

**PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

**ENERGY DIVISION**

**RESOLUTION E-4818**  
**March 2, 2017**

**R E S O L U T I O N**

Resolution E-4818. Measure level baseline assignment and preponderance of evidence guidance to establish eligibility for an accelerated replacement baseline treatment.

**PROPOSED OUTCOME:**

- Adopts modifications to state energy efficiency policy toward an existing conditions baseline per Assembly Bill 802 and Decision 16-08-019 and the details described in this resolution.

**SAFETY CONSIDERATIONS:**

- This Resolution modifies the energy efficiency policy guidelines of ratepayer funded programs, and thus is not expected to have an impact on public safety.

**ESTIMATED COST:**

- This Resolution will not change the currently budgeted spending of the investor owned utilities. However, this Resolution adopts definitions of energy efficiency savings within the existing building stock that will ultimately impact future estimates of energy efficiency potential upon which budgets are based, which will in turn impact future Energy Efficiency portfolio funding authorizations. Many factors will determine how these policies will alter cost-effective savings potential within investor owned utility (IOU) service territories. It is not possible to offer a reasonable estimate for the changes to savings potential given the available information.

---

**SUMMARY**

In October of 2015 California adopted two pivotal pieces of legislation affecting energy efficiency policy in the state. Senate Bill (SB) 350 calls on the California

Energy Commission (CEC), the California Public Utilities Commission (CPUC), and publicly owned utilities to work together to double cumulative energy efficiency savings achieved by 2030. The second, Assembly Bill (AB) 802 calls on the CPUC to authorize investor owned utilities (IOUs) to implement programs that improve the efficiency of existing buildings and take into account all estimated energy usage reductions resulting from measures that bring existing buildings, at a minimum, into conformity with the requirements of Title 24, as well as operational, behavioral, and retrocommissioning activities that are reasonably expected to produce multiyear savings.

Commission Decision (D.) 16-08-019 directs that a working group, organized by Commission staff, to develop consensus recommendations on measure-level baseline assignments and present these recommendations to the Commission in via staff resolution by the end of 2016. Working group activities resulted in an overarching "Working Group Report<sup>1</sup>" documenting the varying perspectives of stakeholders, as well as two proposed guidance documents: a measure-level baseline guidance and a preponderance of evidence guidance. The Working Group Report, measure-level baseline guidance, and preponderance of evidence guidance can be found on the CPUC website<sup>1</sup>.

Despite a complicated scope and an aggressive timeline, the working group came to agreement on a majority of the issues discussed. The proposals adopted in this Resolution include: key definitions concerning alteration and installation types, and standards for the measure-level baseline treatment for various combinations of these and how they should vary by customer class and program delivery. This Resolution adopts much of the working group guidance, in accordance with a standard of good faith and due diligence with respect to our fundamental obligation to ratepayers and our core mission as it is entrusted by the state of California.

There were only a few issues for which the working group recommendations were not made. A small set of these issues are assigned to the "Track 2 working group" (directed in D. 16-08-019 to address the streamlining of custom ex-ante review and industry standard practice) to receive further consideration through

---

<sup>1</sup> <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442451953>

that venue; we anticipate that these issues will be addressed in a future resolution.

## **BACKGROUND**

This Resolution is a result of direction in Decision 16-08-019, issued on August 18, 2016 within Rulemaking 13-11-005. This Resolution presents findings and recommendations resulting from working group activities, organized in accordance with D. 16-08-019 by Commission staff, and implemented with parties and stakeholders. The working group was assigned the task of developing a consensus set of recommendations to address baseline treatment details that could not be fully addressed in D. 16-08-019, due to insufficient record and consensus opinion available at that time.

The new baseline policy is a response to AB 802, which calls for the inclusion of all energy usage reductions in the determination of energy savings. That is, we count savings in relation to changes in the efficiency of measures and installations as well as those resulting from behavioral, retrocommissioning and operational (BRO) activities that are expected to produce multi-year savings. AB 802 states:

*“...the commission <shall authorize> financial incentives, rebates, technical assistance, and support to their customers to increase the energy efficiency of existing buildings based on all estimated energy savings and energy usage reductions, taking into consideration the overall reduction in normalized metered energy consumption as a measure of energy savings. Those programs shall include energy usage reductions resulting from the adoption of a measure or installation of equipment required for modifications to existing buildings to bring them into conformity with, or exceed, the requirements of Title 24 of the California Code of Regulations, as well as operational, behavioral, and retrocommissioning activities reasonably expected to produce multiyear savings. (emphasis added)”*

Implementation of AB 802 was first taken up in the energy efficiency proceeding (R.13-11-005) on October 30, 2015 via an Assigned Commissioner and Administrative Law Judge (ALJ) Ruling and Amended Scoping Memorandum Regarding Implementation of Energy Efficiency “Rolling Portfolios” (Phases IIB and IIIA of Rulemaking 13-11-005) (hereinafter referred to as the Amended Scoping Memo). The Amended Scoping Memo called for the “Interpretation and

implementation of AB 802 generally and support for implementation of SB 350.” Among the related issues identified in the Amended Scoping Memo was the need to develop new policy for the determination of baseline and the implementation of meter-based measurement of energy savings.

In April of 2016, the CPUC staff published a white paper presenting recommendations for implementing an existing conditions baseline, as required by AB 802. On June 8, 2016 an ALJ Ruling was issued, with the staff white paper attached, seeking public comment.

Decision 16-08-019 considered the comments on the staff white paper and addresses the appropriate baselines that are to be used to measure energy savings for specific programs and measures, including specific provisions consistent with the requirements of AB 802. Section 3.14 of Decision 16-08-019 presents Table 1, copied below, which summarizes the adopted baseline policy.

**Table 1. Adopted Default Baseline Policy for All Sectors**

Alteration Type	Delivery	Savings Determination	Shell & Bldg System and Add-On Equipment	Behavioral, Retro-commissioning, and Operational	Normal replacement	Accelerated replacement and repair eligible
New construction, expansions, added load	Any	Any	Code	N/A	Code	N/A
Existing buildings, including major alterations	Upstream & Midstream	Any	Code	N/A	Code	N/A
	Downstream	Calculated	Existing	Existing	Code	Dual
		Deemed	Existing	Existing	Code	Dual
		NMEC	Existing	Existing	Existing, Program Design	Existing
		RCT/ experimental	Existing	Existing	Existing	Existing
Non-building projects, including industrial and agricultural processes	Any	Any	N/A	Existing	Standard Practice	Dual

Decision 16-08-019 deferred some issues to be addressed in a working group process through which Commission staff and parties would work together to create a consensus set recommendations that fulfill the following objectives:

- Identify the measure-level treatment for baselines, and if these should vary within sectors or program savings determination categories.
- Produce a measure-level table similar to the one presented by PG&E in response to Proposed Decision 16-08-019.
- Create a set of more detailed guidelines for documentation required for repair eligible or accelerated replacement treatment for dual baseline treatment for these types of projects.

D. 16-08-019 further directed that these recommendations should be presented in the form of a staff resolution for Commission approval by the end of 2016.

### **1.1 Working Group Process**

Commission staff convened the working group directed in D. 16-08-019 using contracted facilitators. A public meeting was held on October 12, 2016 to introduce the working group topics and to invite parties to participate. Commission staff and the facilitators worked to ensure participation from a diverse set of stakeholders. Table 2 below summarizes participation by stakeholder group. While the first meeting was more heavily weighted toward implementers (44 percent), representation over the course of the working group process was more balanced across stakeholder groups. Important advocacy groups were represented with regular attendance, though smaller in number.

**Table 2. Summary of Working Group Participation**

Organization Type	Number Attending Kickoff	Attended Final Meeting	Attended more than 50% of Meetings
Advocacy	2	1	1
Industry organizations	2	4	3
Program Administrators	17	12	13
Implementer	24	15	13
Commission & Contractors	9	8	7

The working group held seven weekly meetings after the public kickoff on October 12, 2016. A summary of each working group activity and the corresponding topic is provided in Table 3.

**Table 3: Working Group Meetings and Topics**

Date	Event	Topic
10/12/16	Public Meeting, all day	Introduce Working Group objectives and recruit participants
10/20/16	Webinar	Review Working Group process, schedule
10/25/16	Webinar	Installation category definitions
11/1/16	Webinar	Measure level assignments
11/8/16	Webinar	Program influence models
11/15/16	Webinar	Preponderance of evidence models
11/17/16	Sub-group conference call	Deemed Preponderance of Evidence standards
11/22/16	Webinar	Preponderance of evidence details
11/30/16	In-person working group meeting, all day	Final report discussion

In preparation for each meeting, the working group facilitators distributed “prompts” and/or online surveys that were designed to gather an understanding of the perspectives and opinions related to the meeting topic. The perspectives and comments of working group participants are documented in the working group report and accompanying guidance documents, poste.

**1.2 Product Outcomes**

The working group facilitators developed a number of work products. They developed a working group report which describes the activities of the working group in more detail, and summarizes the discussions that were held and the perspectives offered by the various working group members. The facilitators also

drafted two guidance documents, a measure-level baseline guidance document and a preponderance of evidence guidance document.

The measure-level guidance document presents definitions and discussions of the alteration types and installation types referenced in Table 1 of D. 16-08-019. This document also presents proposed definitions for key concepts, including existing conditions baseline, code baseline, dual baseline, and accelerated replacement measures.

The preponderance of evidence guidance also presents some key definitions, including accelerated replacement, normal replacement and preponderance of evidence. Sections 4 through 7 of that guidance document present the following:

- Section 4: *Direct-to-decision and Direct-to-Default Baselines*, wherein a standard for streamlining or automating approval for accelerated replacement baseline treatment is proposed.
- Section 5: *Full Site Based Preponderance of Evidence Based Assessment for Custom Measures* wherein a “full rigor” scoring and assessment process is described and examples of evidence and documentation are presented.
- Section 6: *Simplified Site-Based Preponderance of Evidence Protocol for Custom and Deemed Measures* offers two tiers of simplified assessment standards for projects within certain incentive ranges (Tier 2 applies to incentives less than \$25,000. Tier 1 applies to incentives between \$25,000 and \$100,000).
- Section 7: *Program Level Preponderance of Evidence-Based Assessment for Deemed Measures* presents a process through which program rules and workpapers may be used to pre-qualify measures as accelerated replacement.

## **NOTICE**

Energy Division issued the draft Resolution as ordered in Ordering Paragraph 4 of D.16-08-019.

## **DISCUSSION**

### **1.3 Measure Level Baseline Guidance**

This section presents the measure-level baseline guidance, the recommendations of the working group, and the resulting policies adopted by the Commission.

#### **1.3.1 Baseline Treatment**

##### **1.3.1.1 Code Baseline**

Code baseline has been the default baseline for California IOU energy efficiency programs for a long time. However, some working group members suggest that current implementation of code baseline might be more accurately termed as an Industry Standard Practice baseline to reflect the fact that in some cases, standard practice falls short of or, alternatively, exceeds existing codes. The working group's proposed definition of code baseline applies Title 24 (part 6) building code, regardless of whether there is a standard practice that exceeded code.

Consistent with the perspective of PG&E and others, establishing this type of clarity on the application of code baseline was not within the assigned scope of the working group and we choose not to adopt this proposed definition at this time. However, we recommend that the upcoming working group directed in D.16-08-019 to address topics related to streamlining custom ex-ante review and clarifying the application of industry standard practice consider the issue of code baseline determination as well.

PG&E noted in their comments that code baseline currently lacks a clear definition. Parties have differing opinions about whether standard practice or code should apply where both are available, or whether code baseline should reflect the minimum efficiency of the baseline installation or the minimum efficiency of the selected technology, in cases where these are different. We acknowledge that code baselines in DEER often exceed Title 24 requirements, due to evaluation results that indicated standard practices were higher efficiency than code. The issues related to code and industry standard practice baseline will be addressed by the track 2 working group.

##### **1.3.1.2 Existing Conditions**

The existing condition will be interpreted and applied in a broad range of circumstances, and will inform the development of new programs and measures. The working group's measure-level baseline guidance document proposes a

definition of the existing condition. However, before addressing that definition directly, we present a contextual discussion that informs consideration of the proposed definition.

### **What is the Existing Condition?**

The question of how to define the existing condition is an important one, and not a simple one. The text of AB 802 indicates the energy savings should reflect reductions in energy usage resulting from:

- Adoption of a measure or the installation of equipment that modifies existing buildings to bring them into compliance with code or to exceed code, and
- Energy use reductions due to operational, behavioral, and retrocommissioning activities reasonably expected to produce multi-year savings

Defining an existing condition baseline is challenging because at any given time, some of the equipment within the current stock of existing buildings will be performing sub-optimally. That is, performing at less than its rated or designed efficiency level. This happens for a variety of reasons, some of which go well beyond normal wear and tear, such as deferred or improper maintenance, improper configuration, improper installation, and/or improper application.

When sub-optimally performing, equipment is replaced, the resulting change in energy consumption reflects the savings of the equipment upgrade, as well as those associated with correcting some (or all) of the factors that led to sub-optimal performance.

The savings from restored maintenance, configuration, and usage behave differently over time, and have a shorter effective useful life than the equipment they address. BRO programs have an effective useful life of one to three years; Decision 16-08-019 adopted a two-year life for behavioral programs in non-residential settings and a three-year effective useful life for retrocommissioning and operational programs<sup>2</sup>.

---

<sup>2</sup> Only residential behavior programs have an effective useful life of one year, per D. 16-08-019.

Use of normalized metered energy consumption (NMEC), randomized control trials, and/or experimental design help account for suboptimal performance or varying existing conditions within populations. NMEC savings determinations account for savings only as they are verified using measured data. Thus, performance is monitored, and accounted for as it is demonstrated, which is an appropriate way to track potential degradation of efficiency savings over time. Randomized control trials and experimental design rely on population comparisons, so they reflect what could be described as "standard practice baseline" for the maintenance and repair component of savings, which is a reasonable existing conditions baseline.

Deemed and calculated savings determination methods, however, may be based on performance assumptions and short-term metering that do not reflect actual long-term operating conditions, which makes the determination on an existing condition baseline difficult. If performance improvements that are due to alleviating maintenance and repair issues are bundled with the improvement in equipment efficiency, the implied assumption is that the combined savings will persist over the life of the measure, which may be optimistic given that it assumes the customer's behavior that led to the substandard operating condition will change when the new equipment is installed. This assumption would also be inconsistent with the effective useful life of three years for retrocommissioning and operational measures adopted in D.16-08-019.

At present, neither deemed savings nor calculated projects generally allow savings from fixing deferred maintenance issues. Most rely on International Performance Measurement & Verification Protocol (IPMVP) Options A<sup>3</sup> and B<sup>4</sup>,

---

<sup>3</sup> Option A. Partially Measured Retrofit Isolation: Savings are determined by partial field measurement of the energy use of the system(s) to which an ECM was applied, separate from the energy use of the rest of the facility. Measurements may be either short-term or continuous. Partial measurement means that some but not all parameter(s) may be stipulated, if the total impact of possible stipulation error(s) is not significant to the resultant savings.

<sup>4</sup> Option B. Retrofit Isolation: Savings are determined by field measurement of the energy use of the systems to which the ECM was applied, separate from the energy use of the rest of the facility. Short-term or continuous measurements are taken throughout the post-retrofit period.

where the baseline efficiency is deemed or estimated through engineering analysis, and performance monitoring is done in the post-period only. The working group's measure-level baseline guidance document<sup>5</sup> offers this definition of existing conditions baseline:

"An existing baseline refers to the actual load-serving operation of the existing equipment prior to its replacement, adjusted, where applicable, for the post-installed operation. The existing operations can be suboptimal, but it must reflect equipment performance that maintains essential services. In order to use an existing baseline, the existing equipment is expected to be able to meet customer current and anticipated future requirements (e.g., for the remaining life of the equipment). In the case of projects that occur concurrently with a change in ownership or a lessee, or a change in the function of the space (e.g., office to laboratory), or a substantial change (i.e., 30% or more) in the design occupancy there is no reference operation for existing conditions and the pre-existing conditions may not be applicable to the project."

This definition indicates that sub-optimal performance due to deferred maintenance and repair issues is legitimate to assume in the existing conditions baseline, with the caveat that equipment meet current and anticipated load.

AB 802 asks us to count savings from both equipment upgrades and BRO improvements, but does not explicitly imply that we mix the results of one with those of the other. If we incorporate all non-catastrophic failures of the existing equipment into the baseline, we are essentially procuring BRO savings within a capital expenditures framework, and assuming those savings will persist over the life of the equipment, instead of the two or three-year life that BRO measures can be expected to offer. As we endeavor to meet net lifecycle savings goals, it will be important to differentiate savings gained from capital improvements from those resulting from BRO measures.

---

<sup>5</sup> <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442451953>

The working group report elaborates on the definition of existing conditions shown above, to say:

“Implications of this requirement include the following:

The existing baseline required to maintain essential services is the equipment restored sufficiently (at least in theory) to service the load.

Examples follow:

- A pump where the performance has degraded to where it can no longer maintain the required flowrate is not providing essential service, and the actual existing baseline for the pump must be adjusted to meet the flowrate requirements.
- A pump where the performance has degraded but it still can maintain the required flowrate is providing essential service, and the actual operation of the pump may be used as the existing baseline.

The existing baseline for non-essential controls is their actual performance prior to replacement, even in a suboptimal state. The existing baseline for controls required for essential services is the restored state.

- Lighting occupancy control is not an essential building service. Occupancy controls are often overridden, broken, or not optimized for the application. The existing baseline for lighting controls should reflect their actual operation, including the effects of the overrides and poorly implemented strategies. “

We do not have an objection to these definitions, necessarily. However, as noted earlier, the assumption that currently observed (inefficient) settings or operational patterns will not persist post-installation is likely to be overly optimistic, since it assumes a behavior that the customer is not currently exhibiting. Given these issues, the following clarifying policies are part of the definition of an existing conditions baseline for use within a deemed or calculated savings determination:

- An existing conditions baseline reflective of poor maintenance and disrepair applies only to BRO installation types.
- All activities and installations that restore equipment performance to its nominal efficiency (i.e., rated, intended, or original efficiency) but do not enhance the nominal efficiency must be classified as BRO, and where applicable should adhere to the HOPPs Ruling and with the guidance presented on page 26 of this Resolution (in the subsection titled *Repairs Including Replacement of Failed Add-On Equipment*). However, we allow for Program Administrators to submit proposals for exceptions to this rule for Commission Staff review and approval.

### **When is the Existing Condition Undefined?**

Most agree that the intention of AB 802 is to unlock potential efficiency savings within the existing building stock by measuring savings against current performance. There is no existing condition that would apply to a newly constructed building, or to the expansion of space, or the addition of new load. These activities are associated with a code baseline per Table 1 of D. 16-08-019. The working group recommends expanding the set of circumstances under which no existing condition can reasonably be defined, as follows:

“In the case of projects that occur concurrently with a change in ownership or a lessee, or a change in the function of the space (e.g., office to laboratory), or a substantial change (e.g., 30% or more) in the design occupancy, there is no reference operation for existing conditions and the pre-existing conditions may not be applicable to the project.”

SCG and SDG&E in their comments on the Draft Resolution argue that a change in ownership or lessee, when there is no concurrent change in the building or operation of the customer site, should not imply there is no relevant existing condition. They go on to point out Commission policies for specific measures in which previous participation at a site limits eligibility for incentives, even when there is a change of ownership. Although this is a specialized example and it does not involve existing buildings or commercial services, it is nonetheless a compelling argument and therefore we remove the condition of a change in ownership or lessee as indicative of there being no reference operation for existing conditions.

We adopt this expanded set of conditions for which no existing condition is defined, but we also adopt a clear threshold value per input from stakeholders on the Draft Resolution, and modify the language to read:

“In the case of projects that occur concurrently with a change in the function of the space (e.g., office to laboratory), or a substantial change (i.e. 30% or more) in the design occupancy, there is no reference operation for existing conditions and the pre-existing conditions *are* not applicable to the project<sup>6</sup>.”

### 1.3.2 High-Efficiency Operation

The working group guidance document proposes two definitions of energy efficient operations: improved operation and restored operation. The rationale for developing these definitions was to assist in classifying measures and calculating savings. More specifically, it was to create context for applying the qualifying principles presented in the previous section of this Resolution, stipulating that for deemed and calculated savings determinations, BRO is the appropriate classification wherever sub-optimal performance represents the existing conditions baseline, and for all measures that offer *only* a restorative component of savings.

The definitions themselves, however, were disconcerting to some working group members, perhaps due to their presentation in the guidance document that is absent a direct contextual framing tying the definitions to their role in the installation type definitions. The definitions are as follows:

- “Improved operation – In this case, the high-efficiency measure is nominally more efficient than the pre-existing system as demonstrated by an increase in name plate efficiency or an improvement in the operational specifications of the equipment.
- Restored operation – In this case the high-efficiency measure restores the pre-existing equipment efficiency. These measures entail like replacement of equipment, repair of equipment, or non-hardware operational changes.”

---

<sup>6</sup> Emphasis added to highlight changes versus previous version.

We find these definitions offer a useful reference and language for articulating standards, and determining the appropriate installation type for measures. For these reasons, we adopt them.

### **1.3.3 Effective Useful Life, Remaining Useful Life, and Measure Cost Definitions**

The working group included current definitions and policy that define effective useful life, remaining useful life and measure costs. These do not represent a change, and were not within the assign scope of the working group. They are accepted as existing policy.

### **1.3.4 Alteration Type**

#### **1.3.4.1 New Construction, Expansions, Added Load**

The working group reiterates language from D. 16-08-019 in the draft baseline guidance document definition of the new construction alteration type. As before, and per D. 16-08-019, new construction is an alteration type for which a code baseline must be used. In addition, we note that new construction is an alteration type for which no existing condition is defined.

SCE in their comments on the Draft Resolution recommend we adopt threshold values to define more precisely whether additional load or expansion of space would qualify as “substantial” (see discussion titled, *When is the Existing Condition Undefined?* above). We support the development of such threshold values, but we cannot adopt values given the limited stakeholder input on what such values should be

“The new construction alteration type includes new equipment that has been installed in any one of the following:

- a) New building projects wherein no structure or site footprint presently exists
- b) Addition or substantial expansion of an existing building or site footprint
- c) Expansion or addition of substantial load to an existing facility

All new construction projects use a Code baseline.”

### **1.3.4.2 Existing Buildings and Non-Building Projects**

The working group measure level baseline guidance document offers definitions of “existing buildings” and “non-building projects.” These definitions seem reasonable and they appear sufficient for the intended purpose. For these reasons, we adopt them in this Resolution.

### **1.3.5 Delivery and Savings Determination Type**

#### **1.3.5.1 Program Delivery**

The working group’s proposed guidance document offers definitions for programs that should be categorized as upstream/midstream, and those that are considered downstream programs. The distinction is important to the application of baseline, of course. Per Table 1 of D. 16-08-019, upstream and midstream programs are counted against a code baseline in all cases, while a downstream program may receive different baseline treatments.

Programs that are offered through contractors interacting with customers are generally considered downstream, though not all provide rebates directly to customers. The definition offered in the measure-level baseline guidance document states that downstream measures “target” end-use customers, and that they “typically” offer incentives to customers.

We take this opportunity to clarify that downstream programs should involve program agents (including contractors) directly interacting with participating customers. Also, Program Administrators should ensure implementers maintain records for downstream program claims for each participating customer. We can adopt the guidance document definition, with the addition of the following descriptive text:

“Programs can be classified as downstream when they are delivered by agents or representatives (including installation contractors) of the program that have direct interaction with end-use customers, or offered via a program website. Programs using a point-of-sale intervention strategy—such as offering in-store coupons—should be considered upstream/midstream for purposes of baseline selection. Downstream programs must maintain site-specific records for program activities and installations resulting in energy savings. These records must include utility account number, installation site address, and

evidence required by the applicable preponderance of evidence standard. In some cases preponderance of evidence standards will consist of evidence of program eligibility and adherence to program rules.”

### **1.3.5.2 Savings Determination**

Section 4 of the working group measure-level baseline guidance document describes a principle of savings determination, as follows:

“Methods for determining savings, regardless of the determination type, should use a congruent approach when characterizing the pre- and post-project conditions - e.g., the efficiency rating of pre-existing equipment is compared with the efficiency rating of installed equipment, or the metered performance of the pre-existing equipment is compared with the metered performance of the installed equipment.”

In comments on the Draft Resolution parties noted that use of *short term* metering to determine the efficiency of equipment in the pre- and post- period would not avoid counting the shorter-term maintenance and operational (O&M) savings over the full life of a measure. If we do not separately account for O&M savings, our O&M programs could double count these savings in the future.

We do understand it could be complicated and cumbersome to back-out rigorous estimates of the O&M portion of savings. Energy Star estimates that annual O&M savings range from 5 to 20%<sup>7</sup> for low cost improvements. The use of an approximate adjustment based on these Energy Star values, informed by the levels of O&M savings that are claimed for similar buildings and equipment types, represent an acceptable and low-complexity approach. We adopt the working group congruence principle as written in the measure-level baseline guidance document, with additional direction to adjust savings for O&M impact in cases where short-term metering is used to determine post-installation efficiency, as follows:

---

<sup>7</sup>These originate with a PECI paper:  
<https://www.energystar.gov/ia/business/assessment.pdf>

“Methods for determining savings, regardless of the determination type, should use a congruent approach when characterizing the pre- and post-project conditions - e.g., the efficiency rating of pre-existing equipment is compared with the efficiency rating of installed equipment, or the metered performance of the pre-existing equipment is compared with the metered performance of the installed equipment. When using short-term metering to determine equipment efficiency in the post period, an adjustment factor must be applied to energy savings to account for maintenance and operational factors. This adjustment should be consistent with Energy Star estimates of expected annual savings values for low-cost O&M<sup>8</sup> activities (5% to 20%), and with concurrent claimed O&M savings for similar buildings and equipment.”

### **Deemed Measures**

The third paragraph of Section 4.2 of the draft guidance document addresses deemed measures.

“Deemed measure savings rationale, methods and parameters are documented in work papers. A deemed measure work paper establishes the existing and high efficiency baselines, the EUL and RUL of the measure, the measure cost, and the preponderance of evidence requirements for accelerated measure types.”

We adopt this definition and highlight the addition of “the preponderance of evidence requirements” for accelerated measure types. While the details of the work paper process are not within the assigned scope of the working group, there is a need to create an avenue through which deemed measures could apply an existing conditions baseline. In general, the deemed characteristics that are used to calculate and verify deemed measure savings cannot be site specific. The use of site specific equipment information in determining savings implies the measure is custom (or calculated). For this reason, the application of existing conditions baseline to deemed measures must involve approved work papers that establish reliable aggregate data reflective of the existing condition and circumstance (buildings, customers, climate zones, etc.) where a measure is applied.

---

<sup>8</sup> Operations and Maintenance.

Existing conditions are much more variable than code conditions. This fact exacerbates the potential for error in determining reasonably assured deemed savings values for existing conditions baseline. On the other hand, variance in the existing condition might be largely explained by observable parameters, and where this is the case, the variance of existing condition will be lower within the sub-population defined by those parameters. Thus, we encourage the Program Administrators to examine sub-populations where there are similar existing conditions, and to assess the vintage, efficiency and natural turnover of equipment therein to identify program opportunities with reasonably predictable savings. Examples of observable parameters that may predict or explain existing conditions include: building type, building size, business type, business size, business activity, equipment type, building ownership (own versus rent), lease length, local economic conditions and climate.

Additional discussion of deemed measure considerations can be found in the section titled *Deemed Measure Preponderance of Evidence* on page 42 of this Resolution, and Section 7 of the preponderance of evidence guidance document.

### **1.3.6 Installation Type**

Definitions of installation types were one of the key issues in the measure level baseline working group. Shell and building systems is a relatively new concept, and not a segmentation that is currently built into the portfolio of measures. The installation type issues of concern include:

- What should be included in the shell and building system category? (Working group members were not confused by the definition or intent of the category, but more concerned about how to apply those concepts to the portfolio of measures.)
- Would an initial allocation of a measure to the shell and building system category prevent a program administrator from offering the measure within a normal replacement framework?
- If measures are fungible in this way, what potential compromises does this represent for the integrity of the portfolio?

### **1.3.6.1 Shell and Building System**

The proposed definition of shell and building system (SBS) in the baseline guidance document is as follows:

“A shell and building system (SBS) measure improves from the nominal efficiency of pre-existing equipment that is otherwise expected to perform essential building functions throughout the course of a building’s life cycle, without regular replacement.”

The baseline guidance document offers the following clarifications:

“SBS measures improve the efficiency of equipment that does not burn out or when they do burn out the building can function without them, thus, this equipment is typically not replaced unless there is a major building renovation. An SBS measure must be a nominal energy efficiency improvement over the existing equipment.

Wall and pipe insulation, windows, and ducts are expected to last through the building life cycle without scheduled replacement. This equipment is eligible for SBS treatment. A roof itself is expected to be repaired or replaced during the building life cycle and is not considered a building system.

- Lighting systems (hard-wired systems only) provide the essential service of lighting. Fixtures are typically left in place until a major renovation occurs. Lamps and ballasts can be replaced with like technology as they individually fail, maintaining the original system efficiency indefinitely. Therefore, the lighting system (fixtures, lamps, ballasts, and controls) and the replacement of subsystem of ballasts and lamps with a higher efficiency subsystem is a SBS measure. Lighting controls alone, nor lamps alone, do not qualify as a building system, but could qualify under other installation types.
- Mechanical systems can be expected to be replaced or repaired during the building life-cycle (i.e., boiler, chillers, pumps, air-handlers, motors) in order to maintain essential building services and are categorized as other installation type measures.”

The implications of the draft measure-level baseline guidance discussion and clarification of the category of shell and building systems includes measures that address:

- Improvements to non-mechanical building structures (which might also be characterized as “building weatherization”).
- Improvements to lighting, inclusive of all improvements that are more comprehensive than an exchange of the bulb.

As explained in the section below, we do not accept the categorization of lighting systems as shell and building system measures that do not normally turnover with a building. Therefore, shell and building system measures are limited to non-mechanical building structures, also referred to as building weatherization measures.

## **Lighting**

Lighting is a crucial energy efficiency measure category. Lighting technologies have offered most cost-effective savings opportunities to date. Lighting also encompasses important components of the stranded savings AB 802 asks us to pursue. It is important to adhere to principles that are consistent and clear. If all other mechanical systems are not qualified as shell and building system because they are likely to be replaced, why is lighting different? This appears inconsistent with the intent of the category given the pervasiveness of lighting measure retrofits in the portfolio in relation to HVAC and other building mechanical systems.

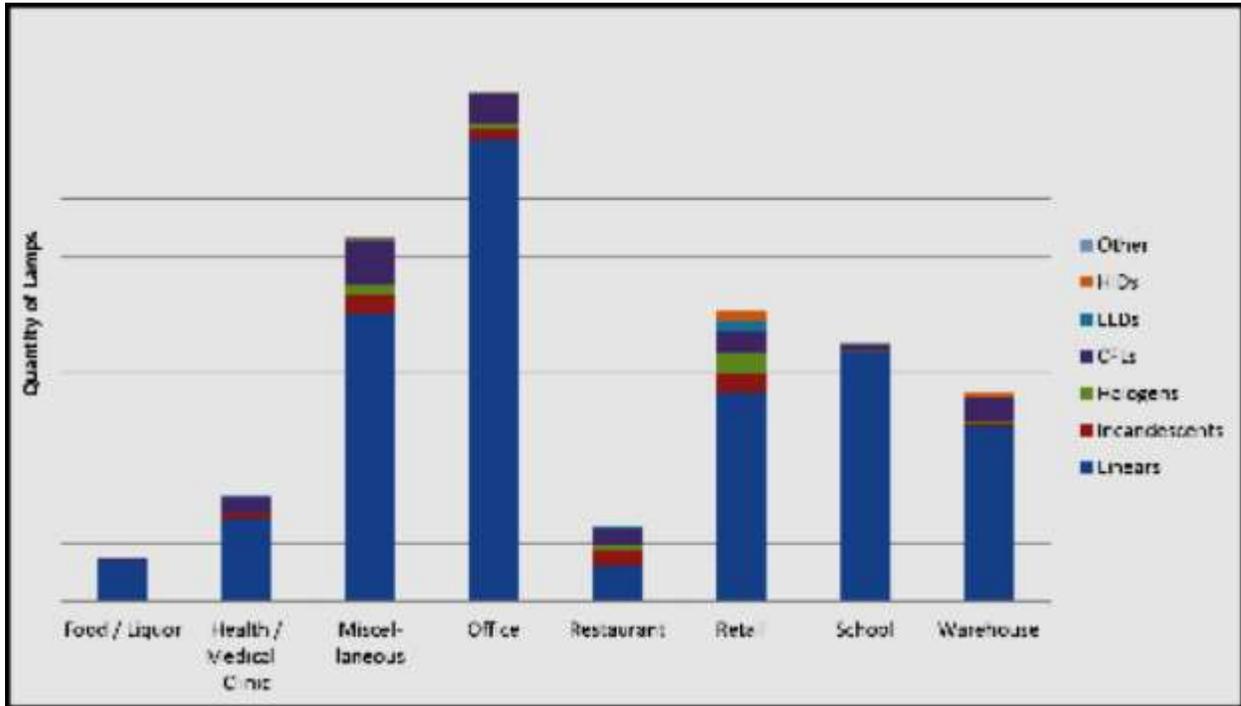
The California Commercial Saturation Survey(CSS) was conducted to assess the saturation and efficiency of mechanical systems and equipment in existing buildings. The study, published in 2014, included 1,439 on-site surveys, each with a full inventory of indoor and outdoor commercial lighting measures.<sup>9</sup> Figure 1 below is an excerpt from that study which represents the distribution of

---

<sup>9</sup> California Commercial Saturation Survey, Prepared for the California Public Utilities Commission by Itron, Inc. August 26, 2014.  
[http://www.calmac.org/publications/California\\_Commercial\\_Saturation\\_Study\\_Report\\_Finalv2ES.pdf](http://www.calmac.org/publications/California_Commercial_Saturation_Study_Report_Finalv2ES.pdf)

interior lighting found in CSS study efforts. The Figure reflects the study finding that 83 percent of all commercial indoor lamps are linear fluorescent.

**Figure 1: Interior Lamp Type Distribution by Business Type**



As part of the CSS study, attempts were made to collect the age of linear fluorescent systems. A good proportion of these attempts failed, but not all of them. Table 4 below is based on CSS findings and shows the distribution of lighting system installation year for sites where the year could be determined. The data indicate that between one-third and one-half of linear fluorescent lighting systems were installed in the eight years between 2006 and 2014.

**Table 4: Distribution of Linear Lamps by System Installation Year and Business Type - Indoor Lighting**

<b>System Installation Year</b>	<b>Food/Liquor</b>	<b>Health/Medical - Clinic</b>	<b>Miscellaneous</b>	<b>Office</b>	<b>Restaurant</b>	<b>Retail</b>	<b>School</b>	<b>Warehouse</b>
Pre-1990	4%	29%	7%	25%	14%	11%	18%	5%
1990-1999	10%	12%	16%	14%	9%	3%	16%	12%
2000-2003	6%	8%	7%	12%	6%	14%	3%	9%
2004-2008	21%	18%	28%	16%	29%	29%	19%	19%
2009-2012	60%	33%	42%	33%	43%	43%	45%	56%
<b><i>n</i></b>	<b>78</b>	<b>60</b>	<b>152</b>	<b>121</b>	<b>98</b>	<b>145</b>	<b>82</b>	<b>74</b>

The CSS study assembled data on the wattage of lighting systems and recorded the number of fixtures and bulbs at each site. Table 5 below presents a comparison of the Title 24 building standard (using the “complete building method”) to the CSS study results. Building types where the 2014 CSS results (in watts per square foot) are lower than the Title 24 standard indicate that, on average, interior lighting is code compliant in that building type. These data indicate that lighting systems for many business type categories are code compliant at present, and that greater opportunities for efficiency improvements are found in the Office, Retail, and Health / Medical Clinic business types. Data indicate that it would not be reasonable to assume that lighting would remain below code over the course of building lifetime without program intervention.

**Table 5: Interior Lighting Code Compliance in Commercial Buildings**

Building Type	Title 24 Standard <sup>10</sup> (watt/ft2)	2014 CSS* (watts/ft2)
Warehouse	0.6	0.4
School	0.95	1.0
Retail	1.0*	1.2
Restaurant	1.1	1.1
Office	0.8	1.0
Miscellaneous	1.0*	0.9
Health/Medical Clinic	1.0	1.2
Food/Liquor**	1.5	1.0

\* Reflects the “General Commercial Building/Industrial Work Building” category in Title 24.

\*\*Reflects the “Grocery Store” category in title 24.

\* The results presented above have been weighted by site weight.

A market study like the CSS study was done in 2006 - the California Commercial End Use Survey (CEUS). Like the CSS study, the CEUS also collected information about lamp type, including the distribution of 4-foot linear fluorescent fixtures across T-8 and T-12 lamp types. There are many varieties of T8 lamp type. The first-generation variety (Series 700) are characterized as a “base” efficiency technology in the CSS report, and there are numerous subsequent generations of T-8s, each with a higher level of efficiency. There are also LED retrofit options for linear fluorescents. In recent years, many lighting retrofits were upgrades of T-8 fixtures from a base efficiency a high-efficiency version. The CSS study collected more detailed categorizations for T-8, but the CEUS study can offer only two categories, T-8 and T-12. Turnover of equipment within the T-8 category cannot be assessed with the data at hand. However, the data does allow us to examine turnover rates within the facilities that were using T-12 linear fluorescent systems in 2006. Figure 2 below illustrates the rate of change over the 2006-2014

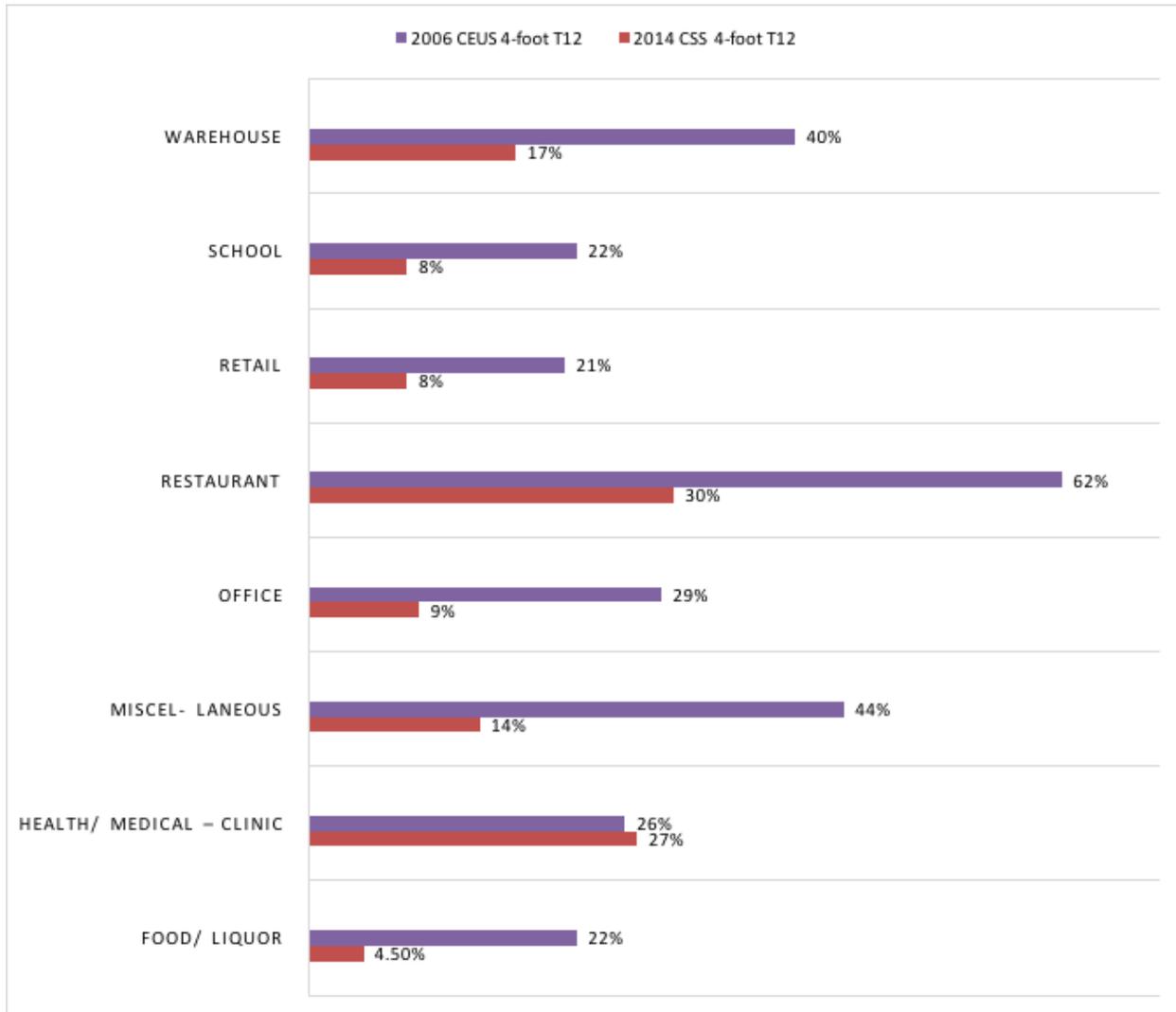
---

<sup>10</sup> For the 2016 Building Energy Efficiency Standards, Title 24, Part 6, and Associated Administrative Regulations in Part 1. Table 140.6-b Complete Building Method Lighting Power Density Values.

<http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf>

period for facilities using a T-12 technology in 2006.<sup>11</sup> The exhibit shows that for some building types the rate of lighting system replacement is significant.

**Figure 2: Distribution of 4-Foot Linear Fluorescents, 2006 CEUS versus 2014 CSS**



In addition to issues of lighting system turnover, there is also a need to carefully consider and protect the ongoing viability of lighting measures in the portfolio. Much of the turnover described above is a result of energy efficiency programs.

<sup>11</sup> It is reasonable to assume no facilities were adopting T-12 technology as a retrofit or new construction option

There are some lighting measures that would be difficult to sustain in a cost-effective portfolio using an existing conditions baseline.

For these reasons, we direct the program administrators to classify lighting with other mechanical systems and treat lighting retrofits as either accelerated replacement or normal replacement subject to a preponderance of evidence via approved workpapers, as described in the deemed and preponderance of evidence discussions in this resolution. We remind stakeholders that the deemed, tiered, and direct-to-decision preponderance of evidence approaches offer an avenue for programs to pre-qualify for a default accelerated replacement baseline.

### **1.3.6.2 Add-On Equipment (AOE)**

The draft baseline guidance document offers a new definition of add-on equipment. The working group report makes it clear that the new definition was designed to allow for new types of measures to be classified as add-on equipment. The example in the report, AOE#6, presents a case where the addition of new energy consuming and fully functional equipment would qualify as an add-on measure. The reasoning behind the modification and an analysis of how it would present opportunities or potential risks is not offered in the guidance document. We do not adopt the implied revisions to the qualifications for AOE at this time given the absence of more detailed analysis and guidelines.

Comments from Program Administrators and Implementers on the Draft Resolution point out that the working group definition also departs from the previous guidance document by allowing for equipment reconfiguration and modifications of systems to optimize performance. These alteration types have been incorporated into the portfolio already and treated as add-on equipment, which is a reasonable classification for them. For this reason we accept the working group definition of add-on equipment, with the addition of the caveat that add-on equipment measures must not be able to operate on its own, as follows.

“An Add-on Equipment (AOE) measure installs new equipment onto an existing host improving the nominal efficiency of the host system. The existing host system must be operational without the AOE, continue to operate as the primary service equipment for the existing load, and is able to fully meet the existing load at all times without the add-on component.

*The AOE must not be able to operate on its own<sup>12</sup>. The actual energy reduction occurs at the host equipment, not at the add-on component, although any add-on component energy usage must be subtracted from the host savings”*

Our decision not to authorize pony measures as add-on equipment leaves certain types of optimization measures without a clear alteration type classification. Currently these are treated with either normal or accelerated replacement baselines, which does not fit well since no equipment is removed or replaced at the time of installation. In the future it may be worth exploring whether a new category would serve these measure types better.

We also note for the sake of completeness that add-on measures are assigned an existing baseline for the shorter of: a) the EUL of the add-on measure or b) for the RUL of the host equipment. This requirement accounts for the potential shortening of the life of the add-on measure due to replacement or failure of the host equipment. CEEIC argues in their comments that add-on equipment might be transferred to new host equipment when it is replaced. There is a high likelihood of changes to equipment specification and configuration with equipment replacement, that generally do not support an assumption of the continued use of add-on equipment with host equipment replacement. However, Commission Staff would consider market studies and/or data-supported cases for applying different measure life assumptions to selected types of add-on equipment where there is evidence that longevity typically extends through the upgrade or replacement of host equipment.

### **1.3.6.3 Replacement of Failed Add-On Equipment**

Add-on equipment that breaks or performs poorly may result in increased energy consumption. When broken add-on equipment is fixed or replaced, energy consumption should return to previous levels. Under current deemed and calculated program guidelines, these are ineligible for program savings credit because the activity is considered part of expected, or “normal” repair and maintenance. However, these types of improvements in some cases may qualify as retrocommissioning. They are also permitted within an NMEC or RCT /experimental design approach, and can qualify as measures under the repair

---

<sup>12</sup>Italics added to emphasis change relative to working group guidance document.

and maintenance rules outlined in the High Opportunity Programs and Projects (HOPPs) ruling released in R.13-11-005 on December 30, 2015.

Similarly, measures that consist of bringing systems that are performing below rated efficiency up to their installed efficiency, such as duct repair or HVAC maintenance, share characteristics of a repair, and require assuming a baseline that is below rated efficiency.

Consistent with current policy, a like-for-like replacement of failed add-on equipment does not qualify for existing conditions baseline, with these exceptions:

- Use of NMEC, RCT/experimental design to measure savings
- Offered through a BRO program or under the repair and maintenance provisions outlined in HOPPs

The replacement of broken or poorly performing add on equipment may qualify as a normal replacement, and may use a code or industry standard practice baseline, as appropriate.

#### **1.3.6.4 Behavioral, Retrocommissioning, and Operational (BRO)**

Measures installed within the BRO installation type are assigned an existing conditions baseline and may include measures that either restore or improve energy efficiency, and can be reasonably expected to produce multi-year savings.

For deemed and calculated savings determination, savings from correcting deferred maintenance, performance restoration and operational characteristics are considered within this category only. In cases where these savings are a component of the savings captured through equipment replacement, separate claims should be made for the equipment replacement savings and savings that arise from updating maintenance and operational factors.

#### **1.3.7 Normal Replacement**

The draft measure-level baseline document and the draft preponderance of evidence guidance document offer definitions of normal replacement. We adopt this definition, with the addition of “*life or*” to the last clause to better address the residential sector, as follows:

“The Normal Replacement (NR) type includes measure installations where the existing equipment has failed or no longer meets current or anticipated needs or is being replaced due to normal remodeling or upgrading or replacement activities that are expected and undertaken in the normal course of life or business.”

### **1.3.8 Accelerated Replacement**

The draft measure-level baseline document and the draft preponderance of evidence guidance document offer slightly different definitions of “accelerated replacement.” The version proposed in the draft measure-level baseline guidance includes a stipulation that the efficiency measure represent an enhancement over the original efficiency of equipment (i.e., the measure offers more than a restorative improvement). It also reminds us that the remaining useful life of the existing equipment must be at least one year. The baseline guidance stipulates three sub-categories of accelerated replacement (repair eligible, repair indefinitely and early retirement) where each is subject to a standard dual baseline approach.

We believe the baseline and preponderance of evidence documents should be aligned with respect to their definitions of accelerated replacement. We adopt the recommendation that accelerated replacement include three sub-categories, and that each be treated equivalently with respect to the dual baseline approach. However, we do not adopt the definition of repair eligible that is proposed in the draft guidance document, due to apparent risk and complexity. A more detailed discussion is presented in the following section.

### **1.3.9 Repair Eligible**

We consider the hypothetical example of a broken boiler, which does not function at all but could be cost effectively repaired. This represents a decision-point where the customer could be influenced by the program to replace the equipment instead of repair it. Assume further that the customer could provide evidence of previous repairs and their costs, and has already obtained a reliable cost estimate for the repair. In this scenario, if a program were to influence the customer’s decision to replace rather than repair, should this be considered an early replacement?

The working group members were in general agreement that what is at issue is whether the equipment could be cost effectively repaired, not simply whether it could be repaired, and that a comparison of repair costs and replacement costs

was called for. With this it seems that in order to apply a dual baseline treatment for the replacement of a broken but repairable piece of equipment, at minimum the following data are needed:

- Repair cost
- Replacement cost
- Energy savings (needed for all claims)
- Effective useful life of installed equipment
- Remaining useful life of existing equipment

The draft measure-level baseline guidance document recommendation suggests screening broken equipment that is potentially repair eligible using a comparison of repair costs and replacement costs. It suggests the standard for determining repair eligible equipment be that the costs of repairs are less than 50 percent the costs of replacement. We observe that the higher this cut-off percent is, the closer the equipment is to being economically unsalvageable. We also observe that the difference between the cost of replacement versus repair in combination with the energy savings offered by the equipment replacement determines the project payback period for the customer. That is, for each combination of equipment cost, energy savings, and repair cost, it is possible to solve for the payback period.

Should the defining criteria be based on the payback period instead of only the repair and replacement cost? It seems that payback period offers more insight to customer decision-making.

If we assume rational decision-making, and had full information about the longevity of the considered repair, then the solution might be to disallow cases where payback (before incentives) is less than the longevity of the repair – i.e., the expected interval between repairs.

We also consider a scenario where repair is relatively inexpensive in comparison to replacement, but that this repair would need to be repeated at short intervals. In this case the best comparable repair cost would represent the discounted cost of a stream of repairs over the EUL of the replacement equipment.

In practice, applying this approach would be burdensome in its complexity and there would be cases with a large variance in estimating the longevity of a repair, and/or costs of future repairs.

These issues would be further compounded by the introduction of sub-optimal performance, and hypothetical repaired efficiency operations into the baselines. The discussions surrounding the use of a repaired efficiency as baseline led to the observation that repairs *temporarily* restore performance that degrades over time. Use of a degradation factor in the baseline would introduce additional complexity.

The full spectrum of cases to consider in dual baseline is intractable without simplifying principles. (Note these do not apply to NMEC or RCT/experimental design savings determinations.)

- For deemed and calculated savings determinations, existing conditions baselines must reflect rated equipment efficiency, or apply an adjustment factor to reflect the portion of savings that are retrocommissioning or operational in nature.
- Replacement of equipment that is broken, poorly performing or not able to meet its load requirement must apply a normal replacement baseline. This includes replacement of broken add-on equipment.
- All accelerated replacement types (repair eligible, repair indefinitely, early retirement) receive the same dual baseline treatment, consistent with the current definition of dual baseline in the Energy Efficiency Policy Manual. However, equipment older than its EUL may qualify for accelerated replacement baseline treatment if it is determined to be repair eligible or repair indefinitely.

Table 6 below presents possible configurations for dual baseline where repair eligible/repair indefinitely equipment may have the following characteristics:

- They may be older than their EUL
- They may assume repair or replacement scenarios in the 2<sup>nd</sup> period of the dual baseline
- Equipment may be broken or performing sub-optimally in the 1<sup>st</sup> period.
- Savings credit is granted for equipment enhancements or performance optimization

Table 6 below is for illustration purposes only. As discussed previously, determining the longevity and costs of hypothetical repairs, and applying baselines that assume a future repair rather than replacement add to the complexity of baseline policy. Furthermore, as illustrated in Table 6 below, the number of scenarios to consider expands quickly creating additional complexity and potential for confusion and misinterpretation. For these reasons, we do not adopt the use of repair cost in determining equipment eligibility-based definitions. Instead we ask the Track 2 working group tasked with streamlining custom ex-ante review and industry standard practice issues to address qualification standards and evidence to determine repair eligible / repair indefinitely equipment.

**Table 6. Illustrative (Not Adopted) Table of Potential Dual Baseline Scenarios Allowing Suboptimal Performance, Performance Enhancements and Non-Operational Repair Eligible Equipment**

Existing Equipment Performance	Older than EUL?	Action Taken	Counterfactual /Baseline action at end of RUL	Measure costs based on difference between action taken and:	1 <sup>st</sup> Baseline	2 <sup>nd</sup> Baseline	Comments
Broken	N/A?	Replace	Repair again	Discounted repairs over EUL of installed equip	Original Efficiency of existing equipment	Original Efficiency of existing equipment	
Broken	N/A?	Replace	Replace	Repair cost and discounted replacement cost	Original Efficiency of existing equipment	Code	
Orig Efficiency	Y	Replace	Repair	Discounted repairs over EUL of installed equip	Original Efficiency of existing equipment	Original Efficiency of existing equipment	
Orig Efficiency	Y	Replace	Replace	Repair cost and discounted	Original Efficiency of existing	Code	

Existing Equipment Performance	Older than EUL?	Action Taken	Counterfactual /Baseline action at end of RUL	Measure costs based on difference between action taken and:	1 <sup>st</sup> Baseline	2 <sup>nd</sup> Baseline	Comments
				replacement cost	equipment		
Suboptimal	Y	Replace	Replace	Discounted future replacement cost	Suboptimal or Original?	Code	
Suboptimal	Y	Replace	Repair	Discounted repairs over EUL of installed equip	Suboptimal or Original efficiency?	Original Efficiency	
Suboptimal efficiency	Y	Repair to Orig eff.	Repair to Orig eff.	Zero - full cost is incremental	??	No Savings	maintenance??
Suboptimal efficiency	Y	Repair to > original efficiency	Repair to Orig eff.	Zero - full cost is incremental	??	No Savings	maintenance??
Suboptimal efficiency	N	Repair to Orig eff.	Repair to Orig eff.	Zero - full cost is incremental	Suboptimal?	No Savings	maintenance??
Suboptimal	N	Repair to	Repair to Orig	Zero - full	suboptimal	No Savings	maintenance??

Existing Equipment Performance	Older than EUL?	Action Taken	Counterfactual /Baseline action at end of RUL	Measure costs based on difference between action taken and:	1 <sup>st</sup> Baseline	2 <sup>nd</sup> Baseline	Comments
efficiency		> original efficiency	eff.	cost is incremental	to more than original efficiency? Or suboptimal to original?		
Suboptimal efficiency	Y	Replace	Repair to Orig eff.	Discounted future repair - *	Suboptimal efficiency or Original efficiency	Original Efficiency	*if using original efficiency in first period - add cost of repair to original
Suboptimal efficiency	Y	Replace	Replace	Discounted future replacement*	Suboptimal efficiency or Original efficiency??	Code	*if using original efficiency in first period - add cost of repair to original

#### **1.4 Prescriptive or Flexible Baseline Categorization**

Some working group members suggest that all measures should be assigned to a default baseline category and, if for any reason a program administrator would like to re-categorize a measure or make an exception to the default category, that this should be restricted and only done through a process where a preponderance of evidence standard is applied.

It has long been Commission policy to require a preponderance of evidence to categorize measures as accelerated adoptions instead of normal replacements, no such standard has been applied to measures when the PA prefers a normal replacement treatment over an accelerated replacement treatment. The reasoning for this non-parallel treatment is:

- Normal replacement baseline treatment represents a lessor claim of program influence than an accelerated replacement/dual baseline treatment;
- Most mechanical equipment is replaced from time to time for reasons independent of program activities;
- For equipment with a high first-cost and a payback period that approaches the effective useful life, assuming normal replacement for purposes of baseline selection is reasonable.

Moreover, cost effectiveness policy applies unadjusted full measure cost to measures receiving an existing baseline treatment. Full measure cost includes demolition of existing equipment and all the labor and materials required for installation of the equipment. Many measures, particularly those with high first costs or longer paybacks would incur a prohibitively large measure cost. Although no single program or measure must be cost effective, the portfolio must be cost effective. Thus, mandating the program administrators classify all applications of a given installation type under an existing conditions baseline may unintentionally limit portfolio offerings and/or undermine their efforts to maintain a cost-effective portfolio.

The draft measure-level baseline working group report recommends allowing the PAs to change the baseline for any measure from its default category into normal replacement. This seems prudent and provides the PAs flexibility to preserve the cost-effectiveness of the portfolio without limiting measure offerings.

Comments on the Draft Resolution submitted by CEEIC and implementers recommend that measures assigned to a default existing conditions baseline category should be required to use that baseline regardless of perceived appropriateness of existing conditions baseline from the perspective of the project developer or program administrator. Such a policy would effectively force some amount of free ridership into the portfolio, since every measure has some amount of normal replacement. The size or composition of any such a forced free ridership effect is uncertain. If the Commission were to adopt such a policy, associated free ridership effects would be a direct result, and for this reason *we do not require the use of existing conditions baseline*, regardless of the default baseline category.

### **1.5 Preponderance of Evidence Guidance**

The preponderance of evidence guidance reflects an early consensus based decision of the working group to develop a new guidance document that would supplant the previous policy guidance document. D. 16-08-019 asks the working group to develop clear definitions on what constitutes evidence sufficient to determine whether a measure is qualified for accelerated replacement baseline treatment. This assignment does not necessitate developing a framework for processing that evidence. However, the assignment also does not preclude such an undertaking, as the framework helps to clarify the evidence and how it will be used for different program types and circumstances.

#### **1.5.1 Proposed Preponderance of Evidence Framework**

The working group interpreted the preponderance of evidence standard to imply a need to consider evidence both for and against two opposing outcomes. An illustrative excerpt from the working group guidance follows:

“‘Preponderance of evidence’ is a term borrowed from civil law. The preponderance of evidence standard requires that evidence for two opposing conditions be considered – in this case accelerated replacement and normal replacement baselines – and the condition more likely to be true (greater than 50% probability) be chosen.

If an implementer decides an accelerated replacement baseline is compelling for a particular measure but fails to fully investigate, document, and provide evidence to score the alternative normal replacement baseline it will be impossible to proceed with certainty that

any subsequent review will uphold the implementer's decision on baseline type because the preponderance of evidence exercise has not been completed. Strong evidence for one baseline condition alone will be at best suggestive."

The working group rationale was that the preponderance of evidence standard in civil law means that the issue in question is "more likely than not" to be true, or that the probability it is true exceeds 50 percent. Furthermore, the working group reasoned that a preponderance of evidence could not be applied without weighing all relevant evidence, including evidence both for and against the considered outcomes. Given this framing, the working group proposes that incentive applications that use an accelerated replacement baseline treatment offer evidence both for and against eligibility. The guidance also suggests that evidence be scored by a reviewer and the resulting scores be used to weigh the evidence. That is, the total score for evidence supporting an accelerated replacement baseline treatment is compared to the total score for evidence against using a normal replacement treatment, and the greater score will determine the appropriate baseline.

We are concerned about the potential subjectivity of the scoring, and whether it is reasonable to expect implementers to bring evidence against their self-interest to the scoring.

Section 5 of the guidance document (*Full Site-Based Preponderance of Evidence*) presents the details of this preponderance of evidence framework. It also embodies important conceptual and implementation shifts that are supported by the working group, such as the scoring system and guidance on types and relative value of evidence. Stakeholder feedback indicates a consensus that the proposed guidance offers improved clarity and transparency in the application of the preponderance of evidence standard. We believe these accomplishments are valuable and we also find the rigor of the proposed guidance to be adequate. On balance, the benefits of the revised policy and what it offers stakeholders outweigh our concerns.

Comments on the Draft Resolution from Program Administrators and Implementers suggest that the guidance document should be adjusted so that it presents an equal number of examples of what would constitute

evidence for and against program influence. We reiterate that the examples in the guidance document are just that, examples, and are not intended to limit the types of evidence that can be submitted. On the other hand, we see no reason not to provide a balanced set of examples.

Sustainability policies or energy policies have been shown to be highly indicative of energy efficiency and integrated demand side management measure uptake. As such, we promote the adoption of these policies and withdraw from the guidance document the example of using a sustainability policy as evidence against program influence.

The guidance document also proposes using a “small” relative incentive (i.e. incentives that reduce the length of simple payback between 5 and 20%) as indicative of low program influence. Similarly, incentives reducing simple payback by more than 20% are indicative of more program influence. While it is reasonable that low incentives by themselves would not be strong evidence of program influence, they are also not inconsistent with program influence. High levels of technical assistance and design support, and/or the provision of financing could provide influence and accompany a “small” relative incentive. For this reason, we withdraw from the guidance document the example of using a low relative incentive amount as evidence against program influence.

Note: These examples are intended to be illustrative, not comprehensive or exhaustive. Thus, both these examples are eligible to be submitted as evidence against program influence, should the project developer determine them to be appropriate and relevant to the case at hand.

As noted in D.16-08-019, the Commission will revisit its policies on existing conditions baseline, which would include the preponderance of evidence documentation standards, to ensure that they are meeting the intent of AB 802. Given that, the preponderance of evidence guidance document is to be considered a “living” document that will be updated over time. This approach may be modified in the future.

### 1.5.2 Applicability of Preponderance of Evidence Guidance

The working group guidance is prefaced with the following text, intended to clarify how to apply the guidance to measures and projects, as follows:

“This protocol applies to the following types of measures:

- 1) Custom or deemed measures in existing facilities delivered through downstream programs, or
- 2) Any non-building custom or deemed measure including industrial and agricultural.

Exceptions: Even if the measure meets the above criteria this protocol does not apply if it is:

- 3) Associated with new construction, expansion, or added load that cannot be met with existing equipment,
- 4) Delivered through an upstream program,
- 5) Implemented as part of a behavioral, retrocommissioning, or operationally oriented program,
- 6) A building shell, building system, or add-on equipment measure type, or
- 7) A program with savings estimation based on a randomized control trial or experimental method.”

Items 1 and 2 together imply the single statement that the protocol applies to “all custom and deemed measures delivered through downstream programs”.

With respect to item 3, the description of added load was modified versus the language of D. 16-08-019, and the measure-level baseline guidance document. The preponderance of evidence document modifies the term to read, “added load *that cannot be met with existing equipment.*” The new clause allows measures to qualify for accelerated replacement baseline treatment where they represent or are concurrent with added load, but where added load “could have” been met with existing equipment. The purpose of this clause appears to be to allow for some added load, pushing the boundary set by the policy beyond its “existing condition” point of reference, and instead to a hypothetical point of reference. Hypothetical points of reference are always more uncertain and in many cases,

are more contentious. Capacity expansions and the addition of new load mandate equipment upgrades and changes, and for these reasons we consider them a normal replacement installation type and apply a code baseline. We find the proposed modification to complicate the policy, both for purposes of verification and compliance and for these reasons we do not adopt it.

With respect to the numbered items in the list above, we note there is no mention of the expanded set of conditions for which there is no defined existing condition that are adopted in this Resolution (See the discussion of When is the Existing Condition Undefined? On page 13)

We find items 4 and 5 to be incomplete and/or not well-defined. For all the reasons discussed in this section, we adopt the following eligibility criteria for use of the preponderance of evidence guidance:

“This protocol applies to custom or deemed retrofit measures that are delivered through downstream programs, under conditions that meet Commission standards for having a defined existing condition and do not otherwise default to an existing conditions baseline per D. 16-08-019 and Resolution E-4818.”

### **1.5.3 Tiered Rigor Levels for Preponderance of Evidence Requirements**

The working group developed a ‘Tiered’ approach in its preponderance of evidence guidance, whereby projects with smaller incentives would be held to a lower rigor standard. The working group agreed there should be three rigor tiers:

- “Full Rigor” for the largest projects with incentives greater than \$100,000,
- “Tier 1, Medium Rigor” for projects with incentives between \$25,000 and \$100,000, and
- “Tier 2 Lower Rigor” for projects with incentives less than \$25,000.

The proposed incentive levels were based on a similar rigor distinction that applies to current measurement and verification standards.

We adopt this proposed tiered approach. We also adopt the proposed incentive size cutoffs for the tier categories. We suggest they might better apply to cumulative incentives for a given customer over a calendar year. However, this option was not considered by the working group so we do not adopt the

modification. However, comments on the Draft Resolution from working group members point out the potential for misuse of incentive cap limits, whereby a project might be sub-divided into multiple applications for purposes of receiving a different level of scrutiny. For this reason, it seems reasonable for CPUC staff to have discretion to aggregate applications when they are from the same customer and appear to be the same project.

Despite agreement on using a tiered approach and in defining them with the incentives values in the bullets above, the working group was not able to agree on what would constitute sufficient documentation standards for the lower rigor tiers (i.e. Tier 1 and Tier 2). Parties could not agree as to whether the lowest rigor tier would involve an interview conducted by an independent third party, or program administrator, or implementer. There were also differing perspectives on whether the questionnaire should be program specific or general, whether the language in the questionnaire should indicate there would be consequences for misrepresenting facts, and even whether an interview should be conducted at all. Working group facilitators present their best approximation of a "middle ground" solution, representing no one perspective nor a negotiated compromise. We do not adopt these policies because there were such large differences in the related opinions of different stakeholder groups on these issues, and we feel the policy requires further development before it can be adopted.

To be clear, **the tiered preponderance of evidence approach is not approved for implementation because the documentation requirements for each tier are not yet defined.** We have no adopted policy guidance to determine what constitutes sufficient rigor for determining accelerated replacement for Tier 1 and Tier 2 projects, so the approach is not implementable currently. We adopt the definition of the tiers to provide a more defined structure within which the supporting policy can be developed and adopted by the Commission at a future time.

#### **1.5.4 Deemed Measure Preponderance of Evidence**

Section 7 of the working group's proposed guidance document allows for deemed measures to apply for an existing conditions baseline through Commission staff approval of related work papers, program designs, and program rules. The expectation is that a compelling data supported case will be made to Commission staff by Program Administrators that indicate a program design and delivery configuration that can be reasonably expected to accelerate measure adoptions in the target population. This alleviates the need to confirm

program influence through the course of program implementation, though not necessarily equipment viability.

SCE in their comments on the Draft Resolution recommend that the preponderance of evidence should be done at a measure level, and that the “submission of program design and market data” should be replaced with “submission of measure level data via the work paper ex ante submission and review process.” They go on to say, “Programs are often broad in scope and include a variety of measures, which are not conducive to demonstrations of preponderance of evidence because *preponderance of evidence is based on the application of measures to the type of customers the program is targeting* (emphasis added).”

We interpret these SCE comments as confirmation that program design parameters connecting measures to the types of customers the program is targeting are critical to application of preponderance of evidence in a deemed approach. We recognize current programs may be broad-based, and offer the following as an alternative to the submission of program designs:

Measure work papers that are submitted for ex ante review and approval by the CPUC may also request an accelerated replacement baseline (or blend of normal and accelerated replacement) for specified program deliveries, customers types and/or measures applications. Such requests should specify types of evidence collected from participants that ensure compliant program delivery.

SCE further requests we limit PA risk for savings claims based on approved work papers where additional data collection is needed to substantiate the baseline assumptions. SCE suggests temporary, preliminary approval that limits the scope of an offering be granted, with direction on additional data to be submitted as part of a future revised work paper in order to expand the scope or length of the offering.

We understand the desire for reduced risk, and do not prohibit the granting of such an allowance where a strong case is made. However, we also do not adopt such an allowance as the routine or default policy. Accelerated baseline treatment may increase savings by a substantial amount on a per unit basis, and the associated risks should be treated with appropriate caution and generally shared across stakeholders, not mitigated for one party at the expense of others.

We note that PAs may roll out small scale pilot programs, utilize market research funding, or orient their non-resource programs activities to test foundational ideas and theories. Programs may use any tool they prefer to screen projects and/or may elect to apply a blended baseline to hedge against the risk of normal replacement in the participant population.

SCE suggests that the low-cost approaches to demonstrating preponderance of evidence that were discussed in the working group be presented as examples of acceptable evidence for deemed measures. Section 7 of the POE guidance document states that the work paper should articulate “the evidentiary standard that will be used will use to determine if the measure is accelerated replacement or the proportion of participants that are accelerated replacement.” We find that offering generic examples misses the essential point of the process, and could potentially be misconstrued as representing universally applicable or pre-qualified tools. The intent is for program administrators to:

1. Identify stranded savings potential using: market research, analysis of existing databases, research in other jurisdictions, existing experience and market expertise. Present the foundational research, analysis and/or hypothesis.
2. Develop a program theory, design and implementation plan:
  - a. Include customer eligibility requirements and evidentiary standards that are cost-effective and reasonable and ensure implementation is consistent with program design and intent.
  - b. The program implementation plan should establish the roles of the PA, implementer and/or other agents acting on behalf of the program and clarify the activities and respective responsibilities of each for collecting data or other evidence to assure high quality program delivery.

We note that what is envisioned here is not necessarily a time-consuming investigation for each site. If the customer type and measure pairing is indicative of accelerated replacement then a simple verification of customer and measure type is all that would be needed to substantiate the blended rate savings claim. Of course, the regular requirements including customer account number, address, date, measure, incentive and other details that are normally required would continue to be required, and ex-post evaluation will be used to confirm the appropriateness of ex-ante assumptions regarding baseline.

Regardless of any approved streamlined preponderance of evidence process for deemed measures, if an incentive for a given project is more than \$100,000, *a full-rigor preponderance of evidence investigation is required*. If a program expects to have a significant number of medium to large projects, (i.e. greater than \$25,000 incentive) we encourage the PAs to propose a tiered approach, utilizing different rigor levels in their screening and data collection for different sized projects.

With the additional allowances above, we adopt the program level preponderance of evidence guidance for deemed measures, as described in Section 7 of the preponderance of evidence guidance document.

### **1.5.5 “Direct-to-Decision” Baseline Assignment**

Section 4 of the preponderance of evidence guidance provides for “direct-to-decision” and “direct-to-default” conditions. These are conditions through which a determination of accelerated replacement may be streamlined or automatic.

The proposed “direct-to-decision” criteria are those by which a project may qualify as accelerated replacement without any further preponderance of evidence requirement.

The proposed criteria that would default a project to an accelerated replacement baseline per the working group guidance are as follows:

1. “Custom measures installed through residential and small commercial direct install programs.\*\*
2. Tenant space build-outs where the tenant, space purpose and equipment use patterns remain the same.
3. Pre-existing equipment was functional and the measure was proposed in an implementer-provided audit through a program that the Commission has approved as being designed to expressly target early replacement.

\*\*Where CPUC Staff must pre-approve the direct install program as being appropriate for such classification. For deemed measures with these customer classes, see the deemed section.”

Item number 1 above is relatively reasonable, as it incorporates a Commission review of program design and program rules to confirm there is a reasonable expectation of accelerated replacement, and that the program is oriented to

specific underserved markets. However, the guidance does not specify requirements for verifying equipment operability or customer eligibility, both of which are necessary and prudent. We note, for example, that some measurable portion of lighting fixtures can reasonably be expected to be non-operational at almost any time in an existing commercial building.

Item number 2 is more concerning than item 1, since it would circumvent any consideration of program influence in the determination of accelerated replacement, in a manner irrespective of program design, customer size or project size. In addition, there are no stated requirements to collect specified types of evidence to demonstrate project or customer eligibility, implying this is either up to the implementer to determine or it is not required at all. In addition, there are no stated requirements to document the functionality and operability of existing equipment.

Item number 3 incorporates Commission approval of the program design. However, there are no requirements for implementers to collect evidence of equipment operability or program eligibility, and this allowance appears to apply irrespective of the customer size or project size. We find these omissions unacceptable.

We adopt the proposals represented in items 1 through 3 above only with the following conditions and modifications:

Any approach that streamlines or automates the determination of accelerated replacement baseline must comply with the following guidelines:

- Program designs, program rules and customer eligibility criteria are submitted to the Commission for approval, with a strong argument or data supported case that is highly indicative of inducing accelerated replacement.
- The program rules must specify the customer eligibility criteria and the evidence of customer and measure eligibility that will be collected for each program installation.
- The specified evidence must be collected for each installation as part of the program implementation, and this evidence must be made available to the Commission upon request and submitted as supporting documentation with related energy savings claims.

Through this process, a program-level case can be made that program design and rules indicate a high probability of accelerated replacement, subject to approval by Commission staff. For these program designs, the project-level preponderance of evidence requirement can be limited to include evidence of customer eligibility for program participation and evidence of equipment viability. Equipment viability standards must be fulfilled on a project-specific basis, in accordance with the appropriate tier standard.

We are aware that there is not agreement across Program Administrators in how to identify and verify a small business customer. This standard would be needed to qualify programs for a direct-to-decision treatment where customer eligibility includes a small business designation. For this reason, we direct the Track 2 working group (assigned to address issues of streamlining custom ex-ante review and industry standard practice) to recommend a statewide definition of a small sized business and associated evidentiary requirements to verify this classification.

#### **1.5.6 “Direct to Default” Baseline Assignment**

The introductory text offered in the guidance document for “direct-to-default” preponderance of evidence requirements state that the condition identified is “strongly suggestive of one of three outcomes.” Based on the content of the table, the three outcomes that are possible include: normal replacement, accelerated replacement and no influence. The latter is directly related to a free ridership determination. Free ridership determinations are not within the assigned scope of the working group. In all discussions and deliberations, the working group focused on distinguishing and defining criteria with which to determine whether the appropriate measure-level baseline was: existing conditions, normal replacement or accelerated replacement. Issues related to the indicators of “no influence” have not been addressed consistently or adequately in working group discussions.

We do not object to the assertion that a payback period longer than the expected useful life of a measure is indicative of important non-energy and non-program influencing factors. However, this singular address of an important issue falls short of a comprehensive treatment of appropriate screening criteria for program influence. Further, we assert that under an assumption of rational and fully informed decision-making, any payback (before incentives) that is *shorter* than the remaining useful life of the existing equipment indicates it is economically

favorable to replace the equipment without need for incentives, and therefore also suggests free ridership. Thus, for cases where rational decision making applies, incentives that do not financially induce existing equipment to cross a remaining useful life payback threshold also indicate no influence.

We are familiar with the perspective of some program implementers that customers have numerous competing high yield opportunities for capital investment and/or that business uncertainty implies a higher discount rate for future costs and benefits than those we apply in our models. We do not adopt the "no influence" criteria proposed in the working group guidance. The proposed maximum payback length threshold is not balanced by an equally plausible minimum length payback period. The Draft Resolution proposed a minimum payback length of one year, which was opposed strongly by Parties in comments, most referencing limitations to portfolio offerings that such a minimum requirement would represent. We concede that for measures without incentives, and for lower-cost deemed measures, payback-length can have a different meaning (e.g. lower cost measures are generally subject to more competition for customer time and attention). For these reasons we decline to adopt any measure eligibility criteria based on the length of simple payback.

The following is an excerpt from Section 4 of the guidance document, describing the meaning of "direct-to-default":

"Direct-to-default" means that the evidence is strongly suggestive of one of the three outcomes and the burden of proof to justify another outcome is high. It is not definitive and does not guarantee an outcome but effectively reduces the rigor for additional requirements necessary to support the default baseline. This guide identifies seven such technology-program type-market combinations:

Evidence	Default Baseline
C/I energy management systems that don't fit in the "add-on" category	Accelerated Replacement
C/I/Ag refrigeration	
Public sector, including primary and secondary schools	
The pre-existing equipment is functional and its age is less than ½ of EUL	
The pre-existing equipment is broken and the repair cost exceeds ½ of the replacement cost	Normal Replacement
Measure associated with major alteration during tenant change-out	
The payback time after incentive exceeds the measure EUL	No Influence (Free Rider)

Note that this does not include Strategic Energy Management programs

The guidance document also stipulates the following:

“If a measure meets the ‘direct to default’ criteria for accelerated replacement, a simplified protocol may be used to demonstrate that the measure is in fact accelerated replacement. See the simplified POE protocol described in Section 6. A measure that does not meet the above criteria is not certain to be the opposite of the default baseline shown. It simply means it is not ‘direct-to-default’.”

Neither the descriptions in the table nor the text above address or define what is meant by a “simplified protocol” or what standards and requirement such a protocol would warrant, or how it would be applied. Whether the intention was to reduce the rigor level by one tier than would otherwise apply, or whether the intended meaning was to apply the lowest rigor tier to all cases, neither proposal is adopted.

The assertion that any alternative baseline determination beyond what is noted in the table cannot be made without a higher burden of proof is similarly ambiguous. It is also inconsistent with our determination –and working group recommendations - that a normal replacement baseline is always an available

baseline option, without any burden of proof (see the section titled, *Prescriptive or Flexible Baseline Categorization*)

Moreover, as discussed previously, the measure-level baseline guidance already stipulates normal replacement treatment for alterations associated with a change in lessee, thus the inclusion of a qualifying circumstance in the table creates ambiguity for eligibility standards.

We do not find the proposed direct-to-default conditions compelling as they are proposed, but agree that there are some conditions under which a streamlined determination of accelerated replacement makes sense. We adopt a policy to allow programs to qualify for a reduced level of rigor to determine direct-to-default accelerated replacement with the following conditions and requirements:

- Direct-to-default program design and program rules must be submitted to the Commission for approval, with a strong argument or data supported case that is indicative of inducing accelerated replacement.
- The program rules must specify the evidence of program influence and customer and measure eligibility that will be collected for each program installation.
- The specified evidence must be collected for each installation as part of the program implementation, and this evidence must be made available to the Commission upon request and submitted as supporting documentation with related energy savings claims.

### **1.6 Default Measure Level Baseline Assignment Table**

The draft measure level baseline guidance document recommends several changes to Table 1 of D. 16-08-019.

The first recommended change from the working group is to create separate columns for add-on equipment and shell and building system measures. The rationale for this is that the two installation types are distinct and should be subject to different policy guidance. At the same time, the group did not recommend different entries in the table for add-on equipment versus shell and building system. We see no reason that these cannot retain separate definitions and distinct policy guidance, while also being represented in the same column of the Table, given they are to receive the same baseline treatment.

The second recommended change is to expand the non-building measures row to essentially duplicate the existing buildings including major alterations rows, with one minor difference- that the entries under the shell and building system column read "N/A" instead of existing. This proposed change is clearly not appropriate. If it were, there would be no reason to separate building and non-building projects, as they are treated identically with respect to baseline except where undefined ("N/A"). However, building projects are substantively different from non-building projects. They are treated differently in D. 16-08-019, and have a different relationship to AB 802 legislation.

Baseline policy for non-building alterations is in development per the discussion in Section 3 of D. 16-08-019. This discussion indicates that treatment of baseline for non-building projects is to remain unchanged pending the development of applicable NMEC savings determinations for measures that improve efficiency in non-building applications. It appears that the inclusion of the non-building sector in Table 1, together with references to ongoing development of emerging NMEC applications may have created unintended confusion.

The third recommended change to Table 1 made by the working group is in regards to major alterations. The group recommended breaking this out as a sub-row within existing buildings, and allowing all applicable measures to be classified as either code or dual baseline. However, these new entries, as proposed do not specify the baseline treatment, but instead they offer a set of alternative treatments for each installation type. This ambiguity is inconsistent with the remainder of Table 1 and undermines the value and utility, so we are reticent to adopt it as is.

Consistent with our efforts to retain simplicity and reflect current policy in a succinct format, we provide a supplemental table, presented below.

SCE in their comments suggested the Measure Level Baseline Guidance table be revised to include Code for normal replacement measures, and that early replacement (ER) should be revised to its new name of Accelerated Replacement (AR). SCE's suggested changes offer a marginal improvement to the accuracy of the table and do not alter the intended substance of the table, and therefore we adopt the suggested revisions, as reflected in the Table below.

**Table 1.1 Measure Level Baseline Guidance**

Alteration Type	Delivery	Savings Determination	Customer Class	Installation Type		
				Weatherization / Add On / BRO	Efficient Equipment	
					AR	NR
No Existing Condition	All		Code			
Existing Buildings	Upstream/midstream	All		Code		
	Downstream	NMEC, RCT, exp. design		Existing		
		Calculated		Existing	Direct-to-Decision/ Direct-to-Default POE**	Code
		Deemed		Existing	Deemed POE	Code
Non-Building projects including industrial and agricultural processes	SEM* programs	NMEC	All	Existing		
	Other (not-SEM) programs	All		Existing	Direct-to-Decision/ Direct-to-Default POE**	Code

\*Strategic Energy Management programs are currently under development in a collaborative effort of Commission staff and Program Administrators.

\*\*"Incentive Tiered POE" will apply here only following Commission approval of Tier 1 and Tier 2 preponderance of evidence requirements. These requirements are not adopted in this Resolution but assigned to the Track 2 Working Group, per ordering paragraph 25.

**1.7 Policy Implementation, Comprehensive Guidance Document and Measure Level List**

Stakeholders have requested in their comments on the Draft Resolution that the CPUC publish a single, comprehensive guidance document reflective of the adopted policies. We agree with the value of such a document and direct staff to compile such a document following the Commission vote on the Final Resolution.

As part of this comprehensive guidance, Commission staff will also provide documentation of the review and approval process program administrators and implementers may use to submit programs or measures for deemed preponderance of evidence, or the direct-to-decision and direct-to-default accelerated replacement treatments.

This Resolution is not intended to disallow measures or the use of baselines that are currently part of the portfolio. This Resolution is intended to provide new avenues for programs and projects to receive accelerated replacement baseline treatment. Thus, programs and measures that presently assume accelerated replacement baseline are not required to alter those claims as a result of the policies in this Resolution. Of course, all such current baseline practices will continue to be subject to ex-post evaluation, as before.

The working group developed a proposed measure level list with the intent to clarify the installation-type category assignments of measures.

In their comments on the Draft Resolution SCE requested that a measure-level list be developed, in order to provide clarity and certainty around baseline treatment, and recommended further that baseline policies regarding default values and applicability of the preponderance of evidence standards should apply only to the measures in the list, as they appear in the list, and that treatment of all new measures be introduced via the existing “bus stop” process.

At the same time, some working group members expressed concern that the measure descriptions in the proposed list were too broad in some cases; other members expressed concern that a longer, more detailed list would be cumbersome and intractable to use. We note it is also true that any given measure might be installed through different alteration types (e.g. new construction versus retrofit) or different savings determinations (NMEC versus calculated or deemed) and thus would be associated with different default baseline categories, limiting the certainty that any such list might provide.

However, we appreciate the request for clarity and would like to accommodate SCE to the extent possible. We direct Commission staff to work with PAs and stakeholders to clarify specific measure-level questions related to baseline classifications, and to document the questions and resulting clarifications in a publicly available document on the CPUC website.

## **COMMENTS**

Public Utilities Code section 311(g)(1) provides that this resolution must be served on all parties and subject to at least 30-days public review and comment prior to a vote of the Commission. Section 311(g)(2) provides that this 30-day period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day comment period for the draft of this resolution was neither waived nor reduced. Accordingly, this draft resolution was mailed to parties on December 22, 2016 and originally scheduled for Commission vote on February 9, 2017. Staff then placed a one meeting hold moving the vote from the February 9th to the March 2nd meeting agenda.

Commenters on the Draft Resolution fell into three distinct categories, where the comments within each category were fairly similar to one another but very different, and often in direct opposition, to those of the other categories. The three categories and the organizations that submitted comments within each are as follows:

- 1) Program Administrators:
  - San Diego Gas & Electric,
  - Southern California Gas,
  - Southern California Edison,
  - Pacific Gas & Electric,
  
- 2) Trade organizations and industry advocates:
  - National Resources Defense Council,
  - National Association of Energy Services Companies,
  - California Energy Efficiency Industry Council (CEEIC),
  - Nexant Inc.,
  
- 3) The Office of Ratepayer Advocates.

The issues in the Draft Resolution that drew the most comments and concern from parties were mostly unrelated to the assignment of existing conditions baselines to measures or to preponderance of evidence documentation requirements. The guidance documents proposed by the working group make fundamental changes to the rules governing eligibility of measures and the

crediting of savings that extend beyond the question of whether or not an existing conditions baseline is appropriate or applicable. Examples follow:

- **Code Baseline:** The guidance document introduces a new definition of code baseline, which would set an important precedent for future considerations of industry standard practice and normal replacement baseline. This is an ongoing issue, and not one that is essential to the assignment of measures to an existing conditions baseline category.
- **Add-On Equipment:** The working group report is clear that the proposed definition of add-on equipment is intended to allow for a new category of measure to qualify as an add-on measure, i.e. the new definition of add-on measure allows for “pony<sup>13</sup>” measures. The eligibility of stand-alone capital equipment (e.g. a chiller) to qualify as add-on equipment has a potential for misapplication in situations where retrofit is concurrent with an expansion of space or load that is marginally “not substantial.” Regardless, development of policy to govern pony measures is not germane to the assignment of current portfolio measures to baseline categories.
- **Simple Payback Restrictions:** The working group proposed using the length of simple payback as an indicator of measure eligibility, based on implied free ridership. The draft resolution accepts this assertion and also balances it with a similar restriction on short payback measures (because an incentive is less likely to be influential for short payback measures). Project economics and the length of payback have a legitimate relevance to preponderance of evidence requirements for accelerated replacement baseline. However, the assigned scope of the working group does not require nor imply a need to make changes to measure eligibility criteria.
- **Definitions of EUL, RUL and Measure Cost:** Working group members advocated these long-standing definitions and policies be revisited in this

---

<sup>13</sup> “Pony” measures save energy by providing smaller scale services to a sub-component of larger space, saving the need to provide that service to the whole space when only a sub-component is needed. For example, a small capacity heating system that is used to meet the demands of a 24 hour call-center that occupies one floor of a large office building, and requires heating at night, would avoid the need to heat the whole building in order to serve a single floor.

working group. The working group facilitators ruled this out of scope and no policy changes were reflected in the proposed guidance documents. However, CEEIC and implementers (NAESCO) assert in their comments that these terms should have been considered for revision as part of this process. These definitions and their applications to energy efficiency program policy are not germane to the assignment of measures to baseline categories, nor are they relevant to the preponderance of evidence requirements to demonstrate accelerated replacement.

- **Repairs that are eligible for ratepayer funded programs<sup>14</sup>:** The issue of funding equipment repairs with ratepayer dollars has been a long-standing and complicated program policy issue. Historically, routine repair and maintenance activities have been ineligible for programs. Similarly replacement of broken equipment (like-for-like replacements) have been viewed as required maintenance and have not qualified for incentives. However, AB 802 asks us to recognize *all savings* reasonably expected to persist over multiple years, and this behooves us to reconsider the issue of eligible repairs again, and integrate the treatment of such measures carefully into existing policy.

The Draft Resolution limits ratepayer incentives for repairs to include only those repairs that improve efficiency by 20% or more and to repairs that are not routine or required, and that are not low-cost or no-cost repairs<sup>15</sup>. These policies would help to avoid using ratepayer dollars for routine repairs, or repairs that are tantamount to replacements and repairs motivated by benefits other than energy efficiency. We maintain it is our fiduciary duty to create and apply guidelines

---

<sup>14</sup> 'Repairs eligible for incentives' should not be confused with repair-eligible equipment, where the latter is equipment that is old but still eligible for accelerated replacement. The former are repair activities eligible for incentives.

<sup>15</sup> CPUC consultants further suggest we should limit eligible repairs to exclude replacements of the primary efficiency determining components of equipment, a concern for pump-repairs in particular. Pump repairs are not an existing building measure, and not a primary consideration of this Resolution. However, we note it is likely that some repairs are tantamount to replacement for some equipment and repair types, and support continued consideration of policies to ensure appropriate treatment of such measures.

that avoid ratepayer subsidy of routine or non-energy related repair activities, as well as repairs that, for all intents and purposes are replacements.

Comments on the Draft Resolution reflect concern over the potential limitations of such a policy, and object to its relevance. We maintain these are relevant issues and important policy considerations given AB 802 legislation. We also maintain that the proposal represents reasonable guidelines for incentivizing equipment repairs. At the same time, we acknowledge there was limited discussion and focus on these issues in the working group. For this reason, we retract the specific requirements regarding repairs eligible for incentives presented in the Draft Resolution. However, we direct the PAs to adhere to previous policies and those in the High Opportunity Projects and Programs framework and D. 16-08-019 with respect to the appropriate treatment of repair and maintenance activities.

## **Summary of Comments**

### **Office of Ratepayer Advocates**

The Office of Ratepayer Advocates comments are in support of the draft resolution, and they recommend the Commission adopt the Resolution as drafted. In particular, ORA noted their support of the Resolution direction on the following issues:

- ORA is in agreement that lighting should be classified with other mechanical equipment for the purpose of determining baseline.
- It would be inconsistent to use a pre installation baseline reflective of deferred maintenance while assuming the efficiency of installed equipment persists over the life of the measure.
- ORA supports the resolution direction that behavioral, retrocommissioning and operational (BRO) installation type should be subject to effective useful life guidance consistent with D. 16-08-019 and the High Opportunity Projects and Programs framework.
- An existing conditions baseline reflective of poor maintenance and disrepair should apply only to BRO installation types.

### **Program Administrators**

PG&E's comments on the draft resolution suggested multiple reasons for removing restrictions on the eligibility of measures based on simple payback. We found much of PG&E's arguments compelling and removed these restrictions from the content of this Final Resolution.

PG&E also suggested the restrictions on 'repairs that are eligible for ratepayer funded incentives' in the draft resolution presented significant challenges.

Further PG&E proposes the Commission amend Ordering Paragraph 24 to allow for " Program Administrators are permitted to adapt the Preponderance of Evidence requirements for projects with incentives less than \$100,000 to allow for the cost effective implementation until tiering standards are adopted." We do not adopt this recommendation directly, but reiterate that the policies in this resolution are not intended to disallow measures or programs currently in place. Additional findings and ordering paragraphs have been added to the resolution to accommodate this need.

PG&E recommended a change to the definition of downstream programs to allow for online program delivery, which we accommodate in this resolution.

PG&E also made a number of suggestions for more precise wording and expanded clarifying text, which are addressed throughout the resolution and noted where appropriate.

Comments from SCG and SDG&E on the draft resolution suggest that an ownership or tenancy change is not necessarily, in and of itself, enough evidence to conclude there is no reference operation for an existing condition baseline. We concede these are reasonable objections, and change the policy in Ordering Paragraph 3 (Please see discussion in Section 1.3.1.2 Existing Conditions Baseline Treatment)

SCG and SDG&E request the adopted definition of add-on equipment adhere more closely to the working group adopted definition to accommodate the optimization and configuration measures that are currently treated as add on equipment. This request is accommodated in Ordering Paragraph 10.

SCG and SDG&E request that broken but repairable equipment be considered for a distinct baseline treatment. We retain our original judgment that the complexity and uncertainty of a hypothetical repair(s) as a counterfactual for the purposes of determining baseline costs and energy consumption are overly uncertain and complex. We retain the draft resolution direction with regard to this issue.

Similar to PG&E SCG and SDG&E took exception to the application of measure eligible restrictions based on the simple payback of measures. As discussed previously, these restrictions are withdrawn from the final resolution.

SCG and SDG&E suggest that the number of examples provided in the preponderance of evidence guidance document should be equally balanced between those indicating influence and those indicating 'no influence'. We see no reason not to equalize these examples, and implement accordant changes (please see Ordering Paragraph 19).

SCE in their comments requests permission to use Emerging Technology funding to conduct the research needed to identify programs and technologies appropriate for a simplified or deemed POE requirement. Their reasoning for this request is to avoid negative impacts of such spending on their portfolio cost effectiveness. In response, we note the existing structure provides many avenues for completing this type of research and we do not feel the change suggested by SCE is necessary. Pursuit of this type of research is already supported through a combination of Emerging Technologies programs, work paper development activities, EM&V<sup>16</sup>- and pilot programs.

SCE argues they should be able to use measure work papers to develop baselines rather than submitting program-specific baseline proposals. They argue that programs are generally very broad, and that appropriate baseline is dependent on the customer measure level data, per the following excerpt from their comments:

---

<sup>16</sup> Evaluation, Measurement and Verification

“Programs are often broad in scope and include a variety of measures, which are not conducive to demonstrations of POE because POE is based on the *application of measures to the type of customers the program is targeting*. Program information is typically presented in implementation plans that do not necessarily include specific measure level details to demonstrate POE. Measures offered within a program often change over time and may require different POE between measures. In addition, multiple programs often include the same measures, which will result in PAs needing to develop multiple work papers for the same measure.”

We agree with SCE that preponderance of evidence is tied to the way *programs* offer measures to specific *customer types*. We agree that program design and the selection of appropriate baseline are *inextricable*, and consideration of appropriate baseline must be connected to program design and delivery detail. That being said, we agree it is reasonable to manage baseline selection at a measure level. In support of this, we invite the PAs (or program implementers) to submit proposed baseline treatments at a measure-level substantiated by particular program design and customer type detail. A measure-level request to apply a baseline treatment should present the market data and program theory that inspired the request; it should present the program design and implementation features that leverage these market characteristics, and the customer and measure eligibility criteria that ensure consistent program deployment. Note that such a measure level request should reference the work papers for the specific deemed values that apply to different customer types and baseline treatments.

Most commenting parties suggest Commission staff produce a comprehensive guidance document reflective of adopted policy, and that resolution of remaining policy issues be expedited. At the same time, SCG and SDG&E recommend working group activities allow adequate time for vetting through a public process, and suggest the expedited timeline of the track 1 working group presented real limitations to their ability to participate fully in the process. We understand and recognize the legitimacy of these positions. As such, future working group activities will seek to proceed in an efficient and timely manner that still provides adequate time for stakeholder input, unique circumstances notwithstanding.

### **Trade organizations and Industry Advocates**

Trade organizations and industry advocates that commented on the draft Resolution submitted similar, if not identical, comments. The summary below responds to CEEIC comments, which were broadest.

CEEIC recommends the Commission require staff to revise the Draft Resolution to better align with the consensus documents on measure level baselines and POE. CEEIC objects to the Resolution adopting a substantial portion of the POE guidance (chapters 6 and 7, addressing deemed measures and simplified POE). The working group report reflects general stakeholder agreement regarding the treatment of deemed measures, as reflected in the following two excerpts:

- “There was general agreement that an accelerated replacement installation type could be assigned to a deemed measure, if appropriately defined and supported in the work papers. The work paper would also define the preponderance of evidence standard for the measure.”<sup>17</sup>
- “The new deemed measure POE protocols allow either site-specific or program-level demonstration of early retirement or normal replacement. This flexible approach was proposed by a subgroup that conceived the deemed approach and presented it to the full group. There was no objection, although it was requested that program-level be given preference. This is considered a unanimous consensus outcome<sup>18</sup>.”

Deemed measures and simplified POE methods were discussed during the meetings on November 1st, 8th, and 15th. The issues were addressed in the draft and final versions of the working group report. The final working group report was careful to highlight concerns and specific comments made by working group members. There are no references or comments in the working group report indicating that CEEIC was completely opposed chapters 6 and 7 and would recommend they be rejected.

---

<sup>17</sup> T1 Working Group Report, Page 6

<sup>18</sup> T1 Working Group Report, Page 25

The working group report notes that the limited time for review and discussion of the deemed POE framework was “of concern” to some stakeholders. However, the working group report notes only SoCalGas suggested deemed measures should be out of scope. No major objections on the part of CEEIC or implementers to the treatment of deemed measures or the simplified POE is noted in the working group report.

Given that the working group meetings and working group report support the inclusion of deemed POE standards, and that no other party recommend dismissing the section, we continue forward with adopting these policies.

Comments submitted by CEEIC refer to a working group proposed definition of New Construction that includes “30%” as an example of what might be considered a “substantial” expansion of space or load. The working group report includes **no such recommendation**. Section 3.1 on page 8 of Appendix A presents the working group definition of new construction. There is no reference to 30% and the definition remains consistent with language in D.16.08.019.

The Efficiency Council comments assert that the Draft Resolution requirements unnecessarily limit the effective useful life of long lived measures. This is not the case. First, it is important to note that a measure restoring equipment to its original designed efficiency *is a repair* by definition, and should be classified as BRO. Second, the resolution requires use of designed (or rated) efficiency as baseline for equipment replacements and long-lived measures<sup>19</sup>. It does not require that equipment replacements and long-lived measures be classified as BRO. It requires that a reasonable adjustment for deferred maintenance be applied to equipment lifecycle savings estimates, to avoid applying an inappropriate EUL to that component of savings. Savings from BRO contribution to savings can be claimed separately and an appropriate EUL can be applied.

In response to the CEEIC comments that the working group recommendations were not given due consideration in the Resolution, we find this assertion to be inaccurate. The working group was tasked with a narrow assignment, but one that offered opportunity to alter program rules. As evident throughout the Resolution, many of the working group recommendations and comments have

---

<sup>19</sup> When using a deemed or calculated savings determination.

been accepted. At the same time, not all working group recommendations were deemed appropriate, including recommendations and comments made by CEEIC. In fact, CEEIC's interest throughout the process of updating program rules cannot in good faith be assumed to be consistent with those of the ratepayers or those that are in the interest of California's policy goals regarding climate and GHG reduction. By contrast, it is important to note that the Office of Ratepayer Advocates' submitted their full support for the policies set forth in the Draft Resolution.

## **FINDINGS**

1. The recommendations of the working group vary in merit and cohesiveness.
2. There are gaps in the proposals of the working group's guidance documents.
3. In some cases, the working group proposals call for adopting additional clarifying policy guidance.
4. The application of existing conditions baseline to determine savings for capital projects using a deemed or calculated savings determination has the potential to confound savings resulting from deferred maintenance and repair with those of the capital improvement they intend to represent.
5. The broad application of existing conditions baseline demands clear distinctions between repairs that are eligible for ratepayer funded energy efficiency programs and those that are not.
6. There are additional circumstances beyond those identified in D. 16-08-019 where there is no reference operation for an existing condition baseline, and therefore the existing condition is undefined and an existing conditions baseline does not apply.
7. There are no feasible cost effectiveness policies to support accelerated replacement eligibility for equipment that is non-operational or does not meet the existing service requirements.
8. Code baseline and industry standard practice baselines both reflect the efficiency of equipment that would have been adopted without the program activities and influence. We do not have a clear policy regarding how to apply these alternative normal replacement baselines in cases where both apply, or how to develop baseline when neither are applicable.

9. We agree with PG&E and other members of the working group that establishing clarity on the application of code baseline was not within the assigned scope of the working group.
10. Mandating the use of existing conditions baseline for all applications of a given installation type may unintentionally limit portfolio offerings and/or undermine Program Administrators efforts to maintain a cost-effective portfolio
11. The definition of downstream programs relates directly to the applicability of existing conditions baseline, and there is no clear and strong definition within the body of current adopted policy.
12. The working group's proposed definition of add-on equipment allows for independently functioning equipment to qualify as add-on equipment, where previously this was disallowed. If it were adopted, this would represent a potentially significant change in policy and warrants careful consideration. In addition, such a policy change is not clearly within the assigned scope of the working group.
13. Shell and building system measures evolved into two classifications during working group deliberations: building weatherization measures and lighting measures.
14. It is not reasonable that lighting systems represent the only mechanical system that should qualify as shell and building system, given their reasonable turnover rate and code compliance for many building types.
15. It is reasonable to define the accelerated replacement installation type as three sub-categories: early replacement, repair eligible, and repair indefinitely.
16. For purposes of dual baseline calculation, there is currently no reasonably reliable and cost effective method to assess the expected useful life or total costs of repairs that would have been necessary to sustain operability of removed equipment over the expected useful life of new equipment.
17. Equipment that is older than its effective useful life may qualify for an accelerated replacement baseline treatment where it is determined the equipment is either repair eligible or repair indefinitely.
18. We do not have a process or evidence requirements for how equipment could be qualified as repair indefinitely. The working group also did not assign any measures to this category.

19. The language of AB 802 legislation directs energy efficiency programs recognize energy savings from measures that bring existing building into compliance with building code and not necessarily exceed code.
20. The proposed guidance for applying a preponderance of evidence standard relies on implementers to present evidence against their own interests. We share the concern of other stakeholders that this is not a prudent or preferred framework. In the absence of an alternative framework, however, we accept this proposal and will revisit its effectiveness in the future.
21. It is reasonable to use a tiered approach to the preponderance of evidence, where three rigor levels (“Full Rigor”, “Tier 1, Medium Rigor” and “Tier 2, Lower Rigor”) are applied as a function of customer incentive size.
22. The working group recommends the tiers correspond to the following incentive ranges specifically: “Full Rigor” for incentives over \$100,000, “Tier 1 Medium Rigor” for incentives between \$25,000 and \$100,000, and “Tier 2 Lower Rigor” for incentives less than \$25,000. These are generally consistent with project size guidelines that determine the level of rigor for required project measurement and verification.
23. The criteria proposed in the working group guidance for determining whether the preponderance of evidence guidance (as a whole) is applicable or not- are insufficient for the intended purpose.
24. It is the intention of AB 802 and D. 16-08-019 to allow a greater portion of the portfolio to default to an existing conditions baseline. We find that most mechanical systems in buildings were more appropriate for consideration in an accelerated replacement framework which uses existing conditions as part of a dual baseline. Thus, processes that streamline or automate the use of dual baseline are important to implementing these policies and considering the savings of energy efficiency measures using an existing conditions baseline.
25. Section 4 of the preponderance of evidence guidance is overly expansive in assigning streamlined or default accelerated replacement baseline treatment, as they are proposed in the “direct-to-decision” and “direct-to-default” sections of the working group guidance.
26. There is not a consensus across stakeholders in how to identify and verify a small business customer in a manner that can be cost-effectively replicated over many participating customers. Such a standard is needed to design and implement any ‘direct-to-decision’ treatment (per as outlined in this

resolution, where the customer eligibility includes a small business designation.

27. Working group members did not agree to specific criteria defining the preponderance of evidence requirements for the lower rigor tiers (Tier 1 and Tier 2). Section 6 of the working group guidance document is a proposal authored by working group facilitators that reflects a middle ground and not a common ground and does not reflect a working group recommendation.
28. This Resolution is intended to extend the allowable measures and programs per AB 802 and D. 16-08-019. For this reason, we see no need to grandfather existing project applications.

**THEREFORE IT IS ORDERED THAT:**

1. For deemed and calculated savings determinations, we direct the Program Administrators to ensure that the nominal efficiency used as an existing conditions baseline will reflect the efficiency rating, designed efficiency, or original efficiency of well-maintained and properly configured equipment for all measures, except those classified as behavioral, retrocommissioning and operational (BRO). If nominal efficiency is not available, Program Administrators shall apply reasonable upward adjustment to the assumed annual energy consumption of the installed equipment to reflect the maintenance and operations component of savings. Energy Star estimates that low cost operations and maintenance savings are between 5 and 20% per year. This is a reasonable estimate, provided it is consistent with O&M savings claims for similar building and measure types.
2. We direct the Program Administrators to ensure that all program activities and installations resulting in performance that does not exceed the nominal efficiency (i.e., rated, intended, or original efficiency) of the pre-existing condition are offered through a behavioral, retrocommissioning or operational program framework, with an effective useful life not to exceed three years.
3. We direct the Program Administrators to apply a code baseline in cases where there is no reference operation for existing conditions, including new construction, expansions, added load, or a change in the function of the space (e.g., office to laboratory), or a substantial change (i.e., 30% or more) in design occupancy.

4. We direct the Program Administrators to apply a normal replacement baseline where the existing equipment is not operational or not meeting the existing service requirements. This applies to all types of equipment, including add-on equipment.
5. We do not adopt the draft policy concerning the application of a code baseline that is presented in the measure-level baseline guidance document.
6. We permit the Program Administrators to apply a normal replacement baseline to any measure or program, regardless of the default category, and without a burden of proof.
7. We direct Program Administrators to classify programs as downstream in their program delivery only when they are delivered by program agents or representatives (including installation contractors) that have direct interaction with end-use customers, or offered through a program website.
8. For all downstream programs, we direct the Program Administrators to maintain site-specific records for program activities and installations resulting in energy savings. These records must include utility account number, installation site address, and evidence required by the applicable preponderance of evidence standard. In some cases, preponderance of evidence standards will consist of evidence of program eligibility.
9. We direct the Program Administrators to ensure all methods for determining savings, regardless of whether deemed or custom, use a congruent approach when characterizing the pre- and post-project conditions - e.g., the efficiency rating of pre-existing equipment is compared with the efficiency rating of installed equipment, or the metered performance of the pre-existing equipment is compared with the metered performance of the installed equipment. However, when using short-term metering to determine the efficiency of installed equipment, an adjustment factor must be applied to the energy savings estimates to appropriately account for maintenance and operational factors.
10. We adopt the definition of "Add-on Equipment", as proposed in the proposed working group guidance document, with a modification to reflect the requirement that add-on equipment must not be able to operate on its own.
11. The default measure-level baseline that is applicable to downstream program delivery for deemed or calculated savings determinations shall be existing conditions for the following measure installation types: behavioral,

retrocommissioning, and operational; non-mechanical building efficiency improvements (e.g. windows, insulation, air sealing, duct sealing, weatherization); and add-on equipment measures.

12. We direct the use of the term 'building weatherization' instead of 'shell and building system,' because it more closely adheres to the underlying measures as defined in working group discussions.
13. We direct the Program Administrators to classify lighting along with other mechanical systems and given a similar baseline treatment consistent with current policy and preponderance of evidence requirements.
14. We adopt the working group proposal that accelerated replacement is comprised of three sub-categories: early replacement, repair eligible, and repair indefinitely, which shall use equivalent dual baseline savings and cost effectiveness calculations for deemed and calculated downstream programs.
15. We direct Program Administrators to ensure that whenever a deemed or calculated savings determination is applied to an accelerated replacement measure, regardless of the accelerated replacement sub-category, the dual baseline calculation savings will be applied per the current standard reflected in the Energy Efficiency Policy Manual. Dual baseline treatment will not vary by accelerated replacement sub-category. Per AB 802 legislation, for measures that bring buildings into compliance with code, but do not exceed code, the second period of the dual baseline will have zero savings.
16. We permit the Program Administrators to apply an accelerated replacement baseline treatment to equipment that qualifies as repair eligible or repair indefinitely where the equipment is older than its predetermined effective useful life.
17. We adopt the following eligibility criteria for the preponderance of evidence guidance: "This protocol applies to custom or deemed retrofit measures that are delivered through downstream programs, under conditions that meet Commission standards for having a defined existing condition and do not otherwise default to an existing conditions baseline per policy of D. 16-08-019 and Resolution E-4818."
18. We direct the Program Administrators to adhere to the direct-to-decision and direct-to-default standards as stipulated in the corresponding sections of this Resolution, and summarized below:

- Program designs, program rules and customer eligibility criteria are submitted to the Commission for approval, with a strong argument or data supported case indicative of inducing accelerated replacement.
  - Program rules must specify eligibility criteria and the evidence of program eligibility and/or program influence that will be collected for each installation.
  - Specified evidence must be collected for each installation as part of the program implementation, and this evidence be made available to the Commission upon request and submitted as supporting documentation with energy savings claims.
  - All projects qualifying for an accelerated replacement baseline under a direct-to-decision or direct-to-default condition must fulfill appropriate tiered preponderance of evidence requirements for equipment viability.
19. We adopt Section 5 of the working group's preponderance of evidence guidance, with modification to the examples of evidence presented in the guidance, as described in Section 1.5 of this Resolution.
  20. We adopt the program-level preponderance of evidence guidance for deemed measures as described in Section 7 of the working group guidance document. We direct the Program Administrators to substantiate claims of accelerated replacements for deemed measures accordingly, on a program-specific basis and subject to Commission approval, per the requirements specified in Section 7.
  21. Regardless of any approved streamlined preponderance of evidence process for deemed measures, if an incentive for a given project is more than \$100,000, a full-rigor preponderance of evidence investigation is required.
  22. We adopt a tiered approach to the preponderance of evidence, with three tier levels corresponding to the rigor of the assessment: Full Rigor for projects with incentives over \$100,000; Tier 1 Medium Rigor for projects with incentives between \$25,000 and \$100,000, and Tier 2 Lower Rigor for projects with incentives less than \$25,000.
  23. For purposes of determining the appropriate tiered incentive treatment, CPUC staff have discretion to aggregate applications when they are from the same customer and appear to be the same project.
  24. We do not adopt the specific preponderance of evidence requirements for Tier 1 and Tier 2, as outlined in Section 6 of the working group guidance. For

this reason, we prohibit the use of a tiered approach to the preponderance of evidence requirements until specific requirements for the tiers are adopted.

25. In response to working group proposals we are not adopting today, we defer several issues to be addressed within the planned activities of upcoming Track 2 working group, ordered by D 16-08-019 to resolve issues related to the streamlining of ex-ante review processes and industry standard practice baseline. We ask the Track 2 working group to address the following in their deliberations and recommendations, and that recommendations be presented to Commission staff no later than June 30, 2017:

- Consider and recommend clarifying policy for how to determine code baseline as they address issues related to industry standard practice.
- Develop qualification standards and documentation requirements to identify a small-sized business customer.
- Develop qualification standards and documentation requirements to identify repair eligible and repair indefinitely measure types.
- Develop recommendations for what should constitute Tier 1 and Tier 2 Preponderance of Evidence requirements.

Commission staff will review the recommendations and update the guidance documents, as appropriate. The update will be vetted through a public process and the final document will be posted to a publicly available website.

26. Commission staff shall make any necessary updates to the DEER savings estimates to reflect the baseline policy summarized in this Resolution.

27. Program administrators shall make any necessary updates to non-DEER work papers to reflect the baseline policy summarized in this Resolution. Changes take effect as of the date of the Final Resolution.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on March 2, 2017; the following Commissioners voting favorably thereon:

/s/ TIMOTHY J. SULLIVAN  
TIMOTHY J. SULLIVAN  
Executive Director

MICHAEL PICKER  
President  
CARLA J. PETERMAN  
LIANE M. RANDOLPH  
MARTHA GUZMAN ACEVES  
CLIFFORD RECHTSCHAFFEN  
Commissioners