

CPUC Staff Ex Ante Review

CPUC Staff Project ID Number	PGE_20_T_I_492_PRJ - 02199208_HVAC
CPMPA Directory Link	https://deeresources.info/cmpa/projects/17231
PA	PGE
PA Application ID	PRJ - 02199208
PA Application Executed Date	NA
PA Program ID	
PA Program Name	Industrial Recommissioning Program - Retro Commissioning (RCx)
PA Program Year	
Date of CPUC Staff Review:	3/17/2023
PA CMPA Upload Dates Included in this review:	
First PA Upload	5/20/2020
Second PA Upload	N/A
Third PA Upload	N/A
Fourth PA Upload	
Fifth PA Upload	
Sixth PA Upload	
Seventh PA Upload	
Eighth PA Upload	
PA Measure Description(s):	
Measure 1	HVAC RETROFIT/NEW-PUMPS-CONDENSER WATER-CONVERT TO VARIABLE FLOW
Measure 2	COMMISSIONING-RCX RECODE CONTROLS-HVAC-SETPOINT CHANGE
Measure 3	COMMISSIONING-RCX RESET CONTROL SETTING-HVAC-SETPOINT CHANGE
Measure 4	COMMISSIONING-RCX RESET CONTROL SETTING-HVAC-SETPOINT CHANGE
Measure 5	HVAC RETROFIT/NEW-PUMPS-CONDENSER WATER-CONVERT TO VARIABLE FLOW
Measure 6	COMMISSIONING-RCX RESET CONTROL SETTING-HVAC-SETPOINT CHANGE
Measure 7	COMMISSIONING-RCX RECODE CONTROLS-HVAC-SCHEDULE CHANGE
Measure 8	COMMISSIONING-RCX RESET CONTROL SETTING-HVAC-ECONOMIZER/OUTSIDE AIR
Measure 9	COMMISSIONING-RCX RECODE CONTROLS-HVAC-SETPOINT CHANGE
Measure 10	COMMISSIONING-RCX RESET CONTROL SETTING-HVAC-SETPOINT CHANGE
PA Project Description:	NA
Bi-Monthly Upload kW Demand Reduction	27.5
Bi-Monthly Upload Annual kWh Impacts	1,177,320
Bi-Monthly Upload Therm Impacts	21,267
PA Proposed Incentive \$ (to Customer)	\$47,810.9
Project Documentation kW Demand Reduction	205.7
Project Documentation Annual kWh Impacts	861,403
Project Documentation Annual Therm Impacts	4,282
Project Documentation Incentive \$ (to Customer)	\$56,647.7
CPUC Staff Primary Reviewer Name	
CPUC Staff Primary Reviewer Firm	Energy 350 and DNV
CPUC Staff Review Supervisor Name	
CPUC Staff Review Supervisor Firm	Quantum
PA Primary Reviewer Name	
PA Primary Reviewer Firm	
CPUC Staff Project Manager	
CPUC Staff Policy Authorization (as needed)	
CPUC Staff Recommendation:	Application ready to proceed with exception(s), as noted
For rejection, action required:	N/A
M&V Review:	Post M&V Review (M&V Results and Final Calculations) Required

Action Number:	Summary of CPUC Staff Required Action by the PA:	Action Category	PA Response (12/22/22)	CPUC Staff Response (3/17/2023)
1	Please resubmit project after post installation M&V and savings calculations are completed.	M&V	The Post-Installation package was submitted on 12/22/2022.	<p>We are summarizing some measure-specific findings here and strongly encourage the PA to review the calculations for all measures before claiming this project. We also request the PA to revisit the process for how verification data are collected and analyzed for these types of retrocommissioning projects, including the use of these data in the PG&E HVAC Tool. More details are provided below:</p> <p>EEM 1 - Implement Scheduling Optimization: The majority of added kW savings are associated with this measure. According to the HVAC tool (see 'AC1.1' in "PRJ - 02199208_Post PGE HVAC Tool v2.0.2 20221018 - CONFIDENTIAL.xlsx"), DEER peak kW savings for most units are the same as the total baseline kW. Given the baseline operating period was from 0am-7pm (i.e., operating 3 hours during the DEER peak hours), and the operating period is from 6:30am-5:00pm (i.e., operating one hour during the DEER peak hours), we are wondering why DEER peak demand savings would equate the total baseline kW. There appears to be some error in this version of the HVAC tool. For example, On-peak Occupied Hours (see cell G103 of "PRJ - 02199208_Post PGE HVAC Tool v2.0.2 20221018 - CONFIDENTIAL.xlsx") shows no baseline operation during peak hours. Additionally, the post-installation hours listed in the post-installation report don't match the HVAC tool inputs. Our observation discussed for AC1.1 are also applicable to AC1.2, AC1.3, AC1.4 and AH4.5.</p> <p>EEM 2 - Optimize Economizer Controls: The measure verification plot provided for this measure (i.e., Figure 5 of the Post-Installation report) shows that the outside air damper stays either at a 15% or a 100% open position. This is not consistent with how outside air dampers typically operate unless the implementor verified that the measure was implemented this way. Typically, the outside air damper moves over a wide range of positions to maintain a desired mixed-air temperature setpoint in the mixing box and does not operate with just two open positions. It would make sense that the HVAC tool also assumes that the outside air damper moves over numerous open % positions between min and max open positions which are the only inputs in the tool. The measure savings summary also shows negative gas savings which can be an indication that the economizer function is not optimized.</p> <p>EEM 3 - Program Duct Static Pressure (DSP) Reset: The measure verification plot provided for this measure (i.e., Figure 7 of the Post-Installation report) shows a DPS range for various outside air temperature (OAT). It is unclear how this plot was used to verify measure implementation as it does not show how the impact of this measure on fan operation. We plotted DSP vs % fan speed for AC 1.1 and did not find any correlation between the two. Providing the range of the operating DSP is not sufficient to verify this measure has resulted in any savings. Also, the PA did not provide the same data (DSP range over OAT) for the baseline period and no other documentation (e.g., EMS screenshot showing the DSP reset control logic) was provided. Just providing a DSP range for post-installation period and then using the HVAC tool to estimate savings is not an appropriate verification process.</p> <p>EEM 4 - Optimize SAT Reset: Figure 8 of the Post-installation report shows a fixed baseline SAT over OAT. It is not clear why the PA did not provide a similar plot for the post-installation operation to confirm the SAT reset logic was implemented. Similar to the EEM 3, the post installation verification plot only provides a range of operating SAT (Figure 9) to verify the measure implementation. We plotted the SAT over OAT and did not find a definite correlation between the two.</p> <p>EEM 11 - Implement Condenser Water Reset: Figure 20 of the Post-installation report shows that the baseline operation had a fixed condenser water supply temperature (CWST) over OAT but the PA did not include anything to show the correlation between CWST and OAT at the post-installation stage. We didn't have data to plot this, but we verified the correlation between CWST and CWST setpoint. This at least verifies that the CWST follows the CWST setpoint, but it is not adequate to verify the reset logic.</p>
2	Please update the peak demand savings estimation to use the updated DEER peak definition (see "PRJ - 02199208 Pre Approved Savings Calcs-CONF.xlsx" file)	Analysis Assumptions	The Post-Installation Report updated the peak demand savings estimation using the latest HVAC Tool V2.0.2 20221018 with the updated DEER peak definition and C22022 Weather Data.	Please see above.

3	Please normalize final savings for data center measures based on the post-installation IT load. Please also update M&V plan to collect trend data for pre- and post- IT loads	Analysis Assumptions	<p>The Post-Installation Report normalized final savings for data center measures based on the post-installation IT load vs baseline IT load for "EEM-5 Utilize economizer on ACU1 & ACU2 serving [redacted] data center" and "EEM-7 Increase data center temperature in Building 3". Refer to file "PRJ - 02199208_Post Savings Summary_EEM7 Cal" for details. The post-field M&V plan in Table 6 of Section 6 is updated accordingly for the two measures.</p>	Thanks for the information.
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Note or Instruction Number:	CPUC Staff Notes or Instructions:	Instruction Category	PA Response	CPUC Staff Response (3/17/2023)
1	Considering the magnitude of savings compared to the total building consumption (~10%), billing analysis might be an appropriate approach to measure final post-installation savings for this project. We recommend PG&E to consider conducting billing analysis for this project.	Analysis Assumptions	12-month billing data after installation is not available for this analysis.	

CPUC Staff Recommendation Definitions	
CPUC Staff Recommendation	Definition
Application ready to proceed without exception	The PA will continue to upload application documents to the CMPA directory through the implementation and claims phases of the project. The PA may proceed to approve the project without waiting for CPUC Staff response. A project is waived from further review at the post-installation stage by CPUC staff, but the PA is responsible for post-installation (IR) review. There will not be conditional approval.
Application ready to proceed with exception(s), as noted	<p>The PA must make revisions or changes as noted in CPUC Staff's review comments before signed agreement with customer. The PA will continue to upload application documents to the CMPA directory through the implementation and claims phases of the project. The PA may proceed to approve the project without waiting for CPUC Staff response. If CPUC Staff decides to perform IR review of a project, CPUC Staff will notify the PA. The scope will be limited to determine if the project was carried out consistent with the application and notes provided during pre-installation review and to obtain information pertaining to whether the eligibility criteria or metrics should be revised.</p> <p>Unless the scope of work presented in project application has changed at IR review, the project will not be reviewed again in the areas specified below. Scope change is defined by substantial changes include significant modifications to the proposed equipment type, size, quantity, configuration, the expansion of a project to include additional retrofits, or the splitting of a project into multiple phases. The following areas will not be reviewed again by CPUC Staff:</p> <ul style="list-style-type: none"> • Calculation Tool • Calculation Methodology • M&V Plan • Baseline • Eligibility • EUL/RUL • Measure Type • Program Influence
Application rejected.	<p>The application is rejected as submitted. The PA shall promptly inform the applicant as to the reasons why the project was rejected and the specific recommendations for the conditions under which the project would be approved. CPUC Staff shall provide the reasons for the rejection or request for modification, including each basis as to why the project is rejected, or modification is requested. In addition, CPUC Staff shall provide specific recommendations for the conditions under which the project would be approved.</p> <p>If any party to the project is unsatisfied with the Commission's directions for the project, a dispute resolution process may be initiated by that party. The Commission shall adopt rules for the conduct of the dispute resolution process. – Section 381.2 (g) (3) (F)</p>
Advisory.	The PA is not formally required to follow instructions or recommendations given in an Advisory review. However, issues found will affect ESPI scoring and may come up again in Ex-Post review.