insert address]. If we receive your letter(s) on or prior to the expiration or termination of this Letter of Credit, then, provided that we receive the same on or before [time] a.m., we will honor such demand on the same banking day; otherwise, we will honor your demand on the next banking day following presentation thereof in accordance with your payment instructions. If requested by you, payment under this Letter of Credit shall be made by wire transfer of immediately available funds to your account as set forth in the Certificate.

To the extent not contrary to the express provisions hereof, this Letter of Credit shall be governed by the
Uniform Customs and Practice for Documentary Credits (2007 Revision) International Chamber of Commerce Publication No. 600 (the “UCP”). As to matters not addressed by the UCP, this Letter of Credit shall be governed by and construed in accordance with the law of California, without reference to any conflict of law provisions thereof that would dictate the application of the laws of any other state. Communications with respect to this Letter of Credit shall be in writing (including fax) and shall be addressed to us at [__________] or at fax number: [______], specifically referring to the number of this Letter of Credit.

This Letter of Credit sets forth in full our undertaking. Except as stated herein, payment of demands made under this Letter of Credit is not subject to any condition or qualification. Our obligations hereunder are primary obligations that shall not be affected by the performance or nonperformance by Seller of any obligations under any agreement between Seller and us. Our obligations and liabilities hereunder shall not in any way be reduced, impaired or limited by any amendment, renewal, extension, modification, compromise, release, discharge or reference of, under, to or in connection with the Contract or any other document or agreement (except only the letter[s] referred to herein or an extension to the expiry date of this Letter of Credit pursuant to an amendment to the Contract). No alteration, modification or supplement to the Contract Documents or the nature of the Work performed thereunder, including without limitation, any extension of time for performance, shall in any way affect our obligations under this Letter of Credit. We hereby waive any notice of alteration, modification, supplement or extension of time. Reference herein to the Contract shall not be deemed to incorporate the same herein by reference.

Very truly yours,

[LETTER OF CREDIT BANK]
LONG-TERM SERVICE AGREEMENT

A. Overall LTSA Scope

The Long-Term Service Agreement (LTSA) is applicable for either the CTGs or the REGs and other major equipment as defined herein. The equipment within the scope of the LTSA may include at the discretion of the City the following:

- Combustion turbine generators
- Reciprocating engine generators
- Landfill gas compressors

Equipment or level of service, not in the scope of the LTSA will be maintained by the City’s plant staff either directly or through contracted services.

If the Proposer’s configuration involves more than one OEM, than a separate LTSA proposal shall be submitted for each OEM and their respective equipment.

B. Term of the LTSA

The LTSA is a distinct and separate contract from the Power Island and Major Equipment procurement contract. The LTSA will be negotiated after the award of the FNTP scope and, if agreed upon between the City and the Proposer, executed prior to substantial completion of the first unit.

The maximum term of the LTSA is limited to 15 years. At the expiration of the LTSA, the City may elect to extend the LTSA in 5-year increments, re-negotiate a new LTSA, or terminate the LTSA at their discretion.

The minimum term of the LTSA should cover the period from substantial completion of a unit through the longer of the following (though not longer than 15 years):

- The first scheduled simple cycle CTG inspection after the most significant inspection/overhaul, e.g., hot section inspection/services.
- Reciprocating engine lower block overhaul

In principle the LTSA would commence with substantial completion of a unit. It is likely that each unit would have a different substantial completion date. How the differing unit substantial completion dates are handled within the one or more (if there is more than one OEM) LTSA’s will be addressed during contract negotiations.

During the first year of operation, the LTSA will run in parallel with the original warranty furnished as part of the Power Island and Major Equipment procurement contract.
C. Operating Profile

Both the CTG or REG units and associated equipment are projected to run at 100% plant capacity rate except for down time due to maintenance activities or at times when sufficient LFG is not available to operate a Unit at 100% load.

D. Planned Outage Schedules

The City plans to have routine maintenance outages for the CTG or REG units. The Proposer as part of the LTSA shall recommend outage intervals and outage duration.

E. LTSA Scope of Services

The LTSA should, at a minimum, include the following services:

- The pieces of equipment that are desired to be included in the LTSA are:
  - At a minimum, combustion turbine generator (turbine, gearbox, generator, bearings, recuperator, catalyst), and controls (digital and electro-hydraulic). Provide detailed information regarding equipment that is included in the LTSA, recommended maintenance intervals, outage time required to perform the maintenance task and labor and material cost associated with each task.
  - Reciprocating engine generator equipment (engine and generator) and controls. Define Major Engine Overhaul, Minor Engine Overhaul, and other maintenance service recommendations, including inspection and maintenance intervals, outage time required to perform the maintenance task and labor and material cost associated with each task.
  - Fuel gas compressor, including the motor and associated equipment supplied as part of the compressor package. Include inspection and maintenance intervals, outage time required to perform the maintenance task and labor and material cost associated with each task.
- Perform SCAQMD required periodic emission testing. Include SCR catalyst replacement intervals and costs.
- LTSA provider shall supply TAs, craft labor, specialized equipment (such as lifting beams, equipment stands, etc. not supplied as part of the original PIME scope of supply), specialty tools not supplied as part of the original PIME scope of supply, their own hand tools, a trailer with furnishings and equipment (hookup by GWP), and spare and contingency parts. The City will make available, if available on a shared basis, material-handling equipment such as their cranes and forklift.
- The City will maintain equipment not within the scope of the LTSA.
• **CTG/REG Planned Outages** - recommended CTG/REG inspection/services including all recommended CTG/REG inspections, services, and any parts replacements that are determined to be necessary as a result of those inspections and services. As part of these outage services, the OEM(s) would work with the City's staff to plan the outages sufficiently in advance to allow scheduling of the unit, the City’s and OEM’s respective personnel, or the City’s contractors needed for the outage, as well as spare and contingency parts.

• **CTG/REG Forced Outages** - inspections, services, parts replacements, and failure analysis that are determined to be necessary as a result of a forced outage originating due to a CTG/REG equipment or control system failure. This provision would not apply for forced outages not due to the CTG/REG.

• Maintaining spare and contingency parts that are not required for routine maintenance or the annual maintenance outages.

• There is no requirement for a Resident Engineer as part of the LTSA. However, for each piece of equipment within the LTSA scope, the proposal should clearly state: a) where the nearest technical support is located, and b) where spare and contingency parts are maintained.

As an option, and if available, the Proposer is requested to provide remote monitoring and diagnostics services of the CTG/REG units. Specify what will be monitored and remotely analyzed.

Provide a list of spare parts that are readily available near The City of Glendale. A list of spare parts that will be made available within the West Coast of the United States and list of parts that will be made available off shore.

The Proposer may also propose other or additional services on an optional basis.

**F. Suggested Fee Structure**

The Proposer may suggest fee structures; however, The City also may recommend alternate fee structures. The agreed upon fee and fee structure will be included as part of the Life Cycle Net Present Value calculations, per Instructions to Proposers Section 14, that will be performed by the City.

**G. LTSA Services Warranty**

LTSA parts and services, whether provided for planned or unplanned outages, shall be warranted for a period of one year following the end of the outage when the services were provided. The warranty shall cover consequential internal damage in addition to the failed part or service.
H. Creating the Win-Win

As part of the proposal, describe what methods, processes, or other means that are proposed to create a win-win over the term of the LTSA that promotes collaboration between the City and the OEM to provide the Proposed Scholl Canyon Landfill Power Project with high levels of availability and reliability.

I. LTSA Proposal

The LTSA proposal shall be included as part of the Proposer’s Power Island and Major Equipment Proposal within the Proposal Supplement.