Back to the Future

Remarks of Commissioner Susan Kennedy
ACEEE
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First of all, let me say that once again that it is an honor to be invited to speak to such a distinguished group of experts. Compared to each of you in this room, I've been at the issue of energy efficiency for all of about two minutes. The honor is truly mine.

It seems both an auspicious moment and an ominous time to be here. On the one hand, as Ralph mentioned, we're celebrating California's launch last week of the largest, most ambitious energy efficiency program in the history of the utility industry.

On the other hand, we're watching the effects of another catastrophic hurricane wipe out homes and businesses along the Gulf Coast, including threatening critical infrastructure that serves the energy needs of the whole nation. As soon as the path of Hurricane Rita was announced, natural gas prices rose to almost $13 on the East Coast.

In that sense what we're doing today – to reduce our energy usage, and reduce our dependence on fossil fuels and the harmful emissions that are linked to global climate change – takes on a new and ominous level of saliency and urgency.

The work that all of you have done over the years, over the decades, in government, in laboratories, in the private sector, in the regulatory arena – is what brought us here today.

I am here as a product of history. Call it being in the right place at the right time, a sort of "Forrest Gump" if you will. And although I do understand the significance of the leadership role I played in pushing forward a far-reaching framework and bringing the pieces together, I also fully recognize and appreciate on whose shoulders I stand.

I was fresh from the front lines of California's energy crisis. I came to the PUC with a new understanding of and appreciation for how critical

Demand Side Management and long term energy efficiency is to California's energy security.

And I knew I had a great deal to learn. I was extremely fortunate to know some of the best minds in the world in energy efficiency. Art Rosenfeld, Ralph, Mike Messenger, Meg Gottstein, John White, Kip Lipper – we sat down two and a half years ago and began a discussion by saying, "Let's not talk about what's *next* with energy efficiency. Let's talk about what's *possible*."

Then, of course, Art Rosenfeld's eyes started to twinkle and he pulled out a dog-eared report on the vast potential for energy efficiency and began to speak of vampires, and refrigerator standards and cool pigments.

One of the most important things we did in those early discussions was eliminating the constraint of available funding from our thinking at the outset. We began by identifying what was out there in terms of energy efficiency potential, in both the short term and long term. We said let's figure out where we need to go first, and then we can figure out what we need to do to get there.

The second most important thing we did was put all the lessons learned from the last two decades on the table. For my colleagues, that's information they carry around in their heads. For me, I had to go back and learn it. What is it that made California so successful on energy efficiency in the past?

This chart, which I used to tell this story to Chinese government officials a few weeks ago, is quite illustrative, not only as a chronology of our history, but also as a map of key policy decisions that brought us to where we are today. Without an understanding of these key policy decisions – and how they fit together – we could not have set such aggressive goals in this next phase of our journey.

Indulge me, if you will, in a brief look-back at the history you all lived.

1980's

California rose to national leadership on energy efficiency after the oil embargo of the 1970s. We took the first and most important step in promoting energy efficiency by recognizing that it is counterproductive to work *against* the market forces that drive our electric utilities. As long as the company's profits were based on *more* sales of electricity, no regulatory effort was powerful enough to counteract those forces.

After we de-coupled profits from sales and encouraged energy efficiency as a resource, investment in energy efficiency soared.

But the increase was temporary.

1990s

In January of 1990 a collaborative working group made up of a wide range of stakeholders – the four major IOUs, state agencies, environmentalists, representatives of all ratepayer classes, and independent energy producers produced a report for the Commission entitled: An Energy Efficiency Blueprint for California."

Cost-effective energy efficiency was integrated into the Biennial Resource Planning Update using the Energy Commission's demand forecast. This was the forum where we integrated energy efficiency and demand-side resources with supply by first reducing demand projections by the estimate of cost-effective energy efficiency—and identifying the resource "gaps" that would require solicitations for QFs. Back then, though, there was no clear direction that EE should be first in the loading order.

To encourage sustained investment in energy efficiency the blueprint proposed an experiment with shareholder incentives in the form of earnings mechanisms.

The mechanisms were experimental, and were authorized for 1991 and 1992. And they varied by utility. Per unit savings were based on *ex ante* estimates, without any *ex post* adjustments, due to the fact that methods and protocols for measuring per unit savings from DSM were still in the early stages of development.

For each program year, utilities were authorized all of their earnings one year after program implementation based on verified program costs and participation.

In late 1991, the Commission adopted a framework for the incentive mechanisms based on what it learned in the experimental phase.

There was a consensus that shareholder earnings should take the form of a shared-savings mechanism as opposed to a rate of return approach.

The utilities were required to meet a minimum level of performance, after which they could increase earnings only if there was an increase in net benefits to ratepayers.

Utilities were responsible for ensuring that DSM activities were cost-effective. To achieve that, utilities were required to compensate ratepayers for 100% of any losses (negative net benefits) up to the total amount of DSM program costs recovered in rates.

There was an immediate resurgence of investment in energy efficiency with incentives in place.

1995

Meanwhile, by 1995 ex post measurement had reached a stage where specific protocols could be adopted and integrated into the earnings and penalty calculations. So in 1995 the Commission adopted M&E protocols requiring all energy savings to be verified after-the-fact based on:

- Load impact studies conducted the year after program installation.
- A one-time technical performance study in the 3rd or 4th year.
- Two retention studies in either the 3rd and 6th or 4th and 9th year to verify the useful lives of energy efficiency measures after installation.

Earnings would be paid out over a 7-10 year period, in four installments, each linked to the results of the ex-post studies and subject to a 75% minimum performance standard.

The Commission adopted a 70-30 split with 30% of monetized value of the shared savings going to shareholders. The estimates of potential earnings ranged from about $89 million statewide – or 30% of an estimated $295 million in net benefits produced if the utilities hit their performance targets, to a loss of $215 million in program costs if no savings were achieved.

1996 - Restructuring

In September of 1996 AB 1890 was signed into law. California again led the nation in introducing competition to our electricity markets.

The statute authorized a surcharge to support public purpose programs, including energy efficiency, but only for a limited period of time. After a few years, it was presumed that a competitive electricity market would provide the financial incentives to invest in energy efficiency and the regulatory mechanisms for shared-savings would no longer be necessary. Existing shareholder incentives were applied through January 1998.

As you can see, energy efficiency investment dropped to the level authorized by the public goods charge.

Additionally, in anticipation of a transition to a competitive market, the Commission also tinkered with the framework:

- The percent of shared savings for shareholders was reduced to 7% and subject to a cap on earnings.
- Earnings were based on ex ante savings estimates developed from previous year ex post studies.
- The saving measurement period was reduced.

2000 – The Crisis

In 2000-2001 the crisis that ate California arrived. California spent a $1 billion in general tax dollars on emergency DSM programs in addition to PGC funding.

In 2001 shareholder incentives for energy efficiency were discontinued altogether.

And in 2002, after the crisis, the Commission began dismantling everything we knew about energy efficiency, in favor of moving toward independent administration and non-utility implementation.

Energy efficiency was treated as a social program by the Commission with success measured in dollars that went out the door. Distribution of energy efficiency funding was required to be balanced by geographic area and service territory, with specified targets for low-income and hard to reach communities, non-English speakers and non-utility implementers. We measured effectiveness by how many programs we funded – not by how much energy we saved.

By one estimate we funded 500 websites in 2001 and 2002.

In 2003, I joined the Commission and the Energy Efficiency docket was reassigned to me. It was more of a hostile takeover than a simple acquisition.

I brought with me two major lessons from the electricity crisis:

First - that DSM is a tangible resource that saved California from massive economic harm. We had already sustained tens of billions of dollars in economic damage from blackouts and forcing companies to shut down operations through constant use of interruptible programs.

But through DSM we were able to reduce our electricity demand by nearly 5000 megawatts off peak -- the equivalent of 10 large power plants – and call on those savings just as effectively as turning on peaking facilities.

Second, that there is massive, untapped potential for energy efficiency in California.

As I've said many times, when the crisis began, few people believed, myself and the Governor included, that we could reduce electricity consumption below existing per capita levels. California was already the second most energy-efficient state in the nation on a per capita basis. We were amazed at what consumers were able to do with the right tools and the right incentives.

And so, in 2003 we began to rebuild.

It is clear from the last two decades of experience that there are four legs to a successful energy efficiency program – and all four are key to balance and success:

1. Decoupling sales from profits
2. Integration of energy efficiency into resource planning
3. Robust evaluation, measurement and verification
4. Financial incentives to encourage investment

We decoupled two decades ago – although clearing out the underbrush of disincentives and conflicts is a constant process and we must be vigilant.

With last week's decision on energy efficiency portfolios, California now has in place the framework for fully re-integrating energy efficiency within the resource planning process. It's important to understand two key components of this reintegration:

- California has adopted, through the Energy Action Plan, a statewide policy that places Energy Efficiency as the first resource in the loading order. That means the first dollar our utilities spend to meet California's growing energy needs must be for all cost-effective energy efficiency. The Governor and all relevant state agencies have adopted this loading order, and the importance of this being established statewide policy cannot be overestimated.

- With the administrative structure we adopted in January, responsibility for managing all energy efficiency programs has been returned to the utilities. If we're going to hold them accountable for energy savings, we must give them the power and the flexibility to manage energy efficiency as a resource.

The third leg of the table is Measurement and Evaluation.

With the framework now in place, this is where our attention will turn. A lot of work has already been done.

The Commission has always recognized that EM&V is critical to the integration of energy efficiency into resource planning and procurement. Back in the early 1980s, we initiated and developed the most comprehensive EM&V protocols anywhere in the world to demonstrate how the installation of energy efficiency measures could provide cost-effective “negawatts and negawatt hours” on the utility system that persisted over many years. Those EM&V protocols also enabled California to demonstrate that shareholder incentives would create a “win-win” situation for utilities and their ratepayers by verifying that the resource savings far outweighed the costs of the programs (including EM&V) to produce net savings that both could share in. We have a solid foundation in both EM&V and shareholder incentives to build on, as we move forward into an era of energy efficiency that goes far beyond initiatives undertaken in the past.

We’re building on the current EM&V protocols and “state of the art” to be able to blend what we learn on the program level (i.e., from participant’s billing data) with the changes we can observe and measure on the market level (e.g., how have the programs affected the market deployment of efficient appliances). Our EM&V efforts will also focus on refining methods to evaluate the impacts of energy efficiency at the level of detail required by system planners. They need to know more than what energy efficiency will save on average during the summer peak hours—they need to know hour-by-hour impacts, so they can also plan for system reliability requirements.

The portfolio development process identified related issues that we need to work on, including how to define and measure the value of energy efficiency savings during critical peak hours on the utility system consistently across all resource proceedings. We are also refining our avoided cost methodology for valuing the contribution of any resource--energy efficiency, demand-response or distributed generation--that reduces peak load requirements during the hours of highest loads on the system.

This is cutting edge work. No where else is EM&V for energy efficiency occurring at the technical level or magnitude as here in California, with the development of our EM&V plans and protocols for the 2006-2008 program cycle. We are in the process of finalizing those plans and protocols: Joint Staff (Energy Division and CEC) have spearheaded the effort to refine the current EM&V protocols with input from EM&V technical experts, program implementers and the public this year and their recommendations will be issued for comment shortly in our energy efficiency proceeding. You can expect to see the Commission's funding decision on overall budgets and plans for EM&V this winter. But the process will not end there—we will continue to improve data collection and evaluation methods as the programs roll out in 2006 and beyond.

The fourth and final leg of the table is restoring financial incentives to the utilities.

We know from experience that without financial incentives, energy efficiency will, at best, be something the utilities simply have to do, and, at worst, will be treated as a social program and not a resource and my conflict with the interests of shareholders.

So while we are focusing on developing EM&V protocols as the next, most urgent issue, we are also aware of the importance of getting the financial incentives in place and getting them right.

I believe there is a consensus on the Commission as to the need for financial incentives, although I'm quite sure there will be some discussion as to the structure and level of earnings.

A few key lessons we learned from past experience are that:

- Earnings must be available within a reasonable time frame – close to the time of the expenditure – or they lose their effectiveness as an incentive. We have to develop an incentive payment structure that recognizes how far we've come in EM&V over the years.

- We have to keep improving our ability to measure and verify savings so that EE continues to be a resource in the eyes of resource and system planners.

- We have to keep the savings goals moving forward in tandem with the incentive mechanism. Before, we didn't have statewide savings goals (or greenhouse gas reduction goals) to link to the incentives, so we were attempting to maximize net resource benefits to ratepayers—but without specific energy or peak demand savings targets. The future incentive mechanism must now be geared towards those overall goals, and must continue to be aggressive, if we are to meet the objectives of the Energy Action Plan.

- We must also balance cost-effectiveness with the need for innovation.

  - In the past, the Commission funded programs based on ex-post review, and we required that each program going forward be shown to be cost effective. That process forced the utilities to eliminate programs that they knew were risky right at the outset.

  - The shareholder incentive/penalty mechanism has to look at the portfolio as a *whole* for overall positive net benefits and cost-effectiveness in order to encourage innovation. That is, if the utilities support an innovative program, and it doesn't pan out, they are not penalized for that particular program. Basing the incentive mechanism on the overall portfolio allows the utilities to experiment while ensuring overall net benefits to consumers.

  - Plus, in the past, because we didn't establish long-term goals, the utilities weren't able to think very far into the future — they had very little incentive or safe harbor to look at emerging technologies.

With the combination of aggressive, long-term goals, 3-year funding cycles, financial incentives that encourage innovation and flexibility in program funding and administration, we hope to create an environment that encourages utilities to be thinking about the energy efficiency resource tools they will need to meet the goals in the next decade.

So I'm really proud that California is once again blazing a trail on energy efficiency.

We will invest $2 billion in energy efficiency over the next three years – the largest authorization of energy efficiency funding in the history of the utility industry.

This year, California authorized approximately $500 million in energy efficiency funding and evaluation. And the portfolio plan we've just authorized will increase funding to $800 million by 2008.

But, the real measure of what this means is not how much money we will spend, but how much energy we will save. And the numbers are impressive.

Over the three-year funding cycle approved in this decision, these programs will replace 1,500 megawatts of energy usage – the equivalent of building three large power plants.

The estimated gross savings to California consumers over the life of the energy saving measures that will be installed over the next three years through these programs is $5.4 billion. Total costs to install these measures will be approximately $2.7 billion. So the net savings to consumers by investing in energy efficiency as a resource is $2.7 billion.

Just to be clear: This does not mean we won't have to build. Our aging, less efficient and not-so-clean power plants will need to be replaced. Our population and our economy and therefore our energy needs will continue to grow. And what this plan does is help us meet those growing needs, first and foremost, with the cleanest most cost-effective energy of all – greater efficiency.

Finally, let me put this in a larger context:

The CPUC's energy efficiency decision is only one part of a package – California is also investing in the most aggressive renewable energy program in the US, and we're in the process of developing demand response mechanisms, such as dynamic pricing, that will give consumers the tools to help themselves and take charge of their own energy future.

This is all part of a much larger and more important effort to reduce global climate change. Governor Schwarzenegger bucked his own party and gave the U.S. a seat at the world table on the issue of climate change by signing an executive order launching the Green Building Initiative in California. The Governor's order directs efforts to make commercial and government buildings in California more energy efficient by 20%.

The CPUC through the leadership of President Mike Peevey along with our sister agency the Energy Commission, has strongly supported efforts to combat global warming, and the energy efficiency plans we approved last week provides the cornerstone of those efforts.

By integrating the Green Building Initiative into utility portfolio plans, funding for the Green Building Initiative will increase to $230 million per year – a 36% increase in annual funding.

The combined results of all these programs is that California will be the most aggressive nation-state in the world in reducing energy usage and reducing the harmful emissions linked to global climate change.