

**AGREEMENT FOR SERVICES  
BETWEEN THE  
CITY OF SANTA CLARA, CALIFORNIA,  
AND  
ETHOSENERGY FIELD SERVICES, LLC**

**PREAMBLE**

This Agreement is entered into between the City of Santa Clara, California, a chartered California municipal corporation ("City") and EthosEnergy Field Services, LLC, a Nevada limited liability company, ("Contractor" or "EthosEnergy"). City and Contractor may be referred to individually as a "Party" or collectively as the "Parties" or the "Parties to this Agreement."

**RECITALS**

- A. City desires to secure the services more fully described in this Agreement, at Exhibit A, entitled "Scope of Services";
- B. Contractor represents that it, and its subcontractors, if any, have the professional qualifications, expertise, necessary licenses and desire to provide certain goods and/or required services of the quality and type which meet objectives and requirements of City; and,
- C. The Parties have specified herein the terms and conditions under which such services will be provided and paid for.

The Parties agree as follows:

**AGREEMENT TERMS AND CONDITIONS**

**1. AGREEMENT DOCUMENTS**

The documents forming the entire Agreement between City and Contractor shall consist of these Terms and Conditions and the following Exhibits, which are hereby incorporated into this Agreement by this reference:

Exhibit A – Scope of Services

Appendix A-1 – Preliminary Project Implementation Schedule

Appendix A-2 – Final System Acceptance Certificate

Exhibit B – Compensation and Payment Schedule

Exhibit C – Insurance Requirements

Exhibit D – Labor Compliance Addendum

This Agreement, including the Exhibits set forth above, contains all the agreements, representations and understandings of the Parties, and supersedes and replaces any

previous agreements, representations and understandings, whether oral or written. In the event of any inconsistency between the provisions of any of the Exhibits and the Terms and Conditions, the Terms and Conditions shall govern and control.

## **2. TERM OF AGREEMENT**

Unless otherwise set forth in this Agreement or unless this paragraph is subsequently modified by a written amendment to this Agreement, the term of this Agreement shall begin on August 21, 2019 and terminate on June 30, 2021.

## **3. SCOPE OF SERVICES**

Contractor shall perform those Services specified in Exhibit A within the time stated in Exhibit A. Time is of the essence.

## **4. FINAL SYSTEM ACCEPTANCE**

- A. Upon final completion of the Services, City and Contractor shall conduct an acceptance test. The criteria for the acceptance tests shall be as set forth in the Scope of Services (Exhibit A). Final System Acceptance will occur upon successful completion of the acceptance tests. When system acceptance occurs, the Parties will memorialize this event by promptly executing a Final System Acceptance Certificate (Appendix A-2).
- B. If, in the discretion of City, the Services do not meet the requirements of the Acceptance Test specifications, Contractor shall repair or replace the Services so that the same meets the Acceptance Test specifications in all material respects, all at no additional expense to City. All warranties shall become effective and begin to run upon the successful completion of the Acceptance Tests and the date of Final System Acceptance.

## **5. FREIGHT, TITLE, AND RISK OF LOSS**

All freight charges will be pre-paid by Contractor. All products and materials shall be entirely at Contractor's risk from the time they are placed in the possession of the carrier for shipment to/from City until the City provides Final System Acceptance. Contractor shall ensure that the products and materials are insured against "all risks" from the time the products and materials are placed in the possession of the carrier for shipment to/from City. Contractor will pack and ship all equipment in accordance with good commercial practices.

## **6. WARRANTY**

Contractor expressly warrants for one (1) year from the date of Final System Acceptance ("Warranty Period") that all materials and services covered by this Agreement shall be fit for the purpose intended, shall be free from defect and shall conform to the specifications, requirements and instructions upon which this Agreement is based. Contractor agrees to promptly replace or correct any incomplete, inaccurate or defective Services at no further cost to City when defects are due to the negligence, errors or omissions of Contractor. If Contractor fails to promptly correct or replace materials or services, City may make corrections or replace materials or services and charge

Contractor for the cost incurred by City. In no event shall Contractor's warranty extend or continue to extend during the Warranty Period to any repairs or replacements not performed or provided by Contractor.

The warranty for any materials or services corrected or furnished in replacement and any services reformed shall be six (6) months from the date of delivery of the corrected or replaced materials or service; however, in no event shall the total period of Contractor's warranty extend for any period greater than eighteen (18) months from the original date of Final System Acceptance.

**IT IS EXPRESSLY AGREED THAT CONTRACTOR'S FOREGOING WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES OF ANY KIND WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND CONSTITUTES THE ONLY WARRANTY AND SOLE REMEDY OF CITY WITH RESPECT TO THE EQUIPMENT, MATERIALS, PRODUCTS, AND SERVICES FORMING THE WORK.**

## **7. QUALIFICATIONS OF CONTRACTOR - STANDARD OF CARE**

Contractor represents and maintains that it has the expertise in the professional calling necessary to perform the Services, and its duties and obligations, expressed and implied, contained herein, and City expressly relies upon Contractor's representations regarding its skills and knowledge. Contractor shall perform such Services and duties in conformance to and consistent with the professional standards of a specialist in the same discipline in the State of California.

## **8. COMPENSATION AND PAYMENT**

In consideration for Contractor's complete performance of Services, City shall pay Contractor for all materials provided and Services rendered by Contractor in accordance with Exhibit B, entitled "Compensation and Payment Schedule." The maximum compensation of this Agreement is Four Million Five Hundred Thirty-Eight Thousand Fifty-Seven Dollars (\$4,538,057), subject to budget appropriations, which includes all payments that may be authorized for Services and for expenses, supplies, materials and equipment required to perform the Services. All work performed or materials provided in excess of the maximum compensation shall be at Contractor's expense. Contractor shall not be entitled to any payment above the maximum compensation under any circumstance.

## **9. TERMINATION**

- A. Termination for Convenience. City shall have the right to terminate this Agreement, without cause or penalty, by giving not less than thirty (30) days' prior written notice to Contractor.
- B. Termination for Default. If Contractor fails to perform any of its material obligations under this Agreement, in addition to all other remedies provided by law, City may terminate this Agreement immediately upon written notice to Contractor.

- C. Upon termination, each Party shall assist the other in arranging an orderly transfer and close-out of services. As soon as possible following the notice of termination, but no later than ten (10) days after the notice of termination, Contractor will deliver to City all City information or material that Contractor has in its possession.

#### **10. ASSIGNMENT AND SUBCONTRACTING**

City and Contractor bind themselves, their successors and assigns to all covenants of this Agreement. This Agreement shall not be assigned or transferred without the prior written approval of City. Contractor shall not hire subcontractors without express written permission from City.

Contractor shall be as fully responsible to City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as Contractor is for the acts and omissions of persons directly employed by it.

#### **11. NO THIRD PARTY BENEFICIARY**

This Agreement shall not be construed to be an agreement for the benefit of any third party or parties and no third party or parties shall have any claim or right of action under this Agreement for any cause whatsoever.

#### **12. INDEPENDENT CONTRACTOR**

Contractor and all person(s) employed by or contracted with Contractor to furnish labor and/or materials under this Agreement are independent contractors and do not act as agent(s) or employee(s) of City. Contractor has full rights to manage its employees in their performance of Services under this Agreement.

#### **13. CONFIDENTIALITY OF MATERIAL**

All ideas, memoranda, specifications, plans, manufacturing procedures, data, drawings, descriptions, documents, discussions or other information developed or received by or for Contractor and all other written information submitted to Contractor in connection with the performance of this Agreement shall be held confidential by Contractor and shall not, without the prior written consent of City, be used for any purposes other than the performance of the Services nor be disclosed to an entity not connected with performance of the Services. Nothing furnished to Contractor which is otherwise known to Contractor or becomes generally known to the related industry shall be deemed confidential.

#### **14. OWNERSHIP OF MATERIAL**

All material, which shall include, but not be limited to, data, sketches, tracings, drawings, plans, diagrams, quantities, estimates, specifications, proposals, tests, maps, calculations, photographs, reports, designs, technology, programming, works of authorship and other material developed, collected, prepared or caused to be prepared under this Agreement shall be the property of City but Contractor may retain and use copies thereof. City shall not be limited in any way or at any time in its use of said material. However, Contractor shall not be responsible for damages resulting from the

use of said material for work other than Project, including, but not limited to, the release of this material to third parties.

#### **15. RIGHT OF CITY TO INSPECT RECORDS OF CONTRACTOR**

City, through its authorized employees, representatives or agents shall have the right during the term of this Agreement and for four (4) years from the date of final payment for goods or services provided under this Agreement, to audit the books and records of Contractor for the purpose of verifying any and all charges made by Contractor in connection with Contractor compensation under this Agreement, including termination of Contractor. Contractor agrees to maintain sufficient books and records in accordance with generally accepted accounting principles to establish the correctness of all charges submitted to City. Any expenses not so recorded shall be disallowed by City. Contractor shall bear the cost of the audit if the audit determines that there has been a substantial billing deviation in excess of five (5) percent adverse to the City.

Contractor shall submit to City any and all reports concerning its performance under this Agreement that may be requested by City in writing. Contractor agrees to assist City in meeting City's reporting requirements to the State and other agencies with respect to Contractor's Services hereunder.

#### **16. HOLD HARMLESS/INDEMNIFICATION**

- A. To the extent permitted by law, Contractor agrees to protect, defend, hold harmless and indemnify City, its City Council, commissions, officers, employees, volunteers and agents from and against any claim, injury, liability, loss, cost, and/or expense or damage, including all costs and attorney's fees in providing a defense to any such claim or other action, and whether sounding in law, contract, tort, or equity, in any manner arising from, or alleged to arise in whole or in part from, or in any way connected with the Services performed by Contractor pursuant to this Agreement – including claims of any kind by Contractor's employees or persons contracting with Contractor to perform any portion of the Scope of Services – and shall expressly include passive or active negligence by City connected with the Services. However, the obligation to indemnify shall not apply if such liability is ultimately adjudicated to have arisen through the sole active negligence or sole willful misconduct of City; the obligation to defend is not similarly limited.
- B. Contractor's obligation to protect, defend, indemnify, and hold harmless in full City and City's employees, shall specifically extend to any and all employment-related claims of any type brought by employees, contractors, subcontractors or other agents of Contractor, against City (either alone, or jointly with Contractor), regardless of venue/jurisdiction in which the claim is brought and the manner of relief sought.
- C. To the extent Contractor is obligated to provide health insurance coverage to its employees pursuant to the Affordable Care Act ("Act") and/or any other similar federal or state law, Contractor warrants that it is meeting its obligations under the Act and will fully indemnify and hold harmless City for any penalties, fines, adverse rulings, or tax payments associated with Contractor's responsibilities under the Act.

**17. LIMITATION OF LIABILITY**

NEITHER PARTY, NOR THEIR RESPECTIVE OFFICERS, PARTNERS, AFFILIATES, SUBCONTRACTORS, VENDORS OR SUBSIDIARIES, SHALL BE LIABLE TO THE OTHER FOR CLAIMS FOR CONSEQUENTIAL, INCIDENTAL, EXEMPLARY, PUNITIVE, SPECIAL OR ANY INDIRECT DAMAGES OF ANY NATURE ARISING AT ANY TIME, OR FOR LOSS OF PROFITS OR LOSS OF USE, FROM ANY CAUSE WHATSOEVER, WHETHER ARISING IN TORT, CONTRACT, WARRANTY, STRICT LIABILITY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING ALL LIABILITY ARISING OUT OF SUCH PERSON'S OR ENTITY'S OWN NEGLIGENCE OR FAULT, CONNECTED WITH OR RESULTING FROM PERFORMANCE OR NON-PERFORMANCE UNDER THIS AGREEMENT AND/OR ANY SEPARATE AGREEMENT FOR CITY'S BENEFIT IN CONNECTION WITH ANY WORK COVERED BY THIS AGREEMENT. THIS EXPRESSLY EXCLUDES CLAIMS FOR PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE.

NOTWITHSTANDING ANYTHING ELSE IN THIS AGREEMENT, THE TOTAL AGGREGATE LIABILITY OF CONTRACTOR, ITS AFFILIATES SUBCONTRACTORS AND VENDORS TO CITY FOR CLAIMS OR DAMAGES OF ANY NATURE ARISING AT ANY TIME, FROM ANY CAUSE WHATSOEVER, WHETHER ARISING IN TORT, CONTRACT, WARRANTY, STRICT LIABILITY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING ALL LIABILITY ARISING OUT OF ANY AND ALL CONTRACTOR SOLE OR JOINT NEGLIGENCE OR FAULT, CONNECTED WITH OR RESULTING FROM PERFORMANCE OR NON-PERFORMANCE OF THE WORK UNDER THIS AGREEMENT, SHALL BE LIMITED TO \$5,000,000 EXCLUDING CLAIMS FOR PERSONAL INJURY, DEATH, OR DAMAGE TO THE MITSUBISHI STEAM TURBINE AND GENERATOR.

**18. INSURANCE REQUIREMENTS**

During the term of this Agreement, and for any time period set forth in Exhibit C, Contractor shall provide and maintain in full force and effect, at no cost to City, insurance policies as set forth in Exhibit C.

**19. WAIVER**

Contractor agrees that waiver by City of any one or more of the conditions of performance under this Agreement shall not be construed as waiver(s) of any other condition of performance under this Agreement. Neither City's review, acceptance nor payments for any of the Services required under this Agreement shall be constructed to operate as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement.

## **20. NOTICES**

All notices to the Parties shall, unless otherwise requested in writing, be sent to City addressed as follows:

City of Santa Clara  
Attention: Silicon Valley Power  
1500 Warburton Avenue  
Santa Clara, CA 95050  
and by e-mail at [gdougherty@santaclaraca.gov](mailto:gdougherty@santaclaraca.gov), [mpineda@santaclaraca.gov](mailto:mpineda@santaclaraca.gov),  
and [svpcontracts@santaclaraca.gov](mailto:svpcontracts@santaclaraca.gov)

And to Contractor addressed as follows:

EthosEnergy Field Services, LLC  
c/o Ed Moore  
2845 Courage Drive  
Fairfield, CA 94533  
and by e-mail at [ed.moore@ethosenergygroup.com](mailto:ed.moore@ethosenergygroup.com) and  
[john.cox@ethosenergygroup.com](mailto:john.cox@ethosenergygroup.com)

The workday the e-mail was sent shall control the date notice was deemed given. An e-mail transmitted after 1:00 p.m. on a Friday shall be deemed to have been transmitted on the following business day.

## **21. COMPLIANCE WITH LAWS**

Contractor shall comply with all applicable laws and regulations of the federal, state and local government, including but not limited to "The Code of the City of Santa Clara, California" ("SCCC"). In particular, Contractor's attention is called to the regulations regarding Campaign Contributions (SCCC Chapter 2.130), Lobbying (SCCC Chapter 2.155), Minimum Wage (SCCC Chapter 3.20), Business Tax Certificate (SCCC section 3.40.060), and Food and Beverage Service Worker Retention (SCCC Chapter 9.60), as such Chapters or Sections may be amended from time to time or renumbered. Additionally Contractor has read and agrees to comply with City's Ethical Standards (<http://santaclaraca.gov/home/showdocument?id=58299>).

## **22. CONFLICTS OF INTEREST**

Contractor certifies that to the best of its knowledge, no City officer, employee or authorized representative has any financial interest in the business of Contractor and that no person associated with Contractor has any interest, direct or indirect, which could conflict with the faithful performance of this Agreement. Contractor is familiar with the provisions of California Government Code section 87100 and following, and certifies that

it does not know of any facts which would violate these code provisions. Contractor will advise City if a conflict arises.

**23. FAIR EMPLOYMENT**

Contractor shall not discriminate against any employee or applicant for employment because of race, sex, color, religion, religious creed, national origin, ancestry, age, gender, marital status, physical disability, mental disability, medical condition, genetic information, sexual orientation, gender expression, gender identity, military and veteran status, or ethnic background, in violation of federal, state or local law.

**24. NO USE OF CITY NAME OR EMBLEM**

Contractor shall not use City's name, insignia, or emblem, or distribute any information related to services under this Agreement in any magazine, trade paper, newspaper or other medium without express written consent of City.

**25. GOVERNING LAW AND VENUE**

This Agreement shall be governed and construed in accordance with the statutes and laws of the State of California. The venue of any suit filed by either Party shall be vested in the state courts of the County of Santa Clara, or if appropriate, in the United States District Court, Northern District of California, San Jose, California.

**26. SEVERABILITY CLAUSE**

In case any one or more of the provisions in this Agreement shall, for any reason, be held invalid, illegal or unenforceable in any respect, it shall not affect the validity of the other provisions, which shall remain in full force and effect.

**27. AMENDMENTS**

This Agreement may only be modified by a written amendment duly authorized and executed by the Parties to this Agreement.



**28. COUNTERPARTS**

This Agreement may be executed in counterparts, each of which shall be deemed to be an original, but both of which shall constitute one and the same instrument.

The Parties acknowledge and accept the terms and conditions of this Agreement as evidenced by the following signatures of their duly authorized representatives.

**CITY OF SANTA CLARA, CALIFORNIA**  
a chartered California municipal corporation

Approved as to Form: \_\_\_\_\_

Dated: \_\_\_\_\_

\_\_\_\_\_  
BRIAN DOYLE  
City Attorney

\_\_\_\_\_  
DEANNA J. SANTANA  
City Manager  
1500 Warburton Avenue  
Santa Clara, CA 95050  
Telephone: (408) 615-2210  
Fax: (408) 241-6771

"CITY"

**ETHOSENENERGY FIELD SERVICES, LLC**  
A Nevada limited liability company

Dated: June 24, 2019  
By (Signature): Edwin D Moore  
Name: Edwin D Moore  
Title: Vice President  
Principal Place of  
Business Address: 2485 Conrage Drive, Fairfield, CA 94533  
Email Address: ed.moore@ethosenergygroup.com  
Telephone: ( ) 707-399-0420  
Fax: ( ) 707-399-0421  
"CONTRACTOR"

## EXHIBIT A SCOPE OF SERVICES

### 1. OVERVIEW

- 1.1. Contractor will provide a turnkey solution that will include provision of all labor, tooling, equipment, parts, materials, and technical expertise for inspection and major overhaul of the Mitsubishi Steam Turbine and Generator located at the Donald Von Raesfeld Power Plant (DVR).
- 1.2. Completion of the Scope of Services will overhaul the Mitsubishi Steam Turbine and Generator utilizing the most current original equipment manufacturer (OEM) specifications, manuals, technical bulletins, and approved parts unless otherwise specified within the Scope of Services or agreed upon within the final scope and work authorization (Project).
- 1.3. To the extent not inconsistent with this Agreement between the City and Contractor including this Scope of Services, the City's RFP 18-19-13 and Contractor's proposal response dated March 8, 2019 are hereby incorporated by reference herein, and shall supplement this scope of services and be subject to the terms and conditions of the Agreement.

### 2. NAME PLATE DATA

<b>TURBINE</b>	S/N: D-934	Yr	2004
TYPE:	Induction Steam		
OUTPUT	53.6 MW		
SPEED	3600 RPM		
MAIN STM	1250 PSIG		
	950 °F		
INDUCTION			
STM	9.5 PSIG		
	IN		
EXHAUST	4.0 HGA		
<b>GENERATOR</b>	S/N: 03GKTL01AA0101	Yr	2003
TYPE:	Air Cooled		
OUTPUT	63.059 MW	TYPE: Rating	
	13.8 kV	MB Continuous	
	2638 A	Cooling Water	95°F
	0.85 PF	ARM Insulation Class F,	
60 HZ	3 PHASE	Field F	
		Excitation Volt	225 V
		Fld Current	620 A

SPEED 3600 RPM 2 Pole  
Rule ANSI C50.13

**EXCITER** S/N: 03GKTL10C51M01 Yr 2003  
TYPE Brushless  
150 Kw 225 V 66 A  
Rule ANSI C50.10

**PMG** S/N: 03GKTL08AA1K01 Yr 2003  
TYPE SFP 3 Phase  
6 kVA 120 V 28.9 A .95 PF 360 HZ 3600 rpm  
ARM Insulation Class F  
Rule ANSI C50.10

### 3. MINIMUM REQUIRED STAFFING

Contractor shall provide staffing that meets or exceeds the following requirements. Exact crew size and work schedule will be determined by Contractor. City anticipates Contractor to work 12 hour shifts with a night shift as needed.

Contractor shall provide all portable office space trailers, port-a-johns, wash stations, lunch areas, and any associated requirements to support personnel on site. "On-site" herein shall mean City property.

#### 3.1. Project Manager

- 3.1.1. Contractor shall assign a Project Manager who will be the single point of contact for all activities related to the Project. The Project Manager must be approved by the City. The City reserves the right to request replacement of the Project Manager at any time during this Agreement.
- 3.1.2. Project Manager Responsibilities:
  - 3.1.2.1. The Project Manager shall attend all meetings, including meetings for developing outage plans and parts forecasts, pre-outage meetings, and post-outage meetings.
  - 3.1.2.2. The Project Manager shall provide timely reports as to budget man-hours, work accomplished, and potential actions for both on-site and off-site activities that can impact schedules and or cost.
  - 3.1.2.3. The Project Manager shall participate in all pre-outage planning (e.g. spare parts, anticipated repairs, logistics, prior technical, data collection, resources, etc.), and shall

coordinate and execute the required services and parts deliveries required of Contractor under this Agreement.

### **3.2. On-site Supervisor / Technical Lead**

**3.2.1.** Contractor shall provide a knowledgeable and experienced Supervisor at all times, including any night shifts, that Contractor has personnel on-site. The Supervisor must be approved by the City. Supervisor and Project Manager can be the same person, but responsibility requirements will remain. The City reserves the right to request replacement of the Supervisor at any time during this Agreement.

#### **3.2.2. Supervisor Responsibilities:**

**3.2.2.1.** Night shift will require its own Supervisor. Supervisor shall direct all on-site overhaul activities and all labor supporting the Project and communicate with City staff to ensure proper coordination of other activities that may or may not be related to the Project.

**3.2.2.2.** Supervisor shall direct sub-contractors related to the Project.

**3.2.2.3.** Supervisor shall participate in daily coordination meetings with City staff and shall provide a daily summary of anticipated activities.

**3.2.2.4.** Supervisor shall immediately report any non-compliance issues having to do with safety or environmental permits/requirements to the City. There will be zero tolerance for non-compliance, and City shall take any action it deems necessary, in its sole discretion, including but not limited to, asking Contractor's personnel not to return on-site, if any such non-compliance with City's safety or environmental standards and/or requirements occurs.

**3.2.2.5.** Supervisor will not be a "Working Supervisor or Trades foreman" unless special exception is granted by the City.

**3.2.2.6.** Supervisor will remain with the Project unless the City and Contractor agree otherwise.

#### **3.2.3. Safety Program and Onsite Safety Manager**

**3.2.3.1.** Contractor shall develop and submit a safety program plan, including lifting and rigging (Safety Program), for approval by City prior to outage start. The Safety Program will include all applicable elements required by the Occupational Safety and Health Administration (OSHA) and any other information required by City.

**3.2.3.1.1.** At a minimum, the Safety Program will focus on management leadership, worker participation, hazard identification and assessment, hazard prevention and control, education and training (to include employee training records), ongoing program evaluation and improvement, communication, and coordination for all affected persons.

**3.2.3.2.** Contractor shall provide an On-site Safety Manager to administer the Safety Program. The On-site Safety Manager will be expected to audit all work occurring on site (including work not related to this Project) to ensure proper safety coordination and safe work practices. The On-Site Safety Manager will have "Stop Work Authority" over all personnel on site and will report any infractions to City immediately. The On-Site Safety Manager shall provide daily audits and daily written report of activities and present observations to the Project Manager, Supervisor, and City.

**3.2.3.3.** Any time the Contractor has employees or subcontractors on-site, Contractor must have a safety representative on-site. Contractor shall notify City if the safety representative is not on-site. The safety representative can be the On-site Safety Manager, or any other individual designated as a safety representative by Contractor.

**3.2.3.4.** Due to proximity to the San Jose Mineta International Airport (Airport), Contractor shall coordinate elevated crane picks with the Airport to avoid inadvertent radar detection.

**3.2.4. Skilled and Qualified Labor**

**3.2.4.1.** Contractor shall provide skilled and qualified labor necessary to perform work in support of the Project.

**4. ENVIRONMENTAL COMPLIANCE PLAN**

**4.1.** Contractor shall develop an Environmental Compliance Plan and present to City for approval prior to the outage. The Environmental Compliance Plan will detail how Contractor shall ensure compliance with all applicable site environmental permits including but not limited to: storm water, hazardous materials, housekeeping, etc.

**4.2.** Contractor shall be responsible for proper storage and disposal of all hazardous materials brought on-site in support the Project. The site's EPA I.D. will not be available for use by Contractor to dispose of hazardous materials not generated on site.

- 4.3. All materials brought on site must be labeled properly at all times, along with Safety Data Sheets (SDS's) provided to the Plant Control Room.
- 4.4. Working and storage areas utilized by Contractor will be kept orderly and cleaned daily.
- 4.5. The Project Manager and Supervisor shall become familiar with site environmental programs, regulations, and requirements prior to outage start.

## **5. EXECUTION PLAN**

- 5.1. The project schedule is detailed in Exhibit A-1 ("Project Schedule"), which lists the tasks, corresponding project deliverables ("Deliverables"), and dates and durations assigned to each task.
- 5.2. Contractor shall meet all the project deliverables and dates in accordance to the Project Schedule. Any changes to the Project Schedule which will impact the completion date of each deliverable must be mutually agreed to by the Parties and incorporated into a revised Project Schedule.
- 5.3. The requirements and expectations shall be reviewed during project kick-off meeting to ensure the Parties have a common understanding. The project kick-off meeting shall occur as early as possible for Contractor to meet the Project Schedule.
- 5.4. Contractor shall seek written approval from City on all corrective maintenance (Extra Work) prior to beginning work.

## **6. SCOPE OF SERVICES**

Compensation for the minimum required services is included in the firm fixed price set forth in Section 4 of Exhibit B.

Section 12 sets forth Extra Work that may be required by the City. Compensation for Extra Work is set forth in Section 5 of Exhibit B.

## **7. RESPONSIBILITY MATRIX**

A division of responsibility is provided below to demonstrate the City's expectations during the Project and outage.

<b>DIVISION OF RESPONSIBILITY</b>	<b>CONTRACTOR</b>	<b>CITY</b>
<b>Outage Staffing</b>		
Supervision and craft labor to perform the defined scope of work	X	
Confined Space Attendants	X	
Fire Watch	X	
Operators to perform system isolation, purging and LOTO		X
Facility representative to witness, inspect and sign off work progress and daily time sheets		X
Instrument & Electrical Technicians (w/tooling) as required		X
Component repairs defined in scope of work	X	
<b>Documentation</b>		
Scheduling and planning	X	X
Electronic end of job report	X	
Site authorization to use digital photo/video equipment to document work activities for engineering disposition		X
Safety Data Sheets for chemicals brought onto site by Contractor	X	
Safety Data Sheets for chemicals already on site		X
<b>Facilities</b>		
Electrical power (120/240/480) single phase and three phase, wiring materials, plugs/connections and cables to work area		X
Laydown and cleaning area (convenient cleaning, storage and work areas that isolate Contractor work area from routine plant activity)		X
Office & break space or trailers	X	
Potable drinking water and ice	X	
Compressed air		X
Service water and drain		X
Toilet & washroom facilities	X	
<b>Tooling, Equipment, and Materials</b>		
Standard tooling to complete defined scope of work.	X	
Mobile equipment such as forklifts, light towers and man lifts w/ fuel / pre-inspected, certified and meeting local air standards/laws.	X	

DIVISION OF RESPONSIBILITY	CONTRACTOR	CITY
Cribbing, timber, skids, pallets, etc. for parts laydown.	X	
Expendable materials (Examples are rags, cleaning agents, bags, tags, etc.)	X	
Oxygen & Acetylene	X	
Replacement parts (capital components)		X
Welding equipment w/leads and material (if needed)	X	
Renewal Parts including asbestos free precut and manufactured gaskets.	X	
Generator and Turbine Rotor Specialty Tooling		X
<b>Support Services</b>		
Mobile crane(s) with operators	X	
Scaffolding materials and services (if needed)	X	
Blast cleaning materials and services	X	
Asbestos and lead-containing materials (testing and removal). Includes responsibility for ACM/PACM, including thermal insulation, lead based paints, and lead carbonate if required. Excludes removal of gaskets or generator material if specifically identified in the scope of work.		X
Disposal services including containers and disposal for all hazardous waste, non-hazardous waste, regulated materials, brought onto site by Contractor	X	
Disposal services including containers and disposal for all hazardous waste, non-hazardous waste, regulated materials, originating onsite		X
Confined space rescue team	X	
Confined space air monitoring, equipment and attendants	X	
First aid capabilities and access to ambulance service	X	X
Welding services and equipment with required certifications to complete defined scope of work	X	
Instrumentation services including determination, termination, testing and calibration		X
Refueling of equipment at site (per approved procedure)	X	
Portable generators if plant electrical power will be interrupted		X
Insulation removal and re-installation	X	



## **8. STEAM TURBINE**

Contractor shall perform the following services:

### **8.1. Pre-Mobilization**

- 8.1.1.** Conduct pre-outage meeting
- 8.1.2.** Finalize and submit Execution Plan, Environmental Compliance Plan and Site Specific Project Safety Plan
- 8.1.3.** Confirm unit release date
- 8.1.4.** Ship tools to City's facility

### **8.2. Pre-Outage Work**

- 8.2.1.** Locate and visually inspect City's spare parts
- 8.2.2.** Unload tools at job site
- 8.2.3.** Set up parts bins & label for organized storage
- 8.2.4.** Locate and clean jack bolts & taps for unit
- 8.2.5.** Locate lay down blocking and bring to laydown area (laydown area will be located on Raymond Street approximately 0.5 miles from the DVR Plant; Contractor shall work with City to determine any additional cost for trucking parts to laydown yard.)
- 8.2.6.** Locate lifting beams and rotor shipping skid
- 8.2.7.** Locate special tooling supplied with the unit and bring to work area
- 8.2.8.** City to move parts to turbine deck
- 8.2.9.** Verify with City that unit is isolated and locked out
- 8.2.10.** Take photographs of unit prior to disassembly

### **8.3. Turbine Disassembly**

- 8.3.1.** Lagging & Insulation
  - 8.3.1.1.** Remove enclosure roof panels and back generator wall panels
  - 8.3.1.2.** Remove insulating blankets from turbine cylinder
  - 8.3.1.3.** Store insulating blankets in a dry covered and protected area
- 8.3.2.** Initial Coupling Check

- 8.3.2.1. Unbolt and remove the turning gear and number one standard cover
        - 8.3.2.2. Lubricate the number one and number 2 bearings if possible
        - 8.3.2.3. Unbolt the turbine to generator coupling
        - 8.3.2.4. Carefully separate the coupling
        - 8.3.2.5. Take “as found” 16-point coupling check
- 8.3.3. Valves
  - 8.3.3.1. HP Control Valves
    - 8.3.3.1.1. Disconnect linkage
    - 8.3.3.1.2. Unbolt and remove the control valve chest
    - 8.3.3.1.3. Set control valve chest on stands
  - 8.3.3.2. HP Steam MSV
    - 8.3.3.2.1. Disassemble valve
  - 8.3.3.3. Intercept Control Valve
    - 8.3.3.3.1. Disassemble valve
  - 8.3.3.4. Intercept Stop Valve
    - 8.3.3.4.1. Disassemble valve
- 8.3.4. Shell
  - 8.3.4.1. Unbolt and remove the rupture disc and pipe
  - 8.3.4.2. Unbolt the horizontal joint and internal bolting in exhaust hood
  - 8.3.4.3. Install shell jack bolts
  - 8.3.4.4. Assemble rigging and setup on the shell
  - 8.3.4.5. Raise shell several inches using the jack bolts
  - 8.3.4.6. Carefully lift the shell with the crane
  - 8.3.4.7. Set the shell in the designated laydown area
- 8.3.5. Upper Diaphragms and Shaft Packing Casings
  - Depending on the diaphragm configuration

- 8.3.5.1.** Diaphragms secured in the upper shell.
  - 8.3.5.1.1.** Flip the upper shell
  - 8.3.5.1.2.** Unbolt and remove the diaphragms.
- 8.3.5.2.** Upper diaphragms bolted to lower diaphragms
  - 8.3.5.2.1.** Unbolt and remove upper diaphragms from lowers.
- 8.3.5.3.** Remove the upper half shaft packing casings on both ends of the rotor
- 8.3.5.4.** Remove packing and prep for inspection
- 8.3.5.5.** Ship upper diaphragms and shaft packing casing to shop for blasting and NDE
- 8.3.6.** Turbine Rotor
  - 8.3.6.1.** Take rotor position checks
  - 8.3.6.2.** Take as found rotor and diaphragm clearances
  - 8.3.6.3.** Take thrust bump check
  - 8.3.6.4.** Journal bearings, thrust bearing and oil deflectors.
    - 8.3.6.4.1.** Remove LP bearing standard cover and oil deflectors
    - 8.3.6.4.2.** Remove the upper half of the journal bearings and thrust bearing
    - 8.3.6.4.3.** Disassemble the thrust bearing
  - 8.3.6.5.** Take a total rotor float check
  - 8.3.6.6.** Rig and remove turbine rotor
  - 8.3.6.7.** Set the rotor in the shipping stand and secure
  - 8.3.6.8.** Ship rotor to shop for cleaning and inspection
- 8.3.7.** Lower Diaphragms
  - 8.3.7.1.** Visually inspect the lower diaphragms for abnormal wear, etc.
  - 8.3.7.2.** Remove lower half packing and prep for inspection
  - 8.3.7.3.** Unbolt and remove diaphragms

**8.3.7.4.** Ship diaphragms to shop for cleaning and inspection

#### **8.4. Cleaning and Inspection**

##### **8.4.1. Turbine Shell and Bolting**

**8.4.1.1.** Cover all lower shell openings and steam line opens to prevent FOD from entering

**8.4.1.2.** Clean upper and lower shells with wire brushes

**8.4.1.3.** Visually inspect the upper and lower shells for:

**8.4.1.3.1.** Erosion

**8.4.1.3.2.** Crack indications

**8.4.1.3.3.** Other abnormalities

**8.4.1.4.** Remove lower half bearings

**8.4.1.5.** Clean and inspect bearing standards

**8.4.1.6.** Clean and visually inspect all bolting

**8.4.1.7.** NDE bolting

**8.4.1.8.** Clean and inspect the horizontal joint and mating surfaces such as steam lead connection

**8.4.1.9.** Clean and inspect the rupture disc and related piping

**8.4.1.10.** Install plugs in lower shell openings to prevent FOD from entering steam lines, drain lines or lube system

##### **8.4.2. Lube Oil System (Details under Miscellaneous below)**

**8.4.2.1.** Prep lube oil system for oil flush

**8.4.2.2.** Prep will be determined by City decision on type of oil flush

##### **8.4.3. Turbine Bearings Oil Seals**

**8.4.3.1.** Clean the turbine bearings and oil seals with cleaning solvent

**8.4.3.2.** Visually inspect the journal bearings wear patterns

**8.4.3.3.** Visually inspect the thrust bearing wear pattern

**8.4.3.4.** NDE the journal bearings and thrust bearing for crack indications or loose bonding of the babbit

- 8.4.3.5.** Take dimensional checks on the journal and thrust bearing
- 8.4.3.6.** Visually inspect oil seals for rubbing and damage
- 8.4.3.7.** Dimensionally inspect the oil seals and report dimensions to the shop.

#### **8.4.4. All Valves**

- 8.4.4.1.** Take trammel dimensions on linkage to ensure correct settings at reassembly.
- 8.4.4.2.** Carefully unbolt and remove spring assemblies.
- 8.4.4.3.** Unbolt and remove components necessary to remove stems and discs.
- 8.4.4.4.** Hand clean stems and discs for inspection.
- 8.4.4.5.** Inspections
  - 8.4.4.5.1.** Check stem runouts
  - 8.4.4.5.2.** Inspect discs and seats for damage to seating areas and crack indications.
  - 8.4.4.5.3.** Dimensionally check stems and CV bushings for proper clearances.
  - 8.4.4.5.4.** Inspect the valve stand for steam cutting on sealing surfaces.

### **8.5. Repairs**

- 8.5.1.** Contractor shall provide repair recommendations to the City upon discovery of the problem. The City will promptly provide its decision on whether the repair will become part of the scope of work. Compensation for repairs will be in accordance with the rates in Exhibit B.
- 8.5.2.** Contractor shall submit a final Inspection report to City upon completion of inspection.

### **8.6. Reassembly**

- 8.6.1.** Lube Oil System (Details under Miscellaneous below)
  - 8.6.1.1.** Drain and clean the lube oil tank
  - 8.6.1.2.** Normalize the lube oil system
    - 8.6.1.2.1.** Remove all plugs from feed and drain lines

- [illegible]

**8.6.7. Turbine Shells**

**8.6.7.1. Prep lower outer shell**

**8.6.7.1.1. Stone horizontal and vertical joints**

**8.6.7.1.2. Have joint bolting clean and ready to install**

**8.6.7.2. Rig and lift upper outer shell.**

**8.6.7.2.1. Clean off outside of shell especially around bolt holes**

**8.6.7.2.2. Stone joints on upper and lower shells**

**8.6.7.2.3. Install guide pins if shell is equipped with them**

**8.6.7.3. Lower upper outer shell into place with proper sealant**

**8.6.7.4. Install dowel pins**

**8.6.7.5. Install joint bolting and tighten per spec**

**8.6.8. Turbine to Generator Coupling**

**8.6.8.1. Take 16-point coupling check**

**8.6.8.2. Assemble turbine to generator coupling**

**8.6.9. HP Bearing Standard Cover**

**8.6.9.1. Clean the HP standard cover**

**8.6.9.2. Install the HP standard cover and bolt**

**8.6.10. Rupture Disc and Related Steam Piping**

**8.6.10.1. Clean flanges and install with new gaskets or sealant as appropriate**

**8.6.10.2. Clean any related piping flanges and install**

**8.6.11. Control Valves**

**8.6.11.1. Assemble controls valves in control valve stand**

**8.6.11.2. Rig and install control valves in steam chest and bolt**

**8.6.11.3. Attach CV linkage**

**8.6.12. Main Stop Valve**

- 8.6.12.1.** Disassemble coupling between stop valve stem & operator
- 8.6.12.2.** Disassemble coupling between stop valve stem
- 8.6.12.3.** Loosen bolting & remove stop valve cover
- 8.6.12.4.** Disassemble steam strainer
- 8.6.12.5.** Disassemble & remove stop valve internals
- 8.6.12.6.** Blast or hand clean & NDE stop valve components. Blasting will be at additional cost subject to City's approval.
- 8.6.12.7.** Check stop valve stem run-out
- 8.6.12.8.** Measure stop valve stem & bushings and record clearance
- 8.6.12.9.** Blue check stop valve main & pilot seats
- 8.6.12.10.** Lap stop valve seats as needed to obtain desired contact.
- 8.6.12.11.** Assemble stop valve internals
- 8.6.12.12.** Install stop valve strainer
- 8.6.12.13.** Install stop valve cover and torque bolts to specification
- 8.6.12.14.** Disassemble stop valve operator
- 8.6.12.15.** Clean and visually and dimensionally inspect stop valve operator
- 8.6.12.16.** Reassemble stop valve operator
- 8.6.12.17.** Make up stop valve and operator coupling

## **8.7. Generator**

- 8.7.1.** Generator Rotor
  - 8.7.1.1.** Install City supplied Generator removal tooling
  - 8.7.1.2.** Remove Generator rotor
  - 8.7.1.3.** Hand clean rotor
  - 8.7.1.4.** Visually inspect rotor body and dimensionally inspect journals
  - 8.7.1.5.** NDE retaining ring
  - 8.7.1.6.** Measure collector rings



**8.7.1.7.** Electrical test rotor (see generator section below for detailed inspection scope)

**8.7.1.8.** Install rotor

**8.7.2.** Generator Stator

**8.7.2.1.** Remove end bells and air baffles

**8.7.2.2.** Record air gap

**8.7.2.3.** Wipe down stator core and end windings

**8.7.2.4.** Complete visual inspection of core and windings

**8.7.2.5.** Customer to isolate lead connections

**8.7.2.6.** Electrically test Stator (see generator section below for detailed inspection scope)

**8.7.2.7.** Assemble Generator after installing field

**8.7.3.** Exciter

**8.7.3.1.** Remove Exciter enclosure

**8.7.3.2.** Unbolt and remove exciter from generator

**8.7.3.3.** Clean and electrical test

**8.7.3.4.** Inspect bearings as needed

**8.7.3.5.** Assemble to Generator rotor and align

**8.8. Miscellaneous Components**

**8.8.1.** Lubrication Oil System

**8.8.1.1.** Drain oil tank

**8.8.1.2.** Hand clean oil tank

**8.8.1.3.** Refill oil tank

**8.8.1.4.** Close up oil tank & seal

**8.8.1.5.** Remove the main oil pump

**8.8.1.6.** Disassemble the main oil pump

**8.8.1.7.** Perform internal inspection on main oil pump

- 8.8.1.8.** Reassemble main oil pump
  - 8.8.1.9.** Remove auxiliary oil pump
  - 8.8.1.10.** Disassemble auxiliary oil pump
  - 8.8.1.11.** Perform internal inspection of auxiliary oil pump
  - 8.8.1.12.** Reassemble auxiliary oil pump
  - 8.8.1.13.** Reinstall auxiliary oil pump
  - 8.8.1.14.** Remove auxiliary oil pump regulator
  - 8.8.1.15.** Disassemble auxiliary oil pump regulator
  - 8.8.1.16.** Perform internal inspection of auxiliary oil pump regulator
  - 8.8.1.17.** Reassemble auxiliary oil pump regulator
  - 8.8.1.18.** Disassemble & inspect oil pressure regulators
  - 8.8.1.19.** Reassemble oil pressure regulator
- 8.8.2.** Steam Seal Regulator
  - 8.8.2.1.** Remove & disassemble steam seal regulator
  - 8.8.2.2.** Clean inspect steam seal regulator
  - 8.8.2.3.** Assemble the steam seal regulator
  - 8.8.2.4.** Install and adjust the steam seal regulator
- 8.8.3.** Gland Exhaust
  - 8.8.3.1.** Remove spray camber
  - 8.8.3.2.** Clean out jet ejector spray chamber
  - 8.8.3.3.** Install repaired spray camber
- 8.8.4.** Overspeed trip testing
  - 8.8.4.1.** Prep rotor and ship to Contractor's Houston repair facility
  - 8.8.4.2.** Perform operating speed balance to Contractor's balance guidelines and test and set mechanical overspeed trip device
  - 8.8.4.3.** Prep and ship rotor back to DVR site

- 8.8.5.** Startup Services – Provide start up support for City’s performance of the following items:
  - 8.8.5.1.** City to remove system locks & tags
  - 8.8.5.2.** Assist City in performing checkout of emergency oil pumps and trip mechanisms outlined by the City
  - 8.8.5.3.** Assist City in stroking MSV and CV’s
  - 8.8.5.4.** Circulate oil for 12 hours thru 100 mesh screens
  - 8.8.5.5.** Remove screen and circulate oil
  - 8.8.5.6.** Warm up steam chest & lines
  - 8.8.5.7.** Roll machine up to speed
  - 8.8.5.8.** Check overspeed trip if required
- 8.8.6.** Demobilization
  - 8.8.6.1.** Move tools and equipment off the turbine deck
  - 8.8.6.2.** Clean work area
  - 8.8.6.3.** Ship tools
- 8.8.7.** Post- Demobilization
  - 8.8.7.1.** Submit final report to City with photographic record
  - 8.8.7.2.** Have post overhaul meeting for lessons learned

## **9. GENERATOR INSPECTION**

Contractor shall perform the following services:

### **9.1. Generator Assessment Program (GAP) Option 3 Inspections / Tests:**

- 9.1.1.** Turbine Generator Stator (TGS):
  - 9.1.1.1.** Visual inspection as accessible
  - 9.1.1.2.** Borescope inspection of core and end windings as accessible
  - 9.1.1.3.** Insulation resistance test on Resistance Thermal Detector (RTD's)/thermocouple as applicable
  - 9.1.1.4.** Resistance test on RTD's/continuity test on thermocouple as applicable

- 9.1.1.5. Insulation resistance test on stator windings
- 9.1.1.6. Winding copper resistance measurements on stator windings
- 9.1.1.7. Polarization index (PI) test on stator windings
- 9.1.1.8. Step voltage tests on stator windings (DC step voltage with high potential) to determine insulation integrity of stator windings
- 9.1.1.9. Power factor and tip-up test
- 9.1.1.10. Corona tests, as assessable, to determine areas and severity of any corona activity using corona camera
- 9.1.1.11. EI CID core test
- 9.1.1.12. Wedge tightness detection (WTD)
- 9.1.1.13. Bump test
- 9.1.2. Turbine Generator Rotor (TGR):
  - 9.1.2.1. Visual inspection as accessible
  - 9.1.2.2. Borescope inspection of end windings and blocking as accessible
  - 9.1.2.3. Insulation Resistance test on rotor windings
  - 9.1.2.4. Winding copper resistance measurements on rotor windings
  - 9.1.2.5. Polarization Index test on rotor windings
  - 9.1.2.6. AC Impedance test on rotor windings
  - 9.1.2.7. AC Pole Drop test on rotor windings if pole connections are accessible
- 9.1.3. Exciter
  - 9.1.3.1. Visual inspection as accessible
  - 9.1.3.2. Insulation resistance testing
  - 9.1.3.3. Diodes and fuses testing

**9.2. Turbine Generator Rotor (TGR) Rings Off Inspection and High Speed Balance:**

- 9.2.1. Transport the TGR from City site
- 9.2.2. Off-load the TGR at EthosEnergy Farmington New Mexico facility

- 9.2.3.** Perform incoming/initial visual inspections of the TGR
- 9.2.4.** Perform incoming inspections of the journals and seals
- 9.2.5.** Perform TIR's (total indicator run-outs)
- 9.2.6.** Perform incoming electrical inspection to include:
  - 9.2.6.1.** Insulation Resistance
  - 9.2.6.2.** Polarization Index
  - 9.2.6.3.** DC Winding Resistance
  - 9.2.6.4.** AC Impedance Test
  - 9.2.6.5.** Static Turn Insulation Integrity Test (STIIT)
  - 9.2.6.6.** Repetitive Surge Oscilloscope (RSO) testing
- 9.2.7.** Remove retaining rings utilizing induction heat
- 9.2.8.** Perform rings off electrical testing to include:
  - 9.2.8.1.** Insulation Resistance
  - 9.2.8.2.** Polarization Index
  - 9.2.8.3.** DC Winding Resistance
- 9.2.9.** Inspect the end windings with the blocking still in-place
- 9.2.10.** Conduct visual inspection of rotor components including rotor pole crossover and main lead
- 9.2.11.** Visually inspect the condition of all wedges
- 9.2.12.** Clean the rotor body exterior
- 9.2.13.** Clean and NDE the retaining rings and fans
- 9.2.14.** Install new tube style retaining ring insulation
- 9.2.15.** Install retaining rings
- 9.2.16.** Install fans if applicable
- 9.2.17.** High Speed Balance
  - 9.2.17.1.** A high-speed balance with running electrical testing shall be performed. A 10% over-speed run of 3,960 RPM shall be performed. Additionally, the following will be performed:

- 9.2.17.1.1. Balance to less than or equal to 2.0 mm/s RMS on either bearing at 3,600 RPM
- 9.2.17.1.2. At-Speed Running Megger tests
- 9.2.17.1.3. Running Impedance tests during acceleration and deceleration starting at 500 RPM with test (120 VAC) at 100 RPM increments to 3,600 RPM and back down in 100 RPM increments to 500 RPM
- 9.2.17.1.4. Running Impedance tests at speed (3,600 RPM) while varying the voltage from 10 VAC to 120 VAC
- 9.2.17.1.5. At speed Flux Probe test for turn-to-turn shorts in winding
- 9.2.17.2. Perform outgoing electrical testing to include:
  - 9.2.17.2.1. Insulation Resistance
  - 9.2.17.2.2. Polarization Index
  - 9.2.17.2.3. DC Winding Resistance
- 9.2.17.3. Perform outgoing mechanical inspections
- 9.2.17.4. Paint TGR utilizing approved insulating paint
- 9.2.17.5. Prepare TGR for shipment
- 9.2.17.6. Load out TGR

### **9.3. FINAL REPORT**

- 9.3.1. Standardized format provided electronically (electronic mail).
- 9.3.2. Photographs of critical areas in the stator winding, core, and rotor.
- 9.3.3. Summary of all insulation and winding resistance measurements taken.
- 9.3.4. Any anomalies reported immediately with the Final Report submitted within thirty (30) days of inspection.

## **10. SHOP SERVICES - TURBINE COMPONENTS**

Contractor shall perform the following shop services (the location of the shop shall be at the discretion of Contractor):

## **10.1. Turbine Rotor**

- 10.1.1.** Receive the rotor in the shop
- 10.1.2.** Visually inspect the rotor
  - 10.1.2.1.** Coupling face and rabbet fit
  - 10.1.2.2.** Coupling bolt holes
  - 10.1.2.3.** Journals
  - 10.1.2.4.** Wheels
  - 10.1.2.5.** Blades and covers
  - 10.1.2.6.** Rotor body
- 10.1.3.** Dimensional inspections:
  - 10.1.3.1.** Dimensionally inspect turbine rotor journals and provide dimensions to site personnel
  - 10.1.3.2.** Dimensionally inspect rabbet fit on Turbine-Generator coupling
- 10.1.4.** Seal rotor ends (journals and couplings) for blasting
- 10.1.5.** Blast clean turbine rotors with 220 grit aluminum oxide
- 10.1.6.** NDE complete turbine rotor using magnetic particles
- 10.1.7.** Visually inspect overspeed trip mechanism
- 10.1.8.** Take rotor runouts
- 10.1.9.** Report findings and recommendations to City
- 10.1.10.** Prep for shipping to City

## **10.2. Diaphragms and Shaft Packing Casings**

- 10.2.1.** Receive the diaphragms in the shop
- 10.2.2.** Visually inspect the diaphragms
  - 10.2.2.1.** Partition wear and Foreign Object Damage (FOD)
  - 10.2.2.2.** Steam cutting on seal faces
  - 10.2.2.3.** Other physical visual anomalies
- 10.2.3.** Blast clean using 220 grit aluminum oxide

- 10.2.4.** Non-destructive Examination (NDE) diaphragms complete using magnetic particle
- 10.2.5.** Dimensional inspection
  - 10.2.5.1.** Diaphragm dishing
  - 10.2.5.2.** Out of round condition
- 10.2.6.** Report any findings and recommendations to City
- 10.2.7.** Prep diaphragms for shipping to site

### **10.3. Control Valves (Qty 4)**

- 10.3.1.** Receive valves in the shop
- 10.3.2.** Disassemble
- 10.3.3.** Clean
- 10.3.4.** Inspect
- 10.3.5.** NDE
- 10.3.6.** Re-assemble
- 10.3.7.** Prep to ship

### **10.4. Repairs**

- 10.4.1.** To be determined after inspections

## **11. CONVENTIONAL PACKING REPLACEMENT**

### **11.1. Shop Services – Seal Manufacturing**

- 11.1.1.** Manufacture 27 rows of conventional packing
  - 11.1.1.1.** Inlet Gland Rows 1-14
  - 11.1.1.2.** Exhaust Gland Rows 1-3
  - 11.1.1.3.** Stages 2-11
  - 11.1.1.4.** Springs for conventional packing are assumed to be reused and are not included.



## **11.2. Pre-measurement**

- 11.2.1.** Perform a new pre-measurement on packing holders and rotor prior to final machining of the seals to ensure the current condition of the machine is known and seals are sized appropriately.
- 11.2.2.** Perform distortion assessment of packing locations for Contractor provided seals.
- 11.2.3.** Assessment is estimated to be thirty (30) man-hours at the project site.
- 11.2.4.** Pre-measurement is estimated to take three (3) shifts.

## **11.3. Installation of Packing**

- 11.3.1.** Perform installation of Contractor-provided packing rings
- 11.3.2.** Service includes machining of the butt clearances, machining of the retaining pin slots and installation of the seal rings into the holders
- 11.3.3.** Installation service of packing is estimated to be one hundred and fifty (150) man-hours at the project site, including shift standby time.
- 11.3.4.** Installation is estimated to take six (6) shifts.

## **11.4. City shall provide the following:**

- 11.4.1.** Supply of butt key screws
- 11.4.2.** Supply of springs for conventional packing
- 11.4.3.** Electrician and/or access to 480-volt electrical service.

## **12. LAST STAGE BLADE REPLACEMENT**

- 12.1.** Based on recent Borescope Inspects, City is aware of some erosion on the L-0 blades. Contractor shall replace the L-0 blades.
  - 12.1.1.** Contractor shall assume the following:
    - 12.1.1.1.** 25" airfoil
    - 12.1.1.2.** 5.75" root (wheel) width
    - 12.1.1.3.** 4.42" shroud pitch
    - 12.1.1.4.** Pitch count of 80
    - 12.1.1.5.** 17-4PH blade material

- #### 12.1.2.11. Clean blade row

### 13. EXTRA WORK

Upon City's approval, Contractor shall provide the following:

### 13.1. Retractable Packing Upgrade

- 13.1.1.2.1. Total HP/IP kW Gain: 1,300**

### 13.1.1.3. Estimated Heat Rate Improvement

**13.1.1.3.1.** Total Turbine Heat Rate Impact: 35 Btu/kWh

#### 13.1.1.4. Estimated Annual Fuel Savings: \$100,000

### 13.1.2. Shop Services – Seal Manufacturing

#### 13.1.2.1. Manufacture 9 rows of conventional packing

#### 13.1.2.1.1. Inlet Gland Rows 1-6

#### 13.1.2.1.2. Exhaust Gland Rows 1-3

**13.1.2.1.3.** Elliptical modifications based on pre-measurement will be \$750 per row

**13.1.2.1.4.** Springs for conventional packing are assumed to be reused and are not included.

**13.1.2.2.** Manufacture 18 rows of retractable packing and springs

#### 13.1.2.2.1. Inlet Gland Rows 7-14

#### 13.1.2.2.2. Stages 2-11

**13.1.2.2.3.** All retractable packing is provided with springs

**13.1.2.2.4.** Elliptical modifications based on pre-measurement will be \$750 per row

### 13.1.3. Pre-measurement

**13.1.3.1.** A new pre-measurement will be performed on packing holders and rotor prior to final machining of the seals to ensure the current condition of the machine is known and seals are sized appropriately.

**13.1.3.2.** Perform distortion assessment of packing locations for seals provided by Contractor.

**13.1.3.3.** Assessment is estimated to be thirty (30) man-hours at the project site.

**13.1.3.4.** Pre-measurement is estimated to take three (3) shifts.

#### 13.1.4. Installation of Packing

**13.1.4.1. Perform installation of packing rings provided by Contractor.**

- 13.1.4.2.** Service includes machining of the butt clearances, machining of the retaining pin slots and installation of the seal rings into the holders.
- 13.1.4.3.** Installation service of packing is estimated to be one hundred and fifty (150) man-hours at the project site, including shift standby time.
- 13.1.4.4.** Installation is estimated to take six (6) shifts.
- 13.1.4.5.** CNC Mill/ material freight costs associated with the pre-measurement and installation of Contractor provided seals are not included and will be billed at cost plus 15% markup.
- 13.1.4.6.** Additional travel costs associated with delays caused by the City or additional work will be invoiced at cost plus 15%.

**13.1.5.** City shall provide the following:

- 13.1.5.1.** Notification of turbine upper half (cover) removal date at least fourteen (14) days prior to the planned removal.
- 13.1.5.2.** Crane and rigger to set up tooling and seal ring holders for pre-measurement and installation of shaft and tip seals. In order to minimize crane time and standby time, City should place diaphragms and seal holders in a horizontal, joint upward (U) orientation. This is facilitated by a simple floor rack constructed of "two-by-fours".
- 13.1.5.3.** Blast clean diaphragms
- 13.1.5.4.** Supply of butt key screws
- 13.1.5.5.** Supply of springs for conventional packing
- 13.1.5.6.** Removal of all turbine components: HP/IP rotor, diaphragms and gland boxes.
- 13.1.5.7.** Electrician and/or access to 480-volt electrical service.
- 13.1.5.8.** Craft labor (1 person) to assist as required for all on site work
- 13.1.5.9.** Water, washroom, telephone and fax facilities for use by installation personnel.
- 13.1.5.10.** Notification of target alignment completion and rotor install date.

**13.1.6.** Contractor shall review opening radial and axial clearances at the beginning of the project. Contractor shall provide feedback related to any conditions that may warrant further examination by the City. Contractor will review with City the final closing radial and axial clearances.

Contractor shall provide advice based on measured clearances, design clearances, and our experience. However, final alignment, including axial packing position, will be the responsibility of the open/close contractor. Opening and closing clearances are to be provided by the City for Contractor's review.

**13.2. Additional Extra Work as approved by the City.**

**14. FINAL SYSTEM ACCEPTANCE**

**14.1. Acceptance Tests**

**14.1.1.** Contractor shall submit an acceptance test procedure for City's approval at least two (2) weeks prior to start of the acceptance test. The acceptance test procedure must include at a minimum the following:

**14.1.1.1.** Mechanical overspeed test

**14.1.1.2.** Synchronization in automatic mode

**14.1.1.3.** Unit balancing

**14.1.1.4.** Operation on vacuum pumps to maintain vacuum

**14.1.1.5.** Unit is capable of operating continuously at base load

**14.1.1.6.** Electronic over-speed test completed

**14.1.1.7.** Power check

**14.1.1.8.** Functionality check (startup, ramp rate, trip test, shutdown)

**14.1.1.9.** Leak checks

**14.1.2.** The final system acceptance shall begin upon completion of the commissioning period after all errors have been corrected.

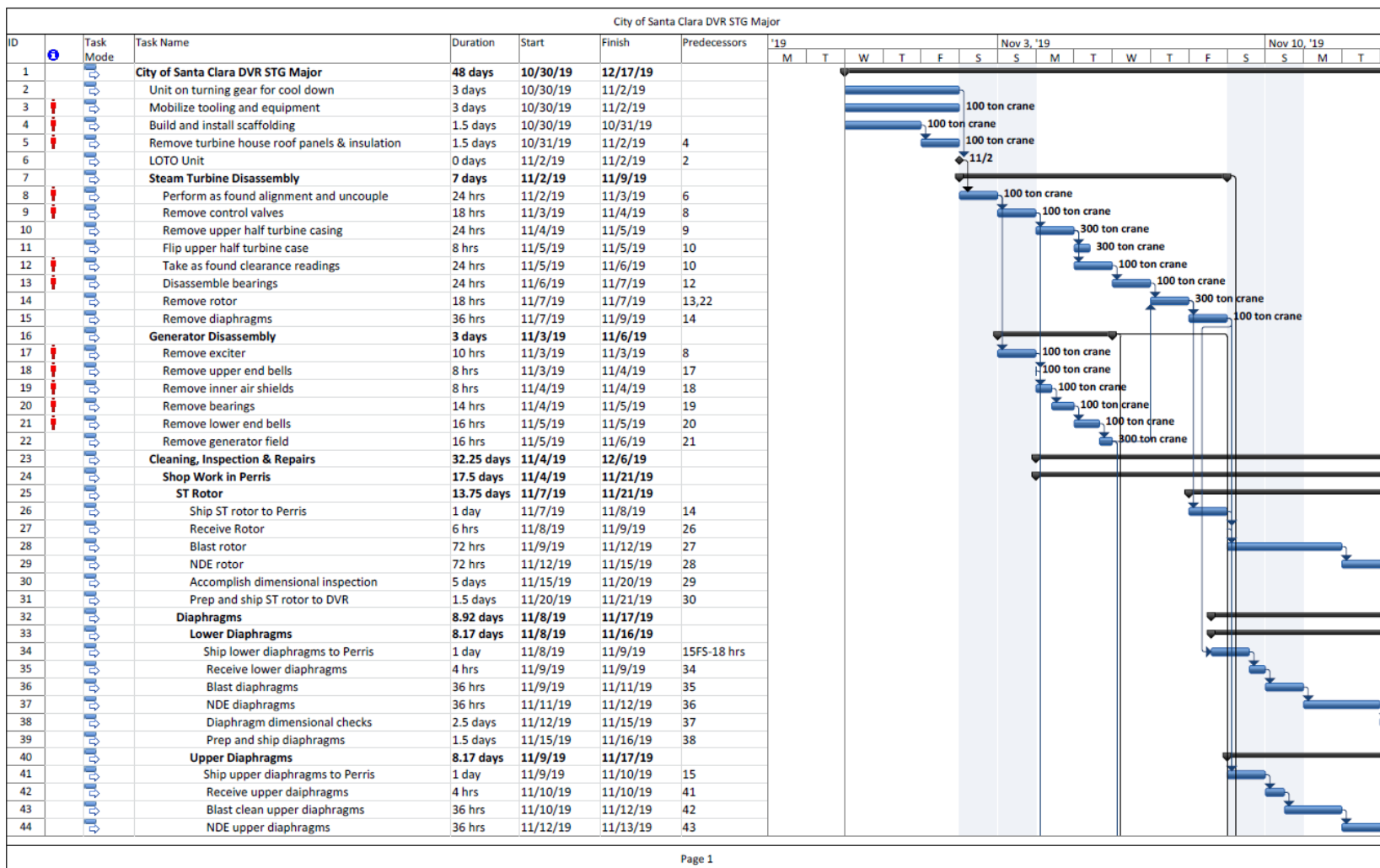
**14.1.3.** Contractor shall provide a comprehensive report to City that includes the results of the acceptance tests as well as any corrective action items. The corrective action report shall show the status of all outstanding issues, including the plan for resolution and estimated completion date.

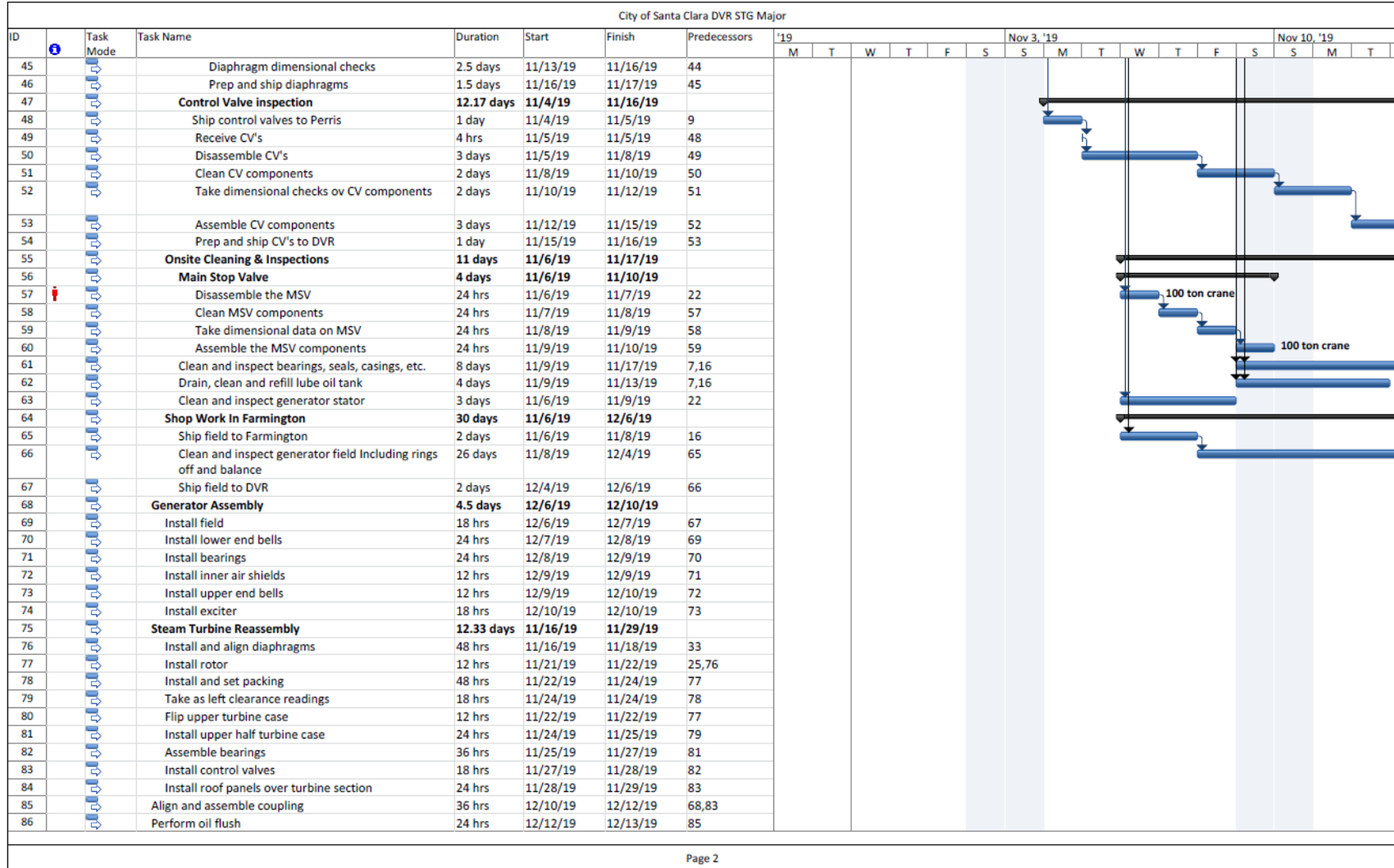
**14.2. Final System Acceptance**

**14.2.1.** Final system acceptance will be issued by the City, in writing to Contractor, upon successful completion of the acceptance tests and completion of all outstanding corrective actions.






## APPENDIX A-1 PRELIMINARY PROJECT SCHEDULE

The project schedule will proceed in accordance with this Preliminary Project Schedule set forth on the following page, except as may be modified into a Final Project Implementation Schedule that is approved by the City. The Final Project Implementation Schedule will become the governing project schedule incorporated into the Agreement.





City of Santa Clara DVR STG Major

ID	 Task Mode	Task Name	Duration	Start	Finish	Predecessors	'19					Nov 3, '19					Nov 10, '19					
87		Insulate turbine	24 hrs	12/12/19	12/13/19	85	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T
88		Install remaining roof panels	24 hrs	12/13/19	12/14/19	87																
89		Unit on gear	1 day	12/13/19	12/14/19	87																
90		Start up unit	3 days	12/14/19	12/17/19	88,89																

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## APPENDIX A-2

### FINAL SYSTEM ACCEPTANCE CERTIFICATE

After the City is satisfied with all test results and resolutions, the City will initiate execution of the Final System Acceptance Certificate.

Customer Name: **City of Santa Clara ("City")**

Project Name: **Mitsubishi Steam Turbine and Generator Inspection and Overhaul Services**

This Final System Acceptance Certificate memorializes the occurrence of System Acceptance.

Contractor and the City acknowledge that:

1. Contractor has completed all Deliverables promised under this Agreement.
2. The Mitsubishi Steam Turbine and Generator is accepted, and all punch list items generated during testing have been completed.
3. By acknowledging the Final Acceptance of the System, the City agrees to pay any remaining and approved outstanding invoices to Contractor, including previously withheld retainage.

**City of Santa Clara  
("City")**

**EthosEnergy Field Services, LLC  
("Contractor")**

By: \_\_\_\_\_ By: \_\_\_\_\_

Name: \_\_\_\_\_ Name: \_\_\_\_\_

Title: \_\_\_\_\_ Title: \_\_\_\_\_

Date: \_\_\_\_\_ Date: \_\_\_\_\_

**EXHIBIT B**  
**COMPENSATION AND PAYMENT SCHEDULE**

**1. MAXIMUM COMPENSATION**

- 1.1. The maximum amount payable for all materials and services provided under this Agreement shall not exceed **Four Million Five Hundred Thirty-Eight Thousand Fifty-Seven Dollars (\$4,538,057)** during the term of the Agreement. Any additional services or materials requested by the City that would exceed the preceding maximum amount will be addressed in an Amendment to the Agreement. No additional services will be performed unless both Parties execute an Amendment outlining the services requested and the compensation agreed for such services.

**Table B-1: Maximum Compensation Summary**

<b>Description</b>	<b>Total</b>
Firm Fixed Price (see Section 4 below)	\$2,669,207
Extra Work (see Section 5 below)	\$1,868,850
<b>Maximum Compensation</b>	<b>\$4,538,057</b>

**2. LIQUIDATED DAMAGES**

**IF CONTRACTOR DOES NOT COMPLETE ITS WORK BY DECEMBER 15, 2019, PLUS ANY EXTENSIONS GRANTED BY CITY IN WRITING, DAMAGES WILL BE SUSTAINED BY CITY AND IT IS AND WILL BE IMPRACTICAL AND EXTREMELY DIFFICULT TO ASCERTAIN THE ACTUAL DAMAGES WHICH CITY WILL SUSTAIN IN THE EVENT OF AND BY REASON OF SUCH DELAY. IT IS THEREFORE AGREED THAT THE CONTRACTOR SHALL PAY TO CITY THE SUMS STIPULATED FOR DELAYS IN FINISHING ITS WORK BEYOND THE TIMES OF COMPLETION SPECIFIED; AND THE CONTRACTOR AGREES TO PAY THESE LIQUIDATED DAMAGES, AND FURTHER AGREES THAT CITY MAY DEDUCT THE AMOUNT THEREOF FROM ANY MONEYS DUE OR THAT MAY BECOME DUE THE CONTRACTOR UNDER THE AGREEMENT. ANY SUCH LIQUIDATED DAMAGES PAYABLE BY CONTRACTOR SHALL NOT EXCEED, IN THE AGGREGATE, TEN PERCENT (10%) OF THE CONTRACT PRICE.**

**LIQUIDATED DAMAGES IN THE AMOUNT OF \$25,000 FOR EACH CALENDAR DAY OF DELAY WILL BE IMPOSED ON CONTRACTOR.**

**3. PAYMENT SCHEDULE**

- 3.1. Progress payments shall be made to Contractor by City in accordance with the payment schedule set forth in Table B-2.
- 3.2. All payments are based upon City's acceptance of Contractor's performance as evidenced by successful completion of all of the deliverables as set forth for each

milestone. City shall have no obligation to pay unless Contractor has successfully completed and City has approved the milestone for which payment is due.

- 3.3.** City may inspect the components of the system when delivered and reject upon notification to Contractor any and all the system, which does not conform to the specifications or other requirements of this Agreement. Components of the system, which are rejected shall be promptly corrected, repaired, or replaced by Contractor. If City receives components of the system with defects or nonconformities not reasonably apparent on inspection, then City reserves the right to require prompt correction, repair, or replacement by Contractor in accordance with Contractor's warranty obligations.
- 3.4.** The City shall withhold a retainage equal to twenty percent (20%) of each payment deliverable preceding the final acceptance test. This accumulated amount shall be paid to Contractor upon completion of Final System Acceptance as evidenced by execution of the Final Acceptance Certificate (Appendix A-2).

**Table B-2: Payment Schedule**

<b>Cost Element</b>	<b>Estimated Completion Date</b>	<b>Payment</b>
<b>Firm Fixed Price</b>		
- Contract Award; Kick-off Meeting	9/1/19	\$266,920.70
- Completion of Work	12/15/19	\$2,402,286.30
<b>Extra Work as approved by the City and in accordance with Section 5 of this Exhibit</b>	-	\$1,868,850.00
<b>PAYMENTS (NOT-TO-EXCEED AMOUNT)</b>		<b>\$4,538,057.00</b>

**SEE NEXT PAGE**

#### 4. FIRM FIXED PRICE FOR SERVICES & REQUIREMENTS

Contractor shall perform the services specified in Exhibit A on a firm fixed cost basis as set forth in Table B-3 below.

**Table B-3: Price List - Firm Fixed Cost**

<b>Onsite Services</b>	<b>Fixed Cost</b>
Project Management	\$46,800.00
On-site Supervisors / Technical Leads	\$312,000.00
On-site Safety Manager	\$68,322.00
On-site Craft Labor, Tooling & Equipment	\$1,551,128.00
On-site Materials	\$3,059.00
GAP 3 Stator Inspections/Tests Labor & Tooling	\$21,268.00
Load Testing of OEM Rotor Lifting Beam and Slings	\$6,000.00
GAP 3 Stator Inspections/Tests Materials	\$4,472.00
<b>Subtotal</b>	<b>\$2,013,049.00</b>
<b>Generator Shop Services</b>	
TGR Rings Off Inspection & High Speed Balance Labor & Tooling	\$93,104.00
TGR Rings Off Inspection & High Speed Balance Materials	\$42,460.00
Freight is billed at actual cost + 15%.	\$9,880.00
<b>Subtotal</b>	<b>\$145,444.00</b>
<b>Turbine Shop Services</b>	
Rotor Inspection	\$49,569.00
Diaphragm Inspection	\$64,493.00
Control Valves Inspection	\$68,849.00
Packing Casing Inspection	\$31,314.00
Freight is billed at actual cost + 15%. Cost includes rotor stand. Additional cost for rotor removal tooling including skid pan, shoe, tombstone if City cannot provide.	\$31,159.00
<b>Subtotal</b>	<b>\$245,384.00</b>
<b>Last Stage Blade Replacement Removal and Installation (City to provide blades)</b>	<b>\$109,850.00</b>
<b>Conventional Packing Replacement Labor</b>	<b>\$93,288.00</b>
<b>Conventional Packing Replacement Materials</b>	<b>\$62,192.00</b>
<b>TOTAL FIRM FIXED PRICE</b>	<b>\$2,669,207.00</b>

## **4.1. Assumptions and Clarifications**

### **4.1.1. Onsite Services**

- 4.1.1.1.** Lay down plan assumes roof panel and back wall will be stored in the DVR switch yard.
- 4.1.1.2.** Price is based on using union millwright labor.
- 4.1.1.3.** Price includes expending maximum efforts on the removal of problem bolting; however, destructive removal of bolting 3/4" and larger will be at extra cost. Price includes normal bolt removal for all bolting associated with disassembly as defined by the specification. (Normal bolt removal is defined as soaking the bolts of studs with penetrating oil and applying enough force to remove the nut or bolt.) Twenty-four (24) man-hours of small bolt (smaller than 3/4") destructive removal are included in the fixed price. Additional man-hours will also be considered Extra Work.
- 4.1.1.4.** Price includes direct exchange of parts; however, disassembly and re-assembly beyond the normal scope of work, such as welding, machining or hand fitting of components to make them fit/work will be considered Extra Work.
- 4.1.1.5.** Price assumes that there is no asbestos or lead contaminates on the unit. Removal and disposal of contaminates shall be the responsibility of the City.
- 4.1.1.6.** Foreign Material Exclusion level 1 & Safety Plan is per Contractor's procedures.
- 4.1.1.7.** City may be subject to additional costs for additional supervision and labor costs (including wages and per diem, rental cars, and third party rentals such as office trailer, phone service, safety clean, scaffolding, etc. ) beyond the Project Schedule completion date if due to City's delay.
- 4.1.1.8.** Project schedule may vary due to emergent work.
- 4.1.1.9.** Asbestos remediation is not included in the price. In the event asbestos is found in the work area, City will have complete responsibility for licensed remediation work.
- 4.1.1.10.** Any delays due to acts of God, gas release, and delays caused by breakdowns of City-supplied items will be considered Extra Work.
- 4.1.1.11.** Price includes standard honing and wire brushing of all vertical and horizontal joints. This assumption is based on the joints being in good to fair condition. Any mars, cracks, or missing

materials that will require repair would be considered as Extra Work.

- 4.1.1.12. Three (3) days of start up support is included in the price. Startup is to be performed immediately following mechanical completion. Any delays or if an additional mobilization/demobilization is required will be considered as Extra Work unless any such delays or additional mobilization/demobilization is caused by Contractor.

#### **4.1.2. Shop Services**

- 4.1.2.1. Price is for inspection services only and does not include any repairs. All repairs will be considered as Extra Work.
- 4.1.2.2. Price includes normal blast cleaning using 220 grit aluminum oxide. Excessive build-up of particle deposits will increase duration and will be considered Extra Work. Customer will be notified immediately upon receipt of parts.
- 4.1.2.3. Price does not include new parts hardware for valves.
- 4.1.2.4. Price assumes normal disassembly of valves. To remove parts that are frozen, broken, or damaged will be considered Extra Work
- 4.1.2.5. If metallurgical inconsistencies are encountered while machining and/or welding, an estimated duration will be increased and time & material rates will apply to remove anomalies.

#### **4.1.3. Mitsubishi Product Bulletin Clarifications**

- 4.1.3.1. MSTB-001: Contractor has included standard “in place” NDE(MT and PT) and visual inspection of the rotor and stationaries as part of price.
- 4.1.3.2. ASTM1-16001-C: Contractor has included standard “in place” NDE (MT and PT) and visual inspection of “wet stage blades”. Last stage blade removal will be included in the price (base scope or via change order). No phased array, UT or similar inspection is provided in pricing but can be provided by Contractor as Extra Work.
- 4.1.3.3. ASTM1-16002-C: Contractor has included standard “in place” NDE (MT) and visual inspection on HP/IP Blades as part of the price.
- 4.1.3.4. ASTM1-16003-M: Contractor has included standard NDE (MT) and visual inspection on control stage nozzle. Nozzle will go through standard dimensional checks and TIRs. Should

additional measurements be required as part of the product bulletin, they may be subject to additional charges. No replacement or repair to the nozzle is included in the price and would be considered Extra Work.

- 4.1.3.5.** ASTMI-16008-C: Contractor has included NDE, visual inspection, gap checks and lift checks on the rotor blades and stationary blades. Diaphragms will be measured for dishing and communicated to the client. Ethos would consider this to be for baseline purposes as no trend data exists. Contractor will provide final reports so these parts can be trended moving forward.
- 4.1.3.6.** ASTMI-16009-C: Contractor has included NDE MT, UT and measurement of the shroud for detachment on R1 Blades. Should cracks be found, replacement blades would be considered Extra Work. Contractor has experience with the redesign of high temperature MHI blades.
- 4.1.3.7.** ATMI-17001-C: It is assumed that all bearings will be repoured/rebabbited as part of the price. Should any bearings be deemed unrepairable, replacement bearings would be considered Extra Work.
- 4.1.3.8.** ASTMI-17003-M: Visual inspection of tubes and hoses is included, assuming additional disassembly is not required to access hoses/tubes. Replacement hoses/tubes and labor would be considered Extra Work.
- 4.1.3.9.** MSTB-009: PT of the erosion shields is included in base scope, repair or replacement of the erosion shields will be considered extra work. Removal and replacement of city-supplied L-0 removal/replacement is anticipated to be included in base scope or change order, L-1 would be extra work. City is responsible for all locking hardware and material. L-1 blades, associated hardware, and removal/replacement of L-1 blades would be considered Extra Work.
- 4.1.3.10.** MSTB-018: Contractor intends to use high temperature greases where applicable.
- 4.1.3.11.** MSTB-020: Price includes visual inspection PT and thread gage checkson 20% of threads in high temperature areas. Hardness testing will be applied in non sealing areas as close as possible to the threaded area. Replacement hardware or repairs will be considered Extra Work.
- 4.1.3.12.** MSTB-023: Price assumes that grounding brushes have been already replaced by the City.

- 4.1.3.13.** MSTB-031: Price includes dimensional and visual inspection of the turning gear. PT on the gears and teeth is included, contractor takes exception to MT but can be provided as extra work. Any repairs or replacement parts will be considered Extra Work.
- 4.1.3.14.** MSTB-050: Price includes removal of current oil and hand clean of the tanks. Contractor will provide City with oil sample for examination. Price includes verification that oil heater is operating properly. Price assumes that oil will be reused. Replacement oil and additional flushing or filtering will be considered extra work.
- 4.1.3.15.** MSTB-054: Contractor shall verify which valves have a lift bar mechanism. Any valve replacement or redesign will be considered Extra Work. City to confirm that this scope is required.
- 4.1.3.16.** MSTB-055: Contractor shall verify that the existing generator space heaters are properly operating. Replacement/Repair/Upgrade to the existing system (including controls modification) will be considered Extra Work.
- 4.1.3.17.** MSTB-056: Price includes visual inspection, application of anticorrosive varnish and application of red varnish to generator rotor bolting. Replacement of rotor bolting will be considered Extra Work.
- 4.1.3.18.** MSTB-066: Contractor shall verify that City PD tester is operating properly pre/post outage. Repairs or replacement of online PD test equipment, OEM TFA support on PD test equipment, and repairs/replacement to generator components to reduce PD will be considered Extra Work.
- 4.1.3.19.** MSTB-067: Price includes visual inspection, application of anticorrosive varnish, and application of red varnish to generator rotor end plates. Replacement of rotor end plates will be considered extra work.
- 4.1.3.20.** MSTB-068: Price includes removal of blower keeper rings and visual inspection and application of anticorrosive varnish. Replacement of blower keeper rings will be considered Extra Work.
- 4.1.3.21.** STUP-16004-C: Price does not include replacement of coupling bolting to hydraulic taper sleeve coupling bolting. Ethos will take as found readings during disassembly and provide an offer for future work.



- 4.1.3.22.** STUP-17001-C: Price includes visual inspection of the exhaust flow guide. Repair, replacement, or shop work will be considered Extra Work.
- 4.1.3.23.** MSTB-063: Contractor will provide lift plans for City review, through the Safety Manager. Lift plans will not be stamped and will be per Contractor's rigging/lifting standard procedure. Procedure can be reviewed per City's request.
- 4.1.3.24.** MSTB-051: This technical bulletin is not applicable to this work.

#### **4.1.4. Generator**

- 4.1.4.1.** Asbestos and/or lead remediation for any work scope is not included. In the event asbestos and/or lead is found in the work area, City will have complete responsibility for licensed remediation work unless the work is performed offsite. Asbestos and/or lead remediation will be considered as Extra Work.
- 4.1.4.2.** Any delays due to acts of God, gas release and delays caused by breakdowns of City-supplied items will be considered Extra Work.
- 4.1.4.3.** Pricing is based on the winding polarization index test results being acceptable. Any delays due to improving the polarization index will be considered Extra Work.
- 4.1.4.4.** No man hours have been allotted to clean the generator as part of the base scope. Any cleaning required will be charged as an extra.
- 4.1.4.5.** City will be responsible for disconnecting and reconnecting the main and neutral leads.
- 4.1.4.6.** Offsite generator rotor inspection:
  - 4.1.4.6.1.** Price does not include any time to remove the rotor coupling. Should this rotor contain a removable coupling and removal is required, Contractor will perform this operation (removal and re-installation) as Extra Work.
  - 4.1.4.6.2.** Forty-eight (48) man hours have been allotted to remove the retaining rings as part of the rings off inspection. Should the retaining rings require additional time to remove, outside of EthosEnergy workmanship; this additional time will be charged as an extra.

- 4.1.4.6.3.** Plating will be considered Extra Work.
- 4.1.4.6.4.** Pricing for the high speed balancing is based on Contractor having the balance bearings required to high speed balance the rotor currently in inventory. Should new balance bearings be required, this will be considered Extra Work.

## 5. EXTRA WORK

The City has set aside the maximum amount of **One Million Eight Hundred Sixty-Eight Eight Hundred Fifty Dollars (\$1,868,850)** for the payment of additional materials, services, and repairs ("Extra Work") as may be required and approved by the City. Any Extra Work requested by the City that would exceed the maximum amount will be addressed in an Amendment to this Agreement.

The City reserves the right to request a fixed priced quote in lieu of time and materials.

Contractor shall provide Extra Work at the rates listed in the tables below or its current best government rates, whichever is less.

Any changes to the Project Schedule due to performance of Extra Work shall be approved by the City in writing. Contractor shall make all reasonable efforts to mitigate the impact on the Project Schedule.

### 5.1. Extra Work

**Table B-4: Extra Work**

Description	Impact on Schedule	Estimated Cost
<b>Retractable Packing Upgrade</b>	Contractor estimates that this will have no impact on the schedule.	\$20,000.00
<b>Shipment of Upgraded Packing and Onsite CNC Mill</b>	Contractor estimates that this will have no impact on the schedule.	\$10,000.00
<b>Shipment of Rotor to Houston Service Shop and Balance</b>	Contractor estimates that this will have 3 to 7 days impact on the schedule.	\$35,000.00
<b>Generator Hand Stator Cleaning</b>	Contractor estimates that this will have no impact on the schedule.	\$8,850.00
<b>Standard steam path and generator repairs.</b> This would include rotor, diaphragms, valve, light case work and generator minor rotor and stator repairs.	Contractor estimates that this will have 5 to 20 days impact on the schedule.	\$650,000.00
<b>L-1 Blade Replacement.</b> This includes removal, manufacture, and installation of last stage blades with locking hardware kit. This includes also the low speed balance in the service shop.	Contractor estimates this will have 14 to 16 weeks impact on the schedule.	\$500,000.00

Description	Impact on Schedule	Estimated Cost
<b>Rotor Rewind and High Speed Balancing with Heat Run</b>	Contractor estimates this will have 14 days impact on the schedule.	\$500,000.00
<b>Coupling Bolt Upgrade.</b> This includes the redesign/engineering cost, replacement hardware, special tooling and installation of new hardware.	Typical lead time for manufacturing of the hardware is 16 to 18 weeks. The City understands that this upgrade will impact the schedule.	\$115,000.00
<b>Tubes and Hoses.</b> This estimate assumes that the parts are easily accessible and that the fittings are of a standard configuration.	Contractor estimates that this will have no impact on the schedule.	\$20,000.00
<b>Casing and Valve Hardware Hardness Testing.</b> Contractor will perform hardness testing on a portion of the HP casing/valve hardware. Contractor will test flat areas on the end of the bolts. City will provide procedure/ spec for hardness testing of the threaded areas.	Contractor estimates that this will have no impact on the schedule.	\$10,000.00

## 5.2. Additional Services on Time and Material Rates

**Table B-5: Time and Material Rates**

Hourly Rates	Straight Time	Overtime	Double Time
Shift	Days/Nights	Days/Nights	Days/Nights
Project Manager	\$133.00	\$176.00	\$218.00
General Foreman	\$130.00	\$171.00	\$212.00
Working Foreman	\$127.00	\$167.00	\$207.00
Journeyman Millwright	\$114.00	\$148.00	\$181.00
8 <sup>th</sup> Period Apprentice	\$114.00	\$148.00	\$181.00
7 <sup>th</sup> Period Apprentice	\$114.00	\$148.00	\$181.00
6 <sup>th</sup> Period Apprentice	\$110.00	\$142.00	\$174.00
5 <sup>th</sup> Period Apprentice	\$106.00	\$136.00	\$166.00
4 <sup>th</sup> Period Apprentice	\$88.00	\$116.00	\$144.00
3 <sup>rd</sup> Period Apprentice	\$84.00	\$111.00	\$137.00
2 <sup>nd</sup> Period Apprentice	\$75.00	\$100.00	\$124.00
1 <sup>st</sup> Period Apprentice	\$68.00	\$90.00	\$113.00
Shop Field Support	\$114.00	\$148.00	\$181.00

<b>Hourly Rates</b>	<b>Straight Time</b>	<b>Overtime</b>	<b>Double Time</b>
Steam Path Technician/Machinist	\$150.00	\$225.00	\$300.00
Technical Field Advisor	\$200.00	\$300.00	\$300.00
Engineer	\$235.00	\$353.00	\$470.00
% Material /Third-Party Services Markup	15%		

- 5.2.1.** The above rates include wages, benefits, payroll taxes, workers' compensation, overhead, all tools except special tools and equipment, product liability, general automotive liability and all other required insurances, permits and taxes. This does not include state sales or use taxes.
- 5.2.2.** Apprentices may be used on any crew consisting of at least three men subject to their qualifications and availability.
- 5.2.3.** All service trucks will be billed at sixteen dollars (\$16.00) per hour to cover the cost of the truck, maintenance and fuel.
- 5.2.4.** Consumables, such as gloves, cleaning solvents, penetrating oil, PPE (hard hats, safety glasses, and earplugs), rags, tape, parts buckets, etc. will be billed at \$20.00 per day per man on the time sheet.
- 5.2.5.** Overtime shall be charged for all work over eight (8) hours a day on weekdays and for the first 8 hours of work performed on Saturdays.
- 5.2.6.** Double time shall be charged for all work over 8 hours a day on Saturdays and all work performed on Sundays or the following designated holidays: New Year's Day, Martin Luther King's Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the day after Thanksgiving Day, and Christmas Day.
- 5.2.7.** Travel time for transferred employees will be charged on a straight time basis for actual hours traveled if applicable. Subsistence for non-local labor will be charged at the rate of \$125.00 (includes hotel cost) per day, per man. Subsistence will be paid to employees living 75 miles or more from the job site.
- 5.2.8.** There shall be a minimum four-hour charge per man at the applicable rate for show-up time whether work is performed or not. There shall be a minimum eight-hour charge per man at the applicable rate if he works more than four hours.
- 5.2.9.** All additional materials, rentals, freight, 3rd-party subcontracts, transportation, and travel expenses shall have 15% handling charge.

## **EXHIBIT C**

### **INSURANCE REQUIREMENTS**

Without limiting the Contractor's indemnification of the City, and prior to commencing any of the Services required under this Agreement, the Contractor shall provide and maintain in full force and effect, at its sole cost and expense, the following insurance policies with at least the indicated coverages, provisions and endorsements:

#### **A. COMMERCIAL GENERAL LIABILITY INSURANCE**

1. Commercial General Liability Insurance policy which provides coverage at least as broad as Insurance Services Office form CG 00 01. Policy limits are subject to review, but shall in no event be less than, the following:  
  
\$2,000,000 Each occurrence  
\$2,000,000 General aggregate  
\$2,000,000 Products/Completed Operations aggregate  
\$2,000,000 Personal Injury
2. Exact structure and layering of the coverage shall be left to the discretion of Contractor; however, any excess or umbrella policies used to meet the required limits shall be at least as broad as the underlying coverage and shall otherwise follow form.
3. The following provisions shall apply to the Commercial Liability policy as well as any umbrella policy maintained by the Contractor to comply with the insurance requirements of this Agreement:
  - a. Coverage shall be on a "pay on behalf" basis with defense costs payable in addition to policy limits;
  - b. There shall be no cross liability exclusion which precludes coverage for claims or suits by one insured against another; and
  - c. Coverage shall apply separately to each insured against whom a claim is made or a suit is brought, except with respect to the limits of liability.

#### **B. BUSINESS AUTOMOBILE LIABILITY INSURANCE**

Business automobile liability insurance policy which provides coverage at least as broad as ISO form CA 00 01 with policy limits a minimum limit of not less than one million dollars (\$1,000,000) each accident using, or providing coverage at least as broad as, Insurance Services Office form CA 00 01. Liability coverage shall apply to all owned, non-owned and hired autos.

#### **C. WORKERS' COMPENSATION**

1. Workers' Compensation Insurance Policy as required by statute and employer's liability with limits of at least one million dollars (\$1,000,000) policy limit Bodily Injury by disease, one million dollars (\$1,000,000) each accident/Bodily Injury and one million dollars (\$1,000,000) each employee Bodily Injury by disease.

2. The indemnification and hold harmless obligations of Contractor included in this Agreement shall not be limited in any way by any limitation on the amount or type of damage, compensation or benefit payable by or for Contractor or any subcontractor under any Workers' Compensation Act(s), Disability Benefits Act(s) or other employee benefits act(s).
3. This policy must include a Waiver of Subrogation in favor of the City of Santa Clara, its City Council, commissions, officers, employees, volunteers and agents.

D. COMPLIANCE WITH REQUIREMENTS

All of the following clauses and/or endorsements, or similar provisions, must be part of each commercial general liability policy, and each umbrella or excess policy.

1. Additional Insureds. City of Santa Clara, its City Council, commissions, officers, employees, volunteers and agents are hereby added as additional insureds in respect to liability arising out of Contractor's work for City, using Insurance Services Office (ISO) Endorsement CG 20 10 11 85 or the combination of CG 20 10 03 97 and CG 20 37 10 01, or its equivalent.
2. Primary and non-contributing. Each insurance policy provided by Contractor shall contain language or be endorsed to contain wording making it primary insurance as respects to, and not requiring contribution from, any other insurance which the Indemnities may possess, including any self-insurance or self-insured retention they may have. Any other insurance Indemnities may possess shall be considered excess insurance only and shall not be called upon to contribute with Contractor's insurance.
3. General Aggregate. The general aggregate limits shall apply separately to Contractor's work under this Agreement providing coverage at least as broad as Insurance Services Office (ISO) Endorsement CG 2503, 1985 Edition, or insurer's equivalent (CGL);
4. Cancellation.
  - a. No cancellation or modification of the coverage provided due to non-payment of premiums shall be effective until written notice has been given from Contractor to City at least ten (10) days prior to the effective date of such modification or cancellation. In the event of non-renewal, written notice shall be given at least ten (10) days prior to the effective date of non-renewal.
  - b. No cancellation or modification of the coverage provided for any cause save and except non-payment of premiums shall be effective until written notice has been given from Contractor to City at least thirty (30) days prior to the effective date of such modification or cancellation. In the event of non-renewal, written notice shall be given at least thirty (30) days prior to the effective date of non-renewal.

5. Other Endorsements. Other endorsements may be required for policies other than the commercial general liability policy if specified in the description of required insurance set forth in Sections A through D of this Exhibit C, above.

#### E. ADDITIONAL INSURANCE RELATED PROVISIONS

Contractor and City agree as follows:

1. Contractor agrees to ensure that subcontractors, and any other party involved with the Services who is brought onto or involved in the performance of the Services by Contractor, provide the same minimum insurance coverage required of Contractor, except as with respect to limits. Contractor agrees to monitor and review all such coverage and assumes all responsibility for ensuring that such coverage is provided in conformity with the requirements of this Agreement. Contractor agrees that upon request by City, all agreements with, and insurance compliance documents provided by, such subcontractors and others engaged in the project will be submitted to City for review.
2. Contractor agrees to be responsible for ensuring that no contract used by any party involved in any way with the project reserves the right to charge City or Contractor for the cost of additional insurance coverage required by this Agreement. Any such provisions are to be deleted with reference to City. It is not the intent of City to reimburse any third party for the cost of complying with these requirements. There shall be no recourse against City for payment of premiums or other amounts with respect thereto.
3. The City reserves the right to withhold payments from the Contractor in the event of material noncompliance with the insurance requirements set forth in this Agreement.

#### F. EVIDENCE OF COVERAGE

Prior to commencement of any Services under this Agreement, Contractor, and each and every subcontractor (of every tier) shall, at its sole cost and expense, provide and maintain not less than the minimum insurance coverage with the endorsements and deductibles indicated in this Agreement. Such insurance coverage shall be maintained with insurers, and under forms of policies, satisfactory to City and as described in this Agreement. Contractor shall file with the City all certificates and endorsements for the required insurance policies for City's approval as to adequacy of the insurance protection.

#### G. EVIDENCE OF COMPLIANCE

Contractor or its insurance broker shall provide the required proof of insurance compliance, consisting of Insurance Services Office (ISO) endorsement forms or their equivalent and the ACORD form 25-S certificate of insurance (or its equivalent), evidencing all required coverage shall be delivered to City, or its representative as set forth below, at or prior to execution of this Agreement. Upon City's request, Contractor shall submit to City copies of the actual insurance policies or renewals or replacements to the extent necessary to ensure compliance with this Exhibit C. Unless otherwise required by the terms of this Agreement, all certificates, endorsements, coverage

verifications and other items required to be delivered to City pursuant to this Agreement shall be provided by e-mailed:

EBIX Inc.  
City of Santa Clara  
P.O. Box 100085 – S2  
Duluth, GA 30096  
Telephone number: 951-766-2280  
Fax number: 770-325-0409  
Email address: ctsantaclara@ebix.com

#### H. QUALIFYING INSURERS

All of the insurance companies providing insurance for Contractor shall have, and provide written proof of, an A. M. Best rating of at least A minus 6 (A- VI) or shall be an insurance company of equal financial stability that is approved by the City or its insurance compliance representatives.



## **EXHIBIT D LABOR COMPLIANCE ADDENDUM**

This Agreement is subject to the requirements of California Labor Code section 1720 *et seq.* requiring the payment of prevailing wages, the training of apprentices, and compliance with other applicable requirements.

### **I. Prevailing Wage Requirements**

1. Contractor shall be obligated to pay not less than the General Prevailing Wage Rate, which can be found at [www.dir.ca.gov](http://www.dir.ca.gov) and are on file with the City Clerk's office, which shall be available to any interested party upon request. Contractor is also required to have a copy of the applicable wage determination posted and/or available at each job site.
2. Specifically, contractors are reminded of the need for compliance with Labor Code Section 1774-1775 (the payment of prevailing wages and documentation of such), Section 1776 (the keeping and submission of accurate certified payrolls) and 1777.5 in the employment of apprentices on public works projects. Further, overtime must be paid for work in excess of 8 hours per day or 40 hours per week pursuant to Labor Code Section 1811-1813.
3. Special prevailing wage rates generally apply to work performed on weekends, holidays and for certain shift work. Depending on the location of the project and the amount of travel incurred by workers on the project, certain travel and subsistence payments may also be required. Contractors and subcontractors are on notice that information about such special rates, holidays, premium pay, shift work and travel and subsistence requirements can be found at [www.dir.ca.gov](http://www.dir.ca.gov).
4. Only bona fide apprentices actively enrolled in a California Division of Apprenticeship Standards approved program may be employed on the project as an apprentice and receive the applicable apprenticeship prevailing wage rates. Apprentices who are not properly supervised and employed in the appropriate ratio shall be paid the full journeyman wages for the classification of work performed.
5. As a condition to receiving progress payments, final payment and payment of retention on any and all projects on which the payment of prevailing wages is required, Contractor agrees to present to City, along with its request for payment, all applicable and necessary certified payrolls (for itself and all applicable subcontractors) for the time period covering such payment request. The term "certified payroll" shall include all required documentation to comply with the mandates set forth in Labor Code Section 1720 *et seq.*, as well as any additional documentation requested by the City or its designee including, but not limited to: certified payroll, fringe benefit statements and backup documentation such as monthly benefit statements, employee timecards, copies of wage statements and cancelled checks, proof of training contributions (CAC2 if applicable), and apprenticeship forms such as DAS-140 and DAS-142.

6. In addition to submitting the certified payrolls and related documentation to City, Contractor and all subcontractors shall be required to submit certified payroll and related documents electronically to the California Department of Industrial Relations. Failure to submit payrolls to the DIR when mandated by the project parameters shall also result in the withholding of progress, retention and/or final payment.
7. No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].
8. No contractor or subcontractor may be awarded a contract for public work on a public works project, unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. Contractors MUST be a registered "public works contractor" with the DIR AT THE TIME OF BID. Where the prime contract is less than \$15,000 for maintenance work or less than \$25,000 for construction alternation, demolition or repair work, registration is not required.
9. All contractors/subcontractors and related construction services subject to prevailing wage, including but not limited to: trucking, surveying and inspection work must be registered with the Department of Industrial Relations as a "public works contractor". Those you fail to register and maintain their status as a public works contractor shall not be permitted to perform work on the project.
10. Should any contractor or subcontractors not be a registered public works contractor and perform work on the project, Contractor agrees to fully indemnify the City for any fines assessed by the California Department of Industrial Relations against the City for such violation, including all staff costs and attorney's fee relating to such fine.
11. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

J. Audit Rights

All records or documents required to be kept pursuant to this Agreement to verify compliance with this Addendum shall be made available for audit at no cost to City, at any time during regular business hours, upon written request by the City Attorney, City Auditor, City Manager, or a designated representative of any of these officers. Copies of such records or documents shall be provided to City for audit at City Hall when it is practical to do so. Otherwise, unless an alternative is mutually agreed upon, the records or documents shall be made available at Contractor's address indicated for receipt of notices in this Agreement.

K. Enforcement

1. City shall withhold any portion of a payment; including the entire payment amount, until certified payroll forms and related documentation are properly submitted, reviewed and found to be in full compliance. In the event that certified payroll forms do not comply with the requirements of Labor Code Section 1720 et

seq., City may continue to hold sufficient funds to cover estimated wages and penalties under the Agreement.

2. Based on State funding sources, this project may be subject to special labor compliance requirements of Proposition 84.
3. The City is not obligated to make any payment due to Contractor until Contractor has performed all of its obligations under these provisions. This provision means that City can withhold all or part of a payment to Contractor until all required documentation is submitted. Any payment by the City despite Contractor's failure to fully perform its obligations under these provisions shall not be deemed to be a waiver of any other term or condition contained in this Agreement or a waiver of the right to withhold payment for any subsequent breach of this Addendum.

City or the California Department of Industrial Relations may impose penalties upon contractors and subcontractors for failure to comply with prevailing wage requirements. These penalties are up to \$200 per day per worker for each wage violation identified; \$100 per day per worker for failure to provide the required paperwork and documentation requested within a 10-day window; and \$25 per day per worker for any overtime violation.