

Welcome to the

Awards Meeting

September 5, 2024, 10:00 AM EST

You have been joined to the meeting with your **audio muted** by default.

At the designated public comment time we will provide opportunity for you to unmute to speak.

During the meeting, public comments received via e-mail regarding any matter on the agenda for consideration will be read out. Per the Public Notice Agenda posted on JEA.com, public comments by e-mail must be received no later than 9:00 a.m. on the day of the meeting to be read during the public comment portion of the meeting.

Please contact **Camie Evers** by telephone at **(904) 832-3385** or by email at **everca@jea.com** if you experience any technical difficulties during the meeting.

**JEA Awards Agenda
September 05, 2024
225 North Pearl St., Jacksonville, FL 32202 - Hydrangea Room 1st Floor**

[Teams Meeting Info](#)

Consent Agenda

The Chief Procurement Officer offers the following items for the JEA Awards Consent Agenda. Any item may be moved from the Consent Agenda to the Regular Agenda by a committee member asking that the item be considered separately. All items on the Consent agenda have been approved by OGC, Budget and the Business Unit Vice President and Chief. The posting of this agenda serves as an official notice of JEA's intended decision for all recommended actions for **Formal Purchases** as defined by **Section 3-101 of the JEA Procurement Code**. Please refer to JEA's Procurement Code, if you wish to protest any of these items.

Award #	Type of Award	Solicitation # & Short Description/Title	VP	Awardee	Funding Source	Award Amount	Original Award Amount	New Not-to-Exceed	Amendments	Term (Projected) Start Date - End Date	JSEB Participation (Y/N) If Y, then list company name(s) (% - awarded)
1	Minutes	Minutes from 08/29/2024 Meeting	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	Invitation for Bid (IFB)	1411780646 - 180-46B Woodley Creek Pump Station Rehab	Melendez	PBM Constructors, Inc.	Capital	\$1,251,790.35	N/A	\$1,251,790.35	N/A	Project Completion Start Date: 10/30/2024 End Date: 01/23/2026	Y RZ Services Group (Material Supply), \$55,000.00 Heckman Electric (Electric Sub Contractor), \$75,000.00
<p>Advised: 07/01/2024 Opened: 08/13/2024</p> <p>Four (4) Bids Received: PBM Constructors, Inc. \$1,251,790.35 Ferreira Construction Southern Division Inc. \$1,415,471.85 Sawcross, Inc. \$1,615,404.38 Petticoat-Schmitt Civil Contractors, Inc. \$1,689,864.75</p> <p>For additional information contact: Marline McDonald</p> <p>The purpose of the solicitation was to select a vendor to provide rehabilitation to the Woodley Creek Pump Station, including: 1. Rehab or replace all mechanical/plumbing components. 2. Rehab or replace all electrical/I&C components. 3. Rehab or replace the surrounding concrete slab, including additional improvements to mitigate observed settlement or potential uplift at the wet well. 4. Replace security fencing.</p> <p>The bid is approximately 26% below the estimate due to lower than estimated bypass and general condition costs, and the bid was deemed reasonable.</p>											

Consent Agenda Action

Committee Members in Attendance	Names	
Motion by:		
Second By:		
Committee Decision		

Regular Agenda (date last updated)

Award #	Type of Award	Solicitation # & Short Description/Title	VP	Awardee	Award Amount	Original Award Amount	New Not-to-Exceed	Amendments	Term	JSEB Participation (Y/N) IF Y, then list company name(s) (% , \$ - awarded)	Action
1	Developer Agreement	2023-0280 Trails 1A	Melendez	Hawk Normandy, LLC/Pipeline Constructors, Inc.	\$432,026.67	N/A	\$432,026.67	N/A	Project Completion Start: 03/15/2024 End: 06/30/2025 (Estimated)	N	Motion by: _____
	<p>One (1) Bid Received (Developer) For additional information contact: Ella Bryant</p> <p>The scope of work for this private development project where JEA has identified improvements consistent with the JEA Cost Participation Policy and, as such, is eligible for reimbursement, consists of the first unit of an overall Trails Phase 1 Development, which will total 114 single family residential units. This project is located within the Southwest Sewer Basin and the North Water Grid.</p> <p>This project is developer driven, so all design and engineering were completed by the developer at their cost (no JEA funds for design). JEA Development has reviewed and approved the construction plan submittal. The project elements are comprised of 2,400 feet of 16-inch water main (44% JEA participation) and 3,880 feet of 12-inch force main (31% JEA participation), which follow the JEA Cost Participation Policy.</p> <p>The developer has followed JEA Procurement directives by advertising and awarding to the highest evaluated bidder. The solicitation was advertised, and a pre-bid meeting was held on 12/20/2023. Only one bidder attended the prebid meeting. Pipeline Constructors, Inc. was the sole bid and was awarded the project. JEA is reimbursing in accordance with the Cost Participation Policy for transmission sized mains and the bid amount is approximately 25% below the JEA estimate, which included material, labor, and equipment, and was deemed reasonable.</p>										Second by: _____
2	Single Source	JEA NGS MKVIe Upgrade	Melendez	GE Vernova International LLC	\$2,043,471.00	N/A	\$2,043,471.00	N/A	Project Completion Start: 09/15/2024 End: 04/30/2026 (Estimated)	N	Motion by: _____
	<p>Single Source For additional information contact: Jason Behr</p> <p>GE will upgrade the existing Mark VI turbine and Exciter control hardware and software with Mark VIe hardware and software (ControlST and Cimplicity). The Migration Upgrade maintains all field wiring terminations and turbine devices. GE will swap out (plug & play) the Mark VI hardware from within the existing Mark VI Cabinet(s), with newer Mark VIe components (Controller, I/O packs and VME boards). In conjunction with the Mark VIe and EX2100e migrations, JEA's Turbine Controls Field Engineers will also perform the integration with the current HMIs. Work will be turn-key from the OEM and will be completed during the FY25/26 outages, with design work beginning at contract execution and on-site work beginning May 2025.</p> <p>This project is to replace the Mark VI turbine controls and EX2100 exciter controls on NGS CT3-CT6. Our current systems are at the end of their service life and will soon lose OEM support. OEM stopped production for new parts of our current Mark VI and EX2100 system. Old parts can be difficult and expensive to source. Similar upgrades have been completed at other JEA plants and upgrading the exciters on the NGS CTs will match with what we have on the rest of our fleet.</p> <p>Project is within budget. This is a turnkey project, so it was easier to get an accurate quote. Price is similar to same work done on different power plants.</p>										Second by: _____

Consent and Regular Agenda Signatures

Budget	Name/Title _____
Awards Chairman	Name/Title _____
Procurement	Name/Title _____
Legal	Name/Title _____

JEA Awards Agenda
August 29, 2024
225 North Pearl St., Jacksonville, FL 32202 - Hydrangea Room 1st Floor

[Teams Meeting Info](#)

Consent Agenda

The Chief Procurement Officer offers the following items for the JEA Awards Consent Agenda. Any item may be moved from the Consent Agenda to the Regular Agenda by a committee member asking that the item be considered separately. All items on the Consent agenda have been approved by OGC, Budget and the Business Unit Vice President and Chief. The posting of this agenda serves as an official notice of JEA's intended decision for all recommended actions for **Formal Purchases** as defined by **Section 3-101 of the JEA Procurement Code**. Please refer to JEA's Procurement Code, if you wish to protest any of these items.

Award #	Type of Award	Solicitation # & Short Description/Title	VP	Awardee	Funding Source	Award Amount	Original Award Amount	New Not-to-Exceed	Amendments	Term (Projected) Start Date - End Date	JSEB Participation (Y/N) If Y, then list company name(s) (% , \$ - awarded)
1	Minutes	Minutes from 08/22/2024 Meeting	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	Renewal	101802 - Government Relations Consulting Services	Brooks	The Vogel Group, LLC	O&M	\$192,000.00	\$192,000.00	\$768,000.00	10/27/2022 - \$384,000.00	One (1) Year w/Four (4) – One (1) Yr. Renewals Start Date: 10/01/2021 End Date: 09/30/2025	N
<p>Originally Awarded: 10/01/2021 For additional information contact: Elaine Selders.</p> <p>This Award requests a third one-year renewal for the Government Relations Consulting Services contract from 10/01/2024 to 09/30/2025. This contract was awarded informally on 09/13/2021 to The Vogel Group, LLC. The Awards Committee approved a two-year renewal on 10/27/2022 with an end date of 09/30/2024.</p> <p>The award amount of \$192,000.00 is based on the monthly retainer fee of \$16,000.00 for the upcoming year. The monthly retainer amount has remained the same since the contract was executed in 2021. The business is pleased with their services and requests a one-year renewal to continue to receive these consulting services.</p>											
3	Contract Increase and Extension	1410343850 Sewer Main Cleaning and CCTV Inspection	Vu	Envirowaste Services Group, Inc.	O&M	\$407,000.00	\$1,200,000.00	\$1,727,000.00	08/22/2024 - \$120,000.00	Three (3) Years w/Two (2) – One (1) Yr. Renewals Start: 10/1/2021 End:03/31/2025	N
<p>For additional information contact: Darriel Brown Last awarded: 09/02/2021</p> <p>The Scope of Work for this solicitation consists of cleaning and CCTV inspection of JEA sanitary sewer mains in various locations throughout the JEA service territory and assisting JEA Sewer maintenance and construction crews with jet-vac combo truck assistance, as directed by the Water and Sewer Preventative Maintenance Manager. The work includes the removal and disposal of solids, sludge, grit, grease, sand, pieces of broken pipe and any other debris from the sanitary sewer lines and sanitary manholes. Sewer mains shall remain in service during the cleaning process.</p> <p>Based on this need, JEA intends to extend the current contract by 6 months rather than exercising one of the available 1-year renewals. JEA plans to issue a new solicitation with an expanded work scope to include CCTV work for lateral connections as well as additional requirements for the reporting of results. The award amount is the estimated cost to cover the 6 month extension. Unit pricing is remaining fixed.</p>											
4	Contract Increase	JP SJC CR210 Widening-Greenbriar to Cimarrone - Water, Force Main and Reclaim Adjustments	Melendez	Superior Construction Company Southeast, LLC	Capital	\$7,078,076.57	\$465,093.65	\$14,736,825.29	12/07/2023 - \$274,657.98 04/04/2024 - \$6,918,997.09	Project Completion Start: 09/10/2024 End: 08/24/2026 (Estimated)	N
<p>Last Awarded: 04/04/2024 For additional information contact: Ella Bryant</p> <p>The scope of work for this contract consists of a Design-Build project to widen CR210 from Cimarrone to east of Veterans Parkway. St. Johns County (SJC) entered into a contract with Superior on July 19th, 2022. SJC and JEA have executed a Memorandum of Understanding to complete this project as a joint project. The original contract executed on 04/03/2023 consisted of design services for a new reclaim water main, in the amount of \$465,093.65. Amendment 1 issued on 12/07/2023 consisted of design services for the existing water, sewer and reclaim conflict resolutions & adjustments in the amount of \$274,657.98. Finally, Amendment 2 consisted of construction services for the new reclaim water main in the amount of \$6,918,997.09.</p> <p>The project includes JEA utility relocations, to resolve conflicts with proposed drainage ranging from 18" to 54" and the new proposed bridge. The following is the approximate total for the work: 1690 LF of water main of various sizes 4" to 16", including a 957 LF 20" Horizontal Directional Drill under the new proposed bridge. 890 LF of 12" force main relocations at various locations and replace 2760 LF of old existing 12" force main, and 500 LF of existing 12" reclaim main relocations at various locations.</p> <p>This request is to award Superior Construction Company Southeast, LLC for construction services to adjust/relocate JEA's existing mains that are in conflict via joint project in the amount of \$7,078,076.57. JEA project staff reviewed the pricing for these updates and deemed them reasonable compared to other projects.</p>											
5	Invitation for Bid (IFB)	1411809246 A-3 Fill Dirt and Well Point Sand - Supply and Delivery	Vu	Marietta Sand Corporation Billy Culvert Jr. Trucking	O&M & Capital	\$2,375,800.00 \$487,440.00	N/A	\$2,375,800.00 \$487,440.00	N/A	Five (5) Years w/Two (2) – One (1) Yr. Renewals Start: 10/1/2024 End: 09/30/2029	N/A
<p>Advertised: 07/18/2024 Pre-Response Meeting: 07/23/2024 Bids Due: 08/20/2024 Four (4) Bids received For additional information contact: Darriel Brown</p> <p>The purpose of this Invitation for Bid (the "IFB") is to solicit pricing and select a vendor that can provide A-3 Sand/Fill Dirt and Well Point Sand to JEA for construction and maintenance services. JEA requires the referenced fill material for backfilling of excavations to meet county and FDOT regulations, as well as the well point sand for the use of dewatering within job site boundaries to ensure crew and excavation safety.</p> <p>The unit price for A-3 Fill Dirt is going up from \$12.47/cy to \$16.97/cy (36%) and for Well Point Sand from \$57.93/cy to \$60.93/cy (5%). This is primarily due to an increase in transportation and hauling costs as well as limited competition in the local market.</p> <p>JEA has decided to divide this award based on the lowest bids for each material: A-3 Fill Dirt to Marietta Sand and Well Point Sand to Billy Culvert. Both awardees have serviced JEA for hauling of the respective materials.</p>											

6	Contract Increase	1410611046 - Engineering Services Substations	Melendez	Leidos Engineering LLC Chen Moore & Associates, Inc. Worley Group, Inc.	Capital	Leidos Engineering LLC - No Change Chen Moore & Associates, Inc. - No Change Worley Group, Inc. - \$669,449.00	Leidos Engineering LLC - \$406,000.00 Chen Moore & Associates, Inc. - \$1,015,000.00 Worley Group, Inc. - \$609,000.00	Leidos Engineering LLC - \$1,471,818.43 (No Change) Chen Moore & Associates, Inc. - \$2,589,557.00 (No Change) Worley Group, Inc. - \$1,278,449.00			
	Deferred										
7	Invitation for Bid	1411786846 (IFB) JEA NGS N01 Grid Floor Refractory Hydro-Demolition	Melendez	Vecta Environmental Services, LLC	Capital	\$321,786.85	N/A	\$321,786.85			
	<p>Advertised: 07/03/2024 Opened: 07/30/2024 Three (3) Bids Received For additional information contact: Jason Behr</p> <p>Unit 1 boiler is a 300 MW circulating fluidized bed boiler (CFB) provided by Foster Wheeler Corp. and placed into service in 2002. Unit 1 CFB has roughly 6,150 nozzles within a refractory bed above that make up the grid floor. Grid floor nozzles are reaching the end of their service life and require replacement. To facilitate installation of the new nozzles, the refractory must be replaced. The replacement of the grid floor nozzles and refractory is part of an overall major maintenance outage that will include several other critical activities in the boiler areas. Contractor shall remove the existing refractory down to bare metal within the entire designated work scope area and dispose of onsite. This is a turnkey project and the Contractor is to provide all labor, equipment, materials and supplies to complete the scope of work. The bid amount came in well under budget estimate and is deemed reasonable.</p>									N/A	Project Completion Start: 03/01/2025 End: 04/14/2025 (Estimated)
8	Contract Increase	097-19 SSF 6 Gas Circuit Breakers	Phillips	GE Grid Solutions, LLC dba GE MDS, LLC	Inventory	\$563,376.00	\$4,559,300.00	\$11,748,079.17			
	<p>For additional information contact: Lynn Rix</p> <p>This request is to add funds for planned purchases related to capital projects through the original term which expires October 30, 2024. The original award amount was based on historical usage and budget estimates available at the time of the award.</p> <p>In December the lead time increased from 2 to 2.5 years. We have been advised that lead times may continue to increase due to overall market demand and this is supported by follow up conversations with the three (3) key breaker manufacturers (Hitachi, GE, Mitsubishi). The contract allows for price adjustments at the time of order placement based on Bureau of Labor statistics published indices, at which point prices are fixed through delivery. JEA intends to issue a Solicitation this fall with the strategy of awarding multiple contracts to mitigate against delivery delays.</p> <p>For this purchase, pricing and lead times have remained stable with no escalation. This increase will cover the current demand for planned projects and emergency stock. The original Award and previous contract increases are attached as backup.</p>									02/02/2023 \$1,440,101.50 05/14/2024 \$599,940.15 05/23/2024 \$4,585,361.52	Five (5) Years w/ Two (2) - 1-Yr. Renewals Start Date: 10/31/2019 End Date: 10/30/2024
Consent Agenda Action											
Committee Members in Attendance	Names	<u>Ted Phillips, Raynetta Marshall, David Emanuel</u>									
Motion by:	David Emanuel										
Second By:	Raynetta Marshall										
Committee Decision	1-5; 7 and 8 Approved. Award 6 Deferred										

Regular Agenda (date last updated)														
Award #	Type of Award	Solicitation # & Short Description/Title	VP	Awardee	Award Amount	Original Award Amount	New Not-to-Exceed	Amendments	Term	JSEB Participation (Y/N) If Y, then list company name(s) (% , \$ - awarded)	Action			
1	Contract Increase	125-19 Construction Management at Risk (CMAR) Services for the Southwest Water Reclamation Facility (WRF)	Melendez	Garney Companies, Inc.	\$3,106,428.00	\$704,232.00	\$117,327,095.00	09/24/2020 - \$2,789,909.00 03/17/2021 - \$3,206,159.00 07/08/2021 - \$4,000,365.00 10/27/2021 - \$748,489.00 03/17/2022 - \$102,771,513.00	Project Completion Start: 01/03/2020 End: 09/30/2025 (Estimated)	N	Motion by: David Emanuel			
	Moved to Other Information to be Brought to the Comittee as an informational item.										Second by: Rayenetta Marshall	Committee Decision: Move to Information Section		
2	Invitation for Bid (IFB)	1411757246 Arlington East WRF Exploratory Well	Melendez	Youngquist Brothers, LLC	\$15,236,041.75	N/A	\$15,236,041.75	N/A	Project Completion Start: 10/30/2024 End: 07/22/2026 (Estimated)	Y V. Michael Enterprises LLC dba M&M Hauling and Land (1%, \$116,364.50)	Motion by:			
	Advertised: 06/20/2024 Pre-Response Meeting: 07/01/2024 Bids Due: 08/13/2024 Two (2) Bids and Two (2) No-Bids received For additional information contact: David King The scope of work for this project is to construct a Deep Injection Well as well as a Monitoring Well at a site adjacent to the Arlington Water Reclamation Facility. The project includes all site work, piping, & electrical work. Testing of the well will also be included. A deep injection well will allow JEA to inject purified water into the aquifer to reduce the strain on the water supply and JEA's water permit limits. JEA contacted the two companies that submitted no bids, and they stated that they did not have any drill rigs available during the time that JEA requires the well to be dug. There are limited well drilling companies in the state of Florida that perform deep injection well drilling services, and many utilities in the state require their services to meet new state regulations. The base bid received was approximately 0.07% above the estimate and was deemed reasonable. JEA has decided to add a bid alternate to the award in the amount of \$399,600.00. This optional addition includes a short term injection test, well acidization, and optical borehole imaging. When comparing the base bids and the alternate items, Youngquist Brothers, LLC is still the low bidder. The entire award amount was reviewed by JEA staff and deemed reasonable compared to the JEA estimate and previous projects. Discussion/ Action: The difference in cost between the two bidders was 11%. Other two were no bids due to the uniqueness of the bid and not enough drillers have the capacity to complete the job for deep well injection. Discussion/ Action Participants: Ted, Peter Doherty and Dan Kruck													
	Second by: Committee Decision: Approved													
3	Single Source	CAPSW001 - Single Source Purchase	Phillips	Southern States, LLC c/o TCI Sales, Inc.	\$527,940.00	\$527,940.00	\$527,940.00	N/A	Start Date: 08/29/2024 End Date: 08/28/2025	N/A	N/A			
	Deferred													

Informational Items

1	Contract Increase	125-19 Construction Management at Risk (CMAR) Services for the Southwest Water Reclamation Facility (WRF)	Melendez	Garney Companies, Inc.	\$3,106,428.00	\$704,232.00	\$117,327,095.00	09/24/2020 - \$2,789,909.00 03/17/2021 - \$3,206,159.00 07/08/2021 - \$4,000,365.00 10/27/2021 - \$748,489.00 03/17/2022 - \$102,771,513.00	Project Completion Start: 01/03/2020 End: 09/30/2025 (Estimated)	N	Motion by: David Emanuel
	Last awarded: 03/26/2024 (JEA Board) The scope of work for this contract includes the preconstruction and construction services for the expansion of the Southwest Water Reclamation Facility (WRF) to 16 MGD. The expansion project includes upgrading the ultra-violet (UV) system, expanding the headworks, odor control, process equipment and associated yard work. On 03/26/2024 the JEA Board ratified the approval of the construction GMP, and authorized up to a 3% (\$3,426,620.01) contract contingency to be used if additional contract increases became necessary through the course of the work. JEA has requested updates to the scope of work to include: adding a generator docking station, UV system enhancements, security and communications upgrades, a valve replacement, and grit classifying system changes. These JEA requested updates require a contract increase of \$3,106,428.00. JEA project staff reviewed the pricing for these updates and deemed them reasonable compared to other projects.										Second by: Rayenetta Marshall

Consent and Regular Agenda Signatures

Budget	Name/Title	<u>Stephanie Nealy, Manager CBP</u>
Awards Chairman	Name/Title	<u>Theodore B Phillips</u> CFO
Procurement	Name/Title	<u>[Signature]</u>
Legal	Name/Title	<u>Rebecca Lavis</u>

Appendix B - Bid Form
1411780646 180-46B Woodley Creek Pump Station Rehab

Submit the Bid electronically as described in section 1.4 of the Solicitation.

Company Name: PBM Constructors, Inc.

Company's Address: 3000 Faye Road, Jacksonville, FL 32226

License Number: CGC037694

Phone Number: 904-714-6353 FAX No: 904-714-6354 Email Address: bmoore@pbmconstructors.com

BID SECURITY REQUIREMENTS <input type="checkbox"/> None required <input checked="" type="checkbox"/> Certified Check or Bond (Five Percent (5%))	TERM OF CONTRACT <input type="checkbox"/> One Time Purchase <input type="checkbox"/> Annual Requirements <input checked="" type="checkbox"/> Other, Specify - Project Completion
---	--

SAMPLE REQUIREMENTS <input checked="" type="checkbox"/> None required <input type="checkbox"/> Samples required prior to Bid Opening <input type="checkbox"/> Samples may be required subsequent to Bid Opening	SECTION 255.05, FLORIDA STATUTES CONTRACT BOND <input type="checkbox"/> None required <input checked="" type="checkbox"/> Bond required 100% of Bid Award
---	--

QUANTITIES <input type="checkbox"/> Quantities indicated are exacting <input checked="" type="checkbox"/> Quantities indicated reflect the approximate quantities to be purchased Throughout the Contract period and are subject to fluctuation in accordance with actual requirements.	INSURANCE REQUIREMENTS <p style="text-align:center">Insurance required</p>
--	---

PAYMENT DISCOUNTS <input type="checkbox"/> 1% 20, net 30 <input type="checkbox"/> 2% 10, net 30 <input type="checkbox"/> Other _____ <input checked="" type="checkbox"/> None Offered	
--	--

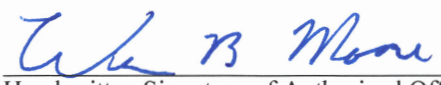
ENTER YOUR BID FOR SOLICITATION 1411780646	TOTAL BID PRICE
Total Bid Price (enter total from cell F56 in the Bid Workbook)	\$1,251,790.35

I have read and understood the Sunshine Law/Public Records clauses contained within this solicitation. I understand that in the absence of a redacted copy my proposal will be disclosed to the public "as-is".

BIDDER CERTIFICATION

By submitting this Bid, the Bidder certifies that it has read and reviewed all of the documents pertaining to this Solicitation, that the person signing below is an authorized representative of the Bidding Company, that the Company is legally authorized to do business in the State of Florida, and that the Company maintains in active status an appropriate contractor's license for the work (if applicable). The Bidder also certifies that it complies with all sections (including but not limited to Conflict of Interest and Ethics) of this Solicitation.

We have received addenda _____


8/13/24
 Handwritten Signature of Authorized Officer of Company or Agent Date

_____ 1 _____ through _____ 2 _____

William B. Moore, President
 Printed Name and Title



LIST OF SUBCONTRACTORS FORM

JEA Solicitation Number 1411780646Tier 1 Prime Contractor Business Name: PBM Constructors, Inc.

The referenced solicitation requires certain major Subcontractors be listed on this form, unless the work will be self-performed by the Tier 1 Prime Contractor.

The undersigned understands that failure to submit the required Subcontractor information on this form may result in bid rejection, and the Tier 1 Prime Contractor agrees to employ the Subcontractors specified below: *(Add additional lines if necessary)*

Note: This list of Subcontractors shall not be modified subsequent to bid opening, without a showing of good cause and the written consent of JEA.

JSEB Subcontractors - Jacksonville Small & Emerging Business Program (JSEB)

A certified JSEB business who contracts with the Tier 1 Prime Contractor to provide goods and/or services. All fields are required to be completed on this section of the form.

The JSEB Subcontractors section of the form is required for any projects with a JSEB participation requirement.

JSEB Business Name	JSEB Primary Contact Name	JSEB Telephone Number	JSEB Email Address	JSEB Certification? <small>Yes or No (select from the drop down menu)</small>	Scope of Work	Dollar Amount
RZ Service Group	Joseph Newkirk	904-402-2313	newkirk@rzservicegroup.com	Yes	Purchasing Sub Contractor	\$55,000.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00

Tier 2 Subcontractors

A Subcontractor who contracts with the Tier 1 Prime Contractor to provide goods and/or services. Please list all major Subcontractors, regardless of diversity status, that will be providing goods and/or services. Submission of Subcontractor Ethnicity or Diverse Classification is optional.

The Tier 2 Subcontractors section of the form is required.

Subcontractor Business Name	Subcontractor Primary Contact Name	Subcontractor Telephone Number	Subcontractor Email Address	Subcontractor Ethnicity or Diverse Classification <small>(select from the drop down menu, if applicable)</small>	Scope of Work	Dollar Amount
Heckman Electric, Inc.	James Heckman	352-443-2255	heckmanelectricinc@gmail.com	N/A	Electric Sub Contractor	\$75,000.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00

Tier 3 Subcontractors - Utilization of Diverse Businesses Only

A diverse Subcontractor who contracts with a Tier 2 Subcontractor to provide goods and/or services.

The Tier 3 Subcontractors section of the form is optional.

Diverse Subcontractor Business Name	Diverse Subcontractor Primary Contact Name	Diverse Subcontractor Telephone Number	Diverse Subcontractor Email Address	Diverse Subcontractor Ethnicity or Classification <small>(select from the drop down menu, if applicable)</small>	Scope of Work	Dollar Amount
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00

Signed: Title: PresidentDate: 8/13/2024

1411780646 Addendum 2 - Appendix B - Bid Workbook
180-46B Woodley Creek Boulevard Pump Station Rehabilitation
 (Only Complete the Prices in Yellow Cells)

Company: **PBM Constructors, Inc.**

PART A - BID PRICE

Item No.	Description	Quantity	Unit	Unit Price	Total Price
PUMP STATION:					
1	SOV-A - DEMOLITION OF SITE COMPONENTS	1	LS	\$25,000.00	\$25,000.00
2	SOV-B - DEMOLITION OF PROCESS/ELECTRICAL/CONTROLS/PLUMBING COMPONENTS	1	LS	\$50,000.00	\$50,000.00
3	SOV-C - SITE WORK – LANDSCAPING / GRADING / SEEDING AND MULCHING	1	LS	\$30,000.00	\$30,000.00
4	SOV-D - WETWELL (TOP SLAB REPLACEMENT)	1	LS	\$25,000.00	\$25,000.00
5	SOV-E - PUMPS (REMOVE AND RE-INSTALL EXISTING PUMPS)	1	LS	\$5,000.00	\$5,000.00
6	SOV-F - DISCHARGE PIPING INCLUDING FITTINGS, VALVES AND RESTRAINTS	1	LS	\$125,000.00	\$125,000.00
7	SOV-G - ELECTRICAL WORK & LIGHTING	1	LS	\$150,000.00	\$150,000.00
8	SOV-H - INSTRUMENTS AND CONTROLS/SCADA	1	LS	\$200,000.00	\$200,000.00
9	SOV-I - IRRIGATION/POTABLE WATER SYSTEM	1	LS	\$8,500.00	\$8,500.00
10	SOV-J - 6' TALL CHAIN LINK FENCE W/ PRIVACY SLATS	1	LS	\$20,000.00	\$20,000.00
11	SOV-K - CHAIN LINK GATES W/ PRIVACY SLATS	1	LS	\$7,500.00	\$7,500.00
12	SOV-L - MECHANICAL WORK	1	LS	\$75,000.00	\$75,000.00
13	SOV-M - EXCAVATION	1	LS	\$10,000.00	\$10,000.00
14	SOV-N - COMPACTED FILL	1	LS	\$10,000.00	\$10,000.00
15	SOV-O - SLAB W/THICKENED EDGE (CONCRETE, CAST-IN-PLACE)	1	LS	\$30,000.00	\$30,000.00
16	SOV-P - CONCRETE DRIVEWAY (CONCRETE, CAST-IN-PLACE)	1	LS	\$20,000.00	\$20,000.00
17	SOV-Q - ASPHALT PAVING REPAIR	1	LS	\$15,000.00	\$15,000.00
18	SOV-R - CONCRETE CURB AND GUTTER REPAIR (CAST-IN-PLACE)	1	LS	\$10,000.00	\$10,000.00
19	SOV-S - SIDEWALK REPAIR (CONCRETE, CAST-IN-PLACE)	1	LS	\$7,500.00	\$7,500.00
20	SOV-T - BYPASS SYSTEM	1	LS	\$50,000.00	\$50,000.00
21	SOV-U - MOT	1	LS	\$40,000.00	\$40,000.00
23	SOV-W - COMMISSIONING AND START UP	1	LS	\$50,000.00	\$50,000.00
24	SWA	1	LS	\$153,000	\$153,000.00
Part A Subtotal Lump Sum Price Items					\$1,116,500.00

PART B - UNIT PRICE BID

Item No.	Description	Quantity	Unit	Unit Price	Total Price
24	WET WELL LINER REPAIR	791	SF	\$50.00	\$39,550.00
25	EXISTING CONCRETE PREP AND REPAIR - TYPE A up to 0.5"	240	SF	\$25.00	\$6,000.00
26	EXISTING CONCRETE PREP AND REPAIR - TYPE B 0.5" to 3.0"	24	SF	\$75.00	\$1,800.00
27	EXISTING CONCRETE PREP AND REPAIR - TYPE C > 3.0" w/o Rebar Rehab	12	SF	\$100.00	\$1,200.00
28	EXISTING CONCRETE PREP AND REPAIR - TYPE D > 3.0" w/Rebar Rehab	10	SF	\$150.00	\$1,500.00
29	EXISTING CONCRETE PREP AND REPAIR - TYPE E - CRACK REPAIRS	5	LF	\$100.00	\$500.00
30	NDT TESTING AND REPORTING ALLOWANCE	1	LS	\$1,500.00	\$1,500.00
31	BYPASS SYSTEM WEEKLY COST	1	WEEKLY	\$5,000.00	\$5,000.00
32	ELECTRONIC SIGN RENTAL	1	WEEKLY	\$500.00	\$500.00
33	DISPOSAL OF UNSUITABLE MATERIAL	20	CY	\$35.00	\$700.00
33	SUPPLY AND PLACE A-3 BACKFILL MATERIAL	20	CY	\$32.00	\$640.00
Part B Subtotal Unit Sum Price Items					\$58,890.00

Part A + Part B Subtotal

34	Mobilization (maximum 1.50% of Part A+Part B Subtotal) (Enter %)			1.00%	\$11,753.90
35	Demobilization (maximum 1.00% of Part A+Part B Subtotal) (Enter %)			0.50%	\$5,876.95
36	General Conditions (maximum 10% of Part A+Part B Subtotal) (Enter %)			5.00%	\$58,769.50
TOTAL BID PRICE - Enter this Value on Appendix B - Bid Form					\$1,251,790.35

JSEB Requirement Overview

Total Bid Price less Allowances and GCs:	\$1,020,890.00
JSEB Requirement:	5%
JSEB Requirement (dollars):	\$51,044.50

Revised January 08, 2024

**PROPOSAL
(Official Bid Form)**

FOR

**NORMANDY PROJECT
PHASE 1A**

JEA WATER AND FORCE MAIN IMPROVEMENTS

FOR

HAWK NORMANDY, LLC,

TO BE SUBMITTED TO:

HAWK NORMANDY, LLC,
c/o ENGLAND-THIMS & MILLER, INC.
14775 Old St. Augustine Road
Jacksonville, FL 32258

on or before January 26, 2024 @ 3:00 P.M.
PUBLIC OPENING

TO: HAWK NORMANDY, LLC

FROM: **Pipeline Constructors, Inc.**

(Contractor)

In accordance with the Request for Proposal inviting proposals for Normandy Project JEA Water and Force Main Improvements, the undersigned proposes to perform all work necessary to construct a complete utility system, including water main and force main, as shown on the plans (ETM Engineering Plans – Diamond Timber Trails Phase 1A dated October 19, 2023) released for bid and the Geotechnical Report prepared by ECS Florida, LLC, and in accordance with all JEA and City of Jacksonville requirements, JEA Standards and Specifications and the Florida Department of Environmental Protection Potable Water and Domestic Wastewater permits. Technical Project Specifications for this project is subject to the JEA specifications in publication at the time of bid. Please visit JEA.com for further information. Attention is called to the required coordination of the proposed work with the existing roadway work being conducted within this same corridor. Proposer is required to provide for close coordination and scheduling of the work with the existing site work currently being performed by Vallencourt Construction. It is imperative that Proposer take this coordination into account when preparing their proposal. Substantial Completion and Final Completion shall be clearly shown on the Proposer's schedule.

All proposals shall be for complete work in accordance with the construction plans. (No partial proposals accepted.)

TO: HAWK NORMANDY, LLC

From: Pipeline Constructors, Inc.

In response to your Request for Proposal, the undersigned hereby submits our Proposal for the **Normandy Project – JEA Water and Force Main Improvements** project. This Proposal has been prepared and submitted subject to the conditions and requirements set forth in the Project Manual, including all Addenda. All of the documents included in the Project Manual and Addenda thereto, so far as they relate to this Proposal, are made a part hereof. The undersigned (Contractor) herewith proposes to perform the work stipulated for the unit and/or lump sum prices given by the Summary of Costs and schedule of values that is part hereof.

The undersigned has carefully checked the Summary of Costs and schedule of values against the Project Manual, including but not limited to the plans and specifications, general and special conditions and other contract documents and all Addenda before proposing this Proposal and accepts them as correctly listing the complete work to be done in accordance with the Project Manual, including but not limited to the plans and specifications, general and special conditions and other contract documents.

The undersigned Proposer examined the entire Project Manual, including but not limited to the Request for Proposal, plans and specifications, General and Special Conditions, and other contract documents and all addenda and is acquainted with and fully understands the extent and character of the work covered by this Proposal and the specified requirements for the work to be performed for the Project. Further, the Proposer has examined the work site and is fully informed as to conditions at this site. The Proposer understands that all work provided for in the Project Manual, including but not limited to all contract-related documents, as may be amended, shall be warranted to the benefit of the City of Jacksonville (COJ) provided until at least 26 months after as-built approval by COJ. All other work shall be warranted in accordance with the Contract Documents.

The undersigned Proposer certifies that no officer or agent of Hawk Normandy, LLC is directly or indirectly interested in this Proposal.

The undersigned Proposer states that this Proposal is made in conformity with the Project Manual and agrees that in case of any discrepancy or differences between any condition of his or her Proposal and those of the Project Manual, the provisions of the latter shall prevail.

The undersigned Proposer certifies that he or she has carefully examined the project site, made his/her own measurements and calculations and prepared and checked the foregoing Proposal after the same was completed and has verified every item placed thereon; and agrees to indemnify, defend and hold harmless Hawk Normandy, LLC and England-Thims and Miller, Inc. against any cost, damage or expense which may be incurred or caused by error in his or her preparation of the same.

The undersigned acknowledges, by execution of this Proposal, that all information provided herein has been provided in full and that such information is truthful and accurate. Proposer agrees through submission of this Proposal to honor all pricing information ninety (90) days from that date of the Proposal opening, and if awarded a contract on the basis of this Proposal, or a portion thereof, to enter into and execute the EJCDC standard form of agreement in substantially the form included in the Project Manual. Further the Contractor warrants the pricing provided in the Proposal shall remain valid and binding for the term of the agreement and not subject to escalation, including for gasoline, labor or material price increases.

Proposer understands that inclusion of false, deceptive, or fraudulent statements on the Proposal constitutes fraud; such action on the part of the Proposer to constitute good cause for denial, suspension or revocation of a Proposal for work for Hawk Normandy, LLC.

Pipeline Constructors, Inc.

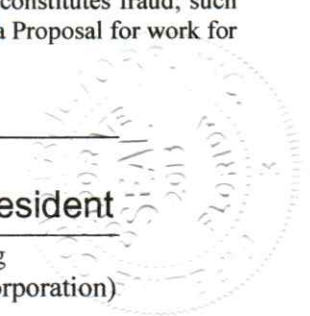
Name of Organization

This 25 day of January, 2024

By: 

By: Ronald E. Denmark, President

Name and Title of Person Signing
(Apply Corporate Seal if filing as a Corporation)



Plans

October 19, 2023

ETM Engineering Plans – Diamond Timber Trails Phase 1A

<u>DRAWING NO.</u>	<u>SHEET DESCRIPTION</u>
1	COVER SHEET
2	SIGNATURE PAGE
3	GENERAL NOTES & LEGEND
4	MASTER SITE PLAN
4A - 5E	SITE GEOMETRY PLANS
6	MASTER PAVING & DRAINAGE PLAN
6A - 6E	PAVING AND DRAINAGE PLANS
7A - 7C	PAVING & DRAINAGE DETAILS
7D	SOIL BORING PROFILES
7E - 7F	TYPICAL SECTIONS
8A - 8D	ROADWAY PROFILES
9	MASTER WATER & SEWER PLAN
9A - 9E	WATER AND SEWER PLAN
9F	UTILITY CONFLICT TABLE
56 A - 56B	WATER AND SEWER PLAN PROFILE
56C	FORCE MAIN HORIZONTAL DIRECTIONAL DRILL
56D	WATER MAIN HORIZONTAL DIRECTIONAL DRILL
10A	JEA WATER AND SEWER DETAILS
10H-10R	WATER AND SEWER DETAILS
12	SEDIMENT AND EROSION CONTROL PLAN
13	SEDIMENT AND EROSION CONTROL DETAILS
14	STORMWATER POLLUTION PREVENTION PLAN
15	SWPPP CONTRACTOR CERTIFICATIONS

**NORMANDY PROJECT
PHASE 1A
JEA WATER AND FORCE MAIN IMPROVEMENTS**

BID SUMMARY

A. MOBILIZATION	\$	
B. EROSION AND SEDIMENT CONTROL	\$	
C. WATER MAIN	\$	
D. FORCE MAIN	\$	
E. UNSUITABLE MATERIAL REMOVAL AND REPLACEMENT	\$	
F. COORDINATION WITH OTHER ON-SITE CONTRACTORS	\$	
G. STORMWATER POLLUTION PREVENTION PLAN	\$	
H. TESTING	\$	
I. AS-BUILTS	\$	
J. BONDING	\$	

GRAND TOTAL LUMP SUM BID (ITEMS A – J)	\$ _____
---	----------

A. MOBILIZATION

Includes all preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site. Includes the costs of any required insurance, bonds and any other pre-construction expense necessary for the start of the work, excluding the cost of construction materials.

TOTAL LUMP SUM PRICE ITEM A:	
\$ _____	(Numerals)
_____	(Written)

B. EROSION AND SEDIMENT CONTROL

Includes all measures that are required to comply with the State of Florida and City of Jacksonville water quality standards. This includes all such measures that shall prevent the discharge of turbid waters from the site and minimize erosion of all graded areas. This includes grassing of all disturbed areas.

TOTAL LUMP SUM PRICE ITEM B:	
<u>\$ 6,000.00</u>	(Numerals)
<u>Six Thousand Dollars</u>	(Written)

C. WATER MAIN

Includes the construction of the 20" HDPE and 16" DR-25 JEA potable water main within the Bright Lagoon Blvd. rights of way, from the point of connection at Normandy Blvd R/W (beginning of Phase 1A) to Sta. 30+60 (end of Phase 1A), as shown within the construction plans. Includes all pipe, valves, fittings, connection to the existing water distribution systems, pressure testing, flushing, disinfection, bacteriological testing, locate wires and appurtenances, plugs, backfill and compaction to JEA and City of Jacksonville Standards of material over the pipe, and the removal, disposal and replacement of any unsuitable material encountered and all other work (including dewatering) necessary to complete the installation of the system. Additionally, this work includes the acceptance testing, JEA warranty and maintenance and other items not specifically mentioned, but necessary for a complete and operable system as shown on the drawings and in accordance with the JEA and Florida Department of Environmental Protection requirements.

TOTAL LUMP SUM PRICE ITEM C:	
<u>\$ 537,140.00</u>	(Numerals)
<u>Five HundredThirty Seven Thousand One Hundred Forty Dollars</u>	(Written)

D. FORCE MAIN

Includes the construction of the 16" HDPE and 12" DR-18 JEA force water main within the Bright Lagoon Blvd, Isle Royal Lane, Lagoon Cruise Way, and Hopper Place rights of way, from the point of connection at Normand Blvd R/W (beginning of Phase 1A) to the master lift station located on Hopper Place, as shown within the construction plans. Includes all pipe, valves, fittings, connection to the existing force main, pressure testing, flushing, locate wires and appurtenances, plugs, backfill and compaction to JEA and City of Jacksonville Standards of material over the pipe and the removal, disposal and replacement of any unsuitable material encountered and all other work (including dewatering) necessary to complete the installation of the system. This work also includes the acceptance testing, JEA warranty and maintenance and other items not specifically mentioned, but necessary for a complete and operable system as shown on the drawings and in accordance with the JEA and Florida Department of Environmental Protection requirements.

TOTAL LUMP SUM PRICE ITEM D:	
<u>\$ 485,662.00</u>	(Numerals)
<u>Four Hundred Eighty Five Thousand Six Hundred Sixty Two Dollars</u>	(Written)

E. UNSUITABLE MATERIAL REMOVAL AND REPLACEMENT

Includes removal of all unsuitable material encountered, naturally occurring or otherwise, that is not included in regular utility excavation, as required for utility construction. Also includes replacement of removed unsuitable material with suitable fill, compacted in 12" lifts to 98% of the Modified Proctor maximum dry density, in accordance with the Report of Geotechnical Exploration. Suitable fill material shall be imported from offsite source(s) secured by the contractor and approved by Owner and Engineer. Excess Unsuitable Material shall be disposed of off-site at a location secured by the Contractor.

BASIS OF BID QUANTITY: 1,000 CUBIC YARDS

TOTAL BASIS OF BID PRICE ITEM E:	
<u>\$ 24,000.00</u>	(Numerals)
<u>Twenty Four Thousand Dollars</u>	(Written)

F. COORDINATION WITH OTHER ON-SITE CONTRACTORS

The selected Utility Contractor shall re-establish all earthwork grades disturbed by the installed utilities (to within 0.1' of the grades established by the roadway contractor) upon completion of the utility installations. This grading work shall be accomplished in a timely manner so as not to delay the roadway contractor's project schedule. The Contractor shall coordinate with the roadway Contractor before, during and after construction to ensure that all proposed water and force main improvements and connections are installed as shown on the drawings and specifications and in accordance with JEA and Florida Department of Environmental Protection requirements. Additionally, Contractor will be expected to coordinate with the roadway Contractor in such a way as to not impede their construction, and such coordination should be reflected in the project schedule and in the price reflected in this bid item. Contractor will be required to provide, in writing, a weekly status report to the roadway Contractor, Owner's representative and engineer depicting the portion of the water and improvements that were installed that week and the anticipated portion of the water and improvements to be installed in the week ahead. Contractor shall be responsible for any delay in the roadway Contractor's work due to lack of coordination and/or delays associated with the work herein. The cost of this coordination shall be included in this proposal item.

TOTAL LUMP SUM PRICE ITEM F:	
<u>\$ 1,500.00</u>	(Numerals)
<u>One Thousand Five Hundred Dollars</u>	(Written)

G. STORMWATER POLLUTION PREVENTION PLAN

The Contractor shall adhere to all Federal rules and regulations regarding the National Pollutant Discharge Elimination System (NPDES) for construction and ground water discharge. The Storm Water Pollution Prevention Plan (SWPPP) included in these plans shall establish the minimum requirements allowed. The Contractor shall implement additional measures, as required, to ensure compliance with the NPDES requirements. Note: Contractor shall also obtain and have analyzed dewatering discharge samples after the commencement of construction in accordance with the FDEP Generic Permit for the Discharge of Produced Groundwater.

TOTAL LUMP SUM PRICE ITEM G:	
<u>\$ 6,000.00</u>	(Numerals)
<u>Six Thousand Dollars</u>	(Written)

H. TESTING

The costs for all testing associated with the backfill of the utility trenches and construction of the temporary construction access road are to be included in the Contractor's Contract. This includes, but is not limited to, all material tests, compaction tests, etc. The Owner must approve the Contractor's testing company.

TOTAL LUMP SUM PRICE ITEM H:	
\$ 30,240.00	(Numerals)
Thirty Thousand Two Hundred Forty Dollars	(Written)

I. AS-BUILTS

Cost of providing ALL as-builts of the potable water system, force main systems, site work as required by the JEA, Florida Department of Environmental Protection, and City of Jacksonville.

TOTAL LUMP SUM PRICE ITEM I:	
\$ 10,960.00	(Numerals)
Ten Thousand Nine Hundred Sixty Dollars	(Written)

J. BONDING

J.1 PAYMENT AND PERFORMANCE BOND

Cost of providing a payment and performance bond in accordance with project specifications.

SUB-TOTAL LUMP SUM PRICE ITEM J.1:	
\$ 21,870.00	(Numerals)
Twenty One Thousand Eight Hundred Seventy Dollars	(Written)

J.2. CONTRACTOR'S WARRANTY

Cost of providing a Contractor's warranty in accordance with JEA's standard requirements and the project specifications.

SUB-TOTAL LUMP SUM PRICE ITEM J.2:	
\$ 10,000.00	(Numerals)
Ten Thousand Dollars	(Written)

TOTAL LUMP SUM PRICE ITEM J:	
\$ 31,870.00	(Numerals)
Thirty One Thousand Eight Hundred Seventy Dollars	(Written)

Pipeline Constructors, Inc.
 Normandy Project - Phase 1A - JEA Water & Forcemain
 Recap of Quantities/Values

Description	Unit	Unit \$	Bid Amount
Mobilization/Erosion Control/SWPPP/Bond			
Bond	LS	\$31,870.00	\$31,870.00
Mobilization	LS	\$15,000.00	\$15,000.00
Erosion Control	LS	\$6,000.00	\$6,000.00
SWPPP	LS	\$6,000.00	\$6,000.00
Total Mobilization/Erosion Control			\$58,870.00
Unsuitable Material Remove and Replace/On Site Coordination			
Unsuitable Material Remove and Replace	CY	\$24.00	\$24,000.00
Coordination with other on-site	LS	\$1,500.00	\$1,500.00
Total Unsuitable/On Site Coordination			\$25,500.00
Water Main			
20" HDPE	LF	126.65	\$20,264.00
16" DR 18	LF	79.55	\$174,999.00
6" DR 18	LF	24.93	\$498.54
16" Gate Vavle	EA	9,394.70	\$46,973.50
12" Gate Valve	EA	5,018.00	\$5,018.00
8" Gate Valve	EA	2,833.20	\$2,833.20
6" Gate Valve	EA	1,958.15	\$3,916.30
20" x 16" Wet Tapp	EA	55,048.90	\$55,048.90
Directional Drill	EA	66,875.00	\$66,875.00
Fire Hydrant	EA	4,046.96	\$8,093.93
Flushing Hydrant	EA	1,950.08	\$1,950.08
Sample Points	EA	902.50	\$2,707.50
20" Misc Fittings	LS	3,710.80	\$3,710.80
16" Misc Fittings	LS	55,328.25	\$55,328.25
Restraints/Wire	LS	45,572.50	\$45,572.50
MOT	LS	16,514.00	\$16,514.00
Dewatering	LS	20,061.75	\$20,061.75
Layout	LS	6,774.76	\$6,774.76
Total Water Main			\$537,140.00
Force Main			
16" HDPE	LF	99.09	\$11,890.38
12" DR 18	LF	69.03	\$262,300.70
Directional Drill	EA	35,975.00	\$35,975.00
16" x 12" Wet Tapp	EA	33,621.60	\$33,621.60
12" Gate Valve	EA	5,418.00	\$21,672.00

Pipeline Constructors, Inc.

Normandy Project - Phase 1A - JEA Water & Forcemain

Recap of Quantities/Values

16" Misc Fittnings	LS	7,038.70	\$7,038.70
12" Misc Fittings	LS	34,407.05	\$34,407.05
Air Release Valves	EA	7,956.20	\$15,912.40
Air Release Vault	EA	8,059.90	\$16,119.80
Restrains/Wire	LS	8,348.75	\$8,348.75
MOT	LS	16,514.00	\$16,514.00
Dewatering	LS	20,061.62	\$20,061.62
Layout	LS	1,800.00	\$1,800.00
Total Force Main			\$485,662.00
Testing/As-builts			
Testing	LS	30,240.00	\$30,240.00
Asbuilts	LS	10,960.00	\$10,960.00
Total Testing/As-builts			\$41,200.00
Total All Scope of Work			\$1,148,372.00

Award #1 Supporting Documents Regular Agenda 09/05/2024

2023-0280 Trails Phase 1A

Number	Bid Item	Pipeline Contractors, Inc.	Engineer's Estimate	JEA Estimate	JEA Participation %
1	Mobilization	\$ 15,000.00	\$ 24,000.00		
2	Erosion and sediment control	\$ 6,000.00	\$ 12,000.00		
3	Water main	\$ 537,140.00	\$ 572,000.00	\$ 822,227.00	44
4	Force main	\$ 485,662.00	\$ 532,000.00	\$ 682,911.00	31
5	Unsuitable material removal and replacement	\$ 24,000.00	\$ 18,000.00		
6	Coordination with other on-site contractors	\$ 1,500.00	\$ 7,500.00		
7	Stormwater pollution prevention plan	\$ 6,000.00	\$ 8,000.00		
8	Testing	\$ 30,240.00	\$ 24,000.00		
9	Asbuilts	\$ 10,960.00	\$ 30,000.00		
10	Bonding	\$ 31,870.00	\$ 30,000.00		
	(EOR est. has contingency10%)		\$ 125,750.00		
	Total	\$ 1,148,372.00	\$ 1,383,250.00	\$ 1,505,138.00	

JEA Participation Amount (Water)	\$ 257,336.90	\$ 298,370.60	\$ 361,779.88
JEA Participation Amount (Sewer)	\$ 174,689.77	\$ 218,591.85	\$ 211,702.41
Total JEA Participation Amount	\$ 432,026.67	\$ 516,962.45	\$ 573,482.29

Delta	25%		% of total length
50%	\$ 128,668.45	Water	
	\$ 87,344.89	Sewer	
		Total pipe length	6418
		Length of water main	2458 38%
		Length of force main	3960 62%

Award #1 Supporting Documents Regular Agenda 09/05/2024

Cost Per Inch Per Foot					
			Length (ft)	Size (in)	\$/in/ft
Water	0.53	\$ 608,637.16	2400	16	\$ 15.85
Sewer	0.47	\$ 539,734.84	3880	12	\$ 11.59
	Total	\$ 1,148,372.00			
Water		\$ 822,227.00	2400	16	\$ 21.41
Sewer		\$ 682,911.00	3880	12	\$ 14.67
		\$ 1,505,138.00			
		0.237032086			

Firm Fixed Price Quotation

To

JEA

At

Northside Station CT-1, CT-2, CT-3 & CT-4

For a

Mark VI to Mark VIe Control System Upgrade

Proposal Number: OP-000597 Rev 3

Date: August 29, 2024



This document, all related and derivative information, whether written or oral is submitted in confidence for evaluation by the Buyer. As such, its contents are proprietary and confidential to the Seller. In taking receipt of this document, Buyer agrees not to reveal its contents, to third parties or otherwise, except to those who must evaluate it. Upon written request of Seller, Buyer will return all copies of this document to Seller. The equipment listed in this document is based on preliminary information and is subject to change.



Date: August 29, 2024

Nexus Controls LLC

John Field
+1-813-470-0081
john.field@ge.com

JEA (BUYER)
NORTHSIDE GENERATING STATION
4377 HECKSCHER DR
JACKSONVILLE, FL 32226-3033
UNITED STATES

Attention: Josh Reed

Subject: JEA Northside CT1-4 Mark VI to Mark VIe Control System Upgrades

Proposal Number: OP-000597 Rev 3

Unit/ Serial No: CT1-4 (GE Frame 7B, SNs 237980 237981 237982 237983)

Reference: Verbal Request

Dear Josh,

Nexus Controls LLC, a General Electric business, is pleased to offer JEA a financially and technically attractive Firm Fixed Price quotation for Northside Station's CT1, CT2, CT3 and CT4 Mark VI to Mark VIe control system upgrades.

We offer this proposal OP-000597 Rev 2 as a revision to our earlier Proposal OP-000597 Revision 0 and Revision 1, dated April 02 and August 28, 2024. This revision is identical to OP-000597 Revision 0 and 1, except with the following points:

- a. Updated Installation Site Services; Installation Years, Installation Schedule and Installation description.
- b. Updated payment terms in invoicing schedule, section 6.4.1.
- c. Moved delivery of all units, all hardware to 2025.
- d. Added 1 year extended warranty option for U3 and U4 hardware.

We look forward to the opportunity to discuss the proposed solution. Should you have any questions or require any additional information please do not hesitate to contact the undersigned.

Yours sincerely,

John Field
Sales Manager
Control Solutions and Services LLC



Table of Contents

1	Executive Summary	6
1.1	Overview	6
1.2	Mark VI to Mark VIe Migration Background	6
1.3	Mark VIe Benefits	6
1.4	Mark VIe History	7
1.5	Quality	7
1.6	Project Management	8
2	Base Scope of Supply	9
2.1	Gas Turbine Mark VI to Mark VIe Full Migration Scope of Supply	9
2.2	Bill of Material	9
2.3	Turbine Control System Hardware	10
2.3.1	Mark VI to Mark VIe Full Migration	10
2.3.2	I/O Enhancements	11
2.3.3	Reliability	11
2.3.4	Mark VIe Introduction	11
2.3.5	System Architecture	12
2.3.6	I/O Interface	12
2.3.7	Control Functions	13
2.3.8	Sequencing	13
2.3.9	Protection	14
2.3.10	Software Maintenance Tools (ToolboxST)	14
2.4	Turbine Control System Software	14
2.5	Human Machine Interface ("HMI")	14
2.5.1	Operator Interface HMI	14
2.5.2	Operator Interface	15
2.6	Proposed HMI External Communications	15
2.7	Engineering	16
2.8	Mark VI Parts Reclamation Program	16
2.9	Documentation	16
2.9.1	Electronic Media Documentation	16
2.9.2	Hardcopy Media Documentation	16
2.9.3	Documentation List	16
2.9.4	Computer Aided Design (CAD)/ Visio Drawings	17
2.10	Software Witness Acceptance Test (SWAT)	17
3	Optional Scope of Supply	18
3.1	Network Switches	18
3.2	Spare Parts – Mark VI to VIe Full Migration	18
3.3	Customer Training – Mark VIe Onsite	18
3.3.1	Audience	19
3.3.2	Course Description	19
3.4	Site Data Gathering Site Visit	19
4	Installation Site Services	20
4.1	Mark VI to Mark VIe Full Migration - Full Installation and Commissioning	20
4.1.1	Mark VI to Mark VIe Full Migration - Installation	20
4.1.2	Mark VI to Mark VIe Full Migration – Checkout and Commissioning	21
5	Proposal Basis and Buyer Responsibilities	22
5.1	General Assumptions and Clarifications	22
5.2	Application/ Product Specific Buyer/ End-user Responsibilities	23
5.2.1	Mark VIe Turbine Control	23
5.2.2	HMI	23
5.3	Documentation Related Buyer/End-User Responsibilities	24
5.4	Site Services Division of Responsibility	24
6	Commercial	27



- 6.1 Price Summary 27**
 - 6.1.1 Base Scope Summary..... 27
 - 6.1.2 Optional Scope Pricing Summary 27
 - 6.1.3 Pricing Limitations and Considerations 28
- 6.2 Schedule 28**
 - 6.2.1 Equipment (Hardware and Software) Schedule..... 28
 - 6.2.2 Equipment Schedule Limitations 28
 - 6.2.3 Site Services Schedule 29
 - 6.2.4 Optional and Incremental Service Adders (Not included in Base Scope pricing) 30
 - 6.2.5 Site Services Schedule Limitations 30
- 6.3 Delivery, Title Transfer, and Risk of Loss 30**
 - 6.3.1 Offsite Work (Equipment and Engineering)..... 31
 - 6.3.2 Onsite Work (Site Services, Training, Support agreements) 31
- 6.4 Payment Terms..... 31**
 - 6.4.1 Invoicing Schedule 31
 - 6.4.2 Termination Schedule 31
- 6.5 Terms and Conditions 32**
 - 6.5.1 Precedence 32
- 6.6 Purchase Order Address Details 32**
- 6.7 Validity..... 33**
- 7 Appendices 34**
 - 7.1 Benefits & Risk Summary – Industrial Cybersecurity 34**
 - 7.1.1 Gain Control of Your Systems with a Partner You Can Trust 34
 - 7.1.2 Benefits of Having a Robust Cybersecurity Solution 34
 - 7.1.3 GE Vernova’s Cybersecurity Portfolio..... 34
 - 7.1.4 Cybersecurity Posture: Assessment & Evaluation 34
 - 7.1.5 Solution Risk Summary 34
 - 7.2 Site Services Rate Sheet 36**
 - 7.3 Control Solutions and Services Terms and Conditions..... 37**



Notice

2019 Copyright © All rights reserved.

The information contained in this document is subject to change without notice.

† Registered trademark of General Electric in one or more countries. Other names may be trademarks of the respective owners and are used herein for identification purposes only. Use of any names or marks owned by a third party does not imply endorsement by or a relationship with the third party.

Defined Terms

The following terms shall have the meanings set forth below as used throughout this document.

1. **"Buyer"** means the Legal Entity ("LE") to which Seller's proposal is directed and the source of any subsequent order/contract, namely **"JEA"**.
2. **"Buyer/End-User's Equipment"** or "Unit(s)" means equipment into which the Seller's Equipment(s) system will be installed and for which the Services will be performed.
3. **"Contract"** means the contract between Seller and Buyer resulting from this Document.
4. **"Contract Change Order"** means additional equipment, engineering, onsite services (time and/or travel expenses) or a change in schedule not specifically identified in this proposal, for reasons outside of the Seller's control, shall be treated as a Contract Change Order. The Contract Change Order will be billed per a) A new quotation or b) the Seller's Standard Services Rate Schedule (Tier 5) in effect at the time of the work. Refer to Services rate section for the Seller's current Standard Services Rate Schedule. Schedule relief may be required based on the nature of the Contract Change Order.
5. **"Contract Price"** or "Proposal Price" means the price to be paid by the Buyer to the Seller under this Proposal or any resulting Contract for the Parts and Services.
6. **"End-User"** means the entity to which will be the ultimate recipient of the Seller's scope of supply, namely **"JEA"**.
7. **"Services"** means such planning, management, technical advisory services, site services and engineering necessary to install the System identified herein.
8. **"Seller"** means the LE issuing this proposal, providing the equipment and collecting the Purchase Order, namely **"NEXUS CONTROLS LLC"**.
9. **"Site"** means the location or Plant where the System or Parts will be installed and commissioned, namely **"JEA NORTHSIDE"** located at **"JACKSONVILLE, FL"**.
10. **"System"** means the equipment, parts, materials, supplies, components and other goods, supplied as part of the offer/proposal/quotation.

Revision History

Revision	Date	Description of Revision
Rev 0	April 02, 2024	Original Distribution to GE Gas Power
Rev 1	August 28, 2024	Updated Site Services description, installation schedule and installation year. Updated invoicing schedule.
Rev 2	August 29, 2024	Updated delivery year of U3 and U4 from 2025 to 2026. Split invoice schedule hardware delivery milestone into two milestones.
Rev 3	August 29, 2024	Updated delivery of all U1, U2, U3, U4 hardware to 2025. Added 1 year extended warranty to U3 & U4 hardware. Updated invoice payment milestones.



1 Executive Summary

1.1 Overview

Nexus Controls LLC is pleased to submit this Firm Fixed Price Quotation to JEA for the Mark VI to Mark VIe Turbine Control Migration at JEA Northside on CT1-4.

The Mark VIe Control System Migration modernizes the existing control system to GE's most advanced control platform, the Mark VIe Controller

As part of the upgrades and enhancements, Nexus Controls is offering the following:

- a. Gas Turbine model 7B with liquid fuel, Units CT-1, CT-2, CT-3, CT-4 (SNs 237980, 237981, 237982, 237983)
 - i. Mark VI Simplex Turbine Control System migration to a Mark VIe Simplex control (in PEECC)
- b. The Mark VIe will maintain the current I/O capability and provide the same functionality as the existing control system.
- c. Technical Direction (TDI) Site Services for the installation, start-up and commissioning will be provided as part of scope of supply.
- d. HMI upgrade with new Windows 10 HMIs to be located in the same locations as the existing HMIs.

1.2 Mark VI to Mark VIe Migration Background

The Mark VI to VIe migration delivers significant performance enhancements and an improved control system lifecycle for your operation. The Seller's migration solutions provide the latest proven technology of the Mark VIe enabling increased performance, flexibility and maintainability without impact to your current control system footprint, field wiring, or turbine devices. Our expertise stems from more than 50 years in control and turbine design and results in an unmatched knowledge of your entire system. With a migration from the Seller, you'll experience a minimized outage timeline and support options throughout the life of your control system.

1.3 Mark VIe Benefits

"e" Benefits -The Mark VIe provides performance, operability and reliability for today's connected plant.

- a. **Increased computational power** – state-of-the-art Mark VIe processors provide access to sophisticated software enhancement modules to improve turbine performance, reliability, and operability.
- b. **Intuitive features** – Seller's powerful ToolboxST software, with modern drag-and-drop type editors, industry leading trender with video type forward-reverse-freeze capability, and code-compare tools.
- c. **Increased operational productivity** – user-friendly HMI graphics, alarm/event management, and trending leading to improved operator recognition and resolution of system faults.
- d. **Maintenance efficiency improvements** – reduced engineering time due to a single integrated software tool for configuring networks, processors, and I/O boards, along with editing application software, managing block libraries, and displaying system diagnostics.
- e. **Latest software libraries** – Leverages years of OEM experience to ensure safety-related software updates are delivered while also retaining the majority of the existing control system customization.
- f. **Reliability Assurances** – elimination of single-point communication failures within the control.
- g. **I/O expandability** – flexible and modular architecture allows for future growth of capabilities and applications.
- h. **Cyber Security Compatible** – compliance with standards, maintenance programs, and remote monitoring and diagnostics.
- i. **Migration Advantages** – Seller's commitment to continued support of existing control platforms has developed into a design strategy that includes all future control platforms to be backward compatible with the previous generation controls. This allows our customers to migrate their control to the current technology without a wholesale change out of the control system. The Mark VI to Mark VIe Migration is part of this strategy. Our customers can now, and in the future, take advantage of the Seller's continued commitment to developing state-of-the-art software, turbine upgrades, and system improvements for their turbine generator and BOP systems.



1.4 Mark Vle History

15 Year Minimum Product Support Plan – Mark Vle spare parts will be available for a minimum of fifteen years from the date of commercial operation. Our intentions are to provide parts for a much longer period, subject to the availability of components from our suppliers. After our ability to provide spares is exhausted, we will provide repair and return service for these parts for a minimum of five more years.

The design philosophy of the Mark Vle control system is extended life through a modular structure. This allows for incremental technology upgrades, obsolescence protection, and comprehensive system upgrades, without replacing the entire control system. It includes an Ethernet backbone and discrete modular building blocks, such as controllers, network components, and I/O modules with extensive software tools. In addition to addressing obsolescence issues, the Mark Vle system will also provide access to new products and future enhancements being developed.

The Mark Vle platform software is derived from current control and protection algorithms, which are used on new steam and gas turbines, and it is modified only where it is necessary for compatibility with the existing site conditions. All Mark Vle platform controls are shipped with application software and display software ready for installation. The Mark Vle control system is specifically designed to perform as a turbine control, with direct sensor interface and diagnostics inherent in the panel design. The Mark Series turbine controls have helped gas and steam turbine users achieve RAM (Reliability - Availability - Maintainability) performance unmatched in the power generation industry.

The Mark Vle platform provides long life, support confidence, and a pathway to grow control system functionality over time. The future needs of control applications will assuredly demand increased performance and functionality. The Mark Vle platform pioneered the application of physics-based control models that enable expanded operating envelopes, improved emission footprint, and better management of turbine parts life. The Seller is actively adopting contemporary smart instruments and field control elements that provide improved accuracy and predictive health insights for our new products and aftermarket offerings.

1.5 Quality

Control Solutions and Services is committed to Customer Satisfaction, Compliance and Continuous Improvement. Our [Quality Policy](#), compliance to numerous standards and many reference sites demonstrate our adherence to these principles.

- a. Our Quality Management System (QMS) is scalable assuring lean quality from software patch or parts delivery to multisite mission critical control systems deployments.
- b. Our procedures drive clear requirements management through to the end solution. We also integrate global regulatory, technical and cyber security standards into our upfront proposal process so all stakeholders know how end user will be compliant.
- c. If new requirements emerge, we manage scope, schedule, cost and regulatory impacts to optimally deliver only the value customer contracts and regulations require.
- d. All our global design and manufacturing sites (USA, Brazil, Hungary, UAE, Saudi, Korea, Singapore, China) are ISO-9001:2015 certified by a leading Auditor such as LRQA or BSI. All operate under a single QA Manual.
- e. We survey using Net Promoter Score methodology driving lessons learned on Parts, Projects and Service deliveries.
- f. Our Continuous Improvement leverages root cause analysis and Lean Six Sigma disciplines to provide clear tie from improvement opportunities to countermeasure effectivity reviews.
- g. We welcome an examination of our procedures and objective evidence for compliance to contract and ISO-9001:2015 anytime during a project. Usually, this would last less than one day. Please work with your Project Manager once project is kicked off to arrange.

Some customers require additional assurances above and beyond contractual, ISO-9001:2015 and relevant technical regulatory standards. We can proceed with discussion on any of these options:

- a. Full System Audit. Occasionally end customers require documented assurance of compliance to contractual and quality standards. These audits require multiple days to complete and some planning for scope. We can include this scope in the contract.
- b. Expanded Project Quality Documentation. Some projects require specific quality requirements that are not part of ISO-9001:2015, we offer to contract these activities to document additional deliverables (examples: Project Quality Plans, Software Quality Plans, Packaging Plans, Inspection Quality Plans)
- c. Where end customers require compliance to standards we do not currently possess we will work with you to develop a custom solution to meet your needs.



1.6 Project Management

Upon receipt of an order, the Seller will assign a Project Manager who will be the Buyer/End-user's single point of contact to ensure that the scope and delivery requirements are satisfied. The Project Manager's responsibilities will include:

- a. Project scheduling and tracking for the project activities associated with the equipment delivery.
- b. Procurement and expediting of all equipment and services included in this proposal to insure a smooth project.
- c. Coordination of engineering, test and startup activities (if included) for the equipment upgrade.



2 Base Scope of Supply

2.1 Gas Turbine Mark VI to Mark VIe Full Migration Scope of Supply

The Seller will upgrade the existing Mark VI gas turbine control hardware and software with Mark VIe hardware and software (ControlST and Cimplicity). The migration upgrade maintains all field wiring terminations and turbine devices. The Seller will swap out (plug & play) the Mark VI hardware from within the existing Mark VI cabinet(s), with newer Mark VIe components (Controller, I/O packs and boards). The Seller's Controls Field Engineer will perform the work, and there will be no need for Craft Labor support.

Mark VIe software functionality is based on the as-running Mark VI software, duplicating all critical functions and improving some functions based on the OEM and Seller's standards.

2.2 Bill of Material

Base scope of this proposal includes below items to support the Mark VI to Mark VIe Migration.

The following detailed scope of supply covers the hardware, software and engineering required to perform a typical Mark VI to Mark VIe simplex controls migration upgrade for a Frame 7B utilizing liquid fuel. It should be noted this listing may not be "all inclusive" and further discussions with the Seller after project award by our execution team and possibly a site visit, would be required to ensure the completeness of our offering.

Qty	Hardware Description
4	Mark VIe Simplex Gas Turbine Control Full Migration (Fits Inside the Existing Mark VI Cabinet/ Footprint)
4	Mark VIe Simplex Turbine Controller
Lot	Internal Cabinet Wiring and Misc. Hardware – i.e., Ethernet cables, Mounting hardware, labels, etc.

Qty	Operator Workstation HMI Computer
3	Workstation – Commercial Minitower Desktop Workstation (Optional Rack Mounting Available) <ul style="list-style-type: none"> • Replacements for CRM1_SVR, CRM2_SVR and "CRM3_SVR" in control room • Intel Quad Core Processor • Two (2) SATA Solid State Drives • NVIDIA Quadro P620 2GB Graphics Card (4 mDP output) • Standard HP USB Keyboard US and 2-Button USB Optical Scroll Mouse
4	17" Touch Panel Mount Computer – IP65 Approved Front Panel <ul style="list-style-type: none"> • Replacement for GT1_SVR, GT2_SVR, GT3_SVR and GT4_SVR in PEECC • Intel Three (3) Core Processor • Analog Resistive Touch Panel • One SATA Hard Drive Note: May require panel door modifications to replace previous Seller supplied 17" PC's
3	24-inch LED Flat Screen Monitor for Control Room Operator Stations Above
Lot	100baseT Ethernet Cables, For UDH Connections per HMI
Lot	100baseT Ethernet Cables, For PDH Connections per HMI

Qty	Software Description (per HMI)
Lot	CIMPLICITY HMI Software, Including Windows Operating System
Lot	Acronis Backup and Restore
Lot	McAfee Antivirus – 2-year License
Lot	Microsoft Excel and Word Programs

2.3 Turbine Control System Hardware

2.3.1 Mark VI to Mark VIe Full Migration

The Mark VI to Mark VIe full migration includes the latest Mark VIe processors (controllers), power supplies, replacement of I/O boards, and the latest software enabling new capability and a clear path for future enhancements and extended lifecycle support.



Today's Mark VI Electronic Hardware Structure (Typical TMR)





Tomorrow's Mark VIe Control: Full Mark VI Migration Hardware Structure (Typical TMR)

- a. Provides:
 - i. Product status is set to new Mark VIe lifecycle while supplying room in the cabinet for future expansion.
- b. Includes:
 - i. Mark VIe UCSx Controllers, Power Supplies/Distribution and Communication modules
 - ii. Replacement of Mark VI VME IO Racks
 - iii. IONet Switches and Ethernet cables replace Mark VI Terminal Block Cables
 - iv. Mark VIe I/O Packs replace the Mark VI I/O Boards utilizing a "Pack Rack" design

2.3.2 I/O Enhancements

With a migration, no changes are needed with the existing field wiring or turbine field devices. The I/O interface to the field cabling remains as is. The current I/O capacity also remains unchanged, but the ability will now exist to expand the I/O capability either locally or remotely via Mark VIe I/O hardware blocks and will communicate 100MB Ethernet via category 5 or fiber optic cable.

Additional I/O capacity, if required, can be achieved by providing a Mark VIe auxiliary I/O cabinet, which can accommodate additional devices. The Mark VIe auxiliary I/O cabinet will communicate 100MB Ethernet via category 5 or fiber optic cable.

2.3.3 Reliability

The same control and protection philosophy that has provided running and tripping reliability all these years in the Mark VI will be retained. The operator stations will communicate directly with the upgraded controllers. For Triple Modular Redundant ("TMR") applications, the upgraded system(s) will also be TMR. The operator stations will communicate directly with the upgraded, redundant <r>, <s> and <t> controllers.

The network provides high-speed peer-to-peer communications between multiple Mark VIe controllers and the ability to add redundant networks.

2.3.4 Mark VIe Introduction

Note this section is a general description, and not all paragraphs may apply to this project.

The Mark VIe is a fully programmable control system that is well suited for retrofit of previous generations turbine control systems. A high-speed Ethernet* IO Network (IO Net) allows distributed IO and connects distributed IO cabinets to the Mark VIe controller cabinet. The Mark VIe control can also be designed to provide simplex or triple redundant operation. The simplex architecture option is well suited to the upgrade of existing non-redundant turbine control systems from any manufacturer.

The Mark VIe architecture is well suited for turbine control retrofits due to its scalable hardware and software capability. It can be built in a single control cabinet or distributed IO configuration.

Simplex and redundant are built-in versions of the Mark VIe that have equivalent control and turbine protection capabilities. The primary difference between simplex and redundant control systems is running reliability. Control system running reliability is based upon the percent of total IO used in the system, the percent of used IO classified as critical and the amount of redundancy built into the control system. Therefore, critical devices should be considered for redundancy.

Applications suited to a redundant control system solution include:

- a. Cases where the unit operation is critical to the plant production processes.
- b. Cases where the unit operation is critical to plant efficiency requirements.
- c. Customer requires controller or power supply redundancy.
- d. Generator drive applications where continuous base load operation is required.
- e. Mechanical drive applications where compressors or pumps are critical to the production process.

Applications suited to a non-redundant control system include:

- a. Plants where the turbine operation is not critical to other plant processes.
- b. Peaking units where starting reliability is the primary system requirement and continuous long-term operation is not anticipated.

Redundant or non-redundant applications requiring electronic backup protection include:

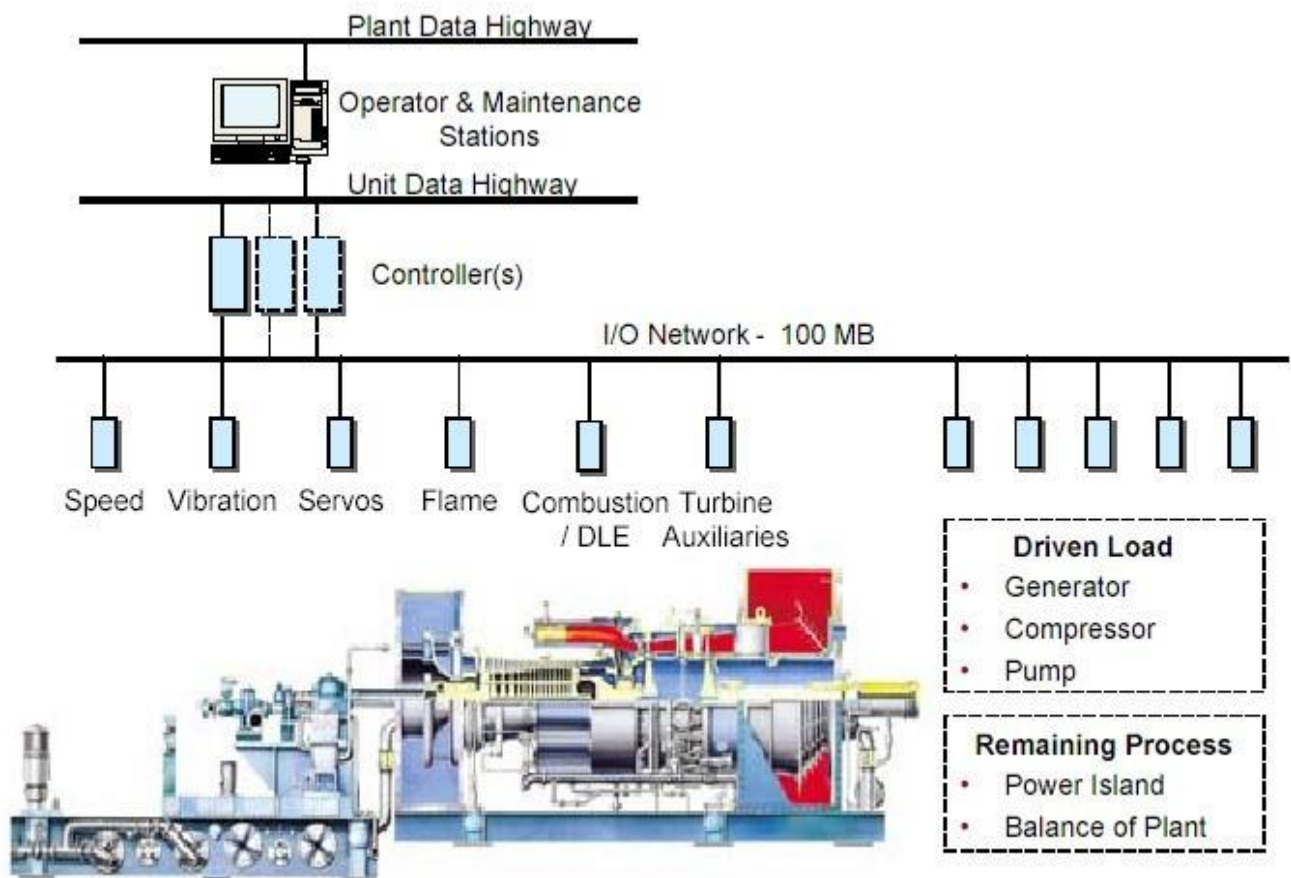
- Electronic over speed, deceleration, acceleration and locked rotor detection.
- Primary control watchdog with speed difference and stale speed detection.
- Backup sync check for generator drive units.

2.3.5 System Architecture

The Mark VIe communicates with networked IO over one or multiple Ethernet networks. The controller rack consists of a main processor and one or two power supplies. A QNX® real-time, multitasking operating system is used for the main processor and IO. Application software is provided in a configurable control block language and is stored in non-volatile memory. Data conforms to IEEE-854 32-bit floating-point format.

The IO Net is a dedicated, TMR, point-to-point protocol that provides a deterministic, high-speed 100 MB communications network suitable for local or remote IO with a fiber interface. It is used to communicate between the main processor(s) and networked IO blocks, called IO packs.

Each IO pack is mounted on a terminal board with barrier or box type terminal blocks. The IO pack contains two Ethernet ports, a power supply, a local processor, and a data acquisition board.



2.3.6 I/O Interface

The Mark VIe control is designed for direct interface to turbine and generator devices such as vibration sensors, linear variable differential transformers (LVDT), magnetic speed pickups, thermocouples, and resistance temperature detectors (RTD). Direct monitoring of these sensors reduces the need for interposing devices with their associated single-point failures. Direct connection to a field device reduces long-term maintenance and enables diagnostics to directly monitor the health of devices mounted on the machinery.

Contact inputs are powered from the 125 V dc battery bus (optional 24 or 48 V dc) through the Mark VIe terminal boards. Each contact input is optically isolated and has a 1ms time stamp for sequence of events monitoring. Terminations for existing contact inputs can be replaced one-for-one or split up for greater alarm resolution. For example, instead of having



several field contacts wired to a single contact input, they can be separated into multiple contact inputs to provide a separate alarm message for each problem in the lube oil system.

Contact outputs are from plug-in, magnetic relays with dry, Form-C, contacting outputs (optional solid-state outputs). Turbine solenoids are normally powered from the 125 V dc battery bus with suppression for each solenoid with a 3.2 A slow-blow fuse on each side of the feeder circuit.

Analog inputs monitor 4 – 20 mA (250 ohm sensing resistor), which can be configured for self-powered, differential inputs, or as sensors that use a +24 V dc supply from the Mark VIe control. Selected inputs can be configured for 0 – 1 mA inputs (5,000 ohm sensing resistor) or ± 5 , 10 V dc inputs. This interfaces to:

- a. Existing 0 – 1 mA generator MW and MVAR transducers.
- b. Existing 0 – 5 V dc pressure transducers.

Most Mark II generator drive systems already have these transducers; however, Mark I systems do not. Compressor discharge pressure biases the temperature control system to improve turbine operation.

Analog outputs can be configured for 4 – 20 mA output (500 Ohm maximum) or 0 – 200 mA output (50 Ohm maximum).

Thermocouple inputs can be grounded or ungrounded. Software linearization is provided for type J, K thermocouples plus types E, S, or T thermocouples. Existing control and over temperature thermocouples are retained and divided between the Mark VIe controller and the backup protection module for temperature control and over temperature protection, respectively.

RTD inputs can be grounded or ungrounded. Software linearization is provided for 10 Ohm copper, 100/200 Ohm platinum, or 120 Ohm nickel RTDs. The generator or load compressor RTDs can be monitored directly by the Mark VIe with all turbine and driven-load temperatures being collected in a common database with other turbine generator parameters.

Speed input direct interface provides redundant, magnetic speed sensor inputs to the controllers for speed control and overspeed protection. Backup protection is provided with separate processors, and terminal boards to automatically de-energize the fuel solenoids.

Integrating servos have a direct interface to the bipolar servo actuator and LVDT valve position feedback. Bi-polar servo current outputs are provided in 10, 20, 40, 80, and 120 mA ranges for valve and actuator controls. Mark VIe LVDT excitation is 7.0 Vrms at 3.2 kHz. Pulse rate inputs are also provided for servo control loops using liquid fuel-flow, pulse-rate feedback.

Vibration protection has a direct interface for vibration protection sensors. This includes seismic (velocity) type sensors and accelerometers. This eliminates the single-point failure of a separate monitoring system, and allows Mark VIe diagnostics to monitor seismic sensors when the turbine is running or stopped. The Mark VIe contains accelerometer speed-tracking filters to isolate the appropriate vibration frequencies of each shaft for the display, alarm, and protection.

Proximitors direct interface for monitoring keyphasor, radial proximitors, and axial proximitors data is available in a common database with all turbine parameters. The fundamental (1X), first harmonic (2X), and composite vibration signals are collected by the Mark VIe and displayed with both magnitude and phase angle on the Human-Machine Interface (HMI). Active isolators provide buffered outputs to BNC connectors on the Mark VIe terminal boards for temporary connection to portable vibration analysis equipment.

Synchronizing interface uses generator and line potential transformers to match the generator frequency (turbine speed) to the line frequency and match the generator voltage to the line voltage through commands to the generator excitation control. The Mark VIe provides backup sync check protection, closes the generator breaker, and monitors actual breaker closure time.

2.3.7 Control Functions

2.3.8 Sequencing

Turbine control can include automated startup and shutdown sequences customized to meet operator requirements, as well as control and monitoring of all turbine auxiliary and support systems. Operators can have the turbine automatically start and synchronize or sequence to intermediate hold. All ramp rates and time delays are pre-programmed for optimum performance. Timers and counters record long-term turbine operating information that can include:

- a. Total running time
- b. Total starts



- c. Emergency trips
- d. Other as applicable

This automation enables operation from a remote site with the assurance that the turbine is fully protected. Diagnostics capture a record of abnormal conditions.

2.3.9 Protection

Turbine control initiates an alarm if an abnormal condition is detected. If the condition exceeds a predefined trip level, the turbine control drives the control valves to a zero-flow position and de-energizes the shut-off valve solenoids. Diagnostics monitor the speed and acceleration, and then verify that all sensors are active. Primary protection is implemented by the controller(s), while backup protection is provided by backup protection IO packs and terminal boards.

2.3.10 Software Maintenance Tools (ToolboxST)

Mark VIe control is a fully programmable control system, which uses proven control and protection algorithms integrated with the custom IO, sequencing, and displays for each application. Multiple block libraries are provided with general purpose blocks, math blocks, macros (user blocks), and application-specific blocks. The application software is password protected and can be downloaded while the system is running. In redundant control systems, the application software in each controller is identical and represented as a single program to maintenance personnel.

Downloads of changes can be automatically distributed to redundant controllers by the control system, and differences are monitored by diagnostics. All application software is stored in non-volatile memory.

Application software is run sequentially, and dynamic data is shown in function block and ladder diagram formats. Maintenance personnel can add, delete, or change analog loops, sequencing, IO assignments, and tuning constants. To simplify editing, use the drag-and-drop operation to move data points on the screen from one block to another.

Points can also be dragged from the application software diagrams onto trends. Other features include Boolean (digital) forcing, analog forcing, and trending at the running frame rate of the application software.

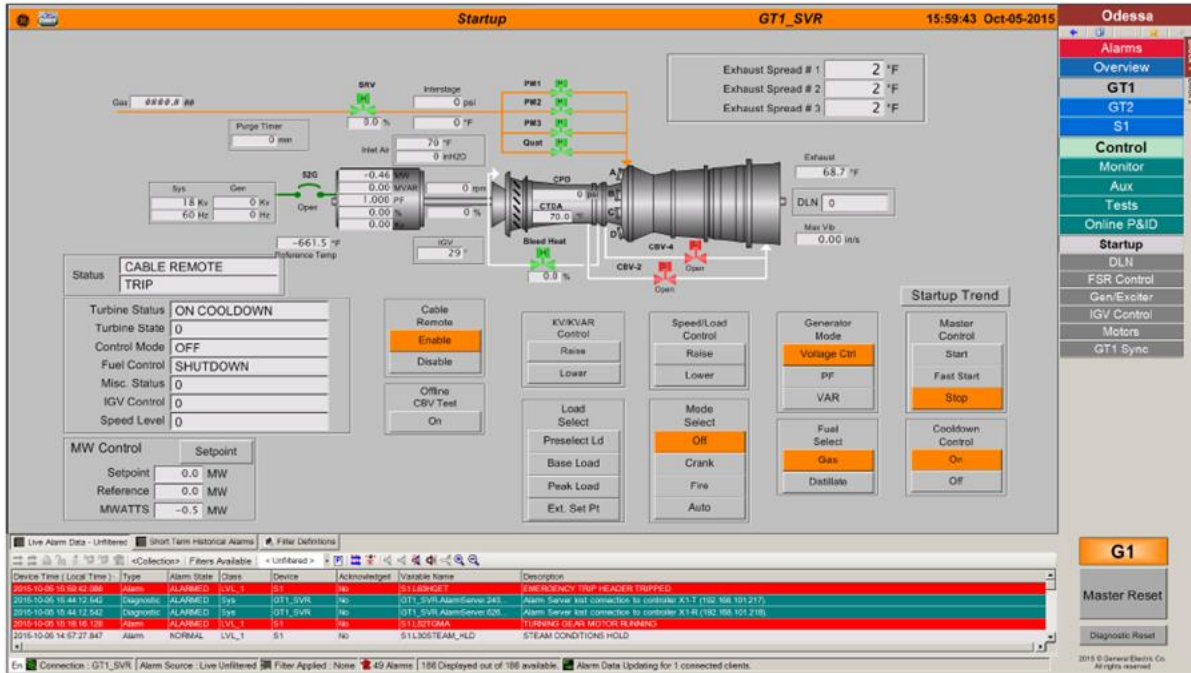
2.4 Turbine Control System Software

As part of the migration, the as-running Mark VI software will be obtained from the unit(s) with automation tools. Conversion of the existing software ensures the transition to the new control(s) will be seamless and accurate. This new software environment is part of the Seller's ControlST and WorkstationST software suite with major enhancements over the current Mark VI tools, including drag-and-drop type editors, math blocks, macros, trending with video type forward-reverse-freeze capability, watch windows, code-compare tools, trip, short-term historian, OPC Server, etc. Also, users can download changes on-line without rebooting the new controllers.

2.5 Human Machine Interface ("HMI")

2.5.1 Operator Interface HMI

The operator interfaces will be replaced with modern HMIs in the same locations. This new operator interface has a Proficy HMI/SCADA CIMPLICITY graphics package with accurate turbine screens, convenient navigation, superior alarm management, and tools for editors, trending, data analysis, and exporting data. New Trip History handles significantly more points with better time resolution and stores the data for 30 trips.



Example HMI CIMPLICITY Graphics

2.5.2 Operator Interface

The HMI is the operator interface. It is a PC with a Microsoft Windows-based operating system, client/server capability, CIMPLICITY* Graphical User Interface (GUI) and software maintenance tools (ToolboxST*). It can be applied as:

- Primary operator station for one unit or the entire plant
- Maintenance station gateway
- Engineers station
- Gateway for communications

The HMI communicates with the main processor board in the Mark VIe controller(s) through the Unit Data Highway (UDH) and to third party control and monitoring systems via the Plant Data Highway (PDH). All control and protection is resident in the Mark VIe controller, which allows the HMI to be a non-essential component. With the turbine running, the HMI can be reinitialized or replaced with no impact on the controller.

System (process) alarms for fault conditions are time tagged at frame rate in the controller(s) and transmitted to the HMI alarm management system. System events are time tagged at frame rate, and sequence of events (SOE) for contact inputs are time tagged at 1ms in the IO packs. Alarms can be sorted according to ID, resource, device, time, and priority. Operators can add comments to alarm messages or link specific alarm messages to supporting graphics. A standard alarm/event log stores data for 30 days and can be sorted in chronological order or according to the frequency of occurrence.

A trip history function stores key control parameters, alarms, and events for the last 30 trips. A configurable set of data is collected continuously in the controller and saved automatically for upload and analysis. Data is displayed in English or Metric engineering units with a one second update rate and one second to repaint a typical display graphic. Operator commands can be issued to increment/decrement a setpoint or a numerical value can be entered for a new setpoint.

Gas turbine control screens display a diagram of the turbine with the primary control parameters. The diagram is repeated on most of the screens to provide a visual image of the turbine's performance while changing screens.

2.6 Proposed HMI External Communications

Our offering includes an OPC DA and OPC AE / GSM protocol interface to the Buyer/End-User equipment. We propose to reapply the same point list that is currently in use for applications.



Seller will not modify the Buyer supplied external (Non-GE) equipment/foreign devices or other sub-systems for communication interface with the Mark VIe. Buyer/End-User is responsible for any additional hardware or programming required for the interfacing of Seller supplied equipment to Buyer/End-User supplied external equipment/foreign devices. The Seller expects the Buyer, or his vendor will be needed to help with the communication on his Equipment. The Seller will work on GE equipment to help support commissioning the communication link(s).

2.7 Engineering

As part of the project, the Seller will include the following:

- a. Kickoff Meeting: A site kickoff meeting will be held at the End-user facility. Attendees will include the project manager and controls/project engineer. The site kickoff meeting will be a one-day meeting that will review the project scope and schedule.
- b. Design Review Meeting
- c. Wiring Design
- d. Cabinet Design
- e. HMI Design
- f. System Programming
- g. System Testing
- h. One-day Factory Acceptance Test (FAT) for demonstration of one GT control system

2.8 Mark VI Parts Reclamation Program

Included as part of this offer, the Seller offers the Buyer a credit for the return of the Mark VI hardware removed as part of this project and the associated Buyer/End-User owned spare parts. The Turbine Control parts removed will be collected and packaged for shipment, along with the unused spares collected by the Buyer/End-User, to a Seller's facility by the Seller's Field Engineer, with assistance from the Buyer/End-User site personnel. The Seller will provide the packaging material and shipping expense for returning the reclaimed parts to the Sellers facility.

2.9 Documentation

Unless otherwise indicated, all electronic (softcopy) and hardcopy documentation, control screens, panel labels and wiring identification will be provided in the English language only. The Seller will provide the following product documentation in quantities and media type listed below.

2.9.1 Electronic Media Documentation

Project documentation will be provided electronically via the Seller's Secure Portal and optionally on DVD media if purchased.

2.9.2 Hardcopy Media Documentation

Three (3) sets of the project documentation will be provided in hardcopy format on paper and inserted in into binders (3 ring or similar). The paper media will typically be 8-½" x 11" or 11" x 17" (for folded drawings).

2.9.3 Documentation List

The following table shows the description of the project documentation that the Seller will be providing as part of the deliverables for the contract.

Document Description	
Item	Generic List
1	Elementary (Wiring) Diagrams
2	Outline Drawings
3	Layout Drawings (cabinet or otherwise)
4	Recommended Spare Parts List
5	Instruction Manuals/Publications; Including Maintenance and User Guides
6	System Guide / Publications
Item	Application Specific List



Document Description	
7	SWAT Report (Optional)
8	Modbus Register Map
9	Startup Report

2.9.4 Computer Aided Design (CAD)/ Visio Drawings

If required as part of the contract, the Seller may provide the Seller job specific drawings (not End-user/plant or vendor/ third party documentation) in "CADD" (Computer Aided Drafting and Design) or Microsoft Visio (.vsdx) format. The following shall apply when the Seller provides drawings in CADD or Visio format:

- a. The Seller will supply the final as-built drawings in AutoCAD (.dwg) or Microsoft Visio (.vsdx) format. Initial project drawings will be provided in Adobe Acrobat format. The AutoCAD or Visio version shall be that version used by the Seller as the time of the drawing generation.
- b. To meet the Seller's Intellectual Property guidelines the AutoCAD. (dwg) or Visio (.vsdx) will be provided without a border or title block as unsigned unformatted drawings. The Seller makes no warranty as to the exactness or the completeness of such drawings. The Seller's drawings contain confidential and proprietary information; therefore, their use is restricted to the use with Products and/or Services as provided under the applicable contract/purchase order. Drawings shall not be disclosed to any third party unless otherwise agreed to by the Seller in writing.
- c. Drawings for the Seller supplied third party (Non-OEM/GE) equipment will be provided in the native format as received by the Seller's vendor.

AutoCAD format drawing files are not included in this proposal.

2.10 Software Witness Acceptance Test (SWAT)

A one-day performance acceptance test for the control system for one Gas Turbine held at the Seller's facility (in Longmont, CO), is intended to be a review of all aspects of the control system's operation and design. Testing will include system software only. The intent of the test is to demonstrate that the software performs as required.

Please note the Buyer is responsible for all travel and living expenses for the Buyer's personnel attending the SWAT.



3 Optional Scope of Supply

3.1 Network Switches

The existing networks will be upgraded to the latest redundant network with modern VLAN switches. Units within the same plant site will be networked together as the units are upgraded.

Qty	Ethernet Network Equipment
3 Pair	Cisco Network Communications Switches for UDH and PDH Duplex Network <ul style="list-style-type: none"> • 1x Root Network Switch, Cisco model 9200L or latest equivalent • 2x Edge Network Switches, Cisco model 9200L or latest equivalent • AC Power Supply modules

3.2 Spare Parts – Mark VI to VIe Full Migration

Seller has included the following spare parts as a minimum requirement to prevent prolonged downtime in the unlikely event of a failure. Typical parts involve the control hardware most critical to the operation of the system. Seller has included one set of level 3 spare parts in this offering as shown in the table below. This list is an estimate and once the engineering design of the system has been completed, a formal list of the supplied spare parts and product specifications will be provided.

The lists below are preliminary lists based on experience with the Buyer's turbine type and is subject to change once a final design of the control system has been completed.

Level 3 – Critical Spare Parts

Qty	Description
1	UCSx - Controller
1	Backup Turbine Protection Module Terminal Board
1	Backup Turbine Protection Module
1	Turbine Specific Primary Trip Terminal Board
1	Turbine Specific Primary Trip Module
1	High Density Power Distribution Module
1	IO Net Communications Switch
1	28 V DC Control Power Output Boards
1	Power Distribution System Feedback Module
1	Power Supply

3.3 Customer Training – Mark VIe Onsite

The Seller shall provide one (1) five (5) day onsite Operator and Maintenance training course for up to eight (8) attendees.

Our full-time instructors are thoroughly trained in the theory of operation of the hardware and software, supported by several years of application experience. This enables them to relate to real-world experience and actual field application problems.

Operator and maintenance personnel training will be provided on-site during the installation and commissioning of the new equipment offered in this proposal. Courses will be in English unless otherwise stated herein.

Unless Otherwise Specified Quoted Price Includes:

- a. Instructors' preparation and class time
- b. Manuals
- c. Class certificates for each student
- d. Instructor's travel expenses including food and lodging
- e. Shipping of training materials and equipment (if required)



3.3.1 Audience

- a. Maintenance Personnel
- b. Technicians
- c. Engineers

3.3.2 Course Description

This program is intended for control technicians whose site has a Mark VIe control system(s). The training will familiarize trainees with the hardware and software components and provides detailed knowledge to troubleshoot and maintain the Mark VIe control system(s) and associated equipment. The course is modular and robust and includes training material derived from actual Mark VIe installed systems.

Mark VIe Upgrade Operations/ Maintenance Intermediate Course

Day 1 Introduction

- Instructor Background & Equipment Review
- Mark VIe System Overview
- ToolBoxST structure
- Cimplicity Startup and Navigation
- Cimplicity Trends
- Historian PI

Day 2 ToolboxST Tools

- Finder
- Watch windows
- Constants and variables
- Monitoring Software & Trenders
- Mark VIe I/O Pack Controls & PDM
- View & troubleshoot IO diagnostic alarms

Day 3 Maintenance

- I/O Pack and Terminal board replacement
- Controller card replacement
- Permanent software changes
- Editing application software
- Configuring IO points
- LVDT calibration

Day 4 HMI Cimplicity (Basic)

- UDH-Networking
- Introduction to EGD
- Cimplicity Single Screen Troubleshooting
- Cimplicity Communications
- Cimplicity Single Screens
- Compiling and Downloading

Day 5 Troubleshooting

- Alarm tracing
- Add and modify alarms
- Viewing triplog
- Capture blocks and DDRs
- Trip History

3.4 Site Data Gathering Site Visit

The Seller has included a one (1) day on-site data gathering visit to gather all of the current as-running software. Travel and living expenses are included for this one-day site visit.



4 Installation Site Services

4.1 Mark VI to Mark VIe Full Migration - Full Installation and Commissioning

The Seller will provide the site services required to upgrade the existing Mark VI to a Mark VIe with a Full Migration. The Seller will provide a Controls Field Engineer during the installation phase of the project, as well as one additional resource to assist. This assistance is to perform tasks including but not limited to lifting/mounting heavy components, routing cables, etc., where two people working together will make the installation more efficient and safer. The Seller's Controls Field Engineer will then perform the commissioning and startup of the new control system. Any/all work outside of the control cabinet will be the responsibility of the Buyer/End-user.

Since little to no field wiring will be de-terminated/re-terminated from the existing terminal blocks during the Migration process, only an abbreviated checkout will be performed. A complete checkout will be performed on new devices only.

The Seller has included a fixed quantity of onsite time to perform the installation. These fixed quantities are based on the Seller's experience with similar installations on similar equipment and recognize the Buyer/End-user's outage schedule.

NOTE: It is assumed that the existing fiber optic and Ethernet network cabling on the existing Mark VI systems is functional and in good working order, as it will be re-used with the new equipment. If this is not the case, new fiber optic and Ethernet network cabling will need to be furnished, installed, and tested (by others). Seller will only furnish and install the necessary new short runs of Ethernet cabling required to connect the Mark VIe packs to the Mark VIe controllers.

4.1.1 Mark VI to Mark VIe Full Migration - Installation

The Seller's Controls Field Engineer will perform the following tasks with the assistance from the Seller's supplied support personnel:

- a) Site orientation/safety training
- b) Locate, uncrate and identify equipment
- c) Stage parts and work area
- d) As necessary, record pre-power-down data from existing Mark VI and Master HMI
- e) Power-down Mark VI / LOTO (Buyer/End-user responsibility, Seller to verify de-energized equipment)
- f) Disconnect cables from, and remove the R, S and T VME rack assemblies
- g) Disconnect cables from, and remove VPRO assembly
- h) Install new Mark VIe Controller assembly in same footprint as VPRO
- i) Use power plugs from old VPRO, to power new Controller assembly
- j) Working on one terminal board at a time, remove the existing terminal blocks from the terminal board with the field wiring still terminated on the terminal block
- k) Remove the Mark VI 37-pin cables that will no longer be used
- l) Remove the Mark VI terminal board
- m) Install the new Mark VIe terminal board and packs in same footprint as the removed Mark VI terminal board
- n) If necessary, set jumpers on the new terminal board to match existing terminal board jumpers
- o) Re-attach the previously removed terminal blocks to the new terminal board
- p) Repeat steps j) through o) for all remaining terminal boards needing upgraded
- q) Install power cables from Mark VIe Controller assembly to all Mark VIe packs
- r) Install Ethernet cables from Mark VIe Controller assembly switches to all Mark VIe packs
- s) Verify all cables and connections are correctly in place
- t) Install new HMIs and network switches as required by design
- a. Checkout and Commissioning



4.1.2 Mark VI to Mark VIe Full Migration – Checkout and Commissioning

The Seller's Controls Field Engineer will perform the following checkout, commissioning, and startup related tasks with assistance from Seller supplied support personnel and where necessary, Plant Technicians:

- a) LOTO clearance (Buyer/End-user responsibility – Seller to verify re-energized equipment)
- b) Energize Mark VIe panel/power-up validation
- c) Establish network communications between Master HMI and Mark VIe
- d) Perform initial ToolboxST software downloads/validation to Mark VIe
- e) Perform post-migration Mark VIe Control System Checkout (per Seller's standards)
- f) Cimplicity screen validation
- g) Alarm validation
- h) Verify communications and functionality to existing excitation and static starter equipment as necessary
- i) Perform Turbine Start-Up and Commissioning Tests (per Seller's standards)
- j) Final documentation and drawing redlines



5 Proposal Basis and Buyer Responsibilities

This section lists those items which are provided by the Buyer or End-User and not part of the Seller's scope of supply. It also lists the Seller's assumptions, comments to Buyer/End-user's requirements, and the breakdown of Buyer/End-User responsibilities.

5.1 General Assumptions and Clarifications

Below represents the Seller's Clarifications, Assumptions and Exceptions related to the Seller supplied equipment and services.

- a. Seller believes that this proposal/quote meets the intent of the Buyer/End-User's request and will be the document of reference in any resulting contract.
- b. Seller assumes multiple units onsite (included in this proposal) are similar except for the Unit number designators and tag names as they relate to the Seller supplied equipment (Hardware, Software), engineering, documentation and control logic functionality. IE: Pricing for unique hardware, software or engineering is not included, when the scope of work is applied to multiple units onsite, which are assumed to be similar.
- c. Firewall and Routing changes are not part of the Seller's scope. They are expected to be performed by the Buyer prior to the Seller's arrival.
- d. Unless specifically identified in this proposal, the Seller is not supplying any cables (copper, Ethernet, or fiber optic), networking equipment, field devices, instrumentation, cabinets, housings, solenoids, actuation devices, or installation materials.
- e. It is assumed that none of the Seller's equipment, cabling, etc. will be installed in or pass through any area identified hazardous (i.e Class I Div. I, Class I Div. II, etc). If upon engineering site visit it is determined that such an area exists where Seller's equipment is to be installed, the resulting changes to design and installation will be billed as a Contract Change Order.
- f. It is assumed that any existing equipment, including but not limited to cabling, wiring, sensors, field devices, terminal boards, communication networks, etc., that are not being replaced as part of this work scope are in a good working order. Replacement of non-functioning or faulty equipment is not included in the scope of this document, unless otherwise specified. If a site survey and Seller's engineering results in the need for additional equipment, cabling and field devices, this will result in a contract change order where pricing and delivery cycle relief will be afforded to the Seller.
- g. All machine components are in satisfactory condition and will operate with the new controls. This includes, but is not limited to, the existing metering, generator protection/control, lubrication, cooling, gas, fuel, steam and hydraulics systems.
- h. If an RFQ or technical specification is presented by the Buyer/End-User during the project's execution (contract term), that were not initially brought to the attention of the Seller during the proposal development stage and said specifications/requirements subsequently increase the cost of the project for the Seller, this will be treated as a Contract Change Order and billed accordingly.
- i. Seller reserves the right to substitute suitable and equivalent third-party hardware in place of those proposed, should such items become obsolete prior to final delivery of those products. If during the warranty period, a third-party hardware item becomes defective and requires replacement, such item may be replaced by a substitute item if the third-party item has been obsoleted. Buyer/End-User shall receive notification of substitution prior to shipment of the items.
- j. When existing cabinetry is being reused, the Buyer/End-User shall be responsible for the condition and suitability of same to house the Seller supplied equipment, maintaining NEMA, EMI and RFI requirements, as an example.
- k. No provisions for a separate, integrated FAT or communication testing with a foreign device or other sub-systems (DCS, SCADA, Historian, etc.) are included in this proposal. Simple communication testing with Buyer/End-User's foreign devices or other sub-systems can be conducted and verified by the Seller's field engineer carrying out the commissioning onsite. Should Buyer/End-User decide to have a separate communication test with other systems at Buyer/End-User's facility, Seller will provide a quotation upon Buyer's/End-User's request and detailed definition.
- l. No modifications to any Buyer/End-User DCS or third-party equipment are included in this proposal. The new Seller supplied equipment may require modification to DCS signals to maintain compatibility. Modification of these DCS signals is the responsibility of Buyer/End-User.
- m. Relevant OEM Technical Information Letters ("TIL") related to equipment being provided, have been performed.
- n. Buyer/End-User is responsible to adhere to the timetable of critical project data exchange and execution milestones as identified in the detailed project schedule agreed to at the kick-off meeting.



- o. As the project, must incorporate Buyer/End-User specific requirements, Buyer/End-User must support all project activities.
 - i. Support Site kick-off meeting, site visits, design reviews, status meetings, etc.
 - ii. Participate in Buyer/End-User Witnessed Factory (if included) and Site Acceptance Tests
 - iii. Respond to Seller inquiries and requests for documentation in a timely manner.
 - iv. Direct all communications through Seller's assigned Project Manager.
 - v. Document, in writing, approvals for all change orders.
- p. Non-Seller Engineering Design Package: As part of our base offer the Seller will provide unit specific equipment design drawings for the equipment we are providing, which will show termination points/locations. A plant specific Engineering Design Package (EDP) is typically required, which takes the Seller's equipment specific drawings and the existing plant drawings and integrates them into a seamless EDP for the Site Services and Craft Labor teams to execute against. If the EDP is not provided by the Seller (as Base or Optional), and a Non-Seller third party provides this EDP, the Seller assumes that the third parties EDP is accurate and without errors. Should errors in this third party EDP result in re-work or delays, on the part of the Seller, these delays/additional work will be treated as a contract change order.
- q. Monitors:
 - i. The Seller cannot guarantee that Buyer/End-User supplied monitors will function properly. While standard VGA monitors typical will work properly, the Seller can only support those monitors supplied by themselves.
 - ii. Optional Dual/Quad Monitor functionality allows the operator to view a turbine unit screen on one monitor and the alarm screen on the second monitor but does not have the ability to view a turbine unit screen on one monitor and different turbine unit screen on the second monitor without special configuration at site.

5.2 Application/ Product Specific Buyer/ End-user Responsibilities

The following represents the Buyer/End-user responsibilities which are specific to the product being supplied by the Seller.

5.2.1 Mark VIe Turbine Control

- a. The upgraded turbine control system shall provide the same functionality as the existing control system. Please note additional information will be required during the project kick-off meeting to ensure agreement of the parties is reached with respect to functionality provided. In some cases, the requested functionality may not be supported if it may cause an unsafe turbine operational condition. In all cases the Seller shall make every attempt possible to suggest an alternative field proven approach that may achieve functional objectives and provide cost impact when applicable.
- b. Contact input voltage (CIT) is assumed to be 125 VDC.
- c. Provide access to instrumentation and power ground sources.
- d. Gas Turbine Applications:
 - i. Black start functionality is not included.
 - ii. DLN tuning for unit upgrades such as modifications to the fuel system shall be provided by others.
- e. It is assumed the existing vibration interfaces and configuration will remain as is.
- f. Not supplied as part of this offer are Intrinsic Safety barriers or marshalling panels. Those should be supplied by the Buyer/End-user should they be deemed necessary.
- g. This proposal does not include any modifications to any Onsite Monitor ("OSM") systems that may exist on site. Please contact the site Contract Performance Manager for any modifications that may be required, as the Mark VIe no longer uses Arcnet communications.

5.2.2 HMI

- a. The Seller's HMI hardware and software package is a tested integrated system. Extensive qualification and verification are performed to ensure 100% compatibility of the components of the HMI core-load and hardware. For warranty and support reasons removal of any of the Seller's provided software or addition of any third-party software packages/hardware packages will result in Seller's inability to properly service and maintain the equipment and thus voids the Seller's warranty on these products.
- b. Network Analysis and Troubleshooting software (Non-Seller supplied software): Network analysis software is permitted to be installed (by the Buyer/End-user) on a Seller supplied computer for network analysis and troubleshooting physical network nodes connected to the Seller's Plant Data Highway, Seller's Unit Data Highway and third-party interface protocol communications, e.g., Modbus, IEC-60870, OPC, DNP3, IEC-61850. This



permission assumes that this software does not directly interface or disrupt the process of the Seller's turbine/generator control software and associated communication and that it will not interfere with the operation of the Seller's supplied computer in any way. This practice will not void the Seller's software warranty, provided as part of the software license/Addendum, if the malfunction was not caused by the installation of the Network analysis software by the Buyer/End-user.

- c. Considerations for the purchase of Panel Mount HMI models: PC models have changed their mounting patterns and sizes over the years and existing door cut-outs will often have to be modified for the new mounting requirements. The Buyer/End-User will be required to rework/modify the existing panels to accommodate the new Panel Mount HMI prior to the arrival of the Seller's field engineer.

5.3 Documentation Related Buyer/End-User Responsibilities

- a. Except where stated herein, all documentation and computer screens will be in English.
- b. It is assumed that Seller will be furnished, upon request, with full drawings and information concerning the state of the existing installation including wiring information to the existing terminations including process and instrumentation diagrams ("P&ID's"). If such information is not available Seller will charge for the work involved in obtaining this information.
- c. It is assumed the Seller will be furnished recorded baseline operational and performance data no later than two weeks after receipt of an acceptable Purchase Order. If data was recorded longer than six (6) months before receipt of a Purchase Order, updated/recent data will need to be capture and provided to the Seller. The data should demonstrate successful starting, loading, base load and peak load (if applicable) operation on all fuel types.
- d. Overall project cycle time is dependent upon receipt of current "Site data". It is Buyer/End-user's responsibility to provide the relevant Site Data in a timely manner. Seller's Project Manager will be assigned after receipt of order and will provide instructions for the download and transfer of site data as necessary. Site services to obtain the site data are not included in this offering but can be provided for an additional cost. Site Data includes, but is not limited to, 1) as running software and 2) design/engineering/P&ID drawings.
- e. If this Site Data is not provided within two weeks upon placement of order, the possibility exists that the hardware/software may be engineered using default, generic data and a delay in delivery and/or an extended startup time may result.
- f. Unless explicitly identified above, Seller is not supplying interconnect wiring or loop diagrams.
- g. This proposal does not include Plant Operation manual updates, or any other site documentation modifications.
- h. To initiate and complete the engineering the following (including but not limited to) documentation shall be provided in a timely manner:
 - i. As-running Turbine, Generator, and Motor Control Center controls elementary diagrams
 - ii. As-running device summary diagram
 - iii. As-running controls specifications
 - iv. As-running connection diagram
 - v. Electrical One Line diagram
 - vi. As-running piping schematic diagrams
- i. Delays in receiving i) current/as running drawings/software or ii) incomplete, inaccurate or poor-quality drawings, which contain errors could result in a contract change order (with schedule and price relief) to overcome drawing/documentation issues which may hinder Seller from completing its engineering within the agreed upon schedule.

5.4 Site Services Division of Responsibility

This DOR (Division of Responsibility) represents the responsibilities for projects where the Seller is providing a Field Engineer(s) and the necessary craft labor to support the installation of the Seller supplied equipment.

Item	Legend: B=Buyer/End-user, S=Seller, N/A= Not Applicable		
	Description	Responsibility	Comments
PREPARATION			



Item	Legend: B=Buyer/End-user, S=Seller, N/A= Not Applicable		
	Description	Responsibility	Comments
a)	Lock Out Tag Out ("LOTO") of all equipment related to Seller's work, prior to start of Seller's work. Seller personnel will verify.	B/E	
b)	Health, Safety, Emergency Response & Security Procedures	B	
c)	Regulatory Requirements and permits (Air, welding, work, etc.)	B	
d)	Hardhat, safety glasses, hearing protection, hand protection, safety footwear for Seller's personnel.	S	
e)	Offload the Seller supplied equipment/material upon delivery and store as required. Place equipment near work area prior to the start of Seller's work.	B	
TEMPORARY CONSTRUCTION FACILITIES			
f)	Scaffolding: Supply, installation, setup and removal	B	
g)	Crane and/or forklift, rigging, rigging plan & Operator	B	
h)	Temporary Utilities (electric, light, air, water, and internet)	B	
i)	Office space, internet access, sanitary facilities, drinking water, parking etc. for Seller's personnel.	B	
j)	Construction Waste Management and Disposal	B	
k)	First Aid facilities	B	
l)	Hazardous Material identification, testing & abatement. Seller shall be afforded schedule & price relief related to any remediation efforts.	B	
CONTROL INSTALLATION			
m)	All installation labor, equipment and materials	S	
n)	Signal Mapping or changing of third-party signal tables required due to Controls upgrade	B	
o)	Testing required to satisfy regulatory requirements	B	
INSTALLATION SUPPORT			
p)	Scheduling of craft labor commensurate with the Seller provided schedule and allotted onsite time	S	
q)	Dedicated Operations support during commissioning and startup testing	B	
r)	Calibration of Protection devices & relays during setup and commissioning	B	
s)	Confined space entry permit, specialized equipment, observer and personnel to enter the confined space, and perform work.	B	
t)	Disposition of all removed equipment and generated trash	B	
u)	Removal of any obstructions, including PEECC / control cab walls, which might be required for a Mark VIe full panel replacement.	B	
v)	Provide experienced and qualified electrician support to assist with handling the heavier equipment, wiring, basic loop checks, and startup support.	S/B	Seller to provide craft labor to support installation. Buyer to provide technicians



Item	Legend: B=Buyer/End-user, S=Seller, N/A= Not Applicable		
	Description	Responsibility	Comments
			for device location, etc.



6 Commercial

6.1 Price Summary

The price for the offering is Firm Fixed for the scope of work in the proposal and **is based on a PO by Sept 30, 2024.**

6.1.1 Base Scope Summary

Description	Price	Currency
<p>Base Project: Units CT1-4</p> <ul style="list-style-type: none"> Mark VI to Mark VIe Simplex, Full Migrations for four (4) Gas Turbines Software Acceptance Test (SWAT) <p>Base Project: HMI Upgrade – traditional/thick HMIs</p> <ul style="list-style-type: none"> HMI Upgrade – Windows10 Thick HMI (Qty 3x) Commercial Desktop HMI (Qty 3x) 24-inch flat panel LED widescreen monitors (Qty 4x) Commercial Panelmount HMI in each control cabinet in PECC Multi-unit HMI Screens <p>as defined in Section 2</p>	\$1,087,734	USD
<p>Parts Reclamation Credit for the Return of the Mark VI Hardware and Spares</p> <p>As described in Section 6.1.2.k</p>	Included	USD
<p>Installation, Checkouts and Commissioning of four (4) Mark VI to Mark VIe Simplex, Full Migrations and seven (7) HMIs</p> <p>Two (2) separate mobilizations. Two units installed in 2025 and two units installed in 2026.</p> <p>Per installation Section 4 and install schedule shown in Section 6.2.3</p>	\$362,879	USD
Total Project Price	\$1,450,613	USD

6.1.2 Optional Scope Pricing Summary

Description	Price	Currency
<p>Network Switch Upgrade –</p> <ul style="list-style-type: none"> 2x Pair Cisco Edge Switches, model 9200L or latest equivalent 1x Pair Cisco Root Switches, model 9200L or latest equivalent Duplex Network Includes Installation Site Services – 1x 12-hr workday, no mobilization <p>As described in section 3.1</p>	\$19,686	USD
<p>Spare Parts – Mark VIe migration</p> <p>As described in section 3.2</p>	\$32,476	USD
<p>Customer Training – Mark VIe</p> <ul style="list-style-type: none"> At customer site 	\$43,769	USD



Description	Price	Currency
<ul style="list-style-type: none"> 5-days Mark VIe operator and maintenance As described in Section 3.3		
One-day site data gathering site visit with T&L (Travel and Living/Lodging) As described in Section 3.4	\$9,278	USD
1 Year of Extended Warranty <ul style="list-style-type: none"> Unit 3 & Unit 4 Mark VI-VIe Migration Hardware 	\$3,445	USD

6.1.3 Pricing Limitations and Considerations

- Unless otherwise indicated, the prices quoted herein are valid for the delivery of equipment in **2025** and performance of services in **2025 and 2026**. Delivery of equipment or performance of services in years subsequent to these shall be subject to a price escalation fee equal to 4% per year of the contract price for the undelivered equipment or un-performed services.
- Prices quoted are based on the Assumptions and Clarifications as described in the Proposal Basis Section and performed per the Terms and Conditions referenced or provided herein.
- Seller reserves the right to review and re-quote this job if there is a discrepancy between this proposal and the purchase order. If Seller receives a specification between the issuance date of this proposal and receipt of the purchase order, Seller reserves the right to re-evaluate this proposal.
- Seller will evaluate changes to the specification, drawings, services or existing equipment. Seller will evaluate if these changes constitute a change in the quoted work scope or schedule. Seller will quote the changes and a change order must be received before work is to proceed.
- The pricing breakouts outlined in this proposal are for accounting purposes only and are not to be considered as standalone prices.
- The prices quoted herein exclude taxes or other regulatory fees.
- The prices quoted herein exclude import duties.
- The prices quoted herein exclude customs clearances.
- Travel and Lodging/Living ("T&L") expenses for Site Services are included.
- Parts Reclamation Program: The pricing above is contingent upon the implementation of the Seller's Parts Reclamation Program whereby the Buyer/End-user returns the hardware removed as part of this project and the associated Buyer/End-user owned spare parts. The parts removed will be collected and packaged for shipment to a Seller's facility by the Seller's Field Engineer, with assistance from the Buyer/End-user site personnel. The Buyer/End-user will be responsible for collecting any spares that are no longer applicable to the control system and providing them to the Seller's representative for packaging. The Seller will provide the packaging material and shipping expense for returning the reclaimed parts to the Seller's facility. Failure to return removed hardware and unused spare parts will result in a contract change order for the value of the hardware/parts retained by the Buyer/End-user.

6.2 Schedule

6.2.1 Equipment (Hardware and Software) Schedule

The After Receipt of Order ("ARO") date will be the date that the Seller **acknowledges** the Purchase Order, not the initial date that the Seller receives that PO.

The estimated timescale from acknowledgement of PO/contract to the Delivery (Incoterms) of the equipment is **37 weeks** and is based on current factory loading and lead times offered by the Seller and other vendors, if any.

6.2.2 Equipment Schedule Limitations

Delivery dates can vary depending on factory workload and should be confirmed before issue of order. Delays in receiving vital information from the Buyer/End-User or delays in receiving "review" drawings back from the Buyer/End-User will



impact the ARO delivery dates. These delays may result in a day for day slip in the delivery schedule or a complete shift the delivery dates indicated herein.

When detailed drawings representing the Buyer/End-user's current (as-running), installed equipment cannot be made available to the Seller, it is critical that the Seller has sufficient time and physical access to the Buyer/End-user's equipment while in a Lock-out/Tag-out condition. This will allow the Seller to take measurements, design, manufacture, and **Field Fit** these portions of the total scope of supply. Some examples of this may include fuel valve/actuator/solenoid mounting plates, blanking plates, speed probe brackets, etc.

Seller's proposed schedule with milestone dates will be presented at the Project Kick-Off Meeting. This project schedule will illustrate the various activities from purchase order/contract receipt, through design, manufacture, testing, shipment and site services (if in work scope).

The overall price and cycle quoted herein requires full cooperation between the Seller and the Buyer/End-User, and adherence to key milestones dates specified as part of a project implementation plan. The specific milestone dates will normally be set during the Project kick-off meeting and will normally include, but may not be limited to, the following key project control points.

- a. Project Kick-Off Meeting (Buyer/End-user and Seller)
- b. Site survey and/or supply of applicable site data (Buyer/End-user and Seller)
 - i. Site data (Buyer/End-user)
 - ii. Drawings and documentation (Buyer/End-user)
 - iii. Logistics Data (Buyer/End-user and Seller)
- c. Drawing submittals (Seller)
- d. Design review and approval (Buyer/End-user)
- e. Design freeze (Buyer/End-user and Seller)
- f. Factory acceptance test/Buyer witness test (Buyer/End-user and Seller)
- g. Supply of documentation for shipment (Buyer/End-user)
- h. Support commissioning, start-up, site acceptance testing and handoff (Buyer/End-user and Seller)
- i. Delivery of documentation (Seller)

Unless otherwise agreed upon in advance, the work shall be executed in an uninterrupted and sequential fashion. If the work is interrupted by or for the convenience of the Buyer/End-user, or cannot be performed according to the schedule, the Seller has the right to submit a change order for incremental charges (for example multiple site trips or additional design review cycles, etc.). The Buyer/End-user shall be provided drawings of sufficient quality and thoroughness early in the project and be given one review cycle, to submit comments and request changes. The review cycle is typically three weeks long but depends on the project schedule and will be reviewed and agreed upon at the Kick Off Meeting. After the review cycle the design will be considered frozen and the cost and schedule impact of requested changes will increase.

6.2.3 Site Services Schedule

The Seller's Services Schedule is based on the following trips, time onsite and working schedule:

Per Unit Task	Working Schedule	Duration
Travel in	8 hrs./day, 6 days/wk., single shift	1 day
Pre-outage Prep & LOTO Support	10 hrs./day, 6 days/wk., single shift	1 day
Outage Installation – Mark VIe Migration	10 hrs./day, 6 days/wk., single shift	7 days
HMI Upgrade	10 hrs./day, 6 days/wk., single shift	1 day
Checkout, Calibrations	10 hrs./day, 6 days/wk., single shift	3 days
Commissioning & Startup Support	10 hrs./day, 6 days/wk., single shift	2 days
Travel Out	8 hrs./day, 6 days/wk., single shift	1 day



6.2.4 Optional and Incremental Service Adders (Not included in Base Scope pricing)

- a. Kickoff Meeting
- b. Additional PPRO
- c. VAMB to PAMC
- d. PSCA Serial Adaptor
- e. Relocate VPRO
- f. Auxiliary Cabinet Installation
- g. Auxiliary Cabinet Loop Checks
- h. Loop Checks

Note: Additional T&L costs will be added for optional incremental adders.

6.2.5 Site Services Schedule Limitations

The Seller's Services Schedule is based on the following:

- a. Seller's Holidays, standby time or second/night shift work are not included, unless indicated otherwise.
- b. The Seller's onsite time includes up to a maximum of two (2) hours of site access safety and orientation training for the Seller's personnel. This training i) does not include additional mobilizations, ii) is assumed to occur on the plant site and iii) immediately upon arrival/initial mobilization (no special offsite training requirements). Site safety or access training which exceeds this allotment will be billed to the Buyer/End-user as a Contract Change Order.
- c. The Seller has included up to four (4) hours of Field Engineer/Controls Specialist support for LOTO ("Lock Out Tag Out") per unit. Additional time or related expenses due to delays on the part of the Buyer/End-user will be billed as a Contract Change Order.
- d. Assumes work scope can be accomplished in an uninterrupted fashion per the agreed upon schedule.
- e. Additional trips or onsite time not specifically identified i) above, ii) in this proposal or iii) not agreed to between the parties, prior to providing the additional services, will be billed to the Buyer/End-user, as a Contract Change Order.
- f. Note: the first two units will be completed in 2025, while the following 2 units will be completed in 2026.
- g. The Seller has allotted 3 additional days to install HMIs that aren't unit specific, however, the time is not shown in the schedule.
- h. Delays in the performance of work beyond the reasonable control of Seller, or delays caused by acts of the Buyer or prerequisite work by others, shall entitle Seller to an adjustment of time and price for completion of its work and expenses resulting therefrom.
- i. The Seller believes the above schedule includes sufficient time to complete the scope of work as required. Additional time or manpower required beyond that which is quoted will be billed as a Contract Change Order.
- j. Scope or schedule changes related to these limitations will be billed to the End-user as a Contract Change Order.
- k. All equipment and components both related and unrelated to the Seller's scope of work are assumed to be in good working condition. Any time required to bring existing equipment to a proper functioning state will be billed as a Contract Change Order.
- l. To ensure safe and alert personnel, the Seller's EHS policy requires a rest period of 36 consecutive hours every 19 days. As such, Seller's schedule will implement one rest day for all personnel on site, at a minimum 19-day interval. By adding a lay-over day, our base offering does not include extra personnel for the rest period; safety is always a priority with both Seller and our Buyer/End-users. Seller can accommodate alternative schedules by adding personnel to site, these alternate schedules will be billed as an extra charge using the mutually agreed to change order process.

6.3 Delivery, Title Transfer, and Risk of Loss



6.3.1 Offsite Work (Equipment and Engineering)

For shipments that do not involve export, including shipments from one European Union ("EU") country to another EU country, Seller shall deliver Products to Buyer FCA Seller's Factory (Incoterms 2010). Title and Risk of loss shall pass to Buyer at Delivery.

6.3.2 Onsite Work (Site Services, Training, Support agreements)

Title to Services shall pass to Buyer as performed.

6.4 Payment Terms

Our Firm Fixed Proposal is based upon the following invoicing schedule and terms:

- Payment Terms are Net 30 days
- Pricing is in United States Dollars (USD)
- Please send your remittances to Remit.Power@ge.com
- As the Seller would like to make doing business easier, please take advantage of our Wire Transfer or ACH payment options by remitting payment using the following instructions:

Account Number: 352846304

Bank Name: J.P. Morgan Chase Bank N.A.

Bank Address: 1 Chase Manhattan Plaza, New York, United States, 10005

ACH routing: 021000021

Wire routing: 021000021

SWIFT: CHASUS33

Please note that check payments are no longer accepted.

6.4.1 Invoicing Schedule

Our proposal is based upon the following invoicing schedule:

Invoicing Milestone	Invoice Amount
Seller's Acknowledgement of PO – not earlier than Oct 10,2024 Based on a PO by Sept 30, 2024.	20%
Submittal of Eng. Designs	15%
Delivery U1&U2 (Per Contract Delivery Term)	23%
Services – Mobilization – First Installation Outage in 2025	5%
Services - De-Mobilization – First Installation Outage in 2025	5%
Delivery U3&U4 (Per Contract Delivery Term) – not earlier than December 10, 2025	22%
Services – Mobilization – Second Installation Outage in 2026	5%
Services - De-Mobilization – Second Installation Outage in 2026	5%
Total	100 %

6.4.2 Termination Schedule

For Contracts not utilizing the Seller's standard Termination Article, the following termination for convenience table shall apply:

Weeks from order date:	% of Contract Price
< 2	20%
< 6	60%
< 8	85%
> 8	100%



6.5 Terms and Conditions

This quotation is an offer to sell between the Buyer and Seller, and subject to the terms and conditions listed below, which by reference are incorporated herein. To the extent there are conflicts or inconsistencies between this set of Terms and Conditions and the preceding information provided in this document, the preceding information shall prevail.

- a. Products and/or Services Terms and Conditions (PSTC)/Emma, Standard, dated May 2024.
- b. STANDALONE SOFTWARE LICENSE AGREEMENT, May 2024.

Each Party represents, warrants, and covenants that, it has complied with, will comply with, and will cause its Affiliates, related parties and representatives to fully comply with all: (a) the GE Integrity Guide (The Spirit & The Letter) available at <https://www.ge.com/sustainability/integrity>; (b) applicable Laws of the Project Country to the extent such Laws are mandatorily applicable to the scope of this Contract; and (c) Laws regarding anti-bribery or kick-backs, illegal payments and gratuities, anti-money laundering, and/or similar practices (including the Foreign Corrupt Practices Act of 1977, as amended, the UK Bribery Act 2010 and any other applicable local anti-bribery laws) in the performance of any activity directly or indirectly related to the Facility or the Contract or applicable to the Work.

Each Party represents that (i) it will not engage any third party, sales representative, agent or consultant in connection with the Project without the prior written consent of each of the Parties, and (ii) it will disclose to each other the use of any sales representative, agent or consultant before the signing of the Contract.

COVID-19, GEOPOLITICAL CONFLICTS, AND RESPONDING GOVERNMENT ACTIONS:

- a. The parties acknowledge that the ongoing COVID-19 pandemic, geopolitical conflicts, and government actions in response thereto are affecting and will continue to affect Seller's ability to deliver goods and services around the world, including, but not limited to, impacts arising from materials shortages, transportation shortages and delays, sanctions preventing receipt or delivery of materials, etc. "ONGOING IMPACT" In the event that ONGOING IMPACT affects Seller's ability to deliver on time or at the bid price, Seller shall be entitled to an equitable adjustment in schedule and price as appropriate, subject to Seller's obligation to work in good faith with Buyer to mitigate the impact on schedule and/or cost."

6.5.1 Precedence

Seller will generally consider the following precedence for any quotation, Contract or set of Terms and Conditions documents in resolving any conflict, error, or discrepancy:

- a. Fully executed Change Orders or contract Amendments
- b. Seller's terms and conditions
- c. Seller's quotation document
- d. Buyer's Specification/bid document
- e. Buyer's purchase order

6.6 Purchase Order Address Details

This proposal/quotation is contingent on the full disclosure of the End User location, before the acceptance of any Purchase Order. Seller will issue Acknowledgement to Buyer Purchase order with in seven (7) business days from receipt of 'acceptable' Purchase order. The execution period of this contract starts from Seller's Order Acknowledgement date.

Upon the Buyer's decision to submit a purchase order, please address the Purchase order to the following Seller's Legal Entity:

NEXUS CONTROLS LLC
1800 NELSON RD
LONGMONT
CO, 80501-6324, UNITED STATES
ATTN: JOHN FIELD

- a. Purchase Order must conform to and reference this document.
- b. Deviations between the Buyers Purchase Order and that proposed in this document, including i) Scope of work, ii) Price or iii) Schedule/s, or iv) Terms and Conditions may cause delays or non-acceptance of Purchase Order.



- c. Please provide a physical address for invoice delivery.

6.7 Validity

This Proposal is **valid until September 30, 2024**. It may be modified or withdrawn at any time by the Seller prior to receipt of Buyer's acceptance. Upon written notice to Buyer, this Proposal may be assigned, transferred, or novated by Seller in connection with a merger, consolidation, or sale of all or substantially all of Seller's assets to which this Proposal relates.

7 Appendices

7.1 Benefits & Risk Summary – Industrial Cybersecurity

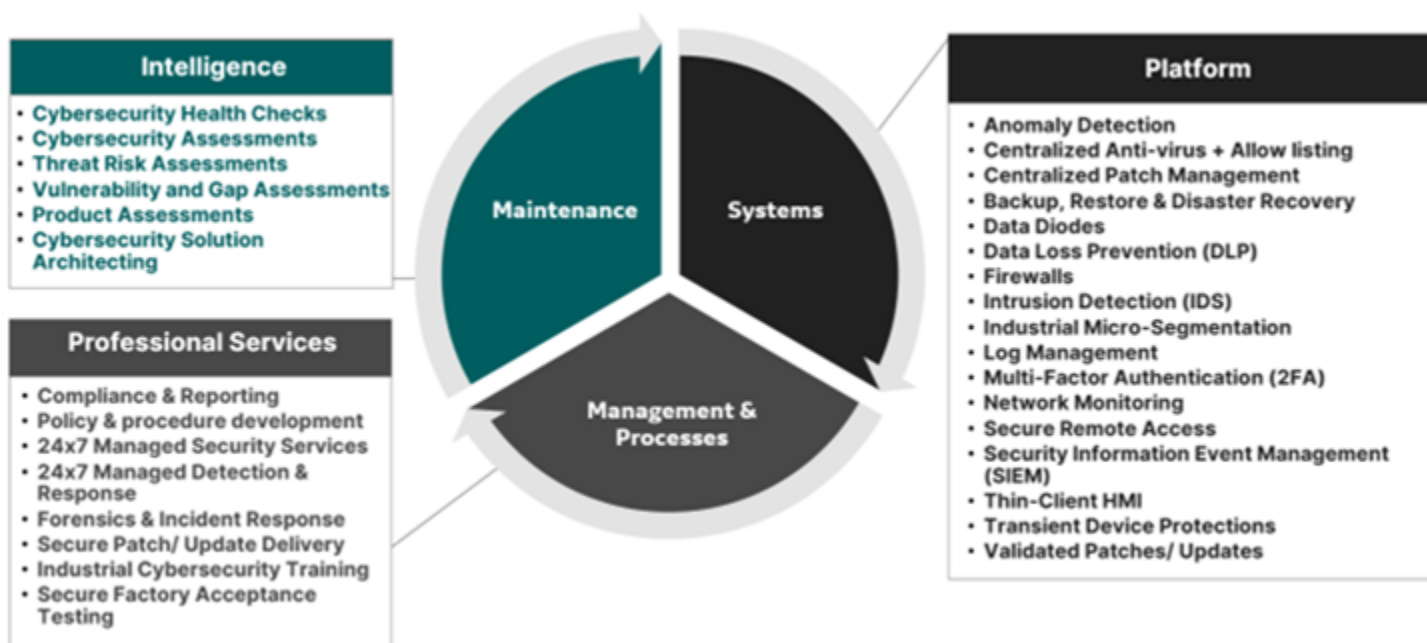
7.1.1 Gain Control of Your Systems with a Partner You Can Trust

Experience the peace of mind that comes with knowing your systems are protected even as they evolve. Our scalable OEM-agnostic cybersecurity solutions are designed to give full visibility into a single plant or multi-site environment. So that you can see and respond to threats faster, focus on your operations, maintain optimal production and ensure reliability and safety.

7.1.2 Benefits of Having a Robust Cybersecurity Solution

Having a strong cybersecurity capability not only provides an organization with risk mitigation and control but also improves insight, visibility and context, which enables a change in operations from a reactive firefighting mode to a proactive approach, reducing unexcepted outages and improving production processes.

7.1.3 GE Vernova's Cybersecurity Portfolio



7.1.4 Cybersecurity Posture: Assessment & Evaluation

When have you last evaluated your cybersecurity posture? GE Vernova ensures that you have an effective cybersecurity program that meets the needs of legacy control systems, with limited expert resources, while accounting for modern technology and increasing cyber threats. With our customer-centric approach that aligns with the industrial plants mission of safety first, zero unplanned downtime, and operational efficiency. It is with this mission in mind that we have designed our cybersecurity platform specifically for plant networks. With our extensive experience in Power Generation, including Nuclear, Oil and Gas, Renewable Energy and other industrial applications, our team of cybersecurity experts is well-versed in designing solutions that meet multiple cybersecurity regulatory compliance standards across the globe, including NERC CIP, ISO/IEC 27036-3, and NIST SP800-161, NEI-08-09 (US Nuclear), and N290.7-14 (Canada Nuclear). Invite us to evaluate your cybersecurity posture, identify critical assets, improve OT network visibility, boost incident response capabilities, evaluate gaps and recommend solutions to meet regulatory compliance standards.

7.1.5 Solution Risk Summary

GE Vernova places a key focus on our customers industrial cybersecurity posture and the solutions we provide. The scope developed with Buyer is evaluated against best practice and international standards to provide a Solution Risk Summary. This summary shows how the proposed solution aligns to best practice to highlight any areas that may warrant further discussion and includes suggestions for improvements in each cyber domain area where applicable. Unless



amended during review or further discussions, Buyer accepts potential risks in cybersecurity areas not addressed in this proposal. The below table is a self-assessment tool to help you evaluate the cybersecurity posture of your organization.

Cybersecurity Solution	Best Practice	Executed at Site?	Recommendations
Secure Configurations Hardened & patchable device configurations that disable or removal unnecessary programs, features or services	✓		Update legacy operating systems and network switches to supported ones and harden configurations
Endpoint Malware Defense (Antivirus/Whitelisting?) Centralized Anti-Malware management or application whitelisting to block known/suspicious activity	✓		Install antivirus or whitelisting for malware protection
Removable Media Protections Centralized Anti-Malware management or application whitelisting to block known/suspicious activity	✓		Install technical controls so USB drives cannot write or copy data from critical assets
Backup & Disaster Recovery Automated and centralized backup and recovery of operating systems, network equipment, etc.	✓		Install automated and centralized backup and recovery solutions
Latest Patching & Updates Centralized Patch Management and process for deploying multiple OEM's pre-validated updates	✓		Install latest OEM pre-validated security patches and updates
Access Control & Authorization Management Centralized role-based access control and two-factor authentication for critical privileged users or roles	✓		Deploy domain controller for centralized password, user & machine mgmt., enforce password complexity. Add 2-factor authentication for privileged accounts
Asset Inventory Visibility Real time active asset inventory visibility & reporting of hardware, firmware, software and applications	✓		Install real time asset management for industrial visibility (make, model, serial number, OS, applications of I/O, PLC's)
Vulnerability Management Real time listing to drill down common vulnerabilities and exposures (CVEs)	✓		Passive and active scanning solution to identify assets that are subject to vulnerabilities for potential malicious activity
Network Separation & Access Control Firewalls & Gateways to control the communication in/out of your trusted Operational Technology (OT) perimeter	✓		Protect ingress/regress locations that lead to different trust zones by Firewall or other boundary protection devices
Industrial Secure Remote Access Zero-trust based industrial remote access with read-only or write control, lockbox, video recording & monitoring	✓		Electronic remote access into the site may not be adequate or up to industry best practices
Security Incidents & Management Centralized security log collection & retention from all monitored assets for Incident Response activity	✓		Missing a centralized method to collect cybersecurity logs, making incident response very difficult
Segmentation & Separation Zoning and segmenting breaking trusted infrastructure into smaller segmentation following international standards such as ISA99/IEC62443	✓		Missing micro-segmentation solution to help contain any successful cyberattacks from reaching other critical assets



7.2 Site Services Rate Sheet

Contract Change Order: Additional work above/beyond that quoted in this document will be billed at the Seller's then current Services Rate Schedule (Unit Upgrade Field Engineer rates for Controls work). Below are the 2024 Services Rates for the Seller.

GE Vernova

Gas Power CSS

Field Services Controls Rates

North America
United States

Effective: 1-JAN-2024
Through: 16-JUN-2024

Technical Field Advisors

	Curr.	Hourly*
Specialty Field Engineer/Advisor	USD	610
Unit Upgrade Field Engineer	USD	395
Cyber Security Field Engineer	USD	350
DCS Field Engineer	USD	300
OnCore Field Engineer	USD	270

Power Engineering Requests (ER)

USD 10,030

I. Rates include Standard Personal Protective Equipment (PPE). Standard PPE includes: steel toe capped boots; hard hat; safety glasses; ear defenders; standard coveralls & gloves. Any non-standard PPE issued will be billed at cost plus 30% administration fee.

II. Purchased labor and materials will be billed at cost plus 30% Administration fee.

III. Foregoing mentioned rates are exclusive of: special security arrangements, high cost living areas, cost of accommodation during local events creating shortages, client-required drug and health-related testing, quarantining, safety orientations, and security clearances.

Specialty Field Engineer/Advisor

Specialized technical advice and counsel related to inspection, testing, vibration analysis, laser alignment, combustion optimization, emissions reduction, repair and startup of turbine / generator and its associated control/excitation systems. Examples: Generator Specialist, Control TFA, Excitation/LCI TFA, Vibration Specialist, DLN Tuning, Diagnostics and Consulting.

Unit Upgrade Field Engineer

Technical advice and counsel related to upgrades of Mark* Controls Systems (Gas/Steam/Excitation/LCI/Compressor)

Cyber Security Field Engineer

Technical advice and counsel for Cyber Security activities, Installation, Network Appliances, Operating Systems & Commissioning

DCS Field Engineer

Technical advice and counsel related to DCS Installation, Startup, Commissioning, Troubleshooting, Preventive Maintenance, Technical Direction, Diagnostics, and Reports

OnCore Field Engineer

Technical advice and counsel related to Testing, Startup, Troubleshooting, Performance & Upgrades to OnCore Controls Systems (Gas/Steam/Excitation/LCI/Compressor)

Power Engineering Requests

The Gas Power Engineering Request ("ER") will provide technical support for customer questions. The customer will be charged for ER responses to one question on one topic (such as, historical records, fleet data, and unit specific data). For each follow-up question, responses and/or telephone call, GE will charge the customer at the rate listed above. GE will determine at its discretion whether any question warrants a funded engineering study. Any such engineering study will be quoted based on the customer's specifications.



* Standard Rate
** Travel & Living
*** Per Diem

Rate Terms

Normal	1.00X	Standard Rate
Overtime 1 (OT1)	1.50X	Standard Rate
Overtime 2 (OT2)	2.00X	Standard Rate
Peak	1.20X	Standard Rate
< 72 Hours Notice	2.00X	Standard Rate
Offshore jobs	1.50X	Standard Rate

A. The normal workday and normal workweek are defined as 8 consecutive hours and 5 consecutive normal workdays, respectively, excluding any holidays or weekends as per local regulations.

B. The OT1 rate above applies to billable hours on first weekend day and normal workday hours greater than 8 but less than 12 consecutive hours.

C. The OT2 rate above applies to billable hours on second weekend day, holidays and normal workday hours more than 12 consecutive hours.

D. Peak multiplier applies to billable hours at the applicable rate from March 1st to May 15th and October 1st to November 30th. When committed 60 days or earlier before start of peak period (date), the peak adder can be waived.

E. Travel time will be charged at the applicable hourly rate (i.e., standard rate times applicable multiplier(s) as set forth) on a round trip basis with point of departure.

F. Minimum billing of 8 hours daily for all services provided, including standby time. Minimum standby time is 8 hours daily at the standard rate (weekdays and weekends).

G. On completion of jobs, nightshift workers allowed 8 hours sleep / laying in time which is billable.

H. T&L** expenses will be billed for all days during the assignment including weekends, standby, and travel days by the GE representative providing the service.

I. T&L** expenses will be billed at USD 400 per person daily or consult with your local GE Gas Power representative for PD*** rate.

J. Services herein do not include supervision or management of purchaser's employees, agents or other contractors.

K. Consult with your local GE Gas Power representative to determine any applicable charges for tooling and/or test equipment or any taxes, fees or VAT that may be applicable in addition to the above rates.

L. Mobilization is 8 weeks after receipt of acceptable purchase order unless mutually agreed by customer and GE. Mobilizations within less than 72 hours are subject to Emergency Response Premium.

M. These published rates are conditioned upon an agreement under which GE's standard terms and conditions of sale apply (e.g., PSTC latest rev.).

© 2024 - Rev.0 - Rates subject to change without prior notice



7.3 Control Solutions and Services Terms and Conditions

The following Terms and Conditions shall apply for this quote/contract document.



We would like to thank you for the opportunity to participate in your offer for Tender and we consider this opportunity of strategic importance to General Electric. We look forward to partnering with you on this project and demonstrating our expanded portfolio and increased value proposition.

At General Electric we are committed to "doing the right thing" which means Health Safety and Environment (HSE), Quality and Compliance are the foundation for all our actions and all our processes. We ensure that everything we do is safe, honest, and takes care of our people, our customers, the communities we operate in, and the environment. This means that HSE and Quality are built into everything we do, from how we design our products, to the way we plan and execute for our customers. We are proud of our track record and our first priority is always to HSE, Quality and Compliance.

General Electric aims to provide our customers the best commercial and technical proposal possible. We asked our teams to access the entire General Electric organization and leverage our unique position in the supply chain to provide a solution that will provide improved operational efficiency and results.



Firm Price Quotation

For

JEA

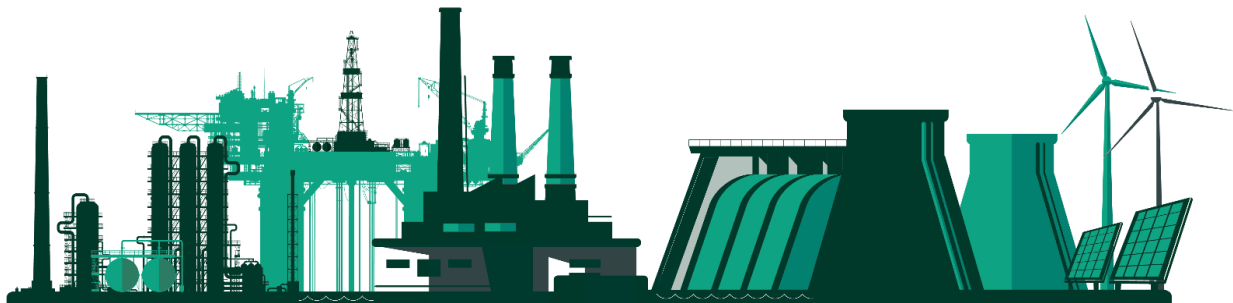
At

Northside Station – Jacksonville, Florida

For a

**EX2100e SCT/PPT Voltage Regulator Excitation System
IGBT Regulator Simplex Parts Kit**

Proposal Number: OP-000597 Rev3
Date: 29 August 2024



This document, all related and derivative information, whether written or oral is submitted in confidence for evaluation by the Buyer. As such, its contents are proprietary and confidential to the Seller. In taking receipt of this document, Buyer agrees not to reveal its contents, to third parties or otherwise, except to those who must evaluate it. Upon written request of Seller, Buyer will return all copies of this document to Seller. The equipment listed in this document is based on preliminary information and is subject to change.



29 August 2024

John Field
Sales Manager

Nexus Controls LLC
1800 Nelson Road
Longmont, CO 80501-6324 United States

JEA (Buyer)
Northside Generating Station
Jacksonville, Florida

Attention: Josh Reed
Subject: EX2100e SCT/PPT Voltage Regulator Excitation System
Proposal No: OP-000597, Rev3
Turbine Serial No: 237980, 237981, 237982, 237983

Dear Josh Reed,

Nexus Controls LLC (Seller), a General Electric business, is pleased to offer JEA (Buyer) a Firm Price Quotation for upgrading to EX2100e SCT/PPT Voltage Regulator Excitation Systems at JEA Northside.

We look forward to the opportunity to discuss the proposed solution. Should you have any questions or require any additional information please do not hesitate to contact the undersigned.

Yours Sincerely,
John Field



Table of Contents

- 1 Executive Summary 5**
 - 1.1 Overview 5
 - 1.2 Quality 5
 - 1.3 Project Management 6
- 2 Work Scope 7**
 - 2.1 Base Work Scope 7
 - 2.2 Documentation 10
 - 2.3 Optional Work Scope..... 11
- 3 Site Services 15**
 - Full Installation and Commissioning 15
 - 3.1 15
- 4 Proposal Basis and Buyer Responsibilities 17**
 - 4.1 General Assumptions and Clarifications 17
 - 4.2 Application/Product Specific Buyer/End-user Responsibilities..... 18
 - 4.3 Documentation Related Buyer/End-user Responsibilities 19
 - 4.4 Site Services Division of Responsibility 20
- 5 Commercial Section 22**
 - 5.1 Pricing 22
 - 5.2 Schedule 23
 - 5.3 Delivery, Title Transfer and Risk of Loss 25
 - 5.4 Payment Terms 25
 - 5.5 Terms and Conditions 26
 - 5.6 Purchase Order Details 27
- 6 Appendices 28**
 - 6.1 Technical Description 28
 - 6.2 Additional Reference Material 36



Notice

2024 Copyright © All rights reserved.

The information contained in this document is subject to change without notice.

† Registered trademark of General Electric in one or more countries. Other names may be trademarks of the respective owners and are used herein for identification purposes only. Use of any names or marks owned by a third party does not imply endorsement by or a relationship with the third party.

Defined Terms

The following terms shall have the meanings set forth below as used throughout this document.

- 1) **"Buyer"** means the Legal Entity ("LE") to which Seller's proposal is directed and the source of any subsequent purchase order/contract, namely "JEA (Buyer)".
- 2) **"Buyer/End-user's Equipment"** or "Unit(s)" means equipment into which the Seller's Equipment(s) system will be installed and for which the Services will be performed.
- 3) **"End-user"** means the LE that will be the ultimate recipient of the content of this offer/System, namely, "JEA (End-user)".
- 4) **"Contract"** means the contract between Seller and Buyer resulting from this Document.
- 5) **"Contract Change Order"** means additional equipment, engineering, onsite services (time and/or travel expenses) or a change in schedule not specifically identified in this proposal, for reasons outside of the Seller's control, shall be treated as a Contract Change Order. The Contract Change Order will be billed per a) A new quotation or b) the Seller's Standard Services Rate Schedule (Tier 5) in effect at the time of the work. Refer to Services rate section for the Seller's current Standard Services Rate Schedule. Schedule relief may be required based on the nature of the Contract Change Order.
- 6) **"Contract Price"** or **"Proposal Price"** means the price to be paid by the Buyer to the Seller under this Proposal or any resulting Contract for the Parts and Services.
- 7) **"Seller"** means the LE issuing this proposal, providing the equipment and collecting the purchase order, namely "Nexus Controls LLC".
- 8) **"Services"** means such planning, management, technical advisory services, site services and engineering necessary to install the System identified herein.
- 9) **"Site"** means the location or Plant where the System or Parts will be installed and commissioned.
- 10) **"System"** means the equipment, parts, materials, supplies, components and other goods, supplied by the Seller as part of the offer/proposal/quotation.

Revision Level	Date	Description of Revision
0	02 April 2024	Proposal Number changed to OP-0009597
1	28 August 2024	Updated Proposal validity. Updated invoicing schedule.
2	29 August 2024	Updated shipment year of U3&U4 to 2026. Updated invoicing schedule to split hardware delivery into two milestones.
3	29 August 2024	Updated shipment year of all units to 2025. Added optional 1-year extended warranty for U3 & U4 EX hardware. Updated invoicing payment milestones.



1 Executive Summary

1.1 Overview

The Seller is pleased to provide the Buyer this Firm Price proposal to furnish, install, commission and startup an upgrade to the existing EX2100 Simplex IGBT Regulator on Combustion Turbine Generator (Generator S/N 161X986, 335X121, 161X990, 161X996) to EX2100e SCT-PPT Voltage Regulator Systems. The new EX2100e will be provided as a Parts Kit (on panel inserts) that are planned to be installed inside the existing cabinets in the same location as the EX2100 components.

The upgraded EX2100e will be capable of being controlled from the Mark VIe / HMIs across the UDH network, from a local keypad, or from an optional GraphEX Operator Interface (GOI). The GOI would replace the existing remotely mounted COI.

Network switches are not presently included in this proposal offering.

An engineering design for the interconnection of the equipment is included in the base offer and is planned to be provided as a Wiring Transition List.

Note that the existing PPT, Linear Reactors, SCTs and Field Flashing are planned to be reused with the new Regulator Control Systems. An option to replace these components can be added upon request.

Options are included for:

- Spare Parts
- GraphEX Operator Interface
- PSS Tuning / Testing

This proposal is based on work being performed during the same installation as the Mark VIe upgrades for each unit during an outage in 2025. Specifics of the items noted in this Executive Summary are provided in the following sections of this proposal.

1.2 Quality

The Seller is committed to Customer Satisfaction, Compliance and Continuous Improvement. Our <attached> compliance to numerous standards and many reference sites demonstrate our adherence to these principles.

- Our Quality Management System (QMS) is scalable assuring lean quality from software patch or parts delivery to multisite mission critical control system deployments.
- Our procedures drive clear customer requirements management through to the end solution. We also integrate global regulatory, technical and cyber security standards into our upfront proposal process so all stakeholders know how End-user will be compliant.
- If new requirements emerge, we manage scope, schedule, cost and regulatory impacts to optimally deliver only the value customer contracts and regulations require.
- Our global design and manufacturing sites (USA, Brazil, Hungary, UAE, Saudi Arabia, South Korea, China) are ISO-9001:2015 certified by a leading registrar such as LRQA or BSI. All operate under a single QA Manual.
- We survey using Net Promoter Score methodology driving formal lessons learned on Parts, Projects and Service deliveries.
- Our Continuous Improvement leverages root cause analysis and Lean disciplines to provide clear tie from improvement opportunities to countermeasure effectiveness reviews.



- We welcome an examination of our procedures and objective evidence for compliance to contract and ISO-9001:2015 anytime during a project. Usually, this would last less than one day. Please work with your Project Manager once project is kicked off to arrange.

Some customers require additional assurances above and beyond contractual, ISO-9001:2015 and relevant technical regulatory standards. We can proceed with discussion on any of these options:

- Full System Audit. Occasionally end customers require documented assurance of compliance to contractual, regulatory, and quality standards. These audits require multiple days to complete and some planning for scope. We can include this scope in the contract.
- Expanded Project Quality Documentation. Some projects require specific quality requirements that are not part of ISO-9001:2015, we offer to contract these activities to document additional deliverables (examples: Project Quality Plans, Software Quality Plans, Packaging Plans, Inspection Quality Plans).
- Where end customers require compliance to standards we do not currently possess, we will work with you to develop a custom solution to meet your needs.

1.3 Project Management

The Seller will provide a Project Manager as a single point of responsibility for communications to the Buyer. The Project Manager's responsibilities will include:

- a) Project scheduling and tracking for the project activities associated with the equipment upgrade
- b) Procurement and expediting of all equipment and services included in this proposal to insure a smooth project
- c) Coordination of engineering, test and startup activities for the equipment upgrade

All communication between the Buyer/End-user and the Seller, including meetings, all documents, notes on drawings, instruction manuals, and submissions required under contract, shall be in the English language. Any language translation, if required, will be the responsibility of others.



2 Work Scope

2.1 Base Work Scope

2.1.1 Bill of Materials

The following items are included with the generator control system upgrade:

Description	Qty
EX2100e IGBT Regulator Simplex Parts Kit (EBSP)	4
EX-PPT (5KVA) for IGBT regulator	4
Field Ground Detector, IGBT regulator	4
Local Keypad (large)	4
PSS for Regulator	4
Site Services - Installation, Checkout and Commissioning	4
Generation of Manuals and Drawings	4
Requisition Engineering, IGBT	incl.
Engineering Design Package - Wire Transition List	incl.
Regional Kick Off Meeting	incl.
**** Option 1 **** Level 3 Spare Parts - EX2100e Regulator	
Level 3 Spares, IGBT	1
**** Option 2 **** GraphEX Operator Interface	
GraphEX-OI Operator Interface (GOI)	4
**** Option 3 **** PSS Tuning / Testing	
PSS Tuning Study	1

2.1.2 Application Data

The offered system is based on the data summarized below. Any changes or modifications may affect final design and/or pricing.

General:

- Station Name: Northside Station
- Turbine Type: Combustion Turbine Generator
- New Excitation System: IGBT Regulator Simplex Parts Kit
- Quantity of Units: 4
- Input Frequency (Hz): 60
- Exciter Power Source: Existing Magnetics

Environment:

- Maximum Ambient Temperature (° C): 40
- Maximum Altitude (meters): 1000

Exciter Ratings:

- Bridge Type: IGBT
- Exciter Design Current (ADC): <10 (TBD)



2.1.3 Control System

The Seller will provide an EX2100e SCT/PPT Voltage Regulator Excitation System. A detailed technical description of the control system is found in the Technical Description section of this proposal.

No enclosure will be provided. The EX2100e IGBT Regulator will be provided as a "Parts Kit". Separate components will be shipped for retrofit into existing systems on prefabricated panels suitable for mounting.

2.1.4 Additional Items

2.1.4.1 PPT for IGBT Regulator

An input Power Potential Transformer (PPT) is provided. This transformer steps the voltage down to the required level for the regulator. It is designed to safely withstand the temperature resulting from normal exciter operation at rated load, and momentary field forcing. Typically, this transformer is mounted within the regulator enclosure.

2.1.5 Standard Factory Tests

Inspection:

This normal production inspection, performed immediately prior to shipment, verifies the mechanical integrity, conformance to special purchaser hardware requirements, appearance, and completeness. The purchaser can elect to participate in this inspection at no charge. This inspection lasts approximately two hours, and includes:

- Inspection of appearance and mechanical integrity
- Review for completion
- Test instructions
- Test log
- Test defect record
- Check engineering log
- Inspection defect records
- Shortages
- Audit Tech check (for example, labeling/nomenclature)
- As-shipped prints
- Purchaser special requirements

The Buyer usually inspects the hardware the day before the unit is sent to shipping. At this point, the unit will have been completely tested and inspected. Generally, the Buyer reviews the quality of workmanship, looking at paint, wiring, crimping, assembly, etc. The duration of this witness point is two hours.

The second part of this option is a review with the engineer. The Buyer can review all paperwork relevant to the engineering and testing of the requisition. This would include the elementary, I/O list, alarm list, layouts, outlines and test sign-off sheets. This documentation provides the basis for certification that the Buyer's hardware and software went through the proper engineering, verification, and test processes. The duration of this witness point is approximately two hours.

The Buyer should advise the assigned Seller Project Manager four weeks prior to shipment of their intent to visit the factory to inspect his equipment. The Seller will inform the Buyer two weeks prior to the inspection date so that the Buyer can make travel arrangements.



2.1.6 Engineering Design Package (Wire Transition List)

The following list of engineering design services and documentation are provided as part of this upgrade:

- a) EDP Engineer participation (remotely via phone) in the project kickoff meeting.
- b) Evaluation/Engineering required to provide a Wire Transition List (WTL) that will show the following for the current and the new exciter: circuit name, terminal board name and terminal number to allow the existing wiring to be transitioned from the current exciter to the new exciter.
- c) Modification notes for input circuits as required to accommodate the new control power circuit configuration.
- d) Red-lines / modifications of the existing drawings are not currently included in this offering. (The WTL will call only for the disconnection of primary interconnection cables where they are no longer required. Unused devices will be abandoned in place).
- e) Cable schedule for any additional cables required by the new interface to existing devices is included.
- f) Electronic drawing transmittal via Seller's library site is included in this offering.
- g) Post installation updates of the documentation above is currently not included in this offering.
- h) All engineering design documentation will be supplied on standard Seller drawing format in English with ANSI notation, in Adobe Acrobat PDF format.

"As Running" Required inputs

The Buyer/End-user shall provide the "As Running" data defined below two weeks prior to the Kickoff Meeting (KOM) to allow finalization of the system design parameters and I/O list during the KOM call. The quality/completeness of the design is dependent on the timing, quantity and quality of the data provided.

- a) "As Running" elementary drawing of existing excitation system
- b) Pictures of existing excitation system showing internal top section, middle section, bottom section, and overall internal panel
- c) Pictures of existing excitation system external termination points (wire numbers should be legible) also record and transmit wire number/color
- d) Cable schedule for each external termination below
- e) Wire schedule and interconnection drawing for each external termination below
- f) Drawings showing the following circuits.
 - ✓ Existing "As Running" 86G circuit - 86G lockout relay input
 - ✓ Existing "As Running" 52G circuit - 52G breaker status contact
 - ✓ Existing "As Running" Start/Stop circuit - excitation start and stop request contacts
 - ✓ Existing "As Running" Raise/Lower circuit - excitation raise and lower request contacts
 - ✓ Existing "As Running" Auto/Manual circuit - excitation auto control and manual control request contacts
 - ✓ Existing "As Running" 64FT circuit - excitation 64FT Field Ground Trip request contact
 - ✓ Existing "As Running" 64FA circuit - excitation 64FA Field Ground Alarm annunciation contact
 - ✓ Existing "As Running" 30EX circuit - excitation 30EX Excitation Trouble alarm annunciation contact
 - ✓ Existing "As Running" 94EX circuit - excitation lockout request contact to 86G



2.2 Documentation

Unless otherwise indicated, all documentation, control screens, panel labels and wiring identification will be provided in the English language only. The Seller will provide the following product documentation in quantities and media type listed below:

(1) softcopy of the project documentation will be provided on electronic/digital media. The file types will be Adobe Acrobat PDF, or the native file type received by the Seller's third-party vendor supplying its documents.

Document Description	
Item	Generic List
1	Elementary (Wiring) Diagrams
2	Outline Drawings
3	Layout Drawings (cabinet or otherwise)
4	Recommended Spare Parts List
5	Instruction Manuals/Publications; Including Maintenance and User Guides
6	System Guide / Publications
Item	Application Specific List
7	Startup Report
8	Model and Settings Report
9	Wire Transition List



2.3 Optional Work Scope

2.3.1 Option 1 - EX2100e Spare Parts

The Seller is pleased to offer several OPTIONS to meet a Buyer’s system spare parts requirements consisting of three (3) different levels:

Level 1 Spare Parts

This level of spare parts represents the most complete coverage that can be provided for the purchased EX2100e. This includes all control circuit boards, electrical devices, and associated spare parts. Purchase at this Level will guarantee minimum downtime of the system:

Level 2 Spare Parts

This level of spare parts represents a smaller scope than Level 1, but is still designed with reduced downtime in mind. Typical parts recommended for this Level 2 include many of the important control circuit boards that are critical to the operation of the EX2100e.

Level 3 Spare Parts

This Level of spares represents a minimum requirement to prevent prolonged downtime in the unlikely event of a failure.

The following is a representative spare parts list. Actual part numbers and quantities for component spare parts will be provided after receipt of order. Spare parts are priced in the commercial pricing section of the proposal.

Note: The Seller is offering a one-time price on a “Spare Parts Startup Kit” that is only available if purchased simultaneously with the major equipment purchase. The content of the Startup Kit is:

Level 3 – IGBT Simplex Spare Parts	
Description	Qty
POWER SUPPLY 480W 28VDC	1
EXCITER REGULATOR AUXILIARY I/O	1
EX2100E SYSTEM I/O, SIMPLEX	1
EXCITER REGULATOR GROUND DETECTOR	1
HIGHSPEED SERIAL LINK INTERFACE RJ45	1
UCSx CONTROLLER, QUAD CORE	1



2.3.2 Option 2 – Operator Interface (GraphEX-OI)

An optional GraphEX-OI operator interface panel can be provided. This interface panel can be used with either generator exciters or voltage regulators. The GraphEX-OI comes with a new graphical user interface that is easier to read, more intuitive, and optimized for touchscreen use. The 15.6 in. widescreen format allows for 45% more information to be displayed on the screen compare to previous models. Functions included with the GraphEX-OI include system monitoring, full control functions, alarm management, and generator capability curve display (where applicable). Special handling and maintenance requiring addition price may be required if any changes to the existing exciter configuration is done or if modifications to the standard displays are requested.





2.3.3 Option 3 – Power System Stabilizer (PSS) Tuning / Testing

The Seller can develop the PSS settings that result in providing as much damping as possible, in the range between 0.1 and 3.0Hz where inertia and local mode frequencies occur in interconnected power grids. The PSS tuning study will use computer models of the generator and excitation system, and consider a wide range of system short circuit impedance reflecting strong to weak system conditions. This range of system impedance reflects the entire range of system conditions in which the unit will operate, and ensures that the designed PSS settings deliver good performance for all possible unit operating conditions. The models will be analyzed, and the PSS lead-lag and gain settings will be designed using frequency response and root-locus analysis techniques. The response of the generator will then be simulated in the time domain to step changes in the Automatic Voltage Regulator (AVR) reference. The simulation results will be used during the PSS field commissioning tests to compare to the test results and validate the models and the PSS settings developed in the tuning study. A PSS Tuning Study Report summarizing the results will be issued in advance of the field commissioning tests.

For large steam units, an additional evaluation of torsional natural frequencies will be performed as part of the PSS Tuning study to identify torsional frequency margins; Seller will apply filters in the PSS to mitigate PSS-torsional interaction, if required.

The tuning study is normally issued 4 weeks after receipt of the following Buyer/End-user supplied data:

a) Generator data - this includes the following information:

- i) $X_d, X'_{dv}, X''_{di}, X''_{dv}, X''_{di}, T'_{do}, T''_{do}$
- ii) $X_q, X'_{q}, X''_{qv}, X''_{qi}, T'_{qo}, T''_{qo}$
- iii) X_l , leakage reactance
- iv) MVA rating, kV rating, speed, power factor
- v) armature resistance - r_a , field resistance – r_{fd}

The above data is usually given in per unit values on generator rating, except for field resistance which is in ohms (temperature of field at which resistance is given plus normal operating temperature should be specified).

Open Circuit Saturation Curve (or Table) - Terminal Voltage (kV or pu) versus Field Current (Amps)

Combined turbine-generator inertia constant in actual units (WR^2 in lb-ft²) or GD^2 in MKS units, or per unit inertia constant H in kw-sec/kva (or $M=2H$)

- b) Plant one-line diagram to identify the connection scheme and step-up transformer rating and impedance values. The base values on which the transformer impedances are given should be clearly indicated. Other information from the one-line would be special local loads, significant extra bus/line/cable between the unit and the transformer, or the transformer and the system. Also, the connection of the units through generator bus connection or split winding transformers. Any units in the plant which are already existing which may or may not have PSS controls already should be described with the computer models for their generator and excitation system.
- c) Short circuit SC MVA (or short circuit current) on the HV bus (from the utility grid) to which the step-up transformer is connected. This number should be given for network contribution only, not including unit contribution. If it includes the unit contribution it should be indicated. If possible, we would like a range of SC values, maybe nominal with all lines in service, and lower limit with some lines out of service (contingency case). The net system impedance will be calculated from the SC duty, and added to the step-up transformer impedance to determine the net equivalent



impedance seen from the generator looking into the power system. If the SC or transformer data from previous item is not available, the Seller will use a wide range of possible impedances from small to large to insure good performance at any operating condition. Having the site-specific data will allow calculation of the expected response to be measured during commissioning (start-up) of the unit.

Field service for excitation commissioning is defined in subsequent sections of this proposal. If included, the PSS will be commissioned using the PSS settings obtained from the tuning study. The following tests will be completed to validate PSS performance.

- Step test in AVR reference (base load without PSS)
- Gain margin test to determine the PSS gain to be used
- Step test in AVR reference (base load with PSS)
- AVR Uncompensated transfer function
- PSS transfer function

Any additional testing required by the Buyer/End-user beyond that listed above is not included in the present scope of work. If the Buyer/End-user requires additional testing a change order proposal will be issued to support the additional requirements.

These tests will be performed using the Control ToolboxST testing algorithms. External equipment such as signal isolators or frequency analyzers are not required. If the Buyer/End-user requires this type of testing equipment a change order proposal will be issued to support the additional requirements.

An analysis of test results will be documented in a final PSS Test Report that will be issued six weeks after completion of testing.



3 Site Services

3.1 Full Installation and Commissioning

The Seller will provide a Controls Field Engineer who will direct Seller's sub-contractor personnel during the installation phase of this project. The Seller's personnel will checkout and commission the new Exciter controls, per the Seller's standard procedures.

The Seller will provide the (craft) labor, tools and materials to perform the installation of the Seller supplied equipment, as defined below.

The Seller has included a fixed quantity of onsite time (and trip(s) to site) to perform the installation. These fixed quantities are based on the Seller's experience with similar installations on similar equipment. The Buyer/End-user shall be responsible for properly staffing the installation (operators/technicians for checkout) and commissioning such that the activities below fit within the Seller's site services schedule.

Unless specified otherwise, the Seller's installation services shall be limited to the existing excitation lineups and does not include any installation, modifications, and/or configuration of any external wiring or conduit, field instrumentation and devices, ancillary equipment, control room, third-party control systems & interfaces, or protective relays.

Note: New Ethernet network cabling may need to be provided and installed by End-User to interface with the EX2100e to the Turbine Control network and remote operator interface.

3.1.1 EX2100e IGBT Voltage Regulator Installation

The Seller's Controls Field Engineer will oversee the Seller's supplied craft labor during performance of the following tasks:

- a) Pre-outage:
 - i. Site Orientation/safety review
 - ii. Pull any new cables as determined by design as close as reasonably safe to required locations
 - iii. Set hardware near current regulator for ease of access
- b) Outage:
 - i) Lockout-Tag out by the Buyer - Seller personnel to verify
 - ii) Identify components to be removed
 - iii) Verify all wire labels for affected wiring
 - iv) Remove previously identified components
 - v) Clear space for sub-assembly mounting
 - vi) Mount sub-assemblies and components per seller documentation
 - vii) Install PPT per Seller's design
 - viii) Terminate control and instrumentation wiring per Seller's drawings
 - ix) Connect and verify all Ethernet network cabling, switches to EX2100e excitation control system panel (if provided as part of the Seller's equipment)



3.1.2 EX2100e IGBT Voltage Regulator Commissioning

The Seller's Controls Field Engineer will perform the following tasks with support of Buyer/End-user supplied plant technicians

- a) Power Up Validation
- b) Toolbox Validation
- c) I/O Validation
- d) Software Validation with EX2100e Generator Simulator
- e) Hardware Validation
- f) EX2100e Generator Rated Speed Offline Commissioning
- g) EX2100e Generator Online Partial Load Commissioning
- h) EX2100e Generator Online Full Load Commissioning
- i) Software Validation



4 Proposal Basis and Buyer Responsibilities

This section lists those items which are provided by the Buyer or End-user and not part of the Seller's scope of supply. It also lists the Seller's assumptions, comments to Buyer's requirements, and the breakdown of Buyer/End-user responsibilities.

4.1 General Assumptions and Clarifications

Below represents the Seller's clarifications, assumptions and exceptions related to the Seller supplied equipment and services:

- a) Seller believes that this proposal/quote meets the intent of the Buyer's request and will be the document of reference in any resulting contract.
- b) Seller assumes multiple units onsite (included in this proposal) are similar except for the Unit number designators and tag names as they relate to the Seller supplied equipment (Hardware, Software), engineering, documentation, and control logic functionality. Pricing for unique hardware, software or engineering is not included, when the scope of work is applied to multiple units onsite, which are assumed to be similar.
- c) Unless otherwise specifically identified herein, this proposal assumes that none of the Seller's equipment (and related engineering) being supplied under this contract (or related contract) will be installed in, or have its wiring routed through, a classified hazardous area as defined by NFPA 70 (section 500/505) or CSA 22.1 and CSA 22.2 as shall be determined by Buyer.
- d) It is assumed that any existing equipment/devices/wiring/sensors/networks that are not being replaced as part of this work scope are in a good working order, calibrated to OEM specifications and will function as designed and work properly with the new system(s) provided. Replacement of non-functioning equipment/devices/wiring, including any troubleshooting or re-calibration will be on a Contract Change Order basis.
- e) If an RFQ or technical specification is presented by the Buyer/End-user during the project's execution (contract term), that was not initially brought to the attention of the Seller during the proposal development stage and said specifications/requirements subsequently increase the cost of the project for the Seller, this will be treated as a contract change order and billed accordingly.
- f) Seller reserves the right to substitute suitable and equivalent third-party hardware in place of those proposed should such items become obsolete prior to final delivery of those products. If during the warranty period a third-party hardware item becomes defective and requires replacement, such item may be replaced by a substitute item if the third-party item has been obsoleted. Buyer shall receive notification of substitution prior to shipment of the items.
- g) When existing cabinetry is being reused, the Buyer/End-user shall be responsible for the condition and suitability of same to house the Seller supplied equipment, maintaining NEMA, EMI and RFI requirements, as an example.
- h) No provisions for a separate, integrated FAT or communication testing with a foreign device or other sub-systems (DCS, SCADA, Historian, etc.) are included in this proposal. Simple communication testing with Buyer/End-user's foreign devices or other sub-systems can be conducted and verified by the Seller's Controls Engineer carrying out the commissioning onsite. Should Buyer decide to have a separate communication test with other systems at Buyer's facility, Seller will provide a quotation upon Buyer's request and detailed definition.
- i) No modifications to any Buyer DCS or third-party equipment are included in this proposal. The new Seller supplied equipment may require modification to DCS signals to maintain compatibility. Modification of these DCS signals is the responsibility of Buyer.



- j) Relevant OEM Technical Information Letters (“TIL”) related to equipment being provided, have been performed by Buyer/End-user prior to installation of Seller supplied equipment.
- k) Buyer is responsible to adhere to the timetable of critical project data exchange and execution milestones as identified in the detailed project schedule agreed to at the kickoff meeting.
- l) As the project must incorporate Buyer specific requirements, Buyer must support all project activities:
 - i) Support Site kickoff meeting, site visits, design reviews, status meetings, etc.
 - ii) Participate in Buyer-witnessed factory tests and site acceptance tests (if included)
 - iii) Respond to Seller inquiries and requests for documentation in a timely manner.
 - iv) Direct all communications through Seller’s assigned Project Manager.
 - v) Document, in writing, approvals for all change orders.
- m) Unless specifically identified in this proposal, the Seller is not supplying any cables (copper, Ethernet, or fiber optic), networking equipment, field devices, instrumentation, cabinets, housings, solenoids, actuation devices, or installation materials.
- n) If the existing enclosure is re-used, it must have a minimum NEMA1/IP20 rating and be free of physical damage. The cost associated with any remediation or repair of existing damage, holes, corrosion, etc. of the existing enclosure, as determined by the Seller to impact the viability and reliability of the new control installation, will be the responsibility of the Buyer. The Seller may provide a cost and cycle for repair or remediation services or new enclosure as required.

4.2 Application/Product Specific Buyer/End-user Responsibilities

The following represents the Buyer/End-user responsibilities which are specific to the product being supplied by the Seller.

Buyer is responsible to identify any hazardous area (including levels of the hazardous areas with types of gasses which the equipment/personnel will be exposed to as defined by the NEC) within their facility that Seller proposed equipment and or wiring is in or passes through. This requirement is to ensure Seller maintains proper hazardous area practices where required by the site’s EHSM practices and OSHA. The scope of supply of the Seller is expressly limited to the scope provided for in this proposal and pre-existing conditions of equipment not a part of the scope in this proposal is solely the Buyer’s responsibility.

4.2.1 Relay Settings, Coordination Studies and Testing

Buyer is responsible for relay settings, any coordination studies, programming and testing that may be required unless otherwise stated elsewhere in this proposal.

4.2.2 EX2100e Exciter

The following represents the Buyer/End-user responsibilities which are specific to the EX2100e Exciter product being supplied by the Seller.

- a) If the excitation system project is executed during or after a turbine control upgrade, the excitation system will utilize the turbine control system Ethernet switches and routers.
- b) Sensing Signals and Control Interfaces
 - i) Generator current feedback
 - ii) Generator voltage feedback



- iii) Generator lockout relay status - A normally closed contact from 86G
 - iv) Generator breaker status - A normally open contact indicating open/close status of the generator breaker
 - v) Control power sources for AC input and DC input control power
 - vi) Network Analysis and Troubleshooting software (Non-Seller supplied software): Network analysis software is permitted to be installed (by the Buyer/End-user) on a Seller supplied computer for network analysis and troubleshooting physical network nodes connected to the GE Plant Data Highway, GE Unit Data Highway and third-party interface protocol communications, e.g., Modbus, IEC-60870, OPC, DNP3, IEC-61850. This permission assumes that this software does not directly interface or disrupt the process of the GE turbine/generator control software and associated communication and that it will not interfere with the operation of the Seller supplied computer in any way. This practice will not void the Seller software warranty, provided as part of the software license/Addendum, if the malfunction was not caused by the installation of the Network analysis software by the Buyer/End-user.
- c) Control Power Sources
- The following power sources are required for EX2100e operation and must be provided by JEA:
- i) AC Source/Control Power: 110 to Max 280 VAC, 50-480Hz, single or three-phase, burden not to exceed 35 amps.
 - ii) Backup Source/Control Power: 110 to 250 VDC (continuous burden will not exceed 20 amperes).
- d) Model and Settings Report (MSR)
- i) Timely submittal of the generator data form and all relative “as running” settings of the existing excitation system.
 - ii) Review of the preliminary MSR and markups relative to End-user desired coordination of the protection relay settings.

4.3 Documentation Related Buyer/End-user Responsibilities

This proposal is based on the following:

- a) It is assumed that Seller will be furnished, upon request, with full drawings and information concerning the state of the existing installation including wiring information to the existing terminations including process and instrumentation diagrams (“P&ID’s”). If such information is not available Seller will charge for the work involved in obtaining this information.
- b) Overall project cycle time is dependent upon receipt of current site data. It is Buyer’s responsibility to provide the relevant site data in a timely manner. Seller’s Project Manager will be assigned after receipt of order and will provide instructions for the download and transfer of site data as necessary. Site services to obtain the site data are not included in this offering but can be provided for an additional cost. Site data includes but is not limited to as-running software and design/engineering/P&ID drawings.
- c) If the site data is not provided within two weeks upon placement of order, the possibility exists that the hardware/software may be engineered using default or; generic data and a delay in delivery and/or an extended startup time may result.
- d) Unless explicitly identified above, Seller is not supplying interconnect wiring or loop diagrams.



- e) This proposal does not include plant operation manual updates, or any other site documentation modifications.
- f) To initiate and complete the engineering the following (including but not limited to) documentation shall be provided in a timely manner:
 - i) As-running Turbine, Generator, and Motor Control Center controls elementary diagrams
 - ii) As-running device summary diagram
 - iii) As-running controls specifications
 - iv) As-running connection diagram
 - v) Electrical One Line diagram

Note: Incomplete or poor-quality drawings, drawings with errors or delays in receipt of drawings and as-running software could result in a contract change order (with schedule and price relief) to overcome issues which may hinder Seller from completing its engineering within the agreed upon schedule.

4.4 Site Services Division of Responsibility

This division of responsibility (DOR) table identifies the entity responsible for various aspects of the controls upgrade proposed and outlines the basis of the Services estimate. It is intended to aid the execution of the project by clearly describing the expectations of all parties.

Responsibility Legend: B=Buyer/End-user, S=Seller, N/A= Not Applicable			
Item	Description	Responsibility	Comments
PREPARATION			
a)	Lock Out Tag Out (“LOTO”) of all equipment related to Seller’s scope of supply prior to start of Seller’s work. Seller personnel will verify.	B	
b)	Health, Safety, Emergency Response and Security Procedures	B	
c)	Regulatory requirements and permits (Air, welding, work, etc.)	B	
d)	Clear and unfettered access to the equipment associated with the Seller’s scope of supply for the duration of the planned work, including clear access for removing and re-install the Seller’s equipment (cabinets, etc.). Any obstructions that need to be moved are the responsibility of the Buyer/End-user	B	
e)	Hardhat, safety glasses, hearing protection, hand protection and safety footwear for Seller’s personnel.	S	
f)	Offload the Seller supplied equipment/material upon delivery and store as required. Place equipment near work area prior to the start of Seller’s work.	B	
TEMPORARY CONSTRUCTION FACILITIES			
g)	Scaffolding: supply, installation, setup and removal	B	
h)	Crane and/or forklift, rigging, rigging plan and operator	B	
i)	Temporary Utilities (electric, light, air and water)	B	
j)	Office space, internet access, sanitary facilities, drinking water, parking etc. for Seller’s personnel.	B	



Responsibility Legend: B=Buyer/End-user, S=Seller, N/A= Not Applicable			
Item	Description	Responsibility	Comments
k)	Construction waste management and disposal	B	
l)	First Aid facilities	B	
m)	Temporary barriers and enclosures	N/A	
n)	Hazardous material identification, testing and abatement. Seller shall be afforded schedule and price relief related to any remediation efforts.	B	
CONTROL INSTALLATION			
o)	Electrical craft labor and materials	S	
p)	Civil craft labor and materials (including pads to support Seller's equipment)	B	
q)	Signal Mapping or changing of third-party signal tables required due to Controls upgrade	B	
r)	Testing required to satisfy regulatory requirements	B	Seller will assist
INSTALLATION SUPPORT			
s)	Dedicated operations support during commissioning and startup testing	B	
t)	Craft labor to assist in performance of loop checks	S/B	Seller to provide craft during install, Buyer to supply technicians for device location as needed
u)	Specialty measurement and test equipment such as 3-phase test sets.	B	
v)	Calibration of protection devices and relays during setup and commissioning	B	
w)	Removal and re-installation of third-party devices or pass through wiring within existing cabinets, not specifically identified as part of the Seller's scope of supply	B	
x)	Updates to existing, or supply, installation and testing of new, Ethernet network to support the operation of the Seller supplied equipment.	B	
y)	Confined space entry permit, specialized equipment, observer and personnel to enter the confined space, and perform work.	B	



5 Commercial Section

The work scope identified in this document is subject to the following terms and conditions, and by reference are incorporated herein.

5.1 Pricing

The price for the offering is Firm Fixed for the scope of work in the proposal and **is based on a PO by Sept 30, 2024.**

5.1.1 Scope of Work Pricing

The prices for the scope of work detailed in the proposal will be as follows:

Item	Offering	Description	Price (USD)
1	Base	Qty (4) EX2100e Simplex SCT-PPT Regulator Systems - PPTs – 5kVA - Engineering Design (Wiring Transition List) - Reclamation Credit (for returning EX2100) - Site Services – Installation, Checkout & Commissioning	\$449,450
2	Option 1	Level 3 Spare Parts - EX2100e Regulator	\$19,509
3	Option 2	GraphEX Operator Interface	\$38,376
4	Option 3	PSS Tuning / Testing	\$77,087
5	Option 4	1-year Extended Warranty for Unit 3 and Unit 4 EX2100e hardware	\$1,451

5.1.2 Pricing Limitations and Considerations

This proposal is based on the following:

- Unless otherwise indicated, the prices quoted herein are valid for the delivery of equipment in **2025** and performance of services in **2025 and 2026**. Delivery of equipment or performance of services in years after these shall be subject to a price escalation fee equal to 4% per year of the contract price for the undelivered equipment or un-performed services.
- This Proposal will remain valid until **September 30, 2024**, and may be modified or withdrawn at any time by the Seller prior to receipt of Buyer's acceptance. Upon written notice to the Buyer, this Proposal may be assigned, transferred, or novated by Seller in connection with a merger, consolidation, or sale of all or substantially all of Seller's assets to which this Proposal relates.
- Prices quoted are based on the Assumptions and Clarifications as described in the Proposal Basis Section and performed according to the Terms and Conditions referenced or provided herein.
- Seller reserves the right to review and re-quote this job if there is a discrepancy between this proposal and the purchase order. If Seller receives a specification between the issuance date of this proposal and receipt of the purchase order, Seller reserves the right to re-evaluate this proposal.
- Seller will evaluate changes to the specification, drawings, services or existing equipment. If these changes constitute a change in the quoted work scope or schedule, Seller will quote the changes and a change order must be received before work is to proceed.



- f) The pricing breakouts outlined in this proposal are for accounting purposes only and are not to be considered as standalone prices.
- g) The prices quoted herein exclude taxes or other regulatory fees.
- h) The prices quoted herein exclude duties.
- i) Unless specified herein, travel and lodging/living (“T&L”) expenses are not included.
- j) **Parts Reclamation Program is included as part of this project.** The pricing above is contingent upon the implementation of the Seller’s Parts Reclamation Program whereby the Buyer returns the hardware removed as part of this project and the associated Buyer/End-user owned spare parts. The parts removed will be collected and packaged for shipment to a Seller’s facility by the Seller’s Controls Engineer, with assistance from the Buyer/End-user site personnel. The Buyer/End-user will be responsible for collecting any spares that are no longer applicable to the control system and providing them to the Seller’s representative for packaging. The Seller will provide the packaging material and shipping expense for returning the reclaimed parts to the Seller’s facility. Failure to return removed hardware and unused spare parts may result in a contract change order for the value of the un-returned hardware/parts.

5.2 Schedule

5.2.1 Equipment Schedule

The After Receipt of Order (“ARO”) date will be the date that the Seller acknowledges the Purchase Order, not the initial date that the Seller receives that PO.

The estimated timescale from acknowledgement of PO/contract to the Delivery (Incoterm) of the equipment is **(36) Thirty-Six to (38) Thirty-Eight Weeks** and is based on current factory loading and lead times offered by Seller and other vendors, if any.

5.2.1.1 Equipment Schedule Limitations

Delivery dates can vary depending on factory workload and should be confirmed before issue of order. Delays in receiving vital information from the Buyer/End-user or delays in receiving “review” drawings back from the Buyer/End-user will impact the ARO delivery dates. These delays may result in a day for day slip in the delivery schedule or a complete shift of the delivery dates indicated herein.

When detailed drawings representing the Buyer’s current (as-running), installed equipment cannot be made available to the Seller, it is critical that the Seller has sufficient time and physical access to the Buyer’s equipment while in a Lock-out/Tag-out condition. This will allow the Seller to take measurements, design, manufacture, and field fit these portions of the total scope of supply. Some examples of this may include mounting plates, blanking plates, etc.

Seller’s proposed schedule with milestone dates will be presented at the project Kickoff Meeting. This project schedule will illustrate the various activities from purchase order/contract receipt, through design, manufacture, testing, shipment and site services (if in work scope).

The overall price and cycle quoted herein requires full cooperation between the Seller and the Buyer/End-user and adherence to key milestones dates specified as part of a project implementation plan. The specific milestone dates will normally be set during the project kickoff meeting and will normally include, but may not be limited to, the following key project control points:

- a) Project Kickoff Meeting (Buyer and Seller)
- b) Site survey and/or supply of applicable site data (Buyer and Seller)



- i) Site data (Buyer)
- ii) Drawings and documentation (Buyer)
- iii) Logistics data (Buyer and Seller)
- c) Drawing submittals (Seller)
- d) Design review and approval (Buyer)
- e) Design freeze (Buyer and Seller)
- f) Factory acceptance test/Buyer witness test (Buyer and Seller)
- g) Supply of documentation for shipment (Buyer)
- h) Support commissioning, start-up, site acceptance testing and handoff (Buyer and Seller)
- i) Delivery of documentation (Seller)

Unless otherwise agreed upon in advance, the work shall be executed in an uninterrupted and sequential fashion. If the work is interrupted by or for the convenience of the Buyer, or cannot be performed according to the schedule, the Seller has the right to submit a change order for incremental charges (for example multiple site trips or additional design review cycles, etc.). The Buyer shall be provided drawings of sufficient quality and thoroughness early in the project and be given one review cycle, to submit comments and request changes. The review cycle is typically 3 weeks long, but depends on the project schedule and will be reviewed and agreed upon at the Kickoff Meeting. After the review cycle the design will be considered frozen and the cost and schedule impact of requested changes will increase.

5.2.2 Site Services Schedule

The Seller’s Services Schedule is based on the following trips, time onsite and working schedule:

Per Unit Task	Working Schedule	Duration
Travel in	8 hrs/day, 5 days/wk, single shift	1 day
Pre-Outage	10 hrs/day, 6 days/wk, single shift	1 day
Outage Installation	10 hrs/day, 6 days/wk, single shift	5 days
Checkout and Commissioning	10 hrs/day, 5 days/wk, single shift	1 days
Startup Support	10 hrs/day, 5 days/wk, single shift	2 day
Travel out	8 hrs/day, 5 days/wk, single shift	1 day

5.2.3 Site Services Schedule Limitations

The Seller’s Services schedule is based on the following:

- a) The Seller’s Holidays, standby time or second/night shift work are not included.
- b) The Seller has included four (4) hours of Field Engineer/Controls Specialist support for LOTO (“Lock Out Tag Out”) per unit. Additional time or related expenses due to delays on the part of the Buyer/End-user will be billed as a Contract Change Order.
- c) The Seller’s onsite time includes up to a maximum of two (2) hours of site access and safety orientation training for the Seller’s personnel. This training does not include additional mobilizations and is assumed to occur on the plant site immediately upon arrival to site for initial mobilization and assumes that no special offsite training requirements. Site safety and access training outside these guidelines will result in a change to the pricing provided herein.



- d) Assumes work scope can be accomplished in an uninterrupted fashion per the schedule above.
- e) Additional trips or onsite time not specifically identified in the Schedule, or elsewhere in this proposal document will result in a change to the pricing provided herein. This includes, but is not limited to, delays on the part of the End-user, or related work delaying Seller's ability to complete their work per the above schedule.
- f) Note: the first 2 units will be completed in 2025, while the following 2 will be completed in 2026.
- g) Scope or schedule changes related to these limitations will be billed to the Buyer/End-user as a Contract Change Order basis.
- h) The Seller believes the above schedule includes sufficient time to complete the scope of work as required. Additional time or manpower required beyond that which is quoted will be billed as a Contract Change Order.
- i) All equipment and components both related and unrelated to the Seller's scope of work are assumed to be in good working condition. Any time required to bring existing equipment to a proper functioning state will be billed as a Contract Change Order.
- j) To ensure safe and alert personnel, Seller's HSE policy requires a rest period of 36 consecutive hours every 19 consecutive days worked. As such, Seller's schedule will implement one rest day for all (Seller and their subcontractors) personnel on site at a minimum 19-day interval if working seven-day weeks. Seller can accommodate alternative schedules by adding personnel to site, which will be billed on a Contract Change Order basis. Safety is always a priority for the Seller and our customers. By adding a lay-over day our base offering does not include extra personnel for the required rest period.

5.3 Delivery, Title Transfer and Risk of Loss

5.3.1 Offsite Work (Equipment and Engineering)

Seller shall deliver Products to Buyer (Or End-user), FCA Seller's Factory (Incoterms 2020). Title and Risk of loss shall pass to Buyer at Delivery.

5.3.2 Onsite Work (Site Services, Training, Support agreements)

Title to Services shall pass to Buyer as performed.

5.4 Payment Terms

This Firm Price Proposal is based upon the following invoicing schedule and terms:

- a) Payment Terms are **Net 30**
- b) Pricing is in USD.
- c) As the Seller would like to make doing business easier, please take advantage of our Wire Transfer or ACH payment options by remitting payment using the following:

Account Name: Nexus Controls LLC (US Federal Tax ID: 27-1141938)
Account Number: 352846304
Bank Name: J.P. Morgan Chase Bank N.A.
Bank Branch: New York
ACH routing: 021000021
Wire routing: 021000021
SWIFT: CHASUS33



D&B DUNS Number: 00-570-7769

Please note that check payments are no longer accepted.

5.4.1 Invoicing Schedule

This proposal is based upon the following invoicing schedule:

Invoicing Milestone	Invoice Amount
The Seller Acknowledgement of PO - not earlier than Oct 10,2024 Based on a PO by Sept 30, 2024.	20%
Submittal of Eng. Designs	15%
Delivery U1&U2 (Per Contract Delivery Term)	23%
Services – Mobilization – First Installation Outage in 2025	5%
Services - De-Mobilization – First Installation Outage in 2025	5%
Delivery U3&U4 (Per Contract Delivery Term) – not earlier than December 10, 2025	22%
Services – Mobilization – Second Installation Outage in 2026	5%
Services - De-Mobilization – Second Installation Outage in 2026	5%
Total	100%

5.4.2 Termination Schedule

For Contracts not utilizing the Seller's standard Termination and Suspension article's, the following termination for convenience table shall apply:

Weeks from Order Date	% of Contract Price
<2	20%
<6	60%
<8	85%
>8	100%

5.5 Terms and Conditions

This quotation is an offer to sell between the Buyer and Seller, and subject to the terms and conditions listed below, which by reference are incorporated herein. To the extent there are conflicts or inconsistencies between this set of Terms and Conditions and the preceding information provided in this document, the preceding information shall prevail.

- a. Products and/or Services Terms and Conditions (PSTC)/Emma, Standard, dated May 2024.
- b. STANDALONE SOFTWARE LICENSE AGREEMENT, May 2024.

Each Party represents, warrants, and covenants that, it has complied with, will comply with, and will cause its Affiliates, related parties and representatives to fully comply with all: (a) the GE Integrity Guide (The Spirit & The Letter) available at <https://www.ge.com/sustainability/integrity>; (b) applicable Laws of the Project Country to the extent such Laws are mandatorily applicable to the scope of this Contract; and (c) Laws regarding anti-bribery or kick-backs, illegal payments and gratuities, anti-money laundering, and/or similar practices (including the Foreign Corrupt Practices Act of 1977, as amended, the UK Bribery Act



2010 and any other applicable local anti-bribery laws) in the performance of any activity directly or indirectly related to the Facility or the Contract or applicable to the Work.

Each Party represents that (i) it will not engage any third party, sales representative, agent or consultant in connection with the Project without the prior written consent of each of the Parties, and (ii) it will disclose to each other the use of any sales representative, agent or consultant before the signing of the Contract.

COVID-19, GEOPOLITICAL CONFLICTS, AND RESPONDING GOVERNMENT ACTIONS:

- a. The parties acknowledge that the ongoing COVID-19 pandemic, geopolitical conflicts, and government actions in response thereto are affecting and will continue to affect Seller's ability to deliver goods and services around the world, including, but not limited to, impacts arising from materials shortages, transportation shortages and delays, sanctions preventing receipt or delivery of materials, etc. "ONGOING IMPACT" In the event that ONGOING IMPACT affects Seller's ability to deliver on time or at the bid price, Seller shall be entitled to an equitable adjustment in schedule and price as appropriate, subject to Seller's obligation to work in good faith with Buyer to mitigate the impact on schedule and/or cost."

5.5.1 Precedence

Seller will generally consider the following precedence for any quotation, Contract or set of Terms and Conditions documents in resolving any conflict, error, or discrepancy:

- a) Fully executed change orders or contract amendments
- b) Seller's terms and conditions
- c) Seller's quotation document
- d) Buyer specification/bid document
- e) Buyer's purchase order

5.6 Purchase Order Details

Upon Buyer's decision to submit a purchase order to the Seller, please address the purchase order to:

Nexus Controls LLC
1800 Nelson Road
Longmont, CO 80501-6324 United States
Attn: **John Field** – Sales Manager

- a) Purchase order should conform to and reference this document.
- b) Deviations between the Buyer's purchase order and that proposed in this document, including:
 - i) scope of work,
 - ii) price, or
 - iii) schedule(s), or
 - iv) terms and conditions may cause delays or non-acceptance of purchase order.
- c) Please provide a physical address for equipment and invoice delivery.



6 Appendices

6.1 Technical Description

The EX2100e is an evolutionary product based on the proven control architecture of the GE Mark control products and EX2100 generator control and protection algorithms. This next generation of EX generator control aligns with the hardware platform of the GE Mark VIe turbine control, resulting in the following added value for the End-user:

- Increased turbine island control system integration for more seamless plant operation and protection.
- Improved software feature sets and integrations through the movement of the EX platform into the GE ControlST operating environment, with access to improved tools for excitation system set-up, maintenance and troubleshooting.
- Reduced training burden due to single hardware and software platform across unit and generator control systems.
- Engineered life-cycle management options for owners of EX2000 and EX2100 products through structured migration products to reduce cost and cycle of product modernization.
- Hardware platform simplification through discrete component, card and interconnecting cable reduction.
- Software tools and documentation packages to support evolving grid stability testing and reporting requirements.
- Improved hardware and software cyber security capabilities.

6.1.1 Supported Standards

Seller's EX2100e products are certified to or comply with applicable sections of the following codes and standards.

Standard Number/Legislation	Standard Title/Legislation Title
2014/35/EU	Low Voltage Directive ⁴
2014/30/EU	EMC directive
CUTR-04	On safety of low-voltage equipment
CUTR-20	On Electromagnetic Compatibility
EN IEC 61000-6-2	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN IEC 61000-6-4	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments (35 amp AVR only)
EN 55011	Industrial, scientific, and medical equipment — Radio-frequency disturbance characteristics — Limits and methods of measurement
EN 55032	Electromagnetic compatibility of multimedia equipment - Emission requirement (35 amp AVR only)
IEC/EN 61000-4-2	Electromagnetic compatibility (EMC)—Part 4–2: Testing and measuring techniques— Electrostatic discharge immunity test.
IEC 61000-4-3	Electromagnetic compatibility (EMC) — Part 4 – 3: Testing and measurement techniques — Radiated, radio-frequency, electromagnetic field immunity test



Standard Number/Legislation	Standard Title/Legislation Title
IEC 61000-4-4	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
IEC 61000-4-5	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques — Surge immunity tests.
IEC 61000-4-6	Electromagnetic compatibility (EMC) - Part 4 - 6: Testing and measurement techniques — Immunity to conducted disturbances, induced by radio-frequency field.
IEC 61000-4-8	Electromagnetic compatibility (EMC) - Part 4 - 8: Testing and measurement techniques — Power frequency magnetic field immunity test.
IEC 61000-4-11	Electromagnetic compatibility (EMC) - Part 4 - 11: Testing and measurement techniques — Voltage dips, short interruptions and voltage variations immunity tests.
KS C 9610-6-4	Electromagnetic Compatibility – Part 6-2: Generic Standards - Immunity for Industrial Environments
KS C 9610-6-2:2019	Electromagnetic Compatibility – Part 6-2: Generic Standards - Immunity for Industrial Environments Class A
KS C 9610-6-4:2017	Electromagnetic Compatibility – Part 6-4: Generic Standards - Emission Standard for Industrial Environments Class A
UL 61800-5-1	Standard for Adjustable Speed Electrical Power Drive Systems – Part 5-1: Safety Requirements – Electrical, thermal and energy
EN 61800-5-1	Adjustable speed electrical power drive systems – Part 5-1: Safety requirements - Electrical, thermal and energy

6.1.2 Environmental Limits

GE EX2100e Digital Exciters are operable within the following environmental limits:

Temperature and Humidity:

- Minimum ambient temperature: 0°C
- Nominal ambient temperature (no derate): 40°C
- Maximum ambient temperature (with derate): 50°C
- Nominal ambient temperature (for this specific application): 40°C
- Maximum rate of temperature change: 0.1°C per min
- Maximum relative humidity: 95% (non-condensing)
- Maximum rate of relative humidity change: 1% per min

Gases:

Maximum concentration of corrosive gases at 50% relative humidity and 40°C (per EN50178: 1994 Section A.6.1.4 Table A.2 (m))

- Sulfur dioxide (SO₂), 30 ppb
- Hydrogen sulfide (H₂S), 10 ppb
- Nitrous fumes (NO_x), 30 ppb
- Chlorine (Cl₂), 10 ppb
- Hydrogen fluoride (HF), 10 ppb
- Ammonia (NH₃), 500 ppb
- Ozone (O₃), 5 ppb



Particulates:

Particle sizes from 10 - 100 microns for the following materials

- Aluminum oxide Ink
- Sand/dirt
- Cement
- Steel mill oxides
- Lint
- Coal/carbon dust
- Paper
- Soot

Seismic:

UBC (1997) and IBC (2012)

Other:

Seller will meet the ATEX and other hazardous environment requirements defined in the scope of supply of this proposal. Additional requirements or Seller's site survey results may necessitate the design and installation of additional scope of supply and a corresponding adjustment to the pricing and delivery as presented.

This proposal assumes no hazardous environment exists for the proposed scope of supply. If ATEX or other hazardous environment requirements exist (including ancillary equipment such as junction boxes, conduit and glands), Seller may meet these requirements upon Buyer's detailed definition and request for an updated proposal.

Elevation:

- Normal operation: ≤ 1000 meters (101.3 – 89.8 KPa)
- Extended operation: 1001 – 3000 meters (89.8 – 69.7 KPa)
- For this specific application 1000 meters
- Shipping: 15000 feet maximum (57.2 KPa)

6.1.3 Exciter Hardware

6.1.3.1 Enclosure

No enclosure will be provided. The EX2100e IGBT Regulator will be provided as a "Parts Kit". Separate components will be shipped for retrofit into existing systems on prefabricated panels suitable for mounting.

6.1.3.2 Control Module

The control module is being provided in a simplex configuration. This configuration provides both auto and manual regulator modes with autotracking of manual to auto, or auto to manual regulators.



(Typical simplex control module)

6.1.3.3 Power Bridge

Simplex power bridge (IGBT) - The power conversion consists of an input section, a DC link, and the converter output section. The input section is a 3-phase diode bridge with input filters. The range of the AC input is from 90 - 280 Vrms, nominal. Frequency inputs range as high as a nominal 480 Hz. AC input may be single or 3-phase from a permanent magnet generator (PMG), auxiliary bus, or generator terminal. A PPT is not required with PMG feed. A PPT is required for an auxiliary bus or generator terminal feed.

A backup source from nominal 110 to 250 VDC station batteries is filtered, diode isolated, and combined with the 3-phase diode bridge output. These sources energize the DC link, an unregulated source voltage for the control power supplies and the output power through the IGBTs. The DC link voltage level is limited by the dynamic discharge circuit during events such as load rejection or unit trip. This output is fed to the control windings of the existing SCT's.

6.1.3.4 Bridge Cooling

The power bridge is convection cooled.

6.1.3.5 Field Interrupting Device

A positive leg contactor is provided to interrupt the field circuit.

6.1.3.6 Power Supply Module

Two power supply modules are used to provide 28 VDC power to the Unit Controller modules. These power supply modules convert DC and AC power delivered from a customer source. The resulting 28 VDC is used to supply the controller and various other circuit boards as needed in the EX2100e through a diode isolation module to preserve the redundancy of input power. In redundant control configurations, the primary and backup control can be powered down independently using power disconnect switches that supply the two redundant power supply modules.



6.1.3.7 PT and CT Isolation Switches

These knife switches are used to isolate the PT and CT feedback signals from the voltage regulator. A second PT switch is provided to allow for redundant generator terminal voltage feedback to the AVR. A second CT switch is provided to allow for 2-phase sensing of generator current feedback.

6.1.3.8 Incoming Ac Line-to-Line Filters

Fuse protected line-to-line series RC filter circuits (snubbers) are provided to dampen voltage spikes associated with bridge commutation to minimize the voltage distortion at the PPT secondary.

6.1.3.9 De-Excitation Circuit

The Dynamic Discharge Circuit acts to dissipate the energy of the exciter field during conditions such as load rejection and/or unit trip.

6.1.3.10 Field Ground Detection

A field ground interface will be provided. A generator field ground detector is provided. Resistance measurement is independent of field operating voltage and is available for trending.

6.1.3.11 I/O Configuration

The EX2100e contains 7 programmable inputs and 4 general purpose programmable output relays. When required, these I/O points are used by the Buyer to control and monitor the EX2100e. Inputs are used for Start, Stop, Raise, Lower, Auto, Manual commands. Outputs are used to give status indication to the plant.

Inputs are rated for:

55VDC (wetting voltage from the EX2100e)

Outputs are rated for:

125 VDC nominal (24 VDC min)

Resistive Load - 2A @ 28 VDC

Resistive Load - 0.5A @ 120 VDC

6.1.4 Software Features

6.1.4.1 Control Functions

The following control functions are included:

- **Automatic Voltage Regulator (AVR)** - Regulates generator terminal voltage to within 0.25%. Adjustable control range limits are typically 90% - 110% of rated generator voltage.
- **Manual Voltage Regulator (FVR)** - Regulates generator field voltage within a typical control range of 20% - 120% of generator rated field voltage. For brushless excitation systems, a typical control range of 20% - 120% of exciter rated field current is used.
- **Automatic and Manual Regulator Reference Adjustment** -The settings of the upper and lower limits and raise and lower ramp times are adjustable.
- **Automatic and Manual Reference Followers**—Adjusts the non-active regulator output to automatically track the active regulator.
- **VAR/PF Controller** - This function is accomplished by slow ramping of the AVR reference set point. The VAR/PF control is selected by operator command and the VAR/PF set point is established using the "RAISE" and "LOWER" pushbuttons before enabling the VAR/PF command.



- **Reactive Current Compensation (RCC/LINE DROP)** - Reactive Current Compensation (RCC) (or “paralleling”) mode, permits sharing reactive current between paralleled machines. Line Drop Compensation allows for better regulation at some point remote from the generator terminals.
- **Generator Field Temperature Calculation** - Calculates the generator field resistance by dividing the generator field voltage by the generator field current. An adjustable high temperature alarm output contact is also included.
- **Operator Control Simulator** - A powerful, detailed generator model is included within the EX2100e controls. It is configured to closely match the operation of the actual turbine/generator set. It can be used for operator training, and it provides for the checkout of regulators, limiters, and protection functions while the unit is shut down.
- **Power System Stabilizer (PSS)** - Provides an additional input to the AVR that improve power system dynamic stability performance. Uses a combination of synchronous machine electrical power and the integral of accelerating power (derived from a signal proportional to rotor speed) to provide the desired improvement in dynamic stability while enhancing transient stability.

6.1.4.2 Limiter Functions

The following limiter functions are included:

- **Volts per Hertz Limiter (V/Hz Lim)** - Acts to reduce an unacceptable volts/hertz ratio to the maximum continuous rating of the generator. The V/Hz Limiter set point is programmable.
- **Generator Field Current On-line Over Excitation Limiter** - Allows the exciter to fully respond to generator fault conditions for approximately one (1) second. Exceeding this delay results in activation of the first limit, a high current limiting set-point, typically 1.25 pu AFFL for 30 seconds. Generator field thermal capability is the basis for this limit. Once this limit has been implemented for 30 seconds activation of a second limit is initiated. This limit is typically programmed to be 1.0 pu AFFL.
- **Generator Field Current Off-line Over Excitation Limiter** - Limit maintains excitation of the machine within a range that prevents the operator from exceeding the Volts/Hz limit of the generator when in manual mode.
- **Under Excitation Limiter** - Prevents the AC regulator from reducing excitation to a level that could result in a loss of synchronism.
- **Manual Restrictive Limiter** - Limits the under-excited operation of the machine when the EX2100e is in manual mode.

6.1.4.3 Detection Functions

The following detection functions are included:

- **Potential Transformer Fuse Failure Detection** - Detects loss of PT feedback voltage to the voltage regulator.
- **Bridge Over Temperature Detection** - Bridge temperature is monitored via RTD. Alarm and trip setpoints for bridge over temperature are provided.

6.1.4.4 Protection Functions

The following protection functions are included:

- V/HZ Protection.
- Generator Field Current Over Excitation Protection.
- Instantaneous Bridge Over Current Protection.
- De-Excitation Protection.

6.1.4.5 Model and Settings Report (MSR)

The EX2100e excitation system is represented by the IEEE 421.5-2016 ST4C model.



Seller will provide a consolidated summary of the key excitation system settings, parameters and capabilities in an included Model and Settings Report (MSR). The MSR is standardized to describe a wide range of excitation applications and models. This document is structured to simplify data accumulation and to aid the End-user's development of regulatory submissions, reporting and serve as a baseline for establishing periodic validation, as may be required by the governing Independent System Operator or grid authority.

The report in its final state includes:

- ST4C Model
- Voltage Transducer Model
- Over Excitation Limiter Model
- Under Excitation Limiter Model
- V/Hz Limiter Model
- Loss of Excitation Protection Settings
- Field Overcurrent Protection Settings (online and offline, timed and instantaneous)
- Over Voltage Protection Settings
- V/Hz Protection Settings
- Field Ground Alarm and Protection Settings
- ST4C Model Validation (optional)

A timely completion of the MSR process allows for economic savings by permitting the validation concurrent with the commissioning of the excitation system. The development of the MSR process begins with completion of the Generator Data Form. Site data is an End-user responsibility.

The MSR process proceeds as follows:

- a) Seller receives the Generator Data Form from the End-user (typically at the kickoff meeting).
- b) Submittal of this form early in the project, fully completed, provides the best cycle time of the process. In the case of a DFE or retrofit, "As Running" software of the existing exciter (or "as running" reports) should also be provided to provide the benefit of understanding "as running" characteristics.
- c) Seller issues MSR preliminary version to establish recommended settings. (Typically, 4-6 weeks after receipt of the fully completed Generator Data Form).
- d) This submittal is useful for the End-user to review the proposed settings, and to make comparisons of the protection relay settings that should coordinate with the exciter protection and limiter settings.
- e) The End-user applies marks to the report relative to coordination with the relay protection settings or other desired changes and return it to Seller (Typically, 2 weeks).
- f) Seller develops a final parameter list suitable for factory test, incorporating the desired changes marked on the preliminary MSR (Typically, 2-4 weeks before the scheduled FAT).
- g) If purchased, Seller will submit a final "as installed" version of the MSR (Typically 2-4 weeks after commissioning). Otherwise the preliminary MSR will be the final version.

Note: The MSR was developed to reduce End-user overhead associated with regulatory compliance, but it is not intended to serve as a regulatory submission. Any additional compliance or model related studies and testing is excluded, unless offered elsewhere in this document.



6.1.5 Programming and Maintenance Tools

6.1.5.1 Capture Buffers

The EX2100e contains up to 4 programmable capture buffers. Each capture buffer can store up to 8 channels of data. Capture buffer sample rate and sample time are programmable. The four capture buffers are typically programmed to monitor START, STOP, FAULT and TESTING conditions. The capture buffers are programmed to re-trigger on subsequent events but can be programmed to trigger only one time until manually reset.

6.1.5.2 Trend Recorder

The GE Control System ToolboxST contains a trending function that allows up to 16 variables to be trended in real time. The update sample rate is approximately 50 msec.

6.1.5.3 Active Graphic Displays

The GE Control System ToolboxST contains advanced active graphic displays that define EX2100e operation.

6.1.5.4 Automated Testing Functions

The EX2100e contains advanced automated testing functions that are enabled using the GE Control System ToolboxST. Both step response testing and frequency response testing are available.

6.1.5.5 Generator/Exciter Feedback Oscillography

The EX2100e contains an advanced oscillography function that records an oscillograph of several generator and exciter feedback signals. These signals include PT voltages, CT currents, PPT secondary voltages, generator field current and generator field voltage, as well as other application dependent choices.

6.1.6 Operator Control Interfaces

6.1.6.1 Diagnostic Interface Keypad

Local control and indication are accomplished via a compact, multi-function, operator touchscreen unit (optional) mounted on the EX2100e cabinet door. Start/stop commands, regulator transfer commands, and regulator selection can be issued from the keypad. The keypad also includes meter displays for generator MW and Mvars, field current and voltage, and regulator balance. Diagnostic displays such as the alarm history, setup, application data, and I/O interface displays provide system information for service personnel.



(Local operator interface provides cost effective solution for diagnostics/operation)

6.1.6.2 Unit Data Highway (UDH)

The Unit Data Highway (UDH) connects the EX2100e with the GE turbine control system, Human-Machine Interface (HMI) or HMI Viewer/Data Server. The UDH utilizes the Ethernet Global Data (EGD) protocol.

The UDH provides a digital window into the EX2100e where variables can be monitored and controlled. It also supports the GE Control System ToolboxST configuration and maintenance tool for the EX2100e.

6.2 Additional Reference Material

- GEA-S1269B EX2100e Excitation Control 35 A and 120 A AVR Fact Sheet



We would like to thank you for the opportunity to participate in your offer for Tender and we consider this opportunity of strategic importance to General Electric. We look forward to partnering with you on this project and demonstrating our expanded portfolio and increased value proposition.

At General Electric we are committed to “doing the right thing” which means Health Safety and Environment (HSE), Quality and Compliance are the foundation for all our actions and all our processes. We ensure that everything we do is safe, honest, and takes care of our people, our customers, the communities we operate in, and the environment. This means that HSE and Quality are built into everything we do, from how we design our products, to the way we plan and execute for our customers. We are proud of our track record and our first priority is always to HSE, Quality and Compliance.

General Electric aims to provide our customers the best commercial and technical proposal possible. We asked our teams to access the entire General Electric organization and leverage our unique position in the supply chain to provide a solution that will provide improved operational efficiency and results.

Certification of Single Source or Emergency Procurement

Please use this form to certify a Single Source or Emergency Procurement complies with the requirements of the JEA Procurement Code. The JEA Procurement Code defines a Single Source and Emergency Procurement as follows:

3-112 Single Source

A Contract may be awarded for Supplies or Services as a Single Source when, pursuant to the Operational Procedures, the Chief Procurement Officer determines that:

- (a) there is only one justifiable source for the required Supplies or Services; **Note: Please provide justification.**
- (b) the Supplies or Services must be a certain type, brand, make or manufacturer due to the criticality of the item or compatibility within a JEA utility system, and such Supplies or Services may not be obtained from multiple sources such as distributors; **Note: If this is a Single Source Standard or OEM, please provide proper backup documentation.**
- (c) the Services are a follow-up of Services that may only be done efficiently and effectively by the Vendor that rendered the initial Services to JEA, provided the Procurement of the initial Services was competitive;
- (d) at the conclusion of a Pilot Project under Section 3-118 of this Code, the Procurement of Supplies or Services tested during the Pilot Project, provided the Vendor was competitively selected for the Pilot Project.

3-113 Emergency Procurements

In the event of an Emergency, the Chief Procurement Officer may make or authorize an Emergency Procurement, provided that Emergency Procurements shall be made with as much competition as practicable under the circumstances. A written Determination of the basis for the Emergency and for the selection of the particular Vendor shall be included in the Procurement file.

For purposes of this Section 3-113, an "Emergency" means any one of the following:

- (a) a reasonably unforeseen breakdown in machinery;
- (b) an interruption in the delivery of an essential governmental service or the development of a circumstance causing a threatened curtailment, diminution, or termination of an essential service;
- (c) the development of a dangerous condition causing an immediate danger to the public health, safety, or welfare or other substantial loss to JEA;
- (d) an immediate danger of loss of public or private property;
- (e) the opportunity to secure significant financial gain, to avoid delays to any Governmental Entity or avoid significant financial loss through immediate or timely action; or (f) a valid public emergency certified by the Chief Executive Officer.

Please provide the following information:

Vendor Name:

Description of Services or Supplies provided by Vendor:

Certification:

I the undersigned certify that to the best of my knowledge, no JEA employee has, either directly or indirectly, a financial interest in this Single Source Emergency Procurement, and

I the undersigned certify that this procurement meets the requirements of a (choose one of the following):

_____ **Single Source Procurement.** Please state which subsection of Section 3-112 above applies to this Single Source Procurement:

Is this Single Source also a Ratification? Yes No If yes, explain

OR

_____ **Emergency Procurement** - Please state which subsection of Section 3-113 above applies to this Emergency

Is this Emergency also a Ratification? Yes No If yes, explain

Raynetta Curry Marshall

08/30/2024

Signature of JEA Business Unit Chief (or designee)

Raynetta Curry Marshall

Name of JEA Business Unit Chief (or designee)

This certification shall be attached to the Purchase Order when it is routed for approval. A Single Source or Emergency Procurement shall be reported to the JEA Board in accordance with Section 1-110 of the JEA Procurement Code.