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January 20, 2022

Mr. RJ Arsenault
Puerto Rico Public Private Partnerships Authority (P3)
(Via Power Advocate)

Re: NAES Response to Post Bid Clarification - Technical Questions
Puerto Rico Electric Power Authority Thermal Generation Facilities RFP 2021-1

Mr. Arsenault:

NAES Corporation (NAES) is pleased to provide responses to the Puerto Rico Electric Power Authority (PREPA) Technical post bid clarification questions received on January 10th and 11th, 2022.

Sincerely,

A handwritten signature in black ink, appearing to read "Dana Petrin".

Dana Petrin
Vice President, Commercial Management, NAES

Attachment

cc: Charlie Hoock, Senior Vice President, Power Services, NAES
Pat Ombrellaro, Vice President, Sales Operations, NAES

NAES Response to Bid Clarification Questions

PREPA questions received January 10, 2022

1. What is your shareholder approval process and expected timings.

NAES Response: Our response to this question is provided in Question 8 of the Legal questions submitted on January 18, 2022.

2. Please provide the assumed decommissioning schedule that your team used to determine your expected payments.

NAES Response: NAES proposal is based on the decommissioning schedule provided by PREPA and with the assumption that there is no reduction in fees until year six (6).

PREPA questions received January 11, 2022

Technical Follow-up Questions

1. Please detail ALL required internal approvals including steps, timing and discussions to obtained "shareholder approval".

NAES Response: Our response to this question is provided in Question 8 of the Legal questions submitted on January 18, 2022.

2. Please expand upon the potential improvements to procurement that Javelin is envisioning with regards to fuel supply procurement?

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NAES has also identified resources in within the NAES PR entity that will have responsibility for relationship and communication with LUMA and PREPA.

5. Doc. p. 83, pdf p. 87 – Under “(vii) Prepare initial year and two (2)-year forecasts of budgets for generation costs, including fuel costs, and all operation and maintenance costs expected to be incurred to run, operate, and maintain the Legacy Generation Assets until decommissioned “part of 5.4 O&M Functional Activities: NAES does not address the “Initial Year Budget” but only the following Calendar Year Budget and onwards in its discussion.

NAES Response: The budget process for the initial year follows the same process as outlined in our proposal response. As soon as NAES begins mobilization efforts we will begin working on the Annual Facility Operating Plan and Budget (AFOP&B) for the upcoming operating period. Whether this is 12 months, or some period less than 12 months, we will prepare for review and approval.

6. Doc p. 89, pdf p. 94 – Under “Decommissioning Phase” part of Section 6.1 Approach to Decommissioning: NAES states that “NAES is *available to assist* with ongoing support for this phase of the project and can provide an estimate of services for supplemental staffing and project management outside of this proposal to develop the Decommissioning Playbook.” Is this not included in the current proposal, please confirm?

NAES Response: Specific decommissioning decisions in terms of scope and timing are yet to be finalized. NAES intends to manage the decommissioning process and may elect to perform some or all of the scope. Specific decisions as to use of NAES PR staff, NAES Home Office staff, or 3rd party providers will be made at the time they are needed.

7. Describe your vision/plan to achieve fuel savings at the plants and the specific categories where you would expect to achieve these?

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8. How long do you expect before you assume all shared services and terminate the Luma contract?

[Redacted]

9. Confirm the intended process for Annual Performance Testing (e.g., calibrated station instrumentation test, other), and that NAES will be performing this required testing itself. Note: PDF p. 66, Doc. p. 62, describes "Performance Testing Oversight" implying that NAES may not be planning to execute the tests directly. Does NAES anticipate subcontracting this service, and if so, to whom?

NAES Response: NAES, as with most operators and asset owners, may subcontract a portion or all of this testing to subject matter experts. Calibration of station instrumentation is something that is commonly performed by plant staff or a centralized maintenance staff. NAES will contract for services if staff expertise is not available, if complexity dictates, or if additional instrumentation is needed.

10. With respect to NAES' Quality Management Plan, does NAES anticipate developing a quality management system which will follow an industry standard or framework, such as ISO 9001:2015? If yes, please provide details. If not, why not?

NAES Response: Yes, NAES does anticipate developing a quality management system centered on 1) Client Focus, 2) Leadership, 3) Engagement of People, 4) Process Approach, 5) Continuous Improvement, 6) Evidenced-Based Decision Making, and 7) Relationship Management. The system framework will include purchasing, mechanics, instrumentation and electrical maintenance, and operations/electrical energy supply . By way of background:

- NAES UK currently operates two (2) 850 MW CCGT 2x1 plants in the United Kingdom that have ISO 9001:2015 certification.

- NAES-México currently operates a 300 MW 2x1 cogeneration plant with integrated ISO certifications, which include ISO 45001, ISO 14001 and ISO 9001: 2005. Additionally, NAES operates a 875 MW CCTG 2x1 plant located in Mexico that achieved commercial operations in 2021 and recently reached ISO integrated certification with the same ISOs of the cogeneration plant. Also, NAES currently operates two 495 MW CCGT 2x1 plants located in Mexico that were certified under the requirements of ISO 9001. These plants continue to implement the quality management system that was developed under ISO 9001, however do not continue with the certification. NAES plan, for plants that we currently operate in Mexico, is to be certified under the ISO 9001:2015 management system by 2023, pending client approvals.

- 11.** NAES provided a list of prospective subcontractors (68), described as NAES' Preferred Vendor List. Considering PREPA has many existing suppliers, how will NAES approach vendor selection with respect to products and services having incumbent quality suppliers versus NAES' subcontractor list provided?

NAES Response: NAES goal for selection of vendors that supply a product or a service is to provide the best combination of product or service quality, timeliness, and price. While NAES has negotiated preferred pricing with a variety of vendors on a wide range of products and services (such as safety supplies, welding products, construction supplies, and chemicals in an on-going effort to provide value to our clients), we recognize that vendor selection must be conducted on a competitive basis.

Competitive bids for products and services over a cost threshold is typically specified by contract. NAES-PR will work with PREPA's existing products and services vendors, will seek to qualify other Puerto Rico based firms, and will invite NAES preferred vendors for opportunities for which they are qualified and may have an interest.

- 12.** In Section 5.1.a.i. NAES explains "The O&M approach for plants operating at base load will be based on long term planning to ensure ongoing reliability and optimized for efficiency. The O&M approach for peakers that are needed to meet changes in electrical demand will be more focused on attaining high starting reliability." Does NAES envision and recommend a bifurcated metric approach (i.e., different KPIs) for these two groups of units to improve/optimize results? If yes, please explain the recommendation.

NAES Response: Yes, we do recommend a bifurcated metrics approach for base load operations versus peak demand operations, and will develop specifically tailored key performance indicators (KPIs) depending on how each plant operates. For example:

1. Base Load Plants: Safety, Compliance, Availability Factor, Capacity Factor, and Cost.
2. Peaking Plants: Safety, Compliance, Starting Reliability, Availability Factor, and Cost.

KPIs

- Safety – We will track key indicators of safety performance such as safety incidents and lost time accidents.
- Compliance – We will track compliance with regulatory requirements in terms of performance and timing.
- Availability Factor – We will track actual available hours in relation to total hours.

- Capacity Factor – We will track capacity factor as a measure of utilization.
- Cost – We will track costs against budget.
- Starting Reliability – We will track successful starts against requested starts.

Developing and tracking key performance indicators is important to drive success and promote continuous improvement thinking. The indicators are useful in goal setting, analyzing cause/effect matters, promote most efficient asset use, promote most effective asset use, aid decision making, and support investment. We are believers in “we are what we measure”.

- 13.** For inventory management and spare parts strategy, can NAES explain whether they have considered centralizing any warehouses, or if inventory is planned to be located at each site? What process will NAES use to determine common spare parts and further evaluate pooling of an appropriate quantity to have on hand for the Legacy Asset fleet?

NAES Response: At this time, we have not evaluated whether a centralized warehouse(s) would provide an advantage to operations. NAES will need to conduct some analysis that will include, but not limited to, the decommissioning schedule, “like plant equipment” in terms of prime movers (GT/HRSG, ST, etc.), common spares and supplies usage among the assets, performance requirements, accessibility needs, etc.

For the process to determine the quantity of spare parts to have on hand for an asset or the fleet, the first step is to prepare a plan to mitigate failures that will affect generation reliability and to conduct a single point of failure (SPOF) analysis. The end goal of this analysis is to identify systems, and equipment, that are most likely to have a negative impact on generation reliability, if they experience a failure.

NAES will:

- Compile (if one does not exist) or review each asset equipment list, by system.
- Analyze the equipment lists and determine the risk of a failure of each piece of equipment to generation reliability. The risks can be classified as:
 - Low – Failure of this equipment will result in a loss of redundancy or reliability.
 - Medium – Failure of this equipment will result in a partial loss of generation.
 - High – Failure of this equipment will result in 100% loss of generation.
- Analyze the equipment list and determine the impact of a failure of each piece of equipment to generation reliability. The impacts can be classified as:
 - Low – Failure of this equipment will be inexpensive to repair and/or the repair or replacement time will be less than 15 days.
 - Medium – Failure of this equipment will be moderately expensive to repair and/or the repair or replacement time will be between 15 days and 1 month.
 - High – Failure of this equipment will be very expensive to repair or the repair or replacement time will be greater than 1 month.

Many pieces of equipment items in the SPOF analysis may be identified as Critical Failure Points. For those items, a failure would result in both a total loss of generation and a return to service time, for the entire facility, of over one month. Eliminating these Critical Failure Points should be of the highest priority. Suggested ways of eliminating Critical Failure Points are:

- Adding equipment redundancy to eliminate, or reduce the effect of critical equipment failures.
- Procuring capital spares to reduce repair or replacement timeframes.
- Optimizing control system response to certain equipment failures to prevent unnecessary unit shutdowns.

14. NAES stated that its Equipment Analysis and Review process will review technical and operational data to provide (or verify) the appropriate equipment sizing (e.g., pumps, valves, transformers, etc.). Please explain the anticipated plans for equipment coverage for this process, i.e., is this a fleet/island-wide process to be implemented for all PREPA Legacy Asset equipment, or intended for a limited, prioritized population?

NAES Response: The Equipment Analysis and Review process will be implemented for all PREPA Legacy Asset major equipment. NAES PR analysis and review give us an insight into the condition of each Asset, including the life expectancy, risk of flooding, the interconnections for fuel and electricity, and the environmental impacts of assets. NAES can make decisions on whether the plant continues to operate or does not and, we will obtain an investment plan, a budget, etc.

15. NAES described part of its planned operational process to include plans to develop and enhance a “green buildings profile.” As there were no specific details for how this would be applied to the Legacy Assets and what the benefits for PREPA, PREPA customers and PR may be, please provide more details regarding this program, including what it is, what it impacts, costs, benefits, etc.

NAES Response: In accordance with efforts to promote the considerations of the “Puerto Rico Climate Change Mitigation, Adaptation and Resilience Act, Law 33” of May 22, 2019, and the “Puerto Rico Public Energy Policy, Law 17” of April 11, 2019, NAES will develop and support a plan to meet the objectives of both Laws to support “green building initiatives” where practical.

Our plan would include, if not already completed, a systematic, site-specific Climate Change/Sustainability review of the assets. This review would identify opportunities for both short-term and long-term projects that would promote the preservation of natural resources, provide recommendations for climate resiliency (site preservation, stabilization, reinforcements), optimize plant operations (energy use, energy alternatives, HVAC efficiency, waste reduction/recycling, water usage, water reuse, compliance systems/controls) and gather/identify community projects as relevant for the surrounding municipalities.

The cost would include the completion of a Climate Change/Sustainability Review for each site. Associated costs for implementation would be vetted through a priority-based system, whereby the benefits (environmental, economic, resource, community) and associated expense or labor necessary for implementation of each project, would be evaluated prior to implementation.

NAES operates a variety of assets that have incorporated renewable resources to take advantage of renewable energy credits or lowering operating costs. By way of example:

- [REDACTED] Under the O&M contract NAES managed the bidding, procurement, installation and inspection for the installation of rooftop solar panels that complement the existing 104 MW industrial steam boiler facility that NAES has been operating [REDACTED]

2006 for the [REDACTED]. The initiative delivered cost efficiencies to the project, the utility and for the [REDACTED] payers.

- [REDACTED] – Under the OMA, NAES managed the bidding, procurement, installation and inspection for the installation of multiple roof top solar panels at the administration building of a 674 MW combined cycle plant that NAES has been operating [REDACTED]. In addition, NAES added an electric vehicle charging station.
- [REDACTED] – NAES operates two [REDACTED] wind farms from a 115 MW combined cycle facility that NAES has been operating on behalf of [REDACTED].
- [REDACTED] NAES operates a 225 MW thermal plant in Swedesboro, New Jersey. NAES upgraded all facility lighting to LED and assisted the client with evaluating the option of adding a solar farm, with battery storage, adjacent to the facility.
- [REDACTED] NAES performed a feasibility study that evaluated the installation of solar panels, in combination with battery storage, at a 805 MW 3x3x1 dual fuel combined cycle facility that NAES currently operates in [REDACTED].

Additionally, NAES has a wealth of experience assisting its clients with purchasing and selling emission allowances and Emission Reduction Credits (e.g. NOx, SOx, GHGs, PM, and VOC).

NAES falls under its parent company Itochu Corporation's (ITOCHU) globally recognized Sustainability and Environmental, Social and Governance (ESG) programs. Itochu has been named the leader in its industry sector in the Dow Jones world sustainability index for five consecutive years. NAES supports Itochu's global sustainability goals by compiling and reporting sustainability data annually from its offices and assets, promoting environmental and natural resource protection across its services and lines of business, and implementing industry-recognized environmental compliance programs and environmental management systems. NAES Corporate Environmental Policy establishes the NAES commitment to and expectations for environmentally responsible operations, compliance and sustainability. As stewards of our clients' assets, NAES seeks to understand and align with its clients' environmental and sustainability goals and programs; we follow our clients' policies and advance our clients' initiatives through ensuring compliance, implementing waste minimization, recycling, resource conservation and efficiency programs and supporting community involvement as appropriate.

NAES helps clients achieve their environmental goals through such programs as:

- Environmental leading indicators program
- Facility reduce, reuse and recycle programs
- Water management plans
- Effective management of chemicals and materials to minimize waste
- Training and technical assistance on emissions minimization, monitoring and reporting, and recognition/awards for environmental best practices and environmental improvements.

These programs can be tailored on a client basis to ensure client-specific goals are advanced.

16. PDF p. 37, Doc. p. 33, discusses “Completion of third-party assessments of the current installed generation, power...” Please elaborate on the details of these assessments, the goals and expectations, who the anticipated 3rd party will be, and what units (if not all) will undergo the assessments?

NAES Response: NAES anticipates the review and consideration of the current installed generation will require an assessment of all existing operational generating plants versus the projected future load profile, including with the growth of renewable energy on the island. An accurate picture of future generation requirements, and reserve margin, is beneficial in order to determine a program and budget for maintenance, retirements, and possible new generation installations.

It is likely that the makeup of the current installed generation will require a transition from large baseload plants to highly efficient quick-start generation. This type of generation is necessary for supporting high levels of renewable energy on the grid. A high percentage of renewable generation on any grid needs rapid start conventional generation in order to maintain grid functionality and reliability during transitional periods such as low wind, or clouds, disrupting renewable power. The planned Integrated Resource Plan (“IRP”) will likely fully meet the assessment requirements NAES has anticipated.

17. PDF p. 45, Doc. p. 41, describes services NAES Engineering provides. It is not clear if all of these services are included in the NAES proposal, or if these are shown as additional services NAES *may provide* on an added-cost, as-needed basis. Please confirm which of these services are included as part of the NAES proposal.

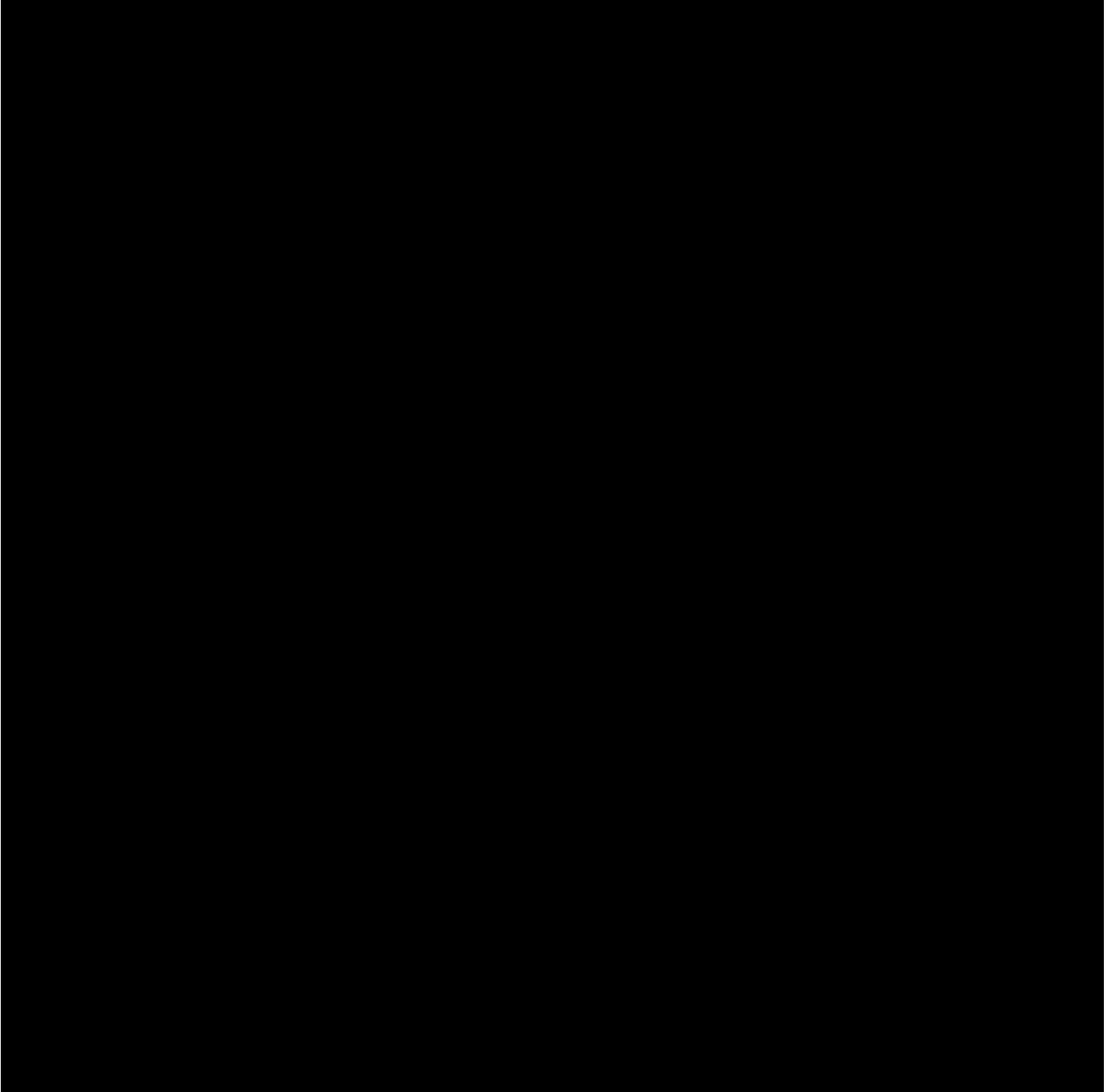
- Example 1: Heat Rate Improvement, states that after an evaluation is performed, NAES *can assist* in implementing these steps. As the Operator, NAES is expected to not only assist, but actually “implement” recommended Legacy Asset programs. Please confirm NAES’ intent for this described service.
- Example 2: Performance Modeling, Energy Efficiency, NAES also *can provide* performance monitoring services to provide feedback on plant performance on a continuous basis. Does NAES plan to implement this for any of the Legacy Assets, and if so, which? Please confirm that associated costs are included in the NAES proposal.

NAES Response: For clarification purposes, NAES provides engineering services for those plants that we operate that do not employ plant engineers, on an as-needed basis. As those service needs are identified, and approved by the client, the work is conducted and invoiced on a time and material basis at specified rates.

For PREPA, NAES has proposed to develop a local technical organization, that includes a Manager of Engineering, four (4) Staff Engineers (electrical, mechanical, ICE/E and turbine), and two (2) Maintenance Planners. NAES believes this team will be sufficient to provide services that are responsive to support plant emergencies, operational events, capital projects or other facility improvement initiatives (including decommissioning support services).

18. PDF p. 66, Doc. p. 62, Plant Trip Analysis / Root Cause Analysis implies RCAs will be performed for each ‘plant trip.’ Please confirm the criteria for implementing an RCA; i.e., will an RCA be performed for every unit trip, or what basis? What other events will trigger an RCA (i.e., items such as: unit fails to start, component failure, safety issues, etc.)? Please provide the list of events for which NAES would expect to initiate an RCA.

NAES Response: Most situations which arise within an organizational context have multiple approaches to resolution. These different approaches generally require different levels of resource expenditure to execute. Commonly, due to the immediacy which exists in most plant operation situations, there is a tendency to opt for the solution which is the most expedient. In taking this approach, the tendency is generally to treat the symptom rather than the underlying fundamental cause(s). Dealing with the symptom, rather than the cause, generally ensures that, in time, the situation will return and need to be dealt with again. NAES programs and training provide guidance regarding when a Root Cause Analysis (RCA) is recommended to be performed. RCAs are recommended when an event impacts a goal as displayed in the RCA Decision Tree illustrated in **Figure 1**.



The actual triggering levels for performing a RCA are dependent on the input from members of each facility. The levels listed below are for guidance only and considerations should be made as follows:

- Anytime an event impacts a NAES goal, consideration for performing an RCA is appropriate.
- If the impact is significant enough to exceed a Decision Tree Threshold, then an RCA should be conducted.
- The depth, breadth and duration of an RCA depends on the significance of the event.
- Consideration for performing an RCA when events go right, especially on a high risk task.

19. On PDF p. 66, Doc. p. 62, NAES discusses LTSA and LTPA Support. Does NAES anticipate review of, and recommendations for, implementing OEM agreements such as LTSAs for any of the Legacy Assets?

NAES Response: NAES will review all existing generation, reliability requirements, budgeting considerations, IRP and future reliability needs. NAES has negotiated many LTSA/LTPA type agreements with significant proven benefits for both budgetary and reliability needs. With the objectives of increasing availability, production and reliability, LTSA/LTPA agreements will likely be an integral strategy for assuring OEM support and meeting performance objectives.

20. On PDF p. 67, Doc. p. 63, NAES discusses Component Based Performance Analysis. Can NAES provide some examples for the Legacy Assets to highlight typical components that may be planned for this type review? What criteria is used to select the components, and when might these items be selected for this analysis?

NAES Response: The plants are near the ocean and have been in operation for 50 years or more. We need to make sure the plants are safe to operate, and we need to know the remaining life of the equipment. Based on the results of the Performance of the components, we will know what investments are necessary and if we need to repair or replace any equipment.

A performance analysis can be performed on the prime movers and most major equipment that includes:

- GT compressor cleanliness and water washing.
- HRSG backpressure and heat rate checks to provide an indicator of cleanliness/blockage (rust, insolation, etc.).
- ST Vacuum and leak checking.
- Condenser efficiency.
- Motor Circuit Analysis (MCA) on large motors.
- Thermography on switchgear, transformers, drain valves, etc.
- Vibration analysis on large pumps/motors and prime movers.
- Transformer testing – various (online and offline).

As an example, we will conduct a review of HRSGs and boilers that includes:

- Visual inspection.
- Maintenance history, historical failure data, availability history, and Root Cause Analysis of problems.
- Historical data of pressures, temperatures, flows.
- Significant system transients or excursions, including thermal-hydraulic events (e.g., steam hammer, water hammer, liquid slugging).
- Startup/shut down procedures (this could substantially reduce the useful life of the equipment).
- Chemical treatment (this could accelerate equipment failures).
- Non-Destructive Evaluation will be performed, if warranted.
- Functional testing for the protection systems.

The criteria for reviewing components will be based on a combination of the results of the previous analyzes and we will focus on critical equipment. We will identify, and prioritize, any area that requires prompt action.

- 21.** The NAES proposal explains that NAES plans to will work together with the various OEMs to track OEM recommendations and requirements, notably before and after outages. Can NAES confirm its anticipated plans to source the main equipment components and spare parts directly from the OEMs, and/or will other 3rd party supplier be considered for critical spare parts (e.g., turbine, boiler)? If other (non-OEM) suppliers will be considered, what is NAES' criteria for this procurement decision?

NAES Response: NAES will utilize multiple sources for capital spares and major components. PREPA's assets are mature technology with a wide market of available parts, including new and used, and carrying similar if not better warranties than those provided by the OEMs.

NAES' process for selection of suppliers will consist of due diligence on both the supplier and the parts and/or materials. Only reputable suppliers with appropriate warranties and ability to support such warranties will be considered. Parts with known pedigrees and confirmation of "fit for purpose" will be utilized. Limiting parts acquisition to OEMs is not cost effective.

- 22.** For Predictive and/or Condition-Based Maintenance Approaches, NAES outlines numerous examples of processes they anticipate utilizing. Can NAES confirm whether all major equipment (such as gas turbines, steam turbines, generators, boilers) are presently equipped with the required instrumentation and control capabilities to apply these tools, or will equipment modifications be required for NAES to apply and utilize its anticipated predictive and CBM programs? If equipment needs to be modified, and/or new equipment purchased and installed, please confirm that NAES has included these costs in the proposal.

NAES Response: NAES is not able to confirm with the limited knowledge we have about the facilities. We will be able to confirm during mobilization.

23. On PDF p. 69, Doc. p. 65, NAES lists several items described as “Additional Engineering Services.” Please explain which, if any or all, of these services are included wholly or in part in NAES’ proposal as part of the anticipated scope of services bid.

“Additional Engineering Services. NAES additional engineering services includes:

- Root cause analysis for equipment failure
- Root cause analysis training
- Plant/equipment trip investigations
- Procedure development and review
- Equipment troubleshooting support”

NAES Response: All of these services are included in NAES’ proposal as part of the anticipated scope of services that will be performed by NAES local engineering staff that includes a Manager of Engineering, four (4) Staff Engineers (electrical, mechanical, ICE/E and turbine), and two (2) Maintenance Planners.

24. Please indicate estimated pass-through costs of the Genera PR entity. Confirm if this pass-through costs would be included as part of the budget or incremental to the annual budgets that will be provided.

NAES Response: The breakdown of the estimated annual reimbursable costs for NAES PR is provided in the table below.

1. Office staff cost is based on the organization structure shown in Figure 3 of the proposal.
2. OPEX includes an annual allowance for office space rental and office goods for the NAES PR staff.

Item	USD/Year
1. Office Staff Cost	
2. OPEX	
Total (Rounded)	