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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Examine the Commission's post-2005 Energy Efficiency Policies, Programs, Evaluation, Measurement and Verification, and Related Issues.	Rulemaking 06-04-010 (Filed April 13, 2006)

ASSIGNED COMMISSIONER'S RULING ADDRESSING NET-TO-GROSS RATIO TRUE-UP AND METHODOLOGY FOR LIGHTING PROGRAMS IN THE 2006-2008 ENERGY EFFICIENCY PORTFOLIOS

This ruling summarizes prior Commission decisions regarding evaluation, measurement, and verification (EM&V) of program impacts and the calculation of performance earnings basis of the utilities' 2006-2008 portfolios, which ensure that the Commission independently verifies savings by measuring key parameters (*e.g.*, net-to-gross or NTG ratios[1]) after program implementation, based on adopted EM&V protocols. This ruling also sets forth a process through which the methodology and results from the most recent EM&V study of the utilities' 2004-2005 upstream lighting programs will be vetted to inform the evaluation plans for similar programs in the 2006-2008 portfolios.

The purpose of this ruling is not to modify the Commission's determinations on how ratepayers and shareholders both will face risks that the

[1] As defined in the Energy Efficiency Policy Manual, v.3, Attachment 3 (Appendix B) to D.05-04-051, NTG is a ratio or percentage of net program impacts divided by gross or total impacts. NTG ratios are used to estimate and describe the free-ridership that may be occurring within energy efficiency programs.

portfolio savings assumptions are higher or lower than initially projected. Rather, it is to ensure that our EM&V work moving forward reflects the best possible practices, and builds upon the lessons learned from the 2004-2005 EM&V efforts.

Ex-post NTG Ratio True-Up and Performance Basis

Through its decisions and rulings the Commission has historically provided a consistent direction and approach with respect to the treatment of NTG ratios in the evaluation of energy efficiency programs. Namely, in evaluating the net benefits (resource savings minus costs) produced by energy efficiency portfolios, NTG ratios would be fully "trued-up" based on ex post study results in the calculation of the performance earnings basis (net benefits) for shareholder incentives. The Commission uses the term "performance basis" or "performance earnings basis" to refer to these portfolio net benefits.

Attachment A to this ruling provides a summary of Commission decisions and rulings that indicate the Commission's longstanding direction on this issue.

Forecasting uncertainties are borne not just by ratepayers or (under adopted incentive mechanism) just by shareholders. A balance has been reached in prior decisions by the direction to true up load impacts (including NTG ratios) and program costs, but not other parameters (like avoided costs and savings persistence) that are used to measure portfolio performance.

The utilities were directed to consider forecasting risks in developing their portfolio plans (and expected to conduct prudent risk management) as part of their 2006-2008 compliance filings and implementation plans. In D.05-09-043, the Commission identified NTG as a potential risk and ordered the utilities to manage their portfolios to minimize this risk. As the Commission noted in D.05-09-043:

> Our decision today on how best to bound the uncertainty associated with this key savings parameter for planning purposes is predicated on the expectation that **NTGs *will* in fact be adjusted (trued-up) on an *ex post* basis when we evaluate actual portfolio performance**. We believe that this is entirely consistent with the resolution of threshold EM&V issues in D.05-04-051.
>
> In that decision, we determined that *ex-ante* savings estimates should be trued up based on the results of *ex post* load impact studies. As NRDC observes, we did not explicitly state whether or not that would include a true up of net-to-gross ratios to reflect free ridership. However, since many load impact studies evaluate the free ridership parameter as an integral component of their evaluation methodology (*e.g.*, through the use of a non-participant control group in billing analyses), we did not consider it necessary to specify that the NTG assumptions would be trued up as part of that process. **So that there is no further confusion on this issue, we clarify today that NTG assumptions should be trued-up in evaluating the performance basis of resource programs**. (pp. 97-98, emphasis added.)

In presenting their portfolio plans in 2005 to the Commission and to their peer review groups, the utilities generally used NTG ratio of 0.80 as the default value for lighting measures. During the peer review process, several peer review group members, as well as Energy Division consultants, noted that the NTG values for a variety of strategies were probably too high. At least one utility committed to using "more realistic and updated" NTG ratios for lighting in program implementation and all utilities conducted sensitivity analysis around this and other parameters in their advice letter compliance filings in early 2006 (see Attachment A). In addition, in recognition that the utilities would need to manage their portfolio plans including forecasting risk throughout the program cycle to maximize performance, the Commission specifically authorized funding

flexibility, authority to modify program design and to pursue new program strategies, as part of D.05-09-043 (see Table 8, Adopted Fund-Shifting Rules).

Notwithstanding the above, I recognize that there are real concerns expressed by the utilities about the forecasting uncertainties they face with respect to "truing up" NTG ratios in particular.[2] These concerns, in large part, arise from the recent evaluation study that Itron, Inc. conducted on the utilities' 2004-2005 Statewide Residential Retrofit Single Family Energy Efficiency Rebate (SFEER) program; more specifically, the evaluation of the upstream/midstream lighting component of the said program.[3] The final evaluation report estimates that the statewide *ex post* NTG ratio across lighting measures is close to 0.62. This NTG is a weighted average of market channel and technology NTG estimates that varied from 0.25 for general merchandise big box retailers to 0.97 for discount stores, and from 0.36 for compact fluorescent fixtures to 0.72 for specialty CFLs. From the utilities' standpoint, some of the market channel and technology level NTG ratios are significantly lower than the planning assumptions they used in developing their 2006-2008 portfolio plans.[4]

The above-referenced Itron study for the 2004-2005 SFEER program will not be used to true-up 2006-2008 portfolio savings for the purpose of the

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[2] Utilities expressed their concerns at the September 17, 2007, all-party meeting regarding the Interim Opinion of Phase I Issues: Shareholder Risk/Reward Incentive Mechanism for Energy Efficiency Programs, as well as in the October 2, 2007, letter they sent to the Commissioners.

[3] Itron's report for the 2004-2005 SFEER program evaluation is posted at http://www.calmac.org/NewPubs.asp.

[4] The utilities generally used NTG ratio of 0.80 as the default value for lighting measures, but then conducted sensitivity analysis around this and other parameters in their advice letter compliance filings in early 2006.

shareholder incentive mechanism. Instead, EM&V studies undertaken during 2006-2008 will be used for that purpose. Nonetheless, the nature of *ex post* EM&V means that there will be uncertainties facing both ratepayers and shareholders in the deployment of energy efficiency in 2006 and beyond, and managing these uncertainties is part of the energy efficiency portfolio administrators' responsibility. Due to the utilities' heavy emphasis on lighting measures, particularly compact fluorescent lamps (CFLs) in their portfolios, even moderate *ex post* adjustments to the NTG could have a magnified impact.

Workshop on NTG Study Methodology

Because lighting measures for both residential and non residential customers account for a very large component of the utilities' 2006-2008 portfolio strategies (*i.e.*, 76% of projected kWh savings and 67% of projected kW reduction), it serves both ratepayer and shareholder interests to examine carefully the Itron 2004-2005 SFEER evaluation study methodology and results, as Energy Division now proceeds to develop and finalize the evaluation plans for its evaluation of similar programs in the 2006-2008 program cycle.

This ruling directs the Energy Division to hold a workshop to discuss the NTG methodology employed in the assessment of energy savings impacts, particularly those of upstream/midstream lighting programs, in October or November 2007. Parties should review the lighting NTG methodology and results in the Itron's 2004-2005 SFEER evaluation report and provide pre-workshop comments to Energy Division and the R.06-04-010 service list. Energy Division will provide a schedule for comments when the workshop date is announced. The purpose of this workshop is to assist Energy Division and their contractors with formulating their evaluation plans for upstream/midstream lighting programs. The workshop will also provide a mechanism for Energy Division to solicit feedback from EM&V expertise and among stakeholders to

identify areas where there may be legitimate disagreements over survey techniques or interpretation of survey results. The information gathered from the workshop will assist the Energy Division and its contractors in conducting the evaluations of such programs in the 2006-2008 portfolios.

IT IS RULED that:

1. A series of Commission decisions and EM&V protocol rulings have established that net-to-gross (NTG) assumptions will be "trued-up" based on *ex post* study results in evaluating the performance basis and performance earnings basis of resource programs.

2. Energy Division shall hold a workshop in October or November 2007 to discuss the NTG methodology employed in the assessment of energy savings impacts particularly of upstream/midstream lighting programs. The purpose of the workshop is to solicit feedback from EM&V experts and stakeholders to assist Energy Division and its contractors in conducting the evaluations of such programs in the 2006-2008 portfolios.

Dated October 5, 2007, at San Francisco, California.

/s/ DIAN M. GRUENEICH
Dian M. Grueneich
Assigned Commissioner

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I have provided notification of filing to the electronic mail addresses on the attached service list.

Upon confirmation of this document's acceptance for filing, I will cause a Notice of Availability of the filed document to be served upon the service list to this proceeding by U.S. mail. The service list I will use to serve the Notice of Availability of the filed document is current as of today's date.

Dated October 5, 2007, at San Francisco, California.

/s/ ROSCELLA GONZALEZ
Roscella Gonzalez

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Summary of Commission Determinations on EM&V: Updated Net-to-Gross Ratios and other Parameters Used to Calculate Energy Efficiency Performance Basis

Summary:

This document summarizes all the decisions and rulings in which the Commission has stated that net-to-gross (NTG) ratios would be fully "trued-up" based on ex post study results in the calculation of the performance earnings basis (net benefits) for shareholder incentives. As discussed below, the only true-up issue on the table in Phase 1 of R.06-04-010 was whether achievement of the Minimum Performance Standard (MPS) tied to kWh, kW and therm savings goals would similarly be trued up in the final earnings claim using ex post verification of NTG ratios and other per unit savings parameters. The alternative that some parties proposed was to determine achievement of the MPS at the interim earnings claim(s) based on verified measure installations (number and type), but utilizing the ex ante per unit savings estimates (and NTG ratios) forecasted at the outset of the program cycle.

Parties strongly disagreed on this issue in their Phase 1 proposals for the earnings claim/recovery process associated with the shareholder incentive mechanism. In determining that the MPS should be trued up in the final claim, the Commission was consistent with what it clearly stated would be the manner in which portfolio net benefits would be trued-up in calculating shareholder incentives. In doing so, the Commission considered how best to ensure that the savings goals were actually met or exceeded, what is fair to ratepayers who fund the programs and how best to ensure that the utilities do not unfairly gain at the expense of ratepayer by gaming forecasts in the portfolio planning phase. The decision also took steps to mitigate the utilities' concerns about potentially paying back all the earnings they would have received during the interim claims (based on *ex ante* estimates of NTG ratios) with the final true-up of this and other per-unit savings parameters.

1. <u>Assigned Commissioner's Ruling Establishing Schedule for Addressing High Priority Issues During 2004</u>, February 6, 2004.

This ruling introduced the concept of "performance basis" in the context of potential performance incentives. It requested that staff hold a series of workshops to address the evaluation, measurement and verification (EM&V) issues most directly related to potential performance incentive design.

Accordingly, Energy Division held a series of four workshops on *Incentives and Related EM&V* during 2004 and early 2005 to address, among other things, how the performance basis of utility programs should be defined, and to describe the EM&V protocols for evaluating the performance basis on an *ex post* basis, i.e., after program implementation. Energy Division prepared written summaries of consensus and non-consensus positions of the parties on the EM&V-related issues addressed in each workshop. The workshop record, augmented by additional written comments by the parties, was submitted to the Commission and considered in D.05-04-051 (see below).

2. <u>D.05-04-051 Issued in R.01-08-028 on April 21, 2005</u>

In addition to adopting the post-2005 policy rules for energy efficiency, this decision addresses the threshold issues raised in workshops on Incentives and Related EM&V and in subsequent written comments. In particular, D.05-04-051 addressed the threshold issue of how to define "performance basis" for incentive design. It determined that performance basis should be based on the dollar value of net benefits (resource benefits minus costs) produced by the utility energy efficiency portfolio.[1]

The decision also addressed the issue of "performance basis true-up," i.e., what assumptions used to calculate the performance of program administrators and program implementers after each program cycle would be "trued up" to adjust the estimated performance basis used at the start of the program cycle.

[1] The term "performance basis" is generally used interchangeably with the term "performance earnings basis" or PEB in the context of the shared savings mechanism.

All parties agreed that program costs and the type and number of installations should be trued-up, i.e., the pre-installation ex ante estimates should be updated using post-installation ex post verification activities by Energy Division. Some parties, including ORA, TURN and NRDC recommended that ex post reevaluation of per unit kWh, kW and therm savings through load impact studies should also be required as a general policy. However, others (including PG&E and SCE) recommended against truing up performance during a particular program cycle using *ex post* measurement results of per unit savings.

Hence, the threshold EM&V issue addressed in this decision was whether the results of *ex post* measurement studies that evaluate per-unit lifecycle kWh, therm and kW savings should be used to adjust the performance basis for energy efficiency programs for prior years.[2] Among other things, these "load impact" studies evaluate the level of free riders participating in the program—*e.g.*, through comparing billing data of program participants with a non-participating "control" group. Gross load impacts are adjusted by the NTG ratio to adjust for free riders and produce the "net" load impacts.[3]

In resolving this issue, the Commission took a middle ground by requiring that first-year load impacts (and associated NTG ratios) be trued up, but not the "persistence" of savings over time, e.g., expected useful lives or degradation factors. In addition, avoided costs and incremental measure costs would be based on *ex ante* estimates, and not trued-up based on *ex post* measurement when calculating the performance basis.[4] *This* meant that, looking back at a program

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[2] SCE, PG&E and Aloha Systems argued at workshops and in their comments that EM&V efforts to assess program performance for a particular funding cycle should focus only on verifying program costs and participation. Other parties, including ORA, TURN and NRDC recommended that *ex post* reevaluation of per unit kWh, kW and therm savings through load impact studies should also be required as a general policy.

[3] The NTG ratio measures the percentage of program participants that are *not* free riders, *e.g.*, a NTG ratio of 80% means that 20% of program participants would have installed the measure anyway, without the program offering.

[4] However, as discussed in subsequent rulings/decisions the *ex ante* estimates of avoided costs were updated for the 2006-2008 program cycle and the *ex ante* incremental costs for customized rebates were to be based on the actual measures installed.

year that was completed, the *ex ante* estimate of first load impacts would be updated based on *ex post* measurement results, but the assumptions concerning persistence of those first-year savings over time would continue to be based on the *ex ante* estimates, as would be the avoided costs used to value those savings. The decision also allowed for exceptions to the true-up of the performance basis using *ex post* load impact studies for some measures and/or programs, as discussed in that decision. ***This discussion is presented in Section 4.2.3 of D.05-04-051 and summarized on pages 7-8 in the Introduction and Summary section of the decision. (See Attachment 1.)***

The Commission also directed staff to develop interim EM&V products that would lead up to the submittal of detailed EM&V plans for Commission consideration in the fall of 2005. One of these products was to describe each parameter for calculating the performance basis (net resource benefits), the sources of the *ex ante* forecasts, the method for updating/verifying the parameter forecast and the frequency of *ex post* verification and true-up consistent with the direction in this decision. The Commission established an expedited review process for these interim EM&V products, whereby they would each be adopted via ruling by the assigned ALJ in consultation with the assigned Commissioner, after soliciting written comments from interested parties. (See rulings below.)

3. <u>Administrative Law Judge's Ruling on EM&V Protocol Issues</u>, September 2, 2005

Pursuant to the expedited review procedures set forth in D.05-04-051, the assigned ALJ solicited comment on a staff document that, among other things, presented a description of performance basis parameters and true-up protocols (method and frequency) discussed above.

Consistent with the Commission's direction in D.05-04-051, staff clearly laid out in their proposed "Process for Estimating and Verifying Parameters Needed to Calculate Net Resource Benefits" that NTG ratios for each program strategy or combination of strategies in a market sector would be updated based on *ex post* impact evaluations—and the program administrators should use these trued-up values in their final reports on portfolio performance. [At this point in

time we had not starting Phase 1 of R.06-04-010 so we didn't have an incentive mechanism to specifically refer to or the associated true-up claim.]

The ruling adopts staff's proposed protocols, with the clarification that the Commission was still considering a process for updating the *ex ante* estimates of expected useful lives that were contained at that time in the E3 calculators and submitted with the 2006-2008 portfolio plans. The ruling also notes that updates to the *ex ante* estimates of avoided costs were being considered in the avoided cost proceeding. But neither of these caveats modifies the staff proposal (or the Commission's determinations in D.05-04-051) regarding the use of *ex post* values for NTG ratios and other parameters related to first-year load impacts.

See Appendix 3 of this ruling, which is reproduced in Attachment 2.

4. <u>D.05-09-043 on 2006-2008 Portfolio Plans</u> issued September 22, 2005

In developing and submitting their 2006-2008 portfolio plans on June 1, 2005, the utilities were instructed to show that these plans resulted in cost-effective portfolio savings on a prospective basis, consistent with the "dual test" of cost-effectiveness required under the policy rules. Parties agreed that the utilities' portfolios were likely to be cost-effective, even with uncertainty over underlying forecasts. However, they could not agree on whether the portfolio plans were likely to meet or exceed the Commission's savings goals, due to uncertainties in the underlying forecasts of net savings produced from each administrator's programs. In particular, the *ex ante* NTG values were criticized as being too high by Energy Division's consultant, as well as by TURN, DRA and other interested parties.

To address these uncertainties in the forecasted net savings (in particular over free rider assumptions), parties suggested various approaches—including (1) requiring an "independent agent" to revise the NTG ratios used by the utilities in their June 1 filing, and resubmitting the portfolio plans in a separate Post Phase 1 advice letter filing, (2) adopting a default NTG ratio across all programs and measures for the current planning cycle, (3) doing nothing, and accepting each utility administrator's filing with the knowledge that although it will be difficult to meet the goals, it is certainly possible, or (4) conducting

sensitivity analysis in the compliance phase filings to assess whether the portfolio will still be cost-effective and meet the Commission's energy goals if key parameters (e.g., NTG ratios and input assumptions for key measures such as lighting) are lower than expected after evaluation.

D.05-09-043 adopts approach (4) above, which was recommended by PG&E. However, in doing so, *the Commission stated very clearly that NTG ratios would be trued-up on an ex post basis when the Commission evaluated actual portfolio performance*:

> "Our decision today on how best to bound the uncertainty ith this key savings parameter [NTG assumptions] is predicated on the expectation that NTGs *will* in fact be adjusted (trued-up) on an *ex post* basis when we evaluate actual portfolio performance. We believe this is entirely consistent with the resolution of threshold EM&V issues in D.05-04-051.
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> "In that decision, we determined that *ex ante* savings estimates should be trued up based on the results of *ex post* load impact studies. As NRDC observes, we did not explicitly state whether or not that would include a true up of net-to-gross ratios to reflect free ridership. However, since many load impact studies evaluate the free ridership parameter as an integral component of their evaluation methodology (e.g., through the use of a non-participant control group in billing analysis), we did not consider it necessary to specify that NTG assumptions would be trued up as part of that process. So that there is no further confusion on this issue, we clarify today that NTG assumptions should be trued-up in evaluating the performance basis…."[5]
>
> "Conducting sensitivity analysis with respect to key input parameters, such as net-to-gross ratios, during the compliance phase provides a practical and effective way to assess the robustness of energy savings estimates before we authorize the

[5] D.05-09-043, pp. 97-98.

> final program plans. Uncertainties over the specific net-to-gross ratios used for planning purposes will be further addressed through *ex post* true-up of these ratios in performance basis evaluation, consistent with our direction in D.05-04-051. "[6]

> "….The EM&V protocols being developed in a separate phase of this proceeding will identify how and when this load impact data should be trued up to calculate performance basis for the 2006-2008 program cycle, per the Commission's direction in D.05-04-051. " [7]

In this decision, the Commission also directed that utilities use the August 2005 updates to *ex ante* useful life (EUL) assumptions posted to the Data Base for Energy Efficient Resources (DEER) when reporting actual installations during program implementation, and when submitting calculations of savings, portfolio cost-effectiveness and performance basis during the 2006-2008 program cycle. In addition, the decision finds that the *ex ante* assumptions of avoided costs that will be used to evaluate the performance basis of 2006-2008 energy efficiency portfolios and programs should be updated, and directs that workshops be held for this purpose. [8] (This effort culminated in D.06-06-063, the 2006 Avoided Cost Update decision.)

In addition, in recognition that the utilities would need to manage their portfolio plans throughout the program cycle to maximize performance, the Commission specifically authorized funding flexibility, authority to modify program design, and pursue new program strategies, as part of D.05-09-043 (see Table 8, Adopted Fund-Shifting Rules).

Finally, having "laid the groundwork" by addressing the "threshold EM&V issues related to performance incentives earlier this year", the

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[6] *Ibid*., Findings of Fact 6 and 7;

[7] *Ibid*., Conclusion of Law 8.

[8] *Ibid*, Ordering Paragraphs 9 and 12.

Commission states that the next priority for energy efficiency is the development of a risk/reward incentive mechanism that would apply to the utility's portfolio performance, beginning in 2006. [9]

5. Joint IOU Case Management Statement Regarding Energy Efficiency Applications for 2006-2008 Programs and Budget Plans, July 18, 2005

The purpose of the Case Management Statement (CMS) was to reflect discussions among the utilities, Peer Review Group (PRG) members, and interested parties that filed opening comments (collectively CM Participants) in the A.05-06-004 proceeding. Specifically, the CMS was intended to (1) summarize the areas/issues in dispute based on the June 1 filings, PRG Assessments and opening comments of interested parties, (2) describe issues/areas where resolution has been reached based on further discussions among the utilities, the PRGs and interested parties, and (3) describe the extent to which cost-effectiveness issue raised by the TecMarket Works report have been addressed during the process, and (4) identify the remaining areas of disagreement that require Commission resolution.

The CMS noted that PRG members were frustrated that the utilities used NTG values for a variety of strategies that were outdated, inaccurate, and probably too high (page 6). The PRG requested that PG&E reduce its reliance on lighting measures, particularly residential lighting, to which PG&E responded that it would "adjust its 2006 portfolio lighting savings to reflect more realistic and updated assumptions on NTG ratios." (pages 17-18.)

6. Administrative Law Judge's Ruling Adopting Protocols for Process and Review of Post-2005 EM&V Activities, January 11, 2006

This ruling builds upon the updating procedures adopted in the September 2, 2005 Protocol ruling by adding specific dates for staff reports on each parameter underlying the performance basis. Here again, the ruling and the adopted "Performance Basis Protocol" makes it very clear that NTG ratios and other parameters related to per unit energy savings, program costs and measure installations (number and type) will be trued up in evaluating the

[9] *Ibid*., pp. 165-166; Conclusion of Law 12.

performance basis for the 2006-2008 program cycle, consistent with the Commission's directions. ***These adopted protocols are presented in Attachment 2 of this ALJ ruling, which is reproduced as Attachment 3.***

7. Assigned Commissioner's Scoping Ruling for R.06-04-010

In the scoping of this energy efficiency rulemaking, which is the successor to R.01-08-028, the Assigned Commissioner describes Phase 2 (EM&V) as the forum for resolving ongoing EM&V issues throughout the 2006-2008 program cycle. In doing so, the Assigned Commissioner reproduced Attachment 2 of the January 11, 2006 adopted protocols for verifying performance basis parameters.[10] Hence, here again, the Commission's intent to update the performance basis (net benefits) based on a full true-up of NTG ratios was fully reflected in the scoping memo.

However, exactly how the Minimum Performance Standard (MPS) for the incentive mechanism would be determined was not resolved at this juncture. The Commission made it clear in D.05-04-051 that the MPS would be linked to the kWh, kW and therm savings goals, so that earnings would not accrue until some percentage of those savings was achieved. The Commission left to Phase 1 of this proceeding to decide what that percentage threshold would be and ***when achievement of the MPS would be determined during the program cycle.*** Accordingly, the scoping memo solicits proposals from parties on their proposed MPS, including a response to the following question:

> "When is achievement of the MPS to be determined under your proposal? After program participation/measure installations are verified (and using *ex ante* estimate of load impacts per measure)? After load impacts are also trued up on an *ex post* basis? On another basis? Please review the Commission's consideration of alternate MPS designs in D.94-10-059 (57 CPUC 2d, 1, 43-46, and Table 6) in formulating your responses." (Attachment 4, page 4.)

[10] See Attachment 3 of *Assigned Commissioner's Ruling and Scoping Memo and Notice of Phase 1 Workshops on Risk/Return Incentive Mechanism.*

As indicated below and in Attachment 4, parties presented very different views on this issue in their Phase 1 (Shareholder Incentive) proposals.

8. <u>D.07-09-043 on Shareholder Incentives (Phase 1) issued September 20, 2007.</u>

This decision adopts a risk/return incentive mechanism, which established a MPS based on 85% of the Commission's adopted savings goals. The MPS would need to be met before the utilities could share a percentage of the verified "performance earnings basis" (PEB), i.e., the net benefits calculation for performance basis adopted in D.05-04-051.

The Commission also adopted an earnings claim and recovery schedule, whereby the interim claims would be based on Energy Division's (ED's) verification reports on measure installations and program costs, and the final "true-up" claim would be also based on ED's *ex post* evaluation of per unit savings, pursuant to the EM&V protocols described above. However, some parties argued in Phase 1 that both the PEB true-up and the MPS true-up should be restricted in this final claim.

For example, as indicated in ***Attachment 4***, under the proposals put forth by SDG&E, SoCalGas, NRDC and SCE, even if the true-up of the PEB indicated that the interim claims paid out a higher proportion of net benefits than the sharing rate when the PEB was trued-up, shareholders would not be required to return any of that overpayment to ratepayers. As discussed above, the Commission consistently directed that the performance basis would be trued up based on load impact studies (including NTG ratios) conducted for that program cycle, so these proposals were clearly outside of the scope of Phase 1. Moreover, as can be seen from Attachment 4 they were asymmetrical, in that the true-up of PEB would work to shareholders advantage if the *ex post* results showed higher savings than forecasted.

However, the Phase 1 scoping ruling discussed above did solicit comment on when MPS achievement should be determined during the program cycle—and parties hotly debated this issue. DRA and TURN argued for full true-up of the MPS, consistent with the manner in which the Commission stated it would true-up the PEB. That is, if the final true-up determined that the MPS was not

met, then the utilities would be obligated to return all of their interim payments (or book those amounts against positive earnings in the next program cycle). SDG&E/SoCalGas and NRDC recommended that there be no true-up in the final claim with respect to MPS achievement, and that the Commission hold back amounts in the interim claim to mitigate the risk of overpayments to utilities. SCE and PG&E took a similar position, with the caveat that all interim payments would be paid back if the portfolio were found to be non cost-effective (i.e., PEB < 0). (See Attachment 4.)

The Commission carefully considered the arguments presented by the parties and determined that a full-true up of the MPS (as well as the PEB) was the most reasonable approach, coupled with hold-back provisions and allowing the utilities to book any potential pay-back of earnings against positive earnings in the next program cycle. (See Section 8.2 of D.97-09-043 for this discussion.)

In comments on the PD and during the all-party meetings, the utilities claimed that the Commission's determination to true-up both the MPS and PEB based on *ex post* NTG ratios was akin to "moving the goalposts" once the program cycle began. In response, the Commission acknowledged the history on this issue (summarized above) and stated:

> "It is also unreasonable for the utilities to ask us to broaden the scope of Phase 1 in order to reverse our determinations on how to account for free riders in the calculation of portfolio savings benefits, just because NTG ratios may be higher (and net benefits correspondingly lower) on an *ex post* basis than they assumed in developing their portfolio plans.[11] There are many parameters that go into the calculation of PEB, some of which we have determined should be trued-up (e.g., NTG ratios, portfolio costs and unit energy savings) in calculating the PEB and others that will be updated for prospective use only (i.e., to revise *ex ante* estimates for the subsequent program cycle). Since early 2005,

[11] The scope of Phase 1 does not include revisiting these protocol issues or how the Commission's savings goals should be established, which are issues raised by PG&E's and SDG&E/SoCalGas comments on the Proposed Decision.

the utilities have been on notice that the parameters used to evaluate near-term net savings, including NTG ratios, would be subject to true-up in calculating the PEB for each program cycle. The Commission made this very clear in D.05-04-051, issued on April 21, 2005, as did the September 2, 2005 ALJ ruling on related EM&V protocols. [12] Moreover, incorporation of up-to-date NTG values into the current portfolios has been the subject of extensive discussion at Commission workshops, as well as program advisory group and peer review group meetings prior to and during the implementation of the 2006-2008 programs.[13]

"In sum, the utilities cannot in good faith claim that risks associated with EM&V results—particularly NTG ratios—are "unforeseen expected evaluation risk."[14] They have had ample opportunity to adjust their portfolios in response to available data, and should be encouraged by Commission policies to minimize expenditures on free riders by doing so. The Proposed Decision achieves this outcome." (D.07-09-043, pp. 168-169.)

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[12] See D.05-04-051, *mimeo*., pp. 48-53 and *Administrative Law Judge's Ruling on EM&V Protocol Issues*, September 2, 2005, Appendix 3. For the reasons discussed in D.05-04-051, the Commission did not require that the results of "persistence studies", which evaluate the extent to which near-term savings from a program persist over time, be used to true-up the PEB for a particular program cycle. Rather, the Commission stated that those results would be used on a perspective basis only, that is, to inform updates to *ex ante* savings projections for future program cycles. The Commission also indicated its intent to revisit this policy and revise it at a future date, as appropriate, if the evidence indicated that the results of *ex post* persistence studies were significantly different from the *ex ante* estimates. *(Ibid*, pp. 52-53.)

[13] *TURN Reply Comments on Proposed Decision*, September 4, 2007, p.2.See also *DRA's Reply Comments on Proposed Decision*, pp. 3-4.

[14] *Comments of PG&E on Proposed Decision*, August 29, 2007, p.7.

ATTACHMENT 1

EXCERPTS FROM D.05-04-051 ON HOW TO TRUE-UP THE PERFORMANCE BASIS FOR ENERGY EFFICIENCY

From Introduction and Summary (pp. 7-8):

This decision also addresses the threshold issue of what assumptions used to calculate the performance basis (e.g., program costs, number and types of measures, first-year savings of measures and persistence of savings over time.) should be "trued up" on an *ex post* (post-installation) basis in order to evaluate the performance of the Program Administrators and program implementers after each program cycle. The parties to this proceeding agree that program costs and participation levels, including the number and type of measures or equipment installed, should be trued up based on *ex post* verification. They also agree that *ex post* measurement studies of per-unit lifecycle kWh, therm and kW savings should be used to inform and update *ex ante* (pre-installation) assumptions for future program years. They disagree, however, on whether the results of these *ex post* studies should also be used to adjust the performance basis of energy efficiency resource programs for prior years. In addition, parties disagree on how frequently these studies should be undertaken for either purpose.

As discussed below, we examine the historical relationship between *ex ante* assumptions and the results of *ex post* studies in considering the positions of the parties. We adopt an approach that strikes a reasonable balance of the following concerns: How to ensure quality control, maintain the credibility of the programs, and at the same time recognize the difficulty in tying the performance basis to true-up studies that are conducted many years after program implementation. As a general policy, we will require for PY2006 and beyond that per unit kWh, kW and therm savings be reevaluated through load impact studies to adjust the performance basis for prior program years. We will consider exceptions to this general policy for measures and/or programs for which there are well-established *ex ante* values with a high degree of confidence, and low external sources of variability that could influence energy savings. Savings persistence studies will not be tied to the performance basis, but will still be performed to inform future planning. However, we may revisit this policy

and revise it if, at a future date, there is evidence that the results of the persistence studies are significantly different from the *ex ante* estimates.

From Section 4.2.3 (Performance Basis True-Up), pp. 44-54:

As discussed above, all parties agree that participation levels, including the number and type of measures or equipment installed, must be trued up relative to *ex ante* assumptions in evaluating program performance for a particular program year.[15] Parties that favor the net resource benefits approach to performance basis also agree that the program costs used in that calculation must be trued up to actual expenditures. There is also consensus that per-unit kWh and kW savings assumptions should be evaluated on an *ex post* basis in order to inform and update *ex ante* assumptions for future program years. We are in full agreement with these principles and discuss in Section 5 the process by which they should be translated into specific EM&V protocols in the near future.

The threshold issue we need to address here, then, is whether the results of *ex post* measurement studies that evaluate per-unit lifecycle kWh, therm and kW savings should also be used to adjust the performance basis for energy efficiency resource programs for prior years. As discussed at some length in this decision, we have a history of doing both: For pre-1998 resource programs we required *ex post* reevaluation of per unit kW, kWh and therm savings assumptions for most measures spanning a 7-10 year measurement period, and the performance basis for the completed program year was adjusted based on this reevaluation. Under current EM&V protocols, we do not require that the per unit savings assumptions used to evaluate programs for funding purposes in a prior program year be adjusted on an *ex post* basis, for any program or measure.

In considering this issue, it is useful to evaluate the relative impact that *ex post* evaluation of kWh, therm and kW savings had on the calculation of

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[15] However, there appears to be consensus that incremental measure costs, or "IMC" (which is a cost component in the TRC test) should *not* be trued up in calculating the performance basis for a prior year. Instead, workshop participants suggest that those costs be evaluated periodically (every 3-5 years) and the results of those studies be used to update subsequent *ex ante* estimates of IMC. (See Workshop Report #1, June 8, 2004, p. 6.) Our reference to "program costs" in the context of performance basis true-ups does not include IMC.

performance basis for energy efficiency programs subject to our pre-1998 Protocols. At the request of the assigned ALJ, utility staff compiled data from the reported E-tables in each Annual Earnings Assessment Proceeding (AEAP) for the pre-1998 program years and summarized it in the format presented in Attachment 5**.** As described above, the performance basis under the pre-1998 protocols (also referred to as "performance earnings basis" or "PEB") represented a net benefits calculation based on a weighted average of the TRC and UC (currently PAC) test of cost-effectiveness. The E-Tables provide the following information in a standardized format for each program year and by utility:

1) *Ex ante* PEB, based on forecasts of all performance parameters for the program year in question. These are the forecasts during the program planning process when programs are selected for funding;
2) PEB adjusted for *ex post* verification of program costs and program participation (including types and numbers of measures installed at each location), but still using the *ex ante* forecasts of lifecycle kW and kWh savings per measure (or "per unit") presented in (1) above;
3) PEB adjusted for verified costs, verified program participation *and* the results of *ex post* first-year load impact studies; and
4) PEB adjusted for all the performance factors in (3) plus the results of *ex post* persistence studies. The combination of the first-year load impact studies and subsequent persistence studies produce the *ex post* estimates of lifecycle kW, kWh and therm savings that are applied to the installed energy efficiency measures.

Our review of this data indicates that the largest true-up adjustments to the *ex ante* performance basis occurred in the first earnings claim, where actual program costs and verified program participation were substituted for the *ex ante* values. For example, in 1996, the *ex ante* ("target") PEB the IOUs combined was a forecasted $140,078,000 in net benefits. Adjustments based on verified costs and participation (types and number of measures actually installed) increased the

ex ante estimate by 113% to $298,944,000 which accounted for 96% of the *ex post* net benefit value ($311,540,000) for that program year.

The data also indicates that, for the IOUs combined, the results of the first-year load impact studies (conducted for the second earnings claim) and the persistence studies (conducted in the third or fourth year) generally cancelled each other out over time. That is, while the *ex ante* assumptions of first-year load impacts were higher than the subsequent *ex post* load impact studies revealed, the *ex ante* assumptions of expected useful life, measure retention and technical degradation were lower than the corresponding *ex post* values produced by the third or fourth year persistence studies. By 1996 and 1997, these forecasting errors nearly cancelled each other out, producing *ex post* values for kW and kWh lifecycle savings quite close to the *ex ante* assumptions used for the programs.

For example, in 1996, the first earnings claim produced a performance basis of $298,944,000 in net benefits using *ex ante* per unit savings assumptions. The first-year load impact studies performed for the second earnings claim reduced this estimate by 9% and the third-year persistence studies raised it up again by 15%, for an *ex post* estimate of $311,540,000 in net benefits. This represents a forecasting error of +4%, meaning that the *ex ante* estimates of kW and kWh per unit savings for that program year were 4% *lower* than the corresponding *ex post* values on an IOU-combined basis. For 1997, the first earnings claim produced a performance basis of $258,981,000 using *ex ante* per unit savings assumptions. The first-year load impact study performed for the second earnings claim reduced that estimate by 19%, and the third-year persistence study raised it up again by 14%, for an *ex post* value of $240,081,000 in net benefits. This represents a forecasting error on the order of -6.4%, meaning that the *ex ante* estimates of kW and kWh per unit savings for that program year were 6.4% *higher* than the *ex post* values produced by subsequent studies.

In sum, the available data indicates that, for the IOUs combined, the *ex post* reevaluation of lifecycle kW and kWh savings conducted for the pre-1998 programs did not produce significant adjustments to *ex ante* forecasts of net resource benefits once the actual program costs and program participation had been verified. This is not to imply that reliance on *ex ante* kW and kWh savings assumption is without some inaccuracies. Had the Commission relied on this

approach (while truing up cost and participation parameters) for the 1994-1996 program years, we would have *underestimated* program net benefits and associated earnings for the IOUs combined, and slightly *overestimated* the net benefits and earnings for program year 1997.[16] However, based on the available data, these inaccuracies do appear to work in both directions--without resulting in systematic overestimation of net benefits, on a statewide basis.[17]

One can see this by comparing the PEB for the first-earnings claim relative to the PEB calculated after the load impact and persistence studies were performed in the third or fourth year after program implementation. As indicated in the Attachment, the net benefits for program year 1994 calculated after adjusting cost and participation parameters (first earnings claims) are $497,017,000. After further adjusting net benefits based on load impact and persistence studies, the net benefits for that year is $600,602,000. Hence, the net benefits calculated with *ex ante* per unit kW, kWh and therm savings estimates captured only 83% of *ex post* net benefits associated with 1994 programs, for the IOUs combined. For program years 1995 and 1996 this percentage was 87% and 96%, respectively, also representing an underestimation of savings for those years. In 1997, this percentage was 108%, indicating that the *ex ante* estimates of kW and kWh savings used in that year slightly overestimated savings for that one program year.

Based on this and other information discussed at workshops and in written comments, SCE, PG&E and Aloha Systems argue that EM&V efforts to assess program performance for a particular funding cycle should focus only on

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[16] The utility-specific numbers in Attachment 5 reveal that most of the underestimation was attributed to PG&E's *ex ante* assumptions of kW and kWh savings (relative to the results of subsequent *ex post* studies) which—given the relative size of PG&E's programs--more than offset the overestimations of kW and kWh savings estimates associated with SoCalGas and SCE's *ex ante* assumptions.

[17] The IOU-specific tables in Attachment 5 do reveal some anomalies in this regard for SoCalGas and SCE that may reflect the lack of adequate "feedback" between *ex post* results and subsequent *ex ante* program planning estimates during the pre-1998 years. As discussed in this decision, this feedback process is key, and documentation of how *ex post* study results are incorporated into subsequent program planning (and resource planning assumptions) will be part of our EM&V protocols.

verifying program costs and participation, including the number, type and quality of measure or equipment installation. In their view, *ex post* studies should not be used to reevaluate the per unit kW, kWh and therm savings levels in calculating the performance basis of any program.

In particular, PG&E contends that using *ex post* studies of per unit savings to inform future planning efforts, and not to reassess prior program year performance, will "reduce potential controversy over measurement results after evaluation has been completed, and instead focus parties' attention on robust measurement and evaluation techniques upfront."[18] Others argue that *ex post* measurement of kWh and kW savings will stifle innovation. They contend that program developers are more likely to design programs using established measures, and to avoid introducing innovative measures or entering markets where savings are less certain, when they know that per unit savings estimates will be reevaluated and adjusted after-the-fact.

We find some merit to these arguments. However, we are also persuaded by the joint comments of ORA, TURN and NRDC ("Joint Parties") that the results observed during the 1994-1997 period may have been due to the policy environment during that time. More specifically, the close alignment of *ex post* and *ex ante* numbers may have been influenced by the fact that during these years, the utilities and implementers knew they would be evaluated based on *ex post* performance, and therefore had the proper incentive to ensure quality control. As these parties point out, looking forward, it is difficult to predict whether the same alignment between *ex post* and *ex ante* values would occur if the performance basis was decoupled from *ex post* evaluation of per unit saving data. Moreover, on an ongoing basis, our adopted savings targets are likely to require administrators and implementers to employ relatively new energy-savings measures and services for which solid *ex ante* information and data is not readily available or transferable.

In our view, Joint Parties present a proposal that strikes a reasonable balance of the concerns raised during the workshops and in comments, namely, how to ensure quality control, maintain the credibility of the programs, and at the same time recognize the difficulty in tying the performance basis to true-up

[18] Comments of PG&E, July 2, 2004, p. 7.

studies that are conducted many years after program implementation. They propose the following:

1. As a general policy, ex post reevaluation of per unit kWh, kW and therm savings through load impact studies should be required to adjust the performance basis for prior program years.
2. An exception to the general policy may be appropriate for measures and/or programs for which there are well-established *ex ante* values with a high degree of confidence, and low external sources of variability that could influence the energy savings.
3. Persistence studies should still be performed to inform future planning, but should not be tied to the performance basis.

We agree with Joint Parties that a general policy of adjusting the performance basis based on the results of load impact studies is necessary to ensure quality control and to maintain the credibility of the energy efficiency programs. As they point out:

> "Even with the success of energy efficiency programs in the past, some will question whether energy efficiency is a reliable resource that provides the claimed energy savings; tying compensation to *ex post* evaluations provides hard after-the-fact evidence of the savings achieved, holds the administrators accountable for the results, and will maintain the credibility of the programs. Relying on load impact studies for the performance basis also helps to ensure accurate forecasting. If an existing *ex ante* [Database for Energy Efficiency Resources] DEER value is known to be too high, the administrators should use the value they expect to be more accurate, since they know they will be compensated based on *ex post* evaluation, until the DEER value is corrected. This is essential since the resource planners

> will be relying on these savings as a resource and the forecasts should be based on the best available information."[19]

Moreover, the need to link *ex post* savings to the performance basis also arises from the fact that actual energy savings are influenced by a variety of factors over which administrators and implementers have control, including the quality of installation, proper application of a measure, proper operation, among others. Such factors may cause near-term performance to differ from assumed values obtained from the DEER. As Joint Parties explain:

> "For example, EM&V findings in California and other states indicate that *ex ante* and *ex post* energy savings can differ significantly for some measures depending on the quality of the implementation. For instance, the proper sizing and installation of heating, ventilation and air conditioning equipment, and duct testing, sealing and insulation, can significantly affect the energy savings achieved. In all of these cases, tying compensation to the verified savings will better align the administrators' and implementers' incentives with the Commission's goals."[20]

At the same time, as Joint Parties recognize, it may not be necessary to "true up" the performance basis using *ex post* load impact studies for some measures and/or programs. In particular, our EM&V protocols should allow for exemptions from this requirement for those measures that have 1) *ex ante* per unit savings assumptions that are already estimated with a high degree of certainty and updated on a regular basis and 2) low external variability (e.g., in quality of installation, or operational characteristics. Referred to as "plug and play" (e.g., residential refrigerators and clothes washers), these measures can be expected to perform as estimated once installed, and therefore, it is not necessary to tie compensation to *ex post* load impact evaluations. Nonetheless, it will still

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[19] Comments of ORA, NRDC and TURN on the Administrative Law Judge's Ruling Issuing Compilation of E-Table Data for Pre-1998 Energy Efficiency Programs, February 18, 2005, p. 3.

[20] *Id.* Joint Parties also make specific recommendations regarding the *ex post* protocols applicable to Standard Performance Contract and New Construction programs. (pp. 3-4.) We believe that this level of detail is better left to further discussion during the protocol development process, and do not address them in today's decision.

be necessary to update the *ex ante* assumptions for these types of measures, on an appropriate schedule. We believe that the EM&V protocol development process described in Section 5 below is the appropriate forum for examining the specific types of measures or program types where *ex ante* assumptions will suffice.

Once the near-term load impacts of a measure or program has been evaluated, the durability of those impacts over time is important to enable resource planners to rely on energy efficiency as a resource. We have utilized persistence studies in the past to demonstrate the durability of those savings. As discussed above, during the 1994-1997 period the performance basis was tied to persistence studies over a 7-10 year measurement period. As Joint Parties point out, the completed studies have shown that the *ex ante* estimates of persistence were generally reliable. Based on that experience, we agree with Joint Parties' assessment: The additional incentive obtained by tying the performance basis to the persistence studies over time does not merit the lengthy and difficult administrative process necessary to create that incentive. Moreover, this approach will simplify our oversight process and shorten the timeline for administrator and implementer compensation.

Persistence studies should continue to be conducted, however, to inform updates to *ex ante* assumptions and to feed into future program planning and resource planning assumptions. We will revisit this policy and revise it at a future date, as appropriate, if there is evidence that the results of *ex post* persistence studies are significantly different from the *ex ante* estimates. In that case, we will reassess the need to tie the performance basis to persistence studies for future programs.

Clearly, all of the *ex ante* assumptions used to evaluate proposed programs during each program cycle will need to be carefully scrutinized by the IOU program administrators, their advisory groups and this Commission to ensure that they are reflective of the best available information, including completed measurement studies. One of the most important next steps in the development of our future EM&V protocols will be to develop a systematic process for collecting and reporting that information, including regular updates to the DEER database, for use during the program evaluation process**.** We discuss this important step further in Section 5 below.

Finally, with regard to concerns that requiring any true-up of kWh, therm or kW savings in calculating the performance basis will stifle innovative program designs or measures, we believe that there are other ways to encourage innovation in program design without eliminating such an important component of quality control. We have taken these concerns carefully into consideration in developing the Rules and approach to EM&V that we adopt today. For example, the threshold cost-effectiveness criteria for evaluating the IOUs' portfolios will be applied on a *portfolio* level, not on the individual program level. (See Rule IV.6.) Similarly, the performance basis for resource programs will be calculated on a portfolio-level basis. This provides the IOUs with needed flexibility to consider new designs and technologies (whose savings may be less certain) along with standard programs in assembling a portfolio that will achieve or exceed the Commission's savings goals. We have also adopted policy rules to address emerging technologies, in order to encourage innovation from promising new technologies over the longer-term. (Rules II.8 and II.9.)

In addition, our adopted administrative structure for energy efficiency encourages program innovation through the input of advisory groups and the competitive bid requirement established in D.05-01-055. These approaches to encouraging innovation are much more appropriate than entirely eliminating *ex post* true-ups of kWh, kW or therm savings, as some parties propose. On balance, we believe that our adopted rules and approach to EM&V is the best way to maintain quality control and credibility of program results, while encouraging innovation in program design and delivery.

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ATTACHMENT 2

Appendix 3 to September 2, 2005 ALJ Ruling on EM&V Protocol Issues: Joint Staff's Proposed Process for Estimating and Verifying Parameters Needed to Calculate Net Resource Benefits

Parameter	Source of *Ex ante* forecast	Method of updating/verifying parameter forecast	Frequency of verification and true up for Resource programs
Measure Installations or Services rendered	E3 Calculator in adopted program plans	Measurement and Verification Studies and independent review of utility tracking databases.	Annual
Commitments to Install measures in future	Program Reports	Staff or Consultant Review of Reports.	Annual
Unit Energy Savings/Unit Peak Demand Reductions	E3 Calculator in adopted program plans	Measurement & Verification and Impact Studies.	Annual interim report with final report at the end of program cycle.
Load Factors/Load Shape	E3 Calculator and Program Work papers	Portfolio Evaluation and Impact Studies.	Annual interim report with final report at the end of program cycle.
Program Costs	Adopted Program Plans, Program Budgets and Program Reports	Review of utility tracking data base and periodic third party audits.	Annual (needs to be completed within 6 months of program year ending).
Incremental Measure Cost	E3 Calculator in adopted program plans	Measure cost estimates must be based on (a) costs shown on collected customer invoices adjusted to calculate incremental measure costs, or if not available, (b) incremental costs collected and reported in the DEER or if not available, (c) incremental measure costs collected and used to conduct customer cost-effectiveness analysis.	Verification happens on spot check basis concurrent with review of other performance basis indicators.
Avoided Cost	E3 Calculator in adopted program plans	No true up required within 3 year cycle.	Expected to be updated at the next IEPR/LTRP, every 2 or 3 years.
Expected Useful Lives/Technical Degradation	E3 Calculator in adopted program plans and Program Work papers	Studies will be used on a prospective basis for future program planning.	Use *ex ante* values; no true-up within each cycle, EUL set every 3 years.
Net-to-Gross Ratio at the strategy and portfolio level	E3 Calculator in adopted program plans	Net to gross study that should estimate NTG for each strategy or combination of strategies in a market sector.	Annual interim report with final report at the end of program cycle.

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This table includes the following parameters that must be trued up or provided by staff on an annual basis:

- Measure Installations and or Services delivered
- Commitments to Install Measures
- Utility Program Costs
- Incremental Measure Cost for customized measures

Program administrators have the responsibility to budget for and collect all data on program costs, measure installation and commitments on an annual basis. In addition they must provide estimates of the incremental measure cost of all measures installed or services delivered if there is no corresponding measure in the DEER data base.

The following parameters will not be trued up and changed every year, but more likely updated as part of one impact evaluation that must occur once every 3 years.

- Net load impacts per measure (energy and peak demand)
- Net to gross ratios for various strategies

The Commission expects the administrators to eventually use trued up values as the verification process proceeds over the planning cycle in their final report. As a result, utilities should use the *ex ante* values to calculate the performance basis for these programs where a true up did not take place in the prior year. In this case the utility should calculate and report an annual performance basis for that program but note that the Performance Basis is not yet verified, e.g. some of the key parameters such as unit energy savings have not yet been estimated and then trued up with the *ex ante* estimate.

At the end of the three year cycle the utility will be responsible for truing up the performance basis for all of the previous three years of programs **with the exception of the following three parameters which the commission has agreed to only use in prospective "true ups":**

- Expected useful lives or technical degradation of the measure or system installed
- Avoided costs forecast on a TDV basis.
- Incremental measure cost estimates

ATTACHMENT 3

Attachment 2 to ALJ Ruling On Protocols
January 11, 2006 in R.01-08-028

Performance Basis Protocol
For Verifying Performance Basis Parameters
And Joint Staff's Reporting Schedule

This protocol identifies when Joint Staff plans to verify various parameters that are used to calculate the performance basis for each portfolio administrator for the planning cycle 2006-2008. Joint Staff plans to provide two types of reports to verify the level of energy and peak savings achieved by programs and the performance basis for each administrator's portfolio of programs:

A. Verification reports - Three annual verification reports will serve to verify the number of measure installations and portfolio and program costs from the previous program year in August of 2007, 2008, and 2009.
B. Interim and Final Performance Basis Reports - These reports will provide Joint Staff's interim and final estimates of the net performance basis achieved for two snapshots in time: the first 18 months of the program cycle in the interim report and the full 36 months of the cycle in the final performance basis report. These reports will also provide information on the annual and cumulative levels of energy and peak savings achieved for this same time period.

The interim performance basis report will be published in March of 2008. Due to timing constraints, the interim report will not have sufficient data to confirm or verify all of the *ex ante* estimates of energy savings, load shapes and savings. In some cases, this will mean that *ex ante* estimates made at the time of program authorization will be used in the calculation of the interim performance basis. However evaluation consultants will be asked to develop evaluation plans that will update key parameters identified as uncertain in the planning process within this interim document. Thus, the interim document could contain updated parameter estimates based on 18 months of data collection for some or all of the following parameters:

1. Measure Installations
2. Program Costs
3. Unit Energy Savings/Measure Installation by Strategy
4. Program Level Estimates of Gross Energy Savings (product of 1 and 3)
5. Net-to-Gross Ratios by Program Strategy and/or Measure
6. Program Level Estimates of Net Energy Savings (produce of 4 and 5)
7. Load Factors or Daily Load Shapes used to transform annual savings estimates into peak savings estimates
8. Incremental Measure Costs

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Evaluation contractors will not be asked to develop updated estimates of Avoided Costs or the Expected Useful Lives of Measures for use in the performance basis calculation. These values will be taken from the *ex ante* filings for useful life of measures and from the 2006 update of avoided cost values, per the Commission's direction.[21]

The final performance basis report will contain updated estimates for all of the seven parameters listed above for the 2006-2008 cycle. This report will be published on March 1, 2010. Consistent with the interim report, the final report will use *ex ante* values for avoided costs and expected useful lives of measures in the calculation of final performance basis for the administrator. Joint Staff will present updated estimates of performance basis, using a mix of verified and *ex ante* parameters, in each of the reports listed below.

The parameters to be verified in each of these reports are summarized in the following table. A more detailed description of how each parameter will be verified is presented after the table.

[21] Per D.05-09-043, the program administrators are required to use the *ex ante* values for expected useful lives that were posted to the Commission's Database For Energy Efficiency website in July and August, 2005. (See p. 101 of that decision.) See also Section 8.8 of D.05-09-043 for a discussion of the avoided cost/E3 calculator refinements that will be undertaken in the avoided cost rulemaking (R.04-04-025) to update the *ex ante* forecasts of avoided cost for the 2006-2008 program cycle.

ATTACHMENT 4

Evaluation Results Joint Staff Reporting Schedule

Report Date	August 2007	March 2008	August 2008/9	March 2010
Report Title	**2006 Verification Report**	**Interim Performance Basis Report**	**2007/8 Verification Report**	**Final Verification and Performance Basis Report**
Parameter	*Report Scope*			
Verification of Measure Installations and Services Rendered	Jan - Dec 2006	*NA*	Jan - Dec 2007/8	PY 2006 - PY 2008
Program Costs	Jan - Dec 2006	*NA*	Jan - Dec 2007/8	PY 2006 - PY 2008
Measure or Unit Energy Savings and Peak Demand Reductions	*NA*	Jan 2006 - July 2007 (where data are available)	*NA*	PY 2006 - PY 2008
Program/Portfolio Energy Savings and Peak Demand Reductions	*NA*	Jan 2006 - July 2007 (where data are available)	*NA*	PY 2006 - PY 2008
Load Factors/Daily Load Shapes	*NA*	Jan 2006 - July 2007 (where data are available)	*NA*	PY 2006 - PY 2008
Incremental Measure Costs	*NA*	Jan 2006 - July 2007 (where data are available)	*NA*	PY 2006 - PY 2008
Avoided Costs	*NA*	Jan 2006 - July 2007 (Verify correct values are used for performance basis calculation)	*NA*	PY 2006 - PY 2008 (Verify correct values are used for performance basis calculation)
Expected Useful Lives/Technical Degradation Factors	*NA*	Jan 2006 - July 2007 (Verify correct *ex ante* is used for performance basis calculation)	*NA*	PY 2006 - PY 2008 (Verify correct *ex ante* value is used)
Net-to-Gross Ratios	*NA*	Jan 2006 - July 2007 (where data are available)	*NA*	PY 2006 - PY 2008

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Discussion of How Each Performance Parameter will be updated

1. Measure Installations - Program Administrators are expected to report on the number of measure installations and associated program costs throughout the 3-year program cycle. Joint Staff plans to have its contractors verify this information on measure installations by performing quality control checks on the measure installation inputs to the data base and verifying actual installations in a sample of customer premises using contact information provided by utilities. We expect Joint Staff verification efforts to lag the measure installation by 1 to 12 months, depending upon the type of project.

We expect that administrators will submit their reports to Energy Division or its EM&V contractors that include cumulative measure installations from the previous program year (2006, 2007, and 2008) on February 28th of each year.[22] Joint Staff would plan to make its best effort to verify the installation counts by program and provide this interim estimate to each utility administrator on July 1st of each year and then publish the final estimate as part of its August report. Joint Staff would work with the administrators to resolve any misunderstandings or communication issues that might have led to differences in verified installations before developing an interim estimate of the performance basis for the portfolio in the August 1st report.

2. Program Costs
On an annual basis, Joint Staff plans to verify program cost estimates reported by each program administrator and will include non-confidential findings as part of its August 1st verification report.

3. Unit Energy Savings/Savings by Program Strategy - Utility program administrators have already provided estimates of the unit energy savings by measure or end-use and then used these estimates combined with forecasts of measure installations to develop program level savings estimates. Joint Staff plans to provide interim measure savings results in the first interim performance basis report in March 2008 and to provide final verification of the measure unit energy savings estimates for the entire program cycle in the final performance basis report in March 2010.

4. Program Level Estimates of Gross and Net Energy Savings
Joint Staff plans to conduct evaluations of the gross and net savings for each program in the utility portfolio. To the extent practicable, those findings will be broken out by program and/or program strategy. Interim results will be presented in the interim performance report in March 2008 and final results in March 2010.

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[22] The frequency of reports on measure installations (e.g., monthly/quarterly) and the data transfer process (what data is submitted by program administrators directly to Energy Division, what data is sent directly to the EM&V contractors, etc.) will be established by the Reporting Requirements.

5. Load Factors or Daily Load Shapes to Transform Annual Energy Savings Estimates Into Peak Savings Estimates

Joint Staff plans to estimate the peak load impacts from a variety of programs using the Gross Demand Savings Protocols. These protocols allow the evaluators to use secondary load shape data or primary interval meter data to estimate peak savings depending on the level of rigor selected by the evaluation team. Joint Staff will make interim results from these studies on an informal basis and then finalize the estimates in the performance basis reports. These peak savings estimates will be available at the same time as the estimates of program energy savings are published. In addition, measure or end-use level savings estimates may also be produced and reported in the interim or final performance basis reports.

6. Incremental Measure Costs

Joint Staff plans to verify the utility reported estimates of incremental measure cost on a spot check or sample basis to ensure consistency with the DEER estimates. In addition, Joint Staff plans to review and verify estimates of incremental cost for large industrial and commercial energy efficiency projects where *ex ante* estimates of incremental costs were not available.

7. Avoided Costs

Joint Staff will have its contractors verify that utility performance basis calculations utilize the adopted avoided cost time series (per the 2006 Update) whenever administrators are asked to provide an estimate of the performance basis of their portfolio.

8. Expected Useful Lives of Measures

Joint Staff plans to hire contractors to estimate survival functions for a selected set of measures using guidance from the expected useful live protocol. The goal is to estimate survival functions and ultimately useful lives for those measures that are forecast to be responsible for a significant proportion of the portfolio savings but were not covered by the most recent evaluation of useful lives completed in the last three years. These estimates will be used to update the *ex ante* estimates of useful life for the next program planning cycle but not to update the useful life estimates used in the 2006-2008 program estimates.

9. Net-to-Gross Ratio

Joint Staff plans to estimate net-to-gross ratios for each of the program delivery strategies as part of its load impact evaluations for each of the major program strategy groupings. In some cases, the net-to-gross ratios will also be reported for specific measures and or end-uses associated with a given delivery strategy, as appropriate. For example, the net-to-gross ratio for a downstream rebate program focused on increasing the sales of compact fluorescent lamps, might be available for a given program year, say 2006, but would need to be updated at the end of the program cycle to account for any changes in program delivery strategies in 2007 or 2008. The availability of these net-to-gross estimates is closely linked to the schedule for releasing estimates of gross and net program energy savings in the interim and final performance basis reports. These net-to-gross ratios will be combined with estimates of gross energy savings to yield net program savings estimates in the interim and final performance basis reports.

ATTACHMENT 4

Summary of Phase 1 Positions on Restrictions to True-Up Claim

If the Final Verification and Performance Basis Report Indicates:

	MPS Was Not Met For the 2006-2008 period	**Shareholders Received A Higher Proportion of Net Benefits Than The Sharing Rate**	**Shareholders Received A Lower Proportion of Net Benefits Than The Sharing Rate**
DRA/TURN	Return all earnings paid out in interim claims	Return that difference to ratepayers	Pay out that difference to shareholders
SDG&E/SoCalGas	Do not return interim payments	Do not return that difference	Pay out that difference to shareholders
NRDC	Do not return interim payments	Do not return that difference	Pay out that difference to shareholders
SCE	Do not return interim payments unless the portfolio is found to be non-cost effective (negative PEB)	Do not return that difference	Pay out that difference to shareholders
PG&E	Same as SCE above	Return that difference by booking against earnings in next program cycle	Pay out that difference to shareholders

3. What Percentage of Earnings Should Be Paid Out in Each Interim Installment (Claims #1-#3)?

DRA/PG&E	100%	100%	100%
SCE	75%	75%	75%
NRDC	50%	50%	50%
SDG&E/SoCalGas	Effectively holds back 25% so it is similar to a 75% payout		

Note: In addition to proposing that 1/2 of the earnings for each of the first three installments be paid out at that time, NRDC also increases their proposed MPS and Tier 2 earnings rate thresholds for the first three interim progress installments but applies their proposed thresholds to the final adjustment claim.

(END OF ATTACHMENT A)

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