



**California Public
Utilities Commission**

White Paper

Proposed Energy Efficiency Risk-Reward Incentive Mechanism and EM&V Activities

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I. Executive Summary

This white paper introduces a framework for considering modifications to the energy efficiency risk-reward incentive mechanism (RRIM) and the evaluation, measurement, and verification (EM&V) activities that are currently used to measure performance and determine incentive awards or penalties for the investor owned utilities (IOUs or utilities). The California Public Utilities Commission (CPUC or Commission) has determined that improvements to the incentive mechanism are necessary in order to make the earnings process more transparent, streamlined, and less controversial, while also encouraging the IOUs to achieve the Commission's core energy efficiency policy goals. On January 29th, 2009 the CPUC instituted Rulemaking 09-01-019¹ to examine and reform the Commission's energy efficiency incentive mechanism. The rulemaking anticipated this white paper, and indicated that issues raised within this document are preliminarily within the scope of the new proceeding. Comments on this white paper will be considered, as directed by the Assigned Commissioner.

This paper discusses various aspects of the Energy Division's EM&V work as background information for considering changes to the RRIM. The full scope and structure of the Energy Division's future EM&V work is not expected to be determined exclusively within the R. 09-01-019 proceeding. The Commission will need to coordinate between decisions in R. 09-01-019 and the Commission's other energy efficiency activities, such as the anticipated adoption of 2009-2011 energy efficiency policy rules and portfolios.

This white paper is not intended to present a comprehensive solution to all problems inherent in the current incentive framework, but rather to provide an analytical overview of the existing problems together with some suggested approaches for improving the incentive mechanism in order to minimize controversy, achieve greater transparency, adhere to a rigorous schedule, all while encouraging the achievement of energy efficiency policy goals. This white paper is intended to stimulate creative thinking by parties in R. 09-01-010, whether through further development of the proposed approaches, or through different approaches proposed independently by parties.

The Commission adopted the RRIM as a key policy tool to promote energy efficiency activities in support of the Commission's energy resource loading order policy, as an alternative to supply side generation, and to support the State's "Greenhouse Gas" (GHG) emissions reductions goals.

EM&V serves to develop gross energy impacts, attribution of savings, and verification of IOU savings claims in order to provide accurate estimates of energy and environmental impacts, and calculate incentive payments or penalties for the IOUs. Over the long-term, EM&V provides timely and accurate data to improve the load forecast estimates and procurement planning.

The implementation of the current incentive mechanism has revealed flaws which lead Energy Division to propose a framework of conceptual elements to improve the design and implementation of the incentive mechanism. In particular, Energy Division proposes a simplified and streamlined earnings process whereby the utility may qualify for regularly scheduled minimum earnings as an incentive for meeting adequate performance standards, and potential bonuses for achieving superior performance. Energy Division proposes this streamlined approach rather than the current system with incentive earnings based on the minutely detailed calculation and verification of energy savings thresholds and a share of the net resource benefits attributed to the IOU administered programs.

¹ <http://docs.cpuc.ca.gov/published/proceedings/R0901019.htm>

Energy Division's concerns regarding the existing mechanism are:

1. The incentive mechanism acts to discourage the pursuit of strategic initiatives and market transformation² activities envisioned by the California Energy Efficiency Strategic Plan.
2. The incentive mechanism acts to discourage the pursuit of all cost effective energy efficiency.
3. Implementation of the incentive mechanism consumes an inordinate amount of CPUC, IOU, and consulting resources.
4. The incentive mechanism has focused attention on the details of the incentive calculation rather than on examining the quality and performance of programs and producing accurate estimates of energy and environmental impacts.
5. The incentive mechanism relies upon achievement of energy savings in relationship to adopted savings goals which are not updated in a manner similar to and on the same schedule as the parameters used to estimate savings and judge accomplishments, leading to complaints regarding the fairness of the mechanism.

Energy Division proposes that modifications to the existing incentive mechanism and EM&V be guided by the following criteria:

1. **Effective and Strategic** - The mechanism must be focused on the Commission's energy efficiency policy goals.
2. **Feasible** - The CPUC must be able to design and implement the incentive mechanism expeditiously with current staffing.
3. **Timely and Non-Contentious** - Incentive payments or penalties should be quantified and processed in a reasonable time frame and be acceptable to all stakeholders.
4. **Fair and Cost-Efficient** - The mechanism should provide reasonable opportunity for awards to utilities for successful management while protecting against unreasonable costs and poorly managed programs.
5. **Simple and Transparent** - The mechanism should be simple and understandable.
6. **Technical integrity** - The mechanism should maintain the technical integrity of all EM&V research, savings estimates, and energy efficiency forecasts.

Below are the components that Energy Division believes are required for an effective incentive mechanism that has the potential of producing the results desired by the Commission:

1. **Decoupling of Certain EM&V Activities from Incentive Earnings** - The incentive mechanism should segregate the measurement of savings and cost-effectiveness from earnings in order to remove disincentives to making productive use of the information flowing from the EM&V work, and to encourage the pursuit of all of the CPUC's energy efficiency policy goals.
2. **Awarding Base Earnings and Performance Bonuses** – Instead of meeting energy savings thresholds, the utilities should be provided an opportunity to qualify for a minimum base level of earnings for managing the energy efficiency portfolio in a prudent manner, with the potential to earn "bonus" earnings based on the performance of selected programs.
3. **Cost-Effectiveness Requirements** - The existing cost-effectiveness tests should continue to be used as a portfolio-level minimum threshold screening mechanism, should not be used as the primary tool to calculate utility incentives, and/or should be thoroughly re-examined to determine their applicability in valuing the full range of benefits flowing from energy efficiency activities.

² Decision (D.) 98-04-063, Appendix A, defines market transformation as "[l]onglasting, sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer appropriate in that specific market."

4. **Rewarding Desirable Market Transformation Activities** – The incentive mechanism should be designed to encourage market transformation by shifting evaluation resources towards carefully designed performance measures.
5. **Rewarding Customer Investments in Energy Efficiency** – The incentive mechanism should reward the utilities for designing programs that encourage customer investments in energy efficiency.
6. **Savings Goals** - The CPUC should continue to adopt energy efficiency savings goals as an input for the long-term procurement proceeding and other purposes but accomplishment of savings goals should not be a sole determinant of IOU performance.
7. **Consumption Targets** – Savings goals should be supplemented with consumption targets for tracking portfolio performance relative to GHG emissions reduction goals.

The current EM&V activities are driven by Decisions 05-01-055 and 05-04-051, drafted 4 years ago. Energy Division recommends that the Commission articulate that the primary objectives of EM&V and related administrative activities are as outlined below.

The Energy Division’s EM&V activities shall be planned and implemented to achieve a balance of precision, accuracy, and cost efficiency, while meeting the following objectives:

1. *Conducting research to support the development of data, information, and tools needed to improve the Commission’s energy efficiency policies and make progress towards all of the Commission’s energy efficiency and GHG emissions goals.*
2. *Supporting the CPUC’s oversight function of ensuring the efficient and effective expenditure of ratepayer funds within the energy efficiency portfolios.*
3. *Measurement and verification of the key technologies and services offered through the energy efficiency programs for the purpose of developing estimates of energy and environmental impacts.*
4. *Evaluation of the IOUs’ portfolios of activities for the purpose of measuring performance relative to established performance metrics.*

II. Introduction

This white paper introduces a framework of possible approaches for modifying the energy efficiency incentive mechanism and the evaluation, measurement, and verification (EM&V) activities that are currently used to determine incentive awards or penalties. The motivation for changes to the incentive mechanism arises from concerns that it may not be the most effective means of encouraging the investor owned utilities (IOUs or utilities) to pursue strategic initiatives and market transformation activities envisioned by the California Energy Efficiency Strategic Plan (CEESP), and other desired program activities which do not have immediate and easily quantifiable energy benefits. Improvements to the incentive mechanism are also necessary in order to re-focus the interactions between Energy Division staff and their EM&V consultants, the IOUs, and interveners on improvements to the energy efficiency (EE) portfolios designed to better implement the CPUC energy resource loading order policy, reduce greenhouse gas (GHG) emissions, and maximize the return on ratepayer investments in energy efficiency. Disagreements concerning the application of EM&V results, as they relate to the incentive mechanism calculations and related policies, have consumed an unacceptable level of scarce staff resources of all involved. An improved mechanism is needed to focus these resources towards progress on the CPUC policy objectives.

III. Aligning the Incentive Mechanism with CPUC Policy

The intent of the energy efficiency incentive mechanism is to provide the IOUs with an earnings potential that is directly related to the success of their energy efficiency portfolios in a manner that encourages energy efficiency to be a core business pursuit in the eyes of IOU management, shareholders, and the financial and energy utility industries. The incentive mechanism is viewed as one of the key policy tools motivating the IOUs to undertake their best efforts in implementing the energy efficiency activities that support the Commission's energy resource loading order policy. Energy efficiency, as the first loading order resource, serves the dual purpose of decreasing GHG emissions as well as minimizing future energy supply cost increases to ratepayers.

The role of EM&V within the existing incentive mechanism is primarily to develop gross energy impact estimates, including magnitude, load-shape, and lifetime, for the full range of energy efficiency measures in the IOU portfolios; to estimate attribution, or the influence the IOU portfolio has on observed changes in energy use; and to verify installation claims for each IOU portfolio measure. The EM&V activities include on-site audits and surveys, on-site measurement of existing and new equipment performance, as well as extensive data analysis and modeling needed to project sampled data into current and future portfolio participant populations and assess future potential. These activities are used not only for the RRIM calculations but are also expected to provide an accurate estimate of energy savings, thereby reducing the uncertainty of savings estimates and increasing the reliability of energy efficiency estimates used in resource planning. Over the long-term, EM&V provides timely and accurate estimates to improve the load forecast estimates and procurement planning, which are activities outside of the RRIM. Additionally, these estimates are used to calculate incentive mechanism results for possible payments or penalties to the utility portfolio administrators. The

foundation of this design is the theoretical alignment of utility, ratepayer, and environmental interests.

Flaws in the Current Incentive Mechanism

The implementation of this mechanism, however, has revealed fundamental flaws which lead Energy Division to propose that the EM&V process, at least as it is currently designed and administered, cannot serve as a tool to simultaneously determine incentive awards or penalties **and** produce accurate estimates of energy savings without protracted disputes concerning the magnitude of specific values or the fairness of allowing those values to be updated and applied retroactively. Energy Division believes that the current incentive mechanism does not optimally align the IOU management and shareholder interest to serve the loading order policy, the CEESP, or the GHG emissions reduction goals mandated by AB32. The load reductions attributed to the IOU portfolios must be accurate and reliable to be taken seriously in resource planning activities. Similarly, the estimates of GHG emission reductions must be genuine if California's claimed progress in reducing GHG emissions is to be taken seriously. To be effective, the incentive mechanism must focus the IOU energy efficiency efforts on providing genuine and accurately measured progress towards these two objectives. Energy Division's primary concerns regarding the current incentive mechanism are twofold: first, implementation of the incentive mechanism has become a diversion that has consumed too much valuable and limited staff time within the IOUs, other stakeholders, and the CPUC, and second, the incentive mechanism has focused attention on the details of the calculation of incentive amounts rather than on the delivery of exceptional programs that reduce energy consumption and GHG emissions, and contribute to laying the foundation for fundamentally changing the way Californians use energy.

The current incentive mechanism utilizes a Minimum Performance Standard (MPS) to establish if a utility should receive incentives or penalties and what the earnings rate should be. The MPS value is based on the utility's kWh, kW and therm accomplishments relative to the CPUC adopted goals for each of those metrics. Incentive payments and penalties are calculated using the earnings rate established by the MPS multiplied by a monetized Performance Earnings Basis (PEB). The PEB value is currently intended to be an accurate measure of the net resource benefits created by the energy efficiency portfolio energy savings and GHG emissions reductions.

The implementation of the IOU energy efficiency portfolios largely involves the installation of millions of individual measures across the state. Each of these installations can be any one of thousands of individual measures, each with an equipment cost, an installation cost, an estimated life, an energy impact estimate (kWh and/or Therm), and an annual impact load profile that must all be known or estimated in order to convert the energy load impacts to both an avoided resource cost and GHG emissions reduction. For each measure that is installed, it must be determined if the installation can be attributed to the IOU portfolio or if the installation would have happened without the IOU activity in order to determine the free-ridership level, or the net-to-gross ratio. Measure load impacts can vary by geographic location of the installation as well as the type and age of the facility where the installation takes place. Finally, program effectiveness and savings persistence have behavioral dimensions that are difficult to predict and measure.

The calculation of the current MPS and PEB metrics is a complex undertaking involving large data sets composed of highly variable parameters. Additionally, many of the parameters for individual measures are subject to annual variations due to market changes, product changes, and variations in installation methods. Although it has been accepted practice to express the portfolio MPS and PEB results as point values, these values have significant levels of uncertainty as well as annual variation. These levels of uncertainty and annual variation make their use problematic within an incentive calculation framework with results that can vary across the range of uncertainty and annual variation for each parameter. Thus, the results of the MPS and PEB calculations will always be highly contentious when large dollar payments or penalties are based on such calculations.

The CPUC's current policy rules articulate the overriding goal of energy efficiency as the pursuit of **all** cost-effective energy efficiency opportunities (Policy Rule II.2 and Energy Action Plan II). However, the current mechanism, where incentive payments are based on net-benefits, works in opposition to this policy goal by incenting the IOUs to prioritize the pursuit of the **most** cost-effective measures, or "low hanging fruit." The most cost-effective measures provide the highest net-benefits, and thus the highest potential for earnings, while minimally cost effective measures produce net-benefits of nearly zero. The highly cost-effective measures should be pursued, but may require less IOU program support and are more likely to have high free-ridership levels. Under a mechanism based primarily on net-benefits, the IOUs are provided a direct signal to go after the low hanging fruit and avoid the harder task of going after less cost-effective or more comprehensive measures. This is precisely why the CPUC excluded the costs of the Emerging Technology Program from the net-benefits calculation in 2005. Emerging technologies and new and innovative programs with very high savings potential, but with low market penetration and low cost effectiveness, are examples of the efforts the Commission has encouraged in order to help increase penetration, bring cost down through increased volume, and foster rapid technology improvements.

The current incentive mechanism was intended to be based upon IOU accomplishment claims subjected to an ex-ante update and an ex-post true-up. During the development of the current incentive mechanism it was assumed that the major difference between ex-ante IOU claims and ex-post evaluated results would be primarily attributed to the difference between estimated and actual measure installations. If individual measure load impacts are well known from past measurement activities, the difference between IOU gross impact claims and ex-post results for a particular measure or intervention will be minimal. Due in part to the large increase in funding for energy efficiency programs, however, many measures in the current portfolios have not been subject to adequate field measurements in order to establish accurate ex-ante estimates of gross load impacts, and they are being installed in a much wider range of building locations, types, sizes, and age than ever before. Thus the gross impacts are subject to a larger variation than in the past. Rapid market changes for many key portfolio measures (i.e. CFLs) result in ex-ante free-ridership assumptions for some program strategies that may significantly underestimate current market conditions.

The complexity of the calculations required by the current incentive mechanism combined with rapidly changing markets, significant shifts in the economy, and the time-lag associated with conducting the EM&V needed to support accurate ex-ante values has created a dilemma for the IOUs, other stakeholders, and the Commission. While it is reasonable to insist that the IOUs proactively manage their portfolios in reaction to changes in market conditions and the latest

technical estimates of load impacts, it may not be realistic to expect utility managers to easily accept the most accurate impact estimates as a basis for the determination of incentive calculations when the ex-ante starting point estimates, as well as the CPUC adopted goals, are out of sync with the EM&V used to establish net and gross impacts. Thus, while the EM&V ex-ante update and ex-post results may represent increased accuracy relative to current measure impacts and market conditions, the IOUs may be required to use updated results to track performance against CPUC adopted goals that have not been similarly updated. Expecting the IOUs to perform their own updates so that their ex-ante values better reflect actual accomplishments represents a conflict-of-interest since those updates may reflect decreased savings and it is especially difficult when reliance on such an update will guarantee that no incentive payments will be awarded and possible penalties will be imposed if the CPUC does not correspondingly update the adopted goals against which the IOU updated values will be compared. In addition, it is likely to be politically difficult within the IOUs' organizations to adopt updates that negatively affect the eligibility for incentive earnings awards.

Energy Division believes that the "risk" and "no reward" constructs of the current incentive mechanism may not serve to achieve either the CPUC loading order policy or the GHG emissions reduction goals. These elements have instead resulted in protracted arguments centered around the details of calculating incentive and penalty payments. Risk would be more effectively embodied in the real prospect of the CPUC moving the energy efficiency portfolio administration from the IOUs to a third party in the event of prolonged unacceptable performance relative to CPUC articulated expectations across a range of performance metrics. Indeed, given the central role that the ratepayer funded energy efficiency programs have in resource procurement, bill savings, and reducing GHG emissions, the Commission should be fully prepared to make such a move if the IOUs perform well below expectations.

Given the multitude of complex and interrelated problems burdening the existing incentive structure, only partially discussed above, Energy Division recommends that the current incentive mechanism be wholly replaced with a greatly simplified structure that provides predictable and regularly scheduled opportunities to receive prescribed *minimum* levels of incentive earnings for meeting adequate performance standards based upon simplified and straightforward EM&V protocols, plus potential bonuses for superior performance of selected non-resource programs, market transformation programs, and strategic initiatives. To qualify for these bonuses, the utility would be required to satisfy a more rigorous set of performance standards. Such a structure balances the streamlining benefits of a simplified incentive structure with the performance enhancing benefits that require more rigorous EM&V. This approach has a better chance of being aligned with CPUC policy priorities and fostering cooperation and constructive interactions between all stakeholders and the CPUC.

IV. Criteria for Assessing Proposed Modifications

Energy Division proposes that modifications to the existing incentive mechanism, including the role of EM&V within the context of the mechanism, be guided by the following criteria.

Effective and Strategic

The mechanism must be designed to uniformly and effectively achieve the Commission's energy efficiency policy goals of producing reliable energy savings, accomplishing the CEESP objectives, and reducing energy consumption necessary to achieve GHG emissions reduction goals.

Feasible

The CPUC must be able to design and implement the incentive mechanism within the first six to nine months of 2009 with current CPUC, IOU, party, and consultant staffing levels and workload. The incentive mechanism would need to be considered in a timely manner through the CPUC's deliberative process while the Commission simultaneously authorizes funding for the 2009-2011 cycle and decides how to manage the incentives policy that still applies to the 2006-2008 cycle.

Timely and Non-Contentious

The mechanism should be designed so that the determination of incentive payments can be accomplished in a reasonable time frame and be broadly embraced by all stakeholders.

Fair and Cost-Efficient

The mechanism should provide sufficient, but not excessive, financial awards to utilities to motivate excellent program design and implementation, with sufficient protection against unreasonable costs and poorly managed programs. The mechanism should minimize the total cost to ratepayers of implementing, evaluating, and incentivizing energy efficiency programs.

Simple and Transparent

The mechanism should be simple, thoroughly understood by all parties, and replicable. A structure that is highly complex and based upon parameters with high uncertainty or the probability of significant variation over time will create high levels of contention as well as consume valuable staff resources to implement and litigate.

Technical integrity

The mechanism should maintain the technical integrity of all EM&V research, savings estimates, and energy efficiency forecasts. The incentive process should not dominate EM&V expenditures and effort, but instead should take a back seat to the more pressing EM&V objectives of accurate estimates of savings and emissions reductions, and useful program evaluations that inform ongoing program design in a timely manner.

V. Key Components for Achieving Improvements of the Mechanism

This section presents proposed improvements that Energy Division believes are necessary components of an effective incentive mechanism that has the potential of producing the results desired by the Commission. The discussion below should be considered a starting reference for

dialogue about possible solutions to the failings of the current incentive mechanism. While the ALJ may request comments specifically on the proposals in this white paper, we anticipate that parties will not be constrained by the proposals discussed below as they present their perspectives to the ALJ and Commission on these issues. Additionally, Energy Division does not intend to provide exhaustive turn-key solutions, assuming that the details should be worked out within the Commission's deliberative process.

In preparing this paper, Energy Division originally contemplated an incentive mechanism similar to the existing mechanism, but with only minor adjustments. Our tentative proposal was to keep the existing incentive mechanism structurally intact and only modify the parameters used to calculate the PEB (ex-ante instead of ex-post) or re-state the savings goals to be consistent with current ex-ante parameter estimates, as well as other minor modifications. From the discussion in section II it should be reemphasized that the current incentive mechanism structure of an MPS based on savings goals and a PEB based on net benefits offers little hope of quick improvement and a return to the CPUC's policy objectives via small fixes or tweaks. We come to this conclusion because the current mechanism structure:

- Is not able to place an appropriate value on all desirable program activities, thereby unintentionally favoring "resource" programs over "non-resource"³ programs.
- Relies on overly complex calculations to implement.
- Is based on calculations that have high uncertainty relative to the incentive/penalty transition points of the earnings curve.
- Is based on performance measures that are internally inconsistent - updated impacts measured against static goals.
- May encourage IOUs to bias claimed impacts upward, further encouraging challenges to the ex post results.
- Is inherently unpredictable, therefore the performance results and uncertainty of performance metrics creates a highly contentious environment.

Even a vastly simplified version of the existing incentive mechanism, based entirely on ex-ante values, simply moves the disputes to the front end of the process of developing accurate ex-ante values and does not adequately address the undesired consequences of the existing mechanism discussed earlier. It is recognized that each of the flaws listed above could be dealt with in some manner given sufficient time to develop, litigate, and implement a comprehensive solution. Energy Division also recognizes that the savings goals cannot be completely removed from consideration as they are fundamental to current California energy policy, resource planning and procurement, and GHG emission reduction goals. Through its examination of possible changes to the existing mechanism, Energy Division has come to the conclusion, however, that any version of the current structure may continue to divert attention to less important calculation details, thus impeding CPUC policy objectives rather than advancing them. In analyzing possible improvements to the incentive structure, as discussed below, we attempt to examine how each of the proposed components are designed to produce results that are consistent with CPUC policy objectives and the criteria described in section III.

³ "Non-resource programs are programs that work towards the goal of increasing the efficiency of energy use through energy information, marketing and outreach, education and training and other approaches that do not directly involve or result in the installation of energy efficient equipment or measures at customer premises.

Decoupling of Certain EM&V Activities from Earnings

If there was no risk or uncertainty associated with achieving benefits from energy efficiency program activities, it would probably not be necessary to do a great deal of EM&V to verify program impacts. There are, however, many aspects of energy efficiency programs that lead to uncertain outcomes. That uncertainty is likely to grow as program funding continues to increase, new technologies are commercialized, policies evolve, markets and customer preferences change, energy efficiency funding sources and other market actors increase and diversify, and public awareness of the risks of climate change and the benefits of energy efficiency spreads. EM&V should be applied to these areas of uncertainty, and the results should be reported as accurately as possible in order to better understand the impacts, move program resources into the most effective activities, and increase the reliability of energy efficiency program impact estimates. This framework is not entirely compatible with an incentive mechanism that aims to provide regular and predictable earnings to the utilities, who are assumed to have the capacity to manage all the uncertainty through shifts in funding and changes to program strategies. As previously discussed, the pursuit of accurate and reliable information on program impacts has the potential to take more time and resources, thereby creating more risk and uncertainty as to the timing and magnitude of any incentive earnings. The investor's perception of such risk and uncertainty may have the undesirable effect of reducing the incentive to pursue energy efficiency measures deemed to have excessive regulatory risk. Thus, beyond a certain appropriate level, excessive requirements for detailed program impact results may be somewhat at odds with promoting incentives for the desired behavior based on a high stakes incentive mechanism that has a significant downside risk and is based directly on net-benefits calculated from the results of program impact measurement.

If the Commission policy is intended to provide IOUs with the opportunity to earn regular and predictable earnings, as the utilities frequently maintain, then the earnings mechanism should not be dominated by a formula that is known to embody a high degree of uncertainty and variability, elements of which are not fully manageable by the utilities. Certainly the utilities should be expected to re-evaluate and update their portfolio strategies and measure mixes in light of changing market and technology parameters on an ongoing basis. However, the incentive mechanism should reward them for those adjustments without penalizing them for imperfect projections of future market and technology changes. Decoupling the measurement of savings and cost-effectiveness from payment of shareholder earnings should remove disincentives to accepting and making productive use of the information flowing from the EM&V work, regardless of the results. At the same time, there is important value to incorporating the principle of performance into the incentive structure. A key question is the degree to which energy efficiency savings determined through EM&V studies is a sole or contributory element in determining shareholder earnings.

Base Earnings and Performance Bonuses

With the segregation of savings measurement and cost-effectiveness from payment of shareholder incentives, we recommend incentives be partitioned into:

1. *Base incentive earnings* that are based upon simplified and more broadly defined performance standards which can be adequately measured and reported within a relatively short period of time and;
2. *Bonus incentive earnings* that are based on superior accomplishment of more specifically defined and rigorous performance standards.

Instead of meeting detailed specific energy savings thresholds in order to qualify for incentives, the utilities would be provided the opportunity to qualify for a *base level of incentive earnings* upon meeting a simplified and streamlined set of criteria. The required criteria and the eligible amount of base earnings would be identified by the Commission at the start of the program cycle. The Commission can set this base earnings payment at an amount equivalent to one or a mix of the examples below:

- The return on investment the utilities would likely have earned had the same level of funding been allocated to supply-side resources, such as a power plant. This amount should be developed with full awareness that ratepayers are directly funding the full cost of the energy efficiency portfolios, in contrast to recovery of shareholder capital investment in a power plant that is recovered through a rate of return and depreciation after a power plant begins delivering energy.
- Management fees typically paid in the energy and financial sectors. The fee could be based upon the level of funds managed, such as one or more of the following:
 - A percentage of portfolio expenditures that are direct investments in efficiency with a cap on non-incentive costs (administration or overhead) as a percentage of counted expenditure for this purpose.
 - A percentage of the net participant expenditure, to reward the utilities for encouraging customer investment in energy efficiency.
- An amount deemed just and reasonable by the Commission.

The success of this revised incentive mechanism would depend upon the careful design of appropriate performance criteria that the utility must satisfy in order to be awarded the eligible level of base incentive earnings. Energy Division invites the views of parties in developing an appropriate set of performance criteria rigorous enough to maintain the integrity of the incentive mechanism, but streamlined enough to provide more regularity and predictability to the regulatory process. As a general matter, Energy Division believes that the criteria should, at a minimum, include rigorous financial reporting requirements, financial audits, thorough compliance with Commission Decisions, and full cooperation with the Commission and its agents to ensure that ratepayer investments in energy efficiency are being spent and managed in a responsible and productive manner. Satisfying the prescribed minimum performance standards should be a precondition for authorizing base earnings. However, these minimum requirements should not be tied to attainment of exceptionally rigorous goals as in the current situation. These minimum requirements should be carefully developed to balance ratepayer and utility interests, and to avoid the impasse that is created when two or more Commission objectives are in direct conflict.

Under this proposed incentive mechanism structure, the IOUs will also have the potential to earn "*bonus*" earnings based on the superior performance of selected non-resource programs, market transformation programs, and strategic initiatives, which will be evaluated relative to carefully developed performance metrics. The performance metrics and additional bonus earnings that may be awarded to the IOUs for achieving performance targets will be broadly set by the Commission when program funding is authorized, and will be further refined as programs roll out, subject to the public vetting process per Attachment 7 of D.07-09-043, or as modified. The metrics used to evaluate the achievement of performance targets are expected to be based on the program theory articulated by program managers and approved by the CPUC, focusing

on performance metrics that are manageable by the IOUs⁴. Bonus earnings will only be granted at the end of the program cycle, and only if the Commission determines that the performance targets have been achieved.

The concept of performance measurement based bonus earnings might appear to contradict previously discussed problems related to the ability of the regulatory system to accept and act on EM&V results when earnings are at stake. Our proposal here is for only part of the IOUs' earnings potential to be structured in this manner. The structure will be carefully designed to use performance indicators that are sufficiently within the IOUs' ability to either control or predict in the short term.

Cost-Effectiveness Requirements

The cost effectiveness tests required by the Commission have been used as a screening mechanism for program funding, a tool for quantifying the performance and measuring the efficiency of programs and portfolios, and as a means for determining the level of earnings the utilities should be granted. As discussed below, the Energy Division recommends that cost-effectiveness no longer be used in determining utility incentive earnings. However, there are reasons to use cost-effectiveness for non-incentive purposes. The upcoming RRIM decision will only address the issue of whether the RRIM should rely upon cost-effectiveness criteria; it will not address the use of cost-effectiveness tests for non-RRIM purposes such as thresholds required as a condition approving portfolio funding.

There are many limitations to relying on existing cost-effectiveness tests if the objectives of energy efficiency move beyond least-cost energy procurement to market transformation and climate change mitigation:

- The cost-effectiveness tests cannot accurately place a value on many indirect benefits of the program, even if benefits are known to exist.
- The risks and costs of global climate change may not be adequately and accurately valued.
- The cost-effectiveness tests are complicated, data intensive, and can be manipulated.
- Basing earnings on the current cost-effectiveness tests does not encourage the optimal mix of program activities because current tests do not adequately value the benefits produced by all desirable program activities and incentives to maximize net benefits often leads to "cream-skimming".

Given these concerns, staff propose consideration of the following options:

- With regard to the RRIM, the existing cost-effectiveness tests should not be used as the primary tool to calculate utility incentives.
- The Commission should thoroughly re-examine the existing cost-effectiveness tests to determine their applicability to valuing indirect benefits if they are to be used for anything other than a portfolio level minimum threshold screening mechanism.

⁴ The California Board for Energy Efficiency (CBEE), in 1998-2000 period, developed market transformation based performance metrics. Energy Division recognizes there are lessons learned on what did not work in that activity. The metrics proposed here will be different and build on lessons learned from that period and the most recent experiences in California and other jurisdictions.

Rewarding Desirable Market Transformation Activities

A key objective of energy efficiency program interventions is to increase awareness, acceptance, and adoption of energy efficiency measures. The IOU portfolios should be designed to aid the transformation of energy efficiency markets such that portfolio resources directed towards program strategies and technologies that have gained wide acceptance in the marketplace can be modified, phased out, or shifted to newer technologies and technologies in the earlier stages of adoption. Successful market transformation strategies increase free-riders, which results in lower savings impacts attributed to the IOU portfolio. One way to acknowledge successful market transformation activities is to provide bonus earnings based on performance measures (such as goals directly tied to the adoption of energy efficiency products and services, with progress towards those goals being tracked through market saturation and market effects studies). The improved incentive structure proposed in this paper coupled with strategic market-based research, performance measures, and rigorous oversight will encourage an on-going re-evaluation of the portfolio to phase in measures and program strategies with high potential and low market acceptance, and to phase out measures that no longer require program support.

Rewarding Customer Investments in Energy Efficiency

One measure of IOU portfolio success not considered in the current RRIM is the amount that program participants invest in energy efficiency. A mechanism that provides increased incentive earnings for increased customer investments attributed to the program may focus the IOUs on market transformation. Using the net customer investment as a component of the base earnings may potentially provide this policy signal. Energy Division recommends that this concept be explored in greater detail by the parties.

Savings Goals

The cumulative energy savings goals adopted by Decision 04-09-060 and modified in Decision 08-07-047 should continue to be the official CPUC savings goals and input for the long-term procurement proceeding forecast until the Commission decides to make modifications to the methods by which goals are estimated and used. The Commission should maintain the expectation that the goals will be met, but should modify its expectations based on the EM&V results as they become available. To that end, we recommend that the savings goals be regularly adjusted by EM&V results, especially those related to attribution. As naturally occurring savings increase for a measure or end use, the portfolio strategy for that measure or end-use must be adjusted in order to continue to obtain attributable net impacts, and the savings goals should be correspondingly adjusted. Similarly, as new technologies become viable, the goals should be adjusted to take into account the increased potential these new measures represent.

Consumption Targets

Energy Division believes that consumption-based targets may be appropriate for tracking portfolio performance relative to GHG emissions reduction goals. Energy efficiency is recognized as one of the means towards the end of *reducing absolute levels of energy consumption*.⁵ Because the Commission intends to achieve a large part of the utility sector GHG

⁵ Readers are urged to review Mithra Moezzi and Rick Diamond (LBNL), "Is Efficiency Enough? Towards a New framework for Carbon Savings in the California Residential Sector," PIER Final Project Report, CEC-500-2005-262, October 2005, posted at <http://www.energy.ca.gov/2005publications/CEC-500-2005-162/CEC-500-2005-162.PDF>, and Reuben Deumling "Separating Means

emissions reduction goals with energy efficiency, it may be desirable to set targets and track total customer energy consumption metrics, in addition to estimating energy savings against a baseline as a proxy for emissions reductions. The established definition of energy efficiency, which does not necessarily consider absolute reductions of energy use, may not be an adequate policy tool for hedging against the risk of climate change, despite the significant improvements in nominal efficiencies of buildings, appliances, and other energy-using products.

The programmatic focus on technological solutions is designed to induce customers to invest in equipment that reduces energy and demand relative to standard practice or minimum code requirements for equipment that produces the same level of energy service. However, this approach can still reward customers for purchasing energy-efficient yet feature rich and large appliances with high energy use rather than choosing the lower use products that meet the customer's minimum requirements. Larger houses, luxury appliances, and other such choices will work against established GHG emission reduction goals. The IOU portfolios could contain program elements and program designs which are more directed towards reducing absolute energy use rather than just improving the efficiency of a particular customer choice. This might be accomplished by reducing or eliminating incentives when the customer choice is a premium product with energy consumption or demand well above the market average choice.

To establish consumption targets, the CPUC-adopted energy savings goals can be augmented to include metrics that reflect reduction targets in (absolute) energy consumption statewide, within each IOU service territory, or by tracking energy intensity indicators⁶ within particular market sectors. As a pilot study, a portion of the proposed *bonus incentive earnings* could be allocated to the IOUs' achievement of metrics reflective of total energy consumption reductions by program participants. Such a pilot study would start with a review of how other entities have used this approach⁷

There are caveats with this approach. Variables other than IOU program interventions can affect a particular customer's energy usage over time. The condition of the economy, changes in demand for particular products and services, energy costs, and a wide range of variables other than energy efficiency improvements will affect total energy consumption. These variables would need to be explicitly analyzed and considered in explaining any observed changes in energy consumption levels. The "signal" of the IOU program energy efficiency activities may be lost in the "noise" of the total annual consumption variations, possibly impeding the use of consumption data to measure structural changes in consumption attributable to energy efficiency activities. Evaluation activities would need to expand to include econometric techniques to quantify total consumption reductions.

and Ends: *Reorienting Energy Efficiency Programs and Policy Toward Reducing Energy Consumption in California*" CPUC Energy Division, August 2007, posted at <http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/EM+and+V/>

⁶ Energy intensity, the ratio of energy consumption to a unit of measurement (e.g., floor space, household, number of workers, etc), is one metric that can be considered as proxy for energy consumption. Energy intensity indicators can be defined by customer type or market sectors (e.g., kWh usage per sq. footage of building space), baseline values developed before programs are launched, and then evaluated after the programs are implemented to determine change in energy consumption level. A decrease in energy-intensity over time may correspond to an increase in energy efficiency, energy conservation, and/or other structural factors that drive the reduction in energy consumption.

⁷ See for example: <http://www.odyssee-indicators.org/index.php>

This website describes the European Union's approach to measuring energy efficiency savings using customer/sector improvements in energy intensity, which ties the energy usage reductions to real reductions in greenhouse gas emissions.

Timing and Process of Incentive Payments

The following is a general description of the incentive payment process envisioned by Energy Division. The exact schedule and procedures will be developed in the Rulemaking 09-01-019 with input from parties.

Base Earnings Incentive Payments

Base earnings, if warranted, will be paid as annual interim payments. On an annual basis, the CPUC staff (Energy Division and Utility Audit, Finance, and Compliance Branch) will conduct the necessary research to verify if the IOUs have satisfied the basic standards for performance adopted by the Commission as a pre-condition for payment of base earnings. The CPUC staff will summarize their research results and findings in annual reports, which will be submitted to the record of the appropriate CPUC docket. The IOUs will then submit applications to the Commission in the year following the program year for which base earnings are claimed in order to present a showing of their record of performance in meeting the prescribed standards necessary to receive their annual incentive earnings. The Commission will rely on the record to authorize annual incentive earnings in accordance with the adopted performance standards for base earnings by decision before the end of the year during which the applications are submitted.

Bonus Earnings Incentive Payments

Bonus earnings, if warranted, will be paid after the completion of each program cycle. Throughout each three year program cycle, the Energy Division will conduct evaluation research to verify the IOUs performance relative to the performance metrics adopted by the commission for bonus earnings. The evaluation results will be documented in a draft report issued by Energy Division in the year after that final year of each program cycle. The Energy Division draft report will be subject to the public vetting process described in Attachment 7 of D.07-09-043, including any subsequent revisions. After considering comments, Energy Division will finalize the report and submit it to the record of the appropriate CPUC docket. The IOUs will then submit applications to the Commission in order to present their case for bonus earnings. The Commission may then grant earnings for superior achievement of the adopted bonus earnings performance goals. The final payment, if granted, will be provided before the fourth quarter of the second year after the end of the program cycle.

Procedural Requirements

Certain details of this proposed mechanism are not offered in this white paper and will need to be developed with parties through workshops and analysis, evidentiary hearings, or Commission decision:

- The base earnings amount, or the performance standards to qualify for of base earnings.
- The total potential bonuses for superior performance for non-resource, market transformation, and strategic initiative activities.
- The general categories of performance targets and performance metrics for non-resource, market transformation, and strategic initiative activities.
- The ratio of base to bonus earnings potential.

Alternative Options for Incentive Mechanism Reform

Energy Division recognizes that the simplified incentive mechanism broadly described above may not be as sufficiently tied to portfolio performance and verified energy efficiency savings as the Commission and interveners might like. As suggested earlier, a possible drawback to Energy Division's recommended mechanism might be the potential for unintended perverse incentives as a result of linking earnings directly to program expenditures with the payment of base earnings irrespective of the actual energy efficiency achieved by the portfolio. Below, we therefore offer two other alternative incentive mechanism reform options for consideration.

Option 1: Maintain existing incentive framework with minor changes

The Commission could, if it chooses, continue to calculate base incentive earnings with the existing MPS/PEB mechanism, *using the Energy Division administered ex-ante DEER and approved non-DEER parameter values*, adjusted for verified installations and audited administrative costs in a final true-up. This option potentially allows the IOUs to have the greater planning certainty that they seek, provides base earnings or penalties founded on familiar measures of portfolio performance, and requires little modification to the existing mechanism. Under this option, the ED administered ex-ante values can be used to forecast portfolio savings and cost-effectiveness prior to program implementation, determine the appropriate MPS earnings rate, and calculate the PEB for the purpose of determining earnings and penalties, but would not be used by either the CPUC or the IOUs to calculate and report actual savings accomplishments if more recent and accurate values are available. The values used to determine energy savings and demand reduction should be strictly based on the most recent and most accurate information produced by the EM&V work managed by the Energy Division. Designing minor adjustments in this manner partially accomplishes the goal of separating the determination of earnings from the reporting of real energy and demand impacts and attribution.

If the Commission chooses to continue with a modified version of the existing mechanism described in this section, Energy Division recommends the following conditions be met in order to remove the IOUs from being in a conflicted position:

- CPUC resources continue to be dedicated to systematically reviewing and approving PEB parameters submitted by the IOUs.
- Energy Division becomes the sole agent for disseminating statistics on the savings and benefits created by the portfolios.
- Energy Division manages all software, databases, and methodologies used to estimate earnings and energy impacts.

Under this option, base earnings and penalties would be determined annually using IOU-reported installations and Energy Division managed ex-ante PEB parameters. The final calculation will be a true-up using ex-post installation rates and audited administrative costs only.

Costs for the Emerging Technologies program, LIEE programs, selected non-resource programs, and selected strategic plan activities could be excluded from the PEB calculation used to determine IOU earnings or penalties. A continuous earnings curve⁸ instead of tiered rates could

⁸ See proposal in DRA's 8/29/07 comments on the 2006-2008 RRIM Proposed Decision.

be used to determine earnings rates. Penalties should be assessed only if there are negative net resource benefits after the final verification studies and true-up are completed. An absolute earnings cap should be retained, and should probably be lowered to account for the greater certainty that will result from the modifications proposed here.

While this option maintains the basic structure and process of the existing incentive mechanism, thus potentially allowing modifications to move forward quickly and allowing the retention of familiar performance measures, there are drawbacks that have already been mentioned elsewhere in this document and are underscored below:

- Relying on the use of ex-ante PEB parameter estimates as a basis for calculating base incentives is likely to insert significant disputes over numbers into the 2009-2011 funding application process.
- Resource program efforts might continue to be favored over the non-resource program efforts needed to support the CEESP and market transformation efforts. Bonuses tied to non-resource program performance may begin to establish an incentive, but it isn't possible to predict how IOU management will respond to these potential bonuses when their core earnings continue to be based directly on the estimated savings produced by resource programs.
- This option does not have any "hard-wired" mechanisms to guarantee encouragement of comprehensive program designs, long term savings, or minimization of cream skimming.

Option 2: Link incentives to energy consumption

Under this option, base earnings would be tied to achievement of consumption-based targets discussed earlier in this paper. The consumption targets should be consistent with the AB32 GHG reduction goals and would likely need to be segmented by classes of customers, building type, building use, etc. The targets could be based on absolute consumption per segment or per capita consumption by segment, and could be expressed as energy intensity indicators (i.e. per household, per square foot, per unit of output etc). Measuring changes in consumption and energy intensity indicators might be somewhat straightforward relative to the impact evaluations currently conducted by the Energy Division and IOUs, setting aside concerns regarding attribution. Consumption changes among the general population of IOU customers could be measured using utility meter data coupled with a carefully designed statewide probability sample that collects on-site energy-related data from households and businesses. This is a common method for accurately measuring changes in consumption and energy use behavior. The U.S. Department of Energy, Energy Information Agency's consumption surveys and the California Energy Commission's saturation and end-use surveys use similar methodology.

How to determine attribution, or the extent to which the IOU portfolios influence changes in consumption, may represent some problems. A panel study composed of residential and nonresidential customers could be conducted and interviewed periodically over a number of years using surveys to collect energy use information. In addition, panel participants' monthly energy use over time could be analyzed in econometric models that includes variables related to factors that are known to influence energy use behavior. This is merely one possible approach meant to stimulate discussion. Rather than proposing specific study designs in this white paper,

Energy Division wishes to propose energy consumption performance goals as a concept to be further discussed in the energy efficiency incentives proceeding, and perhaps piloted during the 2009-2011 cycle.

VI. The Role of EM&V

The CPUC Objectives for post-2005 EM&V

The following discussion is included to provide a summary of the Commission's EM&V rules and policies and Energy Division's recommendations for improving EM&V. The upcoming RRIM decision may only address EM&V in the context of how the revised RRIM will rely on EM&V. The Commission may also address broader EM&V issues in its decision on the utilities' 2009-2011 portfolios or other relevant energy efficiency decisions.

The current EM&V activities are driven largely by the foundation laid out in Decisions 05-01-055 and 05-04-051, subject to subsequent Energy Division interpretation, prioritization, and implementation practicalities.

D.05-01-055 provides the following objectives for the Energy Division's EM&V activities:

- Measure and verify energy and peak load savings for individual programs, groups of programs and at the portfolio level.
- Generate the data for savings estimates and cost-effectiveness inputs.
- Measure and evaluate the achievements of energy efficiency programs, groups of programs and/or the portfolio in terms of the "performance basis" established under Commission-adopted EM&V protocols.
- Evaluate whether program or portfolio goals are met.

D.05-01-055 also made ED responsible for implementing and managing all research and analysis in support of policy oversight:

- Perform research and develop recommendations to assist in developing energy efficiency policy goals and priorities, program performance goals and funding levels.
- Evaluate the remaining potential to achieve additional energy or peak savings in both the short and long term.
- Perform other research, as needed, related to procurement and PGC funded activities.

D.05-04-051 subsequently supplemented the objectives with additional detail:

- Produce a standardized process for evaluating programs, reporting results and acting on results.
- Provide credible and objective information on program impacts and performance.
- Produce recommendations to improve program performance.
- Produce an accurate assessment of future opportunities to save energy.
- Produce results that meet the needs of the Independent System Operator (ISO) and resource planners in order for energy efficiency to be a viable resource.
- Inform the program selection process.
- Provide early feedback to program implementers.

- Produce calculations of performance basis at the end of the funding period.
- Feed back into the planning process for the next program cycle.

Recommended Objectives for post-2008 EM&V

The current EM&V activities are driven by Decisions 05-01-055 and 05-04-051, drafted four years ago. Energy Division recommends that the Commission articulate that the primary objectives of EM&V and related administrative activities are as outlined below.

The Energy Division's EM&V activities shall be planned and implemented to achieve a balance of precision, accuracy, and cost efficiency, while meeting the following objectives:

1. Conducting research to support the development of data, information, and tools needed to improve the Commission's energy efficiency policies and make progress towards all of the Commission's energy efficiency and GHG emissions goals.
2. Supporting the CPUC's oversight function of ensuring the efficient and effective expenditure of ratepayer funds within the energy efficiency portfolios.
3. Measurement and verification of the key technologies and services offered through the energy efficiency programs for the purpose of developing estimates of energy and environmental impacts.
4. Evaluation of the IOUs' portfolios of activities for the purpose of measuring performance relative to established performance metrics.

The IOUs should be authorized to conduct portfolio and program design evaluations and market research that is required to plan and adapt programs to changing conditions, while meeting the following objectives:

1. Providing information needed for day-to-day management of the portfolio.
2. Communicating timely feedback to program implementers.
3. Providing information directed at improving portfolio performance, relative to established Commission policy and goals over time.

Recommended Improvements to the EM&V Process

EM&V activities should conceptually be split into four categories, each discussed below:

- M&V and Impact Evaluation
- Process Evaluation
- Market Analysis and Policy Support Research
- Financial and Management Audits

M&V and Impact Evaluation

M&V activities will consist of on-site review and measurement of program activities and energy consumption behavior that can be physically inspected and measured at a customer site or project, as well as the analysis of site level and measure level data through engineering and

building simulation models. Site visits will be performed on a probability sample of IOU customers, buildings, or facilities drawn from IOU program tracking databases, IOU billing systems, or the general population. Some M&V data may be collected through remote surveys or by using pre-existing data, if circumstances warrant. Given the enormous scale of energy efficiency program activities, the M&V work will focus on segments of the portfolio selected on the basis of the overall uncertainty of that segment's contribution to the total portfolio savings, including potential future savings. These segments will be referred to as high-impact measures (HIMs). HIM M&V will also be focused on baseline energy, peak, and load shape estimation in coordination with the end-use surveys and load forecasts managed by the CEC, wherever possible. A subsidiary M&V activity will be physical inspection of installations to estimate installation rates of HIMs. The installation studies will be timed to conclude at the end of the program cycle rather than on an annual basis, as is currently done.

In contrast to M&V, impact evaluation consists of evaluation activities designed to measure savings at the program level, such as analyses using utility bill data to produce gross realization rates and net-to-gross studies. Net-to-gross values will be developed for major measure/program strategy combinations and will incorporate reliable attribution for market effects where data are available. Other impact evaluation activities may be fielded as needed for select programs. The Energy Division will continue to explore opportunities and methods to supplement the measure/program assessment of free-ridership using market-based approaches.

DEER will be the primary "client" of the EM&V results. EM&V data and results will continue to be a primary information source used to update DEER point estimate parameters (i.e., NTG, EUL) as well as calibrate DEER models that are used to generate estimates of more complex parameters (i.e., kWh, kW, therms).

The DEER project will be responsible for managing the approved values of all energy efficiency measure parameters used to calculate portfolio savings and GHG emissions reductions. The IOU workpaper based measures, currently referred to as "non-DEER" measures, will be incorporated into DEER along with the existing deemed values. Wherever possible, non-DEER measures will be revised using current EM&V results and/or the best available research, and adopted as DEER measures. When time and resources do not permit the conversion of non-DEER measures to DEER measures, those non-DEER measures will be vetted and updated to the extent possible to ensure accurate overall portfolio savings estimates.

In cases where "non-DEER" measures are "custom" measures, modeled on a customer-by-customer or site-by-site basis, the DEER project will be responsible for managing the methods used to provide the custom measure savings estimates, including any software tools, algorithms, calibration and data used in the calculations. The DEER project will coordinate with both the IOUs and ED EM&V activity to ensure consistency of estimation approaches to the greatest extent possible. DEER and its associated tools will be integrated with a new ED managed cost effectiveness software tool and program reporting database in order to allow for seamless, transparent, and accurate reporting of portfolio savings estimates.

M&V will also be the umbrella category for data quality review and data management, such as collaboration with IOUs and CEC on program tracking database improvements and warehousing of M&V data.

Process Evaluation

Program evaluation approaches, typically falling under the category of “process evaluations”, will be used by Energy Division to measure performance of non-resource programs and strategic initiatives relative to performance metrics developed on the basis of the program theory and logic models. The term “process evaluation” broadly refers to the systematic analysis of the development, design, and actual implementation of a strategy or program; assessment of whether strategies were implemented as planned; and assessment of whether expected outputs were actually produced. The Energy Division will manage all process evaluations that are initiated for the purpose of measuring performance for bonus earnings.

The IOUs may continue to run process evaluations and market assessment studies at their discretion, so long as the studies are not overly duplicative of the EM&V work conducted by the Energy Division. The category of EM&V activity to be contracted and managed by the IOUs, also referred to as “program design evaluations” includes:

- process evaluations undertaken to improve the design and efficacy of a particular program or set of programs while the programs are operating;
- “Best Practices” studies to evaluate which energy efficiency programs or program features should be incorporated into future program designs;
- studies undertaken to review the effectiveness of training, audits or media campaigns;
- studies designed to track efficiency “sales” for individual or groups of programs, or provide other accurate market information to help the Portfolio Manager and implementers fine-tune and improve energy efficiency procurement strategies

The utilities were expected to solicit input from Energy Division, program implementers, and the public during the process of developing the scope of work for each program design evaluation and market assessment study, with Energy Division making the final selection of any contractors hired by the IOUs or program implementers. During 2006-2008 the IOUs provided very little opportunity to discuss and comment on their evaluation plans, budgets, and methods to either Energy Division or the public. The requirements for evaluation plans, draft study results and draft reports to be made available for comment prior to publishing final versions, placed on the work of both Energy Division and the IOUs, should be enforced going forward. Energy Division strived to release all evaluation plans and reports in draft form for comment and held numerous workshops, conference calls, and internet seminars to discuss draft results and obtain written comments prior to releasing final versions. Energy Division intends to proactively enforce similar requirements for the IOUs and program implementers during the 2009-2011 cycle.

Market Analysis and Policy Support Research

To support program and policy planning, analyze energy efficiency external to the IOU portfolios, and identify indirect effects of IOU programs, the Energy Division will manage a set of research projects to track and analyze relevant characteristics of the energy efficiency market. Examples of potential market analysis and policy support projects are:

- Technology focused market effects studies, including analysis of baselines and total market adoption.
- Longitudinal tracking and analyses of technology saturation, emissions impacts, energy consumption, and energy efficiency program effects on supply-side procurement.

- Studies of customer attitudes, behaviors, and other factors that influence adoption of energy efficiency.
- Research to supplement the CEC's end-use studies, market saturation studies, and other demand forecasting tools.
- Energy efficiency potential studies.
- Avoided cost updates.
- Energy efficiency measure cost studies, including analysis of incremental measure costs.
- Energy efficiency measure life studies, including analysis of remaining useful life (RUL), effective useful life (EUL), and measure retention.
- Experimental design pilot projects conducted in coordination with program implementation.

While there are many topics that can potentially be examined, there are unlikely to be enough staff resources to oversee research on all topics and enough contractor resources to implement all desirable studies, therefore an order of priority will need to be developed within an overall Energy Division research plan.

Financial and Management Audits

The financial audit component of EM&V will need to be brought to the forefront of the EM&V activities if earnings are to be based on any measures involving portfolio administration and/or participant costs. The CPUC Audit Branch team will work with the IOUs to develop more detailed definitions of allowable costs for energy efficiency program activities and reporting requirements, and will continue to conduct rigorous financial and management audits with a particular focus on the IOUs' general and administrative costs.

Recommended Improvements to EM&V Protocols

EM&V is currently guided by protocols adopted by ALJ rulings issued in 2006 and early 2007. These protocols are conceptually divided into process protocols, which lay out the process by which the evaluation work obtains stakeholder input and presents findings; and technical protocols, which provide standard procedures for conduction evaluations. These protocols should be revised immediately after the Commission adopts any changes to the incentive mechanism. Since the protocols will not be used for the incentive mechanism, if the Energy Division's changes are adopted, these items may not be addressed in the RRIM docket.

- The *California Energy Efficiency Evaluation Protocols*⁹ are essentially advisory and do not need to be updated in the immediate future. If and when these protocols are revised, they should remain advisory since the energy efficiency portfolios and EM&V are dynamic and constantly evolving, and it is therefore disadvantageous to attempt to prejudge and standardize the EM&V methodologies that should be employed, or enforce rigid research guidelines.
- The process protocols adopted by ALJ ruling on Jan. 11, 2006 and modified by ALJ ruling on Jan. 2, 2007¹⁰ should be abolished, and the following protocols should be drafted in their place:

⁹ ftp://ftp.cpuc.ca.gov/puc/energy/electric/energy+efficiency/em+and+v/EvaluatorsProtocols_Final_AdoptedviaRuling_06-19-2006.doc

¹⁰ http://www.cpuc.ca.gov/PUC/energy/electric/Energy+Efficiency/EM+and+V/070103_evaluationprocessprotocols.htm

- A new performance basis protocol should be developed to reflect the data inputs and process for calculating the new performance earnings basis adopted by the Commission.
- A stakeholder input protocol should be adopted to replace the existing “Review Protocol for Impact and Market Effects Evaluation Studies” and “Public Process Protocol for Impact Evaluation Study Scoping” protocols. The stakeholder input protocol should cover the process of stakeholder input on evaluation planning, publication of research findings, and use of results produced by all EM&V research projects managed by both the IOUs and Energy Division. The stakeholder input protocol should build off of Attachment 7 of D.07-09-043 where appropriate.

VII. Recommendations for the 2006-2008 Incentives and Use of EM&V Results in Determining Incentives

In Decision 08-12-059, the Commission partially granted a joint IOU petition for interim payments based on the IOUs’ quarterly savings reports because of delays encountered in the completion of the first Verification Report and concerns regarding the process by which these reports and the underlying assumptions are developed. In Decision 08-12-059 the Commission authorized \$82.2 million in interim incentives to be awarded to the IOUs for their 2006-2007 program effort. The Commission subsequently instituted rulemaking 09-01-019 on February 4, 2009 suspending the schedule for completing the remaining Energy Division evaluation reports and rendering the 2006-2007 Verification Report moot for the purposes of 2006 and 2007 interim incentive payments. Energy Division completed the final Verification Report covering 2006 and 2007 impacts on February 5, 2009, with findings which, while moot for the purposes of earnings, do not reconcile with the incentives authorized in Decision 08-12-059.

Currently, Energy Division is in final stages of the evaluations of 2006-2008 IOU programs, with two remaining final deliverables, if and when the schedule for completing these reports is reinstated: A second verification report due August 2009 and the Final Performance Basis Report due March 2010. As of this time, Energy Division does not anticipate further delays for the reports due on August 2009 and March 2010. However, there will always be some uncertainty regarding success in obtaining all of the necessary data from the IOUs in a timely manner; continuing and completing M&V field work on samples drawn from that IOU data; completing the analysis of M&V data; processing M&V, IOU participant, and DEER data through the incentive calculation tools; developing a draft report in early 2010, leaving enough time for parties to comment, and Energy Division to consider comments; and finalizing the report by March 2010. This entire process will require an unprecedented effort by ED staff, IOU Staff, and EM&V consultants during the very time that the 2009-2011 portfolio of programs will be initiated, a new earnings mechanism for 2009-2011 programs is being developed, and planning and procurement of EM&V resources to evaluate those programs should be well underway, if not already in the process of being implemented in the field. Furthermore, Energy Division has by and large not been persuaded to change, and does not anticipate changing, the general process by which these reports and the underlying assumptions are developed, thus the

potential for on-going disputes on the same issues that culminated with this rulemaking remains likely.

In order to avoid a continuation of the current disputes, Energy Division recommends that the 2006-2008 incentive mechanism be discontinued for the duration of Rulemaking 09-01-019, or alternatively, that the payment of the remaining 2006-2008 incentives be based on a radically simplified formula that is straightforward to administer and understand. A starting point for the Commission to consider is an incentive amount that is calculated using the existing PEB calculation with an earnings rate below the current 9% and no MPS thresholds. This allows the IOUs to earn a modest amount based on the net benefits estimated as a result of their portfolios, with no risk of penalties or an earnings dead-band. The incentives would be calculated using the ex-post evaluation results to ensure the most accurate and fair earnings are awarded. On the other extreme, taking into consideration the results of the first interim verification report, the Commission could abandon any remaining incentive payments for the 2006-2008 programs and work toward a fresh start for the 2009-2011 programs.

VIII. Conclusion

In conclusion, Energy Division recommends that the Commission immediately begin considering a new energy efficiency incentive mechanism that takes into account the problems with the current mechanism, as outlined in this paper. Energy Division encourages parties to think creatively in either continuing the development of the suggested approaches outlined herein, or in offering their own independent alternatives. Energy Division believes that the most viable approach is one which separates the determination and payment of incentive earnings from being determined by the *detailed* analysis of energy savings and cost-effectiveness goals, provides regularly scheduled opportunities to receive minimum earnings as an incentive for adequate performance, provides potential bonuses as an incentive for superior performance, and eliminates the use of penalties. We believe that, in view of its existing design flaws, small changes to the existing mechanism will not be sufficient to orient all parties towards achieving all of the Commission's goals for energy efficiency.