STATE OF CALIFORNIA Edmund G. Brown Jr., Governor

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

Date: March 26, 2018

To: Pacific Gas and Electric (PG&E)

From: Peter Lai, CPUC
Cc: R.12-01-005 and R.13-11-005 Service Lists

Subject: Final 2017 Efficiency Savings and Performance Incentive (ESPI) Ex Ante Review Performance Scores

---

Table of Contents

I. Summary of 2017 ESPI Scores- Custom Projects and Workpapers

The scores[1] contained in this memo are final, and Pacific Gas and Electric Company (PG&E) shall use the total final ex ante review performance points from the table below together with the weighting[2] for each category to calculate the 2017 Efficiency Savings and Performance Incentive (ESPI) ex ante review component award. Breakdown of PG&E's 2017 ESPI score of 67.59/100 for workpapers and custom projects are shown below in Table 1. PG&E's 2017 total points improved over its 2016 total points of 59.78.

Table 1: 2017 ESPI Scoring for Workpapers and Custom Projects

PG&E 2017 ESPI Ex-Ante Review Performance Scores and Points		Workpapers				Custom			
Metric	Metric Area of Scoring	2017 Score	Metric Weight Factor	2017 Points	Max Points	2017 Score	Metric Weight Factor	2017 Points	Max Points
1	Timing and Timeliness of Submittals	5.00	10%	5.00	5	2.45	10%	2.45	5
2	Content, Completeness, and Quality of Submittals	2.81	30%	8.43	15	1.71	30%	5.13	15
3	Proactive Initiative of Collaboration	5.00	10%	5.00	5	4.00	10%	4.00	5
4	Due Diligence and Quality Assurance/Quality Control Effectiveness	3.13	25%	7.83	12.5	4.67	25%	11.68	12.5
5	Responsiveness to Needs for Process and Program Improvements	2.95	25%	7.38	12.5	4.28	25%	10.70	12.5
Total				**33.63**	**50**			**33.96**	**50**

The metric scoring area descriptions are expanded in Attachment A. The final category scores are explained in more detail below as well as in Attachments B through D to this memo. As required by the ESPI decision, the relative weighting of the custom versus deemed portion of the performance component of the ESPI will be published by Commission staff in June 2018 after reviewing the utilities' final 2017 savings claims to be filed on May 1, 2018.

The following sections of this memorandum provide a detailed description of the findings, including, areas of achievement, areas requiring improvement and scoring for both custom projects and workpapers.

II. Commission Staff Findings 2017 Ex Ante Activities

A. Custom Projects Review Overview

1. Summary of 2017 Achievements

PG&E's custom project scores have improved compared to last year by 1.65 points from 32.31 in 2016

[1] Pursuant to Decision (D).13-09-023, D.15-10-028 and D16-08-019, Commission staff and consultants completed the 2017 Efficiency Savings and Performance Incentive (ESPI) mechanism ex ante review performance scoring as prescribed in Table 3 of D.16-08-019. D.16-08-019 established a consolidation of categories of metrics on which the utilities are evaluated and further directed in Ordering Paragraph 19 that the ESPI scores "shall be weighted for the utility program administrators based on the proportion of deemed savings and custom measures in each utility's portfolio".

[2] D16-08-019 Ordering Paragraph 19 specifies that "Energy Savings Performance Incentive scores shall be weighted for the utility program administrators based on the proportion of deemed savings and custom measures in each utility's portfolio." Therefore the final score cannot be determined until the utilities have submitted and Commission staff has compiled their final 2017 savings claims and published for each utility the weights for the custom and deemed categories.

to 33.96 in 2017. PG&E continues to demonstrate efforts to improve its performance. Commission staff's observations include:

- The ongoing commitment of PG&E's management as evidenced by its instructions to responsible parties on the importance of improving the performance of PG&E's portfolio.
- PG&E staff continues to collaborate, hold productive discussions to clarify various Commission staff guidance.
- PG&E actively and constructively participated in the Track 2 Working Group (T2WG) activities. PG&E took a leading role in developing Task 1 and Task 4 documents based on input from Commission staff and stakeholders.
- PG&E has taken a leadership role in the development of Statewide Industry Standard Practice guidelines, a T2WG Task 5 activity.
- In 2016, PG&E was the first Program Administrator (PA) to implement an early project review process that is now being implemented by other PA's. PG&E continues to improve this document.
- In 2016, PG&E was the first PA to implement "Custom Project Rule Book". In 2017, PG&E expanded this document and shared it with other PAs.
- PG&E has provided Commission staff an extensive list of activities that demonstrate its commitment to improve its quality assurance and quality control (QA/QC) processes. Some of the efforts listed to improve QA/QC include training for technical reviewers, engineers, implementers and program managers, an updated post-installation review process, development of standardized calculation tools for HVAC and refrigeration measures, processes to improve communications with stakeholders and continued development of a Custom Project Rule book.
- Commission staff are aware that all four IOUs are collaborating to develop statewide standardized documentation and processes for custom projects. Commission staff applaud this effort and expect that it will result in improved statewide portfolio performance in the coming years.

2. Summary of Areas Requiring Improvement

Areas in need of improvement include similar concerns that Commission staff has highlighted in prior years:

- Systematic errors in a widely used statewide calculation tool.
- Inadequate calculation methodology and analysis.
- Insufficient measurement and verification plans.
- Incomplete documentation in project submittals.
- Lack of evidence of program influence in project documentation.

In some cases, the total number of action items[3] identified in a specific issue area may seem low even though that issue area remains a significant concern and requires much improved action by PG&E. For instance, as shown in Table 2, only a small percentage, 6%, of the overall issues are associated with the "Issues Related to Net Impacts"; however 9 out of the 25 dispositions issued had comment associated with these issues. This is a significant and will require attention from PG&E since as of January 1, 2018 all portfolio goals are based on net savings impacts.

[3] "Action items" are directives for corrective actions issued by Commission staff to the program administrators relative to the review of a particular custom project energy efficiency program application.

B. Deemed Workpapers Review Overview

1. Summary of 2017 Achievements

PG&E's workpapers scores have improved compared to last year by 6.16 points from 27.47 in 2016 to 33.63 in 2017. PG&E continues to demonstrate efforts to improve its performance. Commission Staff's observations include:

- PG&E proactively responded to the Phase 1 disposition for LED lighting including investing significant staff time to work with the ex ante review team to address the primary concerns of the Phase 1 disposition.
- PG&E is undertaking independent research in key areas to understand rapidly changing standard practice in response to discussions with Commission staff.
- The ongoing commitment of PG&E's management as evidenced by its instructions to responsible parties on the importance of improving their performance on custom projects.
- Commission staff are aware that all four IOUs are now collaborating to develop statewide standardized documentation and processes for several deemed measures / work papers. Commission staff applauds this effort and expect that it will result in improved Statewide portfolio performance in the coming years.

2. Summary of Areas of Improvement

The top areas of improvement include similar concerns that Commission staff have highlighted in prior years. Commission Staff's concerns are described in more detail below and include:

- Following methods and assumption used in Database of Energy Efficiency Resource (DEER) when developing new HVAC or building measures.
- Improving response time and quality of responses to Commission staff's preliminary reviews.
- Undertaking a due diligence review of workpapers developed by other PAs prior to adopting into the PG&E portfolio.
- Increase proactive work on standard practice investigation in workpapers not recently reviewed by Commission staff.

III. Discussion

A. Custom Projects Ex Ante Review

Custom project energy efficiency program applications are reviewed by Commission staff. The review findings and directions to the program administrators are presented in documents referred to as dispositions. In early 2016, Commission staff revised the custom project ex ante review disposition template to include a categorization of the actions that staff requires the utility to address for the project under review. Table 2 summarizes the 183 action items identified across 25 dispositions issued between January 1, 2017 and December 31, 2017. The detailed action items for each project are included in Attachment B1.

Commission staff acknowledges that the projects were not selected at random. Our selections drew upon the type of projects that had issues in the past or expected to find deficient for various reasons. We also selected projects to determine whether the utility has corrected issues from similar project types that Commission staff reviews identified in the past.

Table 2: Summary of Categorized Action Items for Custom Projects

Issue Area	Action Category	Quantity of Issues Reviewed	Percent of Total
Issues Related to Gross Savings Impacts	Analysis Assumptions	11	6.0%
	Calculation Method	19	10.4%
	Calculation Tool	53	29.0%
	M&V Plan	9	4.9%
	Revise to Match CPUC Savings Estimate	1	0.5%
	Subtotals	**93**	**50.8%**
Process, Policy, Program Rules	Baseline	4	2.2%
	CPUC Policy	8	4.4%
	Did Not Follow Previous CPUC Guidance	4	2.2%
	Eligibility	4	2.2%
	ER Preponderance of Evidence	1	0.5%
	EUL/RUL	5	2.7%
	Fuel Switching	0	0.0%
	Incentive Calculation	3	1.6%
	Maintenance	0	0.0%
	Measure Cost	1	0.5%
	Measure Type	2	1.1%
	PA Program Rules	3	1.6%
	Repair	0	0.0%
	Self-Generation	2	1.1%
	Subtotals	**37**	**20.2%**
Documentation Issues	Inadequate Response to Precious EAR	0	0.0%
	Missing Documents	8	4.4%
	Missing Required Information	25	13.7%
	Project Scope Unclear	0	0.0%
	Subtotals	**33**	**18.0%**
Issues Related to Net Impacts	NTG	3	1.6%
	Program Influence	8	4.4%
	Subtotals	**11**	**6.0%**
Other Issues		**9**	**4.9%**
	Grand Total	**183**	**100.0%**

1. Issues Related to Gross Savings Impacts

In 2017, more than 50% of issues identified (93 total actions) in custom project dispositions were related to gross savings impacts. Fourteen (14) of the twenty five (25) dispositions issued in 2017 had comments associated with these issues. In particular for CPUC Project ID numbers 0163 and 0164, the EnergyPro™ analysis tool used for many Savings by Design projects was flawed. As highlighted in the 2016 ESPI memorandum, calculation methodologies and M&V plans continue to be an area of weakness that has a significant impact on the reliability of the ex ante savings estimates.

It became evident that PG&E and the Statewide team for this program had not vetted this tool before using it in this program. When accepting analysis tools for use in estimating savings for custom projects more care must be taken to review the results provided by the tool and not rely on vendors or other agency's reviews to ensure the accuracy of the tool under the range of uses expected in the PA programs. Not providing a complete and concise description of a calculation methodology and the inability to provide an accurate savings estimate remains a weakness for many complex projects. PG&E must undertake a long-term and ongoing effort to increase the technical skills of its project developers and Quality Assurance/Quality Control (QA/QC) reviewers to ensure that the ex ante savings estimates are accurate and reliable. In 2017 the following CPUC project ID numbers had issues related to gross savings impacts: X363, X488, X525, 0021, 0044, 0046, 0123, 138, 141, 145, 0151, 0157, 0163, and 0180. Attachment B1 provides a detailed description of the issues identified for each project.

2. Process, Policy, Program Rules

In 2017, approximately 20% of issues identified (37 total actions) in custom project dispositions were related to Process, Policy, or Program Rules. Twenty one (21) of the twenty five (25) dispositions issued in 2017 had comments associated with these issues. The actions were the result of a wide variety of issues ranging from non-compliance with Commission policy, to not following PA program rules, to incorrect measure type designation. Designation of the correct measure effective useful life (EUL) and measure eligibility issues were also identified for several projects. In 2017 the following CPUC project ID numbers had issues related to Process, Policy, or Program Rules: X363, X447, X525, 0020, 0021, 0022, 0044, 0046, 0065, 0066, 0067, 0068, 0112, 145, 0151, 0157, 0163, 0164, 0174, and 0180. Attachment B1 provides a detailed description of the issues identified for each project.

3. Documentation Issues

In 2017, 18% of issues identified (33 total actions) in custom project dispositions were related to incomplete or insufficient project documentation. Ten (10) of the twenty five (25) dispositions issued in 2017 had comments associated with these issues. PG&E basically did not provide the required information in documentation package submittals. Commission staff created a "Ready for Review" checklist in 2015, that PG&E has been directed to complete when submitting project documentation packages for CPUC staff selected projects. In some instances the checklist appears to be used on a "pro forma" basis, and although items are checked off, they are not actually provided. PG&E needs to pay closer attention to the details when preparing project documentation packages. Missing information results in data requests and creates delays in completing project reviews. In 2017 the CPUC project ID numbers that had documentation issues include: 0021, 0022, 0044, 0123, 138, 141, 0145, 0151, 0174, and 0180. Attachment B1 provides a detailed description of the issues identified for each project.

4. Issues Related to Net Impacts

In 2017, 6 % of issues identified (11 total actions) in custom project dispositions were related to net savings impacts. In 2017, nine (9) of the twenty five (25) dispositions issued had comments associated with these issues. The actions were primarily associated with a lack of documentation supporting program influence. As noted in the 2016 ESPI memo, issues related to program influence directly affect the scoring on ESPI Metrics 2, 4, and 5. PG&E should make a more substantial effort to provide documentation that demonstrates what the customer was planning to do prior to the energy efficiency program intervened in the project. The documentation needs to demonstrate how the program enabled the customer to adopt an alternative action that improves final efficiency and provides incremental savings benefits to ratepayers over what the customer was otherwise planning to implement.

Net Impacts should be based on real and convincing evidence of program influence included in the documentation submitted for every project. The evidence of program influence should outweigh evidence that suggests the customer would have chosen the efficient alternative absent the program information or financial support. It is important that PG&E make significant progress in reducing free ridership since as of January 1, 2018 all portfolio goals are based on net savings impacts. In 2017 the following CPUC project ID numbers had issues related to net savings impacts: X488, X525, 011, 138, 141, 145, 0151, 0157, and 0174. Attachment B1 provides a detailed description of the issues identified for each project.

5. Contracting issue- Third-Party Implementer Contract Structure:

The 2016 ESPI memorandum noted several issues with third party contracts including some projects that seemed to have unexpectedly large performance payment rates, a lack of meaningful third-party performance payment caps, and a contract structure based solely on first year claimed gross savings impacts with no consideration for net impacts. Pursuit of large performance payments can create an environment in which implementers maximize the ex ante savings estimates at the expense of compliance with Commission policy, appropriate and accurate assessment of program influence, measure eligibility or classification and savings impacts. The upcoming third party contract solicitation must address these issues.

6. Potential Reviewer-Program Implementer Conflicts of Interest Issue:

2015 and 2016 ESPI review memoranda expressed concern that some third-party implementer firms also perform technical review of program applications. Commission staff believes, and has expressed this several times to PG&E staff, as well as to other PA staff, in meetings that a conflict of interest exists for several of PG&E's technical review contractors that are also third-party implementers. While Commission staff understand that implementers do not in most cases review projects which their firm is also implementing, there is an inherent conflict related to being on the both the enforcement and user side of rules and policies that has contributed to the lack of progress on many of the issues discussed above. PG&E has not informed Commission staff what actions have or will been taken to address and mitigate this problem.

B. Deemed Workpapers Ex Ante Review

PG&E's deemed program continued at a similar pace to previous years although there were several staff changes in 2017. The deemed ex ante review included several phase 1 workpapers which were included in dispositions published on March 1st, 2017. Additionally, a handful of phase 2 workpaper were reviewed. The comments below are organized by the 5 metric areas of scoring. The detailed scores for each metric of the 14 detailed workpaper reviews and 7 preliminary reviews are included in Attachment CAttachment C: Workpaper Scores and Feedback.

1. Timeliness

In 2017, PG&E generally made timely submittals of lists, inventories, plans, studies, and workpaper disposition responses. For example, PG&E followed direction of the Phase 1 disposition for LED Screw-in Lamps and submitted revised workpapers in a timely fashion. Furthermore, PG&E collaborated with Southern California Edison (SCE), and the Commission staff review team to identify differences in measure definitions between PG&E and SCE workpapers so that measure and cost data

for each workpaper were properly represented in the ex ante database.

However, improvements should be made to provide more timely responses for all Phase 1 disposed workpapers. For example, PG&E's response to the Phase 1 disposition for Residential Variable Speed Swimming Pool Pumps was not submitted until December 2017. While PG&E did update their workpaper to be retroactive to January 1, 2017, the submission was not timely. Commission staff recognizes that part of this issue rests with PG&E's requirement to adopt statewide values which may have been delayed by other parties.

2. Content, Completeness, and Quality of Submissions

For some workpapers, PG&E invested significant staff time to work with the ex ante review team and Commission staff to address the primary concerns of the Phase 1 disposition. For example, PG&E worked with Commission staff to develop an approach for LED A-lamp savings that is tied to the overall lamp performance so that higher performing lamps having greater deemed savings. As a result, PG&E and Commission staff were able to develop an approach that became the accepted statewide savings method for 2017.

in other instances, the PG&E workpaper team has not consistently addressed technical concerns within Commission staff workpaper reviews. For example, PG&E did not fully respond to the baseline concerns in the High Performance Circulator Pump workpaper review. At this time, PG&E has still not addressed the concerns of the preliminary review regarding the typical pump models used in residential installations and the workpaper review team is concerned that savings are overestimated.

The PG&E workpaper team should improve the communication with Commission staff regarding the scope of each workpaper submission. For example, PG&E uploaded notifications to the Workpaper Archive site (WPA) indicating the expiration for several workpapers, then at the end of 2017 when claims needed to be filed for those workpapers, PG&E explained that the notification was intended to be a workpaper revision submission rather than a workpaper expiration.

3. Proactive Initiative of Collaboration

We applaud PG&E staff efforts to seek out information, input and clarifications on its deemed measure workpaper development activities. Seeking early input or comments on proposed methodology during workpaper development can reduce the overall review time by reducing the likelihood of review issues after submission or reduce the severity of such issues. For example, PG&E submitted a proposal to Commission staff to revise normal replacement (NR) baselines for exterior and parking garage lighting to include a large fraction of LEDs as standard practice. In its proposal, PG&E noted that an ISP study was in the planning stages and that the proposed baselines were developed in consideration of readily available market data publications. The workpaper review team is currently reviewing the final workpaper, but recognizes PG&E's efforts to anticipate the rapidly changing exterior lighting market as well as provide an opportunity for advanced collaboration with Commission staff and the workpaper review team.

However, there are also cases where early input was given but not fully followed or changes to important details of previously submitted plans were not communicated. For example, PG&E submitted plans and had several discussions with the workpaper review team on a project designed to develop savings estimates and add equipment measures/tiers for packaged HVAC equipment incorporating

multi-speed fan and compressors providing EER and IEER values that exceed those provided in DEER. In this case, the initial workpaper as submitted reveals that the development did not undertake the planned equipment performance characterization efforts or utilize required DEER energy savings estimation modeling assumptions. PG&E should ensure that when a workplan cannot be followed for any reason, the problem is discussed with Commission staff and an alternate approach is approved or agreed to before the project continues and a product delivered.

4. PA's Due Diligence, Quality Assurance, and Quality Control

PG&E has been carrying out independent research regarding the energy savings of smart thermostats and they presented their research results during 2017. Unfortunately, this research has not been used in the development of statewide savings values due to staff approval of SCE's workpaper that follows a different methodology developed by a primary vendor of smart thermostats. Nevertheless, Commission staff acknowledges PG&E's efforts to carry out independent research on these technologies.

PG&E needs to ensure appropriate due diligence has been applied prior to its adoption of other PA's workpapers. For example, PG&E's use of the SCE workpaper for Process Fan VFD up to 75 HP that was waived from review indicates a general lack of internal quality control. PG&E originally adopted the SCE workpaper in 2015. Prior to adopting the workpaper, PG&E should have performed their own due diligence to confirm both an appropriate market and appropriate savings calculations for this measure. In this case, in a later Commission staff review the workpaper was identified as so deficient that the measure was required to be expired.

PG&E should ensure appropriate internal QA/QC process have been completed prior to submitting files to the Commission staff's Workpaper Project Archive (www.deeresources.info). It appears to Commission staff that submissions are made to the Commission staff's Workpaper Project Archive (deeresources.info) prior to the files going through all of PG&E's internal checks. For example, in 2017 PG&E re-submitted workpaper corrections (i.e. for PGECODHW101r6) a few days after a previous submission.

5. PA's Responsiveness

Commission staff and the workpaper review team applaud PG&E's efforts to correctly and effectively reflect the on-going market transformation in screw-in LED lighting. In particular, in consideration of rapid adoption of CFLs as well as removal of CFLs from the 2018 savings goals, PG&E has proactively removed all CFLs from their deemed program offerings as of January 1,2018. We encourage PG&E to take a leadership role to focus on inter-PA collaboration to improving timeliness and consistency of offerings updates across California to reflect market changes.

PG&E needs to demonstrate proactive portfolio adjustments that reflect recognized standard practice changes across all segments of the portfolio in a similar manner as has been done for screw-in lighting. For example, PG&E's work on other lighting technologies such as the LED High-Bay and Low-Bay Fixtures does not reflect previous Commission staff direction or PG&E staff's own expressed perspective demonstrated during the collaboration on the 2017 Phase 1 LED disposition and portfolio retirement of CFLs. The workpaper review team noted a lack of consideration for the rapidly shifting standard practice baseline to LEDs. The workpaper also did not consider the wide variation in available LED fixture performance which the workpaper review team believes should result in greater estimated savings for higher performance fixtures. PG&E has embarked on a standard practice study, but this will

likely not be completed until the 3rd quarter of 2018.

IV. The Scoring Methodology

The 2017 ex ante review performance score was developed using a detailed scoring by metric for each directly reviewed work product (i.e., workpaper and custom project), as well as a scoring of the utility's internal due diligence processes, QA/QC procedures and methods as well as program implementation enhancements to support improved ex ante values.

Attachment A summarizes the Metrics adopted in D.16-08-019 as well as the Commission staff developed scores and points for 2017. D.16-08-019 also directed that the custom and workpaper scoring be weighted together into a final score based of the PA total claims for custom and deemed activities, respectively. The weights for custom and deemed scores will be developed and published by Commission staff in June 2018 based upon the PAs final 2017 savings claims to be filed on May 1, 2018.

In accordance with D.16-08-019, the IOUs' ex ante activities are assessed against a set of five metrics on a rating scale of 1 to 5. Once activities are assessed, the ratings for each are converted onto this scale, where 1 is the lowest score assigned and 5 is the highest score assigned. A maximum score on all metrics for both workpapers and custom projects will yield 100 points whereas a minimum score on all metrics would yield 20 points. The 1-5 rating scale is distinguished as follows:

1. Consistent underperformer in meeting the basic expectations;
2. Makes a minimal effort to meet Commission expectations but needs dramatic improvement;
3. Makes effort to meet Commission expectations, however improvement is required;
4. Sometimes exceeds Commission expectations while some improvement is expected; and
5. Consistently exceeds Commission expectations.

As with the 2016 ex ante review performance scores, the final scores were "built-up" from a metric-by-metric assessment of each reviewed work product. It is Commission staff's expectation that this detailed scoring approach, along with the detailed qualitative workpaper and custom project level feedback, is consistent with the direction provided in D.16-08-019. We believe this scoring approach provides specific guidance to the utilities on how to improve their ex ante due diligence and scores moving forward.

A "Direct Work Product Review" portion of each metric score was developed based upon the individual scoring of dispositions issued for custom project or workpapers. Each reviewed utility work product was first determined to have components either applicable or not applicable to a metric[4]. If not applicable to a metric that item was not used in the final score development for the metric.

[4] For example, workpapers and custom projects which do not involve measures which in some way are expected to utilize DEER values, assumptions or methods, in the development of new kWh, kW and therm savings values would not receive scoring for metric 9 ("Professional care and expertise in the use and application of adopted DEER values and DEER methods"). Another example would be a minor workpaper or small custom project may not receive a score for metric 4 ("Efforts to bring high profile, high impact, or existing (with data gaps) projects and/or measures to Commission staff in the formative stage for collaboration or input ")

For workpapers, if an item was determined to have activity applicable to a metric, the item was then assigned a qualitative rating as to the level of due diligence applied to the item as either deficient (or "-"), apparent but minimal (or "yes"), or superior (or "+"). Each of the ratings were then assigned a score percentage level of 0%, 50% and 100%, respectively. The assigned percentage scores were averaged across all the reviewed items. Individual workpaper level disposition scoring as well as related workpaper activities is provided in Attachment C.

For custom projects, each metric was directly scored using the rating scale described above in accordance with the maximum points allocated to the metric and the applicability of the metric to the work product reviewed by Commission staff. A project by project summary of the custom project scoring is included in Attachment B2.

The above process resulted in custom and workpaper work product review scores. Next, utility-specific review process "Review Process Score Enhancements" were developed for each applicable metric based on observed policy and technical review or program implementation processes and procedures developed and under implementation in 2017 that are expected to positively impact future selected project reviews. Commission staff believes it is important to provide ESPI points for positive due diligence developments as recognition of the effort and continue encouragement even before a change in project-level results is observed.

In the custom scoring process Commission staff added points as "Enhancements" in the area of Policy/Technical QA/QC for Metrics 3, 4 and 5 to reflect PG&E staff's positive efforts in these metric areas as discussed earlier. Those initiatives include standard practice and related baseline development and assessment work, as well as policy compliance and early project development stage review procedures and processes, active training of staff and contractors, Statewide leadership in development of a custom rule book, participation in the Track 2 Working Group, and coordination activities with the other IOUs related to Statewide standardization of custom project processes and procedures. Although these efforts have not yet reflected themselves into the dispositions scores Commission staff believes recognition of the efforts of PG&E technical and policy review staff is warranted. PG&E staff has described to Commission staff other planned additions to their early review activities to address recurring issues identified in previous ESPI memos and earlier in this memo. Commission staff believes these activities offer promise to improve the overall PG&E ex ante performance, however, Commission staff must defer review of those activities until later after implementation to assess if they warrant further augmentation of the PG&E ex ante performance scoring for 2018 and beyond.

Commission staff has observed minimal efforts in the program implementation area and thus a "Review Process Score Enhancements" was assigned only in the collaboration Metric 3 as an "Implementation Increase". The absence of such evidence of improvement on the program implementation side is disappointing and Commission staff urges PG&E staff to take such actions as outlined earlier so as to allow further improvement in performance and scoring during 2018.

Workpaper scores also include "Review Process Score Enhancements." Process issues represent critical deemed measure development topics where Commission staff believes improvement is needed or improvement has occurred, but those activities are not necessarily reflected in the areas of direct review.

To produce final scores, the individual metric scores for the two workpaper contributing areas were added together, using a 50% weight for the process issues score. The 50% weight given to the process review has the effect of being a "score enhancement" or increase to the direct review score.

Furthermore, within each contributing area (direct and process review areas), Commission staff also assigned weights for individual items as a way to reflect greater importance of different individual review items. The separate process scoring provides an avenue for assessing overall QA/QC processes and procedures put into place by PG&E.[5]

Attachment D contains custom and workpaper summary tables showing the components and total scores and points for each metric in each of the two component areas of scoring described above.

Questions or comments about the feedback or final scores should be directed to Peter Lai (peter.lai@cpuc.ca.gov). Note that pursuant to D.13-09-023, Commission staff scheduled April 23, 2018 with PG&E staff to discuss this memorandum and its final scores.

[5] The guidance on scoring approach provided in D.13-09-023, at 74, provides that when only a small number of submissions are available for scoring and the submissions have varying impacts on the portfolio overall, that appropriate weighting should be allied to the submission and observed performance that should carry across multiple metrics. "Low scores for metrics that assess specific and important quantities (e.g., if the utility only uploads a small percentage of custom projects and receives a low score for Metric 1a), will have a proportional impact on the total score the utility could receive for later metrics that measure the quality of custom project submittals." "For example, doing an outstanding job on a large number of very low-impact, standardized projects will not make up for doing a poor job on a few projects that represent a major portion of portfolio dollars."

Attachment A: Final ESPI Ex Ante Review Scores

Metric		Workpapers				Custom			
		Max Points	Max Percent of Total Points	2017 Score	2017 Points	Max Points	Max Percent of Total Points	2017 Score	2017 Points
1	**Timing and Timeliness of Submittals**	5	10%	5.00	5.00	5	10%	2.45	2.45
	Timely submittals: all lists, inventories, plans, studies, workpapers and project/measure documentation; timing and advanced announcement of submittals (spreading out submission when available rather than holding and turning in large batches); timely follow-up PA responses to review disposition action items including intention to submit/re-submit with proposed schedule.								
2	**Content, Completeness, and Quality of Submittals**	15	30%	2.81	8.43	15	30%	1.71	5.13
	Completeness, appropriateness, comprehensiveness, accuracy, and clarity of submittals. Submittal adherence to Commission policies, Decisions, and prior Commission staff dispositions and/or guidance. Do the submittals include all materials required to support the submittal proposed values, methods and results. Is the project or measure clearly articulated? Are proposed or utilized methods clearly explained including step-by-step method or procedure descriptions. Will the proposed or utilized approach provide accurate results. Are all relevant related or past activities and submittals appropriately noted or disclosed, analyzed or discussed. Are the pros/cons of alternate possible approaches or conclusions discussed to support that the chosen one is most appropriate.								
3	**Proactive Initiative of Collaboration**	5	10%	5.00	5.00	5	10%	4.00	4.00
	PA efforts to bring either measures, projects, studies, questions, and/or savings calculation methods and tools to Commission staff for discussion in the early formative stages, before CPUC staff review selection. In the case of tools, before widespread use in the programs. Commission staff expects collaboration among the PAs to develop common or coordinated submissions and for the PAs to undertake joint or coordinated planning activities and study work. The PAs are expected to engage with CPUC staff in early discussions on unique or high profile, high impact measures or projects before program or customer commitments are								

	made. The PAs are expected to engage with CPUC staff on planning and execution of studies that support proposed offerings, tools, or determination of proposed baselines or other programmatic assumption that can impact ex ante values to be utilized.								
4	**Program Administrator's Due Diligence and Quality Assurance/Quality Control Effectiveness** Commission staff expects the PA to have effective Quality Control (QC) and Quality Assurance (QA) processes for their programs and measures. The PAs are expected to have a pro-active approach to reviewing existing measure and project assumptions, methods and values and updating those to take into account changes in market offerings, standard practice, updates to DEER methods and assumptions, changes to codes, standards and regulations, and other factors that warrant such updates. The depth and correctness of the PA's technical review of their ex ante parameters and values, for both Core, Local Government and Third Party programs, are included under this metric. The depth and correctness of the PA's technical review of their own staff and subcontractor work related to supporting deemed and custom measure and project submissions are included in this metric. Evidence of review activities is expected to be visible in submissions so that Commission staff can evaluate the effectiveness of the PA internal QA/QC processes.	12.5	25%	3.13	7.83	12.5	25%	4.67	11.68
5	**Program Administrator's Responsiveness to Needs for Process and Program Improvements** This metric reflects the PAs ongoing efforts to improve their internal processes and procedures resulting in increased ex post evaluated gross and net savings impacts. Commission staff looks not only to the PA's internal QC/QA processes, but also whether individual programs and their supporting activities incorporate and comply with CPUC policies and prior Commission staff disposition guidance in their program rules, policies, procedures and reporting. This includes changes to program rules, offerings and internal operations and processes required to improve overall review and evaluation results. A particularly important area for focus is the improvement of net portfolio performance via the removal of measures and or participation with low program attribution (NTG).	12.5	25%	2.95	7.38	12.5	25%	4.28	10.70
Total		**50**	**100%**		**33.63**	**50**	**100%**		**33.96**

Attachment B1 Custom Project Action Items and Notes

Ref	Action Number:	Summary of CPUC Staff Required Action by the PA:	Action Category
X363-2	**1**	In the "a0b70000008HMx1P1 - EEM1 Project History" document, the PA states that it was the customer's decision to install guestroom thermostats that did not meet the original assumptions upon which CPUC Staff had based the Phase I EAR conditional approval issued in early July 2013. The document states that the "...model selected had an advanced 'fan cycling' algorithm, but no occupancy sensor. " At that time, CPUC Staff considered the measure ineligible and flagged the project measure closed within its review tracking. In a CMPA message posted on August 11, 2014 CPUC Staff suggested to the PA that their "internal reviewers should take over and inform staff when PG&E has posted a complete IR package." By late 2014, the customer decided to replace the "fan cycling" thermostats that were installed in 2013 with occupancy-controlled thermostats as was originally proposed. The PA did not inform CPUC Staff of the plan to replace the fan-cycling thermostats. The replacements took place in early 2015 when the 2013 Title 24 code was already in effect. Specifically, Section 120.2(e) 4 required that "*...Hotel and motel guest rooms shall have captive card key controls, occupancy sensing controls, or automatic controls such that, no longer than 30 minutes after the guest room has been vacated, setpoints are setup at least +5°F (+3°C) in cooling mode and set-down at least -5°F (-3°C) in heating mode.*" In the original PA ex ante analysis, the CASE study supporting the code requirements were used and cited. Hence, the requirements were not unknown to the PA. The PA's "Post Installation Review" document indicates that when a guestroom is not occupied, the thermostat setpoints are setback between 2 to 7 °F. CPUC Staff finds that the implemented controls may not fully satisfy the Title 24 requirements in both temperature setbacks and timing. The submitted PA post-implementation M&V data does not disaggregate the timing for the setbacks to take effect once a room is unoccupied. The submitted post-M&V data from the Guestroom Controls EMS has been rolled up into a single 24 hour profile that does not allow for close examination of the raw data. CPUC Staff requires that the PA revise the claimed savings for Measure 1, Guestroom Controls, to use the 2013 Title 24 requirements as the measure's technical baseline, claim only the level of impacts that exceed the code requirements, remove the like-for-like replacements in the allowed costs, adjust the financial incentives, and resubmit the savings analysis.	Baseline
X363-2	**2**	CPUC Staff finds that the occupancy and rental rate assumptions used in the Measure 2, VFD additions and new service water circulating pumps, analysis are inconsistent with the analysis used for Measure 1. The analysis ignores possible room rental differences between the low and high floors, seasonal room rental differences, primarily with the higher summer rental rates typical of Bay Area lodging. CPUC Staff believes that the differences in room rentals and occupancy may significantly diminish the peak demand reduction estimate and recommends that the PA revise	Analysis assumptions

		the analysis using the rental and room occupancy data from Measure 1 to improve the savings estimates. In addition, the peak demand reduction calculation is based on data that reflects a winter month and not the July 8-10 DEER peak demand period. CPUC Staff requires that the PA revise the impact calculations, adjust the financial incentives, and re-submit the analysis.	
X363-2	**3**	CPUC Staff requires that the PA revise the Measure 1 analysis to use hourly CZ2010 weather data for CZ03 in lieu of average daily TMY3 weather data to normalize the annual energy savings and use actual monitoring observations that reflect the July peak period in the baseline peak demand calculations and not the November data when the hotel's overall room rental rates are lower. CPUC Staff finds that close to 97% of the claimed annual electricity savings for the occupancy based guestroom controls are due to reduced chilled water usage. However, the PA's methodology assumes a constant annual chiller performance value (kW/ton) that is close to 89% of the chiller full load rating. The original documentation for this project indicated that the existing 33 year old chillers were equipped with VSD controls. Hence, CPUC Staff does not approve the PA's assumed annual performance value for the chilled water plant. When CPUC Staff examined the prior baseline eQuest models for this measure, the annual average part-load was close to 40% and close to 72% for the DEER peak period. If the default DOE-2 VSD performance curves were applied to the PA submitted methodology, annual electricity savings would be decreased by about 45% and peak demand reduction decreased by about 48%. CPUC Staff requires the PA to revise their calculation methodology to account for the actual VSD chillers part-load performance and support the performance data with EMS data trends for the chiller plant.	Calculation method
X363-2	**4**	CPUC Staff considers the EUL for occupancy sensors, 8 years, the measure EUL that best corresponds to the Measure 1 Guestroom Controls and considers the thermostats the underlying host equipment with a default RUL value of 3.7 years. Hence, the PA shall revise the EUL for Measure 1 to 3.7 years.	EUL/RUL
X447-3	**1**	With this final disposition, CPUC Staff corrects the underlying host equipment and applies the default of one third of EUL for the RUL limits as follows: Measure 1, Optimized Chiller Sequencing, EUL: 6.7 years (DEER RUL for HVAC Chillers). Measure 2, Chilled Water Reset, EUL: 5 years (DEER RUL for HVAC EMS).	EUL/RUL
X488-4	**1**	In sheet "Base Parameters" of workbook "NC0129706 PODs I II & III CHW Calcs POST rev1.xlsx" baseline chiller capacity has safety factor applied twice: once in cell B2 and a second time in cell B23. The PA shall remove the safety factor from both locations and remove it from the final claimed impacts and revise the impacts accordingly.	Calculation method
X488-4	**2**	In sheet "Baseline Chiller" of workbook "NC0129706 PODs I II & III CHW Calcs POST rev1.xlsx" two chillers are running at all times, even though the load is less than the capacity of one chiller. Also, only one condenser pump would run if only one chiller is running. Chilled water pump flow relationship is relative to full system flow, since that pump serves the entire system, even when only one chiller is operating. If this not reflective of an optimized operating sequence, i.e., keep the chillers near their optimal efficiency point of their performance curve and the loads equally shared, then the PA shall revise the assumptions to reflect a more appropriate chiller sequence of operations where only one chiller is loaded	Analysis assumptions

		until load nearly exceeds its capacity.	
X488-4	**3**	In sheet "FFU Specs" of the workbooks"NC0129706 POD XXX FFU Calcs POST rev 1.xlsx" and "NC0129706 POD XXX FFU Calcs POST full load.xlsx", the total applicable air flow and horsepower is now calculated to include additional units that were not included in the previous version of the workbooks. This leads to an inconsistency between design load and design capacity, which needs to be explained.	Analysis assumptions
X488-4	**4**	CPUC Staff did not look into the program influence during the initial stages of this project. However, CPUC Staff noted in both previous 2014 dispositions issued on the project that a NTG screening should be undertaken. PG&E has not addressed that recommendation. It this time CPUC staff finds insufficient credible evidence of program influence and further that this customer's standard data center design practice had already superseded the assumptions of the PA baseline document and Title 24 requirements. CPUC Staff finds that this customer's data center practices are more in keeping with the practices reflected by other major customers with global reach and data centers that have a global customer base. Therefore, the narrow PA baseline study is not applicable to this customer class. The CPUC Staff concludes that the measures incented through this application were already standard practice among these customers. Hence, CPUC Staff requires that the PA set the NTGR for this project to zero.	NTG
X525-2	**1**	CPUC Staff have extensively reviewed this project. CPUC Staff have participated in several conference calls on the project with PG&E staff, and the 3P implementer staff as well on two conference calls including the customer 08/03/2015 and 11/03/2015. A detailed discussion of the issues with this project is provided in the document titled "CPUC Staff Detailed Assessment 1481-08 (X525) Automotive Ventilation 2016-10-10" (uploaded separately). CPUC Staff have concluded that there is little evidence of program influence on the customer's decision making and therefore require, per Commission Decision 12-05-015 that this project be considered ineligible for a customer incentive or program savings claims. If PG&E proceeds to claim the savings impacts for this project, the ex post Evaluation Team will be directed by CPUC Staff to assign a NTGR value of 0% for this project given that little to no evidence of program influence has been provided in the documentation reviewed by CPUC Staff or in the course of two customer interviews which CPUC Staff participated in. PG&E must revise the documentation for this project and the net to gross must be set to zero.	NTG
X525-2	**2**	CPUC Staff believe that there are no claimable gross savings impacts for this project except possibly those associated with the emissions abatement system. In addition to the emissions abatement equipment, the PCIP Report claims energy savings from other components such as the paint spray nozzles and the low volume dipping tanks. Robotics and other technical features of the project appear to be standard practice. There has been no ISP established for any of the other components. An ISP study would be required before savings can be claimed from these elements. However CPUC staff finds no evidence that the customer considered other options of lower performance or that such solutions would meet the customer requirements so absent that evidence would not approve a lower performing baseline system for this project. CPUC Staff find that PG&E's proposed gross impacts baseline using the existing paint shop and its older generation technology is unacceptable.	Baseline

		In order for the proposed emission control system to be considered in a gross saving estimation the baseline system must be a current technology and current efficiency wet system design. The most plausible gross savings baseline is the comparison of the two dry scrubber systems which the customer actually evaluated. One dry system option was noted to use significant amounts of compressed air compared to the selected system. If PG&E wishes to continue to pursue a gross impacts claim for this project using a wet scrubber system, CPUC Staff requires that PG&E research cost (capital and operating), supply and regulatory implications of the greatly increased water and natural gas consumption and as well as sludge disposal of the wet scrubber system being feasible from a company policy and cost perspective at the 4-times production level. Based upon its interaction with the customer, Commission staff does not believe this was a viable choice in the final decision process. For the two dry scrubber systems, PG&E must establish that the selected option is the higher cost, higher efficiency option.	
X525-2		PG&E must present evidence that any baseline that is used in the analysis is the least cost option including incremental capital costs and first year operating costs, including energy, water, and direct labor. PG&E must revise and resubmit the project documentation if it wishes to pursue a gross savings claim for this project.	Baseline
X525-2	**3**	If PG&E wishes to continue to pursue a gross impacts claim for this project, gross savings calculations must be revised to reflect the ISP baseline of each equipment component and its expected operation in the North Paint Shop under the new design. The current savings estimates use the pre-project South Paint Shop operating parameters as the baseline which is not acceptable. If PG&E wishes to continue to pursue a gross impacts claim for this project, CPUC Staff will provide more input on savings calculation methodologies.	Calculation method
X525-2	**4**	PG&E reported to CPUC Staff that the 3P implementer has been paid a commitment performance payment of $841,167. If PG&E withdraws this project the 3P implementer performance payment must be refunded, and PG&E must provide evidence that the payment has been refunded.	PA program rules
0022-1	**1**	CPUC Staff does not agree with the PA to set the Measure 3 EUL value to 10 years to reflect the measure EUL value of the DEER EUL ID HVAC-Reset. The EUL value for any measure classified as REA shall be the lesser of either the measure EUL or the RUL of the underlying host equipment using the default DEER one third of EUL method. CPUC Staff does agree that the EUL values should be revised to 5 years to reflect the default DEER RUL value for the underlying AHU equipment (DEER EUL ID HVAC-VAVbox).	EUL/RUL
0022-1	**2**	The PA did not submit a revised summary of the approved impacts, costs, and estimated financial incentives for the project. CPUC Staff has summarized the expected levels above. CPUC Staff requires the PA to submit a revised Technical Review that clearly summarizes the approved pre-implementation ex ante impacts, measure costs, and estimated financial incentives.	Missing required information
0022-1	**1**	In the RCx Review Addendum document submitted as part of the PA response to the first disposition, the PA reviewer continues to claim that Measure 1 is eligible. He fails to recognize that the customer's building facilities underwent either major renovation or new construction work just prior to their occupancy in early 2013 as indicated in the customer letter to PG&E dated October 7, 2013 for Buildings D and E, as well as construction dates summarized in Table 3-1 of the Final RCx Investigation Report indicating that major construction work was completed in in 2012 for Buildings A and B, and in 2013 for Buildings C, D, E, and F. Hence, the facilities had to satisfy the 2008 Title 24 code requirements	Eligibility

		including mandatory non-occupied time period HVAC equipment shutdown and setbacks. In addition, the customer indicated in their letter to the PA, concerning the completion of new construction under application NCO119687, that in lieu of implementing unoccupied air flow setbacks in the labs and using two position fume hood exhaust valves, they instead chose to incorporate night set back control for the evening hours in the labs and offices. The PA needs to better review and correct their reviewer's statements and improve their overall measure eligibility analysis.	
0020-1	**1**	The hourly net electrical grid impact analysis workbook (2K1500038033 - Co-Gen Impact Evaluation) uses data analysis that was developed by Lincus, Inc. for the PA (XXXX Non-IOU Fuel Impact Study Final 05042016) to determine the maximum total potential savings possible for all possible energy efficiency (EE) projects combined at this campus. The submitted savings to grid purchases comparison incorporated only this project's impacts. CPUC Staff finds that the overall cumulative impacts of all EE projects for the campus, including the impacts for this proposed project, should be reflected in the hourly net electrical grid impact analysis. CPUC Staff expects the PA to correct the hourly net electrical grid impact analysis for this project to reflect the overall cumulative impacts of this and all prior EE projects claimed for this campus when the final savings are claimed.	Self generation
0020-2	**2**	CPUC Staff finds that the PA's MBCx program continues to lack any in-depth pre- and post- technical reviews that remove ineligible measures (HVAC and Lighting Systems shut-offs during unoccupied time periods are mandated under Title 24, repair and replacement of leaking valves, etc.) and properly scrutinizes claimed costs. The PA did not submit a technical review, hence, CPUC Staff cannot discern the PA's due diligence in these two areas for MBCx projects. Both the CPUC Ex Ante Review Staff and the Ex Post Impact Evaluation teams have identified these issues to the PA in the past and we have not seen any significant PA action to address the issues. CPUC Staff plans to address issues with the MBCx programs in a statewide manner.	CPUC Policy
0151-1	**1**	CPUC Staff finds that the PA did not coordinate this project with SCG. CPUC Staff finds that the PG&E and SCG proposed projects are one in the same and both PA's must approach and treat the project in the same manner. CPUC Staff requires that the PAs coordinate and adopt a single proposed project scope, analysis approach, and baseline. For example, the operation of the current system is not fully explained and it is uncertain whether processing from all three cow water tanks is simultaneous. For the proposed system, PG&E assumes that a single UV light system would be installed with three UV lamp sources. The partial P&ID drawing provided by SCG indicates two separate UV light pasteurization lines, piped in parallel, with a single UV lamp source in each. However, both PAs submitted documents that indicated that one UV system would be a spare. SCG approaches the project as a fuel switching, NR measure type, whereas PG&E treats it as an NR measure type with a lower efficiency UV light system as the ISP baseline. Note that the PG&E technical review indicates that heat based pasteurization is considered ISP for milk plants, hence, the UV system ISP conclusion contradicts the technical review. The PG&E baseline used in the IMC and in the savings calculations are not in alignment: one assumes a new heat based pasteurization system and the other an unspecified UV system (note that the savings calculations just uses the proposed UV system total power demand and not a ΔkW as expected for a Normal Replacement).	Analysis assumptions
0151-1	**2**	CPUC Staff is concerned that this project exhibits no program influence other than the offer of a financial incentives to help the customer meet their internal simple payback threshold of three years. The submitted documentation indicates that the customer requested that the PA visit on	Program influence

		April 4, 2016 to help assess their CIP process. Note that this date is after the March 31, 2016 program application date. Also, this is well after the UV system vendor had visited the site for a smaller unrelated UV light project in 2015. CPUC Staff's research found that the customer's new plant in [redacted] uses a UV light [redacted] system, and therefore, the customer was already familiar with the benefits of the technology. CPUC Staff finds that the submitted customer simple payback analysis does not incorporate the financial benefits of reduced potable water usage and possible savings due to lesser waste water disposal costs. Since the project scope is not completely clear, allowable project costs and benefits remain unclear and therefore the submitted simple payback analysis with and without incentives are inconclusive to support program influence. CPUC Staff is not completely convinced that the proposed project wasn't in part a response to the State's request for significant water savings due to the drought. In addition, there is no submitted evidence that the customer considered any other alternatives to the proposed system and that the PA suggested any potential improvements beyond what the customer was already considering.	
0151-1	**3**	CPUC Staff believes that the customer reliance on UV light [redacted] in their [redacted] plant, the successful retrofit of UV systems in similar facilities by the UV system vendor in other parts of the country, and the effort to save potable water due to the California drought conditions may constitute the primary drivers why the customer pursued this project. CPUC Staff requires the PA to submit a revised simple payback analysis once the project scope and analysis are revised in cooperation with SCG. CPUC Staff requires the PA to provide revised program influence documentation for the project in coordination with SCG since they also claim program influence. Note that SCG considers this customer technically capable of assessing and proposing their own projects without significant utility assistance other than financial.	
0151-1	**4**	The PA submitted vendor literature for the proposed UV Light system containing different available configurations and their power draws. However, lamp and driver service lives are not specified as well as the expected service life of other key components. The PA did not specify an Effective Useful Life (EUL) for the measure. The PA shall coordinate with SCG and determine a EUL for the proposed system accounting for the service life of the key components to support the measure EUL determination.	EUL/RUL
0151-1	**5**	CPUC Staff observes from available documentation from both PAs that the existing system usage will be displaced and does not find an assertion whether the existing equipment will be removed or abandoned in placed and not maintained. CPUC Staff examination of the partial P&IDs submitted by SCG indicate that the existing cow water processing systems are very flexible and may not be entirely non-operational once the new UV light [redacted] system is in place. For example, it is conceivable that the pumps could be used to transfer fluid between the different tanks as needed and therefore reducing the potential savings. Also, if the existing systems remains in place, the addition of the UV light [redacted] system may allow for increased production. CPUC Staff did not find any discussion in the submitted documentation that detailed whether the customer intends to keep production at current levels for the life of the proposed system. The PA must clarify the customer's intentions for the existing equipment and if the customer has plans to expand production.	Missing required information
0065-1	**1**	There is on-site PV generation on adjacent rooftops and the final analysis submitted for claims must take the on-site generation into account following prior CPUC Staff guidance.	Self generation

0065-1	**2**	CPUC Staff finds that the PA's MBCx program continues to lack any in-depth pre- and post- technical reviews that remove consideration of ineligible measures and properly scrutinize claimed costs. (HVAC and Lighting Systems shut-offs during unoccupied time periods as well as minimal heating and cooling temperature deadbands are mandated under Title 24, repair and replacement of leaking valves, etc.) and properly scrutinizes claimed costs. The PA did not submit a technical review, hence, CPUC Staff cannot discern the PA's due diligence in these two areas for MBCx projects. Both the CPUC Ex Ante Review Staff and the Ex Post Impact Evaluation teams have identified these issues to the PA in the past and we have not seen the PA take any action to address the issues. CPUC Staff plans to address issues with the MBCx programs in a statewide manner going forward.	CPUC Policy
0066-1	**1**	This community college submitted an application for Prop 39 funding for this MBCx project and the requested funding level far exceeds the estimated full cost of this project. CPUC Staff reminds the PA that savings claims and financial incentives may only consider valid energy efficiency measures that exceed baseline code requirements as stipulated in CPUC Decision 14-10-046, Ordering Paragraph 9: "For all projects undertaken by schools, and for programs targeting specific transmission, distribution, or generation constrained areas (other than bottoming cycle combined heat and power projects), the following rules shall apply: a) For purposes of determining net savings, default ex ante lockdown rules apply, except that a Net-to-Gross ratio of .85 (before spillover effects) is "locked down" for all projects. b) The only eligible measures are those that are above code. c) The cap on expected useful life shall be 30 years for removed equipment only (not the equipment replacing the removed equipment). d) Customer incentives shall be the higher of 75% of incremental measure cost, or what is available under prior policies. e) All K-12 and community college energy efficiency projects, not just those funded by Proposition 39, are eligible for the treatment specified in subsection (a) – (d) above." If the PA determines that the project is awarded Prop 39 funding to cover the full cost the proposed measures, CPUC Staff requires the PA to set the measure's allowable costs to zero, not claim final impacts, and not award energy efficiency financial incentives, i.e., the incentive measure cost cap is set to zero.	CPUC Policy
0067-1	**1**	This community college submitted an application for Prop 39 funding for this MBCx project and the requested funding level far exceeds the estimated full cost of this project. CPUC Staff reminds the PA that savings claims and financial incentives may only consider valid energy efficiency measures that exceed baseline code requirements as stipulated in CPUC Decision 14-10-046, Ordering Paragraph 9: "For all projects undertaken by schools, and for programs targeting specific transmission, distribution, or generation constrained areas (other than bottoming cycle combined	CPUC Policy

		heat and power projects), the following rules shall apply:	
0067-1	**1 (continued)**	a) For purposes of determining net savings, default ex ante lockdown rules apply, except that a Net-to-Gross ratio of .85 (before spillover effects) is "locked down" for all projects. b) The only eligible measures are those that are above code. c) The cap on expected useful life shall be 30 years for removed equipment only (not the equipment replacing the removed equipment). d) Customer incentives shall be the higher of 75% of incremental measure cost, or what is available under prior policies. e) All K-12 and community college energy efficiency projects, not just those funded by Proposition 39, are eligible for the treatment specified in subsection (a) – (d) above." If the PA determines that the project is awarded Prop 39 funding to cover the full cost the proposed measures, CPUC Staff requires the PA to set the measure's allowable costs to zero, not claim final impacts, and not award energy efficiency financial incentives, i.e., the incentive measure cost cap is set to zero.	CPUC Policy
0068-1	**1**	This community college submitted an application for Prop 39 funding for this MBCx project and the requested funding level far exceeds the estimated full cost of this project. CPUC Staff reminds the PA that savings claims and financial incentives may only consider valid energy efficiency measures that exceed baseline code requirements as stipulated in CPUC Decision 14-10-046, Ordering Paragraph 9: "For all projects undertaken by schools, and for programs targeting specific transmission, distribution, or generation constrained areas (other than bottoming cycle combined heat and power projects), the following rules shall apply:	CPUC Policy
0068-1	**1 (continued)**	a) For purposes of determining net savings, default ex ante lockdown rules apply, except that a Net-to-Gross ratio of .85 (before spillover effects) is "locked down" for all projects. b) The only eligible measures are those that are above code. c) The cap on expected useful life shall be 30 years for removed equipment only (not the equipment replacing the removed equipment). d) Customer incentives shall be the higher of 75% of incremental measure cost, or what is available under prior policies. e) All K-12 and community college energy efficiency projects, not just those funded by Proposition 39, are eligible for the treatment specified in subsection (a) – (d) above." If the PA determines that the project is awarded Prop 39 funding to cover the full cost the proposed measures, CPUC Staff requires the PA to set the measure's allowable costs to zero, not claim final impacts, and not award energy efficiency financial incentives, i.e., the incentive measure cost cap is set to zero.	CPUC Policy
0123-1	**1**	The customer has contacted CPUC management expressing frustration about the length of time to complete the project review. The PA must explain why there has been a 5 month gap between the date of the project selection (September 2016) by CPUC Staff with the technical review completed 6 months ago (August 2016) and the upload of the documents to the CMPA for CPUC Staff review (February 2017).	Streamlining the ex ante review process

0123-1	**2**	Explain why the technical review has been provided in such an abbreviated format. The review lacks critical information such as the approved measure type and EUL for the project. The measure type must be provided. The proposed EUL has been provided in the PFS but an approved measure type and EUL is not included in the PA technical review documents. The technical review document should summarize all pertinent approved project parameters (eligibility, free ridership, measure type, baseline, EUL/RUL, assessment of calculation methodology, savings impacts, incentives, verification/M&V plan, etc.) CPUC Staff requests that PA Technical Reviews for all custom projects address the items outlined below in Item 2 of the CPUC Staff Notes section.	Missing required information
0123-1	**3**	The PA technical review refers to several issues that the PA technical reviewer addressed with the implementer which were resolved in "the pre-installation report and/or on chatter in Energy Insight (EI)". CPUC staff are unclear if this information is included in the PA's submission since CPUC Staff have similar concerns with the implementer's submitted documentation to those raised by the PA technical reviewer. The PFS provided to CPUC Staff is dated March 30, 2016, while the PA technical review is dated August 11, 2016. CPUC Staff do not find any information which appears to be “chatter in Energy Insight (EI)". The PA must verify that it has provided the most recent and updated information in its submittal to the CMPA, and also include all information which is relevant to the project.	Missing required information
0123-1	**4**	Provide the approved measure type.	Missing required information
0123-1	**5**	Provide the approved EUL for the project.	Missing required information
0123-1	**6**	While the concept of the project is described it is unclear exactly what work is required to implement the project. There is reference to a SCADA system but it is unclear how the SCADA system is currently used and how it will be modified. It is unclear if the proposal is to install a control system provided by an outside vendor, or if the customer will program the existing SCADA to control the pumping systems. It is unclear if the customer has one SCADA system for each pumping district or one SCADA system which controls all districts described in the project documentation. The PA must provide a more detailed description of the SCADA system and how it will be used to implement the project and verify the project impacts. The PA should provide information on other customers who have installed this measure and the savings impacts, and the persistence of savings associated with those projects.	Missing required information
0123-1	**7**	The documentation states that the annual hours of operation for each pump are based on data from pump tests performed in 2008. Explain how pump test data were used to determine the baseline hours of operation for each pump, and the relevance of 2008 data to operations nearly 10 years later. Explain what data are available to verify the baseline annual hours of operation for each pump.	Analysis assumptions
0123-1	**8**	Documentation refers to pump tests which were used in the analysis. The pump tests have not been provided. The PA must provide the pump test documentation.	Analysis assumptions

0123-1	**9**	The project refers to an existing SCADA system, however there are no data in the documentation indicated to have been provided from the SCADA system to support any aspect of the analysis. The PA must describe what the function of the customer's SCADA system is and what data are available from the SCADA to support any aspect of the analysis of the baseline or post installation parameters for this project.	Missing required information
0123-1	**10**	Where M&V is proposed, the M&V plan should provide concise descriptions including measurement points, measurement period, measurement interval, measurement equipment, system diagrams, discussion of the accuracy measurement equipment and uncertainty associated with the results. For example, the M&V plan submitted with the IOU documentation of this project lack any specificity regarding point names, measurement intervals, system diagrams, etc. This level of documentation leaves the project vulnerable to having significant uncertainty in the savings analysis if all data required for the analysis have not been comprehensively conceived and clearly defined before the project is approved to proceed to implementation. The PA technical review states "Final verification of pre and post pump performance will be based on measurements of post pump efficiency (kWh/AF), baseline flows (12 months prior to installation), post flow (one month post monitoring to verify pump sequencing) and hydraulic modeling to annualize the results (compare apples-to-apples)." There is no description in the PA documentation about how the 12 month baseline data will be collected, at what interval the data will be collected. One month of post installation data is likely inadequate. The PA must provide analysis of the annual water demand for each system as supporting documentation for the proposed post installation monitoring period. The PA must provide a detailed calculation methodology and M&V plan for this project.	M&V plan
0123-1	**11**	CPUC Staff note that the PFS states "Demand savings are expected from this measure, however due to insufficient data, these savings will be verified with the use of advanced tools such as the District's hydraulic model. As such, demand savings are expected to be claimed post-implementation of the measure." Demand savings for this project may not be claimed without CPUC Staff review and approval of the proposed calculation method and verification plan.	Calculation method
0123-1	**12**	The project documentation does not provide any analysis of the baseline IOU electric meter data for the pumping systems. CPUC Staff's experience is that many pumps for this type of customer are individually metered and that historical information regarding hours of operation can be derived from these data. The PA must explain why metered data are not included in the analysis for this project and how the baseline operation for the pumping system will be established.	Missing required information
0123-1	**13**	CPUC Staff have run a preliminary cost effectiveness test for this project using the PA's estimated energy savings impacts, project cost, customer incentive, estimated 3P implementer performance payment, and a 5 year EUL. The TRC for this project is 0.64. The PA must address the low cost effectiveness of this project.	Cost effectiveness
0112-2	**1**	In the first ex ante review, CPUC Staff noted that Section 1.5 item 3 of the Statewide Customized Offering Procedures Manual for Business	PA program

		states "All measures must meet the following criteria: 3. Must Be Permanently Installed. Measures that are not permanently installed or can be easily removed, as determined by the Utility Administrator, are ineligible for Customized incentives." The initial documentation indicated 5,000 nozzles would be replaced. The revised documentation indicates 10,000 nozzles will be replaced. The PA has confirmed that sprinkler system documented in the project application is a portable system installed for a limited time during the pre-irrigation and germination of the crop seed and which is then removed from the crop field. The PA has responded that "Customer is not expected to remove the CF nozzles from the pipes after each use. They may move the pipes, but the FC nozzles will not be removed from the pipes." and "The equipment (FC nozzles and pipes) is expected to be used year after year for pre-irrigation in the same manner and for the same number of operating hours, so the calculated savings are seasonal and permanent." CPUC Staff reject the PA's reasoning. The irrigation piping is not permanently installed in the fields. It is a temporary irrigation system installed for seed germination and early plant development. After the crop has reached a certain stage, the irrigation piping is removed from the field- thus not permanent. The irrigation method changes- likely to flooding the furrows. The customer cannot mechanically harvest with irrigation piping installed in the field and many crops are more susceptible to disease when overhead- watered. It is also not likely that they always grow the same crop in the same field watered from the same pumping system, year after year. There would be crop rotation to reduce pest and other problems. Different crops have different irrigation needs. For additional information, please see http://ipm.ucanr.edu/PMG/r114900611.html.	rules
145-1	**1**	A signed, dated Program application has not been provided. The PA must include a signed, dated Program application for every project. This is a requirement on the "Ready for Review" checklist.	Missing documents
145-1	**2**	The age of existing equipment not provided. The PA must provide the age of existing equipment in the project documentation. This is especially important for the program induced early replacement measure type.	Missing required information
145-1	**3**	The evidence provided of program induced early replacement is weak. A summary of Deemed motor incentives paid to the customer in the past does not demonstrate program influence for this project. The PA must provide more substantial evidence of program influence, including evidence supporting program influence, and evidence which does not support program influence and a discussion on how the evidence for and against program influence is assessed.	Program influence
145-1	**4**	California's 2013 Title 24 part 6 became effective on July 1, 2014. The 2013 Code covers air compressors. The proposed measure "install one 150 HP rotary screw variable displacement controlled air compressor" does not appear to be Code compliant. In 2014 a Statewide Air Compressor Program Guidelines document was published. The Statewide guideline states "2) Early Retirement – For program induced early retirement compressed air measures the proposed equipment must exceed the T24 code requirements." CPUC Staff believe that the proposed measure is ineligible. The PA must reject this project unless it can demonstrate how the proposed measure exceeds the 2013 Title 24 code requirements. CPUC Staff are rejecting this application pending the PA demonstrating that the proposed measure does in fact exceed the Title 24 Code requirements.	Eligibility

145-1	**5**	CPUC Staff note that based on the vendor quotations provided, a variable speed drive controlled 150 HP air compressor costs $53,284 while the proposed variable displacement controlled air compressor costs $59,435. The PA must explain why it proposes to use ratepayer funds to incentivize the customer to install a more costly, less efficient air compressor which may be non-Code compliant.	Eligibility
145-1	**6**	It appears that the PA may not have updated its compressed air calculation tool which was used to estimate the impacts of this project to match the requirements of the 2014 Statewide Air Compressor Program Guidelines document. The PA must evaluate if the calculation tool meets the Statewide guidelines, and remove it from use if it does not meet the guidelines.	Calculation tool
145-1	**7**	The PA provided .pdf printouts of the savings analysis for this project. The PA must provide "live" calculation spreadsheets, where spreadsheet analysis is used for savings estimates. This is a requirement on the "ready for review" checklist.	Missing documents
145-1	**N1**	CPUC Staff are disappointed that neither the PA nor the PA technical reviewer have referred to the 2014 Statewide Air Compressor Program Guidelines document in the due diligence review for this project. This leads CPUC Staff to believe that neither the PA nor their technical reviewer may be familiar with this Statewide document. Staff are disappointed that the PA seems unable to maintain an active current library of Statewide Program guidelines and CPUC policy and apply it to the due diligence reviews of ratepayer funded custom projects. The PA must endeavor to improve in this area.	Due diligence
0021-1	**1**	The "Ready for Review" checklist has not been provided with the submitted documentation. CPUC Staff note that the PA has neglected to provide items that are required on the checklist. The PA must complete and submit the Ready for Review checklist for this project.	Missing documents
0021-1	**2**	The application provided by the PA is electronically signed by the customer without a date. The PA must provide a signed and dated application as required on the Ready for Review checklist.	Missing required information
0021-1	**3**	The application documentation states that pump amps were measured. The raw data files have not been submitted. The PA must submit the raw data files and the .csv files for all measurements as required on the Ready for Review checklist.	Missing documents
0021-1	**4**	The proposed post installation "true-up" calculation methodology is unclear and lacks sufficient detail. Will the analysis be normalized to system flow or normalized to the chilled water load? The investigation report Post installation M&V plan states "Energy savings will be adjusted if necessary based on the verified operating conditions." Table 7 in the investigation report states that for large savings impact projects (>200,000 kWh/yr.) "Calculations Based on Pre- & Post-Implementation Measurements". The PA does not appear to be following the Program Rules for this project which seem to require that the post installation savings be based upon pre and post measurements. Stating that something may be done "if necessary" is an unacceptable proposal.	Calculation method

		CPUC Staff find that there is no detailed calculation methodology for a post installation true up for this project. The PA must resubmit the project documentation with a proposed post installation true up calculation methodology for this project. The PA must follow previous guidance provided on the documentation requirements for calculation methodology.	
0021-1	**5**	CPUC Staff note that the implementer measured pump amps. It is unclear why the PA does not require that the implementer measure true power. Measuring true power reduces the uncertainty of the analysis and ex ante savings estimates. The PA must address the uncertainty associated with assumptions of voltage, power factor and other parameters used in the analysis.	Calculation method
0021-1	**6**	The M&V plan for this project is unclear and lacks sufficient detail. The PA must follow previous guidance provided on the documentation requirements for M&V plans.	M&V plan
0021-1	**7**	The PA has not provided a clear statement of the proposed measure type for this project. Each measure must have an assigned measure type and follow the requirements associated with that measure type. The PA must revise and resubmit the documentation with a proposed measure type for this project.	Measure type
0021-1	**8**	It is unclear why the PA did not upload documentation for this project for more than 1.5 years after it was selected by CPUC Staff for review. The PA should endeavor to improve its response time so that the ex ante review process can be streamlined.	Delayed response
0021-1	**N1**	CPUC Staff are disappointed that the PA is unable to follow previous guidance related to calculation methodologies and M&V plans. Additionally, the PA has not submitted the Ready for Review checklist for this project and has neglected to provide items required on the checklist. These omissions have created the requirement for another iteration of review. CPUC Staff expect that the PA will put into place processes and procedures to prevent recurrence of issues like these so that the ex ante review process can become more streamlined.	Did not follow previous CPUC guidance
0180-1	**1**	CPUC Staff find it difficult to determine what the PA technical reviewer has approved for this project. The PA has submitted various documents labelled as technical review, and there is a "Technical Due-Diligence Review Form" included that primarily addresses the savings calculations, however it is unclear what the technical reviewer's findings and approval status are for some of the other key parameters that have been reviewed (e.g. EUL, RUL, incentives, costs, M&V plan, calculation methodology, etc.) and what the approved versus submitted parameters are for this project. It is unclear if the absence of comments on key project steps such as the M&V plan signify PA approval to the implementer, or if there may be future PA reviewer input on some aspects of this project. The PA must for all future custom projects, whether selected for ex ante review or not, follow the guidance for technical reviews described in instruction number 1 below.	Missing required information
0180-1	**2**	CPUC Staff note that the primary description of the project is contained in an MS PowerPoint document. The document has a section where Program Influence is discussed which includes copies of email correspondence pasted into the document. Summarizing the pertinent email correspondence is encouraged, however the PA must also submit original emails (.msg files) not solely copied and pasted versions to support program influence.	Missing documents

		Prior to executing an incentive agreement for this project, the PA must upload to the CMPA folder for this project the original emails referenced in the implementer's documentation and the PA's assessment of program influence for this project.	
0180-1	**3**	CPUC Staff note that measured data (e.g. compressor amps, blow off valve signal, etc.) has been included in a spreadsheet. Raw data files have not been submitted. Prior to executing an incentive agreement for this project, the PA must upload to the CMPA folder for this project the raw data files, and the .csv files for the data collected. This is a requirement on the "Ready for Review" checklist.	Missing required information
0180-1	**4**	The PA has not provided a signed and dated application for this project. Prior to executing an incentive agreement for this project, the PA must upload to the CMPA folder for this project the signed and dated program application for this project. This is a requirement on the "Ready for Review" checklist.	Missing documents
0180-1	**5**	CPUC Staff find that the proposed post installation true-up calculation methodology lacks detail-the implementer documents state that the analysis will be normalized to production but does not state production of what. If automobiles are the proposed metric of production, an analysis must be submitted to demonstrate a statistically valid relationship between compressed air usage or compressed air system power and automobile production. If production of automobiles is measured daily, there may not be not enough baseline data collected at this point (14 days of data) to analyze the relationship. The implementer documentation states that "The difference between the curve fits at the expected future production will be the energy savings." Expected future production cannot be used in the analysis- this is speculative. It is unclear how the effects of the two proposed measures will be segregated from the measured impacts. The final ex ante analysis must account for increased energy usage from the heated blower dryer(s) and any other equipment associated with this project. The PA must submit the proposed post installation true-up calculation methodology for this project prior to executing an incentive agreement for this project. The calculation methodology should follow guidance previously provided and must be uploaded to the CMPA folder for this project.	Calculation method
0180-1	**6**	CPUC Staff find that the M&V plan lacks sufficient detail. The proposed measurement period is not discussed. The plan does not describe how the effects of the new heated blower dryers which consume electricity will be accounted for. As stated above, it is unlikely that 14 days of pre-project data are sufficient, if the analysis is proposed to be at a daily interval. CPUC Staff note that this facility is expected to increase its production significantly. Depending on when the project proceeds to implementation, there may be a requirement to collect additional baseline data to more accurately model the baseline condition prior to implementation. Refer to previous guidance regarding M&V plans. The revised M&V plan must be uploaded to the CMPA folder for this project prior to the PA executing an incentive agreement for this project.	M&V plan
0180-1	**7**	CPUC Staff did not find any technical reviewer comments on the proposed EULs for the measures. For the REA measure type (now called add-on equipment or AOE) the EUL is set at 1/3 of the host equipment/existing equipment EUL per D12-05-015	EUL/RUL

		The PA must revise the project documentation with the correct EULs before executing an incentive agreement for this project.	
0163-1	**1**	HVAC systems established by EnergyPro for the standard model were significantly oversized. Sizing for the standard baseline must be accomplished by performing a sizing simulation (as demonstrated by StandardNC_Sizing.INP in the attachments to this disposition). Since the minimum supply air flow ratio for this project was limited by ventilation air, the sizing simulation was run as constant volume (this prevents the modulation of supply air in the hourly simulation from throttling the outdoor air). HVAC equipment sizes from the sizing simulation were manually transferred to the final simulation (StandardNC_Corrected.INP in attachments). Minimum flow ratios for the final simulation were based on outdoor air and exhaust air requirements, as shown in the "ProposedAirFlow" and "StdSizing" sheets of the attached notes workbook ("PGE-0163-2K1600172989_EAR_Notes_2017-11-20.XLSX"). These models shall be updated for true-up based on post-installation review of the project.	Calculation tool
0163-1	**2**	The standard model created by EnergyPro included a single air handler serving the entire building, whereas the proposed building model consisted of two air handlers serving the first and second floors, respectively. The 2013 ACM Manual states that the standard model shall be modeled with one air handler per floor. Post-installation review and true-up for the project shall use the attached corrected models as the starting point for updated energy savings calculations.	Calculation tool
0163-1	**3**	The ventilation values entered for both the standard and the proposed models were not consistent with the values listed in the construction documents, or with the Title-24 values listed for the corresponding activity areas. This was corrected for the attached models, and the MIN-CFM-RATIO values for each system were set based on the ratio of total ventilation air required by the zones to total supply air for the system. Post-installation review and true-up for the project shall use the attached corrected models as the starting point for updated energy savings calculations.	Calculation tool
0163-1	**4**	The submitted models had system fans operating 24 hours per day, 7 days per week. This was changed in the corrected models to operate from 6 am to 11 pm daily. The submitted models used a variety of thermostat schedules, which were not consistent with the fan schedules. This was also corrected. Post-installation review and true-up shall use the attached corrected models as the starting point for updated energy savings calculations.	Analysis assumptions
0163-1	**5**	Demand controlled ventilation (DCV) was modeled by EnergyPro as a fixed 50% reduction in minimum outdoor air for selected zones in the proposed model as compared with the standard model. For the corrected analysis, DCV was modeled using MIN-AIR-SCH at the system level to adjust outdoor air and MIN-CFM-SCH at the zone level to adjust minimum CFM ratio hourly in proportion to the occupancy schedule (see "DCV" sheet of the attached notes workbook). Post-installation review and true-up for the project shall use the attached corrected models as the starting point for updated energy savings calculations.	Calculation tool
0163-1	**6**	The building plans listed HVAC cooling capacities at design conditions rather than at AHRI rated conditions. The performance curves for the PVAV unit were used to convert capacity values from the design conditions to rated conditions for input into the model (see "AHRI_CoolEff" sheet of the	Calculation method

		attached notes workbook). Any changes to cooling efficiency at post-installation review and true-up shall convert non-standard capacities to standard values.	
0163-1	**7**	EnergyPro created a Proposed building model with baseboard radiation heating, whereas the construction documents indicate reheat coils for zone heat. Baseboard heating did not appear to be explicitly chosen in the EnergyPro interface for the proposed building. Heating configuration can be updated in the corrected models if appropriate based on post-installation review.	Calculation tool
0163-1	**8**	Two zones in the proposed building model were set up as unheated zones, whereas the same zones in the standard building model were heated. Space conditioning requirements for each zone shall be unchanged between the standard and proposed buildings.	Calculation tool
0163-1	**9**	Pump properties in the DOE-2.1E proposed building model created by EnergyPro are not consistent with the properties that were input, and the program does not account for primary and secondary pumping. Pump inputs for the attached corrected models were calculated in the "PumpCalcs" sheet of the attached notes workbook. Any post-installation adjustments to pump inputs for true-up shall use these calculations.	Calculation tool
0163-1	**10**	Pump properties in the standard building model do not match the requirements of the California ACM manual, which specifies temperature drop of 40 F, rated power of 19 W/gpm, and minimum speed of 10%. From these values, basic principles can be used to calculate a pump head value of 62 feet (see "PumpCalcs" sheet of the attached notes workbook). This value shall be used in post-installation true-up models.	Calculation method
0163-1	**11**	Fan power values in the standard model did not match expectations based on the requirements of the California ACM manual. Calculations of corrected values are demonstrated in sheet "FanPower" of the attached notes workbook. These calculations shall be used for post-installation true-up models.	Calculation tool
0163-1	**12**	Fan power values in the proposed model did not match expectations based on data from the air handler data sheets. Calculations of corrected values are demonstrated in sheet "FanPower" of the attached notes workbook. Exhaust fan power is grouped with the return fans in these calculations, but fan heat is based solely on the return fans. These calculations shall be used for post-installation true-up models.	Calculation tool
0163-1	**13**	Customer and design team incentives are to be recalculated using the corrections above as well as any true-ups post construction.	Incentive calculation
0163-1	**N1**	HVAC system sizes established by EnergyPro for the standard model were excessive. Sizing for the Standard baseline must be accomplished by performing a sizing simulation (where equipment is automatically sized by the program; see CEC-400-2013-004-CMF, sections 2.6.2, 5.7.5.1, and 5.7.6). For buildings where the minimum supply air flow ratio is limited by ventilation air, the sizing simulation should be run as constant volume. Sizing factors of 1.15 for fans and cooling and 1.25 for heating are applied to peak loads, and the resultant capacities are entered back into the model for the final simulation. Minimum flow ratios for the final simulation are based on the maximum of the outdoor air and exhaust air requirements and a 20% flow ratio.	Calculation tool
0163-1	**N2**	While the 2013 ACM Manual states that the standard model shall be modeled with one air handler per floor, zones that have unique use scenarios (such as kitchens, computer rooms, auditoriums, and gymnasiums) shall be configured into separate systems in the standard model (see CEC-400-2013-004-CMF, section 5.1.2). Otherwise, the one air handler per floor rule shall be followed.	Calculation tool

0163-1	**N3**	There are issues in EnergyPro and DOE2.1E with the relationships between specified ventilation air, exhaust air, supply air and minimum supply air. If exhaust air flow is specified in a model, it will set a lower limit on outdoor air flow and supply air flow for the system design. However, if the minimum flow ratio indicates an hourly supply flow that is less than the specified ventilation or exhaust air, those values will be throttled during that hour. Thus, it is critical that the minimum flow ratio entered into the model be at least as high as the outdoor air ratio and the exhaust air ratio.	Calculation tool
0163-1	**N4**	Occupant densities in the EnergyPro models appear to be based on egress occupant densities published in the California Building Code (CBC). The T24-2013 User Manual (CEC-400-2013-002-SD, Section 4.3.2.B2) indicates occupant density from the CBC tables should be reduced by a factor of 2 for calculation of design ventilation rate for the “expected number of occupants”. This rule shall be applied by the simulation software where occupancy rates are not set by the user.	Calculation tool
0163-1	**N5**	Demand controlled ventilation (DCV) was modeled by EnergyPro as a fixed 50% reduction in minimum outdoor air for selected zones in the Proposed model as compared with the Standard model. In order to appropriately account for impact of occupants on DCV, the measure shall be modeled using an outdoor air schedule at the system level to adjust outdoor air and minimum air flow schedule at the zone level to adjust minimum CFM ratio hourly in proportion to the occupancy schedule (see "DCV" sheet of "PGE-0163-2K1600172989_EAR_Notes_2017-11-20.XLSX", and attached model input files).	Calculation tool
0163-1	**N6**	When available DX cooling capacities and/or efficiencies correspond to non-standard conditions, the simulation tool shall use system performance curves to convert the values from the design conditions to rated conditions for input into the model (see "AHRI_CoolEff" sheet of the attached notes workbook).	Calculation tool
0163-1	**N7**	EnergyPro created a Proposed building model with baseboard radiant heating, whereas the construction documents indicate reheat coils for zone heat. Baseboard heating did not appear to be explicitly chosen in the EnergyPro interface for the proposed building. The proposed building heating system type shall match user selections.	Calculation tool
0163-1	**N8**	Two zones in the proposed building model were set up as unheated zones, whereas the same zones in the standard building model were heated. Space conditioning requirements for each zone shall be unchanged between the standard and proposed buildings.	Calculation tool
0163-1	**N9**	Pump properties in the DOE-2.1E proposed building model created by EnergyPro are not consistent with the properties that were input, and the program does not account for primary and secondary pumping. EnergyPro takes input of motor horsepower or kW and GPM, and it writes pump head and loop delta T to the input file. Motor horsepower values are typically oversized compared to the power that the motor will actually draw when installed. If pump head is specified in the construction documents, this is a better indicator of the actual power. Thus, EnergyPro should have the option to take pump head and motor efficiency as inputs for defining pump power. In addition, while DOE2.1E cannot model primary and secondary circulation loops, EnergyPro should have inputs for these and do a weighted average to calculate model inputs that represent both primary and secondary pumps (see "PumpCalcs" sheet of the attached notes workbook). If primary pumps are constant, and secondary pumps are variable, then the primary pumps can be modeled as a constant auxiliary electric input for the primary equipment.	Calculation tool

0163-1	**N10**	Pump properties in the standard building model do not match the requirements of the California ACM manual, which specifies temperature drop of 40 F, rated power of 19 W/gpm, and minimum speed of 10% (see CEC-400-2013-004-CMF, section 5.8.5, Pump Motor Power-Per-Unit-Flow). From these values, basic principles can be used to calculate a pump head value of 71 feet (see "PumpCalcs" sheet of the attached notes workbook).	Calculation tool
0163-1	**N11**	Fan power values in the standard model shall follow the requirements of the California ACM manual (see CEC-400-2013-004-CMF, section 5.7.3). These calculations are demonstrated in sheet "FanPower" of the attached notes workbook.	Calculation tool
0163-1	**N12**	Fan power values for the proposed model shall follow the requirements of the California ACM manual (see CEC-400-2013-004-CMF, section 5.7.3). These calculations are demonstrated in sheet "FanPower" of the attached notes workbook. Where fan mechanical efficiency is not available, the rules for standard fans shall be used. Exhaust fan power can be added to return fans, as long as heat gain from those fans are not included in the fan delta T value.	Calculation tool
0163-1	**N13**	The EnergyPro models did not use the correct weather files for simulations. The simulation weather files for Savings By Design need to be taken from the set of 16 locations specified in Title-24 Joint Appendix JA2.1 (CEC-400-2012-005-CMF-REV2). These are the locations that were used for determination of the DEER peak periods. The source for the weather data is the CBECC weather files supplied with the ACM Supporting Content.	Calculation tool
0163-1	**N14**	Simulation dates need to be set up for the year 2009 in order to be consistent with the CEC weather files and the TDV definitions (Title24_2013_TDV_Methodology_Report_23Feb2011.pdf, Table 16). The ACM Manual (CEC-400-2013-004-CMF, section 5.2.5) lists the simulation year as 1991, but that is an error.	Calculation tool
0163-1	**N15**	The EnergyPro simulations did not use the correct TDV data. EnergyPro was using 30-year TDV values, and the values are offset by two hours through the year (i.e. the first hour of the year in the model is using the third hour value of the published TDV values, and so on). The 15-year TDV values are prescribed as applicable to lighting and HVAC measure for nonresidential buildings. Since nonresidential buildings are dominated by lighting and HVAC, the whole building analysis in Savings By Design needs to use the 15-year TDV values published by CEC for whole building commercial applications, and the offset problem needs to be corrected.	Calculation tool
0163-1	**N16**	It is unclear in the latest Savings By Design program manual whether TDV is still used for calculation of incentives. In the 2015 Savings By Design Participant Handbook, the Whole Building Approach Incentives section indicates that the kWh incentive rate is based on "TDV % better than Title 24". The 2017 Savings By Design Handbook has the reference to TDV removed, and describes savings simply as "% better than Title 24".	Calculation tool
0164-1	**1**	HVAC systems established by EnergyPro for the standard model were significantly oversized. Sizing for the standard baseline must be accomplished by performing a sizing simulation (as demonstrated by StandardNC_Sizing.INP in the attachments to this disposition). Since the minimum supply air flow ratio for this project was limited by ventilation air, the sizing simulation was run as constant volume (this prevents the modulation of supply air in the hourly simulation from throttling the outdoor air). HVAC equipment sizes from the sizing simulation were manually transferred to the final simulation (StandardNC_Corrected.INP in attachments). Minimum flow ratios for the final simulation were based on outdoor air and exhaust air requirements (see "ProposedAirFlow" and "StdSizing" sheets of the attached workbook: "PGE-0164-	Calculation tool

		2K1600169684_EAR_Notes_2017-11-20.XLSX"). These models shall be updated for true-up based on post-installation review of the project.	
0164-1	**2**	The standard model created by EnergyPro included a single air handler serving the entire building, whereas the proposed building model consisted of five air handlers. While the 2013 ACM Manual states that the standard model shall be modeled with one air handler per floor, the difference in exhaust levels between System-1 and Systems 2 and 3 justify keeping them separate for the standard model. Moreover, Systems 4 and 5 in the proposed model appear to serve data closets, which should be classified as "covered processes" and therefore kept in separate systems for the standard model. Post-installation review and true-up for the project shall use the attached corrected models as the starting point for updated energy savings calculations.	Calculation tool
0164-1	**3**	The ventilation values entered for both the standard and the proposed models were not consistent with the exhaust air values or the MIN-CFM-RATIO values. For example, the total exhaust flow for zones in System-1 was listed in the construction documents as 5,050 CFM, while the ventilation air was specified as 2,979 CFM. In order for the building to be pressure-balanced, the ventilation air flow needs to match the exhaust air. Moreover, in DOE-2.1E, which is the calculation engine for EnergyPro, outdoor air and exhaust air are throttled whenever the supply air flow needed to meet the space load is below the specified outdoor or exhaust air flows. To correct this, outdoor air values for each system were calculated to be the maximum of the total exhaust air and the total required ventilation air for zones on the system. The MIN-CFM-RATIO values for each system were set based on the ratio of total ventilation air required by the zones to total supply air for the system. Post-installation review and true-up for the project shall use the attached corrected models as the starting point for updated energy savings calculations.	Calculation tool
0164-1	**4**	Occupant densities in the EnergyPro models appear to be based on egress occupant densities published in the California Building Code. The T24-2013 User Manual (Section 4.3.2.B2) indicates occupant density should be reduced by a factor of 2 for calculation of design ventilation rate for the "expected number of occupants". This is consistent with the ventilation values that were listed in the construction documents for the building. Post-installation review and true-up for the project shall use the attached corrected models as the starting point for updated energy savings calculations.	Calculation tool
0164-1	**5**	Based on construction documents, the "27 Undefined" and "28 Undefined" spaces appear to be data closets, but the loads in the spaces do not reflect this. Since the actual loads in these spaces are unknown, and there are no efficiency measures identified for these spaces, the models were changed such that these systems are unchanged between the Standard and Proposed buildings.	Analysis assumptions
0164-1	**6**	There was an error in the geometry of the "27 Undefined" space which was corrected. Post-installation review and true-up for the project shall use the attached corrected models as the starting point for updated energy savings calculations.	Calculation method
0164-1	**7**	There was an omission of building shades at the lobby window which was corrected. Post-installation review and true-up for the project shall use the attached corrected models as the starting point for updated energy savings calculations.	Calculation method
0164-1	**8**	Demand controlled ventilation (DCV) was modelled by EnergyPro as a fixed 50% reduction in minimum outdoor air for selected zones in the proposed model as compared with the standard model. For the corrected analysis, DCV was modeled using MIN-AIR-SCH at the system level to adjust outdoor air and MIN-CFM-SCH at the zone level to adjust minimum CFM ratio hourly in proportion to the occupancy schedule (see "DCV"	Calculation tool

		sheet of the attached workbook). Post-installation review and true-up for the project shall use the attached corrected models as the starting point for updated energy savings calculations.	
0164-1	**9**	The building plans listed HVAC cooling capacities at design conditions rather than at AHRI rated conditions. The performance curves for the PVAV unit were used to convert capacity values from the design conditions to rated conditions for input into the model (see "AHRI_CoolEff" sheet of the attached workbook). Any changes to cooling efficiency at post-installation review and true-up shall convert non-standard capacities to standard values.	Calculation method
0164-1	**10**	EnergyPro created a Proposed building model with baseboard radiation heating, whereas the construction documents indicate reheat coils for zone heat. Baseboard heating did not appear to be explicitly chosen in the EnergyPro interface for the proposed building. Heating configuration can be updated in the corrected models if appropriate based on post-installation review.	Calculation tool
0164-1	**11**	One zone in the proposed building model was set up as an unheated zone, whereas the same zone in the standard building model was heated. Post-installation true-up model shall have same space temperature control for proposed and standard.	Calculation tool
0164-1	**12**	Pump properties in the DOE-2.1E proposed building model created by EnergyPro are not consistent with the properties that were input, and the program does not account for primary and secondary pumping. Pump inputs for the attached corrected models were calculated in the "PumpCalcs" sheet of the attached workbook. Any post-installation adjustments to pump inputs for true-up shall use these calculations.	Calculation tool
0164-1	**13**	Pump properties in the standard building model do not match the requirements of the California ACM manual, which specifies temperature drop of 40 F, rated power of 19 W/gpm, and minimum speed of 10%. From these values, basic principles can be used to calculate a pump head value of 71 feet (see "PumpCalcs" sheet of the attached workbook). This value shall be used in post-installation true-up models.	Calculation tool
0164-1	**14**	Fan power values in the standard model did not match expectations based on the requirements of the California ACM manual. Calculations of corrected values are demonstrated in sheet "FanPower" of the attached workbook. These calculations shall be used for post-installation true-up models.	Calculation tool
0164-1	**15**	Fan power values in the proposed model did not match expectations based on data from the air handler data sheets. Calculations of corrected values are demonstrated in sheet "FanPower" of the attached workbook. Exhaust fan power is grouped with the return fans in these calculations, but fan heat is based solely on the return fans. These calculations shall be used for post-installation true-up models.	Calculation tool
0164-1	**16**	Customer and design team incentives are to be recalculated using the corrections above as well as any true-ups post construction.	Incentive calculation
0164-1	**N1**	HVAC system sizes established by EnergyPro for the standard model were excessive. Sizing for the Standard baseline must be accomplished by performing a sizing simulation (where equipment is automatically sized by the program; see CEC-400-2013-004-CMF, sections 2.6.2, 5.7.5.1, and 5.7.6). For buildings where the minimum supply air flow ratio is limited by ventilation air, the sizing simulation should be run as constant volume. Sizing factors of 1.15 for fans and cooling and 1.25 for heating are applied to peak loads, and the resultant capacities are entered back into the model for the final simulation. Minimum flow ratios for the final simulation are based on the maximum of the outdoor air and exhaust air	Calculation tool

		requirements and a 20% flow ratio.	
0164-1	**N2**	While the 2013 ACM Manual states that the standard model shall be modeled with one air handler per floor, zones that have unique use scenarios (such as kitchens, computer rooms, auditoriums, and gymnasiums) shall be configured into separate systems in the standard model (see CEC-400-2013-004-CMF, section 5.1.2).	Calculation tool
0164-1	**N3**	There are issues in EnergyPro and DOE2.1E with the relationships between specified ventilation air, exhaust air, supply air and minimum supply air. If exhaust air flow is specified in a model, it will set a lower limit on outdoor air flow and supply air flow for the system design. However, if the minimum flow ratio indicates an hourly supply flow that is less than the specified ventilation or exhaust air, those values will be throttled during that hour. Thus, it is critical that the minimum flow ratio entered into the model be at least as high as the outdoor air ratio and the exhaust air ratio.	Calculation tool
0164-1	**N4**	Occupant densities in the EnergyPro models appear to be based on egress occupant densities published in the California Building Code (CBC). The T24-2013 User Manual (CEC-400-2013-002-SD, Section 4.3.2.B2) indicates occupant density from the CBC tables should be reduced by a factor of 2 for calculation of design ventilation rate for the “expected number of occupants”. This rule shall be applied by the simulation software where occupancy rates are not set by the user.	Calculation tool
0164-1	**N5**	Demand controlled ventilation (DCV) was modeled by EnergyPro as a fixed 50% reduction in minimum outdoor air for selected zones in the Proposed model as compared with the Standard model. In order to appropriately account for impact of occupants on DCV, the measure shall be modeled using an outdoor air schedule at the system level to adjust outdoor air and minimum air flow schedule at the zone level to adjust minimum CFM ratio hourly in proportion to the occupancy schedule. See "DCV" sheet of the attached workbook ("PGE-0164-2K1600169684_EAR_Notes_2017-11-11.XLSX"), and attached model input files for details.	Calculation tool
0164-1	**N6**	When available DX cooling capacities and/or efficiencies correspond to non-standard conditions, the simulation tool shall use system performance curves to convert the values from the design conditions to rated conditions for input into the model (see "AHRI_CoolEff" sheet of attached workbook).	Calculation tool
0164-1	**N7**	EnergyPro created a Proposed building model with baseboard radiant heating, whereas the construction documents indicate reheat coils for zone heat. Baseboard heating did not appear to be explicitly chosen in the EnergyPro interface for the proposed building. The proposed building heating system type shall match user selections.	Calculation tool
0164-1	**N8**	One zone in the proposed building model was set up as an unheated zone, whereas the same zone in the standard building model was heated. Space conditioning requirements for each zone shall be unchanged between the standard and proposed buildings.	Calculation tool
0164-1	**N9**	Pump properties in the DOE-2.1E proposed building model created by EnergyPro are not consistent with the properties that were input, and the program does not account for primary and secondary pumping. EnergyPro takes input of motor horsepower or kW and GPM, and it writes pump head and loop delta T to the input file. Motor horsepower values are typically oversized compared to the power that the motor will actually draw when installed. If pump head is specified in the construction documents, this is a better indicator of the actual power. Thus, EnergyPro should	Calculation tool

		have the option to take pump head and motor efficiency as inputs for defining pump power. In addition, while DOE2.1E cannot model primary and secondary circulation loops, EnergyPro should have inputs for these and do a weighted average to calculate model inputs that represent both primary and secondary pumps (see "PumpCalcs" sheet of attached workbook). If primary pumps are constant, and secondary pumps are variable, then the primary pumps can be modeled as a constant auxiliary electric input for the primary equipment.	
0164-1	**N10**	Pump properties in the standard building model do not match the requirements of the California ACM manual, which specifies temperature drop of 40 F, rated power of 19 W/gpm, and minimum speed of 10% (see CEC-400-2013-004-CMF, section 5.8.5, Pump Motor Power-Per-Unit-Flow). From these values, basic principles can be used to calculate a pump head value of 71 feet (see "PumpCalcs" sheet of attached workbook).	Calculation tool
0164-1	**N11**	Fan power values in the standard model shall follow the requirements of the California ACM manual (see CEC-400-2013-004-CMF, section 5.7.3). These calculations are demonstrated in the "FanPower" sheet of the attached workbook.	Calculation tool
0164-1	**N12**	Fan power values for the proposed model shall follow the requirements of the California ACM manual (see CEC-400-2013-004-CMF, section 5.7.3). These calculations are demonstrated in the "FanPower" sheet of the attached workbook. Where fan mechanical efficiency is not available, the rules for standard fans shall be used. Exhaust fan power can be added to return fans, as long as heat gain from those fans are not included in the fan delta T value.	Calculation tool
0164-1	**N13**	The EnergyPro models did not use the correct weather files for simulations. The simulation weather files for Savings By Design need to be taken from the set of 16 locations specified in Title-24 Joint Appendix JA2.1 (CEC-400-2012-005-CMF-REV2). These are the locations that were used for determination of the DEER peak periods. The source for the weather data is the CBECC weather files supplied with the ACM Supporting Content.	Calculation tool
0164-1	**N14**	Simulation dates need to be set up for the year 2009 in order to be consistent with the CEC weather files and the TDV definitions (Title24_2013_TDV_Methodology_Report_23Feb2011.pdf, Table 16). The ACM Manual (CEC-400-2013-004-CMF, section 5.2.5) lists the simulation year as 1991, but that is an error.	Calculation tool
0164-1	**N15**	The EnergyPro simulations did not use the correct TDV data. EnergyPro was using 30-year TDV values, and the values are offset by two hours through the year (i.e. the first hour of the year in the model is using the third hour value of the published TDV values, and so on). The 15-year TDV values are prescribed as applicable to lighting and HVAC measure for nonresidential buildings. Since nonresidential buildings are dominated by lighting and HVAC, the whole building analysis in Savings By Design needs to use the 15-year TDV values published by CEC for whole building commercial applications, and the offset problem needs to be corrected.	Calculation tool
0164-1	**N16**	It is unclear in the latest Savings By Design program manual whether TDV is still used for calculation of incentives. In the 2015 Savings By Design Participant Handbook, the Whole Building Approach Incentives section indicates that the kWh incentive rate is based on "TDV % better than Title 24". The 2017 Savings By Design Handbook has the reference to TDV removed, and describes savings simply as "% better than Title 24".	Calculation tool
141-1	**1**	CPUC Staff note that PG&E allowed the customer to order equipment for this project prior to uploading any documentation to the CMPA directory for this project. PG&E's internal QC review questioned the program influence and the implementer's role in this project. CPUC Staff note that the project was primarily developed by the equipment vendor. This issue was discussed during several placeholder calls with PG&E.	Program influence

		PG&E performed additional investigation regarding program influence by interviewing the vendor and the customer. CPUC Staff have found that there does not appear to be significant program influence for this project. The ex post evaluation team will determine the NTG ratio for this project if it is selected for evaluation.	
141-1	**2**	A signed and dated program application has not been included with the documents provided to CPUC Staff. PG&E must upload a signed and dated application to the CMPA directory for this project. This is a requirement on the "Ready for Review" checklist.	Missing documents
141-1	**3**	The M&V plan and post installation true-up calculation methodology lack sufficient detail. The PA must revise and resubmit the project documentation following previous guidance on these subjects. Additionally, for this project the revised documentation must address: 1. How the volume of wine processed in the ED equipment will be measured and verified and then correlated with the proposed equipment power measurements. 2. Will the analysis use the incoming or outgoing volume of wine? 3. What % of wine previously "cold stabilized" will go through the ED process on an annual basis? It seems unlikely that the customer will exclusively use the ED process. 4. Do different types of wine require more or less time and/or energy than others for either cold stabilization or the ED process? If so how will this be accounted for in the analysis? 5. Both the cold stabilization and the ED processes appear to be batch processes. The proposed M&V period must be sufficient to capture a period of high usage and the methodology must be able to correlate the volume of wine in a particular batch with the energy usage when that batch is processed.	M&V plan
141-1	**N1**	The documentation of the M&V plan and calculation methodology for this project is inadequate. CPUC Staff continue to be very disappointed with a lack of progress in improving the documentation for M&V plans and post installation true-up calculation methodologies. CPUC Staff have provided guidance to the PA in the past on these issue. Poor M&V plans and calculation methods often lead to unreliable ex ante savings estimates. The PA must take action to improve the documentation in these areas.	M&V plan
0044-2	**1**	It the first disposition for this project, CPUC Staff required that spot measurements be taken to verify the assumed power factor and voltage used for the savings analysis baseline. The PA uploaded a revised M&V plan to the CMPA folder for this project including this requirement. The PA did not follow this requirement and spot measurements were not taken. CPUC Staff are disappointed that the PA did not follow this guidance and advise the PA that CPUC Staff guidance must be followed. For future projects, if the PA cannot follow guidance they should advise CPUC staff before proceeding and seek agreement as to the proper course of action.	Did not follow previous CPUC guidance
0044-2	**2**	The CPUC Staff approved M&V plan stated that the M&V would include the "Installation of Onset Model: H-22 Power Monitors and H23S Pressure Monitors for a period of 2 weeks on the existing system under the same operating conditions as was captured in the project baseline."	M&V plan

		Pressure measurements have not been included with the submitted data. If pressure measurements were taken, the PA must upload the raw data files and a .csv extraction of the raw data files to the CMPA directory for this project. If pressure measurements were not performed, the PA must upload to the CMPA directory for this project an explanation of why the approved M&V plan was not followed.	
0044-2	**3**	The CPUC Staff approved M&V plan stated that "If post installation verification determines that flow rates are different than values used in the pre-approved calculations, then the baseline will be normalized based on post installation monitored flow for final calculations." The PA's final analysis has estimated that the average baseline operating conditions were: 2,250 CFM with 63.29 kW vacuum pump power and the post installation average operating conditions were: 1,250 CFM with 32.51 kW vacuum pump power. The PA's submitted post installation analysis is simply the difference between the measured baseline average kW and post-installation average kW vacuum pump demand multiplied by 8,568 annual hours of operation. Since the PA's estimated average flow rate was 2,250 CFM for the baseline and 1,250 CFM for the post installation, CPUC Staff have concluded that the PA did not follow the CPUC Staff approved calculation methodology for the post installation ex ante savings true-up which required normalization of the analysis to vacuum system CFM if the "post installation verification determines that flow rates are different than values used in the pre-approved calculations".	Calculation method
0044-2	**4**	Because the PA's estimated average flow rate was 2,250 CFM for the baseline and 1,250 CFM for the post installation, CPUC Staff have normalized the final ex ante savings analysis for this project as follows: Normalized annual kWh savings impacts = (kWpre/CFMpre -kWpost/CFMpost) x CFM post x Annual operating hours= (63.29/2,250 - 32.51/1,250) x 1,250 x 8,568 = **22,715 kWh** Average demand reduction = (kWpre/CFMpre -kWpost/CFMpost) x CFM post (63.29/2,250 - 32.51/1,250) x 1,250 = **2.7 kW** **The PA must revise the project documentation and proposed incentive to reflect the CPUC Staff approved normalized savings impacts for this project.**	Revise to match CPUC savings estimate
0044-2	**5**	The PA has not provided the raw data files for the baseline or post installation measurements for this project. These files must be provided for every project where measurements are taken. The raw data files are not simply data copied into another document. For example, raw data files for Hobo data loggers have a file extension ".hobo". The PA must provide the raw data files **and** the .csv extraction of the raw data files for all measured baseline and post installation data for this project. These files should be uploaded to the CMPA directory for this project. This is a requirement on the "Ready for Review" checklist.	Missing documents
0044-2	**6**	The PA has included a document with a file name "Gray Areas 1643-02 Review Questions Comments_Vacuum_Confidential.docx" with its submission. CPUC Staff note that the PA technical reviewer questioned some of the issues as noted above, but did not require the implementer	Did not follow previous CPUC

		to address them. Additionally CPUC Staff note that the technical reviewer's name and firm are not included in this document. As noted in the first disposition for this project, the technical reviewer's name and firm name must be included for every project. This is a requirement on the "Ready for Review" checklist. The PA must upload to the CMPA folder for this project the name and the firm name for the technical reviewer who performed the review of the post installation documentation for this project.	guidance
0044-2	**N1**	For this project CPUC Staff found that the PA did not follow the CPUC Staff approved M&V plan or the CPUC Staff approved post installation calculation methodology. The PA did not perform pressure measurements and did not normalize analysis when post operating conditions were found to be different that pre operating conditions as proposed in the CPUC Staff approved M&V plan. Additionally the PA did not follow CPUC Staff guidance that required the PA to take spot measurements to verify the assumed power factor and voltage used for the savings analysis baseline. When a project is selected for ex ante review by CPUC Staff the PA must follow all approved aspects of the project and also must follow all CPUC Staff guidance related to the project. If the PA determines that some aspect of the project cannot be executed as approved or that guidance cannot be followed, the PA must discuss the issues with CPUC Staff and reach agreement with CPUC Staff upon the resolution before proceeding. CPUC Staff require that the PA perform internal investigation to determine why the CPUC Staff approved M&V plan was not executed by the implementer (pressure measurements, spot measurement of voltage and power factor) and why the final savings analysis was not performed in accordance with the approved project calculation methodology documentation. CPUC Staff expect that the PA will report back to CPUC Staff on what went wrong on this project and that the PA will propose process changes to eliminate these issues for future projects.	Report back to CPUC Staff
0044-2	**N2**	CPUC Staff note that the PA technical reviewer questioned the implementer on some of the issues raised by staff in this disposition (lack of spot measured volts and power factor, analysis results), but did not require corrective actions from the implementer. CPUC Staff require the PA to interview the PA technical reviewer to determine why they did not pursue corrective actions from the implementer. Was the technical reviewer constrained by the budget allowed for the review of this project? Were there other reasons and rationale for the failure to require the implementer to comply with the CPUC Staff approved M&V plan and post installation true-up analysis methodology? CPUC Staff expect that the PA will explore the deficiencies identified with this project to improve its internal processes.	Report back to CPUC Staff
0044-2	**N4**	Always include the PA technical reviewer firm name and PA technical reviewer name on the technical review document for all projects.	Did not follow previous CPUC guidance
0111-2	**1**	The additional information submitted by the PA does not provide sufficient evidence of program influence on the customer's decision to retrofit the systems. Specifically, CPUC staff requests evidence showing that the PA and program implementer introduced the ideas of using fan walls and VFD retrofits to the customer. At this time, the information provided by the PA is more indicative of the customer's own motivation to implement the system retrofits. Furthermore, similar technologies have been used in the customer's other facilities as early as 2009 (see attached	Program influence

		[redacted]ProjectInfo.pdf). Project documents state that one air handler was retrofit as a pilot (1030) and that additional air handlers would be updated pending positive outcome from that project. It is possible that the point of influence of the PA/implementer may have occurred at that point. If so, then a full submittal for that project must be uploaded to CMPA for further consideration by CPUC staff. At this time, there is still inadequate evidence to support the program influence to install the selected upgrades, and staff is inclined to assign an NTG of zero to this project.	
0111-2	**N1**	CPUC Staff found in prior ex post NTG assessments that this customer has a strong corporate energy efficiency and environmental mandate worldwide. This customer stated in past ex post NTG assessments that it was 100% likely to pursue proposed energy efficiency measures in the absence of the energy efficiency programs. The PA's submitted preliminary freeridership screen is inadequate and does not appear to be conducted by an independent party without financial interest in the outcome. CPUC staff does not believe this an acceptable and reliable freeridership screening procedure. The screening approach lacks depth. Freeridership assessments need to be undertaken by an independent entity with no financial interests to either the project or the 3P implementer. CPUC Staff believes that this customer is a likely freerider. Recent CPUC decision D.16-08-019 states that in 2017 all portfolio goals will be Net Savings Impacts. This project appears to have little net impacts as CPUC Staff could not identify any documentation to demonstrate that the PA's program influenced this customer to adopt a more costly, more efficient option that they were planning to do absent the PA's intervention. CPUC Staff require that the PA improve its freeridership assessments and establish firm procedures to ensure in-depth assessments and independence.	NTG
0157-1	**1**	CPUC staff requests further information on the determination of the project as ROB (now Normal Replacement or NR). The original project report submitted by the implementer states that the project is an ER (now Accelerated Replacement or AR) however, the PG&E reviewer rejected this claim for several reasons including "that the customer's only alternative is to continue replacing fluorescent lamps (do nothing alternative)." Next, the project appears to have been revised to be NR with a baseline equal to the existing baseline, meaning the existing condition was accepted as the standard practice baseline required for NR projects. 1) The customer's expected practice to maintain existing systems for the foreseeable future, contrary to the PG&E reviewer's conclusion, is an indication that the project is AR. However, it is possible that the AR is not program influenced, which is discussed under Action Item 3. Additional information is required that examines the determination of measure application type. 2) Regardless of the measure application type (NR vs. AR), a standard practice baseline is required. For NR, this is the only baseline for the project. For AR, it is the second baseline for savings calculation after the RUL. The implementer assumes in its calculations, and the PG&E reviewer accepts, the use of the existing installed wattage as the standard practice baseline, but the report does not include discussion or evidence that an identical system would be installed if the current system had reached the end of its useful life. Additional information is required supporting that the customer's current practice is to specify similar linear fluorescent systems when installing new lighting systems.	Measure type
0157-1	**2**	The non-DEER HOU values are not allowed. Revise savings calculations to use DEER HOU and CDF values. This project appears to be a mixture of	Analysis

		conditioned storage, refrigerated storage and light manufacturing DEER building types. Revised savings calculations shall be submitted with final project documentation after completion of project. D.12-05-015 requires the use of DEER building type assumptions except in cases where PAs have proposed an alternative building type supported by a representative sample of buildings with lighting loggering and M&V.	assumptions
0157-1	**3**	CPUC staff requests additional information supporting program influence. In the report, the implementer describes a coordination role for itself. There are numerous references throughout the report to the program incentive being a key driver in the decision to pursue the project at this particular time. The customer appears to have obtained a proposal for a lighting system retrofit independent of the implementer. It is not clear if there was any communication between PG&E's core program representatives, who may have provided a more expedient approach to project implementation at a lower cost to ratepayers. In order for full program influence to be allowed, PG&E must provide additional analysis and information that supports how the increased ratepayer expenditures for this project compared to a more typical project that goes through a core deemed program. At this time, CPUC staff believe the NTG on this project is likely close to zero.	Program influence
0157-1	**N1**	CPUC staff has previously directed PAs to require any measures covered by deemed incentives to pass through deemed programs with incentives determined according to measure catalogs published by the PAs and savings determined according to approved workpapers. Notes in the review files indicate that this project was assigned to calculated programs because the products installed, retrofit kits for high- and low-bay installations, were not eligible for deemed incentives. Once the project was directed to calculated programs, non-DEER ex ante operating hours and delta watts assumptions increased the savings over deemed values. Furthermore, calculated incentives are 4 times higher than deemed incentives. However, it is not clear from any of the submitted documentation if these higher incentives were necessary to influence the customer to pursue the project.	PA program rules
0157-1	**N2**	While non-DEER hours are not approved for this project, the lighting logger report does not adequately support the assumed operating hours. There is no loggering plan that shows the lighting layout, location of loggers and mapping of loggers to fixtures that can be reasonably represented by the data recorded by each logger. Sheet 1 of the spreadsheet calculates operating hours by area type (e.g. "Office", "WP", "CP") as the average of loggers installed within that type of area, which ignores the number of fixtures mapped to each logger.	M&V plan
138-1	**1**	A signed and dated application has not been provided. The PA must submit a signed and dated project application. This is a required item on the "Ready for Review" checklist.	Missing required information
138-1	**2**	The technical review indicates that there is a Statement of Influence in the “Pre-Field (Engineer) section in Energy Insight” CPUC Staff do not have access to Energy Insight. The PA must provide evidence of program influence for this project.	Program influence
138-1	**3**	The PA technical reviewer's name and company have not been provided on the technical review document for this project. All review forms must include the name of the reviewer and the firm they work for.	Missing required information

		The PA must provide the PA technical reviewer's name and company on all technical review forms.	
138-1	**4**	CPUC Staff note that the PA documentation submitted on 7/10/2017 notes that the measure type has been changed from REA to Normal replacement. Normal replacement measures must use the incremental measure cost when assessing the incentive caps. The PA must provide documentation for the incremental measure cost to verify that the incentive is properly cost capped.	Missing required information
138-1	**5**	CPUC staff note that the baseline proposed for the chiller performance is based upon Title 24 as effective prior from 2014 to 2016 rather than Title 24 effective 1/1/2017. The Title 24 chiller performance as well as the proposed chiller performance is listed in table 1 below. To utilize 2013 Title 24 requirements as a baseline the customer must supply the building permit application under which the permit for the proposed chiller was issued demonstrating that the date of the application (or permit issuance date) is prior to 1/1/2017.	Missing required information
138-1	**6**	CPUC staff notes that DEER contains chiller savings estimates for a range of building types. It is unclear why custom calculations are being utilized rather than developing savings using a method compatible with DEER or simply utilizing DEER values weighted together based on the site building type composition as compared to DEER building types. Additionally it is unclear that the proposed chiller exceeds standard practice as its rated performance is less than 15% above the Title 24 minimum requirements.	Calculation method
138-1	**7**	CPUC Staff are aware that this customer has had at least 3 applications (including the current application) for chiller projects in the past few years. CPUC Staff are concerned that each application assumes that the new chiller will be the lead chiller for this plant- maximizing the hours of operation and savings impacts. The PA must review its records and determine how many chillers in this facility have been incentivized in the past 6 years and review the assumptions underlying those savings impacts. This application must adjust the savings impacts from past projects and account for them in the proposed impacts of this project. Previous applications that CPUC Staff are aware of include: 2K12079864 (selected for ex ante review as CPUC ID X068), and 2K1500011335 cited in the project documentation for this project.	Analysis assumptions
138-1	**8**	CPUC Staff have performed a high level review of the analysis submitted for this project. CPUC Staff note that the difference between the Baseline Title 24 chiller and the proposed chiller efficiency seems too large. The PA should use Title 24 curves unless can document that the manufacturer's data is accurately modelling the IPLV. To accurately model the proposed chiller the PA will need detailed manufacturer data- e.g. performance at different condenser water temperatures. Additionally it is unclear what the condenser water controls are for this facility- e.g. is the condenser water temperature reset or is it constant? The analysis must accurately reflect the expected operating conditions for this facility. CPUC Staff are uncomfortable that the analysis uses summer data (8/9 -8/24) which is then correlated and annualized. Using summer data and not accounting for ambient wet bulb temperatures may be problematic. The large savings impacts shown in the ex ante analysis may be unrealistic.	Analysis assumptions

		The PA must verify that the analysis has been correctly performed.	
138-1	**9**	CPUC Staff note that the PA has not provided an incremental cost for the new chiller. An incremental cost must be provided and the PA must ensure that the proper incentive cap is applied to the project.	Missing required information
138-1	**N1**	The PA should ensure that all required items of the "Ready for Review" checklist are provided in its submissions. For this project several key items were not provided including the incremental project cost, the reviewers name and firm, the project application and evidence of program influence.	Missing required information
138-1	**N2**	The PA must provide the PA technical reviewer's name and company on all technical review forms.	Missing required information
138-1	**N3**	The customer must supply the building permit application under which the permit for the proposed chiller was issued.	Missing required information
138-1	**N4**	The PA must supply a justification for not utilizing DEER methods or values in the savings calculation in this and all future proposed chiller custom projects. The PA must demonstrate that the proposed chiller exceeds standard practice for similar installations in any future proposed custom chiller projects.	Missing required information
0174-1	**1**	The submitted documentation includes Attachment 10 "..Mechanical -piping diagram and chiller room…" CPUC Staff did not find any diagrams in this attachment. The PA must provide a single line drawing showing the existing and proposed equipment and piping configurations for this project including chillers, pumps, cooling towers, air handlers, control valves and other equipment served by the chiller systems. This document should be referenced as part of the proposed M&V plan.	Missing required information
0174-1	**2**	The correct measure type for this project is unclear. The implementer originally proposed that the project be considered a retrofit add-on. The PA has proposed that this is an Accelerated Replacement measure type. CPUC Staff find that the details of what is required to implement this project are unclear. Will new controls (hardware and or software) be required? Will the project entail new control strategies? Will chilled water valves be converted from 3-way to 2-way? Will pumps be resized? How will the piping be reconfigured? CPUC Staff note that the design for the project had advanced to the 60% stage as of December 2016 and details should be available. The PA must provide a detailed scope of the work required to implement the project so that an assessment of the correct measure type can be completed.	Missing required information
0174-1	**3**	There is a lack of evidence of program influence for this project. The feasibility study makes references to meetings in 2010 and later dates, however little supporting documentation has been provided. There is an email dated 4/26/2011 suggesting the concept of the proposed project, however there is no context (including the lead-up or responses to this message) associated with this message and how it affected the customer's decision process. There is documentation provided from a design firm indicating that the design concept and details of the project were fairly complete (60% design drawings) by 12/15/2016. The project application is dated 12/7/2016, at a point where the project design was well	Program influence

		advanced. The non-energy motivations for the customer to implement this project are unclear. The PA must provide a more detailed assessment of program influence and supporting documentation for this project.	
0174-1	**4**	The analysis of the savings for this project is based on assumptions of baseline and post installation operating conditions-a stipulated analysis. This type of analysis for highly uncertain project outcomes may be acceptable for "placeholder" savings in non-PfP (pay for performance) project, but this approach not acceptable in PfP cases where most of the implementer payments will be made before actual savings can be established via M&V. Additionally, there is inadequate M&V proposed for this project. CPUC Staff note that the savings impacts for this project are substantial-expected to be in excess of 800,000 kWh annually. The PA must revise and resubmit the documentation with a rigorous M&V plan to verify the savings impacts of this project. The PA must follow guidance previously provided on M&V plans and savings calculation methodology documentation.	M&V plan
0174-1	**5**	The PA has proposed that this is an accelerated replacement measure type. The second period baseline has not been provided. Second period costs and savings impacts have not been provided. If this AR project is an "RUL only" savings project that should be explicitly stated. The PA must provide the second period baseline, cost and savings impacts for this project pending the assignment of the measure type.	Missing required information
0174-1	**6**	CPUC Staff note that the customer and the implementer are the same company. The PA proposes to pay the customer an incentive of $91,182 and the implementer a performance payment of $185,590. The total payment to the customer would be in excess of $276,000. The project cost is estimated to be $200,000, therefore the customer would be compensated more than $76,000 than the implementation cost. This level of compensation is in excess of the Statewide Program Rules limits (Section 1.10.3.3) Also, as noted above highly uncertain savings may be appropriate for use as a "placeholder" savings value on non-PfP (pay for performance) projects, but is not an acceptable approach in PfP cases where most of the implementer payments will be made before actual savings can be established via M&V. The PA must address the proposed excessive compensation level for this project.	Incentive calculation
0151-2	**1**	CPUC Staff finds that the PA did not coordinate this project with SCG. CPUC Staff finds that the PG&E and SCG proposed projects are one in the same and both PA's must approach and treat the project in the same manner. Moving forward CPUC Staff requires that the PAs coordinate and adopt a single proposed project scope, analysis approach, and baseline.	Coordination
0151-2	**2**	CPUC Staff is concerned that this project exhibits no program influence other than the offer of a financial incentives to help the customer meet their internal simple payback threshold of three years. There is no submitted evidence that the customer considered any other alternatives to the proposed system and that the PA suggested any potential improvements beyond what the customer was already considering. CPUC Staff believes that the customer reliance on UV light [redacted] in their [redacted] plant, the successful retrofit of UV systems in similar	Program influence

		facilities by the UV system vendor in other parts of the country, and the effort to save potable water due to the California drought conditions may constitute the primary drivers why the customer pursued this project.	
0046-2	**1**	The PA provided a more complete project background and timeline and revised and resubmitted the documentation to match the proposed ER measure type. Commission staff accepts that the repair/replacement for most of the pumps associated with this project are Early Retirement measure types with supporting documentation meeting that described in the ProjectBasis_EULRUL_Evidencev1July172014.pdf document. However, in the description of the incremental measure cost, the PA notes that, on average, the water authority overhauls 6 pumps per year as part of their normal business practice. The six pumps with the highest saving impacts are assumed to be the pumps which would be refurbished in the first year absent the influence of the program and must be removed from the savings claims. Additionally staff note that the final 6 out of 30 pumps which would be refurbished in the fifth year of the project would have reached the end of the estimated 5 year RUL and would require refurbishment anyway and therefore no savings can be claimed for these pumps. The first six pumps have a zero years RUL, the second group of six pumps has a one year RUL, the third group of six pumps has a two year RUL, etc. As such, the savings associated with these 12 pumps (the first six pumps and the last six pumps) are to be removed from the project claims. The total project savings estimates must be revised and resubmitted based upon exclusion of these 12 pumps as demonstrated in the example shown in the supplemental files provided with this disposition (PGE-16-T-I-0046 CPUC Staff Savings Calc example 2017-08-17.xlxs).	Calculation method
0046-2	**2**	The calculation methodology must be revised so that the ex ante savings impacts over the Early Replacement RUL period are calculated as the average annual lifetime savings for the 30 pump project. An example of the calculations has been provided separately in the supplemental files provided with this disposition.	Calculation method
0046-2	**3**	In response to the previous EAR, the PA claims that a demand impact would occur that is related to a re-ordering of pump operation and provides an estimate of this potential impact based on pre and post-OPE values and an adjustment factor. No background information is provided as to the source of the adjustment factor, nor is any data provided that would substantiate a reordering of pump operation. As such, the alternative approach suggested for a demand estimate is not accepted. All demand impact claims must be based on pre and post refurbishment pump tests. Post installation pump tests must be in situ and at similar operating conditions- e.g. flow rate and pressure. The PA should execute a billing analysis that includes pre and post demand values for all water authority utility meters that include a ground-water pump as a load to verify the total savings impacts. The calculation methodology and M&V plan must be revised to reflect these requirements. Ex ante demand reduction impacts are to be set to zero pending verification from the pre and post installation pump tests.	Calculation method
0046-2	**4**	The PA's response to the energy calculation approach required from the first EAR that it was a calculation based upon a fixed pump runtime was incorrect. In fact, the required energy savings analysis is based upon a fixed pump productivity (pre-repair volumetric flow multiplied times the pump runtime). A review of past pump overhaul projects where post-measure tests are available suggest the flow provided by the pump increased significantly after the overhaul, leading to an anticipated reduction in pump runtime. The use of equivalent productivity values is	Calculation method

		standard practice in the evaluation of processes for custom projects. There may be a claimed increase in productivity for a measure, in which case both pre and post-measure nominal energy consumption is prorated to the higher productivity values. However, for this project where no productivity changes are explicitly noted, Commission staff directs the PA to base energy savings on the pre-measure pump annual water delivery rate in its savings calculations. This may also be cross checked through a review of utility meter 15 minute interval data.	
0046-2	**5**	The response document included an incremental measure cost (Table 5 on pp 67 of the response document). The description of what is entailed in the incremental cost was not clear. A review of invoices from other PG&E-funded pump overhauls suggest the most common pump overhaul activity includes a bowl and impeller replacement. If this remains the case for this project, Commission staff is unclear as to why a non-program participant bowl and impeller replacement cost would differ from a program-funded bowl and impeller replacement cost. Commission staff directs the PA to provide the specific tasks that would differ in a non-project pump overhaul in comparison to a project funded pump overhaul and how those differences would impact the pump's OPE. The incremental cost used in the TRC calculation is to be set to zero until specific cost evidence is provided the directly relates the incremental cost to an increase in post measure OPE.	Measure cost
0046-2	**6**	Action item 7 in the first EAR document provided a revised mechanism for determining pump runtime used in savings calculation via a comparison of the pump test pump motor kW to the most recent 5 months of metered electric demand for the meter associated with the pump. The PA noted that, "In the overall project calculations, there is only 3% average variance from the average kW peak demand derived from the pump test compared to the previous 5 months of billing history". The initial Item 7 applied to the calculation of specific pump runtime based on the demand from the electric meter associated with that (those) pump(s). The 3% difference associated with the overall calculations is not relevant in this case as the Item 7 requirement applies on a pump-by-pump basis. CPUC Staff require that the PA follow the direction provided in Item 7 of the First EAR in establishing the runtime for each pump in the project.	Calculation method
0046-2	**7**	The response document notes that post-measure pump tests will be provided on ALL pumps included in the project. If the PA accepts demand and energy savings as directed in this and the first EAR then this would suffice to establish post measure savings based upon pre-measure pump operation (total annual water delivery rate). A one month billing analysis would not be acceptable as meter data provided to support this project indicates potentially significant month-to-month variation in pump usage. Any billing analysis suggested in an M&V effort must begin with an analysis of the variation of billed energy used for the pumps associated with this project to establish a billing analysis evaluation period that would provide an acceptable level of uncertainty in the results. As a default, the PA may follow the initial guidance that post-repair pump test be taken on all pumps associated with this project. Additionally, the PA billing analysis M&V cross check effort should include at least six months of post-repair pump operation. A revised M&V plan must be resubmitted meeting all requirements in this disposition.	M&V plan
0046-2	**8**	CPUC staff have performed an analysis of the cost effectiveness of the measures proposed in this application. Various scenarios analyzed by staff have failed to provide a cost effective result. However the analysis shows that the customer's normal pump refurbishment activity (refurbishing six pumps per year) is highly cost effective for the customer to continue with on their own without ratepayer support. If the	Eligibility

		customer accelerated the pump refurbishment on their own, the return on investment is very attractive for the customer without ratepayer support. The analysis has been previously provided to PG&E. For the ratepayers, paying incentives to the customers and performance payments to the implementer is highly non-cost effective. Staff also performed a TRC analysis of the composite measure methodology directed above using average RUL savings resulting in a TRC of 0.68. This method further demonstrates that the project is not cost effective. The PA must address the lack of cost-effectiveness of this program as represented by the proposed project.	
0046-2	**N1**	For future projects where the ER measure type with an in situ baseline is claimed, the PA must provide the data/information and analysis that supports a preponderance of evidence determination of early retirement using the previously mentioned guidance document.	ER preponderance of evidence
0046-2	**N2**	CPUC Staff note that CPUC Decision 16-08-019 which is effective on 1/1/2017 specifically addresses measures which simply restore equipment to its original operating efficiency. Pump refurbishment as proposed for this project clearly falls into this category. This type of measure is now named "Behavioral, Retrocommissioning, and Operational" with the acronym "BRO". Decision 16-08-019 clearly states that BRO measures have a 3 year EUL, the measures should be in Programs targeting BRO measures, these measures must provide multi-year (at least two years) savings, and there is an expectation that ratepayer funding (incentives) for this type of measure should be lower than those for other types of measures. As of 1/1/2017, all measures which simply restore equipment to its original operating efficiency must comply with CPUC Decision 16-08-019. The findings and actions required described in this disposition also apply to pump refurbishments proposed in other PA programs (PG&E APEP Program and other EE programs in the commercial, industrial or agricultural market sectors.)	CPUC Policy
0046-2	**N3**	The findings and actions required described in this disposition also apply to the WISE program being implemented by the same implementer in other IOU territories. This disposition will be provided to other IOUs at the same time it is provided to PG&E.	Staff guidance
0046-2	**N4**	CPUC Staff reject the PA's underlying assumption that the customer would not perform pump overhauls in the absence of the PA's program, or would wait until pumps fail before performing a refurbishment. For each application that involves pump overhauls, the PA must assess the customer's standard practice in identifying and overhauling pumps, and only offer ratepayer incentives only to accelerate the normal practice. The baseline for each project must be the customer's normal practice for refurbishment. For this project Staff accept that the customer would normally perform 6 pump overhauls on average per year. Staff would expect that the PA's program would only pay to accelerate the refurbishment of the remaining refurbishment candidates that provide multi-year (at least two years), savings. Savings impacts for the EUL-RUL period are zero unless the PA can demonstrate that the refurbished pump efficiency exceeds the OEM pump efficiency. The incremental cost used in the TRC cost calculation (referred to as the ERC by the PA) must be set to zero unless the PA can demonstrate that the program causes additional refurbishment measures which increase efficiency to be installed that would not be installed as standard practice.	Baseline
0046-2	**N5**	CPUC Staff find that the pump refurbishment measure has been offered by the PA for many years in other Programs at a much lower cost to the ratepayers. All future pump refurbishments must go through the Core program and its successor programs. This measure may no longer be	Staff guidance

		offered in the WISE Program in its current structure. CPUC Staff advise the PA that its portfolio of programs should be working together in a manner that is most cost effective for the ratepayers.	

Attachment B2 Custom Project Scores and Feedback

The table below lists the identification numbers associated with each disposition. The PA may refer to Attachment B1 for more detailed descriptions of the specific actions staff required for each application. All custom projects were scored using new metrics adopted in 2016. The metrics are shown in the Table below.

Table 3 *2016 Adopted ex ante Metrics*

Metric	2016 CPUC Adopted ex ante Metrics	Maximum Points	% of TOTAL POINTS
Metric 1	**Timeliness and Timing of Submittals** Timely submittal of all documentation and follow-up utility responses to review disposition action items.	**5.0**	**10%**
Metric 2	**Content, Completeness and Quality of Submittals** Completeness, appropriateness, comprehensiveness, accuracy, and clarity of submitted documentation. In addition, this metric is an assessment of the utility's adherence to CPUC policies, Decisions, and prior CPUC Staff disposition guidance.	**15.0**	**30%**
Metric 3	**Proactive Initiation of Collaboration** Utility's efforts to bring either measures, questions, and/or savings calculation tools to CPUC Staff for discussion in the early formative stages, before CPUC Staff review selection. In the case of tools, before widespread use in the programs. CPUC Staff expects collaboration among the utilities and for the program administrators to engage with CPUC Staff in early discussions on high profile, high impact measures well before customer commitments are made.	**5.0**	**10%**
Metric 4	**Utility Due Diligence and QA/QC Effectiveness** CPUC Staff expects the utility to have effective Quality Control (QC) and Quality Assurance (QA) processes for its programs and measures. The depth and correctness of the utility's technical review of its ex ante parameters and values, for both Core and Third Party programs, are included under this metric.	**12.5**	**25%**
Metric 5	**Utility Responsiveness to Needs for Process & Program Improvements (Course Corrections)** This metric reflects the utility's efforts to improve, operationalize, and improve its internal processes which are responsible for the creation and assignment of ex ante parameters and values. CPUC Staff looks not only to the utility's internal QC/QA process, but also whether individual programs incorporate and comply with CPUC policies and prior CPUC Staff disposition guidance in its program rules, policies, and procedures.	**12.5**	**25%**

	X363		X447	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**0.0**	The PA submitted a follow-up to CPUC Staff after almost 56 months after their last communication about this project. CPUC Staff had marked this project as closed and Measure 1 as ineligible since there was no occupancy controls and the installed thermostats were essentially like-for-like replacements.	**5.0**	PA submitted their follow-up reply within an acceptable timeframe.
Metric 2	**11.3**	The post-M&V data for Measure 1 is rolled-up to a single 24-hour profile, no raw data submitted. No pre-M&V data for the chiller plant. PA did not inform CPUC staff that they were continuing to pursue the project. The PA did provide a complete narrative explaining the history behind Measure 1, Guestroom Controls.	**15.0**	PA followed and applied CPUC Staff prior disposition as requested.
Metric 3	**0.0**	The PA should have made CPUC Staff aware that it was continuing to pursue the guestroom controls for this project and trying to get the customer to rectify their initial decision to install different equipment that did not satisfy the original savings assumptions.	**0.0**	Issue of upstream measures in custom projects and process for identifying them has not been discussed with CPUC Staff.
Metric 4	**4.1**	The PA split the Technical Review between different firms and the analyses of the two measures did not apply common assumptions of room rental rates and occupancy. The Technical Review did not examine the eligibility and technical baseline of Measure 1. The Measure 1 analysis only used the CZ2010 weather data for the peak demand reduction estimate and not the annual energy savings. The PA's technical reviewer for Measure 1 did not recognize the need to use the VSD chiller's performance curve to establish an annual average performance values in the impact calculations.	**12.5**	PA followed and applied CPUC Staff prior disposition as requested.
Metric 5	**9.4**	The PA failed to communicate that the project was continuing and that Measure 1 was being corrected in 2015. On the positive side, the PA did check back with CPUC Staff before proceeding to finalize the project.	**6.3**	PA has not indicated how they will systematically avoid double-dipping upstream measures in the future.

	X488		X022	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**5.0**	PA uploaded initial project documentation within an acceptable timeframe.	**4.0**	CS staff requested a response within 14 days after receipt of the 1st disposition. First disposition was posted to the CMPA on 9/9/16 and the response was uploaded on 10/14/16, 21 days late.
Metric 2	**7.5**	Submitted response documentation is adequate. However, program influence documentation is lacking overall.	**7.5**	The PA's RCx program was not screening new construction projects properly to avoid any potential double-dipping. The revised technical review did not summarize the level of approved impacts, allowed measure costs, and estimated financial incentives.
Metric 3	**N/A**	This metric is scored during the final annual ESPI review for overall activities and not just on a single project basis. This project did not entail any issue that the PA should have brought to CPUC Staff attention for proactive collaboration.	**0.0**	The PA did not recognize the potential double-dipping issues between new construction and their RCx program.
Metric 4	**6.3**	Technical inconsistencies remain in the PA's submitted savings analysis that were not addressed by their Technical Review team. Need to use CZ2010 weather data and the revised DEER peak period definition.	**6.3**	Although CPUC Staff agreed to revise the RUL of the underlying equipment to set the appropriate REA measure EUL limit, the PA reviewer persisted in not following CPUC guidance for setting the SAT and DSP Reset measures EUL value.
Metric 5	**6.3**	The PA's collaboration with CPUC Staff to resolve technical issues, but program implementation considerations remain in particular surrounding actual program influence and customer standard practices.	**3.1**	The PA does not appear to be QC checking their reviewer's work and statements. This may be an indication that the PA is not thoroughly following up to ensure that CPUC policies and guidance is being applied and accepted throughout the organization.

	151		65	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**5.0**	The PA did not upload the initial project documentation within the expected timeframe. The documentation was provided 59 days beyond what was expected, i.e., two weeks after EAR selection.	**5.0**	PA uploaded initial project documentation within the expected timeframe.
Metric 2	**11.3**	Reasonably complete, but missing a determination of the measure EUL, does not recognize the fuel switching nature of the project, lacks adequate program influence documentation, contradictory ISP baseline assertions.	**0.0**	Minimal documentation, lacks consideration of code requirements, ineligible repair measures, and locked workbooks. Methodology for determining the ex ante impacts not provided and appear to be only placeholder values.
Metric 3	**N/A**	This metric is scored during the final annual ESPI review for overall activities and not just on a single project basis. This project did not entail any issue that the PA should have brought to CPUC Staff attention for proactive collaboration.	**N/A**	This metric is scored during the final annual ESPI review for overall activities and not just on a single project basis. This project did not entail any issue that the PA should have brought to CPUC Staff attention for proactive collaboration.
Metric 4	**6.3**	The PA's technical review contradicts the UV system ISP determination found elsewhere in the PA's documentation. The savings calculations do not use a ΔkW value for the UV system as would be expected for a Normal Replacement savings calculation, the measure EUL was not determined, and fuel switching was not acknowledged and accounted for.	**6.3**	Inadequate pre- and post- M&V data collection period typical of all proposed MBCx projects, in-house labor charges not questioned, incorrect DEER base year used for the peak demand period (1991 used and should be 2009). Measures are largely undefined: "...unclear if ventilation reductions will be possible in lab spaces, it is very likely that offices, conference rooms, and some support rooms can utilize demand controlled ventilation, increased deadbands, and other advanced sequences." There is no consideration of code requirements and ineligible repair measures. PA's reviews of MBCx projects are pro-forma. The documentation did not identify the solar PV on the adjacent buildings and whether the subject building receives power from the PV arrays. Length of pre- and post- data collection remains an unaddressed issue with all the PA's MBCx projects.
Metric 5	**6.3**	The PA did not question whether this project was potentially a free rider. CPUC Staff believes this project represents a likely free rider.	**3.1**	The PA recognizes that the MBCx program has similar issues to what CPUC Staff has previously identified for RCx programs, in both ex ante review and in ex post impact evaluations, but has not taken any concrete action to address the issues other than acknowledge it to Staff in a CMPA Message: "PG&E realized the MBCx program is in a manner inconsistent with Commission Staff expectations and may have some issues similar to the AERCx programs. PG&E would like to talk about it on the Monday Placeholder call along with the RCx discussions."

	66	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**5.0**	PA uploaded initial project documentation within the expected timeframe.
Metric 2	**0.0**	Minimal documentation, lacks consideration of code requirements, ineligible repair measures, and locked workbooks. Methodology for determining the ex ante impacts not provided and appear to be only placeholder values.
Metric 3	**N/A**	This metric is scored during the final annual ESPI review for overall activities and not just on a single project basis. This project did not entail any issue that the PA should have brought to CPUC Staff attention for proactive collaboration.
Metric 4	**6.3**	There is no Technical Review among the submitted documentation and the proposed measures are not typical on a single building MBCx project. The PA's reviews of this MBCx project is pro-forma. The documentation does not provide anything to back up the initial estimated ex ante impacts. The PA did address the 240 kW micro-turbines on-site generation that serve the campus.
Metric 5	**3.1**	The PA recognizes that the MBCx program has similar issues to what CPUC Staff has previously identified for RCx programs, in both ex ante review and in ex post impact evaluations, but has not taken any concrete action to address the issues other than acknowledge it to Staff in a CMPA Message: "PG&E realized the MBCx program is in a manner inconsistent with Commission Staff expectations and may have some issues similar to the AERCx programs. PG&E would like to talk about it on the Monday Placeholder call along with the RCx discussions."

	67	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**5.0**	PA uploaded initial project documentation within the expected timeframe.
Metric 2	**0.0**	Minimal documentation, lacks consideration of code requirements, ineligible repair measures, and locked workbooks. Methodology for determining the ex ante impacts not provided and appear to be only placeholder values.
Metric 3	**N/A**	This metric is scored during the final annual ESPI review for overall activities and not just on a single project basis. This project did not entail any issue that the PA should have brought to CPUC Staff attention for proactive collaboration.
Metric 4	**6.3**	There is no Technical Review among the submitted documentation and the proposed measures are not typical on a single building MBCx project. The PA's reviews of this MBCx project is pro-forma. The documentation does not provide anything to back up the initial estimated ex ante impacts. The PA did address the 240 kW micro-turbines on-site generation that serve the campus.
Metric 5	**3.1**	The PA recognizes that the MBCx program has similar issues to what CPUC Staff has previously identified for RCx programs, in both ex ante review and in ex post impact evaluations, but has not taken any concrete action to address the issues other than acknowledge it to Staff in a CMPA Message: "PG&E realized the MBCx program is in a manner inconsistent with Commission Staff expectations and may have some issues similar to the AERCx programs. PG&E would like to talk about it on the Monday Placeholder call along with the RCx discussions."

	68	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**5.0**	PA uploaded initial project documentation within the expected timeframe.
Metric 2	**0.0**	Minimal documentation, lacks consideration of code requirements, ineligible repair measures, and locked workbooks. Methodology for determining the ex ante impacts not provided and appear to be only placeholder values.
Metric 3	**N/A**	This metric is scored during the final annual ESPI review for overall activities and not just on a single project basis. This project did not entail any issue that the PA should have brought to CPUC Staff attention for proactive collaboration.
Metric 4	**6.3**	There is no Technical Review among the submitted documentation and the proposed measures are not typical on a single building MBCx project. The PA's reviews of this MBCx project is pro-forma. The documentation does not provide anything to back up the initial estimated ex ante impacts. The PA did address the 240 kW micro-turbines on-site generation that serve the campus.
Metric 5	**3.1**	The PA recognizes that the MBCx program has similar issues to what CPUC Staff has previously identified for RCx programs, in both ex ante review and in ex post impact evaluations, but has not taken any concrete action to address the issues other than acknowledge it to Staff in a CMPA Message: "PG&E realized the MBCx program is in a manner inconsistent with Commission Staff expectations and may have some issues similar to the AERCx programs. PG&E would like to talk about it on the Monday Placeholder call along with the RCx discussions."

	123	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**0.0**	The customer has contacted CPUC management expressing frustration about the project review time. The PA must explain why there has been a 5 month gap between the date of the project selection (September 2016) by CPUC Staff with the technical review completed 6 months ago (August 2016) and the upload of the documents to the CMPA for CPUC Staff review (February 2017).
Metric 2	**3.0**	The technical review has been provided in such an abbreviated format. The review lacks critical information such as the approved measure type and EUL for the project. The measure type must be provided. The proposed EUL has been provided in the PFS but an approved measure type and EUL is not included in the PA technical review documents. The PA technical review refers to several issues that the PA technical reviewer addressed with the implementer which were resolved in "the pre-installation report and/or on chatter in Energy Insight (EI)". CPUC staff are unclear if this information is included in the PA's submission since CPUC Staff have similar concerns with the implementer's submitted documentation to those raised by the PA technical reviewer.
Metric 3		NA
Metric 4	**3.8**	The technical review has been provided in such an abbreviated format. The review lacks critical information such as the approved measure type and EUL for the project. The measure type must be provided. The proposed EUL has been provided in the PFS but an approved measure type and EUL is not included in the PA technical review documents. The PA technical review refers to several issues that the PA technical reviewer addressed with the implementer which were resolved in "the pre-installation report and/or on chatter in Energy Insight (EI)". CPUC staff are unclear if this information is included in the PA's submission since CPUC Staff have similar concerns with the implementer's submitted documentation to those raised by the PA technical reviewer.
Metric 5	**6.3**	CPUC Staff have previously highlighted issues with poorly documented M&V plans. Projects must not be approved to proceed to implementation until a well-conceived M&V plan has been designed, documented, reviewed and approved. The PA reviewers must be diligent in reviewing the implementer’s projects and ensure that all reasonable efforts are made to increase the reliability of the savings estimates.

	112		145	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**0.0**	The PA did not respond to the first EAR for 217 Days. This is an unacceptable response time.	**0.0**	The PA did not upload any documentation for this project for 193 days after notification of selection.
Metric 2	**3.0**	The PA did not respond to the second item in the EAR requesting that the PA provide supporting documentation for the assumptions used in the calculations.	**0.0**	The PA did not follow the Statewide Compressed Air Guidelines which seem to indicate that this is an ineligible project. This is a waste of time and ratepayer resources. The PA did not follow the "Ready for Review" checklist which requires a signed, dated application and live spreadsheet calculations which were not provided. The PA did not provide the age of the existing equipment for the project- this is especially important for the "Program Induced early Replacement" measure type.
Metric 3		NA		NA
Metric 4	**3.0**	Incomplete response to the first disposition. Flawed logic in defending that the installation is "permanent".	**0.0**	CPUC Staff are disappointed that neither the PA nor the PA technical reviewer have referred to the 2014 Statewide Air Compressor Program Guidelines document in the due diligence review for this project. This leads CPUC Staff to believe that neither the PA nor their technical reviewer may be familiar with this Statewide document.
Metric 5	**3.0**	The PA seems unwilling to reject projects even after flaws are identified by CPUC Staff. In this case CPUC Staff clearly identified a State Wide program rule which renders this project ineligible. The PA has provided flawed logic in response to try and justify paying incentives for this project. The PA must make more effort to improve its due diligence reviews of custom projects.	**0.0**	Staff are disappointed that the PA seems unable to maintain an active current library of Statewide Program guidelines and CPUC policy and apply it to the due diligence reviews of ratepayer funded custom projects. The PA must endeavor to improve in this area.

	21		180	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**0.0**	The PA did not upload documents for more than 1.5 years after being notified that the project was selected by CPUC Staff for review.	**1.3**	58 days to first PA upload after CPUC Staff selection.
Metric 2	**3.0**	CPUC Staff are disappointed that the PA is unable to follow previous guidance related to calculation methodologies and M&V plans. Additionally, the PA has not submitted the Ready for Review checklist for this project and has neglected to provide items required on the checklist. These omissions have created the requirement for another iteration of review.	**6.0**	The project description and background are well presented. The PA neglected to upload the project application and raw data files as required on the "Ready for Review" checklist. The PA did not adjust the proposed EULs for the REA measure type as per previous guidance. The calculation methodology and M&V plans have not been presented in accordance with previous guidance.
Metric 3	**NA**			NA
Metric 4	**2.5**	CPUC Staff are disappointed that the PA is unable to follow previous guidance related to calculation methodologies and M&V plans. Additionally, the PA has not submitted the Ready for Review checklist for this project and has neglected to provide items required on the checklist. These omissions have created the requirement for another iteration of review.	**6.3**	The PA did a good job in reviewing the placeholder ex ante savings estimates and measure eligibility. however it is unclear what the technical reviewer's findings and approval status are for some of the other key parameters that have been reviewed (e.g. EUL, RUL, incentives, costs, M&V plan, calculation methodology, etc.) and what the approved versus submitted parameters are for this project. It is unclear if the absence of comments on key project steps such as the M&V plan signify PA approval to the implementer, or if there may be future PA reviewer input on some aspects of this project. The PA must for all future custom projects, whether selected for ex ante review or not, follow the guidance described in instruction number 1 of the disposition.
Metric 5	**2.5**	CPUC Staff are disappointed that the PA is unable to follow previous guidance related to calculation methodologies and M&V plans. Additionally, the PA has not submitted the Ready for Review checklist for this project and has neglected to provide items required on the checklist. These omissions have created the requirement for another iteration of review.	**5.0**	The PA technical review did not include any assessment of the evidence of program influence. The PA did not adjust the proposed EULs for the REA measure type as per previous guidance. The calculation methodology and M&V plans have not been presented in accordance with previous guidance.

	163		164	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**0.0**	194 days from notification to submission date.	**0.0**	151 days from notification to submission date.
Metric 2	**10.0**	Problems with accuracy mostly due to choice of modeling software, but also some model input issues.	**10.0**	Problems with accuracy mostly due to choice of modeling software, but also some model input issues.
Metric 3	**NA**		**NA**	
Metric 4	**8.0**	A review was completed and submitted, but failed to identify numerous problems. The model developed by the reviewer was not included in the submitted files. The preponderance of issues in the modeling software indicates Q/A and Q/C on the software prior to deployment was insufficient.	**8.0**	A review was completed and submitted, but failed to identify numerous problems. The model developed by the reviewer was not included in the submitted files. The preponderance of issues in the modeling software indicates Q/A and Q/C on the software prior to deployment was insufficient.
Metric 5	**NA**		**NA**	

	141		44	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**0.0**	The PA uploaded the initial documentation for this project 112 days after being notified of the project being selected. The PA is required to upload the documentation within 14 days.	**5.0**	This is a post installation report. There is no specific response time expectation.
Metric 2	**7.5**	The project documentation includes a good description of the measure and its impacts. The documentation of the M&V plan and calculation methodology for this project is inadequate. CPUC Staff continue to be very disappointed with a lack of progress in improving the documentation for M&V plans and post installation true-up calculation methodologies. CPUC Staff have provided guidance to the PA in the past on these issue. Poor M&V plans and calculation methods often lead to unreliable ex ante savings estimates.	**0.0**	CPUC Staff are very disappointed with the numerous deficiencies identified for this project including: the failure to follow CPUC guidance, the failure to follow the approved M&V plan and the failure to follow the approved calculation methodology for the post installation true-up for this project.
Metric 3		NA		NA
Metric 4	**7.5**	CPUC Staff have repeatedly advised the PA that the documentation for the proposed post installation true-up calculations and associated M&V plans require significant improvement.	**0.0**	The PA technical reviewer questioned some of the same deficiencies identified by CPUC Staff but did not require adequate corrective actions from the implementer.
Metric 5	**6.3**	PG&E's internal QC review questioned the program influence and the implementer's role in this project. CPUC Staff note that the project was primarily developed by the equipment vendor. CPUC Staff have found that there does not appear to be significant program influence for this project. CPUC Staff have repeatedly advised the PA that the documentation for the proposed post installation true-up calculations and associated M&V plans require significant improvement.	**1.9**	CPUC Staff are disappointed that the PA struggles to improve in basic areas that directly affect the reliability of the ex ante savings estimates. For this project the PA did not follow CPUC guidance, the failed to follow the approved M&V plan and the failed to follow the approved calculation methodology for the post installation true-up for this project. The PA's technical reviewer questioned some of the same deficiencies identified by CPUC Staff but did not require adequate corrective actions from the implementer.

	111		157	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**1.0**	Response to first EAR took several months	**0.0**	PG&E notified of project review on 12/19/2016. PG&E uploaded files on 5/17/2017
Metric 2	**3.0**	Submittals in response to review did not provide evidence of program influence. Resubmittal responsive to technical comments but inadequate response for POI/Net.	**3.0**	Enough information submitted to review project. However, calculations approaches do not follow DEER methods which require the use of DEER building type assumptions for lighting measures including operating hours. While operating hours assumptions were rejected, logger results submitted still did not support claim of non-DEER operating hours. Program influence is not well supported and there appears to be a lack of understanding of the analysis needed to determine measure application type (NR vs. AR).
Metric 3		Not applicable to this project	**n/a**	
Metric 4	**3.0**	A significant short coming is the lack of review of documentation for the "pilot project" which appears to be the most critical, and perhaps only, point of possible program influence over the project.	**3.0**	Inadequate analysis to properly determine the measure application type (NR vs AR) on both the implementer and reviewers from both PG&E staff and PG&E's contracted reviewer. Decision to allow non-DEER HOU appears to have been made unilaterally by PG&E management (referred to as "Policy" in the PG&E reviewer's notes.) No analysis was provided to support the use of the existing baseline as the standard practice baseline. There was no independent analysis to support program influence for this custom approach compared to deemed approaches which are less costly to ratepayers.
Metric 5	**3.0**	The free ridership assessment lacks depth and appears to have been conducted by either the PA account representative or the 3P implementer. (11/112017 update: original comment still applies)	**3.0**	It is not clear why this project should be going through a custom program at a significantly higher cost to ratepayers than a deemed program. PG&E reviewer's notes indicate that it was directed to a custom program because the specific technologies were not included in any deemed offerings. This metric is intended to focus on those program areas needing improvement so that projects can be implemented at lower cost to ratepayers. PG&E should examine its custom projects. CPUC staff suspects that technologies in this particular project are a fairly common measure.

	138		174	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**0.0**	The PA's first upload of documents for this project was 147 days after selection for review by CPUC Staff.	**2.5**	The PA uploaded the first submittal 29 days after being notified of the project being selected.
Metric 2	**2.3**	For this project several key items were not provided including the incremental project cost, the reviewers name and firm, the project application and evidence of program influence. Additionally the updated reviewer notes are contained on a tab of the calculation spreadsheet which is difficult to locate.	**6.0**	The scope of the project is unclear. Critical details about what is required to implement the project have not been provided- leading to a requirement for CPUC Staff to request additional information.
Metric 3		NA		NA
Metric 4	**6.3**	The PA has not carefully followed the "ready for Review" checklist, creating a need for CPUC Staff to request the missing information. CPUC Staff has concerns about some of the assumptions used in the analysis.	**8.8**	The PA technical review did not question the proposed verification plan for this large savings impact project. CPUC Staff have found that the M&V plan is inadequate for such a large savings impact project. The PA required the implementer to change the measure type from REA to ER, however the second period information such as cost and savings have not been provided.
Metric 5	**6.3**	The PA has not provided any documentation supporting program influence for this project. There are statements on this subject, however documentation has not been provided. QA/QC processes would ensure that required items on the "Ready for Review" checklist are provided so that CPUC Staff does not have to request these items from the PA, creating delay in the project approval process.	**6.3**	Program influence for this project has not been well documented. CPUC Staff have found that the M&V plan is not rigorous enough. The PA must improve its due diligence efforts.

	151		46	
Metric	**SCORE**	**CPUC Staff Specific Comments on Each Metric**	**SCORE**	**CPUC Staff Specific Comments on Each Metric**
Metric 1	**5.0**	The PA responded in a timely fashion to the first disposition for this project.	**5.0**	The PA provided a comprehensive response in a reasonable time frame given the complexity of the project.
Metric 2	**10.5**		**3.0**	The PA provided detailed replies to CPUC Staff comments, many of the PA's replies were found to be inappropriate.
Metric 3	**NA**			NA
Metric 4	**6.3**	CPUC Staff finds that the PG&E and SoCalGas did not coordinate this project as the proposed projects are one in the same. Both PAs must approach and treat the project in the same manner. Moving forward, CPUC Staff requires that the PAs coordinate and adopt a single proposed project scope, analysis approach, and baseline.	**3.0**	The PA has failed to recognize the significance of customer provided information regarding the normal planned pump refurbishment/maintenance activities and did not adjust the project impacts to account for this level of activity absent the program. The PA has failed to demonstrate the incremental cost for this project and seems to not comprehend the concept but rather seems to be looking for opportunities to maximize the project incentive as opposed to complying with Staff guidance.
Metric 5	**6.3**	CPUC Staff is concerned that this project exhibits no program influence other than the offer of a financial incentives to help the customer meet their internal simple payback threshold of three years. There is no submitted evidence that the customer considered any other alternatives to the proposed system and that the PA suggested any potential improvements beyond what the customer was already considering.	**4.0**	CPUC Staff have identified and brought to the attention of the PA recurring issues with this implementer. CPUC Staff expect the PA to take action to remedy these deficiencies.

Attachment C: Workpaper Scores and Feedback

The table below lists the ID numbers associated with each workpaper submission or disposition and the workpaper review process "score enhancements" scoring area. The listed weight is used in the combining all the individual rows together into a single score for all the rows in the two scoring components ("direct review" and "process issues"); then each category total score gets equal weighting in the final total score for the metric. The PA may refer to the individual dispositions for more detailed descriptions of the specific actions staff required for each workpaper. The qualitative ESPI scoring feedbacks are designated as follows:

'+' indicates a positive (from midpoint) scoring impact on a metric,
'-' indicates a negative (from midpoint) scoring impact on a metric,
'Yes' indicates meeting expectation; neutral (midpoint) scoring impact on a metric,
'No' indicates the review feedback is not applicable to a metric.

Workpaper Detailed Reviews					ESPI Metrics				
WP ID	Rev	Title	Comments	Weight	1	2	3	4	5
PGECOPRO110	2	Process Fan VFD Up to 75 hp	PG&E's adoption of SCE's workpaper indicates a general lack of internal quality control. PG&E originally adopted the SCE workpaper in 2015 and then updated their adoption of the SCE workpaper in July to conform with the phase 1 disposition; however, CPUC staff rejected the workpaper.	1	no	no	no	-	-
PGECOPUM102	4	Residential Variable Speed Swimming Pool Pump	PG&E's followed direction of the Phase 1 disposition to adopt a statewide definition for measures and costs; however, the measures for 2017 were not submitted until December. Additionally, prior to adopting the workpaper, PG&E should perform their own due diligence to confirm that the adopted workpaper conforms to the disposition. In January 2018, CPUC staff reviewed PG&E's workpaper and found that is did not follow the requirements of the disposition regarding "early retirement" measures.	0					
PGECOPUM102	8	Residential Variable Speed Swimming Pool Pump		0.5	-	-	no	-	-
PGECOPUM102	7	Residential Variable Speed Swimming Pool Pump		0.5	no	-	no	-	-
PGECOLTG141	7	LED PAR16, PAR20, PAR30, and PAR38 Lamps		0.25	+	yes	no	no	no

PGECOLTG165	3	LED A-Lamps	For A- lamps, PG&E invested significant staff time to work with the EAR team and CPUC staff to address the primary concerns of the Phase 1 disposition, which was that A-lamp savings needed to be tied to the overall lamp performance with higher performing lamps having greater estimated savings.	0.5	+	yes	+	yes	+
PGECOLTG107	8	Residential Upstream Compact Fluorescent Lighting	Disposition includes multiple versions of workpaper. Workpaper retired 7/1/2017	0.25	+	yes	no	no	+
PGECOLTG111	8	Nonresidential Upstream Compact Fluorescent Lighting	PG&E followed direction of the Phase 1 disposition and submitted revised workpapers in a timely fashion. Furthermore PG&E collaborated with SCE, the EAR team and CPUC staff to identify differences in measure definitions between PG&E and SCE workpapers so that measure and cost data for each workpaper were properly represented in the ex ante database. Furthermore, in consideration of rapid adoption of CFLs as well as removal of CFLs from the 2018 savings goals, PG&E has proactively removed all CFLs from their deemed program offerings as of 1/1/2018.	0.25	+	yes	no	no	+
PGECOLTG140	7	LED MR-16		0.25	+	yes	no	no	no
PGECOLTG163	5	LED Candelabra Replacements		0.25	+	yes	no	no	no
PGECOLTG164	5	LED Globe Lamps		0.25	+	yes	no	no	no
PGE3PLTG173	6	Compact Fluorescent, Downstream & Direct Install		0.25	+	yes	no	no	+
PGECOLTG177	3	LED BR/R Lamps		0.25	+	yes	no	no	no
PGECOLTG178	3	LED High-Bay and Low-Bay Fixtures	The EAR team notes that the workpaper was well documented supporting a comprehensive review. The EAR team noted a lack of consideration for the rapidly shifting standard practice baseline to LEDs. The workpaper also did not consider the wide variation in available LED fixture performance which the EAR team believes should result in greater estimated savings for higher performance fixtures. PG&E has embarked on a standard practice study, but this will likely not be completed until the 3rd quarter of 2018.	1	+	yes	yes	-	-

Workpaper Preliminary Reviews

WP ID	Rev	Title	Comments	Weight	1	2	3	4	5

PGECOPUM107	0	High Performance Circulator Pumps	PG&E's was non-responsive to the EAR team's technical and baseline concerns on this workpaper. PG&E has not addressed the concerns of the preliminary review and the EAR team is concerned that savings are overestimated.	0.5	no	-	yes	-	-
PGECOLTG163	6	LED Candelabra	PG&E submitted revised workpapers in a timely fashion, following the final Phase 1 review issued on May 26, 2017. The EAR team observed some inconsistencies in ex ante data and values, but these were resolved through the regular workpaper meetings with PG&E.	0.2	+	no	no	no	yes
PGECOLTG164	6	LEDGlobe		0.2	+	no	no	no	yes
PGECOLTG165	4	LED A-Lamps		0.2	+	no	no	no	yes
PGECOLTG141	8	LED PAR Lamp		0.2	+	no	no	no	yes
PGE3PLTG173	6	CFL DI		0.2	+	no	no	no	yes
PGECOLTG177	5	LEDBR-R-Lamps		0.2	+	no	no	no	yes

Other Direction

WP ID	Rev	Description	Comments	Weight	1	2	3	4	5
PG&E		Smart Thermostats	PG&E has been carrying out independent research of savings of smart thermostats and presented research results during 2017. Unfortunately, this research has not been used in development of statewide savings values due to staff approval of SCE's workpaper that follows a different methodology developed by a primary vendor of smart thermostats. Nevertheless, CPUC staff acknowledges PG&E's efforts to carry out independent research on these technologies.	1	no	yes	+	+	yes

PGECOLTG151	8	LED Outdoor Area and Street Lighting	PG&E submitted a proposal to CPUC staff to revise normal replacement (NR) baselines for exterior and parking garage lighting to include a large fraction of LEDs as standard practice. In its proposal, PG&E noted that an ISP study was in the planning stages and that the proposed baselines were developed in consideration of readily available market data publications. The EAR team is currently reviewing the final workpaper, but recognizes PG&E's efforts to anticipate the rapidly changing exterior lighting market as well as provide an opportunity for advanced collaboration with CPUC staff and the EAR team.	1	no	yes	+	+	no
PGECOHVC174	0	Multiple Speed Unitary Air-Cooled Commercial Air Conditioners and Heat Pumps	PG&E submitted plans and had several discussions with CPUC staff consultants on a project designed to develop savings estimates and added equipment measures/tiers for packaged HVAC equipment incorporating multi-speed fan and compressors providing EER and IEER values that exceed those provided in DEER. In those discussions, as in similar discussion in previous years, PG&E was directed to follow DEER assumptions and methods in developing equipment performance maps and running simulations utilizing DEER building prototypes. The initial workpaper as submitted did not supply all data used to develop the equipment performance maps, did not undertake to examine a range of representative equipment on the market, and important DEER modeling assumption were not utilized.	1	yes	-	yes	-	no
Process Adders										
	1	Updates to Unreviewed Workpapers Based on Other Reviews: Initiative of the PA to examine previous workpaper preliminary reviews or dispositions and use that information to identify and update other workpapers that may have similar issues.		1	yes	yes	no	no	yes

2	Responsiveness to Previous Direction: Efforts to update workpapers where previous direction has been provided, such as through decisions (e.g. D.11-07-030 that required standard practice research on food service equipment) or through CPUC staff direction	1	yes	-	yes	no	yes
3	Consideration of Standard Practice and/or Code Baselines: Efforts to research typical standard practice or code baseline where it may not be well understood. For example: What are most common applications for program VRF and mini-/multi-split HVAC systems? What portion of small wattage LED fixtures are installed where high efficacy fixtures may actually be required by code? (which would reduce the likelihood that an incandescent baseline is reasonable)	1	yes	-	+	yes	+
4	Data Gaps in Best Available Information: Appropriateness and adequacy of data to support savings calculations, cost or net-to-gross assumptions. For example, when energy use information about the baseline technology is not readily available, the PA should perform additional research beyond seeking opinions of a limited group of individuals.	1	yes	yes	yes	yes	yes
5	Consistency with CPUC Policy and Existing Body of Decision Language: Ex ante values must be developed in a manner that is consistent with existing CPUC policy and all applicable decision language.	1	no	yes	no	yes	-
6	Completeness of narrative on initial review: On first review, a workpaper should include enough descriptive information so that both the delivery approach, the ex ante values, and the relationships between the two are understood by the EAR team and CPUC staff.	1	yes	yes	no	yes	yes

Attachment D: 2017 Ex Ante Review Annual Ratings

Custom Scoring

2017 Annual Custom Ratings		Metric 1	Metric 2	Metric 3	Metric 4	Metric 5	
Direct Workproduct Review Score	Dispositions Score	2.45	1.70	1.00	2.16	1.77	
Review Process Score Enhancements	Technical & Policy QC Increase	0.00	0.00	2.00	2.50	2.50	
	Implementation Increase	0.00	0.00	1.00	0.00	0.00	
Total Score	Final Metric Score (1-5)	2.45	1.71	4.00	4.67	4.28	Total Points
	Metric points	2.45	5.13	4.00	11.68	10.70	33.96

2016 Annual Custom Ratings		Metric 1	Metric 2	Metric 3	Metric 4	Metric 5	
Direct Workproduct Review Score	Dispositions Score	2.33	1.41	5.00	0.94	1.16	
Review Process Score Enhancements	Technical & Policy QC Increase	0.00	1.00	2.00	2.50	2.50	
	Implementation Increase	0.00	0.00	0.00	0.00	0.00	
Total Score	Final Metric Score (1-5)	2.33	2.41	5.00	3.44	3.66	Total Points
	Metric points	2.33	7.23	5.00	8.60	9.15	32.31

Workpaper Scoring

2017 Annual Workpaper Ratings		Metric 1	Metric 2	Metric 3	Metric 4	Metric 5	
Direct Workproduct Review Score	PGE "-"	10%	21%	0%	58%	50%	
	PGE "+"	90%	0%	63%	33%	18%	
	PGE "Yes"	0%	79%	38%	8%	32%	
	Dispositions Score %	**90%**	**39%**	**81%**	**38%**	**34%**	
	Dispositions Score	**4.52**	**1.97**	**4.07**	**1.88**	**1.70**	
Review Process Score Enhancements	PGE "-"	0%	33%	0%	0%	17%	
	PGE "+"	0%	0%	33%	0%	17%	
	PGE "Yes"	100%	67%	67%	100%	67%	
	Process Score %	**50%**	**33%**	**67%**	**50%**	**50%**	
	Process Increase Score	**2.50**	**1.67**	**3.34**	**2.50**	**2.50**	
	Process Increase Weight	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	
Total Score	**Final Metric Score (1-5)**	**5.00**	**2.81**	**5.00**	**3.13**	**2.95**	**Total Points**
	Metric points	**5.00**	**8.43**	**5.00**	**7.83**	**7.38**	**33.63**

2016 Annual Workpaper Ratings		Metric 1	Metric 2	Metric 3	Metric 4	Metric 5	
Direct Workproduct Review Score	PG&E "-"	29%	35%	30%	48%	38%	
	PG&E "+"	39%	6%	6%	5%	6%	
	PG&E "Yes"	32%	59%	64%	47%	55%	
	Dispositions Score %	**55%**	**35%**	**38%**	**28%**	**34%**	
	Dispositions Score	**2.74**	**1.78**	**1.92**	**1.42**	**1.71**	
Review Process Score Enhancements	PG&E "-"	0%	25%	50%	38%	13%	
	PG&E "+"	20%	0%	0%	0%	0%	
	PG&E "Yes"	80%	75%	50%	63%	88%	
	Process Score %	**60%**	**38%**	**25%**	**31%**	**44%**	
	Process Increase Score	**3.00**	**1.88**	**1.25**	**1.57**	**2.19**	
	Process Increase Weight	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	
Total Score	**Final Metric Score (1-5)**	**4.24**	**2.72**	**2.55**	**2.21**	**2.81**	**Total Points**
	Metric points	**4.24**	**8.16**	**2.55**	**5.51**	**7.01**	**27.47**

Explanations of scoring tables row entries

1. The row labeled with *IOU "-"* lists the percent of workpaper reviews undertaken where the Commission staff evaluation of the materials or information indicated that the IOU performance in this metric for the submission did not meet minimum expectations or requirements relative to the metric.
2. The row labeled with *IOU "+"* lists the percent of workpaper reviews undertaken where the Commission staff evaluation of the materials or information indicated that the IOU performance in this metric for the submission exceeded minimum expectations or requirements relative to the metric.
3. The rows labeled with *IOU "Yes"* lists the percent of workpaper reviews undertaken where the Commission staff evaluation of the materials or information indicated that the IOU performance in this metric for the submission exceeded met minimum expectations or requirements relative to the metric.
4. The "Dispositions Score %" row (and "Process Increase Score" for workpapers) indicates how the combination of the three rows of scores (+, -, and yes) sum into a total points multiplier for each metric. Each row contributes to the total based on the row count over the total count for all three rows.
5. The "Disposition Score" (and "Process Increase Score" for workpapers) row converts the % score into a numeric value of up to five by directly applying the % to a value of 5.
6. The custom row labeled with "*Technical & Policy QC Increase"* lists Commission staff points added to the metric based on an evaluation of the overall IOU performance in putting into place quality assurance and/or quality control methods, documents and/or training for staff and contractors related to this metric area that are expected to improve the ability of review personnel to identify and cure issues going forward on projects started during 2016 but not yet seen in the custom review activity.
7. The custom row labeled with "*Implementation Increase"* lists Commission staff points added to the metric based on an evaluation of the overall IOU performance in putting into place new or changed program rules, eligibility criteria, incentive structures, application and implementation contract processes and procedures in 2016 related to this metric area that are expected to improve performance going forward on projects started but not yet seen in the custom review activity.
8. The workpaper rows labeled with "*Review Process Score Enhancements"* lists Commission staff scoring for each metric based on an evaluation of the overall IOU performance in putting into place quality assurance and/or quality control methods, documents and/or training for staff and contractors that are expected to improve the ability of review personnel to identify and cure issues going forward on workpapers. This score is weighted as an increase to the disposition score based on the fractional weight listed in the "Process Increase Weight" row.
9. The "Final Metric Score" row indicates the total score for each metric as a sum of the Direct Work product Review Score plus the Review Process Score Enhancements (either as a simple sum for custom or a weighted value sum for workpapers) to provide a final metric score with the final score constrained between a maximum score of 5 and a minimum score of 1.
10. The "Metric Points" row provides the point value derived from the Final Metric Score row. If the maximum point value associated with a metric is greater than 5 then the score is multiplied by the max point value divided by 5 to obtain the metric point value related to the final score.