

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Examine the Commission's Post-2008 Energy Efficiency Policies, Programs, Evaluation, Measurement, and Verification, and Related Issues	Rulemaking 09-11-014 (Filed November 20, 2009)
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**COMMENTS OF THE UTILITY REFORM NETWORK TO ASSIGNED
COMMISSIONER'S RULING**

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I. INTRODUCTION

In accordance with the Assigned Commissioner’s issued July 2, 2010, The Utility Reform Network (TURN) submits these Comments in response to follow-up questions for the Commission’s EM&V review. The Ruling sought additional discussion based on parties’ responses to the May 21 ACR pertaining to EM&V policy and methodology. TURN’s comments can be summarized as follows:

- TURN supports additional language to the “Market Assessment” objective emphasizing common Market Transformation definitions, but not language that would deviate from market characterization and baseline measurement activities;
- TURN would only support the use of Macro Consumption Metrics (MCM) to supplement, but not replace, current energy and demand savings metrics: TURN is concerned that MCM falls short of measuring absolute changes in energy demand and of accurately measuring the impact of EE policy;
- TURN recommends that a working group to explore best practices for California and facilitate be composed of the CEC’s Demand Forecast Energy Efficiency Quantification Project (DFEEQP) working group and the Energy Division’s EM&V staff and consultants;

- TURN agrees that the work to expand the Commission’s EM&V practices to determine the impact of EE initiatives should be allowed to proceed.

II. TURN’S RESPONSES TO COMMISSION’S QUESTIONS

1. EM&V Objectives

A. *Several parties suggest adding a reference to the Strategic Plan’s goal of market transformation to the Commission’s adopted EM&V objectives. In particular, DRA proposes adding the following phrase to the “Market Assessment” objective adopted in D.09-09-047: “The goal of market assessment is to identify a common set of Market Transformation definitions based on CPUC assigned market indicators, which will allow the Commission to determine when market transformation has occurred for a program.” Do parties support the addition of this phrase to the Market Assessment objective?*

TURN supports the addition of DRA’s proposed phrase to the “Market Assessment” objective ***with the following clarification:*** “While the Commission’s development of market transformation definitions or assigned market indicators plays a key role in this determination, the IOUs themselves, as EE program administrators, ultimately bear the responsibility for modifying their energy efficiency programs based on these market transformation assessments.”

B. *Do parties support SCE’s suggestion that the Market Assessment objective be expanded to specify that the purpose of Market Assessment is to assist the Commission in “[m]onitoring and guiding progress on meeting the goals of the Strategic Plan; and guiding updates to the Strategic Plan by providing new information about what market changes are most feasible and cost-effective”?*

TURN is reluctant to support SCE’s proposed language for this particular purpose, although it appreciates the overall concern for “feasibility” and “cost-effectiveness”. In the context of articulating a purpose for Market Assessment, such language may prove overly restrictive in light of recent discussions of Market Assessment. TURN calls attention to the “Decision Determining EM&V Processes for 2010 Through 2012 EE Portfolios” (D.10-04-029, Attachment 1 “2010-2012 Joint Energy Division and IOU EM&V Plan”), which clearly and precisely states what market assessment studies provide and does not mention cost-effectiveness/feasibility factors:

The Market Assessment studies that will be conducted by ED and the IOUs will include two different study types: market characterization and market baseline measurement.

Market Characterization is a quantitative and qualitative assessment of the structure and functioning of a market, the primary purpose of which is to understand key components and magnitudes of a market, and how the market operates. The study also provides information on how to effectively change the way in which the market functions.

Market Baseline Measurement is the quantification of key market indicators that have been or can be influenced by a program intervention. The primary purpose of the baseline measurement is to provide a basis for later comparisons of the status of the market after program intervention, in order to help assess the impact of the program. This study can also include quantification of size of a particular market so we can monitor the share of the market as a result of program intervention.

C. *Can the suggestions in questions 1 and 2 above be reconciled and, if so, how?*

See TURN's response to B.

2. **Macro Consumption Metrics**

A. *The NRDC supports and encourages exploration of Macro Consumption Metrics as a supplement to, but not replacement of, the current energy and demand saving metrics. Do parties agree with NRDC?*

As discussed in our June 4th Comments, TURN agrees that Macro Consumption Metrics (MCM) should supplement, but not replace, current energy and demand savings metrics. The role of current energy and demand savings metrics is dictated by the IOUs' continued reliance on short-term savings and widget-dominant EE portfolios, which neglects deep-rooted savings from BBEES and market transformation achievements.

TURN is concerned that MCM will measure relative rather than absolute changes in energy demand. In order to comply with AB32 and its GHG reduction targets, California must focus on reducing energy consumption in absolute terms (as well as by shifting towards low carbon emissions generation). An MCM that measures relative reductions (e.g. per capital electricity consumption) will only serve the current focus on relative energy savings. What is needed now is a shift to measuring absolute changes in demand.

a. *If Macro Consumption Metrics cannot replace current impact evaluation practices, do they offer other benefits?*

See TURN's response to *b.* below.

b. *The NRDC suggests Macro Consumption Metrics are necessary to “help inform progress towards the state’s objective to limit greenhouse gas emissions.” However, SCE argues that converting existing energy savings metrics to GHG emission reductions is sufficient to accomplish the same goal. Which perspective is most valid?*

The perspective that is more valid is NRDC's perspective, as echoed in TURN's June 4th Comments (“After all, energy efficiency is not an end in itself, but a means toward reducing absolute consumption and affecting GHG emissions.”) TURN does not agree with SCE's argument that converting energy savings to GHG emissions is sufficient to accomplish the same goal. E3 calculations take the energy savings ascribed to a measure and calculate GHG emission reductions from these savings. The resulting figure is not a GHG emissions reduction, but the *difference* between GHG emissions attributable to savings from a specific EE measure relative to its *less energy efficient* alternative. As an example, the current practice is to calculate the savings that result from replacing a standard incandescent bulb with a CFL bulb, with the GHG emissions reductions being derived from the savings attributed to the difference in wattage between the incandescent and the CFL. This only represents an absolute reduction in GHG emissions if the number of bulbs in the household or establishment remains constant. If the overall number of bulbs increases, or the hours of operation, GHG emissions for that household or establishment may remain constant or even increase despite the use of an EE bulb in one or more sockets.

B. *Do parties agree with PG&E's suggestion that the inherent limitation of Macro Consumption Metrics is that “factors outside of the energy efficiency arena could skew the perceived effect of the energy efficiency programs themselves?”*

TURN is also concerned that Macro Consumption Metrics put forward to date fail to adequately model the impact of energy efficiency policies because they do not directly assess the impact of EE policy. Actually, other factors *not* included in the model could equally influence demand: changes in household and house size, “home office” phenomena, technologies using more energy, and attitudes towards conservation.

a. *Is it possible to control for factors like economic activity or electrification of transportation such that the impact of energy efficiency is more evident?*

Yes, it is possible to control for such factors, as demonstrated by the California Energy Commission (CEC)'s demand forecasting methodology.

b. *Would the availability of certain data strengthen Macro Consumption Metrics? If so, what data, if any, would improve the reliability of econometric evaluations?*

Macro Consumption Metrics suggested to date do not capture behavior changes that affect the market, but which are not prompted by market prices. The fundamental assumption in MCM methods is that changes in the market are adequately captured in price variables. TURN's June 4th comments addressed this issue: "Economists can espouse great faith in their ability to identify parameters that capture the full range of experience, even more so than do other social scientists. Be that as it may, TURN submits that the Commission should harbor doubts about the validity of such an assumption and, by extension, the resulting model output."¹

C. *Would the addition of a Macro Consumption Metric comparable to that suggested by Horowitz, or other approaches, provide more certain measures of the aggregate impact of California's energy efficiency policies than is available through existing EM&V?*

TURN does not believe that the addition of a Macro Consumption Metric comparable to that suggested by Horowitz would provide "more certain measures of the aggregate impact of California's energy efficiency policies than is available through existing EM&V." The aggregate metrics under consideration are based on the assumption that the impact of EE policies can be captured by modeling the difference between actual and predicted energy demand, accounting only for known and measurable variables, and then ascribing the remaining "balance" to EE programs. While providing an upper bound on the effect of EE policies, this approach likely does not actually measure it and most likely overstates the impact of EE.

Moreover, Horowitz's methodology for determining the impact of EE policy focuses on the difference between actual versus predicted energy demand. For example,

¹ TURN's Opening Comments on ACR and Scoping Memo, June 4, 2010 in R.09-11- 014, at 8.

in “Measuring the Savings from Energy Efficiency Policies” (April 2010), Horowitz’s analysis reveals the gap between actual and predicted electricity demand in New York and Oregon to be higher than that for Illinois and Nevada. The larger difference for New York and Oregon is attributed to the influence of EE policy; nevertheless, total electricity use in all of these states increased.

D. *Would the addition of a Macro Consumption Metric comparable to that suggested by Horowitz, or other approaches, provide evaluation results more quickly than existing EM&V?*

The addition of an MCM comparable to that suggested by Horowitz would not provide reasonably accurate or reliable information. TURN recommends an analytical framework that focuses not on widgets but on key end uses, such as household and commercial lighting, for example. California’s wealth of data from its recent EM&V exercise could provide a sound basis for this kind of analysis.

There are other available approaches that can more readily indicate the aggregate impact of California’s energy efficiency policies, that is, existing data on California per capita and total electricity consumption. Attachment 1, “Electricity Consumption Trends: California and the Rest of the U.S.”, shows the per capita and absolute change in residential and total electricity consumption between 1960 and 2008 (California and the rest of the U.S.), as well as the reductions in consumption that are consistent with meeting AB32 targets. This data indicates that California’s 2004-2008 per capita electricity consumption is increasing, and at a rate greater than in the rest of the U.S. Also, California’s total consumption is also increasing, instead of trending downward responsive to AB 32.

3. EM&V Beyond California

A. Parties suggest California establish a working group of evaluation practitioners and users to explore best practices for California and facilitate increased collaboration. What form would this working group take?

a. What should be the responsibilities of such a group?

b. Who should lead the effort?

c. What would be the group’s relationship with the Commission?

d. How should the Commission use the group’s recommendations?

TURN recommends that the working group be composed of the CEC's DFEEQP working group and the Energy Division's EM&V staff and consultants.

4. Experimental Design

A. D.10-04-029 adopted a policy to measure and count savings from “comparative usage programs” using experimental design. OPower suggests that there may be an expanded role for experimental design in California’s energy efficiency evaluation framework. OPower admits that experimental design cannot be used for every energy efficiency initiative, but argues that it should be the preferred initiative when practical.

a. Could and should experimental design be practically applied to energy efficiency initiatives beyond comparative usage programs?

TURN believes Section 8 of D.10-04-029 should guide this discussion of experimental design. The decision emphasized the need to first fully understand comparative usage programs before possibly expanding experimental design:

These programs have intersections with several other categories of program activities already underway, such as AMI. As such we must take special care to ensure that savings credited to these programs do not represent double-counting. The experimental design method, as described in the California Evaluation Protocols, and spelled out in greater detail in parties’ comments, is well equipped to deal with most of the analytical issues raised by the overlap of the savings targeted by comparative energy use reports, and programs already under way through Commission directive. So long as the evaluation is set up to compare two populations which in statistical terms are in no way different except for the treatment of the program, the measured savings should be those attributable to the program, provided the experiment is properly designed.

b. Would experimental design be an appropriate methodology to measure the impact of each of the 12 statewide programs approved in D.09-09-047? Please delineate between the subsets of each statewide program as necessary, and indicate which subset would be well served by experimental design.

TURN supports OPOWER and/or other such programs conducted on a pilot basis as part of the Whole House Retrofit Program (WHRP). As set forth in D.08-09-047, the WHRP must achieve a 20 percent reduction in energy consumption in the 2010-2012 program cycle, in order to reach the targeted 40% reduction in energy purchases from all homes by 2020.

4.5. Market Transformation

A. *D.09-09-047 directed the Commission's Energy Division to develop market transformation metrics, a process which is currently underway. Most parties agree that the Commission needs to do more to measure progress in achieving market transformation. Do parties agree with DRA's suggestion that the Commission should adopt market transformation metrics already developed by the NEEA?*

TURN believes that it would be reasonable to adopt NEEA market transformation (MT) metrics. While some of the key MT metrics such as sales, saturation, and free-ridership rates are useful in the evaluation of most if not all IOU EE programs, no one single set of MT metrics applies to all programs.

a. *Are there available best practices from NEEA that should be adopted by California? Please be specific.*

In the Commission's 2008 rulemaking on a California Energy Efficiency Strategic Plan (R.08-07-011), TURN recommended that the IOUs and Commission consider the NEEA market transformation approach and offered some NEEA best practices.²

b. *What would be the primary challenges in adopting market transformation metrics from NEEA? What strategies could be applied to overcome such challenges?*

4.6. EM&V Needs and Activities of the CEC

A. *D.08-07-047 sets interim energy efficiency savings goals for 2012 through 2020 for electricity and natural gas on a Total Market Gross (TMG) basis. The TMG goals encompass forecasted energy savings from a wide range of energy efficiency activities beyond investor-owned utility (IOU) programs. Can existing EM&V practices adequately determine the impact of energy efficiency initiatives beyond the Commission's energy efficiency programs (i.e., compliance with codes and standards)? If not, should this capability be added and how?*

The work to expand the Commission's EM&V practices to determine the impact of EE initiatives should be allowed to proceed. The Energy Division should be given the opportunity to expand related activities on a going-forward basis.

² See TURN's Protest of the IOUs' California EE Strategic Plan, A.08-06-004, July 9, 2008. See also, TURN's July 31, 2008 Comments and August 7, 2008 Reply Comments on the Commission's Draft EE Strategic Plan.

a. If the Commission's EM&V should measure energy efficiency initiatives beyond its own programs, how should such activities be coordinated with the CEC?

TURN believes that the CEC in conjunction with Energy Division's M&V staff and consultants is already engaged in MCM activities.

B. *Parties note that EM&V impact evaluations, as well as other parts of the current EM&V framework need to provide support for long-term demand forecasts, such as those prepared by the CEC, and used in the Commission's long-term procurement planning. Should IOUs be directed, and funded through EM&V, to develop disaggregated demand forecasting models that more directly allow energy efficiency program impacts to be included in long-term forecast models?*

TURN supports the development of disaggregated demand forecasting models by way of the IOUs working with the CEC in consultation with Energy Division M&V staff and consultants. The 2010-2012 EM&V budget would need to be increased to accommodate this project.

a. Are there additional analytical efforts which could be undertaken to better support the integration of projected energy savings into California's demand forecasts?

Yes, these efforts should be identified through the CEC and the Energy Division's M&V staff and consultants in consultation with the IOUs.

III. CONCLUSION

TURN appreciates the opportunity to provide these comments and looks forward to continuing to work with the Commission towards making EM&V a more effective tool in reaching California's consumption and GHG reduction goals.

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Respectfully submitted,

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Electricity Consumption Trends: California and the Rest of the U.S.

Figures 1 to 4 below show the per capita and absolute change in residential and total electricity consumption between 1960 and 2008 (California and the rest of the U.S.), as well as the reductions in consumption that are consistent with meeting AB 32 targets.

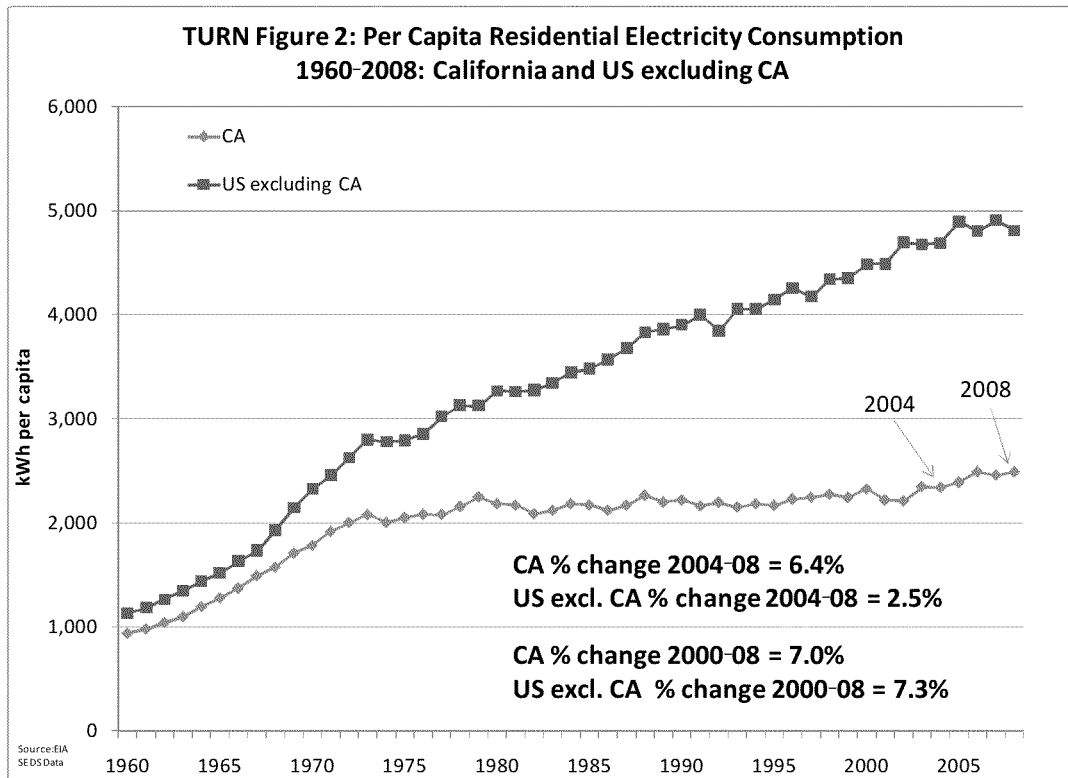
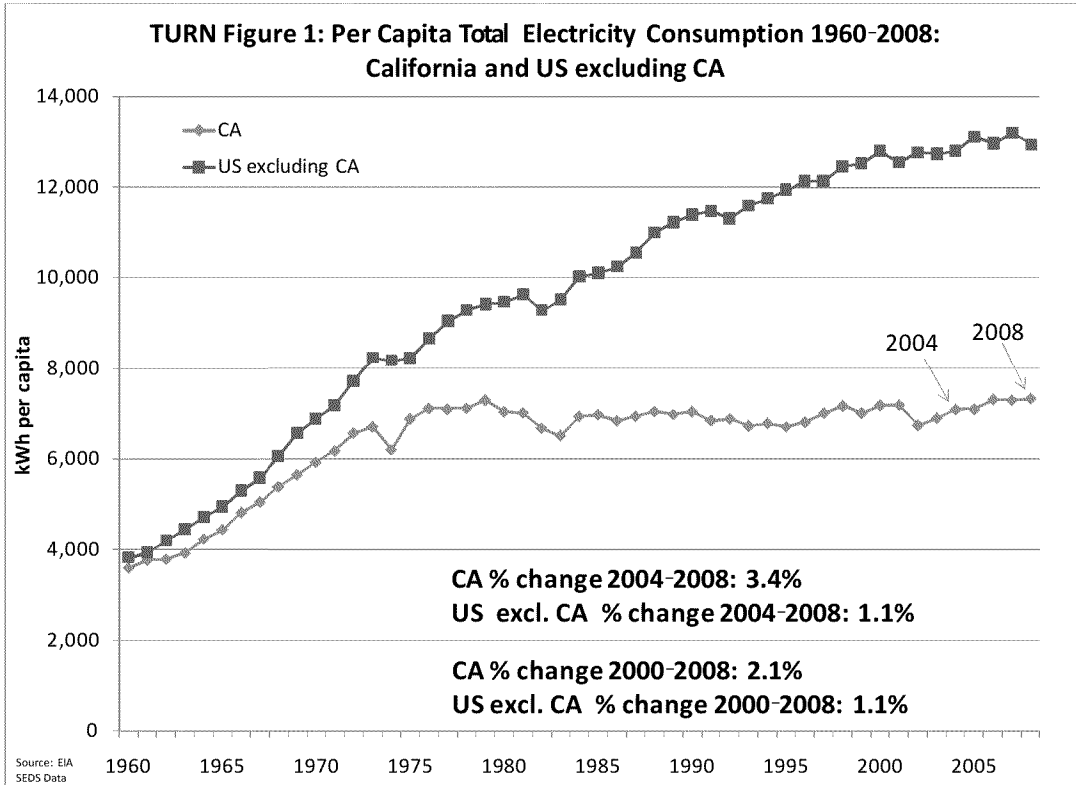
Figure 1 shows total electricity consumption per capita. California and the rest of the U.S. followed divergent paths from the 1970s to the beginning of the twentieth century, with California consumption leveling off while the rest of the U.S. continued to increase its per capita electricity use. More recently, however, the rest of the U.S. has slowed its rate of increase in consumption. A similar pattern is evident in Figure 2, which focuses on trends in the residential sector only. In both cases the rest of the U.S. has actually experienced less of an increase in per capita electricity use over the last several years than California:

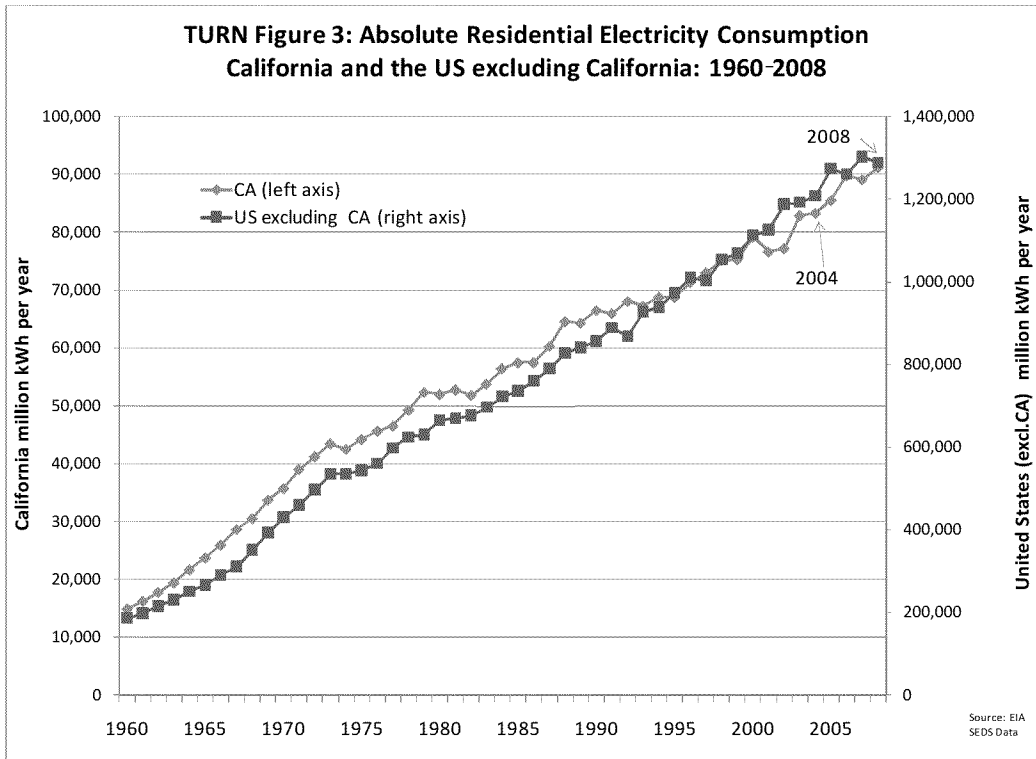
- For total electricity, per capita consumption increased by 3.4 per cent in California between 2004 and 2008, compared with 1.1 per cent in the rest of the U.S. A similar pattern is evident for the 2000-2008 period, during which California recorded an increase of 2.1 per cent compared to 1.1 per cent in the rest of the U.S.
- For the residential sector, per capita consumption grew by 6.4 per cent in California between 2004 and 2008 and 2.5 per cent in the rest of the U.S. Over the longer 2000-2008 period, both California and the rest of the U.S experienced a similar rate of increase (7 per cent).

There has been considerable debate about the causes of California's relatively flat per capita electricity consumption curve in the context of steadily increasing usage in the rest of the U.S. While it is tempting to assume that the difference is due to California's history of energy efficiency, closer inspection reveals a number of other factors that have contributed to the trends in Figures 1 and 2. The issue was addressed in a study conducted by Energy Economics Inc. and published in Public Utilities Fortnightly March 2009, "Stabilizing California's Demand: The Real Reasons Behind the State's Energy Savings". The article illustrates the difficulty of establishing a strong direct "cause and effect" between energy (utility EE programs and building

and appliance standards) and energy consumption, and points to a number of other factors that both distinguish California from the rest of the U.S. and which act to reduce the demand for electricity in the state. One of these is the price of electricity; the Energy Economics, Inc. study found a strong correlation between changes in California per capita residential electricity consumption and changes in the price of residential electricity in the state. The study also identified a number of other differences between California and the rest of the U.S. that could help explain the state's history of relatively low per capita electricity use, including climate, the rising share of multi-family housing, increasing household size, behavior suggestive of a "conservation ethic" and, beyond the residential sector, the structure of the economy and trends in energy usage within dominant industries.

Turning now to absolute consumption, rather than usage per capita, Figure 3 shows that both California and the rest of the U.S. have seen steady increases in residential electricity consumption. Although California has kept per capita consumption relatively stable over the past 40 years, population growth has meant that absolute electricity use has continued to rise. Figure 3 also shows that the EE programs of the 2004-2008 period did little to address the steady increase in residential electricity consumption within California. Figure 4 shows that if the state is to meet its AB32 GHG reduction targets, this upward trend will have to reverse direction: California will have to reduce electricity usage in absolute terms and bend down the consumption curve.





TURN Figure 4

