INSPECTOR GENERAL

SEPTEMBER 30, 2019

AUDIT OF THE CAPITOL POWER PLANT COGENERATION FACILITY

Report No. OIG-AUD-2019-05 **Redacted**

Subcontractors that worked on the Capitol Power Plant Cogeneration Facility have been redacted from the publicly released version of this report.

MISSION

The OIG promotes efficiency and effectiveness to deter and prevent fraud, waste and mismanagement in AOC operations and programs. Through value added, transparent and independent audits, evaluations and investigations, we strive to positively affect the AOC and benefit the taxpayer while keeping the AOC and Congress fully informed.

VISION

The OIG is a high-performing team, promoting positive change and striving for continuous improvement in AOC management and operations. We foster an environment that inspires AOC workforce trust and confidence in our work.

September 30, 2019

Objective

The Architect of the Capitol (AOC) Office of Inspector General (OIG), with technical assistance from the United States Army Corps of Engineers (USACE) as subject matter experts, determined whether construction of the Capitol Power Plant Cogeneration Facility (or "Facility") was in accordance with contractual and other applicable requirements which included reviewing the cost and schedule management, quality control, and quality assurance and commissioning. We also conducted a limited review of the design to determine whether the economic design documentation was consistent with industry standards. The audit focused on a partial review of the Cogeneration Facility design, completed construction, and a site visit to the Facility.

This audit was included in the Fiscal Years 2018-2020 OIG Audit Plan.

Findings

The AOC OIG and USACE, the subject matter experts, determined that overall, the Cogeneration Facility was constructed in accordance with the terms and conditions of the Utility Energy Service Contract (UESC) and other applicable requirements. Our assessment of the Cogeneration Facility included a review of the cost and schedule management, quality control, and quality assurance and commissioning. We also conducted a limited review of the design to determine whether the economic design documentation was consistent with industry standards. While we determined that the Cogeneration Facility was constructed properly, we found the Cogeneration Facility contract requirements for the Commissioning Process and Reliability Run were not clearly defined. In addition, we identified enhancements for AOC consideration on future UESC projects.

Recommendations

We made three recommendations to address the identified areas of improvements. Specifically we recommend:

1. The AOC incorporate well-defined contract requirements for future UESCs, to include but not limited to:
    - Commissioning requirements – General Description, Commissioning Roles and Responsibilities, Systems to be Commissioned, Commissioning Plan, Scheduling, Commissioning Report, and
    - Reliability Run requirements – Duration, Classification of Interruptions, and Scheduling.
2. The AOC enhance its contracting policies and procedures for origination and execution of UESCs to include developing contract templates for future projects that reflect lessons learned and current industry practice.
3. The AOC establish well-defined AOC policies and procedures for providing and documenting oversight of UESCs to ensure contract compliance.

Management Comments

We requested that the AOC management provide comments in response to the recommendations to this report.

The AOC provided comments on September 26, 2019, See Appendix C. Overall, AOC management agrees with the OIG's conclusions that the Cogeneration Facility was designed and constructed in accordance with contract requirements and that the AOC generally followed the intent of the UESC program guidance issued by the Department of Energy in administering the contract. AOC management concurred with the three recommendations in this report.

Please see the Recommendations Table following this page.

Recommendations Table

MANAGEMENT	RECOMMENDATIONS UNRESOLVED	RECOMMENDATIONS RESOLVED	RECOMMENDATIONS CLOSED
Architect of the Capitol Director, Utilities & Power Plant Operations Chief Acquisition & Material Management Officer Director, Planning & Project Management	None	A.1, A.2 and A.3	None

Please provide Management's Decision by March 30, 2020

The following categories are used to describe agency management's comments to individual recommendations:

UNRESOLVED – Management has not agreed to implement the recommendation or has not proposed actions that will address the recommendation.

RESOLVED – Management agreed to implement the recommendation or has proposed actions that will address the underlying finding that generated the recommendation.

CLOSED – The OIG verified that the agreed upon corrective actions were implemented.

ARCHITECT OF THE CAPITOL

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United States Government

MEMORANDUM

DATE: September 30, 2019

TO: Thomas J. Carroll III
Acting Architect of the Capitol

FROM: Christopher P. Failla, CIG
Inspector General

SUBJECT: Audit of Capitol Power Plant Cogeneration Facility

This memorandum transmits the final OIG Report OIG-AUD-2019-05 on the Audit of the Capitol Power Plant Cogeneration Facility.

Architect of the Capitol (AOC) management agreed with the Office of Inspector General's conclusion that the Cogeneration Facility was designed and constructed in accordance with contract requirements and that the AOC generally followed the intent of the Utility Energy Service Contract program guidance issued by the Department of Energy in administering the contract. AOC management concurred with the three recommendations in this report.

The next step in the audit resolution process is for AOC management to implement Management Decisions on proposed actions to close the recommendations no later than six months from the date of this final report. Next, a Notice of Final Action taken by AOC management to implement the agreed upon recommendations is due one year from the date of this final report.

We appreciate the courtesies extended to the staff during the audit. Please direct concerns and questions to Erica Wardley, Assistant Inspector General for Audits, at 202.593.0081 or Erica.Wardley@aoc.gov.

Distribution List:

William O'Donnell, Chief Administrative Officer
Anthony Hutcherson, Chief Acquisition & Material Management Officer
Christopher Potter, Director, Utilities & Power Plant Operations
Peter Mueller, Director, Planning & Project Management
Jason Baltimore, General Counsel
Mary Jean Pajak, Senior Advisor to the Chief Operating Officer

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Introduction

Objective

This audit report presents the results of our audit of the Architect of the Capitol's (AOC) Capitol Power Plant Cogeneration Facility. The objective of the audit was to determine whether construction of the Capitol Power Plant Cogeneration Facility (or "Facility") was in accordance with contractual and other applicable requirements which included reviewing the cost and schedule management, quality control, and quality assurance and commissioning. We also conducted a limited review of the design to determine whether the economic design documentation was consistent with industry standards. The audit focused on a partial review of the Cogeneration Facility design, completed construction, and a site visit to the plant.

We conducted this performance audit of the Cogeneration Facility located in Washington, DC, from September 2018 through August 2019, in accordance with Generally Accepted Government Auditing Standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

See Appendix A for a discussion of the scope and methodology, review of internal controls, and prior audit coverage related to the objective.

Background

The Capitol Power Plant provides steam and chilled water used to heat and cool buildings throughout the Capitol complex. In December 1910, the Capitol Power Plant started operations generating steam and electricity for the U.S. Capitol Building. Ultimately, the Cannon House Office Building, Russell Senate Office Building and the Library of Congress Buildings were tied into the Capitol Power Plant, as would all future buildings constructed on the Capitol complex.

The Capitol Power Plant has been enlarged many times to keep up with expansion of Congressional offices and corresponding increases in heating and cooling demands. With the advent of air conditioning in the 1930s, the Capitol Power Plant also supplied chilled water to the Capitol complex. Originally called the "Heating,

Lighting, and Power Plant," the Capitol Power Plant was one of the earliest 25-cycle alternating current electric-generating facilities in the country. The original coal-fired steam boilers were removed in 1923 and replaced by a second generation of steam boilers. A one-story addition was built in 1938 to house six refrigeration machines and other equipment.

In 1950 most of the steam boilers were replaced with modern coal-fired steam generators and the original refrigeration equipment was replaced, doubling the Capitol Power Plant's air-conditioning capacity. At the same time, the Capitol Power Plant's electricity generating capacity had reached its limit; thus, it was decided to abandon production and transfer loads to the local electrical utility, Potomac Electric Power Company (PEPCO). There have been other expansions since 1958; the most recent was the plant's third expansion prompted by construction of the U.S. Capitol Visitor Center in the early 21st Century.

Currently, the Capitol Power Plant provides steam and electricity to 24 buildings throughout the Capitol complex. The coal-fired boilers were well past their expected lifespan and experience frequent breakdowns and failures. Capitol Power Plant mechanics salvage for spare parts wherever they can find them since many of the original manufacturers are no longer in business, and the risks associated with trying to maintain this antiquated equipment continue to grow.

The AOC analyzed various energy technologies and consulted with experts in determining to use natural gas-fired Cogeneration as the solution to address the urgent need to replace failing boilers. Cogeneration, also known as combined heat and power, is an established technology with more than 4,400 facilities throughout the United States. Using a single fuel source, Cogeneration simultaneously produces electricity and heat. It is the AOC’s goal that the Cogeneration Facility will eventually use natural gas exclusively in a combustion turbine to generate electricity and heat, increase system reliability, improve efficiency, and save taxpayer dollars, partially through the phasing out of coal.

This project was initially a design-build installation contracted with PEPCO which provided a design of a two-turbine facility that would require a plant extension for additional square footage to house the new equipment. The AOC determined that PEPCO’s design was costly and therefore, the AOC issued a Request for Proposals to Washington Gas Light (referred to as “the contractor” or WGL) Company for a conceptual design and guaranteed maximum price (GMP) for a Cogeneration plant. In response to the Request for Proposal, WGL designed a single combustion turbine

generator to produce electricity and a heat recovery steam generator without an extension to the Facility. The AOC approved this design and contracted with WGL.

Utility Energy Service Contracts

The federal government is the largest energy consumer in the United States and it is one of the largest energy consumers in the world. Policymakers have highlighted the role of energy efficiency improvement in the federal sector as a mechanism to reduce energy consumption and its associated costs. However, the availability of capital is one barrier to federal agencies making investments in improving energy efficiency and increasing the use of renewable energy. As a result, agency projects that could reduce federal energy usage, expand the use of renewable energy, and reduce federal energy costs may not be pursued.

To address this challenge, Congress established Utility Energy Service Contracts (UESCs or "contract") as an alternative financing method that utilizes private sector resources and capabilities to facilitate federal energy projects. A UESC is a contract between a federal agency and the serving utility responsible for supplying customers with electricity, gas, water, or sewerage. Under a UESC, the utility arranges financing for efficiency projects and renewable energy projects, and the costs are repaid by the agency over the length of the contract. The authority for UESCs does not require utilities to guarantee savings; the repayment is based on estimated cost savings. UESCs do not require a savings guarantee although efficiency improvements can provide benefits such as reduction in demand, which can lead to cost savings for the utility.

In October 2015, the AOC awarded a UESC to design-build project to provide a Combined Heat and Power (CHP) system with a nominal capacity of 7.5 MegaWatt (MW) electrical generation and 100,000 Pounds Per Hour (PPH) of steam at the Capitol Power Plant. The Capitol Power Plant Cogeneration Facility Design-Build Project Contract AOC14G1174-T001 (referred to as "UESC") contracted the design and construction services for the plant to WGL. The UESC is a task order written under an Areawide Public Utilities Contract No. GS-00P-06-BSD-0393 with the General Services Administration (GSA) dated March 20, 2006. The UESC was awarded with a GMP of $63.1M; however, the total project cost (Base Bid and Owner's Contingency) was reduced to a GMP of $57M through a contract modification shortly after award. Per the UESC, the period of performance was three years with the first annual invoice due in October 2018. The contractor was required

to arrange financing for this project and to submit monthly progress reports to the AOC.

Criteria

To determine whether construction of the Capitol Power Plant Cogeneration Facility was in accordance with contractual and other applicable requirements; the below references provided the criteria used by the Office of Inspector General (OIG).

The Capitol Power Plant Cogeneration Facility Design-Build Project Contract (AOC14G1174-T001) provides the requirements to design and construct a cogeneration power plant. The UESC also provides a general description for commissioning, the systems to be commissioned, and the roles and responsibilities of the commissioning agent (CxA).

AOC Order 34-1 Contracting Manual dated March 31, 2014, incorporates current legislation, federal regulatory requirements as well as AOC policies, orders, and best practices. It is issued to prescribe uniform policies for the acquisition of supplies, services, construction, and related services; and provide guidance to personnel in applying those policies and procedures.

The Utility Energy Services Contracts Guide: A Resource for Contracting Officers Working on UESC Projects dated September 2013, was prepared by the U.S. Department of Energy (DOE) Federal Energy Management Program (FEMP). The FEMP UESC Guide is a compilation of samples and templates developed as a resource to help contracting officers implement task orders for UESCs under existing GSA areawide contracts.

AOC Order M-28-8, Design Guide dated August 1, 2012, establishes minimum design standards for the design and construction of facilities under the jurisdiction of the AOC. These standards apply to all design and construction projects, including the Cogeneration Facility, which commence on or after the effective date of the Order.

AOC Order 28-11, Commissioning Guidelines dated September 1, 2010, (“guidelines”) establishes the framework to decide which projects need commissioning, what level the commissioning should be, and the roles and responsibilities of the people involved in the process.

Audit Results

Overall, the Cogeneration Facility was Constructed in Accordance with the UESC and Other Applicable Requirements

The AOC OIG, with technical assistance from United States Army Corps of Engineers (USACE) as subject matter experts, determined that overall, the Cogeneration Facility was constructed in accordance with the terms and conditions of the UESC and other applicable requirements. Our assessment of the Cogeneration Facility included a review of the cost and schedule management, quality control, and quality assurance and commissioning. We also conducted a limited review of the design to determine whether the economic design documentation was consistent with industry standards. While we determined that the Cogeneration Facility was constructed properly, we found the Cogeneration Facility contract requirements for the Commissioning Process and Reliability Run were not clearly defined as discussed further in Finding A. In addition, we identified enhancements for AOC consideration on future UESC projects.

Our audit conclusions were based on our review of the Cogeneration Facility design, completed construction, and site visit to the Facility.

Cogeneration Facility Design

Our limited review of the design determined that the Cogeneration Facility was properly designed in accordance with contract requirements, AOC Design Standards, and industry guidelines. While we noted the Facility was properly designed, the initial economic design analysis may have overstated the financial benefits of introducing Cogeneration to the Capitol Power Plant. Nonetheless, the AOC's economic design documentation was reviewed by two independent third parties that agreed that a Cogeneration Facility was the best option to meet the AOC's needs. Therefore, our observations discussed below can be used as enhancements for the AOC's consideration on future UESC projects.

The Cogeneration Facility design-build for 7.5 MW electrical generation and 100,000 PPH of steam design requirements were prescribed by the Design Basis Document (DBD) dated October 5, 2015. The DBD was incorporated into the UESC as Exhibit B. The USACE reviewed the DBD and determined that it complied with the AOC

Design Guide and was consistent with industry practices typical of UESCs. The purpose of the DBD was to define the project parameters and system functionality for the Cogeneration Facility, including: background information concerning the project; project requirements; and project design criteria and systems descriptions. Most sections of the DBD were appropriately detailed. The Systems, Construction Sequencing, Clarifications, Limitations, and Exclusions sections of the DBD were adequately described. For example, the DBD properly clarified the exclusions of the American Society of Heating, Refrigerating and Air-Conditioning Engineers Standard 90.1 and Leadership in Energy and Environmental Design polices as required by the AOC Design Guide. The AOC and USACE reviewers concurred that these requirements were not applicable to this project. In addition, the Design Criteria section was also well-defined with the exception of the performance guarantee. The UESC was executed with an expected nominal performance range rather than a well-defined performance guarantee. The UESC did not require WGL to guarantee any level of energy savings or cost reduction. WGL has no liability in the event the actual level of energy savings or cost reductions is different from the economic design estimates. The UESC requires the AOC to make annual payments regardless of the actual level of energy savings or cost reduction.

In addition, we determined the economic design documentation developed for the Cogeneration Facility was consistent with industry standards and supported the AOC's decision to move forward. Although the AOC followed FEMP UESC Guide recommendations and sought independent third party reviews of the economic design analysis, the initial economic design analysis may have overstated the financial benefits of introducing Cogeneration to the Capitol Power Plant. In 2009, the AOC reviewed technical options to generate steam and electricity at the Capitol Power Plant and recommended the installation of a Cogeneration Facility. In 2015, the AOC developed a whitepaper that provided a comparative analysis between a single cogeneration unit and a single boiler and costs associated with a decision to move forward with either option. The AOC concluded that constructing a Cogeneration Facility at the Capitol Power Plant was in the AOC's best interest to support its mission to service Congress. For additional support, the AOC requested an independent review of the whitepaper by the DOE National Renewable Energy Laboratory (NREL) and Wiley|Wilson / Burns & McDonnell (WW/BMcD) Joint Venture team. The NREL found the assumptions and methodology used in this report to be correct and in practice with industry standards. Furthermore, the NREL agreed with the AOC's conclusion to move forward with pursuing cogeneration under a UESC. WW/BMcD compared installation of CHP financed through a UESC to installing a boiler using appropriated funds. The WW/BMcD independent assessment

concluded installation of the Cogeneration Facility provides the highest magnitude of expected net present value savings regardless of the funding method.

Although AOC management took the necessary steps to develop an economic design analysis aligned to industry standards, we continue to conclude that the results may have overstated the financial benefits of a Cogeneration Facility at the Capitol Power Plant. Specifically, we identified some shortcomings in the underlying analyses: (1) some variables, assumptions, and costs were not consistently applied across the various reviews; (2) the finance charge(s) associated with the UESC vehicle were understated; and (3) the analysis did not consistently include additional operations and maintenance costs. Nevertheless, we note the potentially overstated financial benefits of the Cogeneration Facility do not have a direct effect on the UESC, as it requires the AOC to make annual predetermined payments that are not based on energy savings or cost reduction.

Cogeneration Facility Completed Construction

The USACE determined that the Cogeneration Facility was constructed overall in accordance with the terms and conditions of the UESC and the FEMP UESC guide; however, the UESC did not stipulate clearly defined contract requirements for the Cogeneration Facility Commissioning Process and Reliability Run. The Commissioning Plan (Cx Plan) and Commissioning Report (Cx Report) accepted by the AOC did not clearly document all commissioning events and activities and the Reliability Run did not occur after successful completion of the Commissioning Process nor did it demonstrate uninterrupted operation for 30 full calendar days. Our results and recommendations are discussed under Finding A. In addition, during our review, we identified enhancements for the Cogeneration Facility contract administration and construction that the AOC may consider for future UESC projects.

To assess the Cogeneration Facility's completed construction, we reviewed contract administration, cost and schedule management, and quality control and quality assurance. We also reviewed the Commissioning Process and Reliability Run discussed under Finding A.

Contract Administration

During our review of the Cogeneration Facility construction contract requirements, we identified a few contract administration enhancements for the AOC to consider for future UESC projects. We assessed the administration of the Cogenerations Facility's UESC by comparing it to the FEMP UESC Guide, dated September 2013. The FEMP

UESC Guide is a set of recommended practices and examples and not a policy requirement. Therefore, failure to follow a recommendation does not constitute an infraction of law or policy. The following notes are presented as observations and discussion points for future UESC projects and not as deficiencies.

The USACE found that the AOC contract documentation generally followed the intent of the FEMP UESC Guide's recommended practices and examples; however, a few of the AOC contract documents minimally satisfied the recommendation and seemed to lack the detail intended by the recommendation. Specifically, the FEMP UESC Guide recommends the following practices and examples for acquisition planning; we noted below our observations on the AOC's contract documentation used to meet the intent.

FEMP UESC Guide Recommendation	AOC's Contract Documentation	Enhancements for Future UESC Projects
Acquisition strategy/planning Limited Acquisition Plan Template establishes the agency's strategy for the acquisition of the project.	Acquisition Plan	The AOC provided an Acquisition Plan with a planned completion date of the Cogeneration project of December 2013 that satisfied the intent of the FEMP UESC Guide.
Survey interest of eligible utilities Letter of Interest Template is used to determine which serving utilities are interested and capable.	Letter of Interest (LOI)	A LOI was prepared and sent to Washington Gas Light Co. (WGL), a subsidiary to WGL Holdings. The LOI satisfied the intent of the FEMP UESC Guide.
Provide fair consideration to all serving utilities	Request for Qualification	The AOC issued a Letter of Request for Qualification to WGL containing evaluation criteria that satisfy the intent of the FEMP UESC Guide.

Utility Selection Evaluation Factors Sample		This recommendation did not fully apply to the subject UESC since the AOC only had one vendor as a viable choice for the UESC.
Justification and Approval (J&A) for Other than Full and Open Competition J&A Sample is a sample justification to use a "limited source" contract.	Capitol Power Plant Cogeneration Technical Evaluation of UESC Concept Phase Proposal	The AOC's document provided a justification for why the AOC only had one vendor as viable choice for the UESC. However, preparing a more explicit J&A document, as recommended, may enhance the AOC's process for future limited source UESC.

In addition, the FEMP UESC Guide recommends Business Clearance Memorandum – Recommendation to Award or its equivalent. Per the FEMP UESC Guide, "The business clearance memorandum typically includes acquisition background, technical and financial evaluation outcomes, a pre-negotiation position, request to negotiate and approval to negotiate, and a determination of reasonable pricing and recommendation to award the contract." The AOC provided the Capitol Power Plant Cogeneration Technical Evaluation of UESC Proposal Addendum 1, dated September 23, 2015, as the nearest equivalent to a Business Clearance Memorandum – Recommendation to Award. This document lacks detail and minimally satisfies the recommendation. The USACE suggested that the AOC should consider incorporating more FEMP UESC Guide recommended practices and examples into contract documentation for executing UESCs for future UESC endeavors. The documentation can be modified as appropriate to fit within AOC contracting procedures while meeting the intent of the UESC recommendations.

Cost & Schedule Management

The USACE determined that the AOC's cost growth for the Cogeneration Facility project was within reason. The original UESC was awarded with a base bid amount of $51.4M. Through contract modification, the WGL UESC totaled $54.0M, representing a cost growth of approximately five percent. This amount of cost growth is within acceptable standards of well managed projects. However, the AOC is still in the process of negotiating claims submitted by WGL. Due to these outstanding claims, we were unable to assess whether the cost growth after claims resolution will

still be within acceptable standards. We do note that the UESC did not convert to a Firm-Fixed-Price (FFP) after initial award and that the AOC had continual issues with WGL substantiating cost and billing rates.

The signed UESC had a contractual requirement to convert to a FFP contract vehicle. In April 2017, WGL presented the AOC with a FFP proposal; however, the proposal was rejected by the AOC because the substantial completion date was extended by 235 calendar days and the proposed total cost of $65M exceeded the GMP of $57M. There was no further attempt by WGL to meet this contract requirement.

The AOC contracting officials issued several Letters of Concerns which noted continual issues with WGL substantiating costs and billing rates and submission of supporting documentation throughout the project. Per the AOC, WGL's lack of back-up documentation and justification impacted the AOC's ability to accurately assess the Cogeneration Facility's costs and schedule. The overall project costs did not exceed the GMP; however, the AOC stated that the WGL's reported summary of budget/expenditure status, including contingency and allowances, were at times inaccurate, which created an inability to accurately assess contract costs throughout the project. We determined that AOC contracting officials carried out their roles with the necessary due diligence to provide cost management oversight to the Cogeneration Facility. Although we found no significant improvements for the AOC to provide cost management oversight, the AOC should consider ways to ensure robust project controls are in place to review detailed cost information in the UESCs.

For the AOC's schedule management, we found the Cogeneration Facility project was behind schedule by 108 days. The original UESC was awarded with a duration of 950 days but also included a contract provision for a duration of 1,095 days. The conflict was later resolved by a bilateral modification which edited contract duration to 1,010 days. The contractor achieved substantial completion on September 18, 2018, a reported 108 days behind schedule. The AOC contracting officials assessed WGL's schedule management as marginal because WGL did not proactively manage the project schedule, including mitigation and resolution of its own delays.

In light of the AOC's challenges with WGL, we determined that the AOC contracting officials carried out their contract oversight roles with the necessary due diligence for the Cogeneration Facility. Although we found no significant improvements for the AOC to provide schedule management oversight, the AOC should consider ways to ensure contractor performance and resolution of AOC concerns throughout the duration of the UESC.

Quality Control and Quality Assurance

We determined the AOC provided quality assurance through sufficient monitoring of contractor performance; however, we found the UESC did not stipulate clearly defined contract requirements for Commissioning and Reliability Run quality control activities. To assess the quality control and assurance activities for the project, we reviewed monthly progress reports, meeting minutes, an interim Contractor Performance Assessment Report (CPAR), commissioning documents, Reliability Run Log, and correspondence between the AOC and WGL to track and resolve issues which included Letters of Concerns, Notices to Comply, and Safety Notices.

According to the UESC, WGL was responsible for the coordination of all work performed by its own workforce and work performed by its subcontractors. The AOC had challenges with the WGL's quality control inspection program. As a result, the AOC had to take proactive measures to ensure the Cogeneration Facility met quality standards required by the UESC. The AOC performed detailed reviews of WGL's monthly progress reports. These monthly reports included schedule narratives, detail construction schedules and percentages of construction work completed, critical path summaries, cash flow curves, and inspections. The AOC maintained a detailed log of the AOC's comments, issues, and concerns identified for each monthly report. The AOC issued numerous Letters of Concerns, Notices to Comply, and Safety Notices, which noted inconsistent and inaccurate reported information, safety and security issues, and noncompliance with contract requirements throughout the project.

In an AOC interim CPAR[1], the AOC noted WGL's implementation and adherence to its Quality Control Inspection Program plan (QCIP) as marginal. WGL relied on its subcontractors for quality control and was not proactive in the identification and correction of problems with its subcontractors. WGL did provide daily reports to the AOC that included a count of subcontractor personnel on site and a description of activities performed but no information on quality inspections as required by the QCIP. Generally, there was little to no comment or any records furnished by WGL on the technical acceptability of any of its subcontractors' work. Although the AOC had significant concerns with tracking WGL's compliance with its QCIP, we determined the Cogeneration Facility was properly designed and overall constructed in accordance with contract requirements, AOC Design Standards, and the FEMP UESC guide.

[1] Washington Gas Light Contract AOC14G1174, T-001, Capitol Power Plant Cogeneration Interim CPARS Evaluation, Period of Performance October 15, 2015 – April 18, 2017

It is our conclusion that the AOC properly monitored WGL's quality control activities for the Cogeneration Facility; however, we found the UESC did not stipulate clearly defined contract requirements for Commissioning Process and Reliability Run quality control activities. (See Finding A for further discussion.)

Cogeneration Facility Site Visit

During our site visit, we determined the Cogeneration Facility was overall constructed in accordance with the contract requirements. The USACE conducted an on-site inspection of the Cogeneration Facility in March 2019. The USACE examined drawings and specifications for compliance with AOC Design Standards and noted no compliance issues. However, the AOC OIG issued a Management Advisory Memorandum based on input from the USACE to address a safety vulnerability observed during the site visit. The USACE observed that the Cogeneration Facility did not have arc flash hazard boundary markings to protect workers from electrical shock and electrocution. In response to the Memorandum, the AOC staff immediately performed inspections of Capitol Power Plant switchgear rooms and found the switchgear had proper equipment labeling that contains minimum working spaces as required by the Occupational Safety and Health Administration, the AOC, and industry standards. USACE confirmed the AOC's compliance after reviewing the switchgear design documentation and closed the matter.

Additionally, the USACE examined the installed system for compliance with drawings and specifications and noted no discrepancies. All installed equipment was readily recognizable from the drawings and in its place as represented in the drawings. Furthermore, the USACE examined the Cogeneration Facility for overall quality of workmanship. All piping and ductwork was neatly routed and painted, insulated/jacketed, and labeled. Care was taken to ensure accessibility of equipment and ancillaries for maintenance.

It is our conclusion that the overall construction of the Cogeneration Facility was in compliance with contract requirements, AOC guidance, and industry standards; however, we identified areas the AOC may consider improving before entering into another UESC in the future. In addition, we made three recommendations to address reportable concerns identified in the Commissioning Process and Reliability Run quality control activities.

Finding A

Cogeneration Facility Contract Requirements for the Commissioning Process and Reliability Run Were Not Clearly Defined

The UESC did not stipulate clearly defined contract requirements for the Cogeneration Facility Commissioning Process and Reliability Run. The UESC required a comprehensive Cx Plan, Cx Report and Reliability Run for the Cogeneration Facility. We determined that the contract requirements for these deliverables were ambiguous or not specified which subjected the AOC to contractor interpretation. Therefore, the Cx Plan and Cx Report accepted by the AOC did not document all commissioning events and activities and the Reliability Run did not occur after successful completion of the Commissioning Process. Further, it was unclear whether the Reliability Run demonstrated an uninterrupted operation for 30 full calendar days.

The AOC contracted with WGL, the Energy Service provider, to finance, design, build, and commission the Cogeneration Facility. Following recommendations in the UESC guidance, the AOC allowed WGL to subcontract design and construction work to [redacted] and subcontract commissioning activities to [redacted] and [redacted].

Commissioning is a quality-oriented process for achieving, verifying, and documenting that the performance of facilities, systems, and assemblies meets the objectives and criteria defined by the general contractor. To ensure building systems perform as designed, these systems must go through this Commissioning Process. Depending on the complexity of a project, types of equipment, and systems involved, different levels of commissioning may be required. The AOC contractually required commissioning for 19 systems for the Cogeneration Facility. After commissioning these systems, the UESC required an additional quality-oriented activity to ensure the Cogeneration Facility would fully operate as designed, referred to as the Reliability Run. Per the UESC, the Reliability Run should demonstrate the uninterrupted operation of the entire Cogeneration system over a 30-day period.

By not stipulating well-defined contract requirements for the Commissioning Process, the AOC received a fragmented Cx Plan, and a Cx Report that did not clearly document a fully tested and commissioned project. In addition, the deficiencies found

in the contract requirements for the Reliability Run allowed the contractor to begin the Reliability Run before completion of the Commissioning Process and continue the run period after experiencing several system interruptions. Due to the lack of detailed contract requirements for the commissioning activities and Reliability Run, the AOC experienced significant difficulties with enforcing UESC provisions on WGL.

Cogeneration Facility Commissioning Process

The Commissioning Process requires the CxA to review design documents to ensure that they meet operational needs and functionally test the Facility systems, equipment, and controls to verify proper installation and operation. [redacted] further subcontracted [redacted]. to be the CxA, which was responsible for commissioning the Cogeneration Facility. The CxA must develop and issue a comprehensive Cx Plan that details the scope of commissioning and the procedures utilized throughout the Commissioning Process. The Cx Report should be the overall record of the commissioning events and activities. The report should reference the commissioning documentation completed throughout the project and summarize the overall Commissioning Process.

Fragmented Commissioning Plan

It is our opinion that the Cx Plan submitted to the AOC was fragmented. The Cx Plan is intended to be a detailed guidebook utilized by every individual involved in the development and construction of the Cogeneration Facility to perform commissioning activities. Section 4.4.2.3. of the UESC states the primary role of the CxA is to develop, issue, witness, and document the execution of a comprehensive plan. According to Cx Plan Section *1.3 Purpose of the Commissioning Plan*, "the Cx Plan is a living document. Throughout the development and construction of the project, the Cx Plan shall be updated to reflect the actual procedures being adopted and utilized." Due to the custom nature of every construction project, the Cx Plan should also be customized.

The Cogeneration Facility Cx Plan, dated April 7, 2017, stated that the Cx Plan did not contain Pre-Functional Checklists (PFCs) or Functional Performance Tests (FPTs), but would be provided later in the project. In addition, we noted that the Cx Plan did not address all 19 systems identified for commissioning as required by the UESC. The AOC stated that the systems listed in the UESC may not have been tested as standalone but may have been tested in conjunction with other systems; however,

the Cx Plan did not clearly document how the contract requirements would be met or which systems were tested together. Lastly, the Cx Plan stated the CxA will develop Integrated Systems Tests (ISTs) to test the functionality and performance of all the systems (tested by FPTs) to work together as an integrated system; however, the ISTs were not performed. The AOC did not obtain an updated Cx Plan prior to the start of commissioning activities in May 2018, which commenced one year after the Cx Plan was developed. Per the *AOC Commissioning Guidelines, Cx Role and Responsibility Matrix*, updating and revising the Cx Plan are required activities during the Design and Construction phases, respectively. We recognized that the CxA developed and submitted PFCs and FPTs; however, we found the information to be fragmented and it was difficult to determine if the CxA developed and issued a comprehensive plan. It was unclear if the Cx Plan was updated to reflect the changes in the Commissioning Process, to include how the contracted 19 systems would be commissioned, and the removal of the ISTs, as well as any other updates to reflect the actual procedures adopted and utilized.

The Final Cx Plan should outline all commissioning activities and their relative schedule (timelines for completion and submission, based upon construction milestones). Without a clear, complete, finalized comprehensive Cx Plan, it is difficult for users and reviewers to determine whether commissioning processes and procedures were properly planned and implemented. It is our determination that the accepted Cx Plan was a direct result of the UESC not stipulating well-defined contract requirements, which limited the AOC's ability to specify the content of a comprehensive Cx Plan.

Deficient Commissioning Report

The CxA's Cx Report did not document a fully tested and commissioned project. We determined that the UESC did not stipulate or modify the Cx Report contract requirement to reflect the actual commissioning events and activities that occurred. Specifically, the UESC listed 19 systems to be commissioned based on WGL's Cogeneration Facility design at contract award; however, the Cx Report documented the results for six of the listed systems as commissioned. The other 13 systems may have been commissioned or tested in line with industry standards but were not clearly documented in the Commissioning Report.

According to the AOC, there were not necessarily 19 individual commissioning processes envisioned; the UESC intent was for the named systems—if eventually included as part of the design—to be covered comprehensively, as appropriate,

regardless of the number of individual "processes" used by the agent to verify. The AOC stated that although the Cx Report did not explicitly identify all systems or subsystems that were identified in the UESC as anticipated to be commissioned, all but two went through a Commissioning Process. The remaining two systems were tested and approved by industry standards. Specifically, the Heating, Ventilation, and Air Conditioning equipment installed went through industry standard final testing and balancing that was observed by the AOC, and the fire alarm system was tested by [redacted] observed by the AOC and confirmed by the AOC's Fire Marshal.

The AOC acknowledged that the Cx Report should have been clearer regarding the work done relevant to the systems and subsystems that needed to be commissioned per the UESC. However, the AOC asserted that the UESC did not explicitly state that the report needed to identify each system or subsystem commissioned or equivalently tested by another acceptable means. We agreed that the UESC was silent regarding the specifics of the Cx Report; however, according to the Cx Plan, the CxA will witness FPTs/ISTs as they were executed by the contractor and document results of all FPTs/ISTs. In addition, the UESC clearly stated that the CxA's role and responsibility was to witness the execution of a Cx Plan and document performance, to include witnessing and approving FPTs performed by contractor.

Therefore, we conclude that by not stipulating clear contract requirements for commissioning events and activities, to include the actual systems commissioned and roles and responsibilities of the CxA, it was difficult to determine whether the Cogeneration Facility was fully tested and commissioned.

Abridged Reliability Run

We determined that the AOC accepted an abridged Reliability Run for the Cogeneration Facility. Specifically, the Reliability Run for the Cogeneration Facility did not occur after successful completion of the Commissioning Process and it was unclear whether the Reliability Run demonstrated uninterrupted operation for 30 full calendar days. Our analysis of the Cogeneration Facility Reliability Run Log and supporting documentation shows the Facility started the Reliability Run before completing the Commissioning Process and experienced interruptions throughout the run period.

The Cogeneration Facility consists of one dual-fuel Combustion Turbine Generator (CTG) and one Heat Recovery Steam Generator (HRSG) with supplemental fuel duct firing which serves as the primary electric and steam generating system. The CTG

converts combusted fuel and highly compressed air into electrical energy and exhausts to the HRSG where heat is recovered to generate steam. The Fuel Duct Burner element is a component of the HRSG that allows generation of steam above 35,000 PPH up to a maximum of 100,000 PPH. Without Fuel Duct Burners, the system would only be able to generate 35,000 PPH of steam and not obtain the 100,000 PPH to replace the steam generating capacity of one coal boiler. The Cogeneration Facility primarily uses natural gas that requires a supply pressure greater than what is available in the Washington D.C area. Gas Compressors are major components that increase the pressure of the natural gas. If the HRSG, CTG, or gas compressors fail, the interruption would cause the Cogeneration Facility to go offline. A Fuel Duct Burner 'flame out' would not cause the Cogeneration Facility to go offline, however, it would significantly reduce the amount of steam generated by the HRSG.

According to the Reliability Run Log, WGL commenced the Reliability Run on June 4, 2018. However, the CxA completed commissioning activities on July 16, 2018. The AOC issued a Letter of Concern that stated the Reliability Run began without fully completing the Commissioning Process in accordance with contract requirements and without incorporating five design requirements into the Distributed Control System (DCS)[2] programming that controls the Cogeneration Facility. The AOC was concerned that design requirements were not addressed by WGL as part of the Quality Control or Commissioning Process prior to commencement of the Reliability Run. WGL responded that the UESC did not require completion of the Commissioning Process prior to the start of the Reliability Run. However, the UESC stated the Reliability Run was part of performance testing that occurs after the associated FPTs had been successfully completed under the Commissioning Process.

Illustrated by the Reliability Run Log, specifically within the first week of the Reliability Run, the Cogeneration Facility experienced CTG and HRSG interruptions. On day 15 of the run, the CTG failed for a third time, requiring the Cogeneration Facility to be offline for 23 days. During that time, WGL diagnosed and remediated interruptions and addressed the missing design requirements, then restarted the Reliability Run on July 17, 2018. Following the restart, there were three more gas compressor interruptions that caused the Cogeneration Facility to temporarily go offline or switch power to an alternate compressor, along with four additional Fuel Duct Burner failures. After consultation with the USACE, we determined that the gas compressor interruptions should have required a restart of the 30-day Reliability Run.

[2] Capitol Power Plant required an expansion to the DCS for data handling, systems control, monitoring, recording, and alarming necessary for the proper supervision and operation of the Cogeneration Facility.

According to our calculation, there were only 15 days (from August 3 to August 17) of uninterrupted Reliability Run time.

The AOC asserted that the UESC was developed to make allowances for certain tolerable interruptions. The UESC prescribes interruptions during the Reliability Run as either: 1) a Non-systemic[3] interruption outside the control of contractor; or 2) a Systemic[4] interruption within the work. In the event of Non-systemic interruptions, the affected test run shall resume from the point of time of the interruption. All other interruptions shall be classified as Systemic interruptions and require restart of the 30-day Reliability Run after all corrective actions were complete. Per the AOC, following every system interruption—or near interruption—AOC management, contractor stakeholders, and technical subject matter experts discussed the interruption to collectively determine how to classify the interruption in accordance with contract guidance. The AOC determined that the three gas compressors interruptions were Non-systemic; however, USACE did not initially agree with that determination and stated that the interruptions were Systemic and required a restart of the 30-day Reliability Run, per the contract.

After multiple meetings with the AOC and written responses explaining how the AOC collaborated with WGL to determine the interruptions were Non-systemic, USACE and the OIG found it difficult to determine whether the Cogeneration Facility had a successful Reliability Run due to unclear contract definitions for Systemic and Non-systemic interruptions. Therefore, interpretations and judgements were necessary to determine the start and restart of the Reliability Run. Given the UESC requirement on the start of the Reliability Run and the unclear definition of Systemic and Non-systemic interruptions, it is our conclusion that the Reliability Run did not occur after successful completion of the Commissioning Process and it is unclear if a 30 full calendar days of uninterrupted operation was accomplished.

Conclusion

The Cogeneration Facility has been operationally functional since Final Acceptance in December 2018. The AOC maintains that the Cogeneration Facility's systems and subsystems were properly tested and commissioned, and the results of the Reliability Run, together with the other performance testing, provided indication of long-term

[3] Non-systemic interruptions are defined as event caused by factors outside the control of the contractor.
[4] Systemic interruptions all other interruptions not defined as Non-systemic. Systemic interruptions can only be reclassified as Non-systemic interruption if one or more of the following criteria are satisfied: (1) operator error or (2) a single instance of minor hardware component failure.

reliability. However, fragmented and deficient commissioning documentation made it difficult for the USACE and the OIG to follow the Commissioning Process and determine whether all commissioning activities were completed. Furthermore, the abridged Reliability Run, conducted prior to the completion of the Commissioning Process, presented questions as to overall reliability of the Cogeneration Facility. Although we determined that overall the Cogeneration Facility was constructed in accordance with the terms and conditions of the UESC and other applicable requirements, we concluded that incorporating well-defined contract requirements into the UESC will assist with oversight and deliverables of future UESC projects.

Recommendations

Recommendation A.1

We recommend that the AOC incorporate well-defined contract requirements for future Utility Energy Service Contracts, to include but not limited to:

- Commissioning requirements – General Description, Commissioning Roles and Responsibilities, Systems to be Commissioned, Commissioning Plan, Scheduling, Commissioning Report, and
- Reliability Run requirements – Duration, Classification of Interruptions, and Scheduling.

AOC Comment

Many types of projects involve the need for commissioning. The AOC is updating its 2010 Commissioning Guidelines and will include provisions in the update to address the issues raised by the OIG. The AOC expects to complete this update by July 2020.

OIG Response

We recognize the AOC's concurrence with the recommendation. The AOC's proposed actions to update the Commissioning Guidelines by July 2020 are responsive to the recommendation. Therefore, the recommendation is considered resolved and will be closed upon completion and verification of the proposed action.

Recommendation A.2

We recommend that the AOC enhance its contracting policies and procedures for origination and execution of Utility Energy Service Contracts (UESC) to include developing contract templates for future projects that reflect lessons learned and current industry practice.

AOC Comment

The AOC will prepare a lessons learned document by January 31, 2020, covering the Cogeneration Project to address the issues identified by OIG. This document will be used to enhance contracting policies and procedures should the AOC decide to pursue another UESC.

OIG Response

We recognize the AOC's concurrence with the recommendation. The AOC's proposed actions to prepare a lessons learned document by January 2020 is responsive to the recommendation. Therefore, the recommendation is considered resolved and will be closed upon completion and verification of the proposed action.

Recommendation A.3

We recommend that the AOC establish well-defined AOC policies and procedures for providing and documenting oversight of Utility Energy Service Contracts (UESC) to ensure contract compliance.

AOC Comment

The AOC will include oversight in the lessons learned document discussed in Recommendation A.2 and will establish the relevant policies and procedures should another UESC be pursued in the future.

OIG Response

We recognize the AOC's concurrence with the recommendation. The AOC's proposed action to prepare a Lessons Learned document discussed in Recommendation A.2 is responsive to the recommendation. Therefore, the recommendation is considered resolved and will be closed upon completion and verification of the proposed action.

Appendix A

Scope and Methodology

The scope of this performance audit was the Capitol Power Plant Cogeneration Facility Design-Build Project Contract AOC14G1174-T001 (awarded October 2015) and the Cogeneration Facility's design, construction and commissioning. We conducted this performance audit of the Cogeneration Facility located in Washington, DC from September 2018 through August 2019 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

To determine whether the construction of the Cogeneration Facility was in accordance with contractual and other applicable requirements, the AOC OIG was assisted by the USACE as the subject matter experts on combined heat and power systems. We reviewed and analyzed Cogeneration Facility designs, contract file and project management documentation. In March 2019, we conducted a site visit that included a walk-through of the Capitol Power Plant Cogeneration Facility. Throughout the audit, we interviewed AOC staff from Acquisition & Material Management Division, Utilities & Power Plant Operations and Planning & Project Management responsible for reviewing the cost & schedule management, quality control, and quality assurance and commissioning; however; we did not interview officials representing the contractors/subcontractors. We also conducted a limited review of the design to determine whether the economic design documentation is consistent with industry standards.

This audit was included in the Fiscal Years 2018-2020 OIG Audit and Evaluation Plan.

Review of Internal Controls

Government Auditing Standards require auditors to obtain an understanding of internal controls that are significant within the context of the audit objectives. For internal controls that are significant within the context of the audit objectives, auditors should assess whether the internal control has been properly designed and implemented and should perform procedures designed to obtain sufficient and appropriate evidence to support their assessment about the effectiveness of those controls. Information system controls are often an integral part of an entity's internal control. The effectiveness of significant internal

controls is frequently dependent on the effectiveness of information systems controls. Thus, when obtaining an understanding of internal controls significant to the audit objectives, auditors should also determine whether it is necessary to evaluate information systems controls.

We reviewed internal controls to obtain an understanding of the process for design, construction and management of the Cogeneration Facility. We obtained our understanding by reviewing the applicable laws, regulations, AOC policies and contractual specifications, and interviewing AOC Planning and Project Management, Capitol Power Plant and Acquisition & Material Management Division officials to determine if controls, individually or in combination with other controls, were properly implemented and working as designed.

The AOC Contracting Manual, Design Guide, Commissioning Guidelines, UESC, and FEMP Guide, documented uniform policies and practices for the design, construction and management of AOC projects. Although the detailed internal controls discussed in these documents were sufficient for most AOC projects, we determined that the unique nature of the Cogeneration Facility required enhanced controls for monitoring contractor performance and ensuring contract requirements were met.

Use of Computer-Processed Data

We did not use a material amount of computer-processed data to perform this audit.

Prior Coverage

During the last five years, the Government Accountability Office (GAO) issued a report discussing AOC's energy-related cost saving measures and decision to procure a cogeneration system.

GAO

Report No. GAO-15-436, "Architect of the Capitol Should Update Its Long-term Energy Plan before Committing to Major Energy Projects," dated September 3, 2015.

The GAO was asked to analyze potential cost savings at Capitol Power Plant. The GAO analyzed (1) measures AOC implemented since 2008 to manage the energy-related costs of the complex and opportunities, if any, to further manage these costs, and (2) how the AOC decided to procure a cogeneration system and the extent to which the AOC followed leading capital planning practices.

The AOC has implemented many measures to manage the costs of heating and cooling the Capitol complex and has achieved measurable results. The agency has additional opportunities to manage these costs through conservation. The AOC and its contractors have identified hundreds of additional energy conservation measures, and the agency intends to act on some of them when resources become available. However, the GAO recommended that the AOC, prior to undertaking future major capital projects related to its energy needs, fully update its long-term energy plan while following key leading capital-planning practices.

AOC OIG

There were no relevant audits done by the AOC in the five years preceding this audit.

Appendix B

Notification Letter

ARCHITECT OF THE CAPITOL

Office of Inspector General
Fairchild Bldg.
499 S. Capitol St., SW, Suite 518
Washington, D.C. 20515
202.593.1948

www.aoc.gov

United States Government

MEMORANDUM

DATE: September 27, 2018

TO: Stephen T. Ayers, FAIA, LEED AP
Architect of the Capitol

FROM: Christopher P. Failla, CIG
Inspector General

SUBJECT: Capitol Power Plant Cogeneration Facility Audit
(2018-0013-AUD-P)

This memorandum serves as notification that the Office of Inspector General plans to initiate an audit of the Architect of the Capitol, Capitol Power Plant Cogeneration Facility. Our objective is to determine whether the construction of the Capitol Power Plant Cogeneration Facility was in accordance with contractual and other applicable requirements. This will include reviewing the cost and schedule management, quality control, and quality assurance and commissioning. We will also conduct a limited review of the design to determine whether the economic design documentation is consistent with industry standards. We have an interagency agreement with the United States Army Corps of Engineers to serve as subject matter experts for this audit.

We will coordinate with the Office of the Chief Operating Officer to set up an entrance conference. If you have any questions, please contact Ashton Coleman, Jr. at 202.593.0261 or MaryAnn Davenport at 202.593.0081.

Distribution List:

Christine A. Merdon, P.E., CCM, Chief Operating Officer
Dan Cassil, Chief Administrative Officer
Christopher Potter, Director, Utilities and Power Plant Operations
Peter Mueller, Director, Planning and Project Management
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Anthony Hutcherson, Chief Acquisition and Materials Management Officer
Shalley Kim, Executive Officer
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Appendix C

Management Comments

ARCHITECT OF THE CAPITOL

Architect of the Capitol
U.S. Capitol, Room SB-16
Washington, DC 20515
202.228.1793

www.aoc.gov

United States Government

MEMORANDUM

DATE: September 26, 2019

TO: Mr. Christopher Failla
Inspector General

FROM: Thomas J. Carroll III
Acting Architect of the Capitol

SUBJECT: Draft Report: Audit of the Capitol Power Plant Cogeneration Facility Project No. 2018-0013-AUD-P

Thank you for the opportunity to review and provide a response on the subject Office of Inspector General (OIG) draft report in accordance with sections 5.2.6 and 8 of AOC Order 40-1.

The Architect of the Capitol (AOC) is pleased you found that the Cogeneration facility was designed and constructed in accordance with contract requirements and that the AOC generally followed the intent of the Utility Energy Service Contract (UESC) program guidance issued by the Department of Energy in administering the contract.

The AOC concurs with the OIG's general finding that contract requirements for the commissioning process and the Reliability Run were not clearly defined. We affirm that the Cogeneration system was properly Commissioned and tested; contractual requirements for Commissioning and testing were met; and that the system meets all contractual performance requirements. While we concur with this general finding, it is important to mention that many of statements in the draft report that describe apparent shortcomings with the Commissioning Plan and Report are a result of using a Design-Build project structure. Under the Design-Build approach, the detailed project design is not known at the time of contract award and the design incrementally evolves. Additionally, this project structure requires close collaboration and interpretation between the owner and contractor to administer the contract.

The AOC's additional comments concerning the report's recommendations are as follows:

OIG Recommendation A.1: We recommend that the AOC incorporate well-defined contract requirements for future Utility Energy Service Contracts, to include but not limited to:

- Commissioning requirements -General Description, Commissioning Roles and Responsibilities, Systems to be Commissioned, Commissioning Plan, Scheduling, Commissioning Report, and
- Reliability Run requirements -Duration, Classification of Interruptions, and Scheduling.

AOC Comment: Many types of projects involve the need for commissioning. The AOC is updating its 2010 Commissioning Guidelines and will include provisions in the update to address the issues raised by OIG. The AOC expects to complete this update by July 2020.

OIG Recommendation A.2: We recommend that the AOC enhance its contracting policies and procedures for origination and execution of Utility Energy Service Contracts to include developing contract templates for future projects that reflects lessons learned and current industry practice.

AOC Comment: The AOC will prepare a lessons learned document by January 31, 2020, covering the Cogeneration Project to address the issues identified by OIG. This document will be used to enhance contracting policies and procedures should the AOC decide to pursue another UESC.

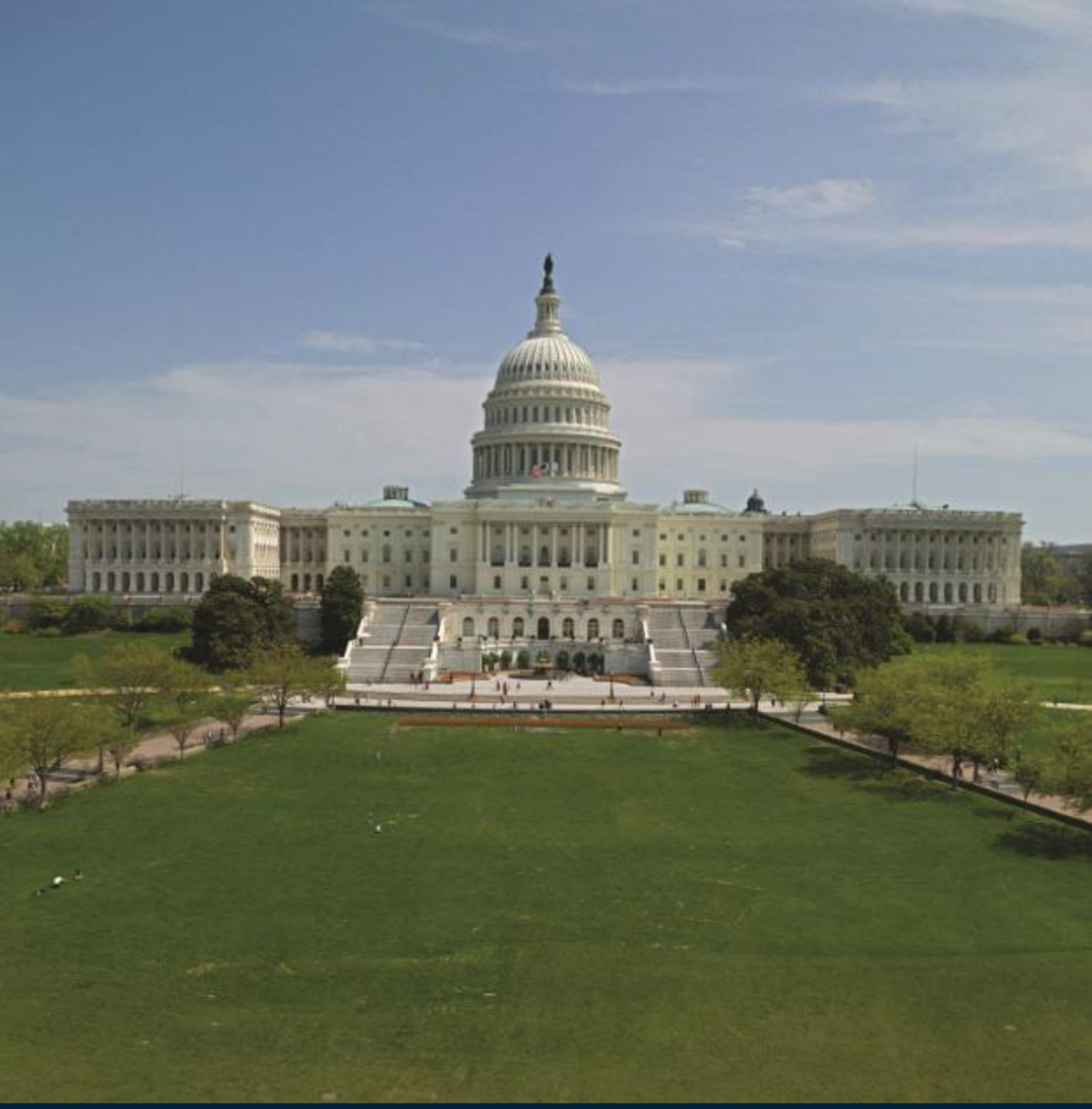
OIG Recommendation A.3: We recommend that the AOC establish well-defined AOC policies and procedures for providing and documenting oversight of Utility Energy Service Contracts to ensure contract compliance.

AOC Comment: The AOC will include oversight in the lessons learned document discussed in Recommendation A.2 and will establish the relevant policies and procedures should another UESC be pursued in the future.

Thank you for the opportunity to provide comments on the draft report. Please contact Director of Planning and Project Management Peter Mueller at 202.226.4119 or peter.mueller@aoc.gov if you have any questions.

Acronyms and Abbreviations

AOC	Architect of the Capitol
[redacted]	[redacted]
CHP	Combined Heat and Power
CPAR	Contractor Performance Assessment Report
CTG	Combustion Turbine Generator
CxA	Commissioning Agent
Cx Plan	Commissioning Plan
Cx Report	Commissioning Report
DCS	Distributed Control System
DBD	Design Basis Document
DOE	Department of Energy
FEMP	Federal Energy Management Program
FFP	Firm-Fixed-Price
FPT	Functional Performance Test
GAO	Government Accountability Office
GMP	Guaranteed Maximum Price
GSA	General Services Administration
HRSG	Heat Recovery Steam Generator
[redacted]	[redacted]
IST	Integrated Systems Test
J&A	Justification and Approval
LOI	Letter of Interest
MW	Mega Watt
NREL	National Renewable Energy Laboratory
OIG	Office of the Inspector General
PEPCO	Potomac Electric Power Company
PFC	Pre-Functional Checklist
PPH	Pounds Per Hour
QCIP	Quality Control Inspection Program Plan
[redacted]	[redacted]
UESC	Utility Energy Service Contract
USACE	United States Army Corps of Engineers
WGL	Washington Gas Light



INSPECTOR GENERAL

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