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CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

FRIDAY, JUNE 26, 2009

9:00 A.M.

Reported by:
Peter Petty CER**D-493

COMMISSIONERS (and their advisors) PRESENT

Jeffrey D. Byron, Presiding Member, IEPR Committee

James D. Boyd, Vice Chair and Associate Member,
IEPR Committee

Susan Brown, His Advisor

STAFF PRESENT

Suzanne Korosec, IEPR Lead

Chris Kavalec

Tom Gorin

ALSO PRESENT

At Dais

Steve St. Marie, Advisor to
Commissioner John Bohn, CPUC

Commenting Utilities

Tim Vonder, San Diego Gas and Electric

Art Canning, Southern California Edison

Richard Asling, Pacific Gas and Electric

Nate Toyama, Sacramento Municipal Utilities District

Michael Cockayne, Los Angeles Department of Water and Power

Other Presenters

Simon Baker

Public Comment

Noah Long, NRDC

Barbara George, Women's Energy Matters

Katie Kaplan, Integrated Energy Solutions

I N D E X

P R O C E E D I N G S

JUNE 26, 2009 9:04 a.m.

MS. KOROSEC: Just a few housekeeping items before we get started. Restrooms are out the double doors in the atrium, to your left. There is a snack room on the second floor of the atrium at the top of the stairs, under the white awning. And if there is an emergency and we need to evacuate, please follow the staff out of the building to the park diagonal to the building and wait there until we are told it is safe to return. Today's workshop is being broadcast through our WebEx conference system and parties need to be aware that we are recording the workshop today. We will make the recording available on our website immediately after the workshop and then we will also make a transcript available, which is about two weeks from today. For speakers and commenters today, please make sure you speak very closely into the microphone so the people on the WebEx can hear. It sounds very loud in the room, but to them it sounds like little teeny voices, so it is very helpful if you can get as close as you can to the mike. We have a number of presentations today, followed by an opportunity for public comment this afternoon. At that point, we will take comments first from those in the room and then we will open up the WebEx line to give the parties listening in an opportunity to speak. If parties on the

WebEx have questions during the presentations, please send those to the WebEx Coordinator and we will make sure that the presenter sees your question and is able to answer it. For parties in the room, when you do speak, please give the Court Reporter a business card if you can remember to do that, so that we can make sure that your name and affiliation are spelled correctly in the transcript.

This workshop is being held as part of the 2009 Integrated Energy Policy Report, or IEPR Proceeding. The Energy Commission is required by statute to prepare this report every two years, it talks about trends in the energy markets, it makes policy recommendations to help the state meet our energy goals, one of which is having adequate supplies of energy to meet expected demand. So the purpose of today's workshop is to provide the public an opportunity to weigh in on the Energy Commission's staff's demand forecast for 2010 to 2020, and also to compare staff forecast with those that have been submitted by the Utilities in February of this year. The staff will also be talking about the amount of energy conservation savings that were incorporated into our forecast and the method that is used to come up with those numbers.

I just want to acknowledge Mr. St. Marie has joined us from the PUC, and welcome, we are happy to have you here.

I also want to remind parties that written comments are due on July 6th. So with that, I will turn it over to Commissioners for opening comments.

COMMISSIONER BYRON: Thank you, Ms. Korosec. Good morning everyone. I am Jeff Byron and I chair the Integrated -- I should say the Commission's Integrated Energy Policy Report Committee. With me is my associate member, Commissioner Vice Chair Boyd. To his left is his advisor, Susan Brown. And to my right, joining us from the Public Utilities Commission, is the advisor to Commissioner Bohn, Dr. Steve St. Marie.

This is a committee workshop of the Integrated Energy Policy Report. It is a little bit different, perhaps, than some of the policy workshops that we get involved with, in fact, Dr. St. Marie and I were discussing this a little bit beforehand. It is an important workshop because we are vetting one of the important things that this Energy Commission does, and that is the forecast for demand for the State of California, and I appreciate PUC being represented here today because the input is extremely important to them. I should say the outcome of what we do here today is extremely important to them. We are also interested in hearing from the investor-owned utilities and the publicly-owned utilities today with regard to the forecast and that is the purpose of the meeting. Of

course, other commenters are welcome, as well. Before turning it over to the other members on the dais here for comments, I would like to also acknowledge that, in the audience, is my Executive Assistant's daughter, Mariana, who is here observing the public process of her State Government. Of course what is going on at the State Capitol is far more important today, but nevertheless, the heartbeat of what we do goes on, as well. And thank you all for being here on a Friday. Commissioner Boyd?

COMMISSIONER BOYD: Thank you, Commissioner. I would remind Tiffany, do not try to explain what IOUs are to your daughter. She does not need to understand that process just yet. Welcome, everybody. Thank you for being here. Commissioner Byron did indicate the importance of this document to hopefully, those of you out there and in the work a day world who have to deal with the subject of energy resources and the demand and supply thereof, this is part of our effort to deal with the 10-year forecast of natural gas, electricity peak demand, as part of not only the Integrated Energy Policy Report, or just part of the policy formulation that goes on by the energy agencies. In my years here, I have experienced the fact that the staff has gotten better and better at doing this, nobody world-wide is really good at doing this, but I think our staff is among the best at doing this. And the output, as

indicated, is fairly important to other calculations that go on within the state. So the hardy few who are here with us today obviously recognize the importance of this work to the overall process, and I thank you for being here and I hope to hear from a lot of folks. Again, this is a workshop, this is not a formal hearing. We really encourage dialogue, questions, back and forth, as Ms. Korosec indicated, though, we do like people out there listening in to hear it, so we need you to come to the microphone. We do like the record complete for the staff's purpose. So count to 10, run to the podium, grab a mike and give us your comments and your questions freely throughout the day. So, with that, Mr. Chairman.

COMMISSIONER BYRON: Yeah, Commissioner Boyd, there is actually lots of comment opportunity the way they have scheduled the agenda here, and so they are looking for comments and response after each presentation. Dr. St. Marie, would you like to --

DR. ST. MARIE: Yes, thank you, Commissioner. I am Steven St. Marie and I work for Commissioner John Bohn at the California Public Utilities Commission. Commissioner Bohn and I have discussed the matter of the forecasts of future demand and energy use in California as being among the more important things that we have to look at because that becomes input for the next process, which is, what do

the utilities that are subject to the regulation of the California Public Utilities Commission have to buy, or what do they have to be prepared to provide to their customers, etc., etc., down the line. And long gone are the days when one could assemble the relevant data on a sheet of logarithmic graph paper and place a ruler next to it, and thereby pick the next years and the future forecasts. This is much more difficult work than it was many years ago, and so we are glad that the CEC staff and outside professionals who work on this kind of question are working hard and are here today. Thank you.

COMMISSIONER BYRON: Very good. Thank you. So let's go ahead and begin. Dr. Chris Kavalec is first up. Doctor, I think there are some grim views in your presentation, but also some glimmers of hope in there, as well. So I look forward to it.

DR. KAVALEC: Good morning, Committee, and Dr. St. Marie, and ladies and gentlemen. I am Chris Kavalec from the Demand Analysis Office. I am going to give two consecutive presentations here this morning. The first is going to be on the statewide forecast results for electricity and natural gas, and the second will be on efficiency and conservation incorporated within the demand forecast.

So the California Energy Demand Forecasts, or, as I

will refer to it, the CED Forecasts, today we are talking about the draft forecasts, of course, and we are now working on revised forecasts and the revised forecasts will consider comments made today and in writing afterwards. The revised forecasts are going to be released at the beginning of August with a workshop later in the month, after which we will do an uncommitted forecast in support of the CPUC long-term procurement work. I should explain the concept of uncommitted. We sometimes refer to our forecasts as committed forecasts, meaning they incorporate only the impacts of committed utility efficiency programs, those that have either been implemented, or for which there is firm funding and a definite plan. There are also potential efficiency impacts out there in the future that may be likely, but there is no funding or plan yet. Those, we refer to as "uncommitted."

Our forecast report is available online at this address and, as I mentioned, I am going to talk about statewide results and conservation and efficiency, and then Tom Goren is going to present forecast results for individual planning areas. And after each of his presentations, the Utilities will either make a short presentation or make comments. I believe that we have three slide presentations from the Utilities today.

So, a summary of what I am going to talk about.

Reduced electricity consumption vs. our last forecast, the theme of the day is the economy, but also contributing to this decline is increased efficiency impacts, as well as a lower starting point. In other words, our most recent historical data from 2007 shows lower consumption than we predicted in the previous forecast. You started -- you have a lower starting point and you end up at a lower place, all else equal. And the drop in peak electricity demand is not as dramatic as that of consumption.

A couple of slides about our methodology. We forecast at the statewide level and for eight planning areas listed here. Tom is going to provide results for LADWP, PG&E, Edison, San Diego, and SMUD. The way we forecast for these areas is with individual sector models. The residential and commercial models are full end-use models, meaning the analysis is done at the end-use level, and "end-use" being, for example, lighting or refrigeration, using inputs like saturation levels of appliances. The industrial model is sort of a hybrid econometric end-use model. The agricultural model is econometric and we forecast transportation communications in utilities and street-lighting with a simple trend analysis.

Here is the structure of our forecast. Model sector results feed into what we call our Summary Model,

where annual results are calibrated to historical data, cooling and heating are weather-adjusted, and we subtract off some utility program impacts from our model output. These annual totals are fed into our peak model, where load shapes are applied, and peak forecasts are developed at the sector level, and Oilá, you have a forecast that no one ever disagrees with.

We are using this basic structure, but we have made some changes in our demand forecasts from the last time. Because of all the attention paid to utility lighting programs, we have broken residential lighting out as a separate end use. It was already broken out in the commercial model, now in the residential model. We developed new commercial floor space methodology to predict commercial floor space. For you econometricians out there, the Appendix in our report describes the commercial floor space econometrics. We also assumed a higher compliance rate with 2005 commercial lighting standards. Basically, we raised the compliance rate to be consistent with our other standards, and the idea was that all this attention being paid to lighting and all these utility lighting programs, it should be easier to be compliant with the commercial lighting standards, therefore we raised the rate. And we increased our effort to capture the impacts of utility efficiency programs.

So all these changes affect the forecast, but the main driver of the difference in our forecasts this time vs. CED 2007, is reduced economic growth. Both personal income and total employment are down by almost six percent by 2018, relative to our previous forecast. I use 2018 here because that was the last year of the previous forecast, the last year for comparison. And these key indicators show a short-term drop-off, as we have all seen because of the current recession, but they also show slower long-term growth. Economy.com that does our economic forecast is saying, basically, that the current recession is creating conditions that lead to lower growth in the long-term, as well. We also --

COMMISSIONER BYRON: Excuse me, Dr. Kavalec, I think it is worth asking the question -- and I apologize for the interruption -- on your previous slide, what do you base all your economic forecasts upon?

DR. KAVALEC: What do we base it on?

COMMISSIONER BYRON: Yes.

DR. KAVALEC: You mean what data do we use? Or what does Economy.com use? Or --

COMMISSIONER BYRON: I think you are beginning to answer it. I would like to know where you get the data that you use to make your forecasts.

DR. KAVALEC: Oh, I am sorry. This comes from

Economy.com.

COMMISSIONER BYRON: Do you compare it to any other forecasts or information?

DR. KAVALEC: We did not for this draft forecast, but we are comparing Economy.com's projections with UCLA's and Global Insights for the revised forecasts.

COMMISSIONER BYRON: Are they specific for the State of California? I think the UCLA one is California-specific, are the others?

DR. KAVALEC: Yeah, all three do state forecasts for California.

COMMISSIONER BYRON: Okay, thank you.

DR. KAVALEC: Okay, so this time we did, rather than use one set of price projections for electricity and natural gas, we developed three rate scenarios which we call the low rate case, the mid-rate case, and the high rate case. The mid-rate case being 15 percent higher in 2020 vs. 2010, and natural gas 10 percent higher. And in the high-rate case, 30 percent higher for both fuels. Different rates affect three sectors; the other sectors do not have any price response incorporated in the models, and when I compare our results with results from the previous forecast, I am going to use the low rate case because, in the previous forecast, we assumed constant rates, the same as the low rate case for this forecast.

So a look at some results. Short-term drop, the recession going on, lower long-term growth, you will note the distance between the two lines gets wider as we move out, electricity consumption per capita, not surprisingly, is decreasing, as Californians were proud of our constant or declining per capita consumption, and we can now be even prouder, thanks to the tanking of the economy. The state peak --

COMMISSIONER BOYD: That had a hollow ring to it.

DR. KAVALEC: Whistling in the graveyard? The statewide electricity peaks, same pattern, short drop-off, less long-term growth, but the effects are not as dramatic as with consumption. This difference between peak, what happens to peak and what happens to consumption, comes from two things, first, we have noted with the latest historical data that the consumption drop-off appears to be higher than the peak drop-off, and also we assume continued increase in cooling in California, both from net migration to inland areas, and folks on the coast buying more air conditioners, so peak grows at a higher rate. Per capita, slightly declining, not as dramatic as for consumption. And some numbers to go with these drafts, consumption down by nine percent, peak by five percent, growth rates between 2010 and 2018, and consumption falls to below one percent per year, with a peak being just over one percent. And the

economy, as I have implied, is responsible for most of the difference. How much of the difference, you ask? Well, in 2010, we estimate that the economy is responsible for roughly half of the difference between the two forecasts in terms of consumption; with increased utility programs, the impacts that we have estimated for this forecast being responsible for around 25 percent. In the year 2018, as I said, we consider only committed utility programs, which begin to decay after 2011, so that the slice for utility programs becomes very tiny, it is around one percent of the difference between the two forecasts, as program measure effects decay away, the economy going up to around 70 percent, and we have the appearance of residential lighting savings as a source of the difference, which I will get to in my second presentation.

And going back to the economy for a moment, I just wanted to show how these key economic indicators mirror what is going on with consumption. Personal income, short-term drop-off, slightly lower long-term growth, the distance between the two lines gets wider; same thing for statewide employment, short-term drop, you see the recovery there predicted in 2011, 2012, but then, after that, long-term growth is less than what was used in the 2007 forecast.

Here is an example of a graph with too much

information on it, but what I wanted to show was that most of the decline between the two forecasts comes from the residential and commercial sectors. So the top two lines there, the distance between those two lines, shows the difference in the commercial energy projections for this forecast vs. last time, and the two lines below that show the difference between the residential forecasts. The lines below that, the other sectors, you can see that there is very little difference at the statewide level, although that is not necessarily true at a planning area level, which Tom will talk about. Same story for peak, most of the responsibility for the drop-off comes from commercial and residential.

And some numbers. Residential consumption down by 13 percent, with peak 4 percent, and corresponding commercial numbers are 11 percent and 8 percent. The reason for the larger disparity between consumption and peak and residential vs. commercial is because the peakiness, the increased peakiness, is taking place in the residential sector, going back to the pattern I mentioned of net migration into inland areas and more air conditioning in homes.

As I mentioned, we did three price scenarios. And for consumption, this yielded a difference of around 5,000 gigawatt hours by 2020 between the high price case and the

low price case. Remember, the high price case is roughly 30 percent higher by 2020. And for peak, the difference between the high and the low is around 2,500 megawatts by 2020. In other words, consumption is down by around two percent in the high rate case, and about half that in the mid-rate case, with the peak reductions, or the peak changes, a little bit smaller. This corresponds to a price elasticity of around 6-7 percent. Price elasticity refers to the response in terms of demand for a given change in price. So this is saying that, if rates doubled, total consumption would fall by 6-7 percent.

Most of the response is coming in the commercial sector, and elasticity of 15 percent, with a much lower elasticity in the other two price response sectors of 1-2 percent. The one problem with these elasticities is they are dated. We have not updated our elasticities, our price responsiveness, for a long time, and we are planning to do that for the 2011 forecast, but for now, these are the elasticities that we have.

In term so of the price cases, we propose to use only one case in the revised forecast, the mid-rate case, because 1) we want to spend our time looking at the impact of different economic variables on the forecast, and we do not have time to do all three cases again. And the mid-rate case is convenient because you can talk about X

percent above, and X percent below, because we know what the responsiveness is in this forecast, we really do not need to do it again, and also I am choosing the mid-rate case, proposing the mid-rate case, because most experts expect there to be at least some rate increase for electricity because of renewables and other things. So this is what I am proposing and I would like to hear reaction at some point from the utilities and the committee, if you have comments, negative or positive.

MS. BROWN: I have a couple of questions, if I might, Chris.

DR. KAVALEC: Uh huh.

MS. BROWN: What growth rate in population did you assume in the forecast?

DR. KAVALEC: Uhm --

MS. BROWN: I am just curious. I mean, is --

DR. KAVALEC: Tom, is it around 1.1 percent? Does that sound right? Just over 1 percent, I believe.

MS. BROWN: Just over 1 percent. And is out migration from the state an issue at all? I mean, are folks leaving the state based on what we know about the population growth? You mentioned a lot about shifts in population in the hot or inland areas, but --

DR. KAVALEC: That certainly is an issue in a severe recession, especially if California is hit worse

than other areas. But the DOF, Department of Finance that does our population forecast, has not updated their long-term forecast, so we really have no numbers to go along with that right now.

MS. BROWN: Okay. Tom, you wanted to comment?

MR. GORIN: If I might add a little bit to that. This is Tom Gorin from the Energy Commission. We have used Department of Finance's annual estimates of population and housing. They update -- they actually update history every year, so -- in May --

MS. BROWN: You do not forecast population growth?

MR. GORIN: The last time they forecast was in 19 -- in 2007, they did a long-term forecast. To my knowledge, they are not proposing to do another long-term forecast until the census comes out because there is a difference of opinion on how many people currently are in California between the U.S. Census Bureau and the Department of Finance. So they are going to wait until the Census comes out to do a long-term forecast. Our current population estimates are trending from 2007 numbers. We have not incorporated the 2008 numbers because they just came in in May. We plan to do that. We will trend the 2008 numbers to the 2020 number because there is, if you trended it to the 2010 number that they came out with, there are jumps and dips, depending on their most recent

estimate of population and what they projected two years ago.

MS. BROWN: Thank you. I only raised it because it is an obvious impact and the population growth has a lot to do with demand.

MR. GORIN: They have revised their estimate. If I remember correctly, for last year it is down 80,000 people from what it was the previous year, so it is ever changing.

DR. KAVALEC: Okay, I wanted to talk a little bit about self-generation since that is receiving an increased amount of attention in the energy world. And we do a self-generation forecast which accounts for all of the major programs that are listed here, as well as for self-generation from the large commercial and industrial users. What we do for the forecast currently is a simple trend analysis. We look at each technology and if there is an observable trend in the adoption of the technology, we would continue that trend out, through the forecast period. If there is not a trend, or there is not enough data to identify a trend, we take the average of the last three years and use that as our projection. So using this simple trend analysis, here is what the peak forecast looks like for the state. The impact of total self-generation on peak is slightly over 2,600 megawatts by 2020, and folks are interested in photovoltaic systems, specifically, so I show

a break-out here of photovoltaic and non-photovoltaic. And photovoltaic is projected to reach over 700 megawatts of peaked reduction by 2020.

Now, there are many that would say that these projections are a little conservative, that self-generation is going to take off like gangbusters in the future, and so what we have begun to do is to develop predictive models for the self-generation technologies based on factors such as estimated pay-back and cost-effectiveness. The first model that we are still testing is designed to predict residential photovoltaic systems and we have also begun work on a commercial self-generation predictive model. And the plan is to hopefully apply these models for the 2011 forecast. The residential PV system model, as I mentioned, is still not quite ready for prime time, but I wanted to show an illustrative result, a simulation for the PG&E territory, where different levels of megawatts installed are shown here, that depend on the system price and the electricity rate. And I just wanted to show that the potential for huge increases in PV system adoption, as prices fall, particularly when you get below around $5,000, growth increases very quickly. So there is some reason to be optimistic, at least so far in our new analysis for solar systems.

That takes care of electricity. And moving on to

natural gas, we forecast natural gas by the three major planning areas, as well as a little sliver that we call "other," very tiny compared to the others. This is an end-user natural gas forecast, so it does not include natural gas use for generation. The mid and high cases that I mentioned for natural gas, 15 percent higher, and 30 percent higher by 2020 come from a scenario analysis that we did in 2007, and you see the source there. Some results. The same pattern, basically, as electricity, a short-term drop-off relative to current levels, and then lower long-term growth. Although the effects are not as dramatic for natural gas, because we do not -- we have not included a whole bunch of increased efficiency impacts, so the drop-off is not as great. This shows a break-out for the Southern California vs. Northern California territories by price scenario, roughly a difference of 200 million therms by 2002, between the high-rate case and the low-rate case. That corresponds to an elasticity of around 5 percent, a little bit lower than for electricity, and that comes mainly from the commercial model being a little bit less responsive for natural gas than it is for electricity. Okay, so -- and I am going to talk a little bit about the revised forecast after my next presentation, but I will stop here and ask for any questions or comments.

COMMISSIONER BYRON: Good. Gentlemen? Ms. Brown?

Comments, questions?

COMMISSIONER BOYD: I guess my only guess and comment is, there has been a lot of writings in the last couple of weeks about most of the projections about the state of the economy are being revised, and being more gloomy than they were in the past, and I do not know if, in your review, before you finalize this, how much of that you are going to pick up. I mean, particularly, UCLA got a lot of press this week because they revised things to be much more gloomy for California in the Anderson School forecast than they had before. And everything is a coin toss in this arena, it really is, and I just wonder how much of that, Chris, you will absorb into this process.

DR. KAVALEC: Well, one reason that you UCLA's latest forecast is gloomier is they have not done a forecast for a while, since before mid-2008 when things actually did not look as bad. What we are going to incorporate and are incorporating in the revised forecast is the June 2009 release from Economy.com, which is a little bit more optimistic than the previous forecast we used from the end of 2008. And it is not just Economy.com, but Global Insights' projections are a little bit more optimistic. So that means our revised forecast is likely to be a little bit higher than this one. So things are still gloomy, but it may be picking up a little bit,

according to these companies.

COMMISSIONER BOYD: Thank you.

DR. ST. MARIE: I am interested in the conclusion that the growth in the peak is going to be -- this is electricity that I am talking about -- the growth in the peak is going to be slower than the growth in the energy consumption.

DR. KAVALEC: The opposite.

DR. ST. MARIE: Well, I have got -- okay, I am sorry, but I have -- page 23, statewide electricity consumption, jumping by about 40 percent from 2010 to 2020. And then the statewide peak -- and these are the mid-price scenarios -- jumping by about 10 percent from 2010 to 2020. Did I miss something in looking at those graphs?

COMMISSIONER BYRON: Good question.

DR. KAVALEC: Uhm --

DR. ST. MARIE: Statewide electricity consumption by price scenario, that is page 23 of your --

DR. KAVALEC: Oh, slide 23.

DR. ST. MARIE: I am sorry, yes.

COMMISSIONER BYRON: Dr. Kavalec, why don't you go ahead and page back to 23 so everyone can see what we are talking about.

DR. ST. MARIE: Okay, so those are the two graphs, it is actually 23 and 24, together, that I am looking at

where I saw this contrast. And, to me, it looks as though we are forecasting that statewide electricity consumption and GWH is going to jump about 40 percent over the next 10 years, while statewide electricity peak is going to jump only about 10 percent from just over 60 to -- to about 69. And that is why I was surprised at that, because -- you were surprised, as well, when I asked the question. I thought the nature of your comments was that we were going in the other direction.

DR. KAVALEC: Let's see, I see a higher percentage growth in peak here vs. consumption, from 62 to 70 vs. 280 to 300.

DR. ST. MARIE: Okay, well, I took 69 over 62.5, I am sorry, and I must have done that incorrectly.

DR. KAVALEC: Yeah, when I sit down, I will check that to make sure.

DR. ST. MARIE: Okay, that is fine. We can talk about it afterwards. Thank you.

COMMISSIONER BYRON: Ms. Brown?

MS. BROWN: Yeah. I just wondered, Chris, why is it that you did not include utility generation in the natural gas forecast?

COMMISSIONER BYRON: Good question.

DR. KAVALEC: Because we do a demand forecast and we -- this is just the way we have done it. We provide the

demand forecast at the end-user level, and supply that to the Natural Gas Office, who does the generation part. And they put the two together for the total natural gas forecast.

MS. BROWN: Okay.

COMMISSIONER BYRON: Dr. Kavalec, I have a couple of questions, if I may. Going back to slide 11, now, not to be careful here, I am talking to an economist and I am sitting between a couple of economists, and I know this all comes down to how the economy is doing, but then we are translating that into electrical demand. Go back to slide 11, please. And, you know, growth is one thing when we are projecting forward, building and new load and new demand, but whenever we see a downturn like this, I always think of it as somebody went in and turned the lights off in a building. But the building is still there. And if I look back at 2000, when we know there was a significant economic downturn for the state, and we can see it in your plot there, I note how quickly it recovered. And, again, I am not an economist, but I look at these really low -- oh, I even have to look at the coefficients that you described as 5 and 6 percent, you know, on the doubling of rates, it has very little impact on people's use. And it responds and it rebounds very quickly, and I remember back in, oh, 2000, talking with the ISO at that time, and they were quite

concerned because it is load sitting there waiting to be turned back on, and yet we show significant drop, it stays down, and in fact the recovery is quite slow. And it concerns me that, yes, I am sure you have got the economy forecast as right as it can be at this time, but we cannot miss on the electricity demand, and so it just concerns me that we may be under-predicting how this rebound might respond. So you are the economist, so I give you a chance to respond to that one.

DR. KAVALEC: Well, I agree with everything you said, and that is why I think it is very important that we do econ-demo scenarios. We can only do so much because behavior is ultimately unpredictable, and there are trends that happen that we never catch until after they happen, but we are doing the best we can in a very uncertain time to incorporate different economic variables, and try and present cases for different future economies.

COMMISSIONER BYRON: Well, and we will hear from some of the utilities later on in their presentations, and it will be interesting to see what their response will be, as well. Mr. Gorin?

MR. GORIN: I am afraid, Commissioner Byron, I am in your book, I am not an economist. But I was doing some looking and I was focusing on the pattern of the early '90s. There is mitigating circumstances in the early 2000

era, the '98 to 2001 era that would drive consumption and, to take it and bring it back at a faster rate, we had the expectation that deregulation was going to provide cheap energy in the '97 and '98 period. We also had the Internet explosion, and Alan Greenspan's irrational exuberance speech, and then we had the reality of 2001 in the lower energy experiment we had, that drove consumption down, and part of the rebound I think you see from 2001 through 2005 is people returning to the levels that they were used to. I was looking, just looking at 1990 figures. We are now two percentage points higher in unemployment than we were in 1990, which may have some bearing on the recovery. So we have been analyzing a lot of this information and trying to figure out how to make sense of it in relatively uncertain times.

COMMISSIONER BOYD: Commissioner, Mr. Gorin makes pretty good comments. I share his thoughts. To me, the 2000 blip was the result of the electricity crisis that rippled through the economy. The early '90s was the piece dividend did not visit California, aerospace and what have you, military expenditures went down, and for the first time, unlike the rest of the country, California got whacked pretty good. This is a worldwide economic recession that is rippling through the electricity forecast vs. what happened in 2000; at least, that is my irrational

explanation to myself of why the trends are what they are, and why the recovery was rather quick after 2000, because we went to great pains to get the lights back on to assure everybody everything was okay. But economic recessions, so to speak, or depressions, are a little harder to turn around, and as well as to forecast. So I think Tom has got it nailed.

DR. KAVALEC: Let me just add one more thing. It would be nice if at one of these workshops to get somebody like Mark Zandi of Economy.com in to talk about their projections. But basically what he is saying, what Economy.com is saying, to echo what Commissioner Boyd just said, is that this is a worldwide problem. Conditions have changed in the world and it is real complicated with capital flows and all kinds of other economic variables changing, that lead us to this long-run result of less growth.

DR. ST. MARIE: I also wanted to apologize for my initial characterization of the difference between those two graphs; in fact, I went back and saw that I had made a calculation error. Indeed, energy consumption is growing, according to these graphs, by less, a lower percentage than the peak is, just as you had said. Thank you.

DR. KAVALEC: That is a relief.

COMMISSIONER BYRON: Well, but going to that point,

I am quite concerned with that, as well. Even in this economic downturn, you know, we are still seeing a rise in peak demand. And that is troubling for how we need to respond as a state in order to meet that demand, as well.

COMMISSIONER BOYD: That is a product, in my mind, of the mysterious signs of behavioral economics. And as somebody put it to us -- I forgot to mention in my introduction that, not only are you and I the IEPR Committee, we are also the Electricity and Natural Gas Committee, so we get this in spades throughout each week, but we had a recent discussion about the behavior of Californians and what the population's growth has done to us in pushing people into interior state, the hotter part of the state, and people are still quick to turn on the air conditioning --

COMMISSIONER BYRON: Comfort.

COMMISSIONER BOYD: We have become quite used to that. Many of us grew up with not knowing what an air conditioner was, except in fancy buildings and theatres, and what have you. And now it is just a matter of life, and no matter what your economics are, you flip on that thermostat when it is really hot out. At 105° tomorrow, predicted, by, even though it is a weekend, it will be an interesting electricity day here in Sacramento.

COMMISSIONER BYRON: Let me ask you a couple of

other questions real quick. With regard to this plot, what about -- and Commissioner Boyd is very keen on this -- what about electrification of the transportation sector? What if that were to happen in a big way? I suspect you have not factored that in.

COMMISSIONER BOYD: Oh, how some of us wish that were true.

DR. KAVALEC: We have not yet, but for the revised forecast, we are going to incorporate the latest electricity vehicle forecast coming from the transportation office, assuming that is done in time for the revised forecast. But from what I have heard, expectations are that the impact of electric vehicles under realistic assumptions is going to remain pretty low relative to total consumption.

COMMISSIONER BYRON: There is some agreement here at the dais. Go to your next slide, if you would, please. I think there is some good news here. Despite the economic downturn, we are still seeing this per capita use of electricity decline with population growth. I think this is good news, isn't it, that the energy efficiency penetration for the first time has now taken us forward with a negative forecast on per capita energy use?

DR. KAVALEC: Yeah, although I would like to see, as I say, what that looks like under different economic

scenarios because part of this is coming from the economy and, as you say, part of it is coming from efficiency. I have not done this yet, but I would like to actually see what it looks like with just the efficiency effects vs. just the economic effects.

COMMISSIONER BYRON: If you would, please, go to slide 16. Now, you know, these are terms that I am not necessarily familiar with. Can we get there?

DR. KAVALEC: Ah, it got stuck again.

COMMISSIONER BYRON: The brown 24 percent is increased utility program impacts. Where do appliance and building standards show up in this plot?

Dr. KAVALEC: This is relative to the previous forecast, which incorporated all of the same standards that we incorporate in this forecast. So the only additional standards show up from increasing the compliance rate for commercial lighting standards.

COMMISSIONER BYRON: Okay, and so there is incremental program impacts for utility programs of 24 percent.

DR. KAVALEC: Right.

COMMISSIONER BYRON: Okay. I am jumping ahead to your self generation analysis that you did. And on slide 28, you know, you said you began looking at estimated payback periods and cost effectiveness; but I would point

out that self-generation is really controlled by regulation, by policy and the tariffs that we put in place. So although these look very optimistic, at least for photovoltaics, it would be a much larger gain, I would suspect, for natural gas and, in fact, we are seeing some of that, we are seeing some significant movement in the publicly-owned utilities who are not necessarily controlled in the same way as the IOUs. I guess my question is, maybe I missed it, but why did you concentrate so much on photovoltaics here, Dr. KAVALEC, instead of looking at all of the self-generation?

DR. KAVALEC: You mean for the predictive modeling?

COMMISSIONER BYRON: Yes.

DR. KAVALEC: Well, this was not meant to suggest that we are concentrating on photovoltaic systems, it is just the first model that we did, and we are developing models eventually for all the different technologies.

COMMISSIONER BYRON: Okay, good. Any further questions here at the dais? I think you are opening it up now to questions from others, correct?

DR. KAVALEC: Yes.

COMMISSIONER BYRON: Thank you. I will look first to the audience and then next to WebEx. Are we doing it where people are supposed to raise their hand on WebEx? Okay.

DR. KAVALEC: No? Nothing on WebEx.

COMMISSIONER BYRON: Thank you, Dr. KAVALEC. You may press on.

DR. KAVALEC: Okay, my second presentation deals with efficiency and conservation that is incorporated in the forecast. Three sources of savings that we track and, again, let me mention that the utility and public agency programs incorporated in the forecasts are only those that are committed, already implemented, or already funded, and naturally occurring savings, I will explain in a moment. The summary of the results related to efficiency and conservation, the savings from these three sources significantly reduce consumption and peak demand over the forecast period over what they would have been. The bulk of the savings comes from the combination of building and appliance standards. There are additional lighting savings we have included beyond what happens from programs and standards, which I will get to in a minute. And importantly, we should be aware that this analysis has important limitations.

The first category, utility and public agency efficiency programs, I am not going to talk about this a lot because we had a workshop on this back on May 21st, but basically our goal was to update our historic estimates of utility program impacts, and particularly to capture

estimates of the impact of the 2009-2011 investor-owned utility program plans. We have received helpful support in this effort from Itron and our demand forecasting energy efficiency quantification working group, which needs a new acronym, but is comprised of CEC staff, CPUC staff, folks from the utilities, ARB, NRDC. And so far, what we have done is update our program measure impact estimates for the investor-owned utilities only. By the revised forecast, we are going to update those estimates for publicly owned utilities, as well. But for now, all we have is the update for IOUs.

This is what the difference in utility program estimates look like comparing what we have now for the current forecasts, and what we predicted and incorporated in the previous forecast, the major difference being the large impacts from 2009-2011, which was not included in the previous forecast because, at that time, 2007, those programs were not considered committed, and therefore were not included. To incorporate these impacts, some were incorporated directly into the models, for example, residential lighting, and others through post-processing, meaning subtracting the results from model output. These are preliminary estimates, still being refined. And the 2009-2011 programs for the IOUs are still in the approval process, and final approval is not going to happen until

later this summer, which unfortunately will be too late for our revised forecast. So there may be some modifications of the '09 to '11 programs that are not captured in our forecast.

Second category, standards. We incorporate the standards in our models through changes in inputs, i.e., changes in average use per household at the end use level, and use per square foot at the end-use level for the commercial sector. The way that we measure the impact of each individual set of standards is we start with the most recent, we remove the impacts of those sets of standards on model inputs, we rerun the models, and we assign the difference between the two model runs to savings from that standard, from that set of standards. So whatever impact the standards have on modeling inputs is removed, we rerun the model, the difference is savings for that set of standards. The next step is to follow the same thing for the second-most recent set of standards, remove the effects from those sets, and on down the line until we have eliminated all the different standards from the model. Here are the standards incorporated in our forecasts, beginning with the residential building standards in '75 on through the latest non-residential building standards, and the third category, naturally occurring savings, this is meant to capture changes in energy use that are not coming

directly from the utility programs or standards, but could overlap with programs and standards. More specifically, it mean the impact of rate changes and additional lighting savings from the residential sector. We used to refer to these effects as price and market effects, but the problem was that market effects is used differently in other energy-related circles. So we tried the word "naturally occurring savings," but unfortunately that is also used differently in other places and one project we are involved in now is one in which we are attempting to standardize the terminology we used related to energy efficiency, we call that our taxonomy work. So eventually this will be worked out and we will have a standard set of terms, but for now, for this forecast, naturally occurring savings means price effects and additional residential lighting savings.

As we know, lighting programs, or lighting savings are the focus of utility programs, as well as legislation, and we know that committed utility program impacts decay after the end of the current program cycle, so we thought it unrealistic to assume that average lighting per household would return to current levels at the end of the 2011 program cycle. In other words, we thought it unrealistic to assume that households would immediately go back to incandescent light bulbs, for example, right after the 2011 program cycle ended. So therefore we assumed that

average residential lighting would continue at 2000 average levels for the investor-owned utilities, and for the publicly owned utilities, we also assume some lighting savings, we assumed a gradual reduction starting from current levels to 75 percent of current levels by 2020. This is sort of a temporary measure, a temporary assignment to naturally occurring savings. When we update our POU utility program impacts, a lot of the savings that is currently included, and naturally occurring, will be assigned to POU program impacts. Other savings down the line might be assigned as an uncommitted effect in our uncommitted forecasts, to Huffman Bill effects, for example. But we thought this savings was going to happen in some way, shape, or form, therefore, we incorporated it in the forecast.

So here is what savings looks like broken out by category. By 2020, roughly 65,000 GWh of total savings, meaning that consumption in this year would have been 65,000 GWh higher without these different sources of savings, I am using the mid-rate case here; so naturally occurring savings would increase if it were the high-rate case; and decrease if it were the low-rate case because there would be less price effects in the low-rate case. The little sliver at the top right-hand side shows the additional residential lighting savings we assumed, and

added to naturally occurring savings. Note, looking at 1990, the effects are greater than zero. Our programs track savings all the way back to 1975, and when you get to 1990, impacts have accumulated from the standards and it also carries forward price effects from rate increases that happened in the late '70s, early '80s.

There was some discussion in the May 21st workshop with the idea of a hockey stick, whether at the end of the current utility program cycle in 2011 we should see a surge in consumption, as the programs ended. Now, hopefully this graph here will allow me to answer that question a little bit better than I did the last time, a) utility programs do not go away all at once in 2011, as you can see, some effects remain because they do not decay away all at once; at the same time, impacts from building and appliance standards are continuing to increase, making up for that loss in utility and public agency programs. Also, lighting savings begins to make an appearance in 2011 -- additional savings. So, in other words, we do not see a hockey stick, a sudden surge in consumption in 2011, because other sources of savings are making up for that.

Peak savings, again, the mid-rate case around 16,000 MW savings by 2020, relative to a world without these savings sources. The numbers to go along with these graphs, total consumption is reduced by around 16 percent,

compared to the world without savings, 18 percent by 2020, corresponding peaked reductions are 17 percent and 19 percent, roughly the same. And in 2010, standards make up around half the total consumption savings, and by 2020, with less utility program impacts, they make up a higher amount, 57 percent. And the corresponding peak impacts for 2010 and 2020 are 55 percent and 60 percent, respectively.

Utility programs reach a maximum share of the total amount of savings of over 20 percent in 2011 with a peak slightly higher at 24 percent, naturally occurring savings, meaning price effects and additional residential lighting savings, a little less than a third in 2010, a little bit more than a third by 2020, as you add in the additional residential lighting savings, and residential consumption makes up roughly half of the total savings with the peak being higher because residential consumption tends to be peak year.

Okay, as I mentioned, this is the mid-rate case. Had we used the high-rate case, we would have had more naturally occurring savings because of more price effects to the tune of around 2,200 GWh by 2020; and had we used the low-rate case, our naturally occurring savings would have decreased by around 2,700 GWh. So if we go back to slide 11 here, in the high-rate case, total savings would have increased to around 67,000 GWh. In the low-rate case,

total savings would be reduced to around 62,000 GWh. And the corresponding peak numbers, high-rate case, increases at 450 MW and, in the lower-rate case, decrease of 550 MW.

Now, there are some important limitations of this analysis that need to be noted. Publicly owned utility impacts have not been updated, as I mentioned, but that is going to be remedied in the revised forecast. But the remaining limitations are a little bit more serious. First, we rely on an assumption of a counter-factual, in other words, that the world without all of these savings impacts corresponds to the world of consumption today, plus those savings impacts added back in, when we know that is not exactly true because the existence of programs and standards themselves change the market. So, for example, if efficiency program incentives for air conditioners increase the saturation of air conditions, okay, not just induce folks to replace current air conditioners with more efficient ones, but to buy more air conditioners, then our counterfactual world has more air conditioners in it than does the "real counterfactual world." So when we estimate savings from air conditioning, we over-estimate because we have more air conditioners. How serious this is, I do not know. My guess is that the actual counterfactual is not hugely different from our assumed counterfactual because most of the major changes in consumption in the last 20-30

years have not had anything to do with programs and standards like electrification in offices in the '80s and '90s, the crisis in 2001, so -- okay, so that is one problem. The second problem is that attribution among the three sources is not an exact science. In other words, there is overlap. The way that we isolate and measure these sources of savings is we start with utility programs, remove the impacts of utility programs, after which we remove the impacts of standards, as I described earlier, and finally, we set prices back to 1975 levels to measure price effects. However, if we were to change the order, if we took out price effects first, then the impacts of standards, we would get a slightly different answer. The reason for that is that we folks -- at least we assume -- folks, when deciding how long to operate an appliance do not make that decision based solely on electricity rates, and not just solely on the efficiency of the appliance, but the combination of the two. It is a simultaneous decision. Just like we assume motorists, when they make driving decisions, do not react just to the price of gasoline, but the price of gasoline in tandem with the fuel efficiency of their vehicle. So in other words, there is no unique break-out between price effects and standards. We think that we have captured the sum of the two pretty well, but attribution between the two is inexact.

Other overlap, utility program impacts and price effects -- with a rate increase, we know that it is likely that there is going to be high adoption rates for utility programs. So that means that, at the gross level, there will be higher utility program impacts, in other words, more free riders, more folks taking advantage of utility programs, but it will also affect net utility program impacts because there will be -- the marginal consumer out there who would have done nothing in the face of a rate increase, but because the utility program is out there, that person then takes advantage of the program. So some of these price effects, in other words, could reasonably be assigned to utility programs.

Standards and utility programs. We assume a compliance rate for the standards in our model of something around 75 percent, but we know that, in the real world, utility programs can impact the compliance rate. So we have a certain compliance rate and, in actuality, utility programs are contributing to that compliance rate, however, all the credit is being assigned to the standards in our model.

Finally, we are in a recession now and, if it continues for another couple of years, the question is what impact would this have on the adoption of utility programs. The answer is we do not know, although we are looking into

it. It could be that less disposable income means a lot less participation in utility programs because of the capital costs, but that is not necessarily true. It could be that folks buy more CFLs, for example, with less disposable income if the cost is low enough to reduce their electricity bills. Okay, so the point of all this is that, as we go forward in teasing out efficiency impacts, there are some serious issues that we need to consider and resolve to some degree, and these are complicated issues that are not easily resolved.

So, finally, the revised forecasts. We are continuing to refine our program numbers. There is an issue that has come up recently and that issue is that we are not sure how the CPUC is directing the utilities to account for decaying utility program measure impacts. The question is, is the CPUC requiring utilities to make up for all the decay in the measures beyond going out into the future, or are they requiring utilities to only make up for the decay of measures that have a less than expected useful life. Do they want them to make up for all decay, or just earlier than expected decay? And that we are looking into. It is not clear to us, and apparently it is not clear to some of the CPUC staff, but hopefully we will resolve this quickly. In the first case, if utilities are responsible for making up for all of the decay savings, then that is

going to affect, obviously, the decay that we use in our model forecasts; if it is the second case, that they only have to make up for earlier than expected decay, that does not affect us as much because, in our utility program impacts, we assume that useful lives are as expected. Realization rates -- we are hoping to tease out realization rates at an end-use level rather than just apply one rate to all different end uses. As I mentioned, incorporating POU impacts from programs, we have updated our econ demo data. The economy data comes from the latest release from Economy.com in June, which, as I said, is a little bit more optimistic than the one last December. And we are also spending some time analyzing the impact of key economic variables on the forecast; in other words, creating some economic scenarios. Okay, and that does it for my second presentation.

COMMISSIONER BYRON: Very good. Hang on.

DR. ST. MARIE: I have a question about slide 5, which is the one that has the great big mountain in the center of it. I do not think that I understand what the numbers are that are on that chart, and so, for example, if you would humor me, the number for 2006 from the green line is about $2,000, and from the blue line is about $5,000. What does the $2,000 mean? What does the $5,000 mean?

DR. KAVALEC: The numbers mean a cumulative

savings, so it is first year savings and then those savings begin to decay year after year, so it is the accumulation of all the different years of savings.

DR. ST. MARIE: Okay, and so then going to 2011, when we reach a peak under the revised forecast of approximately $12,000. After that, what you are saying is that, not only are we no longer saving, but our decay begins to outrun the new investment in savings? Is that what that means? From 2011 to 2012, we run from about $12,000 to about $11,600.

DR. KAVALEC: Right. What this is saying is that, since we only incorporate committed programs, there are no additional savings beyond 2011 that are committed.

DR. ST. MARIE: Okay. There are no additional savings --

DR. KAVALEC: From utility programs, from IOU utility programs.

DR. ST. MARIE: Okay, so if the utility buys me a light bulb, are you saying that is the year the light bulb breaks, or are you saying that I will not get a second light bulb that year -- on my own.

DR. KAVALEC: Yeah, it is --

DR. ST. MARIE: So, I mean, do the existing savings continue at a normally decaying rate? Or is this the actual measure of the decay?

DR. KAVALEC: Yeah, savings continue, but at a decaying rate.

COMMISSIONER BYRON: The thing that I did not quite grasp that you said, Dr. Kavalec, is that this is a cumulative savings, so how can we begin to have a negative curve here after 2012?

DR. ST. MARIE: Yeah, it is still difficult for me to understand that, as well.

DR. KAVALEC: Well, basically is it is function of continually adding in first year savings for every year through 2011, and then suddenly stopping with new first year savings.

DR. ST. MARIE: Oh, okay. So --

DR. KAVALEC: So you reach a plateau, then you add no additional first year savings, and because of decay, that begins to fall off starting in 2012.

DR. ST. MARIE: So is it a fair interpretation of that change to be that, if the California Public Utilities Commission ceases to fund programs, or ceases to tell utilities to fund programs, beginning at approximately that time, the effect would be as we see in this chart, rather than in a counterfactual -- since we are using the word "counterfactual" today -- a counterfactual assumption is that the CPUC and the state will remain committed to energy savings, and therefore one might assume that we would

continue to have savings after that date?

DR. KAVALEC: One might definitely assume that.

DR. ST. MARIE: Okay, but you just do not want to put it in here because no one has signed an Order saying that they should continue?

DR. KAVALEC: Exactly right.

DR. ST. MARIE: Thank you very much.

COMMISSIONER BYRON: Did you want to add something, Mr. Gorin?

MR. GORIN: Maybe I can add to the confusion. This is Tom Gorin. That is just for the utility program, and the residential model, the way it is modeled now, that top of the mountain is expected to be flattened out because that will be counted as naturally occurring. The decay is the decay in the lifetime of the utility -- light bulbs, CFLs. But we are assuming that people will replace it with a light bulb because of the [inaudible] [84:09] and because of the federal legislation, and that thing goes to the naturally occurring side as part of the attribution issue that we have. For the most part, it is not a decaying forecast, it is just a decaying attribution of the IOU savings.

COMMISSIONER BYRON: Good question. I would like to stay on this for just one minute longer. If you would, move to slide 11. And just so that I understand this

committed vs. uncommitted, if I note, around 2007, the utility and public agency programs begin to ramp up significant and then, of course, around 2011 or so, that ramping begins to flatten out, and I imagine that is also -- or 2012, I cannot quite tell -- I imagine that is also because of the uncommitted programs at that point; however, as Dr. St. Marie indicated, if we were to assume that those programs would be funded and become committed, the slope of that line we would expect to continue relatively unabated, correct?

DR. KAVALEC: Yes, we would.

COMMISSIONER BYRON: Okay, good. So I think that is -- I would characterize that as a limitation of our analysis. I do not think there is anything you can do about it, but I would like to make sure that we clarify that the analysis does not include the expected IOU committed programs.

DR. KAVALEC: Right.

COMMISSIONER BYRON: And because it really does lower the projections out in those out years, and I realize there is little you can do about it because we do not know what will happen in terms of those programs. I suppose you could do a similar thing with regard to our standards, although we do have a 30-year track record that is backing those up.

DR. KAVALEC: But, do not forget, we are trying to do exactly that in our uncommitted forecast.

COMMISSIONER BYRON: Okay.

DR. KAVALEC: It is going to include utility program impacts from 2012 to 2020, or expected utility program impacts.

COMMISSIONER BYRON: Good answer. Any other questions for Dr. Kavalec?

MS. KOROSEC: We have a question from the WebEx from Noah Long. Noah, your line is open.

MR. LONG: Yeah. Can you hear me?

COMMISSIONER BYRON: Go right ahead.

MR. LONG: Thanks so much. Yeah, I just have a couple of questions. One is about the issue that was just discussed a second ago with decay. I think it was slide 4, the one with the mountain in the middle, and my understanding is that, in the Northwest, and you guys might know this better than I do, but my understanding in the Northwest is that they use total resource costs to set our energy efficiency, for the planning they assume all of that -- and this sort of goes into what I think Tom said about it sliding into the naturally occurring -- they assume that, you know, once included, so a CFL or a more efficient refrigerator, will yet then be replaced by at least as efficient of a model, and so that decay does not mean --

even if it means not in the utility program anymore, it does not mean that the data suddenly go away. How are you guys -- is that the same way you are dealing with it? It sound like, with the lighting, you are because of an upcoming standard. But with other things you may not be dealing with it that way?

DR. KAVALEC: That is exactly right. Lighting is the only case where we assume a market transformation.

MR. LONG: Okay, and with other things, you assume that the decay will mean, actually, people will go back to less efficient models?

DR. KAVALEC: That is right.

MR. LONG: Okay, and is that something that this working group is -- is that addressed? Or is that up to the specific planned assumption?

DR. KAVALEC: Yeah, one of the aspects of efficiency that we are working on diligently is the idea of market transformation.

MR. LONG: Right.

DR. KAVALEC: But we have not developed it enough to completely incorporate it in the model forecast yet.

MR. LONG: Great. And then, if I could just ask a little bit about this issue of attribution, and that goes back to slides 11 and 12, I guess a couple of things, one is I am not totally sure -- I have not made up my mind yet

-- I guess [inaudible] [88:31] is the right way to say about the idea of the baseline price being 1975?

DR. KAVALEC: Right.

MR. LONG: It just makes [inaudible] [88:38] quite difficult because, I mean, prices have increased everywhere and it is sort of hard to know what prices should be. And I guess part of that implies the attribution between what we are calling right now naturally occurring and everything else because, you know, maybe we would not have done -- well, for example, building standards would not be what they are without the current price because of the cost effectiveness test, and the same for utility programs. So all those things sort of mixed together based on that counterfactual. Is that a fair assessment?

DR. KAVALEC: That is a very fair assessment.

MR. LONG: And then the last thing is, I mean, this is an issue that NRDC has raised a few times here, but just attribution between utility and naturally occurring, particularly, my understanding is that, until just a couple years ago, because those were viewed as one block, and just more recently have been divided out. And is that -- it seems to me that those are the two that are probably the most -- that the lines between them are probably the most gray, because of that problem. Is that something you agree with?

DR. KAVALEC: Uhm, well, it is all kind of gray. But I agree that that is definitely a challenge.

MR. LONG: Right. And I guess, I mean, in terms of the modeling exercise, I think I understand the perspective that you are talking, but I guess my concern is that, when we underestimate the effectiveness of all the policies that we have by calling a big chunk of what we have done naturally occurring.

DR. KAVALEC: Okay. Noted.

MR. LONG: So that is all for now.

MR. GORIN: Noah?

MR. LONG: Yes.

MR. GORIN: This is Tom Gorin.

MR. LONG: Hi, Tom.

MR. GORIN: I would like to make a couple comments about your questions. In the first one, in the models, if you look at utility rebate program to buy an appliance that exceeds the standards at that point in time --

MR. LONG: Right.

MR. GORIN: -- that is the kind of model -- there is an early replacement of that appliance, and when that appliance decays, it can only be replaced by an appliance that meets the standard in the year it decays in. So that would be assumed it would be replaced by a more efficient appliance than was originally purchased. Does that make

any sense?

MR. LONG: I think that makes -- so it would be replaced by a model than was originally purchased, but not necessarily as efficient as it was.

MR. GORIN: Well --

MR. LONG: Depending on how quickly the [inaudible] [91:31]?

MR. GORIN: Right, and like a refrigerator, if you buy something in, say, 1998 that is 15 percent more efficient than the standard in 1998, and it decayed in 2008, the existing refrigerator you could buy would be more efficient than the one that was 10 percent more efficient in 1998.

MR. LONG: Right. So that would imply that, really, I mean, we probably do not have too much of a decay problem, afterall. Right?

MR. GORIN: Well, it is still open to debate. And the attribution problem, I think, is being more clouded when utilities get credit for promoting building required standards.

MR. LONG: Right.

MR. GORIN: So that makes, you know, finer shades of gray scale.

MR. LONG: Right. Yeah, in a way, I wish that, you know, in order to be more saturate, but at least useful, we

could just have this all be one color and say, [inaudible] [92:39].

MR. GORIN: Well, from a standpoint of an energy forecast, that may be more useful from a forecasting perspective for procurement, but from an attribution standpoint where a lot of the money changes hands, that is not quite as useful.

COMMISSIONER BYRON: That is correct. And everybody is always going to want to drill down on and understand the basis for the savings.

MR. LONG: Right. And my only last comment is that I really appreciate that you are going to be adding to the uncommitted program because I think it is sort of an exclamation point when the utility program is dropping off here, so that will be really useful when we see the projections for their increase, and continued increase.

DR. KAVALEC: And it helps resolve somewhat the acrimony over our definition of committed and uncommitted.

MR. LONG: Great. Thank you very much.

MS. KOROSEC: All right, we have another WebEx question from Barbara George. Barbara, your line is open.

MS. GEORGE: Email --

COMMISSIONER BYRON: Ms. George, would you begin again, please?

MS. GEORGE: Yeah, hi. Can you hear me?

COMMISSIONER BYRON: Yes.

MS. GEORGE: Okay. I had a question, it is not directly on these slides, but it was something that I picked up from looking at the table, the Appendix, Table 8.7 which was sent out with the work, and what I found really interesting and wanted to get some more information on was that, in the naturally occurring savings, the amount in the residential are -- well, the amounts of naturally occurring savings in the commercial sector are modeled at 15 times as much as in the residential sector. In other words, for 2008, in PG&E's territory, the commercial consumption in the naturally occurring, the savings in the naturally occurring, is about $6,500, and it is only $119 in the residential. So -- and that is true also in peak, the peak is actually 15 times greater, and the consumption is even more. And I have been trying to understand what that is attributed to.

DR. KAVALEC: Okay, that is coming about because of the much higher price responsiveness in the commercial model, so for a given change in rates, consumption of commercial energy drops by a lot more, in other words, more savings than does residential. Residential has very little price responsiveness included in the model.

MS. GEORGE: But do you think that is true in real life, you know, it is after a model, but can it be 15 times

in business?

DR. KAVALEC: Well, there are many that would say that our residential price elasticity is too low, but we are going to, as I mentioned, we are going to re-examine the price responsiveness in our models after this forecast. Unfortunately, that is what we have for this cycle.

MS. GEORGE: Okay. Well, what I wanted to do was to know what I can carry back to the CPUC as far as this is concerned because, if these figures are anywhere close to being true, it would mean that the CPUC programs are attacking the wrong sector because they concentrate on commercial. And residential savings are pretty much CFLs and not much else. We only have a certain percent of the money in the CPUC programs once residential in the last round of programs. So I am fascinated by these numbers because they are basically saying that the free ridership in the commercial sector is extremely high, and that, in other words, the commercial property owner is responding to prices.

COMMISSIONER BYRON: This is good. This is a key question. Is the PUC spending the IOU funding in the right sectors. Dr. Kavalec?

MS. GEORGE: Yeah, it is completely backwards because they are concentrating on commercial rather than residential, and what this seems to be saying -- and this

is what I understood from the 1970s, which is where I guess some of these figures are coming from, is the price effects from the 1970s. I am not sure that the price effects now are that unevenly distributed, but they might be. And it certainly would indicate that the need for programs is in the residential sector because the commercial sector is going to do a lot more work itself.

DR. KAVALEC: Yeah, I think that is a very interesting point. I would not be comfortable in saying that until we have re-examined our price response, however, because, as I said, these price responses are from the '80s, and they have not been updated for a while.

MS. GEORGE: Then those are based on price response studies in the '80s? Is that what they are?

DR. KAVALEC: Yes.

MS. GEORGE: And those prices in the 1980s that did show that the impacts were much greater?

DR. KAVALEC: Yeah. At least the data that we had, that we used, did show that.

MS. GEORGE: Well, I would be very interested in getting some [inaudible] [99:20] for that data, so that at least I could do that for my comments.

DR. KAVALEC: Okay, yeah. We have been emailing back and forth, so we could continue that, or we can actually talk on the phone.

MS. GEORGE: Okay, great.

DR. KAVALEC: Okay, thanks.

MS. GEORGE: Thanks much.

COMMISSIONER BYRON: Okay, my misunderstanding, I thought Ms. George was from the Public Utilities Commission. I understand she is with Women's Energy Matters.

MS. GEORGE: That is right.

COMMISSIONER BYRON: Okay, thank you. Any other questions on WebEx? Good. We are a little bit ahead of schedule. I was tempted to press on with two presentations before lunch, but I think it might be a good idea to take a short break and we will resume in about 10 minutes and stay on schedule. Thank you.

[Off the record at 10:44 a.m.]

[Back on the record at 11:01 a.m.]

COMMISSIONER BYRON: All right, we are at the 11:00 item on the agenda. Tom Gorin, from our Demand Analysis Office, will be addressing the staff forecast results for the San Diego Gas & Electric Planning Area in comparison to SDG&E's forecast. In fact, I think for the rest of the afternoon, it is the Tom Gorin show. Mr. Gorin, would you give us some indication -- I suspect it is not just you and Dr. Kavalec that is behind all this -- can you mention some of the other staff that are involved in this work?

MR. GORIN: And then I will get in trouble for leaving somebody out.

COMMISSIONER BYRON: Go ahead, take a chance.

MR. GORIN: Take a chance. Glen Sharp is doing a residential forecast. Mohsen Abrishami is a commercial modeler. Bryan Alcorn is working on industrial. Mark Ciminelli is doing peak forecasts. Mitch Tian is doing the peak. And we have --

COMMISSIONER BYRON: Ms. Gough.

MR. GORIN: -- Andrea Gough, who is supervising the QFER collection. Asish Gautam is our new self-gen forecaster. We have a bunch of new people supervised by Kae Lewis, working on DSM analysis and evaluation. And one of the newest irritants we have from the PUC is Don Schultz, helping the DSM people out.

COMMISSIONER BYRON: All right, well, that gives an indication that there are a lot of staff involved in this, and that is great of you to just mention their names. Mr. Schultz, welcome. We do not think of you as an irritant.

MR. GORIN: I should have read off in the report, but --

COMMISSIONER BYRON: That is okay. If you think of others, you have a few more presentations coming up, you can mention a few others.

MR. GORIN: I would rather not go through any of

these presentations, but I feel there is a need to. There are a lot of slides in these and what I have prepared them for is to use them as a Cliff Notes to the report that probably nobody wants to read. This is sort of a picture book overview of each of the utility planning area forecasts and a preliminary comparison to what they provided us in February - April time period. So I am going to blow through some of these slides relatively quickly. If you have questions, do not hesitate to stop me and ask for explanation.

In my 20 plus years here in providing forecast reports, nobody has ever really called me up and asked me what a sentence was meant to be in a report, they always asked me what the graph means, or what the number in the table means, so this is sort of to give an overview to people that just want a cursory analysis of it.

This is for the San Diego Planning Area. Down arrow. I am technologically challenged at the moment. Our forecast for San Diego is lower because of things that Chris has mentioned. We are projecting about 7 percent lower in 2010 and, depending on a rate scenario that goes 9 to 11 percent lower by 2018, this is a break-out by sector, the biggest drops are in residential, industrial and commercial building. TCU is dropping actually more, but it is a smaller sector. Peak forecast is only 2 percent

lower. I will go through these slides. These are the values in the table. You will note that in 2007, which was a projected year in the last forecast were about starting from a 2.5 percent lower value on consumption and actually peak was higher than we had expected. This is the difference in the forecast. We are projecting it to grow at a slightly lower rate, from a lower point. Per capita consumption is projected to be flat, it was slightly increasing last time, and we are coming from a lower rate because of more recent data. And I actually -- this is a little bit different order of utilities than I have done it before, and we started with San Diego because it was easiest to compare to the San Diego forecast, and I will get into that later. So our peak forecast is not as -- it is slightly lower. We assume people in San Diego, even on the coast, will use air conditioners when it gets hot. Maybe they should not, but that is our assumption. The per capita peak is going to remain constant and the load factor is going to decline because most of the savings that we are seeing are energy related and are not peak related. I think this could be a relatively constant story across the utilities.

Residential sector is 5 percent lower. The household income projections drives that down a lot. Lighting savings, we have touched on; that reduces use per

household beyond 2011 by about four percent. Lower birthrate from a lower starting point -- use per household is now projected to be flat. You can notice kind of the saw toothed history of use-per-household, and as in all forecasts, we get tempted by forecasting the period of the last increase. So, you know, in 1998, 1999, we were forecasting an increase, and then 2001 came, and our forecasting -- we decreased, and there does not appear to be a period where we are going to have complacent growth in the economy. I am not sure what the next bubble is going to be, but we will probably have one.

In the residential model, we use household income, which is a different animal from personal income. And the way household income is derived in our current forecast is multiplying per capita income times persons per household. That shows a slower recovery than would be seen if you used the difference in graphs between personal income. And it is an artifact of the way it is calculated, as far as I can tell. Our peak is not that much changed for residential over the last time. Peak use per household has continued to go up because we assumed every new household has an air conditioner, effectively, and they are going to use it.

Commercial sector has a lower starting point. We have slightly less overall projected floor space of the commercial model. I should note, in the residential model,

our forecast of population in households is relatively unchanged from the last forecast; that is why I did not show it. If you look at it in the report, I doubt you can see any difference in the graphs of this forecast vs. the last forecast. We are looking at somewhat more decay of commercial floor space, a faster decay rate in terms of age, so there are more new buildings which are more efficient being put out there than we had previously forecast. We changed the compliance rate with commercial lighting standards, which impacts retrofit of commercial buildings, which is why there is a greater decline in use per square foot of commercial buildings, because we are assuming that people, that commercial building operators that retrofit their buildings have to comply with the new lighting standards. So these are the price scenarios. You can see that there is more price elasticity in the commercial building model than any of the other models. This shows the slight decline in floor space and we are projecting, with the lighting and the combination of floor space that we are putting out, projecting in new buildings that commercial kilowatt hours per square foot will decline and, you know, go back to the levels of the early '90s. The peak is somewhat lower from a starting point value than it was the last time. And peak per square foot is projected to decline at a faster rate because there is more

-- lighting has a bigger impact on commercial peak than it does on residential peak because lighting is used more during the day in commercial buildings than it is in residential buildings. So increases in efficiency and lighting will have a greater impact on commercial than residential.

The other sectors are only 18 percent of total consumption. Eight percent of that is the transportations and communications in the utility sector, which is the CCU sector, 7 percent industrial, and agricultural water pumping, and mining load construction and street lighting, we pick up an additional 3 percent. And they only comprise 13 percent of the peak. The TCU sector, we have a lower starting point based on historic consumption data that we have. The industrial sector is the same, although industrial value of production, which value shipments which is what drives the forecast, is part of the big decline, and then Economy.com is projecting a rather rapid recovery, and then a leveling off. I am not exactly sure if that is changing their more recent forecast, but tapering off improves in all the service areas.

Industrial sector peak is also lower and it is a function of what we estimate their peak was. San Diego, the last three years, if I remember right, have peaked at what I would call "odd times." Last year, I think they

peaked in October. The two previous years, they peaked on Saturdays, so they are becoming not what you would call a normal California utility from a peak standpoint. Other sector peak is the same growth rate, just from a lower starting point.

I put the efficiency savings tables in for all the utilities, just for the sake of completeness. The 2009-2011 utility programs are based on the current filings through the CPUC. Self-generation forecasts are based on recent history and I guess this is a point of interest to both us and San Diego Gas & Electric. We have been in contact with them and we are trying to resolve this little mountain here in the middle. On peak estimates and consumption estimates for self-generation, if I have this right, we relied on self-reporting that self-generators have to report to the Energy Commission. San Diego, I think, has some other data where they keep track of their self-generators, and we are trying to resolve the issues. It turns out, in some of the reporting to the CEC, the reported peak generation was greater than the nameplate of the unit, so we are trying to go through those records and make some adjustment to the history. But the reason that is important is we forecast, from the Energy Commission's standpoint, consumption, which is sales for both Utility sales and direct access sales, and self-generation. And

what we would like to have is a more complete picture of self-generation because, when a self-generator decides not to generate, the utility -- it is my belief that the utility is the one that provides the energy to them that they are using, so if the gas prices go up and they decide it is too expensive to run their generator with the high gas prices, and they go back to utility, that consumption needs to be accounted for somewhere, so that is why we are interested in getting more accurate self-generation information from a historical perspective.

I think comparisons to the San Diego forecasts, and I do not know if the representative from San Diego wants to come up and talk about them now or wait? You will comment later. We are basically seeing that our forecast is lower than the San Diego forecast. There is a starting point difference that we are going to try and resolve because their sales in 2008 is higher by almost three percent. We have not included the 2008 QFER sales from San Diego yet. I think we are anticipating doing that in the revised forecast. We are still trying to clean up some of that data. The managed utility sales, which includes all uncommitted efficiency, which includes -- I think includes -- the PUC goals past 2012; that forecast is about six percent higher by 2015, and 7.5 percent higher by 2020. I tried to -- the unmanaged forecast is 8 percent higher by

2015 and 13 percent higher by 2020. I tried to tease out the difference between our forecast and the San Diego forecast. They included 2009 to 2011 programs as uncommitted, and we decided to count them as committed, so I tried to take the difference of that out of their unmanaged sales forecast and peak forecasts. The managed peak is closer than the energy forecast. By the end of the forecast, they are 2 percent higher than ours. The unmanaged peak is 7 percent higher. And essentially that is back to the 2007 levels that we were predicting in our forecast. So if we take this forecast, the 2008 starting point difference would reduce the different in the forecast slightly. Our residential forecast would go up and we would essentially be, I think, the same through 2012. And the real divergence -- there is some divergence between the managed and unmanaged forecast in the post-2012 period. Between our forecast and San Diego's, the real divergence comes in the definition of managed and unmanaged forecasts. Same thing happens in the commercial industrial sector, although in the commercial industrial sector, San Diego is projecting more growth than we are in the short-term recovery period. The peak forecasts are similar. The San Diego forecast, with all uncommitted energy savings is slightly higher than our forecasts. Both of the unmanaged forecasts are higher. We have a difference of opinion on

what the 2007 history was and probably a difference of opinion of what the 2008 numbers are. We are trying to resolve those.

So with that, if there are comments? Questions?

COMMISSIONER BYRON: I think your presentation does raise a few questions. Let's go ahead and -- do you have someone here from San Diego Gas & Electric?

MR. GORIN: Yes.

COMMISSIONER BYRON: Okay, let's go ahead and do that and I think we will get all the facts out on the table.

MR. VONDER: My name is Tim Vonder. I am with San Diego Gas & Electric. And I do not have a presentation today on our forecast, but we would like to take this opportunity to make a few comments on staff's forecast of our service territory.

Basically, I would like to cover three areas and first start with the economics scenario, the economics and demographics that lie in staff's forecast vs. our forecast. And like Chris said, staff relied on 100 percent Economy.com forecasts for their economics, and we did not rely 100 percent on Economy.com. We had a blend of Economy.com and Global Insight when we did our forecast, and those economic drivers were actually higher than the Economy.com. So there is some difference in our forecasts

due to that. It is really hard for us to attribute how much of a difference there is due exactly to that.

COMMISSIONER BYRON: But can we assume they are more optimistic about economic recovery?

MR. VONDER: Economy.com at that time was less optimistic --

COMMISSIONER BYRON: I am talking about your forecast.

MR. VONDER: Yeah, the blend of our economic drivers were more forward looking, I mean, well, they are higher than theirs. The other area that I would like to comment on is, well, many years ago, and I will not say how many years ago, but my wife taught Kindergarten and I taught college, and we would prepare for class the night before, and she would always tell me that, you know, she taught beginnings, and I polished her students years after, and what she did was really far more important than what I did. And when you teach beginnings, I have to agree with her, that beginnings are very very important. And in the world of forecasting, beginnings are very very important. And we have really made a concerted effort to work with staff, making sure that they have good history data for our service territory, and that, in our models, we used 2008 actuals, and staff did not. And so we have been working hard with staff to try to help them get a good set of

historical data for our service territory, and incorporate 2008, if they can. And we are working on that. We have made some progress. And they have been very willing to use the information that we are providing, and so thank you for that, and we pledge to continue to work in the future perfecting that body of data because I think it is to everyone's benefit to do that.

The other area of difference is in the energy efficiency area. And in our forecasts, we did include assumptions about uncommitted energy efficiency in the future years. But when we prepared our forecast documents, filled out the forms, we did indicate on those forms the level of uncommitted energy efficiency that we assumed in our forecast. So Tom was able to use that information to try to pull out part of what we had put into our forecast that is uncommitted, so that it would be comparable to what they had, or what they claim is in their forecast, which is just the committed. So you can see there that, once you pull that out, there is a difference between our before and after, and it kind of looks -- you are going to hear this term "hockey stick," probably, quite often throughout the day. But by pulling that out of our forecast, you can see that we have somewhat of a hockey stick. It is a kind of a hockey stick for a hockey player with short legs, but it does have the resemblance of one. And staff's forecast

theoretically, now, should look like a hockey stick since they, too, do not have a full compliment of uncommitted DSM in their forecast. But it looks a little straighter, more like a pool cue. So we are really looking on trying to understand uncommitted and we really have to applaud staff's effort in trying to sort out the EE impacts and standards impacts in the history. There has been a working group that has been working very hard, CEC has been an integral part of that working group in trying to sort it out, and we certainly applaud their effort, and I think they have made a lot of progress. We are still trying to read the report and still trying to understand how it is all getting sorted out, but hopefully, like we are helping them with actuals on the consumption and peak side, historical and current year, we are hoping that they can help us sort out historical energy efficiency impacts. They have done some things like apply realization rates to history, and we would like to develop a good history of energy efficiency impacts. And that kind of accounts for the differences. We want to continue to work together to build a better forecast. So thank you.

COMMISSIONER BYRON: Mr. Vonder, if you will stay up there for a little bit. Let's have a little discussion around this. Did you want to respond, Mr. Gorin?

MR. GORIN: I wanted to mention one thing that I

forgot to mention, and the reason that I put San Diego first in this comparison is they were the only ones that had a clear -- that submitted forms that had a really clear demarcation of what uncommitted in commercial and what uncommitted in residential was, so I could make these comparisons at both the residential and commercial level. I have been in contact with Edison and we are trying to resolve those issues right now on a way to look at what portion of uncommitted would be attributable to residential and commercial, and maybe helpful to hopefully make comparisons at a finer level for forecasts for those two types of forecasts.

COMMISSIONER BYRON: Let's drill down just a little bit more on these differences that exist. I am a little bit confused, and I am sure Mr. Gorin can explain why it is that, you know, disagreement on the '08, and I think you said the '07 actuals, or what Mr. Vonder referred to as the "starting points."

MR. GORIN: I do not think we -- we had maybe a disagreement on self-generation for '07. I think the numbers, the green and the red numbers for 2007, are pretty close except for 2001, and that is -- or 2000, which may be some self-generation problem. I think the real differences in 2008, we have not included 2008 sales, and that would increase our forecast line, if you will, up to their level.

And I have put a chart together that had that, but I thought that was one too many lines in the chart. That would indicate, I think, that our forecasts probably cross out in 2011 and 2012.

MR. VONDER: Yes, something like that.

MR. GORIN: So they are pretty comparable out to that level -- I mean, out to that year. And after that, they are projecting slightly more growth than we are.

MR. VONDER: Yeah.

COMMISSIONER BYRON: Is that the primary difference, is the growth in the San Diego service territory?

MR. VONDER: Yes. Like I said, we are working with them to try to get that 2008 number [inaudible] [33:13].

COMMISSIONER BYRON: So then it is not just really the economic recovery, it is also faster growth rate than assumed?

MR. VONDER: It is a starting point issue -- it raises it. After they raise it, the growth rate is not much of an issue.

MR. GORIN: The growth rate after 2012 would be an issue. That is economically driven.

MR. VONDER: That is from the economics after that, Economy.com's scenario kind of levels off.

COMMISSIONER BYRON: Okay. I am curious back on

Mr. Gorin's slide 29 that showed SDG&E self-generation peak estimates plummeting there in essentially one year. I think by -- does that look like 2007? Mr. Vonder, do you have a sense of what happened there?

MR. VONDER: It is in the reporting. Our history does not look like that. Like Tom said, in those earlier years where that mountain is, some of the reporting that they got from the QFER data, was it -- or from the data that was being reported by the ESPs, they were reporting, I guess, higher than our records had indicated in the utility, itself. We are working on getting that correct.

COMMISSIONER BYRON: So the reporting in, for instance, 2005 and 2006 was higher than actual?

MR. VONDER: Yeah, higher than what we have.

MR. GORIN: If I have my facts straight, which I may not, but our -- the mountain is based on self-reported information that we get from the generators. And in some of those cases, the peak estimates were greater than the nameplate capacity of the equipment that generated the peak, and we are in the process of going through and -- we thought -- we were of the naïve assumption that there would be less than, or equal to the nameplate capacity of the equipment and, apparently, that was not the case. So we are going through and trying to clean up the data and limiting the peak capacity, the peak output of the

generators to the nameplate capacity of the equipment, at least. So that mountain may go away.

COMMISSIONER BYRON: Yeah, I suspect. Okay, any other questions? Any questions from the audience? WebEx? All right, good. Mr. Vonder, thank you very much. The agenda calls for a lunch break at this time, correct?

MS. KOROSEC: Yes, that is correct.

COMMISSIONER BYRON: I think the general consensus here is that let's go ahead and do another presentation, if the parties are here, and then we will take a break after that one.

MR. CANNING: Edison is here and --

COMMISSIONER BYRON: Please go ahead and identify yourself.

MR. CANNING: I am Art Canning, representative from Southern California Edison. We are probably going to have a longer discussion period than San Diego did. I have a sed rate slide and I just had two more, and I will have comments about some of the earlier slides from the staff.

COMMISSIONER BYRON: All right, we will take that vote as wanting to go to lunch, and then we will come back afterwards. So let's do that. Let's take a break. I would hope that we could be back and underway again at a quarter to one. I hope that is agreeable. That gives us just a little over an hour for lunch. Thank you very much.

We will reconvene at 12:45.

[Off the record at 11:38 a.m.]

[Back on the record at 12:50 p.m.]

MS. KOROSEC: All right, we are going to go ahead and get started now. Tom?

MR. GORIN: I guess we are working our way north in the state.

COMMISSIONER BYRON: That is a nice way to do it.

MR. GORIN: This is for the Edison planning area. We have done, since we have returned to the forecasting arena, we have concentrated on planning areas rather than service areas, and we may change that at some time, but the geography of these keeps changing a little bit politically, depending on who is in or who is out of what balancing authority, or transmission area, or distribution area. So our forecast for Edison is 9.5 percent lower, growing to 12 percent by 2018. Commercial and residential are about the same reductions of 11 percent residential, reduction gets a little bigger over time than commercial. Industrial sector goes down rapidly at first and then stages a slight comeback. Peak forecast for 2010 is 5 percent lower, and we hope that only increases to 6 percent. Per capita consumption and peak now are projected to decline and the load factor will decline. These are the numbers for the forecast years, you will note the 2007, we are starting at

2.5 percent lower than we projected two years ago. But peak is higher.

These are the basic charts that we have seen for the other utilities. We are projecting a slower recovery. Per capita consumption is -- we are projecting going down at a faster -- going down rather rapidly compared to the past. Peak is growing at about the same rate as we projected before in a previous forecast. It is just starting from a lower point. And per capita peak is relatively constant in the low rate case; if we use the mid-rate case, it is going to be half way between those two bottom lines. The load factor is projected to decline, although not as rapidly as it has in the last few years. It is projected to decline at a faster rate than we projected in the previous forecast.

Residential consumption is down and projected to continue to go down. Use per household is going to be flat. The CFL savings that we put in a model, based on utility -- we held the level of utility program penetration of CFLs constant throughout from -- we held it constant at the 2011 level through the end of the forecast, and that reduces use per household about six percent. So that is in large part the reason for -- a reason for the lower growth rate. And this graph, we are projecting use per household to be constant. It has grown since the energy crisis, but

in the '90s, there was a period when it was also constant. This is differences in the household income projections. And sort of the pattern I was alluding to earlier, that we have here in the recession and recovery, it is a slower recovery in the out years than happened in the '90s, but it has projected more of a rapid recovery in the 2012 and 2013 period than happened in the early '90s. The peak grows about the same rate as we projected in the past, it just start from a lower peak based on current analysis that we have been doing on current weather-adjusted peak numbers. And peak use per household goes up because of the people that have air-conditioners, we feel, are still going to be using them at a similar rate. Commercial consumption, sort of the same story, starts at a lower rate. There is less projected floor space and increased compliance with lighting standards. We are starting from a 2007 value of commercial building consumption that is lower than what we had projected in 2007. And we are projecting an increase at a lower rate. The floor space projections that we currently have in the draft forecast are increasing at a lower rate than we had in the past, and that in part drives the lower commercial model consumption forecast. We are projecting a future decline in use per square foot because the lighting standards in the new buildings that are being put up are much more efficient than the ones that are being

torn down. The commercial sector peak follows essentially the same pattern as the energy forecasts, but the difference of growth rate is slightly higher than the energy forecasts. Peak use per square foot declines as the consumption use per square foot declines.

Industrial sector kind of falls off the table in the early years at the starting point and recovers through maybe 2014, and then is projected to remain constant, relatively constant, for the remainder of the forecast. Yeah, industrial sector peak is actually lower than we projected before, but it is projected to increase a little bit in the mid-term, and then remain constant.

The other sectors are 13 percent of the total, the TCU model, Transportation, Communications and Utilities. It is 5 percent agriculture and water pumping, it is 4 percent -- 3 percent mining, and 1 percent street lighting. Two of those forecasts with the biggest difference are the TCU model, which has a lower starting point in mining and these sectors comprise 7 percent of peak. This is a TCU forecast. We are projecting a slower growth rate because of the economic drivers we are using. And peak is starting from a slightly lower point and growing at about the same rate to the mid-term and then trailing off with the economic indicators.

And these are the tables of savings by category

that we have put in the chapters for the forecasts. There are detailed -- more detailed tables in the forms online. We have similar problems with the self-reporting of non-pv self-generation with Edison. I have talked with the people from Edison and we are gong to get together and try to resolve some of these historic reporting issues to try to come to a better agreement on what total consumption was in the historic period.

Uh, I made the same -- or attempted to make the same adjustments to forecast comparisons with a SCE forecast by removing the 2009-11 programs. I was only able to do that at the total system level. Basically, this is the same story, maybe a little bit more pronounced, that we had for San Diego, their expected growth in years past. 2012 is greater than our expected growth. Their unmanaged forecast is returning to growth levels that we experienced coming out of the energy crisis, so we should -- we will probably have discussions about those differences, I would guess. My view is that the majority of difference comes from the forecasts in the commercial sector. Their unmanaged forecast suggests -- or actually, maybe it is their managed forecast -- is projecting growth in the out years that our current forecast is not. The residential forecast, there is probably less difference. I mean, there is a big drop in 2009, I believe. And in the Edison

forecast, there is probably a starting point difference that we should try and resolve for residential forecasts for 2008. And we are working on that with processing the 2008 QFER data. If the residential forecast was benched to the 2008 value, it would raise it up and we would not have the decline, I think, in 2009, that they have; but the ending point would be the same because, after the recession, they have faster growth.

Peak forecast, there is not such a great difference, there is a difference in history of the 2008 value, I believe -- 2007. We, for the revised forecast, will probably try and resolve that difference and that may have an impact on our calibration, which may raise our forecast some. With that, are there questions? We could have Edison's presentation.

COMMISSIONER BYRON: Yes, and we do want to hear from Mr. Canning. A couple quick questions to make sure we are all on the same page. And I go all the way back to the title page, SE Planning Area Forecast. Is there any possibility that we have an error in what is in our planning area vs. their planning area, and if you can attribute to that, otherwise we will wait for Mr. Canning to speak.

MR. GORIN: Mr. Canning can probably contribute to that better than I can.

COMMISSIONER BYRON: And also these discrepancies, these differences in history, that also is a little bit of a concern, too, because that -- if you cannot get the past right, it always raises doubts about our ability to forecast, so those two issues. Could you comment on those just briefly before Mr. Canning speaks?

MR. GORIN: What I tried to do to make a comparison from our forecast to theirs is I benchmarked our forecast to their values in 2007. And for planning purposes, I think, for the resource adequacy results, we do a very detailed break-out of the utilities in the planning area. And Edison is approximately 90 percent, SCE is approximately 90 percent of the SC planning area. There are --

COMMISSIONER BYRON: That is all right, you do not have to list them all, but --

MR. GORIN: Well, some of the largely -- the municipal utilities are included in the planning area, and not in the service area, if I am right. The peak -- what was interesting to me is the peak history is about the same. There is not as big a difference in the peak as there is in the sales, when I benched them. And --

COMMISSIONER BYRON: All right, well, my question was, are we confident we have the same -- the areas in both their forecast and ours?

MR. GORIN: I think we are for Edison. PG&E may be a different kettle of fish because of the contractual arrangements.

COMMISSIONER BYRON: Okay, Mr. Gorin, thank you. Let's go ahead and let Mr. Canning present their results. Mr. Canning, I note before lunch you indicated you had more slides and perhaps more controversy, and so we are certainly interested in hearing from you. But I will concede right off the bat that this is a very big difference, this forecast, vs. the previous forecast by this Commission, and we certainly want to understand any differences you might have and what you agree and disagree with in this forecast.

MR. CANNING: Okay. I have a basic set and then we added two more additional slides on, which were just getting up to date. So the Commission has made big downward adjustments. We recognize the recession is going on. We agree with that, and you will see slides later on where we are pretty much in agreement.

COMMISSIONER BYRON: All right, we are all in agreement there is a recession.

MR. CANNING: Yeah, in the load forecasts, even, for those three years. But what we are concerned about is the long-term growth, meaning after 2010, there seems to be a big difference, and we do not see the economic source of

that. Now, this morning, it sounds like a lot of it is this naturally occurring conservation, which I am a little unclear about, and there may be some issues on model calibration, that Tom and I have discussed, too, that some of the data they are using on that self-gen looks suspicious.

Okay, the first one, here is -- we just took a look at what the CEC was presenting to us, what the staff were presenting. So we looked from here, from several different periods. And '91 to 2001 was a trough to a trough, economic trough, in '91 there was a recession, in 2001 there was a recession, and we said, okay, let's look across similar -- that is a better comparison going from '90 to 2000, which would be from a recession to a peak. So we can see the growth rates there, and I have just highlighted down from 2010 to 2020 from the data that was sent to us, the 2009 IEPR forecast with CED forecast, you know, the households are the same growth rate. The income, real income, was actually at a higher growth rate from that period, and this -- 2007 is probably -- 2010 to 2018, but we use that period there. And then floor space is a little bit lower. But, you know, we looked at this and we said this is not a source of a big reduction in the long-run forecast growth rate. So I am really worried about the 2010 to 2020 growth rate, that is what I am trying to show

here. That seems to be the bigger issue. Let's go on here. Here is the retail sales forecast, so if the economics are not too much different, we look at the 2010 to 2020 forecast that are highlighted there from the last CED forecast, this one dropped from 1.4 down to .8 only, and then somewhat of a drop on the peak. And, again, here I picked periods that sort of modeled the economic series, only after I looked at this this morning I said, oh, 2001 was not a good year because that was a crisis on top of an economic recession, so it was really double counting. I gave that period a very low reported growth rate. I would probably rally -- maybe shoot '89 to '99, that would be sort of a peak to peak. But I am trying to get what the long-term growth actually has been. But in any case, the recovery period after 2010 seems to be where there is a big shift in the forecast, and yet I did not see that big a shift in the economic factors that I looked at. And we have gotten more information today about some more of the detail on the economics than we had earlier. So these two graphs really are pretty much what Tom has already showed you, the shift between the CED from the last forecast to this one, and actually I am going to skip right through them because, that was energy, this is peak, the next one gets a little bit more interesting. This is us vs. -- our most recent forecast vs. the CED forecast, the current one.

This is peak demand. I was very gratified when, for the Resource Adequacy Analysis, I saw that your weather-adjusted peak for 2008 was within 10 megawatts or 20 megawatts, or something like that, of ours. I said, "Finally, finally, after all these years, we finally have an equal starting point." So that was good news. And I thought you would be using that as a starting point here, and you are shaking your head, no, that was not your starting point for this forecast? The 2008 weather-adjusted?

MR. GORIN: Yeah, that was the starting point.

MR. CANNING: Okay, well, in any case, we were equal on that. You can see on the graph that we are pretty much the same through 2013, and then, after that, we show faster growth than what the staff is showing. So here we are going to really compare that second decade between Edison and the staff. The top row are the economic indicators showing that Edison has a tenth a percent higher growth in households, real income just three-tenths a percent higher, really not much, and a tenth on floor space. This is slightly higher, not enough to justify that big a difference in the forecast because, if you look at the bottom section there, the retail sales, and there is a little bit -- well, no, the retail sales should be the same definition, although you include the resale cities in with

ours, so then we just took the growth rate there.

COMMISSIONER BYRON: Where do you get your rates, your growth rates?

MR. CANNING: So my growth rates are off our forecast that we just -- it is an updated forecast we presented just a week or two ago --

COMMISSIONER BYRON: But what is the basis for the 1.8 percent retail sales?

MR. CANNING: Starting from our 2010 forecast to our 2020 forecast, we are forecasting 1.8 percent growth and, looking at staff's forms, they are forecasting on retail sales 0.8 percent growth.

COMMISSIONER BYRON: Yes, and staff answered my question as to where they get their 0.8 percent. Where do you get your 1.8 percent? Theirs comes from Economy.com --

MR. CANNING: Oh, the economics, oh, we get it from Global Insight. We also subscribe to Economy.com. They have --

COMMISSIONER BYRON: Are we reading these things differently? I am not an economist, so I do not understand how you can have a factor of 2 difference from the same material. And that question goes to my staff, as well.

MR. CANNING: Well, okay. The top section here is the economic numbers. We have the Global Insight forecast of April, I think it was, staff is using Economy.com as of

December? Is that right?

MR. GORIN: Right.

MR. CANNING: Okay, so you have got two different vendors, slightly different timing. The real income difference, 2.5 vs. 2.8, that is probably in the bandwidth of what people can forecast out that far. And, of course, for floor space, it is close enough, so those really are not very different.

COMMISSIONER BYRON: Well, I was looking at retail sales which are --

MR. GORIN: Maybe I can clear this up. Retail sales is their forecast of consumption, it is not the economic --

MR. CANNING: Thank you, Tom.

MR. GORIN: -- retail sales.

MR. CANNING: I am sorry, we did not label this. This is a last minute graph. So the top half is economic indicators, the bottom section is our electricity sales. That is why there is a such a big difference, and so our forecasts are different because we forecast those. We did not get that from somebody else. And a fairly big difference, again, in the peak demand out there. Let's see if this next slide -- okay, here is where we took -- we just took the total forecast for planning area megawatt hours and divided it by household, and then we calibrated

their numbers because planning area is bigger than service area, it includes MWD, which is a fair amount of kilowatt hours, and the resale cities, so we just calibrated to the same 2007 point, I think it was, and the history matches pretty closely. You can see the forecast, this is megawatt hours per household. So this is dividing all the megawatt hours for the whole system by the number of households. We are pretty much matched to 2012, 2013, and then they head north and they head south. There is something going on here, so if this is this natural occurring -- because the economics are not that much different -- I do not understand how we can be that far different if we are that close for the first four years, our economics are that similar, and yet this intensity measure right here looks so much different. I have got the additional dotted line there that shows without electric vehicles, which does impact the forecast, as you get in the out years, we had assume quite a bit of plug-in hybrids coming along. And the next one? Okay, we are going to pull up another set of slides that we just had my staff send up this morning.

Okay, so I called my staff and said, "Listen, take a look at our kilowatts per household." So here we are actually looking at usage per household, calculated our history, their history, and compared the forecast. So the histories compare fairly well, with the exception of the

last two years, and we will have to check data on that. You will notice the Edison forecast, which is the lower one, drops through 2011. That is sort of the bottom of the recession for us, as well as the lag effects of price increases that are coming along, and after that with income growing, we say that usage per household will start to increase again. Now, if I went off into the graph, it would certainly have to flatten off at some point in time, but we said there is going to be a recovery in usage per household after the recession and when income starts growing again. People will spend that income. And some of it goes into electricity use. In there, it -- we incorporate whatever naturally occurring conservation occurred in the past; the model expects that to happen into the future, too. And the other difference is this contains our uncommitted conservation savings in the future, so that is even a little bit more of an exaggeration. Without that, our line would be a little bit higher, as would the history. I mean, what we do is we go back to the beginning of the 1990 and we add back in, from 1990 on, the conservation savings that occurred each year. And we run the regression on that higher series. So I just did not have time to go ahead and plot that in to show that, okay, it is a higher historical series of growth rate, and it will be a higher forecast, too, because that includes what

would have happened if it had not been for conservation programs. In any case, we have got slightly increasing electricity prices and a slightly faster income growth, but the same household growth, and you can see a big difference in the shape of the forecast; we go a little bit deeper in the recession and then we come out, and the staff stays right there at a flat level. Yeah, and I guess -- I have asked Tom for additional information, so maybe we can work and find out where this is coming from, but this just did not match when I compared the economics.

Here is a comparison of kilowatt hours per square foot in the commercial sector. Here, we do have a definitional difference in our recorded history. We record commercial by the way we reported in the financial reports, and Tom uses it by SIC code, and those are two slightly different groups of customers, so the histories are going to be different. I did not try to match them here. But what is dramatic here is the kilowatt hour intensity in the staff forecast dropping, where we have got certainly flat for about five years there, as do the effects of the recession, and before we start coming out, but then a slight increase after that. And Tom pointed one time to the mid-'90s, well, you can see in the mid-'90s during the worst of the aerospace recession, the kilowatts per square foot on our data is increasing pretty fast. It is not to

say this is going to be the same sort of recession at all, but it can happen. So these two sectors and these usage -- these energy intensity in the residential and commercial sectors appear to be the source of difference. So a couple comments. Tom has told us that he has reduced the forecast because he has assumed the lighting standards will be more effective in the future. Well, we have assumed that lighting standards will continue to be as effective as they have been in the past, and we have actually in our forecast, because it subtracts out the uncommitted conservation, we have deducted out the forecast effects of the Huffman Bill past 2016, as well. So Tom is assuming a behavioral shift here that we are not assuming. The employment numbers in the long-run, we need to check because we should be very very close on our total employment levels, between our forecast and his, but we did not get your forecast of employment on the original tables you sent us, so we were not able to compare that. So that is one thing that I need to check on because they should be pretty close from 2010 to 2020. We are both using Economy.com. The way you have constructed your household income by taking personal income, dividing by households, then multiplying by per population per household, that is possibly -- that is what, in one of his earlier slides, I think --

MR. GORIN: We, this time we took per capita income and multiplied it times persons per household.

MR. CANNING: Okay, well, that gives you that -- you are getting those roll-offs in growth of your household income index after 2011, or something like that, 2013. And we are not seeing that. If we just take personal income and divide by households, it is staying at a fairly constant growth rate. It is not rolling off the way -- I am going to try to point to one of Tom's -- but -- it might be on page 12 of Tom's pitch on us.

MR. GORIN: I would think it should end up as the same number, though.

MR. CANNING: If you look at Tom's presentation about the Edison forecast, you can see that the SC household income goes down in the recession, and we can agree with that, has a recovery, and then grows at a slower rate. It really slows down. Ours would have a recovery and then would more or less follow the forecast from the previous CED, I think. So there is -- and it might be because of the way you construct your -- your assumptions about persons per household because that enters into the equation, and that could affect this variable, which then affects residential energy consumption.

The other point was on self-gen, which is Tom's slide on page 30. You have been asking questions about

that all along. I have told Tom that is not what happened at Edison. Tom has been using data as self-reported by the generators; we go out and our account managers, well, when a person wants to put a self-generator in, they have to get an energy connection request from us, we find out all the information, and we know when that machine came in online. We do not know its actual total production behind the meter, we are not allowed to meter that, but we can estimate that. We know when the machine came on line, and if they were to take it out of service permanently, we would know that also, so we can construct a historical series of estimated self-generation that I think will show a very different picture. You will not see that big decline from 2001 to 2007. Thermal co-generation did drop right after the crisis, it went up during the crisis, and then it dropped and some people found their uneconomic co-generators and they settled down, and then it has been growing at 35 to 45, 55 megawatts a year since then. Photovoltaics have been increasing and their picture may be pretty close. So this number actually goes into Tom's model as a recorded part of a consumption, which he models. So if we change this, we are changing his history, and it will change his model, which will change his forecast, also. I hope that makes sense, but when you actually start changing the historical data, and his model is trying to

track that, this is going to change -- this is going to shift the shape of the recorded data that he has got in his model. So we have agreed we are going to work together and given how we have -- the list of customers that we have said have come in, and how we have built our annual self-generation estimates.

Yeah, and with that, Tom has agreed also we will look at the model calibration factors, which in past years we had an issue with, so he will show us what the actual recorded data was, first what the model predicted for each year in history, and sometimes there is a bias to the trend; and if there is not, great, but that has happened in past years. So we have got more exploration to do to try to see if we can find out a little bit more why -- we can correct some differences, perhaps. And then this issue about the naturally occurring is still something that, as I saw the size of it, it looked, you know, it has increased from 2008 to 2020, that is half as much as what the utility programs would be, it is a very large increase in naturally occurring. So when they come back in the next workshop and bring in the incremental EE, then I supposed a lot of that will be overlap, but right now that just looks like a big source of the difference in the forecasts.

COMMISSIONER BYRON: Wait, I want to understand, make sure I understood what you just said. So a big source

of the difference in the forecasts is this -- what you said was incremental EE, do you mean the uncommitted EE? Is that what you meant?

MR. CANNING: Well, right now in their forecasts, they have the naturally occurring, which is growing at a fairly fast rate. We do not know what their incremental EE is going to look like, how much it will be in comparison to ours. So we are going to have to wait and see that. In other words, we are comparing here their forecast before incremental EE, and --

COMMISSIONER BYRON: When you say "incremental," do you mean "uncommitted EE?"

MR. CANNING: Yes, uncommitted, excuse me. Yeah, so the uncommitted forecast, theirs may have a lot of overlap with their naturally occurring and it will not fix the forecast, but it will maybe explain a little of the difference there.

COMMISSIONER BYRON: When you do your forecast, Mr. Canning, do you go next door and check with the folks in the environmental -- excuse me, in the Energy Efficiency Program and see if you all agree on the amount of committed and uncommitted energy efficiency you are putting in?

MR. CANNING: We are joined at the hip, practically. We use their numbers in the forecasts and we use the numbers they have submitted to the PUC historically

as what has actually been accomplished.

COMMISSIONER BYRON: So then we can assume that the difference in these two forecasts is primarily the economic recovery and growth that you are projecting versus what our staff is projecting?

MR. CANNING: Yes, well, the economics do not look that much different. There is something else going on.

COMMISSIONER BYRON: Well, and that is what we are trying to get at the bottom of. I mean, you did say you do not understand why they are so different, but I am hoping that we might get some light shed on that.

MR. GORIN: I have, I guess, a comment or a question for Art.

MR. CANNING: Sure.

MR. GORIN: You said you added historic savings back to your restored consumption for utility program savings?

MR. CANNING: Yes.

MR. GORIN: And those are as reported to the PUC ex ante?

MR. CANNING: Yes, ex ante because I do not think there is any ex post as the way the PUC defines it.

MR. GORIN: So they are not ex post verified, so what would happen to your results if what we seem to be finding now, that the programs do not quite save as much as

they were originally built to save? That would reduce the historic -- your estimate of historic consumption, right?

MR. CANNING: Yeah, it would reduce our estimate of historic consumption, it would lower the equations, and if you apply that same forecast to the forecast of EE, then it is probably going to wash out, actually, as far as the ultimate sales forecast.

MR. GORIN: Well, that would -- wouldn't that lower your trajectory of projected consumption?

MR. CANNING: It would lower your trajectory of projected consumption, included committed and uncommitted EE, yes. But then it is also, if you have some sort of reduction factor, and apply that to the forecast period, too, then it will reduce the amount of uncommitted EE, and so the final sales forecasts might not change that much. It might come down some because there is so much more conservation going on in the future.

MR. GORIN: And then, okay -- we can probably -- should probably talk about that more and try to make some resolution to it.

MR. CANNING: Okay, well, like I say, the other thing that seems to be in there is your assumption on the compliance -- commercial customers for the lighting standards. That seems to be a big source of the shift in

the commercial forecast, which does seem to be where we are most different.

MR. GORIN: Right. I did look at our report and our persons for household projections for Edison, which I left off of the slide show in the interest of brevity, we are projecting a slight decline over what we did before, so that would lower the household income projects because there are a tenth of a person less per household. But that is, going out, it widens that gap.

MR. CANNING: Yeah. The other thing that is going on right now is certainly vacancy rates are up and, so, when you start doing commercial kilowatt hours per square foot, we actually put it in an occupancy factor to try and account for that because, obviously, if you take the recorded kilowatt hours and divide by the existing square feet, a lot of which are vacant, you are going to show a drop in intensity that is really fictitious. Well, it certainly is biased, or I do not know what it is, but you have got a lot of empty buildings out there. If the square feet are being counted and not the kilowatt hours, that is going to affect it, so we have tried to adjust the commercial square footage on the commercial side; on the residential side, we used active residential meters, so those are called "accounts," or "customers," active customers, rather than households. So the household

number, if you have not got a vacancy rate in there, then you are going to show a little bit higher households and a lot of which are empty because of the foreclosure crisis, and all that, so then you are going to end up a little bit lower estimated usage over the last year or two. We have estimated what we think the vacancy rate is, and put that in there, too. So those are things we shall, yes, the vacancy rate will get -- those homes will get sold off and then they will return into service, but right now, if you do the simple division of fewer kilowatt hours by the same number of households, same number of square feet, you are going to get what looks like a declining intensity in the last two years.

COMMISSIONER BYRON: Dr. Kavalec?

DR. KAVALEC: Yeah, I had a question sort of turning this around from our forecast being low to your forecast being high. What I do not understand, I was looking at some of your numbers, and so I want to better understand your model and the way that you forecast. Looking at historical growth from '90 to '97, I see a 1.4 percent increase in sales per year. And then, in 2010 to 2020, you have an annual growth rate of 2.3 percent per year. Yet, at the same time, comparing the two periods, personal income growth is down, and floor space is down. So I am wondering what is driving this much higher growth

rate relative to 1990 to 2007 versus the forecast period, if it is not the econ demo?

MR. CANNING: I cannot answer that because I do not have those numbers in front of me.

DR. KAVALEC: Okay, we can talk about this more offline.

MR. CANNING: Okay, but, yeah, we should be consistent on that point. The sales forecasts should reflect the economic demographic factors going on.

DR. KAVALEC: Yeah, so I saw this growth rate for unmanaged is -- I mean, it is higher than it was in the late '90s in the boom period.

MR. CANNING: The unmanaged?

DR. KAVALEC: Yeah.

MR. CANNING: Okay, now, that is --

DR. KAVALEC: And the managed, too, is higher than historic.

MR. CANNING: Okay, well, the managed is the one that we actually produced. Tom did his best to generate the unmanaged.

COMMISSIONER BYRON: Excuse me, gentlemen. When you use "managed" and "unmanaged," unmanaged what?

MR. CANNING: With and without uncommitted EE. So he is looking at the forecast if there were no -- we only gave him the forecast deducting committed EE because that

is what we tell our management, this is what is going to show up on the meters. Staff wants to forecast without that uncommitted EE, and it makes the comparison difficult. If we had been as intuitive as San Diego was, we would have filed two forms, one with uncommitted EE and one without, so staff could have done an easy comparison. I did not find out about that until this morning that that would have helped them out. It is certainly something we can do, and then I could speak better to Chris' question on that because I cannot do it off the top of my head.

MR. GORIN: Yeah, let's talk later about that.

COMMISSIONER BYRON: All right, I just have one more thing I would like to wring out of this if it makes sense. Mr. Canning, earlier, like on about slide 4, I was trying to follow what you were describing with regard to looking back at earlier periods, and I believe you looked back at the '91 to 2001 period, and you were trying to match up these similar troughs and peaks and apply those rates of change to the future.

MR. CANNING: Yes.

COMMISSIONER BYRON: And then, later on, oh, the numbering is not good -- on your new page 1, you did a similar thing where you ran a regression analysis on the series beginning in 1990. So my question is really to staff here. This seems -- I am losing Mr. Gorin here --

MR. GORIN: I am listening.

COMMISSIONER BYRON: My question really is to staff. This approach where they go back and use these what they observed historically, let's say, for a period of time, trough to trough, or trough to peak, or whatever, back in the '90s, they are using a regression analysis back then and applying it now. And I am just wondering, is that the sort of thing that we do? Or is that sort of a unique approach to trying to forecast the future? I guess it is even more -- I will stop there -- do we do that same kind of thing where we go back and we look at earlier periods of time that match up, at least in their appearance, with today?

MR. GORIN: We try to do similar things. The art form of that is picking the years. And I have a tendency to use as far back as we can go, which is -- sometimes we look back to 1980 and growth between then and now. But if you look over the historic period, there are different reasons for different patterns of growth.

COMMISSIONER BYRON: Uh huh.

MR. GORIN: If the slide that Art had up there on kilowatt hours per square foot for commercial buildings, if you look at the early '90s, there was a lot of growth to '98. That is when the proliferation of office and computer equipment came in.

COMMISSIONER BYRON: Right.

MR. GORIN: You know, I look at our old forecasts before that period and they were done on typewriters.

COMMISSIONER BYRON: Well, and that is kind of where I am going with this. Isn't that kind of approach, when you use old regression analysis -- I should say regression analysis based on older data -- it does not take into consideration these kinds of factors -- more efficient appliances, a whole different kind of demand response based upon, like you say, computers instead of typewriters.

MR. GORIN: You know, maybe in the future after 2014, there is going to be a new proliferation of some kind of energy intensive device. I think we have enough -- the computers that we have now are probably not going to show that kind of growth rate.

COMMISSIONER BYRON: So I think what I am really questioning, isn't this approach flawed? If you are using this kind of old regression analysis?

MR. CANNING: You are using "old" there --

COMMISSIONER BYRON: Old data, old data --

MR. CANNING: What it shows --

COMMISSIONER BYRON: -- the past.

MR. CANNING: -- is how people have changed their energy intensity over time. So if you look at usage per household back in 1980, it was quite a bit lower, and, yes,

they have added appliances over time, and that intensity has gone up. So it is not -- yeah, it is old data, but Tom runs his model on 1980s to 2007 data, too. So you are looking for the relationship between energy and the relevant economic drivers, and you are looking to see, well, did that change anywhere, but if there is a constant relationship, what is that relationship, and then assume that that holds true in the future. And then you step back and say, "Well, what outside of that relationship is going to change?" Well, energy efficiency is one of the big things.

COMMISSIONER BYRON: Right.

MR. CANNING: So you are assuming that the people's income to their home energy use has had a pattern over that period of time, that is more stable. So it is not an old pattern, it is picking up the changes in people's use as their income is going up.

COMMISSIONER BYRON: Yeah, I did not mean to emphasize "old," Mr. Canning, that is not my point. My point is just whether or not it is taking into consideration all the other changes that have taken place between a period of 20 years ago to today. I am just concerned that if it is not capturing all those other changes, then we are trying to forecast based upon 20-year-old trend that does not correspond to what we would see

today -- more efficient air conditioners, more appliances, but more efficient appliances, different kind of demand set up in an office per square foot than we would see 20 years ago.

MR. CANNING: So as those changes have taken place over time, that is what the econometric model is picking up, is how is that changing. If -- so the relationship is actually -- I mean, as income has gone up, people have, you know, they have bought bigger TV's and things like this, they have used more appliances. But it is not an outdated relationship.

COMMISSIONER BYRON: Yeah, I have made you defensive. I am trying to understand what you tell me you can understand, and that is why these are so different. And that is all I am trying to do, is just wring out one possibility here. If you have other ideas, and we will work together, that would be very helpful for this Commission to help understand why these forecasts are so different in their trends and where they end up.

MR. CANNING: Okay, I think the bottom line is we are pretty similar through the recession period; after the recession period, we are more similar to where they were in the previous forecast, the CED 2007, than they are now. What have they shifted? They have put in those natural occurring and they have put in the commercial compliance to

lighting, those seem to be the two big changes within the model that they have made, that have made the 2010 to 2020 growth rate shift downward. The economics do not seem to explain it. So that is what I am -- that would be my estimate of where the changes come from.

MR. GORIN: I --

COMMISSIONER BYRON: Mr. Gorin, let's see if we can wrap this up.

MR. GORIN: I think they are looking at it from an aggregate sector level and we are, in actuality, doing a similar thing at a more disaggregate end-use level. So we are trying to figure out what the pattern of lighting is going to be, what the pattern of television is going to be over the future, and figuring out ways that that may be reduced. It may not be fully captured in an aggregate.

COMMISSIONER BYRON: Okay. Dr. St. Marie, did you have something you want to add?

DR. ST. MARIE: A question for Mr. Canning. Your presentation has been very good on the differences between the methods and the specific sections. Just for overall materiality, can you give me a characterization of the difference in overall megawatts of demand at peak between your forecast and CEC forecast in the year 2020, which is at the very end of this set of forecasts?

MR. CANNING: I am going to ask Tom if he did that

calculation because I am not sure that I actually --

DR. ST. MARIE: Twenty-one versus 19? No, that is per household. Oh, what I have got is per household.

MR. CANNING: Well, Tom and I are looking at the graph and I think it might be 2,000 megawatts, but this is also with, Tom pointed out, my uncommitted EE, and I need to check and see if that is really what --

DR. ST. MARIE: Okay, but if it is 2,000 megawatts and it is, let's say, 50 megawatts per peakers, we are talking 20 peakers -- I am sorry -- 40 peakers. Okay? So this is a material difference.

MR. CANNING: This is a material difference, yes. After 2013, we start to gather a bigger and bigger material difference, that is right.

DR. ST. MARIE: Okay, thank you very much. That was the point I was trying to get onto the record. Thank you.

COMMISSIONER BYRON: Well, and Commissioner Boyd likes -- he likes to permit 500 megawatt peakers.

DR. ST. MARIE: Five hundred megawatt peakers?!

COMMISSIONER BOYD: You are right. I mean, just look at our caseload. We will get 800 megawatt peakers, 650 megawatt peakers, which -- as Commissioner Byron knows why he brought it up -- bothers me quite a bit.

COMMISSIONER BYRON: Okay, well, we digress. I am

sorry. Mr. Canning, thank you for much. Do you have anything else you would like to add?

MR. CANNING: Nope. Thank you very much. Thank you, Tom.

COMMISSIONER BYRON: Thank you for coming.

COMMISSIONER BOYD: A comment while they are changing speakers. By this time of today, I am beginning to think that Flex-Your-Power is not predicted to work too well in the future in terms of peak demand growth. It is rather phenomenal, so there may be another administrative effort that may have to be undertaken to address that in the future.

COMMISSIONER BYRON: And I think, is it Mr. Gorin that is continuing to head north here in his presentations? We are on to PG&E. Correct?

MS. KOROSEC: If we could have your indulgence for just a moment while I load up PG&E's presentation?

COMMISSIONER BYRON: All right. This is the staff forecast results for the Pacific Gas & Electric planning area in comparison to PG&E's forecast.

MR. GORIN: Okay, this is PG&E planning area, which includes all the great majority of municipal utilities within PG&E. In the early '90s, we did a service area forecast, as well as a planning area forecast for PG&E. It may be the case, and I think PG&E would like us to go back

to that, and we may entertain that, there is just a lot of small parts in PG&E that are not part of their service area. But I tried to make comparison as best I could. The forecast -- here is 4 percent lower in 2010 and that grows to be 7-8 percent, led by reduction in residential use. Peak forecast is 3 percent lower, growing to 5 percent lower. Same kind of stories as you have heard previously. I probably will not belabor the point a lot. We are growing at a lower rate after 2013. Per capita consumption, now projected to decline. Planning area peak, it increases, but from a lower starting point and it is projected to grow approximately the same as our previous forecast, just from a lower point. And per capita peak has the same shape as our previous forecast, maybe tails off a little more at the end of the forecast. And the load factor continues to go down. We are projecting it to go lower than we had projected before and, as in the other service areas, a lot of the savings from residential lighting, which are not directly related to peak savings. Residential forecasts starts from a lower value and grows at a lower rate. The growth rate increases slightly after 2011, but not much. Our use per household flattens out as the majority of the savings other than lighting from utility programs decline.

COMMISSIONER BYRON: Now I just want to make sure,

again, when you keep saying "PG&E", it means for the planning area?

MR. GORIN: Yeah, for the entire planning area.

COMMISSIONER BYRON: Okay.

MR. GORIN: Which includes entities like Modesto, Turlock, Roseville, Redding, other utilities. And in the revised forecast, we will -- and for other purposes, we break out the other utilities in their growth. But PG&E service area is approximately 88 percent to 90 percent of that planning area. Same story with income, household income. There is a greater increase in the late '90s because they had this Internet phenomena in Silicon Valley that increased household income there, and so they had a -- took a bigger hit in the 2000 period. Residential peak grows at the same rate it has before. Peak use per household, same situation.

Commercial building sector, start slightly lower. In 2010, this increases to 7 percent. We have a noticeable drop in commercial floor space projections from our previous forecasts. This is due to the economic drivers used in the commercial forecasts and that, along with increased compliance with the lighting in existing buildings, drives down the commercial forecast over last time. And the increased compliance with the lighting drives down the use per square foot where it had been

constant in the past. Commercial sector peak grows at a slower rate than projected before -- partly because of reduced floor space and partly because the lighting savings affect peak in the commercial sector more than in the residential sector. Peak per square foot declines just as consumption did. Industrial sector is lower in the short-term and it has a more rapid recovery. This is the same pattern as in the other utilities. So in PG&E, the end result is about the same at the end of the forecast.

Industrial sector peak, we have started at a higher point based on our recent estimates of industrial peak, and that is actually projected to grow in the short-term, and then flatten out.

The other sectors in the forecast are only 15 percent of the total. TCU sector is 5 percent, agricultural water pumping is 6 percent, mining, oil extraction is 3, and street lighting 1 percent. But they only affect 4 percent of the peak. The TCU sector is projected to increase right at the moment and that is a factor of calibration. We have -- that may decline. Our forecast for the revised forecast may come down somewhat. And the peak is higher. Same story for the efficiency savings and peak savings -- they are presented here for completeness. There are the similar historic difficulties with self-generation, although I am not sure that PG&E has

any information on their self-generators. I have not talked with them about that yet, as I have talked with the other two utilities. They did not file any forms reporting self-generation in their service area, as far as I can tell.

The comparison of the forecasts, again, with PG&E, I benched, tried to bench the two forecasts to the same starting point. And we are really just comparing growth rates from that starting point. Their sales forecast is about 2 percent higher in 2010. Their managed sales forecasts, which includes all their uncommitted efficiency programs is 3 percent higher by 3.5 percent higher by 2015, and 4.5 percent higher by 2020. When you take out all of the uncommitted efficiency savings, their forecast is 7 percent higher than ours by 2015, and 11 percent higher by 2020. I think the major differences are short-term growth in the commercial sector. This -- I was only able to compare uncommitted, their unmanaged forecast, which removes the effective uncommitted programs at the total service area level. All of their uncommitted programs after 2012 are unspecified as to what sector the savings come from. So you can see their unmanaged growth is a lot higher than ours; our short-term growth is about the same, and if we could adjust for 2008 starting point, our forecasts might be fairly close. The difference is that

uncommitted savings, for the most part. For residential sector, as far as I could tell, if we adjusted for the difference in 2008, the forecasts may be fairly similar. But we are still working on the 2008 QFER data to try to get it in our revised forecast. But commercial forecast, the PG&E forecast is growing slightly faster after 2010 than our forecast. We have a difference of opinion of where the industrial sector is headed, but it looks in the PG&E service area, so this may be a source of difference in the overall forecast. They had faster recovery than we do, and they continue to increase while our forecast flattens out.

Peak forecast -- they are growing at a slightly faster rate and, if you look at their difference between our forecast and their unmanaged forecast, that is probably about 3,000 megawatts by the end of the period, which is noticeable. So with that, I could entertain questions or turn it over to PG&E.

COMMISSIONER BYRON: Mr. Gorin, let's go ahead with PG&E.

MR. ASLING: Well, uh, good afternoon. My name is Richard Asling and I work for the Pacific Gas & Electric Company, and I want to make a few observations and comments. And I have labeled this presentation "Work in Progress for Discussion Purposes Only" because I was really

putting this together yesterday afternoon after trying to read through the materials as quickly as possible. So I really do view this as an opportunity for discussion and I think it has been a lively discussion so far, I was not here for the morning session, but I think that might continue.

Just an overview of some of the things I wanted to talk about, so I did want to talk about the draft peak forecast. I am actually just going to concentrate on the peak forecast here. I think, as Tom mentioned in his presentation, except for some what I think are actually differences in just the definition of what the uncommitted is, actually are energy demand forecasts, they are really not that different, but when we get to the peak demand forecasts, then I think we see a pretty major difference. And I -- just like Art had spoken about -- and I do not know what Tim had to say earlier, but definitely following up on Art, it is the only thing I am going to focus on, is that there seems to be this very large disconnect between the historic period and the forecast period, and I do not see anything in the model inputs that justifies that degree of departure. Now, I am not saying that the future is going to be a perfect replica of the past, but I just do not see the justification for the type magnitude of the drop that is in the draft forecast. And when I looked at

it, I saw -- and I will highlight this a little bit later, what I saw was that the primary differences were really in two sectors, one is the commercial sector and the other is the agricultural sector, that looked like that was where the bulk of it was. And the drop in the commercial sector appeared to be driven primarily by this new floor space forecasting model, and I call it "new" because when I was reading the report, it looked like it was something that you had developed just very recently, this might have been the first test of it. So it is a new floor space forecasting model. And the other thing was it looked like the agricultural growth was just an assumption, assuming zero growth in agricultural peak -- after a certain point in the forecast, it was just locked in at this one number.

MR. GORIN: I still need to check.

MR. ASLING: Subject to check. I also wanted to just keep sort of mentioning that I think the level of all of the forecasts are too low because the temperature statistics that are used to set the one and two recurrence level, so the base case temperature that is used for these forecasts is based on historical data. It does not take into account the effects of climate change and there are a number of studies that have been sponsored by the California Energy Commission that are on the California Energy Commission website, which suggests that, if one

changes to temperature statistics which are based on climate change modeling, peak load forecasts, for example, will probably increase at this base case level, the one and two recurrence interval, will probably increase between 200 and 500 megawatts, just by incorporating a temperature statistic which takes into account climate change.

And lastly, I want to spend just a little bit of time talking about the process because I think the process could take more advantage of the amount of expertise that is available in the forecasting than it currently does. And I do not know, I have said this so many times, I guess -- maybe I will make a commitment that this will be the last time I will say this, but the end-use model that the staff is using cannot be verified by any other stakeholder. So no stakeholder that is going to be using this forecast, or is commenting here today, can actually verify the forecasts that are being presented here, nor can we verify the estimates of the embedded energy efficiency savings. So what we really have is a report and a string of numbers, and that we have to just take that, and then try to look at that and see, okay, does that make sense logically? But we cannot actually vet the model itself. So the thing I want you to really look at here is -- if I had a laser pointer, I might be able to pull this off, but I am just going to -- well, I will just describe it. So if you look at the

bottom part of this table, which is the PG&E forecast, what you will see is that, in the historic period, 1990 to 2000, and also 2000 to 2007, the growth rate is very consistent, very consistent, it is around 2 percent. And then, yeah, of course we have a drop there in this recessionary period, and we have a pretty much very similar drop to what is in the draft forecast for this period, but then what happens is, after the recession, in 2010 to 2018, the growth rate in the draft forecast here is about half the historical growth rate. I am going to really focus on that. So the question is, why is that? So when you look at another table that was in the report, I just took a little excerpt from that table and added another -- this data was in the report. So this is the growth rate by the various segments of the market, so growth rate for residential peak, commercial peak, industrial and agricultural and other, and then total demand. And again, what I want you to concentrate on here is to look at two things, really, one is the historic growth rate, 1990 to 2007, you know, pretty much the same as what you saw in the previous table. So it is close to 2 percent. And then I want you to look at two things here, one is that, in the forecast period -- oh, I also want you to look at in the historic period, residential and commercial, they are very close. The growth rate is very very close. Residential

and commercial are moving together in the historic period, and that is pretty much the case throughout the historic period, residential and commercial tend to move together. But in the forecast, residential drops from just a little bit over 2 percent to just under 2 percent, but commercial drops from being 2.5 percent to being about one-half percent, so that is a 75 percent decline in the commercial growth rate from the history to the forecast rate. So two things are happening here. One thing is the growth rate in commercial is dropping dramatically from the historic period, and the other thing is that the growth rate in commercial has somehow disassociated itself with the growth rate in the residential. And I question that. I really question that. The other thing is, what you see is agricultural growth, it goes from being about 1 percent per year to being zero. That is a 94 percent drop in agriculture. And just to put this in perspective, so those two classes, commercial and agriculture, make up about 40 percent of the total peak load, so if you are off on those, you are going to be off on the total. So it is not trivial segments for PG&E. So what I would just request is that staff really take a look at that commercial forecast, and then really take a look at the assumption about agricultural growth. And really, just thinking in terms of -- you know, to me, commercial floor space, for example, is

very much linked in the long-term to growth in households, growth in population, because growth in households and growth in population are in turn linked to employment, and employment is linked to commercial floor space, so they have to be moving together, and if you are forecasting them over the long-term to not be moving together, then I think you need to question whether that forecast makes sense because, in the history, they do move together. And the other thing is that Ag, over the last several years, has actually been, I think, by percentage, the fastest growing peak. And the reason for that is because there have been a lot of water cuts from the flowing water, and there has been a lot of conversion from diesel and natural gas pumps to electric pumps to reduce greenhouse gases, and that is likely to continue. And it will probably take a while for California agriculture to adjust to that, so that the crop rotation and things like that become different adjusting to the lower flowing water supplies. But I think to have a no-growth in agriculture peak does not make a lot of sense, either.

Here, I am just trying to kind of look at what the difference is and the economic drivers, and the primary one, as I mentioned earlier, is that the growth in commercial floor space from the historic period, it is a fairly long historic period, 1992 to 2007. So this is not

a historic period in which there was a recession or there was a big boom, this is a long period of time. During this period 1990 to 2007, I am trying to remember, but I think we had one, two, three, I think about four recessions in this period of time, so it is a pretty long history there, and it is showing that growth in commercial floor space in the history is about 2 percent, and then growth from the forecast model, over the period 2010 to 2020, so, again, after we are over the recession, hopefully, it is down by 33 percent. And at the same time, household population, it is only down by 6 percent -- household, or actually up by 2 percent, things like that, so again, there is this kind of disconnect. So that is all I wanted to point out there.

Chris and I, we exchanged many voicemails, but never were able to connect on this table right here, so I am still a little bit confused by this table. You probably explained it this morning -- or are you going to explain it later?

COMMISSIONER BYRON: Dr. Kavalec, unfortunately, you have to either put the mike in your hand, or turn your back on the speaker.

DR. KAVALEC: Basically, that is the break-out of our different sources of savings by sector. Did you have a specific question about it?

MR. ASLING: Well, just, you know, maybe you can

take a look at this slide, it does not have to be now, or we could talk later, but I just wanted to make sure I understood it, but essentially what I was trying to point out here was that, you know, the drop in commercial, as far as I could tell, it does not seem to be due to a difference, you know, a larger amount of energy efficiency in the forecast period that is in commercial, than in the historic period, because when I look at this table and I calculate the average annual commercial and agricultural energy efficiency savings from 1990 to 2008, I get 47 megawatts per year, and when I look at the forecast period, 2011 to 2020, I calculate 20 megawatts per year. So I am just trying to, again, just reiterate this observation -- commercial peak growth goes down by 75 percent, and the floor space drops by 33 percent -- I question that, also, but -- that is only 33 percent, so that is less than half of the drop in the commercial peak growth. But actually, commercial and agricultural energy efficiency savings were 60 percent higher in the historic period than they are in the forecast period. So I am just following up on this notion that I do not see the rationale for the big drop in commercial, and the big drop in commercial is really driving the big drop in overall forecast.

COMMISSIONER BYRON: That is a very helpful observation.

MR. ASLING: And this slide is really wordy. I will try to just hit the key points. I talked a little bit about incorporating global climate change into the temperature statistic and what impact that would have. So one, just to sort of give an example of what is going on with the current temperature statistics, so if you calculate the temperature statistics based on the history, what you would estimate is that, in the year 2006, we have approximately a one in 40 recurrence interval temperature. In 2007, we had approximately a one in five recurrent interval temperature, based on the historic calculation. In 2008, we had an approximately one in 10 temperature recurrence interval, right? So I am going to admit here that I took a statistics class a long time ago, but I was tackling the probability of that happening back to back to back, if the temperature statistic was correct, and that probability -- subject to check -- is one in 2,000. And so, to give you some idea of something to compare that to, that is exactly the same probability as flipping a coin 11 times in a row and getting heads every time. So I just leave you with the question of, if that happened, would you want to take a second look at that coin? Because I know I would. And again, there are a number of studies on the website that give estimates of what this change would be.

MR. GORIN: Is that our temperature you

statistically did the calculation on? Or yours?

MR. ASLING: It was the three-day weighted max -- it was from our history, but check it out. I am just trying to put it into some context. So I am just saying that it is very unlikely that you would get one in 40. All right, and here is just a little recent data, so even though our model also shows a drop in 2009 and 2010 due to the economic downturn, I think we talked about this a little at the March 21st workshop, and we have not actually seen that in 2009, once we have gotten into the period where there has been at least a little bit of air conditioner use. So what you are looking at here is -- this is PG&E temperature normalized peaks for 2008 and 2009, admittedly, only through May. But what you will see is that, once we come out of the winter, and we get into March, April and May, that the peak for 2009, which is the -- I will call it red, it is not exactly red, but the reddish bar is actually pretty much the same level, or in some cases just a little bit above the peak for 2008, which is the blue bar. And I know there can be disagreements around temperature adjustments and things like that, but I just wanted to say that, you know, we have talked a lot about this drop that is going to happen because of the economic downturn, and we do see that on the energy side. On the energy side, we are seeing that, but on the peak

side we have not seen that. We are not into the peak season yet, so by the time we have a chance to look at the revised forecasts, we will have the June and we will have the July data, so we should have a much better idea of really what the impact on the peak load is of the economic downturn. And maybe that will help us to revise the forecast if we could get that information in time.

I just wanted, again, a very wordy slide. But what I wanted to do here was just make a couple of observations, one is, and this is really about the process, so one thing I want to say, I very much appreciate the process, I like the fact that we can come here, we can talk, you know, we can talk about our disagreements, and the next day we can call each other on the phone and we can work through it, and we can make progress. So I really very much value that. One thing that I have noticed over the last several rounds of the IEPR is that I think that the stakeholders invest an enormous amount of time in this process, but I do not think that the expertise of the stakeholders is being used as effectively as it could. And I would like for the Commission and the staff, too, to think about how they could use the expertise that is available, you know, to the maximum extent possible. And this is because we are talking about the future here, okay, there is a lot of uncertainty about what will happen in the future, and there

is an enormous amount of uncertainty, more than there has been in the last decade or more, about what is the future path of energy growth. And it is even more critical because we know the energy growth and energy consumption is intimately linked with greenhouse gasses and further climate change, so we are at that point in time where we are really really interested in doing this, but there is a lot of uncertainty about what the future will be. And it is pretty well accepted in the literature that consensus is going to produce superior results when there is a lot of uncertainty, than reliance on a single point of view -- unless you could show that that single point of view was somehow informed by superior skill, superior knowledge, or superior insight. And just standing before you today, I will admit that I do not have superior skill, you know, expertise, or insight about the future. You know, I do not know -- as much as I have studied energy demand, both on the gas side and on the electric side, and in other parts of energy industry, risk management and things like that, I really think there is a great deal of uncertainty about the future of energy demand growth. So what I would suggest, just as something to think about, is that it might be possible at the end of this process to adopt a forecast which, with some sort of averaging of the aggregate forecasts that were submitted by the various stakeholders

and the CEC's final forecast, in order to produce a true consensus forecast.

I would also like to mention that I think there is an over-emphasis on this idea of central tendency. So what we talk about here is this string of numbers, the so-called expected value. But I think one thing that we are seeing here is that there is a very very high degree of uncertainty in this forecast, a high degree of uncertainty, especially when you are talking about 2015, or 2020, which is the real purpose of these forecasts. The purpose of this forecast is not to forecast 2010, we have other ways of doing that. But the purpose of these forecasts is to look at what sort of resources we are going to need in 2015 and 2020, and there is just an enormous amount of uncertainty, and that uncertainty is reflected in this difference in the forecast, from one forecast cycle to the next, which is a two-year period. The outlook for the future has changed by -- in SC service territory, alone -- 2,000 megawatts. In PG&E service territory, 2,000 megawatts. Statewide, I do not know, 5,000 or more. So that is an enormous amount of resources that need to be planned for. And those resources could be demand response or energy efficiency, it does not have to be, you know, power plants, or anything like that, but we need to plan for that. So what I would suggest is, when I look, one

thing I notice when I look at the scenarios that were done, the rate scenarios, one thing that happened there was that there actually was not a lot of dispersion in the forecast results that was due to the rates. And that is because, you know, historically, at least, there has been fairly low elasticity from energy demand to price, and especially at peak. So there was not -- that probably is not capturing, nor should anyone think that that is capturing the true amount of uncertainty in the forecasts, those three scenarios. So what I would ask is that, if it is possible for the revised forecasts to build out a forecast that has really a lot more uncertainty in it, that really reflects -- and I do not know if you can do a statistical model on this or not, but that would reflect something like, at least, you know, an 80 or 90 percent confidence interval around the expected value. One reason why I think that is very important is because, at least from my point of view, and other people might disagree with this, but from my point of view, the financial implications of the forecast error are not symmetrical. When you have a situation as you have here in the electric industry, where you have a very inelastic supply, and you have a very inelastic demand, being short is going to be very very costly, very costly. And being a little bit long is really not going to be that costly, so that -- I really question

the idea that we would be choosing the expected value as the planning forecast. I am sorry, did you say you understood what I was --

COMMISSIONER BYRON: Very good observation.

MR. ASLING: Okay, thanks. Yeah, so I think that is something to really think about. So I have been told that at PG&E, we like to summarize everything with "the ask," the ask. I do not really like that one. So here is what I ask today, I ask that staff review and revise, if they find it appropriate, the commercial and agricultural sector peak load. I think the drops that are in there right now are too much. I would ask that the staff take -- at least give some thought to the notion of somehow the change in the temperature statistics so that it incorporates climate change, there is a lot of research and authority been done on that. And I would ask that the staff reduce scenarios that are more confidence interval oriented so that they go beyond the rates and really take into account things like the air variance in the commercial floor space forecasts, for example, things like that. And then I would ask the Commissioners if you could give some thought to the idea of, at the end of this process, having staff develop a consensus forecast which is -- somehow explicitly takes into account the forecasts that were provided by the stakeholders in the process, also. And I

am sorry, that was a little longwinded, but that is the end of my presentation.

COMMISSIONER BYRON: Good observations. I appreciate it very much. Any questions before I give staff a chance to respond?

COMMISSIONER BOYD: No, I agree that those were some very good comments made.

COMMISSIONER BYRON: Gentlemen, would you like to respond to any of those points? You do not need to, of course.

DR. KAVALEC: Well, I will not respond to everything, but a couple things. Rick's idea of developing sort of a common forecasting methodology or group, I --

COMMISSIONER BYRON: You mean a consensus forecast?

DR. KAVALEC: Yeah, with input from various parties. I have been thinking about that and I thought it might be a good idea to begin a forecasting group model on our Demand Forecasting Energy Efficiency Group that has been meeting since last fall to exchange information and about input data and about modeling, and so on. As far as uncertainty, that is something that we have also been thinking about, and we are in the future going to attempt to build that into our models. In our revised forecast, as I mentioned this morning, we are going to look at econ demo scenarios, and economic variables tend to be the biggest

sources of uncertainty in a forecast, so I like to think we are covering that uncertainty in not maybe a statistically formal way, but we are addressing it. In terms of the commercial peak, the difference there, as far as I know, it comes from the lower floor space and from the higher compliance with commercial lighting standards, and I can provide a break-out of that and we can talk about it a little bit later. In terms of the Ag forecasts, a large reason for the drop in peak comes from a large increase in energy efficiency impacts attributed to Ag. Whether that is the whole story or not, I would have to check with our agricultural modeler.

COMMISSIONER BYRON: Okay. If there are no other questions, I was going to ask if Mr. Baker would come forward from the Public Utilities Commission. I think he might have some comments. Oh, wait, we do have -- if you will hold on for just a moment. We do have some questions on WebEx.

MS. KOROSEC: Yeah, we just have a couple of questions on WebEx. We have one from K.K., Barbara George first. Barbara, your line is open.

MS. GEORGE: Oh, hi. I actually had a question earlier for Edison. This is actually -- I wanted to find out why the utilities are using self-reported numbers. Why aren't they using the results of the EM&V, that is the

Evaluation Measurement Verification, that we know those numbers are very different, and the utilities actually maintain a website called CALMAC where they post all the EM&V reports, and so they have access to them. I would like to know why they are not using them.

MR. CANNING: This is Art Canning from Edison. Actually, I use the numbers that are given to me by our representatives and that are on CALMAC, but I do not know how they might differ. So we will have to look into that because these are the forecasts of uncommitted ER, the ones that the PUC says targets our goals.

MS. GEORGE: The PUC says is what?

MR. CANNING: So the PUC has said in various decisions that these are the targets, or goals, in future years.

MS. GEORGE: Well, yeah, but your report was -- your historical data was based on the -- some report. I mean, it has been a little while since your presentation, so I do not have the exact slide, but it was on the -- there was a question to you before about where those numbers came from and they were from the utility reports rather than from the EM&V. That is my recollection from earlier today, so I --

MR. CANNING: I will have to check out my energy efficient people and find out if there is a difference, and

which ones we are because I usually take it based on -- I wish I could answer you better, but I cannot.

MS. GEORGE: Well, there is a tremendous difference between the utility report and the final verification. Yeah, there is the final verification for '04-'05 was like 40 percent in specific programs, and the utilities were claiming more like 80 percent, so huge differences, as I know there was a difference in the December -- in the report that occurred last fall, that was where the staff, the EM&V report show that the utilities should not get any profit because they had only made -- or, you know, the low 70s realization rates, and in the utility report they all said they should get profits and they were, you know, at least 10-20 percent more. So --

COMMISSIONER BYRON: Okay, I think we get your point, Ms. George.

MR. CANNING: I got it and I will check on it.

MS. GEORGE: Thanks.

MS. KOROSEC: All right, our next question is from someone on WebEx identified only as K.K. I will open your line, so go ahead and ask your question.

MS. KAPLAN: Katie Kaplan. This is Katie Kaplan. Can you hear me?

MS. KOROSEC: Yes, we can.

MS. KAPLAN: Okay, great. This is Katie Kaplan on

behalf of Integrated Energy Solutions, and I just had a couple questions for the CEC staff and hopefully for the utility presenters, as well. I just was curious if you spent any time looking through the historical information that all of the IOUs and the CPUC have collected over the last four years on all of the inputs that you have articulated today, you know, demand response, energy efficiency. We have learned a lot and I think the IOUs and other market participants spend a tremendous amount of time and effort trying to true-up the forecasts with what actually happened for a number of those critical inputs, and as we now see, there is a significant difference between, I think, what the IOUs collectively have articulated in their forecasts, and what the CEC staff has come up with. And I was just wondering if you have spent any time looking through that information, or if you have spoken with the ISO and considered their input formally, and just have they actually kind of gone back and looked and said, yeah, that they think this might be a realistic set of assumptions?

COMMISSIONER BYRON: Before everybody jumps in to answer, can we limit it to one answer? Could staff answer this question?

DR. KAVALEC: Yeah, and you are asking what data we have collected, or what data we are using for our

evaluation of energy efficiency and other impacts?

MS. KAPLAN: Yeah, and other inputs. I mean, the Resource Adequacy Forum at the PUC has done a great job collecting a lot of really important historical information and a lot of your presentation was based on reviewing historical information as inputs into our forecast. I was just wondering whether you had spent any time looking through any of the information. I think a lot of the IOUs did include the same type of data in their presentations, but seeing that the CEC forecast has become part of the resource adequacy and procurement processes, I just was curious if you had reviewed those and incorporated the findings into your forecast.

DR. KAVALEC: Well, what we have used in the forecast was data collected by the CPUC primarily for our energy efficiency impacts, and we put together a historical time series. But we are always interested in new sources of data. One thing we found is that there are many varied, scattered sources of data, so if you have a list you want to provide, I would be glad to look into that.

MS. KAPLAN: I would point you to the reports that have been developed by the PUC staff in the Resource Adequacy Department. Every year they present a report that goes through what the CEC forecast was, or the ISO forecast was for that time period, and measures of what actually

transpired on the grid, and they look back to the long-term forecasts that the CEC has provided, as well as short-term ones. And, honestly, we found that to be -- and I think, you know, the IOUs and other folks would agree -- we found that process to be very informative as far as future decisions with regard to procurement and the demand response proceedings has come out of that process, as well. So there is a tremendous amount of data there that I am sure the PUC would be happy to share that is already publicly together in the documents.

DR. KAVALEC: Okay, thank you. Any other source you want to mention?

MS. KAPLAN: I just was -- have you spoken with ISO and gotten their input at all on this forecast?

DR. KAVALEC: No, we have not.

MS. KAPLAN: Is there a plan to do that?

MR. GORIN: Yeah, we work with the ISO on the short-term forecast.

MS. KAPLAN: No, and I realize that, but, I mean, as we go forward and are trying to be more collective in our planning processes, obviously we know that when you have too many forecasts, that is when you really start to get into trouble. So I just was curious if there had been an effort, you know, just if you consulted with IOUs to get some input from the ISO. I thought maybe that would be

somewhere to start.

MR. GORIN: We do periodically consult with the ISO and they monitor our forecasts. I do not know if the representative of the ISO wants to make a comment about it?

COMMISSIONER BYRON: That is not necessary. It is okay.

MS. KAPLAN: Yeah, I mean, I was just curious more than anything.

COMMISSIONER BYRON: All right, well, we appreciate your question.

MS. KAPLAN: Yeah, thank you for taking the time to answer it. I appreciate it.

COMMISSIONER BYRON: All right, thank you. Mr. Baker? And while you are coming forward, I just wanted to thank our previous speaker. We did not really get a chance to thank you, Mr. Asling, that was very helpful and informative, and very good observations. Thank you.

MR. BAKER: Good afternoon, Presiding Commissioner Byron, members of the IEPR Committee. I am Simon Baker, PUC staff member in the Energy Division's Procurement Section. And thanks for the opportunity today to comment on the forecast issues for the three IOUs. Today, I will limit my comments to the energy efficiency conservation and self-generation assumptions. As you know, the PUC and its procurement proceeding has deferred to the IEPR process to

generate load forecasts that are used for the 10-year procurement planning proceeding, which determines the need for new system resources to maintain reliability. And in the previous LTTP docket, our commission deferred to the IEPR process and encouraged collaboration in the IEPR process to sort through some of these complex issues of teasing out embedded effects of energy efficiency and incremental effects of energy efficiency, with respect to our Commission's energy efficiency goals. So staff are definitely to be commended for the hard work that they have done so far on producing the forecasts and the documentation, so that we can have this discussion today. And I will just say that it has been a very rewarding process the past several months, especially being involved in the Demand Forecast and Energy Efficiency Quantification Project. I think it is a really fruitful setting to be continuing to examine these issues and hopefully come up with some solutions to some challenging technical issues that we face in sorting this out. I would second Richard's comment and Chris' comment and suggestion about a possible common forecasting methodology; that is something that is consistent with the PUC's practices and procedures to have transparency in any modeling exercise that results in Commission decisions. And also a continuation of the stakeholder group, initiated in the DFEEQP, potentially

extended to broader load forecasting issues. I think those are good ideas.

First, I would like to just provide a little bit of background in terms of how the procurement proceeding utilizes the forecasts and deals with energy efficiency to determine this net short for new system resources. As you know, the CEC has a Reasonably Expected to Occur standard. And in the LTTP, we have a similar standard, we have not really given it a name yet, call it a Deliverability Risk Assessment. But essentially, it is the one proceeding at our Commission where we have to take policy driven goals such as energy efficiency, or demand response, or renewables, or RPS Programs, and really interpret them for, you know, what do we expect the delivered megawatts will be from these resources? And how sure are we of that? So sure that we are willing to stake reliability on that bet? And so it is a different milieu, the procurement proceeding, in terms of looking at the expected delivered megawatts from those resources. Now, that is not to diminish the value of those goals to the extent that you might make more conservative estimates about delivered megawatts from those resources in the LTTP. It does not diminish the value of the energy efficiency goals, or the necessity that the utilities continue to strive to meet those goals. But this deliverability risk assessment, we

see as being very analogous to the challenge that the IEPR Committee faces in making a determination on the load forecast of what is reasonably expected to occur. Now, we see that as basically being a combination of looking at the historical data of what are the drivers of load, and then you are also applying some expert judgment, and as has been said, this is a roomful of experts, and so we have an opportunity to really work together, share data, share expertise, and come at the best guess of what is an inherently uncertain thing to predict. So for energy efficiency, the Reasonably Expected to Occur standard is pretty well defined, it is categorized into two -- well, two buckets, the committed and the uncommitted, and we are all familiar with those two buckets. For self-generation, the standards are not quite so clear, and so some of my comments today are going to be probing at ways that we can come to some agreements about what are appropriate standards for what to include in the forecast when it comes to self-generation. But I will begin with comments on energy efficiency, so as a result of this experience of collaborating with staff and doing this work, we have a better understanding of the uncertainties in savings estimations as a result of differences in modeling methods and assumptions made related to the forecasting, the rate of naturally occurring, and also the impacts compared to

utility programs. We see there is still much work to be done in assessing the degree of overlap that may exist between utility and other programs, savings estimates, and the PUC's goals. However, we are grateful that staff has created the modeling framework that will make these comparisons possible in the next few months by publishing their estimates of total savings by year, and explicitly stating how utility savings from different types of programs and end uses were treated at the end use level in the CEC forecasts. The actual savings estimates for utility program savings by end use has not yet been disclosed. In addition, the discussion on how to resolve potential overlaps in savings attribution between these different categories of savings has not yet occurred. The analytical tasks remaining include discussions about the CEC staff's analysis and what they did to exclude or discount savings from utility programs for specific uses, based on their potential overlaps in the efficiency measures promoted by the programs of the CEC building standards or price that needed changes. In other words, the methods used to attribute energy savings to a utility program or a building standard for specific end uses has still not been resolved, but we are getting much closer to agreement on the total level of savings to be included in the baseline forecast.

And I will just emphasize, too, that at the PUC in our recent Energy Efficiency Goals Proceeding, the goals that were adopted are total market growth goals, which means our Commission has not yet adopted utility-specific goals. Our goals basically encompass utility programs, as well as the savings from codes and standards, and naturally occurring, so it is the entire universe of savings from conservation that the total market goals are based upon. So this question of attribution is an important one, but the fact that we are getting much closer on the estimation of the total savings is a very good sign, and we are encouraged by that.

The Table 8.6 in the staff forecast document illustrates the progress that has been made in developing specific methods to handle utility program estimates for each use. It is probably useful to say that analytical staffs at CEC, and also Itron, the PUC contractor collaborating on this project, are in agreement for roughly 80 percent of the end uses. But the remaining 20 percent may be the hardest to solve. For example, totally excluding the savings from utility programs in the other commercial lighting category, which include savings from utility programs promoting T-8 lamps and electronic ballasts, is an area of disagreement between the CEC and Itron staff, and we look forward to resolving those

remaining analytical uncertainties.

Staff has done really good work in estimating total energy and peak savings from programs, standards, and price impacts that are included in the forecasts, and Table 8.1 provides very useful total savings information that will allow us to compare models at the sector level, and calibrate energy savings between models. This analysis also provides useful perspective on the effect of total savings achieved over time. A key question is whether the trend in the level of total savings at a percent of the load will continue after 2011 due to the impacts of future programs implemented after 2011, the so-called "uncommitted period." This boils down to a question of whether there is significant increase in utility program efforts and continued updates to standards can counteract the inevitable decline returns on program dollars spent in energy efficiency market, what you would call "saturation of the market." To get a better handle on these potential saturation effects, it will be important to contrast these forecasts, the program savings, or drops in energy intensity, with more recent trends and examine how they interact with forecasts of continued structural growth, or lower levels of economic growth for each end use. And with that, I will just again say that we look forward to working together with the CEC staff to share data and continue the

good work that we have already begun.

On the self-generation forecast, my comments are going to be mostly constrained to the California Solar Initiative Program. And the first observation is that, based on what we see in trends for installations and pending applications in the CSI program, the program is well on target to meet its 1900 megawatt goal by 2017. But we observe that the staff draft forecast does not take into account recent data on trends and installation rates. The proposed methodology would average the 2007 and 2008 per year solar installation data as a predictor of future installations. But we do not see that as being consistent with basically the trend of the last decade, which has seen year over year growth in installation rates. The proposed methodology would essentially assume that installation rates are flat as an average of 2007 and 2008 rates, and we have supporting tables and figures that we will be filing along with written comments to help to inform this dialogue. To look at this in a little bit more detail, what we did was we developed three scenarios, high, medium and low, and the medium case scenario, would just assume that pv capacity continues to grow at just 50 percent per year, which is close to the per annual growth rate over the past decade. Under that scenario, 1,700 megawatts would be installed by the end of 2012, that is five years in advance

of the date for the program, 2017, the goal. In a low scenario, where you would use the same installation rate as 2008, you would still get there by 2018, and so the key conclusion here is that, even in the low scenario, we see that CSI program goals are likely to be met, are reasonably expected to be met within the forecast period, and should therefore -- we should look at that as potentially being included in Reasonably Expected to Occur.

Now, as I mentioned at the outset, it is still not clear in my mind what the standard is for Reasonably Expected to Occur when it comes to self-generation. And I imagine that that may be a subject of dialogue here in this setting. We observe in looking at another self-generation program the NSHP Program, the National Solar Home Partnership Program, that a different methodology would be used there. There, the methodology did not look at the average of installed capacity over the past two years, it looked at the average of installed plus pending. Now, if you were to consider pending applications, as well, in the CSI program, there, again, you would see higher rates of assumed penetration from self generation. We are not saying one methodology is better than the other, we are just saying they should be consistent one way or the other, but there should be a consistent standard about what reasonably is expected to occur when it comes to self-

generation. And then, the last point that I will make on self-generation is that, this is a really a great opportunity for our two staffs to work together in refining projections for DG penetration, especially since our Commission has a lot of good data that could potentially be input into this process. We have over 22,000 publicly available data points on solar system cost to use as a possible starting point on cost estimates. We also have meter performance data out of this self-generation incentive program, and CSI program evaluations that could potentially be utilized, including eight impact evaluations that could be used in this effort. So I think that pretty well summarizes kind of the key points that we wanted to make today in terms of ways that we continue to collaborate and come to some agreements about what Reasonably Expected to Occur means in the IEPR process. And, again, I will just close by saying, you know, we see Reasonably Expected to Occur as being the same thing in terms of its application, both in the IEPR process and in the LTTP. And so we have a lot in common in terms of coming to agreements about methodologies associated with making those determinations. And with that, I will draft out my comments and ask if you have any questions for me.

COMMISSIONER BOYD: No questions. I just want to compliment the speaker for the presentation. We have got a

raft of notes here. Thank you.

COMMISSIONER BYRON: Yes, very good. And we do appreciate the offers for cooperation. This Commissioner welcomes it, but I think the people of California expect it, so that is good. I think I will reserve my comments with regard to tying all of this together later, but really appreciate your being here and your summary of the feedback on the investor-owned presentations. Thank you, Mr. Baker.

MR. BAKER: Thank you very much.

COMMISSIONER BYRON: So we are going to pick up speed now, right? Do we have, in addition to your presentations, Mr. Gorin, do we have respondents as shown on the agenda from both the SMUD and LAWP today? Are there people here?

MR. GORIN: People are here from SMUD to respond, and L.A. was going to be on the phone. I do not know if they are there now, or not.

COMMISSIONER BYRON: We will find out. All right?

MR. GORIN: I am going to, in the interest of time, go through this really fast. It is the same story as you have heard before, pretty much. Lower forecast because of economic conditions and some other things, the SMUD forecast is only about 5 percent to 7 percent lower. For the peak forecast, actually, is lower than the energy forecast than we had last time. Same kind of flat per

capita consumption, a much lower starting point from peak, but it is expected to grow at about the same rate, flat per capita peak. The load factor for SMUD is projected to be flat, but that is probably because it is pretty low already, and it has been relatively flat in recent history.

COMMISSIONER BYRON: Now, Mr. Gorin, I hope you will not mind, because these presentations look so similar, they are all depressing with regard to the economic forecast, will you just call out anything that you think is unique here that we need to know?

MR. GORIN: Yeah. One thing I wanted to point out, which is in relationship to something that Edison brought up, we now project persons per household for SMUD in the future to be flat. We in the past projected it to increase. That may not seem like a huge difference of, you know, like 500th or 2,500ths of a person per household, but it makes a huge difference in household income because you have less people multiplied per capita in income. With less people, you get a slower growth rate.

Everything else is relatively similar to what you have seen before. We have a little more commercial floor space at SMUD than we had projected last time. With the new economic forecast by Economy.com, that may change. I think, if I remember right, the only county in California

that is worse off now than it was in the December forecast is Sacramento County. It might have something to do with the state workers, I do not know. Everything else declines, just our industrial forecast is actually higher than it was last time, based on the economic projections of industrial growth, and industrials at the peak follows that same -- the other sectors are relatively small. PCU is up because of increased starting point due to QFER sales, and we have not incorporated 2008 consumption into our forecast yet, through SMUD. The peak, though, is somewhat smaller.

This is where everything is different than what you heard before, and I talked with Mr. Toyama yesterday a little bit about this, and he can expound on it a little more. He gave me a call yesterday and said that he thought our forecast was higher than theirs. The way they count committed and uncommitted savings is, in my way of thinking, opposite of the way the IOUs count it. And so I put four forecasts on this slide. Ours is the black one. The higher line is what we will call the SMUD Unmanaged Forecast, which is essentially similar to the utilities unmanaged forecast. If I understand it right, SMUD's planning forecast is the green line, which is practically flat. And the goals forecast from their board actually declines over time. So SMUD may want to comment on whether this is a fair characterization of the differences in our

forecast or not. But my understanding is the forecast they are planning to is the forecast that is relatively flat.

COMMISSIONER BYRON: That would be the green one?

MR. GORIN: That would be the green one.

COMMISSIONER BYRON: Okay.

MR. GORIN: Our peak forecast is slightly lower than their unmanaged forecast here -- I am challenged with the new Excel -- in that their forecast would be the line with the X's on it, which is the blue line. And so their planning forecast is much lower than we are projecting them to be. And with that, we go with SMUD's presentation.

MR. TOYAMA: Good afternoon. This will basically be a continuation of Tom's forecast, but the first part, what I wanted was to just give you a really brief review of what we do, or some of the modeling issues that we look at. First of all, ours is primarily statistical. We try to do -- we have basically a forecast that serves all purposes for SMUD planning needs, one being short-term forecast, going out one, two, three years, the other being a long-term forecast. Now, the unmanaged forecast that Tom talked about was a forecast which we use to examine if things were to go -- if things were to replicate themselves over time in the same way it does now, then that would be our unmanaged forecast, what it represents is our forecast, if

SMUD were not to continue its energy efficiency programs, or its DG programs, and it is basically a simple trend. And that is what our unmanaged forecast is. From the unmanaged forecast, we then produce a managed forecast in which we then subtract energy efficiency distributed generation and some of the new building standards and appliance standards that are coming into effect within the near future.

This slide basically shows some of the differences in our forecast over time. Population growth, we both have relatively slow population growth, a very low difference. If we look at the residential customers, we are looking at basically a difference of about 10,000 customers. In a good year, we get about 10,000 customers. In the future, we are projecting something less than that, but overall, it is a very low difference. Our energy efficiency sale in terms of gigawatt hours are practically identical, in fact, we are just a little bit lower than the CEC's. Our peak forecast in terms of energy efficiency is very similar, as well, or slightly higher, about one percent.

There is quite a bit of difference in our distributed generation forecast, and I do not know exactly why they are so different, but ours is primarily based on our pv program. We think we are going to get in the next 10 years, at least 125 megawatts, at least that is what our

plans are, and maybe double that for other programs that we have for our commercial sector. Our energy sales over the 20-year period, or the 10-year period, is lower than the CEC's, about 7 percent lower. But in terms of overall, we do not think that is a big amount to overcome should our programs not deliver the gigawatts that we think it is going to give us. Our peak, as well, is only about 300 megawatts lower, 9 percent. That is a large number, but I think that, in general, it is something that we can plan for, should we realize that our programs are not as effective as we think they will be.

The last issue, or the last couple of points, shows what our unmanaged energy sales per customer are, and they are per person. We did not have a breakdown of our total number of accounts in the future from the slides that we were given, and so I did everything on a per customer basis. So on our unmanaged, we see that it is fairly high. And that is what it is now, actually. But with our managed forecast, we show that we are well below the CEC's -- about 8 percent below their managed forecast.

The next slide just sort of goes over these points once again. This shows you that our growth rate, one percent, is one of the forecast -- I guess that is the DOF forecast. We are looking at about a 1.5 percent forecast. That -- in all respects compared to the relative history of

SMUD, they are both low. As you can see in the past, we have had anywhere from 3-4 percent growth; if we look in the '80s, we had about 5 percent growth. So 1 percent, 1.5 percent growth, at the end, it does not make much of difference, they are both low.

Energy efficiency, we end up at the same place, but we take a rather different path. We think that we are going to be able to get much more energy efficiency in the next couple of years. We believe our programs, with the given level of participation now, is getting roughly about 100 gigawatt hours a year. We look to increase that in the future as we expand our budgets in 2010. Same thing with our peak. We are getting approximately about 30 megawatts of energy efficiency a year in terms of peak savings. And if we looked at both of those numbers, that is roughly about 1-1.5 percent of our growth, which is what we are expecting to see in the near future anyway, so we think that with our energy efficiency, both for energy, as well as peak, we will be able to keep our load at least flat, and hopefully decrease it over time. This is the retail sales forecast that Tom presented. As you can see, our unmanaged forecast is slightly above the CEC's, and our managed forecast is just below the CEC's. The same thing is true for peak. It is flat, as Tom was saying, and we think that, with our programs, that we will be able to

maintain a relatively flat peak, and relatively flat retail sales.

This is where we sort of diverge in terms of the way we look at our future projections. We do not -- with our unmanaged, we are relatively flat, which is the dark line. The CEC's line for what we would refer to as our managed forecasts is relatively flat, as well. We think with our energy efficiency programs, that we will actually be able to reduce the energy use per customer overall, and up until about 2020, it is relatively flat after 2020 in terms of energies per customer. This forecast that we have accounts for the building standards, our energy efficiency programs, the appliance standards. We think it is fairly reasonable forecast. And, again, as we -- we deal with this forecast every year, and so we are able to adjust these parameters as we go forward. But we think with our current plans that we will be able to meet the blue line forecasts, with the existing programs that we have now.

One mention, or one thing to talk about, is the Board goals. The difference between our Board goals and what we have in the blue line is the blue line is based on our current programs and what we expect to get out of the current programs in the future. The Board goals, while being quite aggressive, have -- we are not able to, at least today, substantiate our ability to achieve that goal.

And so, as a Board goal, we use it, but we are just -- we think in the future, perhaps, that future standards and, as well, transit growth of the economy, may allow us to achieve those goals, but right now we just cannot quantify them, and so that is why the energy efficiency for sales and peak are much lower than the Board goals that you saw in Tom's slide. I think that is the end of my presentation.

COMMISSIONER BYRON: Mr. Toyama, you handled that very deftly in terms of the Board goals vs. what your forecast is, but I think it does merit comment. SMUD is doing an exemplary job in moving forward on implementing a lot of the state's policies. I am very hopeful that your Board is going to influence the company in a substantial way and you will probably even move closer to those Board goals. But I understand your answer and I think it is very good. So let me ask you just very directly, you are unique amongst the service territories' planning areas that we have done forecasts for here today, and your forecast is much lower than ours. Would you attribute that to more substantial economic downturn? Or would you say, because you are implementing these energy efficiency goals in a more substantial way?

MR. TOYAMA: I would attribute it more to our modeling technique because, given the way that we model our

load, and with evidence of the last couple of years, our load per customer, our sales per customer for each of our classes, have been relatively flat. We have seen also in the areas, especially with the commercial customers, that we have been able to achieve reduction in average use per customer. We are assuming it is from our programs, but I think our modeling technique basically assumes that, after we sort of grind out some regression models, that it maintains a relatively flat load. We do not have price elasticities, we do not have incremental elasticities, and so, with those two variables in there, we might see a difference in load, we might see it increasing over time, but our evidence indicates that, at least over the last couple of years, our load per customer is relatively flat, and that is with energy efficiency programs that were about a half a percent of annual growth. Since then, or since 2007, we have doubled our efficiency impacts, and that is how we are going to get this downward trend. But I think, in general, our forecast model basically looks at the last couple of years as what the energy use behavior is today, and forecasts that out in terms of our managed, or unmanaged forecasts. And so we are just replicating what we see now in the future, and just having a growth factor which is our population growth. We think our energy efficiency will get us even lower than that. So if we had

a profit income elasticity variable in there, then it might be different, we might see an increase in average use per customer. But when we try to model income elasticity, you know, it is modeling an indirect effect because income elasticity gives you more wealth or more income to buy other things. But we do not know what that process is and, in fact, we do not even know what those things will be in the future, which makes it difficult to model. And so, when we do actually try to estimate either price or income elasticity, we always get opposite parameters than you would think from economic theory. And so, given that, and not using those in our equation, we tend to get a flat growth. And so I think it is more of a modeling technique, or what we choose to model, and how we choose to model. But primarily our forecast is also a short-term forecast. We use energy efficiency DG and other things to bring it down, but we are really trying to explain really just -- in terms of what our uses of this forecast is, the most immediate use of our forecast is primarily looking at short-term procurement issues. So we are trying to pick up the volatility in daily sales, transfer that into the way that we purchase our capacity and energy, primarily option contracts. We extend the forecasts in terms of the long-term forecasts by applying these future programs to it, which we think gives us, then, changes in the structure of

the equation, but it is difficult to really estimate changes in the structure of an equation which is going forward. We can measure that going backwards, or within a sample equation, or in-sample modeling effort, like going forward, it just simply introduces an uncertainty which we cannot really measure, and so that is why we choose not to include it. It just really complicates things quite a bit, and we just do not know what the distribution of those savings would be anyway, or that growth would be. We only put in what we think we can get.

COMMISSIONER BYRON: Well, my compliments to the Board goals and to the staff at SMUD for being so successful in implementing the state's policies, going forward. I hope you are successful. Any questions from the dais?

COMMISSIONER BOYD: No, just ditto your comments.

COMMISSIONER BYRON: Any response at this time? Tom?

MR. GORIN: No.

COMMISSIONER BYRON: Okay. Mr. Toyama, thank you very much. Do we have any questions? Okay. Mr. Toyama, thank you. Very good. So we will proceed to our last staff forecast results for the Los Angeles Department of Water and Power's planning in comparison to their forecast. And again, Mr. Gorin, if you would not mind, I think we can

really concentrate on where there are differences that you want to point out.

MR. GORIN: Okay. And I believe we have a representative from LAWP on the phone.

COMMISSIONER BYRON: Good.

MR. GORIN: Mike Cockayne, are you there?

MR. COCKAYNE: Yes, I am here.

MR. GORIN: Okay. I emailed -- did you get the presentation I emailed this morning?

MR. COCKAYNE: Yes.

MR. GORIN: Okay. I am just going to go through it briefly in the interest of time. I think our forecast for L.A. is the same ballpark as the rest of the utilities. It is lower -- 5-7 percent lower on sales, the peak is not that much lower, though, because I think our peak was low before. Per capita consumption, the peak forecast you could maybe argue that it may be low now compared to recent history, but we will have to wait through this summer and see. The L.A. load factor is projected to be flat, at a lower rate now, but because of more recent peak events in L.A. Residential consumption and use per household, we changed in household population numbers for L.A., we increased them. And, also, the number of households. We have been -- I think a residential forecaster has been in contact with L.A. Since we do most of our economic and

demographics by county, L.A. is way too big a county, and there is four -- five utilities that we split out of L.A. County, and the distribution of population among the cities in that county gets to be tricky at different points in time, and so we are now projecting that there is an in-migration into the City of L.A. that we had not projected before, basically. Commercial is lower. We are looking at lowering of commercial floor space in the short term for L.A., but by the end of the forecast, it is about the same.

I think the biggest problem we had with L.A. was considering -- and I would not call it a problem -- a difficulty. There is the same self-generation issues that we have had with the other utilities that we are going to try and work out for the historic estimates. And I think these differences in historic values are kind of translate into the comparisons that I tried to make, because we have a different view of what historic consumption was in L.A. than the L.A. forecast does, and I think a lot of this has to do with differences in self-generation reporting and we are going to try and work with LADWP to iron this out. I think the overall forecast, if I could tempt to compare them, is our forecast does not show as big a drop from the current recession or as much of a -- and it shows a slower recovery than the L.A. forecast. They may have done some comparisons also.

The residential history is relatively good between the two forecasts. We have not incorporated 2008 data, that they have, yet. I am assuming that their 2008 is their version of what actually happened. We have not incorporated the QFER data yet. So our forecast would probably be higher then, until like 2018 or something like that. Where it gets messy is commercial and industrial, and we need to work together to resolve this difference in history, which creates a difference in starting point. I mean, the shape of those two forecasts is relatively similar; they are just a constant increment apart for most of the forecast period.

Peak shows less variation in history. The forecasts are pretty much the same shape. There is a bigger drop from L.A. and a greater recovery, just like the consumption forecast. So if -- I think Mike Cockayne is on the phone, if you want to comment?

MR. COCKAYNE: Yes, thank you. I apologize for not being able to be up there today, but I will do my best. One thing I want to observe is that, since we print out this forecast, which was done last September, we have a new signed April 2009 forecast, and actually the April 2009 forecast is closer to the CEC forecast than the one you have seen, so we have kind of moved together. The LADWP forecast does include uncommitted energy efficiency, so our

uncommitted -- what we forecast for energy efficiency is maybe 2021 goals, where we need to reach 10 percent for cells and energy efficiency by 2016. So after 2016, then everything is uncommitted, so we do tend to have that hockey stick after 2016, that our cells and peak grow pretty fast after that.

I do believe we have a calibration issue because our cells in 2008 were a lot higher than forecast by the CEC. I think there might be an adjustment upward.

In terms of economics, we use the UCLA forecast. I just want to comment that what was said earlier, that UCLA only updates every two years, actually, they prepare for us an L.A. County forecast prepared once a year in the summer, and we get three quarterly updates. That is economics in LADWP forecasts. I do have differences in personal income. I am using the personal income from UCLA, but we believe that you are going to see differences in savings and tax rates going forward, so I had savings rates actually negative and like the 2005-2006 time period, those savings rates will be increasing to 7 percent of personal income by 2018, and then I keep them constant after that. Also, I weighed tax rates, so actually we take that personal income variable and try to change it into personal consumption. There is also an issue in L.A. County that we have a high amount of transfers. You have a large percentage of

foreign born citizens and they tend to send money out of the country. We have a large amount of money leaving the county. So transfers also have a negative impact on personal income.

In terms of policy, I am glad that the population for the CEC is going higher. In L.A. County, it is the Mayor's strategy to build transit-friendly housing going forward, that is pretty much mostly high density housing near subway stations. If you look at the population data the last couple of years, you will see that the cities that have subway stations seem to have an increase in population; that is true in Los Angeles and Pasadena. The question is whether this is must a blip in the data, and in the future we will tend to see the migration out to the hot areas like the CEC has forecast, but I think that is an important question. But in terms of my forecast, I think what has occurred is that I have lowered the personal income and I have increased the number of households, so that kind of offsets each other. So that is kind of where I am in the forecasting process there.

I guess the fifth issue is the data issue. That data is very difficult for me to compare forecasts from a center level. We use our First Accounting System to classify ourselves. We send the CEC the data by its NAIC codes. I think, right now, the class codes, the First

Accounting codes, and the NAIC codes are not well matched. We have made two attempts to prove the quality of that data, we have basically failed. They were kind of low budget attempts, and basically my supervisor told me to say that we have a funding issue, that we tried to fund that project to its fullest, and it tends to get cut in the budget in the final round. So that is kind of where we are right now. Right now, there is now budget to correct that, so we need to find funds somehow to correct that data issue. So that is all I have to say. Thank you.

COMMISSIONER BYRON: Thank you, Mr. Cockayne. A lot of unique service territory data and information that you have. I think it shows a really good understanding of your population and your customers for your service territory, a number of unique aspects there. I could not help but notice as I was looking at the comparison on slide 34 of Mr. Gorin's presentation, how you had about six years of a very steep peak demand. You are probably breathing a bit of a sigh of relief, at least in terms of that not continuing. I am also encouraged to hear that your revised forecast in April is closer to ours, but I still suspect we have more work to do in understanding what these differences are. Is that correct?

MR. COCKAYNE: I would have to agree with that, yes.

COMMISSIONER BYRON: Well, I would like to thank you, Mr. Cockayne, for being on -- I do not know if you stayed on all day with us, or if you just joined late, but that was very helpful.

MR. COCKAYNE: Well, thank you. Well, I learned the definition of "counterfactual." So all day was a good thing.

COMMISSIONER BYRON: So you have been on with us for a while?

MR. COCKAYNE: Right.

COMMISSIONER BYRON: Okay, well, very good. Thank you. I believe now we are going to go to public comment in the event there is some. It is a Friday afternoon.

MS. KOROSEC: Friday afternoon, and everybody is fried.

COMMISSIONER BYRON: I think we are all eager here, too, to bring this to a close.

MS. KOROSEC: Do we have anything from anybody in the room?

COMMISSIONER BYRON: Anything from WebEx?

MS. KOROSEC: We are going to go ahead, then, and unmute the WebEx lines in case there is somebody who wants to speak. All right, all the lines are open if you have any comments, go ahead and chime in. All right, hearing none, I think that we have taken all public comment.

COMMISSIONER BYRON: Dr. St. Marie, do you have any closing comments?

DR. ST. MARIE: I would like to thank everyone for their efforts today. This has been a gritty, very specific set of comments today, more specific in green than I usually attend here at the IEPR meetings. I am, as a representative of the California Public Utilities Commission, that will be the consumer of these forecasts when they are finally printed in the final IEPR, I am concerned that we do our best to get them right, and I appreciate the hard work that everyone is doing. Thank you.

COMMISSIONER BYRON: Commissioner Boyd?

COMMISSIONER BOYD: I would like to thank the staff. I know how tough this is, this is not my first year to sit through these processes and, as the years have gone by, the process has gotten better, people have learned a lot, there is more cooperation, and I was very impressed with the many speakers who talked about we need to get together more, we need to compare things, we might have some ideas on how to make the process better, and how to get ourselves closer together in our understandings of how we do this, and I would encourage that. And then I would just, for the first time in years, express my sympathy to the CPUC in having to deal with all this. Thank you.

COMMISSIONER BYRON: Thank you, Commissioner. A few remarks. I found this to be a very good workshop. I think my compliments to the staff on doing a thorough job of explaining some of the concepts and the results in a way that even I could understand them; I appreciate that very much. But I think it is also clear that we still have some significant differences that merit further work in order to understand why we are not quite on the same page. I hope my staff agrees with that. And, in fact, it may be worthwhile to consider, if not a staff workshop on the subject, but some sort of gathering of the expertise that we discussed that is here today and on the phone, as a way to try and get some closure with the differences that we are seeing. But I think the process is working. You know, there were some comments earlier about how we need to maybe include some -- what was the term -- the consensus group to come to terms with a consensus forecast. I am not really -- although I am a great fan of consensus building to get buy-in, when someone needs to be accountable, however, for the forecast, and we are that agency, consensus is not the appropriate approach. I like widespread input and a working group idea makes a lot of sense, given the successes that you had with the Energy Efficiency Working Group, but we need to also use the input from that group, but a single point of responsibility is where we need to

end up, and that is where this Commission is. And we are obliged to take our responsibility very seriously with regard to the IOU forecast, and for the other service territories in the state, as well. Do not get me wrong, I think you are doing a good job, but we still need to get closure on why we have got these substantial differences. So I will end with that. I think it was very good, a little more work needed, and it certainly was a lot better than Science Friday, which I normally like to listen to at 1:00 in the afternoon. So my thanks to Mr. St. Marie for being here, staff, all the participants, and particularly Commissioner Boyd, whom I spent most of the week with.

COMMISSIONER BOYD: Yeah, this has gone too far.

COMMISSIONER BYRON: Thank you. I hope you all have a good weekend. We will be adjourned.

(Whereupon, at 3:39 p.m., the workshop was adjourned.)

CERTIFICATE OF REPORTER

I, Peter Petty, a certified Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Joint Committee Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 7th day of July, 2009.

Peter Petty CER**D-493