BEFORE THE

CALIFORNIA ENERGY COMMISSION

In the Matter of:	)	
	)	Docket No. 09-IEP-1C
Preparation of the 2009	)	
Integrated Energy Policy Report	)	
(2009 IEPR)	)	

COMMITTEE WORKSHOP ON 2010-2020 REVISED DEMAND FORECAST
AND UNCOMMITTED ENERGY EFFICIENCY

CALIFORNIA ENERGY COMMISSION
FIRST FLOOR, HEARING ROOM A
1516 NINTH STREET
SACRAMENTO, CALIFORNIA

MONDAY, SEPTEMBER 21, 2009

10:00 A.M.

ORIGINAL

Reported by:
Kent Odell

COMMISSIONERS PRESENT

Jeffrey D. Byron, Presiding Member, IEPR Committee

Laurie Ten Hope, His Advisor

James D. Boyd, Vice Chair and Associate Member,
IEPR Committee; Presiding Member Transportation and
Fuels Committee

STAFF PRESENT

Suzanne Korosec, IEPR Lead
Chris Kavalec
Malachi Weng-Gutierrez
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Michael Cockaigne (phonetic)

Via WebEx

I N D E X

I N D E X (Continued)

P R O C E E D I N G S

SEPTEMBER 21, 2009 10:06 a.m.

MS. KOROSEC: Good morning, everyone. I am Suzanne Korosec. I lead the unit that produces the Integrated Energy Policy Report, or IEPR. Welcome to today's IEPR Committee Workshop on our staff's 2010-2020 Revised Demand Forecast. At an IEPR Workshop on June 26th, the Energy Commission staff presented their preliminary forecast on Electricity and End user Natural Gas assumption, as well as peak electricity demand for each major utility planning area in California. Based on comments received at that workshop, the staff has prepared revised forecasts that they will present today.

Our agenda today will begin with a presentation of the statewide forecast results by Chris Kavalec, followed by a presentation from Tom Gorin on the Southern California Edison planning area -- this is a slight change to the printed agenda to accommodate some time constraints -- followed by Edison's responses and comments on that staff forecast. We will then hopefully break for lunch around noon, and then resume at 1:15 with another presentation by Mr. Kavalec on energy efficiency and self-generation demand forecast, followed by the remaining utilities service area forecasts. We will then finish up with an update from Dr. Michael Jaske on the ongoing efforts to develop forecasts of

uncommitted energy efficiency impacts, and we will finally have an opportunity for public comment at the end of the day.

Just a few housekeeping items before we get started. Restrooms are out in the atrium and to your left as you go out the double doors, there is a snack room with coffee and such on the second floor at the top of the stairs, under the white awning, and if there is an emergency and we need to evacuate the building, please follow the staff out to the door to the park that is kitty corner from the building and wait there until we are told that it is safe to return.

Today's workshop is being broadcast through our WebEx teleconferencing system, and parties need to be aware that we are recording the workshop. We will make that recording available on our website within a few days after the workshop, and we will also provide a written transcript once that is prepared, usually about two weeks after the workshop date.

Those of you listening in on WebEx, if you have questions, would you please send those to the WebEx Coordinator and we will make sure that those get passed on to the presenters. And during the public comment period at the end of the day, we will hear first from people here in the room, and then we will open up the lines for the WebEx

participants. For those of you in the room who want to make comments, please come up to the center podium and use the microphones so we can capture your comments accurately in the transcript and, also, if you could give the Court Reporter a business card when you come up to speak, it would be very helpful to make sure that your name and affiliation are spelled correct in the record. We are also asking parties to submit written comments and those are due by 5:00 p.m. on Friday, October 2nd. We plan to release the first draft of the IEPR at the end of this month in preparation for an IEPR Committee hearing on October 14th. So, because of the timing of that release and the timing of when written comments are due for this subject, some of the material in that draft IEPR will not reflect the comments that we have heard today, but we will make sure to reflect those comments in the final draft IEPR, which is scheduled to be released in mid-November, in preparation for our December 2nd adoption date. So with that, I will turn it over to the Commissioners for opening comments.

COMMISSIONER BYRON: Thank you, Ms. Korosec. And good morning to everyone. I would like to extend my Monday morning welcome to all of you, thank you for being here. As Ms. Korosec said, this is the Committee Workshop on the California Energy Demand Forecast 2010-2020 and the Staff Revised Forecasts. I was looking back in my notes and it

looks as though we met May 21st on this subject and also June 26th in a Staff and Committee Workshop, respectively. It seems like it was just yesterday. I will introduce my fellow Commissioner on the Integrated Energy Policy Report Committee, Vice Chairman Boyd, and ask, Commissioner, would you like to say anything to open?

VICE CHAIR BOYD: Very little. First, I would like to welcome the hearty few who are here to partake of this subject which really, as all of us in the room know, I am sure, is extremely critical with regard to the business we are all in. Having an accurate forecast of electricity and natural gas needs in the future drives an awful lot of activity. So I look forward to what it is we learn today and, just to let you know how important it is to us, who ultimately have to oversee the production of the Integrated Energy Policy Report. So with that, I would again extend a welcome and thank you, Commissioner, for the chance to say a few words.

COMMISSIONER BYRON: Thank you, Commissioner. I am going to be very brief on my opening remarks, as well. My sense is, based upon the input at meetings that we had over the last couple of months, the staff has been extremely responsive to the input we received on the draft forecasts. We certainly are interested in the results today and response to that from the various load serving entities.

You know, I noticed with the forecasts that we are doing, in May I recall saying that the policymakers' view of energy efficiency is a little bit different from that of customers and, although we are doing a forecast, I want to emphasize again that what our emphasis should be on is ultimately what the customers are concerned about, and that is saving money, and that is what good energy efficiency does. So I will just put that out there, look forward to the results today and in the feedback, and I did not want to forget to introduce my Special Advisor who is here, as well today, Ms. Laurie Ten Hope. Having said that, let's go ahead and pick up on the agenda. Ms. Korosec, I will look forward to you to make sure we have rearranged this correctly. I think I have captured the order as you described it, but I believe we are starting with Dr. Kavalec on the statewide forecast results for electricity and natural gas?

MS. KOROSEC: Yes, that is correct.

COMMISSIONER BYRON: Okay.

MS. KOROSEC: All right, Chris?

DR. KAVALEC: Good morning, ladies and gentlemen. We are presenting today the results for the California Energy Demand, or CED, as we call it, Revised Forecast for 2009. The report is available online at this address; also online on the same page are various forms that include all kinds of output results for the different planning areas, as

well as specific results for efficiency and conservation. Ms. Korosec has talked to you about the agenda today.

So first a summary of the results I am going to talk about in this presentation. Electricity consumption is reduced relative to the '07 forecast for the 2007 IEPR for three reasons, the downturn in the economy, increased efficiency impacts, and higher electricity rates. In this forecast, we have slightly increasing electricity rates and the '07 forecast rates were flat. The drop in peak electricity demand is not as dramatic and that comes from our assumption, or our projections, that there will be continued migration inland in California, and increased saturation of air-conditioners. But the forecast is significantly up relative to the draft forecast we presented in June.

A little bit for those not familiar with the way that we forecast, a little bit about our methodology. We forecast for eight different planning areas listed here. Tom will present results for the five major planning areas, that means PG&E, Edison, San Diego Gas & Electric, SMUD, and LADWP. And we forecast using individual sector models for the sectors listed here. The residential and commercial models are full end use models. The industrial model is a hybrid econometric and end use model. The agricultural water pumping model is econometric. And the TCU and street

lighting model is a simple trend analysis.

Changes in the demand forecast versus 2007, because of all the focus on residential lighting that was broken out as a separate end use in the residential model. It was already broken out separately in the commercial model. Overall, we have increased our effort to capture the impact of utility efficiency programs and, for the revised forecasts, that includes publicly owned utilities that were not updated for the draft forecasts. Given the economic uncertainty prevailing today, and the impact that we all know the economy has on electricity use, we did some economic demographic scenarios in this forecast and, as I mentioned earlier, electricity rates are slightly increasing by around 15 percent between 2010 and 2020, compared to flat rates in the '07 forecast.

In the draft forecasts, we ran three scenarios for prices, a flat case, a mid-rate case, which is a 15 percent increase, and a 30 percent increase. We did not have time to run all the scenarios again for the revised forecasts because we wanted to spend time on the economic demographic scenarios. But we know roughly what the impact on demand would be of a higher and lower rate relative to what we are using based on the results for the draft forecasts. Flat rates would reduce consumption in peak by around 1 percent, compared to what we have. Flat rates would increase demand

by around 1 percent, and the 30 percent increase in rates would reduce demand by a little bit over 1 percent.

So the big driver for the change versus the 2007 forecast, reduced economic growth, we get our economic forecasts for our base case here from Economy.com. And real personal income and total commercial floor space, two key drivers in our forecast, are down by around 2.5 percent compared to the '07 projections. However, these key economic indicators are up relative to the draft forecasts, as we will see in the next couple of slides. Now, we are using, for this revised forecast, we are using June 2009 Economy.com data, whereas, in the draft forecasts, we used December 2008 data, and projections for the economy have gotten more optimistic in the interim.

Statewide personal income, you see the revised forecast projections in the middle there in the dark blue, lower than in the 2007 forecasts, but higher than in the draft forecast. In fact, the growth for revised forecast personal income is actually higher than in the '07 case after the economic recovery, towards the end of the forecasting period.

Commercial floor space well up relative to the draft forecast, but still below the '07 forecast, and this happens for two reasons, commercial floor space is based on economic inputs, and the economic growth is up relative to

the draft forecast. Also, in the draft forecast, we used a newer methodology to predict floor space, and this methodology was leading to commercial output for commercial electricity use. It seemed pretty low to us, so what we did was to go back to the old methodology, and that is part of the reason that floor space is up relative to the draft forecast.

VICE CHAIR BOYD: Chris, I am kind of curious why you considered using a new one and went back to the old one. Has the old one been ground truthed over the years to be pretty good? And, if so, why even consider a different one unless you thought it could be even better?

DR. KAVALEC: That is why.

VICE CHAIR BOYD: Okay.

DR. KAVALEC: We liked what we had before, but we had this new model that was fancy based on the latest econometric techniques, and that is why we gave it a try.

VICE CHAIR BOYD: Thanks.

DR. KAVALEC: Okay, finally, some results for consumption. Now, when I compare to the draft forecast, I am comparing to the midrate case because that is the rates we are using for the revised forecast. We have a short-term drop-off and slightly lower long-term growth relative to the '07 forecast, although the rate of growth of the revised forecast would be as high as in the '07 forecast if it were

not for the additional efficiency impacts and the effects of the rate increase. Consumption per capita is still declining after the recovery from the current recession, but the decline is not as dramatic as it was in the Draft Forecast, so the economy is not cooperating as fully with us in our desire to reduce per capita consumption.

The Statewide Peak, this is a non-coincident peak, meaning it is summing up the individual planning area peaks, which may occur at different times of the day. Again, the peak relative to 2007 forecast, there is less difference compared to consumption, and that is because of migration inland, more air-conditioning. The peak for the revised is closer to the draft forecast and its consumption, and there is less difference, and that is because we had adjusted the draft forecast peak upward based on earlier indicators of peak in 2009. And if we had not made that adjustment, there would be much more of a difference. It would look more like the difference in consumption. The rate of growth in consumption or peak for the revised forecast would actually exceed that in the '07 forecast, were it not for the rate increase in our assumptions about additional photovoltaic self-generation during the forecast.

Peak electricity per capita, the same basic story as for consumption, although by the very end of the forecast period, it begins to increase ever so slightly -- again, the

dark blue in the middle there. The numbers to go along with these graphs, as I mentioned, consumption down by more than peak, and the economy is responsible for most of the difference between the revised forecast and the '07 forecast. And let us see how responsible -- this pie chart shows the sources of reduced consumption relative to the '07 forecast in 2010, the economy being responsible for over half of the difference, utility programs around 40 percent. You see that small yellow slice, that is Additional Standards impacts that were not in the '07 forecast, and that means commercial lighting standards and residential refrigerator standards. And there is a tiny invisible slice there, referred to as Lighting Savings, and I will explain what that is all about when I do my presentation on efficiency a little bit later.

By the time we get to 2018, the economy is still responsible for a little bit more than half. The effect from utility programs has decreased from 40 percent to around 11 percent. The reason for that is we do not include any utility programs, new utility programs, beyond the year 2011. In our forecast, we only consider committed efficiency programs, and "committed" means either already implemented, or for which there is firm funding and a specific program plan we can work with. So, in other words, after 2011, there were no more new utility programs, and

vendor savings begin to decay, and we are reduced from 42 percent to 11 percent. At the bottom there, the light blue, Additional Price Effects make an appearance. That is coming from the rate increase that begins in the year 2010.

The next two slides are basically meant to show where also the difference between the '07 forecast and the revised forecast is coming from. It is coming in the residential and commercial sectors. The top two lines there indicate the difference in commercial forecasts between '07 and now, and the next two lines show the difference in residential. I did not put in any other sectors there because I did not want to make the graph too busy, but you would see a much smaller difference than you do with residential and commercial, at least at the statewide level, that is not necessarily true with planning area level, as Tom Gorin will show later. Same story in the peak case, most of the action is in the residential and commercial sector, although there is less difference in residential and commercial peaks than there were for consumption.

Some more numbers. Residential consumption down by more than commercial consumption, however, residential peak is down less than commercial peak, and that comes from, again, from our assumption of migration inland by households and more air-conditioning. So, as I said, given our uncertain economic world, we thought it would be prudent to

look at alternative economic scenarios in this forecast, and for those alternatives, we chose two cases, a global insight optimistic case, higher economic growth, and in Economy.com "aborted recovery," or a pessimistic case, which is just what it sounds like, a longer lasting recession and then less growth afterwards. The reason we chose these two scenarios is that, among all the scenarios offered by the two companies, in general, these showed the highest and lowest rates of growth. So we thought it was a good range to use. And these scenarios differ based on assumptions about the impact of the stimulus package, projected business investment, consumer demand, and so on. In the report, the appendix gives a more detailed description of the difference between the two. And fortunately, these two scenarios provide California-specific projections, so we can do economic scenarios for the state, and California-specific projections are available for a whole host of variables, like employment output by sector, income, industrial output, and so on.

So here is a look at change in a couple of economic indicators between the optimistic and pessimistic scenarios, on a base case. Employment, roughly 4 percent higher or lower than the Economy.com base case in the year 2020. Statewide personal income, a little bit more severe on the downside, 8 percent lower by 2020, 5 percent higher

in the optimistic case by 2020.

So we did not have time between the preliminary forecast, the draft forecast, and the revised forecast, to make two full runs with our full slate of models, so what we did was to estimate reduced form econometric models by planning area for the three major sectors, residential, commercial, and industrial. The appendix provides all the details about the variables included in the econometric progressions, but, for example, residential is a function of persons per household, income per household, weather variables, average residential rates, and so on. Commercial is a function of floor space, employment, weather, average commercial rates, etc. And the industrial version, I did a little bit differently; the dominant force in industrial energy use over the last 30 years has been a decline in energy use per dollar, coming from processes in efficiencies in the industrial world that are beyond the scope of a simple econometric model. So what I did was to take that trend as given, investigate whether economic variables had any impact on that trend, and the forecast results match relatively closely with the revised forecast.

So this next graph compares the econometric models using the same economic demographic inputs as in our revised forecast. And it predicts a little bit more on the downside at the beginning of the forecast period, but, by 2020, the

difference between the two forecasts is less than one-tenth of 1 percent. So this means either that our end use models are doing a reasonable job because the different methodology used the same results, or it means that I have estimated a model just as crummy as our end use models, one of the two.

Okay, the way we did these economic scenarios is we ran the economic models for the "base case", economic inputs on the two alternative scenarios, and then applied the percentage difference between the alternative scenarios and the base case to our revised forecast. And we estimated peak demand by applying load factors at the planning area and sector level to consumption results.

So here is what the scenarios look like at the statewide level in terms of consumption, roughly 2 percent higher or lower by 2020, relative to the base case, the revised forecast. On the peak side, a little bit more of a difference on the downside because, remember, I showed you a graph where personal income -- the reduction in personal income was much higher in the pessimistic case versus the increase in the optimistic case. And this affects residential consumption, personal income, more than it does the other sectors. And residential consumption, we know, is peak year, so there is more of an impact on peak.

We did these scenarios for each of the planning areas and the results were similar in terms of the

difference by 2020, around 2 to 2.5 percent up or down for each scenario. Some numbers to go along with those graphs, and the largest change is by sector, the industrial in the case of the optimistic scenario changed the most. Residential changed the most in the pessimistic scenario because of the big drop in personal income. And as you noticed, the difference in the scenarios relative to the base case is not huge, only around 2 percent up or down. And this is a reflection of a relatively narrow spread among the economic scenarios. I showed you personal income and employment differences among the scenarios. For a lot of other variables, the differences are much smaller. For example, retail employment is only up or down 2 percent in the alternative scenarios relative to the base case. And in the pessimistic case, industrial output actually reaches the same level as in the base case by the end of the forecast period. And I think what has happened here is there has been sort of a convergence in economic forecasts over the last few months, at least for these two companies, Global Insight and Economy.com. So they are not predicting even in their scenarios any more of a total crash of the economy, or a huge dramatic increase in the economy. And economic forecasters tend to be fairly conservative. They want all of us to go out there and predict a large change in the economy because, if it does not happen, it is not good for

your reputation.

So if these scenarios are reasonable, and if I did a reasonable job with the econometric models, then this is telling us that we should not expect a huge change, a huge variation relative to our base case forecast, in the next 10 years; however, of course, if there is a crash of the economy, or we have a new bubble coming up, and all bets are off, and economists, as we know, are very good at predicting bubbles after they happen, but they are not predicted yet.

We also do, in conjunction with our electric forecast, we do a natural gas forecast for these three planning areas, PG&E, Southern California Gas, and San Diego Gas and Electric, and another that we call "other" which is a very tiny slice. And this is an end user forecast, it does not include natural gas use for generation. What we do is develop this end user natural gas forecast, and the Natural Gas Office combines that with their generation forecast to provide a statewide forecast for natural gas. And, as in the electricity case, we assume mid-rate natural gas prices from the draft forecast. That means specifically a 10 percent increase in rates between 2010 and 2020. The '07 forecast assumed a higher increase in natural gas prices, around a 30 percent increase between 2010 and 2020. So this graph shows natural gas demand broken out in Northern California and Southern California, Northern

California meaning PG&E and Southern California and the rest. And the story here is a drop in 2008 consumption relative to what was predicted in previous forecasts, so you notice the dark blue line which is the revised forecast is, at least in the beginning of the forecast period below the other two forecasts. And the reason for that is recorded consumption in 2008, which we use for the revised forecast, is a lot lower than had been predicted in our previous forecasts. And this is a function mainly of the recession. Remember, the official starting point of the recession, I think now is early 2008. But the growth rate after the initial downturn is higher than in the previous two forecasts. Compared to the draft forecast, the growth rate is higher because economic growth is up. And relative to the '07 forecast, the growth rate is higher because we are using lower rates, and also because, for natural gas, we are not adding any additional efficiency impacts like we do in the electricity case.

Some additional analysis provided in the appendix to the report. We looked at the performance of our forecasting models two ways, we looked at back casts provided by the models versus actual history; and we looked at previously forecasts going back to 1990 versus what consumption actually was subsequently. And as is the case with any forecasting model, the results are sort of mixed.

We generally get the longer term trends right, but miss some of the short term changes. We also did some scenarios looking at the impact of climate change on peak electricity demand in terms of increasing annual maximum temperatures. We already make an adjustment to our forecast to attempt to account for climate change by adjusting the amount of cooling and heating in the forecast, based on the ratio of heating degree days and cooling degree days in the last 12 years versus the last 30 years. This is meant to account for general warming. But we thought it would be useful to look specifically at the impacts of potentially increasing maximum temperatures on peak demand because there was scenario data available to do this from the Scripps Institute of Oceanography. And they provided us -- they have 12 different scenarios they recently put together for California. This was work they did for the Commission earlier this year. So of those 12 scenarios, they provided us the scenarios that led to the highest increase, projected increase, and maximum temperatures between now and 2020, and the lowest increase among the 12 scenarios. And the high scenario looked like this. These are very disaggregated projections they provide for California, so we were able to match them to our planning areas, and the amount of temperature increase depends on the planning area, but overall, in the highest scenario, annual maximum

temperatures rose by between 3 and 5 degrees relative to average historical maximums, and in the low scenario, they varied by between -.4 degrees plus 2 degrees, and that means that, in the low temperature scenario, some areas of California were actually cooler. Specifically for us, in terms of planning areas, that means the SDG&E planning area actually had lower maximum temperatures by 2020 compared to historical levels.

So the results of this scenario analysis we did show an increase in statewide peak of between 1.5 and 2.2 percent for the high temperature increase scenario, and by between -- that is actually a typo there -- it should be -.2 percent up to +1 percent increase in peak in the low temperature scenario. The negative value because, again, the SDG&E planning area has lower temperatures in the low scenario. And I want to thank the folks at Scripps for providing us this data. And, as I said, we already make an adjustment in the forecast using a ratio of cooling days, recent cooling days versus 30 years of cooling, averages of cooling days, but that is sort of a blunt instrument. So you can think of this as our beginning to refine our approach to incorporating climate change in the forecast.

These are some additional slides that were not part of the original package, but are provided outside in the lobby, and I believe the Committee has an updated set

that includes these additional slides. And the deal with an electric vehicle forecast, the last couple of weeks or so, I have been moonlighting as a transportation forecaster, attempting to assist the Fuels Office staff get their vehicle choice model going, to crank out an electric vehicle forecast, and the reason it took a while is because they recently finished a large scale survey, statewide survey designed to measure California's inclinations towards vehicle choice inclinations, and in this survey, they incorporated additional fuel types that were not previously part of the model, like ethanol and plug-in hybrids, and so that made the model more complicated, and therefore it took a while for it to get going. But thanks to the diligence of the Fuels Office staff, the model is up and running. So what I am going to provide today is a preliminary forecast for electric vehicle consumption, and this is, of course, subject to finalization by the Transportation folks, together with the Fuels Committee. But I think the end results will look roughly like what I am going to show you today.

Okay, the vehicle choice model in question is called the Calcars model. It is a vehicle choice quantity model, meaning that it predicts choice among different types of vehicles, and the number of vehicles a household is going to own, and it does this at the household level, using

roughly 75 simulated households that are meant to represent different segments of the California household population. So, for example, one segment might be a household with two members, one of whom is employed and whose income is between $50,000 and $75,000. And these simulations at the household level are blown up to a statewide forecast by factoring up the results for the individual segments based on how many of those households exist, those types of households actually exist in California. Households choose among various fuel types, including conventional gasoline, and they can choose two types of electric vehicles, a dedicated electric vehicle meaning it runs solely on electric motor, and a plug-in hybrid, and that is a vehicle that, in case you do not know, has both an electric motor and a gasoline motor, and the idea behind the plug-in hybrid is that you would use the electric motor for the stop and go type driving, city driving, and you would use the gasoline motor for higher speed driving. And, of course, when your electricity runs out, your vehicle would use gasoline.

And the choice is based on vehicle and household characteristics, your choice of vehicle. Vehicle characteristics include things like purchase price of the vehicle, fuel efficiency of the vehicle, horsepower, and so on. And household characteristics mean things like number of members in the household and income. And also, the model

estimates vehicle miles traveled and fuel use for each vehicle, and therefore that can give us a forecast for electric vehicle consumption. Critical input to the model is projected vehicle characteristics, that is, how much a plug-in hybrid is going to cost in the future, what the fuel efficiency of a natural gas vehicle is going to be, and so on. And that comes to us from our expert automotive consultant, K.G. DuLieb, who has been doing this for us for a long time, since the early '90s, and as far as I know, he is the only person that does this, so he is both the best and the worst at it.

What I am going to show you are two scenarios. The first scenario includes relatively high gasoline prices going from today's level to around $4.50 a gallon by the end of the forecast period, with low alternative fuel prices, and then the second case would be low gasoline prices, prices would stay at roughly today's level throughout the forecast period, and higher alternative fuel prices. These two scenarios are meant to encompass a range for alternative fuel vehicles.

A couple things about electric vehicles that are assumed in the model. Each fuel type can have a maximum of 15 classes, a class means something like a subcompact car, minivan, and large sport utility vehicle. So there is a maximum of 15, and by the end of the forecast period, plug-

in hybrids have representation in 12 of those classes and dedicated electric vehicles in 11. Electricity costs in the high alternative fuel price case is $.13 a Kilowatt hour, and then in the low alternative fuel price case, it is $.6 a Kilowatt hour. The average purchase price, taking the average for both plug-in hybrids and dedicated electric vehicles is around $6,000 higher than gasoline. The average range for dedicated electric vehicles is around 85 miles with an average efficiency of two miles per Kilowatt hour, and that translates to around 70 miles per gasoline equivalent gallon. And the plug-in hybrids, on average, because of the electric motor, the portion of time spent operating the electric motor are on average 60 percent more fuel efficient than gasoline vehicles. And, in general, it was clear from the survey that respondents looked very favorably on the plug-in hybrids, but were not so crazy about the dedicated electric vehicles because of the limited range and the limited opportunities for refueling.

COMMISSIONER BYRON: Dr. Kavalec, does the 44 mpg at the end of the last bullet -- is that parenthetical for the assumed fuel efficiency of gasoline? Or the PHEV?

DR. KAVALEC: Oh, I am sorry, that 44 is for the PHEV's, for the plug-ins, and the 27 is the average for gasoline.

Okay, that brings us to the forecast first for

projected number of electric vehicles on the road, the majority of which are plug-in hybrids; in fact, 95 percent of the total here is plug-in hybrids, reflecting preferences of survey respondents and their general favorable view towards plug-ins. So, by 2020, we have in the low alternative fuel price case around 1.6 million on the road, and in the high alternative fuel price case, 1.4 million.

And here we have our forecast, around 4,700 Gigawatt hours of consumption in the low alternative fuel price case by 2020, and just over 4,000 in the high alternative fuel price case. That 4,700 represents around 1.5 percent increase in the total consumption in the state. A crucial assumption being made here is that, for plug-in hybrids, they are assumed to operate 50 percent of the time on the electric motor, and 50 percent on gasoline. And that comes from the concept of the electric motor operating during city driving, and the gasoline motor operating during the highway times, and the split between those two types of driving is roughly 50/50, so that is where that assumption comes from. Okay, so that is a preliminary electric vehicle forecast, and once this is finalized, if that happens in a relatively short period of time, we will add this into our electric forecast.

Okay, so those are the statewide results and, with that, I will take any questions or comments.

COMMISSIONER BYRON: Commissioner?

VICE CHAIR BOYD: On the section you just finished on electric vehicles, the cost range between $.13 and $.6 a Kilowatt hour, am I correct in assuming the $.6 is predicated on some new tariffs being established for off-peak charging, or what have you, for electric vehicles?

DR. KAVALEC: Do you want to give that a try? This is Malachi Weng Gutierrez from the Fuels Office.

MR. WENG GUTIERREZ: Good morning. The $.6 value is actually a current rate that is primarily all off peak, and it was the selection of a single utility's rate to represent the lowest number that we could kind of identify. It was PG&E's off rate without meter charge included, and assuming no other electricity consumption.

VICE CHAIR BOYD: Okay, thank you. No other questions.

COMMISSIONER BYRON: Yeah, I would go so far as to say I think that may be a little bit low, but there are a lot of assumptions involved in this sort of thing. A couple of other quick questions, if I may, Dr. Kavalec. Going back to, let's see, to your Slide 9, first of all, I suppose a comment. What a difference we are seeing in the forecast as a result of revised economic forecasts from Economy.com. I think it obviously indicates that our forecasting ability is highly susceptible to the economic assumptions that we make

early on. I was struck by the floor space comparison. *The Economist* magazine is not nearly as bullish on the recovery of commercial floor space, I think, as this forecast would indicate.

DR. KAVALEC: Yeah, I read that.

COMMISSIONER BYRON: And so, believe me, I am very encouraged to see that our staff is buying into an improved economic recovery here, but I think my comment still stands. It certainly is susceptible to these assumptions. Let's jump ahead to your Slide 30. Does the end user natural gas forecast -- is it impacted by the penetration of renewables in the electricity sector?

DR. KAVALEC: It is influenced by -- no, not directly, is the answer to that question. But there is competition among fuels that takes place in our commercial model, depending on the respective prices.

COMMISSIONER BYRON: So whether or not we are going to a 33 percent renewable case in 2020, in the electric sector, is not going to really impact this forecast, this natural gas forecast?

DR. KAVALEC: Not unless it affects natural gas prices.

COMMISSIONER BYRON: Does someone want to make a comment on that? Okay. I would certainly like to open it up if that is okay, if there are any other questions from

others present with regard to the presentation.

VICE CHAIR BOYD: Commissioner, can I go back to one chart, I forgot? Going back to Chart 11, I did have a -- Chris, you used the term in describing what is going on there as [quote] "the economy is not cooperating," and this of course is consumption per capita. Can you elaborate a tiny little bit on that?

DR. KAVALEC: Oh, that was just a throw-away joke.

VICE CHAIR BOYD: I can make a bigger joke out of it and say, "What is this? The impact on flies on TV screens?" But never mind.

DR. KAVALEC: Well, yeah, the decline itself is a function of increasing efficiency and increasing rates. But because of improved economic conditions, the decline is not nearly as severe as it was in the draft forecast.

VICE CHAIR BOYD: Meaning we will keep powering up all those goodies, and drawing more --

DR. KAVALEC: All our new toys.

COMMISSIONER BYRON: I think the only other comment I would make, and if there are any other questions from our participants, they are welcome, would be back on the electric vehicles section. As I look at your low and high penetration cases, there is really only about a one-year lag between the low and the high case. Isn't that correct?

DR. KAVALEC: Uh, yes.

COMMISSIONER BYRON: So that is a pretty narrow bend. I am not sure -- maybe your earlier comment about economists unwilling to stick their neck out might apply here. I would expect there to be a little bit wider spread in terms of the low and high cases there.

DR. KAVALEC: I would say that does not happen because conventional gasoline is still going to be the dominant vehicle in the year 2020, that is what most people are buying.

COMMISSIONER BYRON: So it is not having much of an impact.

DR. KAVALEC: Yeah, you are not going to get a huge shift to electric vehicles.

COMMISSIONER BYRON: I agree. Will you accept any other questions or comments?

DR. KAVALEC: Sure.

MS. TRELUV (phonetic): My name is Cathy Treluv (phonetic)and I am from PG&E, and I just had a clarification question. Could you say again when we will see the electric part of the natural gas forecast, the electric generation part? It sounded like your end use piece would be combined with electric, and that would be published when?

DR. KAVALEC: Tom, do you have any sense of when?

MS. TRELUV: Oh, in the Cal Gas Report, okay.

Yeah, I also do not know when that comes out, but it is every two years, right? So, sometime soon?

DR. KAVALEC: It is out.

MS. TRELUV: Oh, good.

COMMISSIONER BYRON: Is the Cal Gas Report out? Tom, if you have the answer, you can approach the microphone.

DR. KAVALEC: It is out. There is a copy sitting on my desk, so apparently it is out.

MS. TRELUV: I think we all have someone who knows in each of our organizations, so I just --

MR. ASLIN: Hello, my name is Richard Aslin and I also work for Pacific Gas & Electric Company. So I just wanted to make sure I was clear on this. So, the Energy Commission's natural gas forecast does not include the forecast for natural gas used in electric generation?

DR. KAVALEC: Right.

MR. ASLIN: And there is no intention to include that at any time in the future?

DR. KAVALEC: Not in our forecast. We do a PIER demand-side forecast.

MR. ASLIN: Okay, well, there is a California Gas Report that comes out every other year, and every other year is a forecast year, and then the in-between years are just an update for recorded data, and then any other sort of

incidentals. So the next full forecast will be July of 2010 for the natural gas. As long as I am here, I had a couple of other questions.

COMMISSIONER BYRON: Sure. That is that colluding report that the IOU's put together every couple of years, right?

MR. ASLIN: Cooperative.

COMMISSIONER BYRON: I mean "concluding" report.

MR. ASLIN: Chris, I had a couple of questions on your presentation. One thing was, I wanted to understand and make sure I am clear on this. The 15 percent increase in the electric rates, that is a 15 percent increase in real electric rates?

DR. KAVALEC: Yes.

MR. ASLIN: Okay. So just go with me on this one, if I assume a 3 percent inflation rate per year for the next 10 years, that is going to yield approximately a 35 percent increase in nominal rates, and then I need to add the 15 percent on top of that. So in nominal terms, that would be a 50 percent increase in electric rates.

DR. KAVALEC: Assuming a 3 percent inflation rate, yeah.

MR. ASLIN: Okay, I just wanted to make sure everybody understands it is not a 15 percent increase in electric rates, it is actually something that is going to be

closer to like a 50 percent increase in electric rates. So if PG&E's average electric rates are $.15 per Kilowatt hour now, then in 2020, they would be, you know, over $.21 per Kilowatt hour. I think, historically, actually, if you look back in the history, there has been only one brief period of time where electric rates on average have increased faster than the rate of inflation. For the most part, they have actually increased less than the rate of general inflation. Yeah, I also wanted to make sure -- first of all, thanks very much for looking into the climate change situation because I think that is very important, and I am wondering, is there an intent to incorporate that into the final forecast?

DR. KAVALEC: No, what Scripps provided, they do not call -- they are careful to not call it a forecast -- they call it plausible scenarios for changes in climate. So what we are going to do after this forecast is take some time and look at the way that we incorporate climate change, and potentially incorporate temperatures. But that is going to take a while, so it is not going to be ready for this version of the forecast. But, like I said, there is still that adjustment being made for cooling degree days, and heating degree days, already in the forecast.

MR. ASLIN: Okay, and if I understood that correctly, so what you do is you take the ratio of a more

recent period, 12 years?

DR. KAVALEC: Right.

MR. ASLIN: And then you compare that to the longer historic period which was 55 years, or something like that?

DR. KAVALEC: Thirty years.

MR. ASLIN: Thirty years, okay. All right, and then, but on the electric vehicles forecast that you were showing there, the intent is to incorporate that into the final version?

DR. KAVALEC: Yeah, assuming that it gets finalized in time.

MR. ASLIN: Okay, because the two of those things together, if I understood that correctly, the electric vehicles forecast would increase the energy consumption in 2020 by approximately 1.5 percent?

DR. KAVALEC: Right.

MR. ASLIN: And the climate change scenario could have an equal effect, around 1.5 percent, so are you talking about a 3 percent difference in the forecast in 2020 just by incorporating these two elements?

DR. KAVALEC: Yeah, although that, 1) that is the high temperature scenario, so it is much lower in the low case. And what we already incorporated in the forecast gives us, in effect, an adjustment that is already between

those two, although it is closer to the lower side.

MR. ASLIN: Okay, so it would be a more limited adjustment?

DR. KAVALEC: Right.

MR. ASLIN: And I will probably have some questions later. You are going to talk about the energy efficiency -- review efficiency later?

DR. KAVALEC: Yes.

MR. ASLIN: Okay, so I might have some questions on that, as well. Thanks very much.

COMMISSIONER BYRON: Thank you. Any other questions or comments on this presentation?

MS. MARIN: Hi, Commissioners Byron and Boyd. My name is Sue Marin and I am here representing the Alliance for Retail Energy. Boy, my brain just went dead -- energy marketers. And we are an organization of electric service providers that serve retail customers within the three IOU service territories. And I am not here so much commenting on this presentation, but it is a request for something to be done in the future, and we have submitted comments on this previously and I have talked to some of your staff members. There is sort of an interplay between the Public Utilities Commission and the Energy Commission. The Public Utilities Commission is doing a long-term planning process that intends to incorporate the results of this IEPR

forecast. Along with those results, what the Public Utilities Commission is looking for is something that is sort of a lower level detail, which is what is the forecast for increased or decreased direct access by end use customers during the forecast period. And you are probably aware there was a bill passed in the Legislature that is waiting for the Governor's signature, that would re-open direct access to some degree beginning as soon as next year. So in an effort to reduce costs for California consumers, if we can include in the forecast an estimate of the numbers of customers, or some range of customers that would be expected to shift from the utilities to other providers, the ESP's, then the utility procurement could be reduced, and therefore avoid the possibility of additional stranded costs. So that is something that the Public Utilities Commission has said they are looking for the Energy Commission to provide. So far, it has not been done. I have spoken with Lynn Marshall and Tom Gorin about some time before the final is done to do some calculation of this. And I know everybody is very busy, so I just wanted to get my plug in to see if we can get some of that work done. Thank you.

COMMISSIONER BYRON: Thank you, Ms. Marin. Do you have any insight on whether or not the Governor is going to sign that bill?

MS. MARIN: Looking good from what I hear, but,

you know, until it is signed, we do not know. But everything we here is that it is going to be signed.

COMMISSIONER BYRON: Dr. Kavalec, would you like to address that comment? Is it one you feel comfortable addressing, whether or not we could or should do anything with regard to a change in the direct access?

DR. KAVALEC: Well, we do -- and in the forms that are posted with the report, we will be providing a break-out by bundled and direct access, and there is also a forecast, but it is a simple forecast, it just holds the current number, and it may grow a little bit, but roughly constant throughout the forecast period. But, anyway, I just want to mention, we do provide at least a current breakout of direct access and bundled.

MS. MARIN: And if I could reply to that, I would argue that that is -- something better could be done because, certainly, we have some history for direct access in the state, when it opened and what happened, and how quickly people moved, switched back and forth, so I think even using some of this historical analysis of what happened starting in 1998 until today, just holding something steady over a period of time, I mean, that is not accurate. It has not been accurate at all through the course, since 1998. So I am just hoping for something better. Thank you.

DR. KAVALEC: Would you happen to know of any

survey work being done in this area?

MS. MARIN: No, I have not heard of any. Who would be doing it, I guess, huh?

DR. KAVALEC: Yeah, that would be very useful.

COMMISSIONER BYRON: Ms. Marin, I would like to comment on behalf of staff. It is obviously very difficult to do forecasts on a real time basis, depending upon whether or not certain legislation is signed into law or not. I am not sure what we are going to be able to do and still meet the schedule that we are driving staff towards. I forgot to mention earlier in our opening that we are certainly in IEPR season -- we are in the harvest period now of IEPR season. This report is going to have to get done here in some draft form in the next couple of weeks. I am talking about the entire Integrated Energy Policy Report. So there is probably not a lot of time to include assumptions with regard to legislation that is pending into this draft forecast.

MS. MARIN: I do appreciate that problem, but even looking at historical events that have happened in California, and knowing -- I mean, we all know that eventually the DWR contracts are rolling off in the next few years, definitely within the forecast period, and as soon as those contracts roll off, just by existing law, direct access reopens. So regardless of whether this bill is

signed into law or not, direct access will reopen during this forecast period, and it seems to me that there should be some reasonable way of looking at, okay, well, what would that mean? How many customers might switch away from the utilities? Even looking at what we saw historically.

COMMISSIONER BYRON: Okay, thank you. Oh, Dr. Jaske, we will let you have the last word on this.

DR. JASKE: I would just like to point out that what is being presented by staff today is primarily a planning area consumption forecast, that is, it is a composite -- let's take PG&E as an example -- of PG&E bundled service, direct access within the PG&E service area, but even POUs in the PG&E transmission area. So it is at sort of the highest level, various kinds of aggregations that could split all those pieces out further. So one option is for the IEPR process to somehow or other continue the charge to an IEPR Committee, or delegate to an Electricity and Natural Gas Committee, you know, any further examination of this issue literally that the PUC requested, such that the adopted forecast is a planning area level, and it would be a matter of dividing into portions that which is bundled and that which is direct access, so there would be a control total established in the IEPR, and this aggregation along the lines of Ms. Marin's request, you know, could come later.

COMMISSIONER BYRON: Good. Thank you. Dr. Kavalec, thank you very much. Very responsive changes. I know a lot of effort on your part and the part of others here over the last number of months to revise the forecasts. We are going to have to call it, and I think the Committee is probably ready to do that in terms of adopting this, or at least recommending adoption of this forecast. But we have more to hear today. Thank you very much.

I think we are jumping ahead to the Staff Forecast Results for the Southern California Edison Planning Area. Is that correct?

MS. KOROSEC: Yes, that is correct. Mr. Gorin?

MR. GORIN: Good morning, Commissioners. I am Tom Gorin from the Demand Office. And we are going to go through the Edison planning area currently.

Our revised forecast for Edison is essentially the consumption forecast and, as we have just discussed, this is a consumption forecast which includes bundled, direct access customers, and the consumption forecast also includes self generation. It is 2 percent higher in 2010, and goes up to 5 percent higher in 2018, but it is still a lot lower than what we projected in 2007. Peak forecast is only slightly higher. The peak forecast is net peak forecast, which excludes sub generation, so the self generation is subtracted off of peak, but not consumption. I realize that

that is probably confusing and there are both -- in the forms, there are end use loads for consumption and peak, and there is a consumption form, I think 1.2 is net energy per load, which includes losses and subtracts self generation, so you can get net energy needed for generation by the utility, which would be sales plus losses, which is what happens with the net peak table that we report as peak. So that is part of the reason why the peaks are lower in these forecasts, because we have increased self generation that is subtracted off from the peak.

COMMISSIONER BYRON: But the consumption forecast includes self generation?

MR. GORIN: It includes self generation. There is a separate form that -- there is a separate consumption form in the report, or in the forms, that subtracts off self generation from total consumption. And this is a -- I thought about it as we put this together -- this is the way we reported it for a long time because there was not that much difference in self generation and private supply, and we probably need to re-think the way we are reporting it, in general, but all the parts are there, it is just which parts we put out in the forefront. Right now, as I think about it, consumption is what people are actually using. We do not really differentiate that much between how it is supplied. If you have -- if it is supplied by direct access

or PV, and those generation sources fail to work, people are going to still need the energy supplied by someone. So this is the total forecast of consumption.

Our per capita peak is constant, the per capita consumption declines, and the load factor is higher than we projected in June, but it still continues to decline. This is a table of the numbers and it is probably easier to look at the graphs. The consumption forecast, starting from a slightly higher point, and it grows at a faster rate overall than previous -- the draft forecast still grows at a lower rate than what was projected in 2007. The peak forecast is just slightly higher than what we projected in June, but it is still a lot lower than 2007, same story for per capita consumption, a little flatter, but still declining because of increases in efficiency. Peak is now relatively constant because people are still using their air-conditioners. And we changed a little bit of the LA County split because there is some differences in forecasts of the way the population is going to flow in LA County, because of the economic downturn it may be going back more toward LADWP service territory than the Edison service territory. And here is the load factor, which still continues its decline because of the use of air-conditioning relative to other consumption. Residential forecasts, we adjusted upward for 2008 consumption levels, which is a combination of QFER data

and QFER reported self generation data and also additional self generation data that was not reported through QFER. The forecast grows at a slightly faster rate, use per household increases slightly, income grows at a higher rate after the recovery, and peak differences are following the consumption differences. Here, you can see there is a decline, less of a decline in 2010 than was previously projected, and a slightly faster growth. Now, use per household is projected to increase slightly after the recovery because of increased income projections, household income is actually, after the recovery, growing at a slightly faster rate than was projected in 2007. The peak forecast start is relatively the same as the draft, it starts from a slightly higher level. Peak use per household grows essentially the same rate as the previously forecast, but starts from a higher value.

The Commercial building sector grows faster than the draft because of floor space increases used per square foot continues its decline, and peak follows suit. Consumption forecasts start at virtually the same point to the June forecast, maybe a little bit higher. And increases because of square footage increases produced by the revised commercial floor space model, it is essentially the same for the first four years, and then after we get by the current economic downturn, it grows at a faster rate than was

projected in June. Commercial use per square foot still declines, but not as great as it did in the draft forecast, it declines because of increased lighting efficiency measures and other efficiency measures included in this forecast.

The peak grows at a faster rate than the draft forecast now because of the mix of buildings and the greater square footage, but commercial peak is essentially the same as it was in the draft forecast on a per square foot basis. It follows the same general pattern that it did in the 2007 forecast. One thing I would like to point out in all this is that it was brought to my attention in a previous meeting with other parties that history is jagged, and the forecast is smooth, and that is the way most forecasts are because it minimizes the -- hopefully minimizes the error in the projections, because if you try to project the building cycle and the bubbles and valleys of history, you have a chance of being 180 degrees off where, here, this is just trying to minimize the errors in what is going to happen in the future.

COMMISSIONER BYRON: Or, put another way, you intend to be a lot more wrong than you are going to be otherwise.

MR. GORIN: Right. Our industrial sector now has a higher forecast and it has greater recovery than other

sectors, and the peak forecast is actually now similar to 2007, so in the consumption there is still a large decline in the short-term, but there is an optimistic recovery, not quite to the level of the 2007 forecast, but higher than what we had previously. The peak actually gets up to the 2007 level. It is driven by the changes in the industrial mix. And it has the most rapid recovery of any of the sectors. The other sectors are relatively small parts of total consumption and peak. Thirteen percent are consumption, and 7 percent are peak. I will just provide these -- this is -- TCU is a trend model suggested for the 2008 starting point. It is adjusted upward to note the 2007 level, but it grows at a lower rate because of lower economic projections than 2007. The peak for the other sectors is now higher, but it flattens out to be the same in 2018. I should point out that these sector peaks are based on estimates of what each -- the history is based on estimates of what each sector's contribution to peak, which are based on load-metering samples from the utilities, and some other information. So they are -- the history is actually an educated estimate of what the contribution of each sector is to peak, so in some cases history can change and we have -- we keep striving to get a more accurate estimate of the pieces of peak, but it is not really measured with the precision that consumption is measured at

because you do not have a billing history of sector peak contributions.

The Ag and water pumping sector is higher now and it is actually based on -- the forecast is based on normal rainfall and normal weather conditions. We have had dry years in the recent history, which drives the consumption up, so that is why the forecast is lower than more recent history and the same thing is true for the peak numbers, but we are projecting slight -- more water pumping in the future, and agricultural use.

This is an overview of the efficiency savings. I was just going to put a table and numbers together, but the numbers were harder to read than the charts that follow this. They are based on savings estimates that are resulting from the models. The utility program estimates go through 2011. The 2009 to 2011 utility program estimates are based on the current CPUC filings, something Chris will touch on just a little later, about maybe differences that we could look at different program years.

Self generation forecast is based on the solar, the CSI part is based on 2008 reported and projected 2009 installations, the average of those two years continuing into the future. The historic self generation estimates have been revised in consultation with SCE and we are still working to refine those. The self generation estimates we

have now reduce the peak from the draft forecast an additional 400 Megawatts. These are the electricity savings estimates compared to the forecast, which is the gray area. I guess what I would say about this chart is we start from the forecast, which is the gray area, and then make assumptions about what would happen if these building standards and appliance standards had not happened, utility programs and public agency programs had not happened, and savings had not happened, and constant products. So essentially these savings estimates are based on the world stuck in 1975, and we have not gotten any smarter since then. So the total savings is probably an over-estimate of what that actual savings have been. But determining how much smarter we would have actually gotten since 1975 is more of an art form than the art form that is included in these savings estimates. So the total estimated savings here are 25 percent of the actual forecast, so the forecast would have been 25 percent higher if we had -- if we were still stuck in 1975 mentality. And same thing for peak, it would be 28 percent higher. And we will probably hear more about these later.

This is the difference in the self generation forecast that I was speaking of earlier. Our preliminary numbers are on the bottom. The revised numbers are the blue lines in the revised forecast. So we are holding the

installations constant at the 2008 to 2009 levels for PV through 2016.

COMMISSIONER BYRON: Mr. Gorin, is this what you referred to earlier as revising the self generation estimates based upon SCE input?

MR. GORIN: Yes, the solid blue line versus the dotted red line.

COMMISSIONER BYRON: Okay.

MR. GORIN: And this is also based on some reexamination of the self reported self generation estimates on peak that have been submitted to the Energy Commission previously. This represents the portion that is PV versus non-PV of the peak estimates. We did the economic scenarios, as Chris referred to. Consumption and peak increase about 2.6 percent, roughly, in the high case versus the base case and consumption and peak decrease about 2.4 percent in the low case. For Edison, they are relatively symmetric. And the peak is similar to that. So with that, I will take questions.

COMMISSIONER BYRON: Commissioner Boyd? I will go first and give you a chance. First of all, Mr. Gorin, I am sure glad that there were two slides on each page, otherwise I could not have turned fast enough -- a lot of material covered here. If I go all the way back to Slide 4, where you summarize the Southern California Edison Electricity

Consumption forecast, am I reading this correctly that, again, you know, the revised input primarily based on, I assume, the economic forecast revised from Economy.com, instead of having about a 10-12 year lag, we only have about a five-year lag in consumption?

MR. GORIN: Yes.

COMMISSIONER BYRON: Big change.

MR. GORIN: Big change and it is what we are estimating now, we are processing how far the drop was this year.

COMMISSIONER BYRON: Uh huh. And we are going to hear from them shortly, correct?

MR. GORIN: Yes.

COMMISSIONER BYRON: And then, jumping ahead to the slides beginning on 25, TCU standing for Transportation Communications and Utilities Sector, I am not familiar with that sector designation, but I just want to make sure I am reading this correctly, both this and the Ag sector, which follow, represent about 5 percent each of total consumption for the utility, right? So they are relatively small sectors.

MR. GORIN: Yeah, they are relatively small. I would just add that Transportation Communications and Utilities Sector is rail transport, airports, sewage treatment, communications, televisions, wires, everything

that does not fit neatly into industrial or commercial buildings.

COMMISSIONER BYRON: Or residential.

MR. GORIN: Or residential.

COMMISSIONER BYRON: Okay. Thank you. Commissioner?

VICE CHAIR BOYD: I do not think I have a question, just kind of an observation about the importance of self generation in our future and the potential it has to help. I think we have to pay a lot of attention to that in finishing up this IEPR, but no questions.

COMMISSIONER BYRON: Well, thank you. And thank you for all the effort on this revised forecast. I think we have adjusted the schedule so we can hear from Southern California Edison. Let's go ahead and do that now.

MR. CANNING: Good morning, Commissioners. My name is Art Canning. I am the Manager of Demand Forecasting, both a day ahead and long-term forecasting, at Southern California Edison. I deeply thank you for rearranging the schedule and letting me speak at this time in the morning.

What we have come to you with is not much about our forecast, but our comments on the CEC's revised forecast, and offering suggested thoughts or changes that we have either seen or analyzed. In some cases, we have only

seen it and have not had a chance to analyze it.

We agree overall with the overall changes in the forecast. It is more in line with ours, but since it does not yet include the effect of incremental uncommitted EE, it is hard for me to actually compare it to mine because we embed that in our forecast. But I can say it looks like it is closer, so that is -- I will bring that up a little bit later, too.

The Price forecast, Dr. Kavalec sort of said, well, 15 percent. I would like to say that I think that is probably quite reasonable if you -- and we look for some other source for a Price forecast, we look at the 33 percent renewable study by the PUC, even though it is only a preliminary, and we had a lot of comments ourselves on it, as did other people. When you translate those into nominal prices, they show very significant price increases over the next 10 years, or even as far as 15 years, because of the once-through cooling, the need for more transmission infrastructure, and then whatever renewables scenario you want to pick. It seems to -- even with delayed renewables, an increasing goal toward renewables leads toward price forecasts that are more in line of what the staff is saying. So actually, I suggest they ought to just put up on their slide what the PUC study had come up with as a preliminary result, just to show how aligned they are with that.

On CSI, on the photovoltaic study, we might be in agreement, we might not. The issue we have really looked at in the forecasting group, and in talking about our CSI Specialists, is that, yes, there is a glut on the market of photovoltaic modules now, the big demand in Europe, those programs that both curtailed, the worldwide production apparently is going up, and the demand has dropped off in certain cases, being in the commercial sector. In the Edison area, there were third-party vendors putting big photovoltaic systems, other CSI's, so they are under a Megawatt, on top of commercial buildings, and then, in essence, selling the photovoltaic power back to the company to the end user off-site in the Edison rate, and the store got the credit for having a photovoltaic on top. A lot of those customers are not as trend worthy as that third-party would now require, and probably will not be for several years due to the construction, and the whole economy. So the commercial sector for photovoltaic looks weak for a couple years, but the residential -- and I think you mentioned that we are getting many more applications for interconnection this year than last year, even in the middle of a recession, and part of that is because we are now holding town hall meetings throughout the Edison territory, inviting people and giving them information about the CSI program, and it is getting quite a response, apparently. So

what we have yet to really know is whether these applications turn into an installation because that person still has to pass the credit worthiness test in order to afford these. On my flight up here, I sat next to a physician who thought about it and he said, "Even I can't afford a $40,000 installation on my roof." But he lives fairly close to Ocean, and I told him he lives in DWP territory, too. But we had an interesting talk. He is working on the outliers up here somewhere, the Commission is out working on a long-range, so, hey, two important issues. So we had an interesting discussion. In any case, I think to really look at how successful CSI can be in the intermediate range, we needed to look at worldwide supply and worldwide demand, and how that is going to change because of Edison, or any other utility, we start signing contracts for 1,000 Megawatt Central Station Photovoltaic out in the desert, that excess supply we see is going to drive it pretty quickly, and yet, if rates increase, the customers who have a lot of consumption in Tiers 4 and 5, the highest rate increase, might still find it economic, so it is a tricky analysis.

Using the most recent year's trends, maybe the best you can do for the moment, but it deserves more than that, and I cannot offer it myself, I can say I am working with my own staffs within Edison to try to develop this

ourselves, too. They seem to know off the top of their head, but getting it into a model is a second step.

Not on here, but also was on electric vehicles. Well, Edison made apparently quite a presentation to this committee back in August about the potential of the electric vehicles, these are hybrid or battery powered, and the tremendous GHG offsets that could be accomplished by that, and they did that based on looking at the most recent marketing releases from the car companies, themselves. And they are aimed heavily at battery electric, all electric vehicles, because that is easiest for them to convert over to. I had not realized until they explained to me that what Toyota has done with the Prius enabled then to be able to both use the gasoline engine to drive the wheels at the same time as the electric to drive the wheels is something not -- it is not something common anywhere else, that they have really done something with that. Everyone else would rather just run a gasoline engine into a generator and charge the batteries off that; that is a much simpler technology -- or just all electric. The only caution here is, when you start getting up to a million vehicles, and I am a big supporter, I think this is great, I think hybrid is great, but you also are going to have to look at what it is going to do to the distribution system, and which is why I am more in support of the hybrid. If you remember back to the summer of 2006,

we had much higher temperatures than expected. We were 1 in 10, PG&E was 1 in 50, or something like that, and we had a lot of transformer failures. Well, distribution transformers are meant to be able to cool off at night in order to keep their lives up. When you have air-conditioning running all night long because of extended heat spells, and then you start trying to charge 1 EV every fifth house or something like that on that, there is going to be an impact on the distribution system. I am not sure if anyone has really looked at it, but our distribution planners sort of look sideways at each other when we start talking about a million electric vehicles, or half a million, or however many you want to assume. So I think, even though the auto companies might be pushing the all-battery, my own personal vision is the hybrid is a better choice because it gives a back-up in case that charging cannot be done. And that is my personal opinion on this, I cannot say it is representative of Edison. We are still very positive about the potential for greenhouse gas offsets for that.

There was a comment made earlier about new versus old models, some data, you know, it hits us, too. We got back and sometimes say, well, we tried something new this year, let's go back and put in last year's because we think maybe that technique or whatever looks like it is more

consistent. So that is not something just the staff ends up with, it is something we end up with, too. I will just make that comment.

On direct access, I know Edison -- I am not the policy expert on this and I know Edison was a supporter of the bill, and I thought PG&E was too, and all I can say is I do not think we would have supported it if we did not know what effect it might have on us. Direct access customers this year have lost sales at a much higher rate than the bundled customers. In other words, I think they have been going out of business at a faster rate. That is the economics, it may not have anything to do with who is out there that wants to be direct access. In fact, when that opens up again, [inaudible].

My next area, and probably the area I have the biggest reservations about is the lighting savings. And it is not that lighting efficiencies will not help induce a lot of savings, but what I have seen -- and the staff has done fantastic work, I mean, this volume they put out really helped explain things. But what I have not seen is how many square feet a year are you assuming are being re-lit. And if you are assuming once -- Tom Gorin sent me a note, they thought the model assumed a 10-year life span on commercial lighting systems. That means every 10 years they are replacing it, so the ones being replaced this year were

replaced just 11 years ago, and by 2012, they would have been replaced in 2002, so they are not that far behind the current standards. And then, if you assume a 10-year life, that means -- and we have maybe 1.5 percent floor space growth, that means you are remodeling about seven times as many square feet each year as you are building. Now, I do not know if this is high or not, we had looked at meter steps on trying to see how many -- at least in the residential sector -- to get an idea of how many remodels go on, and it was nowhere near that high. I think if you look over at the building boom, maybe there was a lot of remodeling done, but I do not know if a long-run rate, if that is achievable or not. And as I was discussing with our energy efficiency expert, maybe in the medium and bigger sized buildings they do change ownership, or they change lighting systems, but the little mom and pop stores, you know, they probably still have their magnetic ballasts but with whatever fluorescent light they have to put in there to keep going. They are a tough group to make it economic. And unless we go in and pay for the whole system, they are liable not to re-lamp. So I would like to see the staff document how many square feet a year does this forecast imply are being re-lit. And you get down to how many lamps per year are we talking about here. I asked Tom about the residential sector and are you assuming a 10-year life to

residential lighting systems? And he said no. And I thought, yeah, my house, I have replaced with much higher efficiency bulbs, but the fixture is the same as it was in 1980, and I do not plan on taking those out, as long as any new bulb will fit in that same socket. I certainly used compact fluorescents, but what I am saying here is, in the staff forecast, it is a very big effect, it really reduced the growth rate. Tom, may I quote you on this? Off the record, in terms of -- it just sucks the energy growth out of the commercial and residential sectors, the lighting growth, and the lighting energy growth. We have had retrofit measures before, the federal standards back in the mid-'90s on lighting. I am a little suspicious with a retrofit standard that is that effective. And I would just like to see a little more background. I will be glad if it is true, but I am just a little cautious about being able to support that. And so I would like to see a square foot, let's see the number of lamps, let's see -- is it really what lamp system are you assuming is being replaced? Because a lot of these systems may already have been -- magnetic ballasts with T8 bulbs and, you know, you are getting some increase in these fixtures. The other case, I am just saying that the lighting savings is something I would like to see more

-- I am going to have to go to quite a level of detail on

the end use on that, but number of households impacted each year, and the number of buildings per square feet is probably my first question -- what is being impacted?

COMMISSIONER BYRON: If I could just ask you a clarifying question, Mr. Canning?

MR. CANNING: Yes.

COMMISSIONER BYRON: You said something a little bit earlier about how you look back at your residential customers to try and make some comparison based on retrofits that the residential sector has done. I could not quite understand what you were saying. Were you looking at whether or not they changed their services?

MR. CANNING: Well, what we see is, when we look over a long period of time on the residential sector, we install about 10,000 more meters a year than the net meter gained. Now, when we look at that, that means we pulled out about 10,000 meters. And when we talked to our meter expert, he said, yes, if there is a major remodel on a house, we go out -- Edison goes out -- and pulls the meter and takes it back to the shop. When they finish the house, they will go out and put a new meter on it.

COMMISSIONER BYRON: Usually for a larger service, correct?

MR. CANNING: Well, yeah, for a larger service, but also we do not want the meter sitting on the ground and

the contractor stepping on it, obviously, too. And so if it is a lot smaller remodel, and we have been asked to pull the meter, they may leave the meter there, basically on the ground, and come back a couple weeks later and install the same meter. So when we see a 10,000 difference between the gross meters installed and the net meter increase, we have implied, without knowing, this must be about the level of remodels. And I said, well, and I will tell you, over the history, I have tried to find the number of demolitions on remodels and it is not something that is reported, as far as I have gotten out, anyplace easily. The number of new building permits is, but not the number of remodeled buildings. And if staff has more of them that would be something useful to spread to the rest of us because what we have looked at, we just have not found much. Years ago, when I called the City, they said, "Well, call the demolition companies, they'll tell you how many houses they've demolished." I said thanks, you know, that is not the way I am going to go at it.

My next comment here, and it is just a reservation -- in the Straw Proposal, our comments to the Straw Proposal at the CPUC on the LTPP, we withheld judgment on using the IEPR forecast because we said we do not know what they embedded -- well, let's see, how is this properly said -- incremental, uncommitted, and efficiency -- how much that

will be. And without knowing that, we cannot say that we really support the forecast. And because then we know how to match it against ours. So we are still waiting to hear more about that, and we know that is quite a challenge for staff, and they have done a lot of work, but we have been on the record with that, as in my comments here, and I think on the next slide, just say we will respond to the PUC more when we see the final results.

I have a few other comments I wrote down here. Oh, the Price forecast, too. Chris, I think you said a slight increase. When you look at the PUC study on the 33 percent renewables, when they come up with a price forecast that is about in the range, or, in their lowest case, it is tens of billions of dollars, and they made the comment in one of the -- I think maybe one of the worse case scenarios they had -- that this would involve $115 billion of investment in California in infrastructure and such, and this is like twice our credit limit for the state right now. It is not a trivial increase, at all. And yet, I think with the policy goals we have, that something -- this is the best assumption to be made. Rick made a comment, I think I heard it clearly, but, yes, this is a big increase in prices. When you look at once-through cooling and all the units that have to be replaced, perhaps new ones built out in the desert and new transmission brought in to bring that power

in, it is going to have a big impact. And whatever renewable, something you want to make, it is going to have a big impact. So I would not want you to get any slighted opinion. This is a big effect and, quite likely, with the goals the state has set, those prices will come about. I think that is about all on mine. I am ready to answer any questions.

COMMISSIONER BYRON: Mr. Canning, thank you very much. Let me ask you a couple of questions to make sure I am clear on your critique of our staff's forecast. When SCE does a forecast, how do you address, for instance, once-through cooling, and Renewable Portfolio Standards in your assumptions? Do you include -- or do you make some interpretations about the impact of once-through cooling in your demand forecast? Or based upon state policy? For instance, 33 percent renewables, do you assume 33 percent renewables in your forecast? Do you assume power plants are all either repowered or replaced? Help me understand. Do you follow policy --

MR. CANNING: Yes, I follow you exactly, that is a great question. I look for publicly available information on this and the PUC study, the 30-33 percent implementation planner is also the best I could get to. Now, I think you know that Edison does not believe we can get to 33 percent by 2020 --

COMMISSIONER BYRON: That is kind of why I am asking.

MR. CANNING: Okay, so what I did was I looked through the study and found out they had timeline 2B which says something to the effect that factors outside the state's control delay the ability of the state to get to 33 percent, actually, ever. We only get to about 85 percent of that goal by 2026. And these factors are a lot to do with getting the transmission right of ways, the technology may not be as effective as they thought, and other legal delays that would cause the state not to reach the 33 percent goal. So in this case, 33 percent was about 19,000 Megawatts, as I remember, statewide. And in the timeline 2B, they get to about 15,000 Megawatts by 2026. I took that case and, with what information they did provide for the year 2020, tried to figure out what the price impact would be for that case because they did not explicitly provide that. And that did include their estimate of once-through cooling. Now, I have not refreshed myself on Edison's comments on it, they have left other retirements out, and I think we had quite a few other comments that should be included in that study, but at the time it was the best public document I had. So that is why I said, well, it is what is out there, and timeline 2B seems like a rationale view of the future in terms of what actually could be accomplished. So that was my source of

information on my price forecasting, most recent one.

COMMISSIONER BYRON: Commissioner?

VICE CHAIR BOYD: Well, I just wanted to comment that, as you indicated, that 33 percent report is out there in draft form now. I do not know how well it was received in the RPS community, but I noted with interest last week, in spite of all the comments and consternation about that report, and the cost figures, that the PUC was actively engaged in encouraging and participating in the 33 percent renewable Executive Order process, and the report was cited more than once in an extremely positive way as supportive of the need to move in this direction. So I have a feeling the final report might be considerably different than the draft report, so I guess we will have to wait to see. But obviously, the sun and the planets have lined up in the last week to a degree that 33 percent RPS is technologically and economically achievable. So we have to predicate where we go on all that we hear, hear what our staff has said, and what seems to be going on around us. So I guess we wait for the final report, or we do not wait for the final report, as we have to wrap up our IEPR findings. And to wait for that report is not going to be timely, as to be left hanging out there in space somewhere in terms of what the economics, cost, and future tend to really be. So, while I share your concerns, we have marched forward.

MR. CANNING: I have also been asked by my Manager what gas price forecast did that 33 percent include, and does it include this humongous revision in the gas -- in the evaluation of the United States natural gas resources which was just done recently -- I think they doubled the amount of resources, and the cost of obtaining the drop, and it was like, wow, things are really changing on a big basis here. These are major major changes. Electric vehicles, CSI, the price of the development costs of natural gas, energy efficiency, there is a lot going on in the forecast world right now, more than I have seen since the years of the oil embargo, I would say. And Commissioner, as you expressed, at least I thought I heard, that maybe the high and low scenario were not quite as wide as you might expect, those are exactly the sort of results we get when we put in economic forecasts, and yet I know that the future has got to be much more unknown than what that model would show, something similar to that, as no one would have forecast the size of this economic drop. So we know that the future is much more uncertain than putting a base case and a high and a low economic in there. And it is because I think people, like you said, do not stick their necks out on how big an economic cycle might be coming up, and they do not know. But, yes, I think the future is more uncertain than plus or minus 2 percent, when we just dropped 3 this year, 2 percent

last year, and heaven only knows what next year will be just because of the economy.

VICE CHAIR BOYD: Right.

COMMISSIONER BYRON: Right, plus or minus 2 percent at 10 years out there. That is a very small range.

MR. CANNING: Yeah, it is much bigger than that, as much as you hate to admit, reality is much bigger and that is where your scenarios is probably better than --

COMMISSIONER BYRON: Mr. Gorin, you have been very patient. Did you want to try and add something to this presentation? Or do you have any questions of Mr. Canning?

MR. GORIN: Yes. Tried to look through the 33 percent documentation over the weekend when Art brought up--

MR. CANNING: I think I see the graph you are looking at and I think that is the right one, but go ahead.

MR. GORIN: Is this the right one? There is a lot of documentation on the PUC website on the 33 percent renewable and finding a price forecast, for me, was not that easy. And the thing I came to was Edison has a -- from 2008 to 2020, has an 11 percent real increase, if I am reading this right. Another chart showed $.2 a Kilowatt hour real increase from 2008 to 2020. Our price forecast uses I think what Edison provided for their most recent rate case, which has effectively a 2 percent real increase from 2008 to 2010. That would mean, if the 33 percent price forecast is right

for 2010, the 2020 forecast would be flat, which I am not too sure about. The way we developed our price forecast was we took utilities, most recent filings for 2009 to 2010 and put those rates in our forecast, and then the 15 percent is made up of 5 percent increase in real terms over the first five years, and a 10 percent increase over the next five years, so we loaded the increases on the back end, figuring that, at some point, we are going to have to pay for transmission distribution upgrades, the renewables, the GHG ramifications, and that is loaded more into the second half of the forecast. I think our forecast is relatively in line with what the GHG calculation is, but I am going to do some more research to try to find what that forecast is.

COMMISSIONER BYRON: Thank you. Dr. Kavalec?

DR. KAVALEC: Yeah, I just wanted to address the commercial lighting issue that you brought up. I cannot give you an answer right now for the amount of square feet affected each year, but we can get you that information easy enough. About the compliance rate, we agree that a retrofit standard like this is a challenge. In the '07 forecast, we assumed a lower compliance rate and, in this forecast, we assumed -- we increased the compliance rate up to 75 percent because of all the focus paid to lighting savings. We thought, well, maybe a 75 percent compliance rate is doable. But, like I said, we agreed it is a challenge. Also, I want

to say, I promise not to call the rate increase "slight" anymore.

MR. CANNING: And to be clear, Chris, it is not the compliance rate that I am ready to debate on, it is the fact that the smaller commercial buildings do not retrofit every 10 years. They might go 20 or more years before a retrofit, so the retrofit standard will not impact as many square feet as a model might assume. That is what I would like you to look into.

DR. KAVALEC: Yes, we can provide you all the assumptions that have gone into those numbers.

COMMISSIONER BYRON: Thank you.

MR. CANNING: Thank you.

COMMISSIONER BYRON: Hang on a second. Dr. Jaske, did you want to add something?

DR. JASKE: I just wanted to make an observation about price increases. The Energy Commission staff did not prepare a holistic revenue requirement projection in this IEPR cycle, in fact, we did not even ask the utilities to provide -- it was a subject of great difficulty in previous IEPR cycles because of sensitivity about rate increase projections and confidentiality about certain elements of those projections that they make for their own business and ratemaking purposes, and staff formerly doing that kind of analysis, you know, we were directed to do other things.

But if you think about all the factors that were talked about here today, with the exception of natural gas price projections, almost all of them are capital costs. Renewables is capital costs, solar photovoltaic, you know, the public subsidy part is a capital cost, the replacement of OTC plants by something new is capital cost, so all of the factors that are leading one to suspect there will be rate increases are on capital side of things, not on annual operating cost side of things. So, future gas price variation is actually less of a phenomenon that affects rates going forward than it has been in the past. And lastly, on the point that Mr. Aslin made about whether 15 percent over 10 years is the issue, I suspect that if one were sitting in someone at ARB's shoes and being bombarded by GHG compliance costs at the various sectors, if a 15 percent increase was all that was being talked about in real terms, that sector would be thought of as getting off pretty lightly compared to everybody else who may be paying way more than that to achieve GHG compliance.

COMMISSIONER BYRON: Well, thank you. I think you are correct. One last question for staff, anyone that can answer me. It seems that the key point from the SCE comments is, until the level of energy efficiency embedded in the IEPR demand forecast is resolved, at least to their satisfaction, they cannot voice support of the base case EE

assumptions. Are we every going to get to the point where we fully have resolved this embedded energy efficiency issue?

DR. JASKE: I think I have to take issue with that characterization. In contrast to the '07 IEPR, when details of the staff's demand forecast were released only very close to adoption of the IEPR, and there was not a process to go through all that documentation, there have been two rounds of analysis in this '09 IEPR cycle where all of the energy efficiency in the forecast has been calculated, summarized, and explained in considerable detail, both the preliminary forecast and this one, that there are whole spreadsheets posted out there on the IEPR website right now that is all of the energy efficiency in this forecast.

MR. CANNING: Is that committed or uncommitted?

DR. JASKE: That is committed.

MR. CANNING: Thank you. I am asking about uncommitted.

DR. JASKE: Well, as you undoubtedly know from looking at my presentation for this afternoon, we have not done uncommitted yet, so it is not possible to get it to you today.

MR. CANNING: And that is the only source of my hesitation about standing behind the IEPR forecast, is it is not ready.

COMMISSIONER BYRON: All right, thank you. That was a good answer. I think it is time for a break.

MS. KOROSEC: Yes, we had originally planned to take a break from noon to 1:15. Do you want to keep to that schedule? Or do you want to give people until 1:30?

COMMISSIONER BYRON: Let's be fair, let's go to 1:30.

MS. KOROSEC: All right, we will return, then, at 1:30.

COMMISSIONER BYRON: Thank you all, very much. And we will pick up on which agenda item at 1:30, Ms. Korosec?

MS. KOROSEC: We will begin with Mr. Kavalec.

COMMISSIONER BYRON: On conservation efficiency and self generation?

MS. KOROSEC: Correct.

COMMISSIONER BYRON: Okay, thank you all very much. See you at 1:30.

[Off the record at 12:17 p.m.]

[Back on the record at 1:33 p.m.]

COMMISSIONER BYRON: Let's begin.

MS. KOROSEC: All right, so we will begin with a presentation by Dr. Kavalec. Chris?

DR. KAVALEC: Okay, this is the next presentation on efficiency conservation and self generation incorporated

into our forecast. We tracked three different savings categories in our forecast -- utility and public agency efficiency programs, those that are committed, and that means either already implemented or for which there is firm funding, as well as a specific program plan, building and appliance standards and naturally occurring savings, which I will define a little bit later, and a summary of this presentation, savings from these three sources reduce consumption in peak by around 18-21 percent over the forecast period relative to our approximation of what the world would be without these savings impacts.

The largest sources of savings among the three is the combination of building appliance standards. There is additional residential lighting savings beyond the utility programs, an offshoot of the utility programs that I will explain in a moment, and we should always keep in mind that analysis like this has uncertainties and limitations.

Okay, first utility and public agency efficiency programs. We have a small amount of public agency impacts included in the forecast -- federal, schools, and hospitals program, and a couple of other ones, I think. But they are a really tiny slice, so I am going to focus exclusively on utility programs. And I am not going to go into a lot of detail because we had two workshops where we did that earlier this summer. But I mainly want to spend my time

talking about the changes, the adjustments we have made to program impacts since the draft forecast. I want to also point out, again, the support we have gotten from Itron and our DFEEQP working group, who have helped us immensely in this effort. And an FYI, the working group is creating a subgroup within the larger group to look specifically at modeling methodology forecasting model methodology issues.

COMMISSIONER BYRON: And does the Demand Forecasting Energy Efficiency Quantification working group subgroup have an acronym name also?

DR. KAVALEC: Not yet and Sy Goldstone is involved, so I fear for the acronym.

Okay, in terms of changes relative to the draft forecast, we incorporated publicly owned utility efficiency programs for the revised forecast, and we made a slight adjustment to IOU utility program impacts. First, the IOUs. We updated history going back to 1998 and estimated impacts all the way up through 2011. They way we incorporate impacts is either directly in the model, for example, for residential lighting, or through post pricing which means subtracting efficiency impacts from the model output. The adjustment we made to the IOU program impacts was to reduce the realization rate for utility program impacts from 0.85 to 0.7 for the '09 to '11 program cycle. A realization rate refers to adjustments you make for reported savings, maybe

where it may end up being higher than actual savings in the real world. For example, because measures are purchased and not installed, or measured savings may be lower than anticipated. So we started out with a 0.85 for '09-'11 because there was hope that it would be higher, that delivery mechanisms would be more efficient. But we decided that, since what empirical evidence is out there tends to show consistently a realization rate between 0.6 and 0.75, we thought it would be more realistic to use 0.7 for that program cycle like we are doing with all the other years. And we hope we are proven wrong, but we will have to wait and see.

And a critical factor, the CPUC may shift to a 2010 to 2012 program cycle, and I will talk about the impacts that would have on the forecast a little bit later.

COMMISSIONER BYRON: Well, will we know that this week? Don't they vote on that this week at the PUC?

DR. KAVALEC: Is it this week?

VICE CHAIR BOYD: My understanding.

COMMISSIONER BYRON: Yes. Thank you.

DR. KAVALEC: Good, that is good. Okay, this next graph shows a cumulative efficiency program savings for the IOUs for the three forecasts. The '07, of course, the red one being much lower mainly because it did not include the '09-'11 program impacts. And the difference between the

green line and the dark blue line indicates the impact of reducing the realization rate from 0.85 to 0.7, and that difference is a maximum of roughly 800 Gigawatt hours in 2012. Now, this rapid drop-off that we see here after 2011 tends to cause consternation because it is a pretty severe drop. And there are two reasons for that and the first is that we are only considering committed programs, so after 2011, there are no new first year program impacts, it is just existing measure of savings decaying. And the second reason is that a significant portion of program impacts comes from lighting, and lighting measures tend to have shorter expected useful lives and other measures. So there is a rapid decay. But what I thought I would do was to show what I call here a "actual decay of IOU program impacts" that adds back in this additional residential lighting I am going to talk about a little bit later, which is an offshoot of utility programs. In other words, you can think of this red curve there as showing direct IOU program impacts and indirect impacts as additional residential lighting. Okay, so the drop-off, as you can see, when we add that back in, is much less dramatic.

Okay, on to the POUs. We updated program savings for the '06 to '09 period by end use, using Senate Bill 1037 filings required to the Energy Commission. We used the same basic methodology as we used for the IOUs in terms of

expected useful lives and realization rates. That is, we also used a realization rate of 0.7. And, as in the IOU case, some impacts were incorporated in the models, others post-processed. And 2009 is the last year that we considered committed for the POUs. We all know that there are goals that the POUs are required to meet beyond 2009, but after 2009, there is no specific program plan for us to work with, so it is not real meaningful to attempt to measure specific amounts of savings. So there are goals, there is efficiency reasonably expected to occur, but it is not committed in our forecast.

Here is what the updated POU Cumulative Program Impacts look like, roughly four times the impact in 2009 versus the 2007 forecast. I do not show the draft forecast here because, in the draft, we use the same numbers as in '07. And since I did this for the IOUs, here is what happens when you add back in additional residential lighting savings in the POU case, less of a dramatic drop-off, although the difference is not as big as in the IOU case, and that is because, as a percentage of total savings, lighting is smaller in the POU case than it is in the IOU case.

Okay, our next category, building and appliance standards, we incorporate standards into our models with changes in inputs. For example, for a given standard, we

might change the average amount of cooling per household in the residential model. To measure the impact of each individual set of standards, what we do is, for each, starting with the most recent set of standards, we remove the input effects of those standards in our model, we re-run the model, and then the difference between the two model runs, one with the standard and one without, gives us an estimate of the impact of the standards on consumption. Here is a list of standards going back to the 1975 Residential Building Standards.

And our next category, naturally occurring savings. The reason this is in here is it is meant to capture load impacts not directly associated with standards or programs, but that could overlap with programs and standards. And what naturally occurring savings specifically means is the impact of rate changes, which we call price effects, people use less electricity and/or buy more efficient appliances in the face of rate changes, that creates savings, and this additional residential lighting savings. The term "naturally occurring savings" may change, given the taxonomy work that we are currently involved in, meant to standardize the terminology used for efficiency related terms. Because "naturally occurring" is used slightly differently in other venues, so the name may change, but for now, for this forecast, "naturally occurring

savings" means a) price effects, and b) additional residential lighting savings.

Okay, so what is this residential lighting savings all about? We know that lighting is the focus of utility programs in the legislation, like the Huffman Bill, and we know the committed utility program impacts decay after 2011 in the IOU case, and after 2009 in the POU case, and we thought it was unrealistic to assume that average lighting per household would, after 2011, would immediately return to current levels. For example, households would immediately go back to incandescent light bulbs and stop using CFLs. So what we did was to assume that average residential lighting continues at 2011 levels for the IOUs and 2009 for the POUs; basically, that is saying, say in my house, the result of all these utility programs was that I reduced my lighting by 25 percent, well, after 2011, we assume that 25 percent continues, and that is added into additional residential lighting savings. And this is -- it does not strictly meet the definition of committed for our forecast, but we thought that it was so likely to occur that we would be remiss in not making some adjustment for these additional savings. Okay, so those are the three categories. And here is the distribution among the categories. You will notice for 1990 there, savings is greater than zero, and that is because we tracked savings going back to 1975. So what you see there

in 1990 is an accumulation of previous standards and price effects. You can see naturally occurring savings, the gray part, begin to increase after 2010 because of the additional residential lighting savings and because of the rate increases.

Utility and public agency programs, the light blue there, you can see reach a maximum in 2011, and then begins to drop off as measure savings decay. Peak savings, roughly the same story. And some numbers to go along with that, total consumption reduced almost 18 percent in 2010 and 20 percent by the end of the forecast period relative to our alternative universe of no savings. Standards are responsible for the bulk of those savings. And utility programs reach a maximum share of the total savings of 20 percent in 2011, and then begin to decay.

So here is what our "unmanaged" or "counterfactual" consumption would look like if we took the savings and added that back into historical consumption and projected consumption. Around 57,000 Gigawatt hours of savings in 2009, and almost 80,000 in 2020. And here is what it looks like for the peak, almost 19,000 in savings in 2020. And this brings us to some of the limitations of this analysis. We are relying on the assumption of the world without savings being the same as current and projected consumption levels plus savings added back in. When we know

the alternative, the counterfactual is slightly different from what the world would actually be without savings, because the existence of efficiency programs and standards actually changes the world. So, for example, because of the existence of efficiency programs and standards, customers may purchase more air-conditioners because they are now cheaper to operate, or there is incentive involved in purchasing the air-conditioner, so therefore, in the world now we have more air-conditioners than we have in the actual, as opposed to our approximation, of the world without savings.

Attribution is inexact, for example, we know that utility programs can make it easier to meet requirements of standards, however, standards are given all the credit and utility programs none. So there is some overlap there.

There is this idea of "take back," which I will talk more about in a minute. And we are not sure yet what impact the economy can have on utility programs. What does a continued recession mean for utility measure adoptions in the next couple of years? Is it going to go way down? What is going to happen when the economy recovers and begins to grow quickly?

Okay, a little bit about the "take back" or what is called the "rebound effect." I am presenting this to make a point about the uncertainties involved in measuring

savings. The take back effect takes various forms, the most well known of which is, if you have a more efficient appliance, then you may use it more hours because it is cheaper to operate. So that first bullet there is -- it should say "increased hourly usage" instead of "electricity usage." Because you use the appliance more hours in the day because it is cheaper to operate. There may also be a propensity to purchase larger appliances since they are now cheaper to operate. They may be in "income effect," if you are saving money every month on your utility bill, you may save up and buy a plasma TV or something. There may be production effects, for example, if industrial motors are more efficient, we may find that energy intensity in production begins to increase because it is cheaper to operate these industrial motors.

Now, some have claimed that the cumulative take back or rebound effect could be more than 50 percent, that is that we lose 50 percent of reported savings through this increase in consumption. Now, I am not claiming that the rebound effect is some huge number. The point I want to make is that we spent a lot of time collecting reported savings data, creating a consistent time series, making careful adjustments, but in terms of what impact these savings, these programs actually have on the real world, well, we may have a little bit more work to do.

Okay, so that is our efficiency and conservation, and that is the starting point for our uncommitted forecast. Our job is to look at all the reasonably expected to occur uncommitted programs coming up in the next 10 years, and estimate how much of those savings overlap with savings already in the forecast. And from that, we get an estimate of the incremental effect from uncommitted savings, and that provides us a "managed forecast" for CPUC long-term procurement -- for the long-term procurement process.

Okay, self-generation, we tracked all the major programs, including the California Solar Initiative, the National Solar Homes Partnership, smaller POU Programs, as well as the traditional big industrial and commercial generators. For the solar programs, we used the average rate of PV system installation and pending installations for 2008 through 2009, and we carried that forward for our forecast. And after 2016, we assume that PV systems grow at the average -- that these two programs and, by the way, in 2016, after 2016 we assume that PV system installation grows at the rate of energy growth. We used a peak factor for photovoltaic systems of .5, that means of the total capacity that is out there, 50 percent is being used during peak periods, and that comes from averaging four years of studies conducted by the CPUC.

So here is what the forecast looks like.

Significantly higher for self-generation, compared to the previous two forecasts. The main reason for that comes from additional PV installations, as we see in the next graph. Around 600 Megawatts more installed in 2016, compared to our draft forecast. Now, to get -- since we are using a peak factor of 0.5, you can take these numbers and multiply them by 2, and that will give you an approximately of the total capacity installed. So, by 2020, we are looking at almost 2,800 Megawatts installed.

COMMISSIONER BYRON: Dr. Kavalec, you may have said this, and I apologize, but what causes the change in slope for the '09 forecast at about 2016?

DR. KAVALEC: Oh, that is the end of the two big solar programs. So they are no longer incentivized unless they are continued. So we assume the growth rate after that point is equal to the average growth rate of energy.

COMMISSIONER BYRON: Thank you.

DR. KAVALEC: Okay, finally the question of shifting the program cycle from 2009 to 2011, to 2010 to 2012, which is likely going to happen. We prepared a forecast assuming this shift, and these next two graphs show the impact on consumption and on peak for the IOUs. First, consumption. In 2012, the maximum difference is a little bit less than 1 percent compared to assuming '09 to '11, and by 2020, that difference is around 0.5 percent. For peak,

there is less of a difference, and that is because programs tend to affect consumption more than maybe peak; around a 0.5 difference in 2012 compared to the '09-'11 assumption, and falling to around 0.2 percent difference by 2020. So here are options. We can keep the current forecast in the report and we can adjust assuming the shift to 2010 to 2012 is approved, and we can adjust our uncommitted forecast based on this shift. Or we can keep the current forecast of the report and add an addendum that shows the differences in the forecast in the event of a program shift. Or we can just replace the current forecast in the report with one assuming the 2010 to 2012 shift. So that is a decision we will have to make relatively soon. And with that, I will take questions or comments.

COMMISSIONER BYRON: Do you have a recommendation on what we should be doing there, Dr. Kavalec?

DR. KAVALEC: Assuming that it is approved, even though it is more work, my suggestion would be to replace what we have in the report. Tom, you can do that, right?

COMMISSIONER BYRON: Any questions?

VICE CHAIR BOYD: No questions.

COMMISSIONER BYRON: I do not have any questions either. Is there anyone else that would like to ask a question or to make any clarification? Please.

MR. ASLIN: So my name is Richard Aslin and I work

for the Pacific Gas & Electric Company. And, Chris, could you go back to Slide 7? I just wanted to make sure that I understood what the red line was signifying, so would you mind explaining that again?

DR. KAVALEC: The additional residential lighting savings that we assume occur after 2011 as an offshoot of utility programs before that point are added back to decaying utility program impacts.

MR. ASLIN: Okay, and that is equivalent to the assumption that, at least for residential lighting programs, that when your CFL bulb burns out, you replace it with another CFL bulb?

DR. KAVALEC: Right.

MR. ASLIN: That is essentially what that is. So would that be -- if I wanted to think about it this way, would that be sort of the same as thinking of it as that is the imbedded uncommitted?

DR. KAVALEC: Yes.

MR. ASLIN: Okay, so there is the imbedded uncommitted, then there is the incremental uncommitted, then there is the committed?

DR. KAVALEC: Right.

MR. ASLIN: Three kinds of energy efficiencies, committed, imbedded uncommitted, and incremental uncommitted?

DR. KAVALEC: Yeah. As I said, this is an exception to our rule of only including committed, but we thought it was so likely that we should include it.

MR. ASLIN: Yeah, I agree. I think that is a big improvement because I think it does make sense to believe that people are going to replace the CFLs with other CFLs. I guess my question there is, why not make that assumption for all programs? Because if I am an industrial customer and I replace a less efficient motor with a more efficient motor, and 12 years from now I need to replace that, it is very likely that I am going to replace that motor with at least as efficient a motor as I currently have.

DR. KAVALEC: Well, that is because we stop using committed, or we stop considering program impacts committed after a certain year because we do not know what program plans are going to look like. And program plans are going to affect the way people -- whether people replace current, more efficient equipment with the same equipment or not.

MR. ASLIN: I agree with that, but you overcame that hurdle here just by assuming that they would replace with that at least an efficient --

DR. KAVALEC: Yeah, I guess I would call that a matter of probabilities.

COMMISSIONER BYRON: But you assumed .7 of the CFLs would be replaced. Was there some factor involved?

DR. KAVALEC: No, .7 was for the realization rate for the utility programs.

COMMISSIONER BYRON: Yes, but I am talking about the -- I do not want to use the wrong term -- the lighting -- additional lighting effects, lighting savings. You did not assume that every single bulb would be replaced, did you?

DR. KAVALEC: What we assumed was, one way or another, residential savings were going to continue. That might come about because of the Huffman bill, or it might be future utility programs, but those savings were going to continue.

COMMISSIONER BYRON: Mr. Aslin is suggesting, why don't we carry that a little bit further.

MR. ASLIN: That is what I am saying. I do not see why stop at residential lighting. Why not have it also apply to commercial lighting and things of that nature? Because, to me, that seems like a more reasonable assumption than to assume that it reverts back to what the efficiency was prior to making the improvement in the first place.

DR. KAVALEC: Yeah, and as I said, it is a matter of probabilities, and because of the focus on lighting. So that is my best answer. It met some threshold where we said, this is so likely that we are going to include it.

COMMISSIONER BYRON: Mr. Gorin?

MR. GORIN: I think in the commercial model, the lighting fixture part is included in the model and it is the new standards, it is assumed by the time they decay that they are replaced by something that meets the new standards. So that becomes not a utility program, but a standards savings, so this is where the allocation problem comes in -- what kind of savings is it? And for the original lighting, residential lighting savings, we assume that 70 percent of the CFLs that were handed out were used from the utility programs and held that level constant. So the peak there for lighting savings uses the realization rate as 70 percent to get to that peak.

MR. ASLIN: Okay, well, that is good. My next questions were really around can you explain how, you know, making that assumption on the residential lighting, how that interacts with the forecast growth rate of peak or energy?

DR. KAVALEC: How it interacts?

MR. ASLIN: Yeah. Is it a one for one trade-off?

DR. KAVALEC: Well, yeah. It is for consumption, yeah. So if we did the forecast assuming households went back to previous practices before the utility programs, then the consumption would grow by the amount of these additional residential lighting savings, yeah.

MR. ASLIN: Okay. I wanted to make sure I understood that. And then the next question was how does

this assumption interact with the analysis about the incremental uncommitted?

DR. KAVALEC: These lighting savings are -- you could call that a temporary category to be assigned somewhere in the uncommitted analysis, so they will be attributed to future utility programs, for example, the Huffman bill, and maybe something else. But right now, they are temporarily in our naturally occurring category.

MR. ASLIN: Okay, so there is a 1:1 correspondence there, or there should be, also. All right, thanks. So the next question I had was on this take back effect. So you said there were some studies that -- comments that have been made -- there was something out there that the take back effect could be as much as 50 percent. And I am just wondering, how is that captured in the end use modeling? I can see how that would be captured in the econometric model, but how is that captured in the end use model?

DR. KAVALEC: Yeah, that was my point, and this being a limitation of this analysis, it is not fully captured in our end use models. The only place where it is captured is that first take back effect I talked about where people use an appliance for more hours; that is accounted for in our commercial model, but not in the other models. So that is, as I said, a limitation of the analysis.

MR. ASLIN: Okay. And then I had a question on,

you know, in your earlier presentation, you said that you had developed, or someone in your group had developed econometric models for residential, commercial, and industrial, and that when you simulated those econometric models over the forecast period, the result was that the forecast that was created was very similar to the forecast that was created via the end use model.

DR. KAVALEC: Right.

MR. ASLIN: And my question was, how did you treat imbedded and -- how did you treat the committed and the embedded uncommitted energy efficiency in the context of those econometric models?

DR. KAVALEC: That is probably maybe more of a technical discussion we could have offline.

MR. ASLIN: Okay. Right. I would be happy to do that. And my final question was, if I could ask one final question, on the photovoltaic's, there was a big difference between the draft assumptions around the installation of Megawatts of photovoltaic's and the revised forecast. And what is the reasoning for that?

DR. KAVALEC: Well, it is because the rate in 2009, as Art alluded to earlier, has been so much higher than in 2008. That brings up the average, so it brings up the rate of installed in our forecast.

MR. ASLIN: Okay, so that difference was

predicated on looking at more recent historic data.

DR. KAVALEC: Right.

MR. ASLIN: And what is the source of that historic data?

DR. KAVALEC: It is data filed with the CPUC and with the Energy Commission, and I forget which regulation it is under, but that is where it comes from. I can get you a specific source, but our self-generation forecaster is not here, so I cannot tell you.

MR. ASLIN: Okay, yeah, I would like to look at that also because there is some kind of disconnect, for PG&E, at least, in the data there.

DR. KAVALEC: Right.

MR. ASLIN: Okay. All right, well, thanks very much. And I am very encouraged by the revisions in the forecast and the direction that things are going, looking at climate change, looking at electric vehicles, looking at different impacts from energy efficiency and things like that. So I just really want to say thanks very much to staff for taking the effort, the time to do that.

COMMISSIONER BYRON: Good. Thanks for your comments and your questions. I am sure if we give staff enough time, they get it completely right to your satisfaction.

MR. ASLIN: The thing with forecasting is, there

is not any right. So I learned that a long time ago.

COMMISSIONER BYRON: Okay, thank you. Anymore questions or comments? Please.

MS. HORWATT: Hi. I am Andrea Horwatt from Southern California Edison. I just have one question. I would like to make a comment, though. I would like to give Chris and Tom and Dr. Jaske just a lot of kudos for the work that has been going on at the DFEEQP meeting. I think there has been a lot of really good exchange of information and really advancing the state of knowledge in the forecasting arena. And I appreciate them involving the broad group of stakeholders in that effort. The question I have, and I will take my answer off the air, is to just -- if Chris and Tom could speak a little bit more to page 11, and specifically the methodology that is used for estimating the building and appliance standards, impacts, and how that kind of interacts with the impacts of utility programs, naturally occurring price effects, and etc. Are those looked at -- how are those considered in this analysis of the building and appliance standards?

DR. KAVALEC: I will defer to Tom on this because he has more experience with this kind of analysis. Do you want to try and take that one, Tom?

MR. GORIN: Sure. I will make an attempt. The appliance -- the building and appliance standards are

modeled by percentage reductions in our estimated actual use of appliances, and they supersede utility programs, so the utilities of I believe now and the greater scheme of things, that the CPUC get credit for influencing building and appliance standards. So, you know, what portion of the utility programs that influence building and appliance standards, and building and appliance standard savings -- we are not worried about allocation between those two because we just allocate those to building and appliance standards. Those are the -- I think that is an answer to one of your questions.

MS. HORWATT: And I -- I should have stayed on the air -- part of what I am looking at is not just the IOU Codes and Standards Programs, but would also be the other regular incentive and other types of programs, as well, in terms of impacts. In other words, where they get counted as you run the scenarios, stripping off the Codes and Standards impacts.

MR. GORIN: The incentive programs would be subtracted externally from the model.

MS. HORWATT: Okay, so are they subtracted first? Or what is the order?

MR. GORIN: They are subtracted after.

MS. HORWATT: So it is a residual --

MR. GORIN: Yeah, but it -- it would help if I

looked at page 11. It is a separate residual. It depends on the program, specific program, and there is on page 173, there is a table of the treatment of IOU program savings by end use and sector that may be helpful.

MS. HORWATT: This is the staff report accompanying the forecast -- okay.

MR. GORIN: But for the specific building and appliance standard savings, percentage reductions for each of the standards are benchmarked to actual -- not actual -- but estimated use per appliance, which is benchmarked to actual use per household, which effectively discounts other reported savings that, like the Building Appliance Standards Office uses more engineering estimates of savings. So we discount that by actual use per household. But it is the same percentage reduction.

MS. HORWATT: My concern in my question is, we do a great job, I think, as a state, an incredible job of measurement and evaluation studies of program impacts. I just want to make sure that we are taking full advantage of that in the work that we are doing in attribution and applying it to the forecast. And, you know, that none of that resolution gets lost in the process of kind of back casting or looking at any of these other impacts.

MR. GORIN: Right and a lot of analysis is relatively in its infancy of attribution because it is sort

of a quagmire of differing programs and what we are mainly concerned with from a forecasting perspective is there is not a level of -- not double-counting savings so you end up with an artificially low forecast.

DR. JASKE: Let me -- this is Mike Jaske, Energy Commission staff. Let me supplement what Tom said to Andrea's overall question, and that is, are we making full use of the EM&V data? And I think the answer is no. We made considerable strides in this cycle in making use of the portions of EM&V data that have to do with first year savings and the various kinds of adjustments to first year savings, and then sort of broadly applying these realization rates that Chris mentioned earlier in his presentation, but those realization rates are a generalization of what is learned through all sorts of detailed ex post studies that take three, four, or five years to complete relative to when the savings were first installed. And those ex post studies, as you well know, are not very fully fed back in any organized way that poor forecasters can sort of take the mass of those results and go to a database and see how some study done three or four years downstream has actually analyzed the extent to which a particular kind of measure that started off as a first year, and had net versus gross adjustments, etc. etc., how all that actually translates itself into sort of permanent savings estimates. And the

PUC is proposing -- PUC staff is proposing a better means by which all those ex post studies can be collected together in an organized fashion, I believe, for what was originally called the '09 to '11 program cycle, going forward, presumably now being implemented in 2010 to 2012. And from their perspective, that is their focus. From our perspective and our colleagues that are employed by the utilities doing similar things, we want to know what those ex post studies mean for all the prior years' worth of savings that have been spent, installed, presumably have some lingering impacts, except perhaps for CFLs from more than four or five years ago, they are already gone. But we do not have a very good way of systematically incorporating those data into our forecasts. And we are attempting to tee up that issue with the PUC and to get funded out of the new round of EM&V studies, you know, going back at least some period of time so as to get those ex post studies accessible and organized in some coherent -- call it a database sort of fashion that you can match up to the first year of savings. So that is a significant piece of the overall EM&V effort that we have not yet been able to actually wrap our arms around and bring into the forecasting process. And perhaps we will be able to make progress in the 2011 IEPR cycle if we can convince the PUC to assign some funding to that, and we can all sort of get collectively behind spending some of

those dollars in that manner.

MS. HORWATT: Yeah, not an easy problem at all. And, again, I think you guys are doing a great job to increase our understanding of this area. Thank you.

COMMISSIONER BYRON: Ms. Horwatt, I would like to also add that I appreciate your regards for the imparting of knowledge that takes place at this, and I always have to look it up -- this DFEEQP working group. I suspect it is also a little bit of terminology and communication that contributes -- or I like the word "Taxonomy," getting these definitions right. But it is also your involvement and the involvement of the investor-owned utilities extremely helpful at your level, let's say it is not typically encumbered with some of what I will characterize as corporate objectives of the parent company, which sometimes tend to get in the way of our ability to figure this all out, so I appreciate your participation very much, too. Do we have any other comments or questions? Do you have something online? Go ahead.

MS. GREEN [presumed]: Yes, Commissioners, we have Mr. Rich Ferguson with RETI.

COMMISSIONER BYRON: Oh, Mr. -- Dr. Ferguson, go right ahead.

DR. FERGUSON: Good afternoon, Commissioners and our hardcore people who are still there. I just have a

quick comment on this. If you can go back to the PV slide on the self-generation? Commissioner Byron had mentioned that earlier and I had a comment. As you all know, RETI ran into a lot of flack with the public about the initial PV [inaudible] projections, and the goal is that rapid increase to 2015 to do the program. The goal, of course, is that that will lower costs and do whatever else it is supposed to do to transform the market. In RETI's forecast, we projected that growth rate on out to 2020, so the RETI numbers that we are using were grid connected generation, and are quite different. And I do not know if you are going to run into some flack with this assumption, if it is reasonable, but of course the hope of that program is to make this growth rate permanent and have it die in 2016. So, I just thought I would make that comment. I have some other comments, but I guess I will wait until the public comment period.

COMMISSIONER BYRON: Thank you, Dr. Ferguson. Anyone from staff wish to comment on that?

DR. KAVALEC: I will just add, Rich, that problems like this are why we are in the process of developing full predictive models for self-generation, that take into account costs, so we can look at the impact of, for example, declining costs as we go out over the next 10 years. But right now, I would be the first to admit that our process

for projecting self-gen is fairly primitive.

DR. FERGUSON: Yeah, well, I hope you are wrong. I mean, I hope that line after 2016 is the right line, but on the other hand, I certainly am not certain that the RETI prediction is the right one either.

COMMISSIONER BYRON: Well, we know they are wrong. These gentlemen continue to boldly go where no one else will go. We hope they are conservative in their projections. Any other comments or questions? All right, once again, thank you. And I think we are pressing on now. We are picking up our agenda with regard to staff forecast results for San Diego Gas & Electric. Is that correct?

MS. GREEN: I believe Mr. Gorin would like to start with Pacific Gas & Electric.

COMMISSIONER BYRON: Okay. All right, so we are skipping down the agenda, then, to the staff forecast results for the Pacific Gas & Electric planning area and comparison to PG&E's forecast.

MR. GORIN: We planned this change before lunch. I was not sure that the San Diego representative was going to be here to talk. He made it, but we will go with PG&E.

This format is similar to the Edison format. This is mainly to get these charts and numbers on the record and get the report on the record, and to show changes from the June forecast. So I may go through them, some of these,

rather rapidly. The forecast for consumption is between 2 percent higher in 2010, and it is 5 percent higher in 2018 than what we had in June. This is still lower than the 2007 forecast by 2 percent. The peak forecast is only 1 percent higher than the June forecast. Per capita consumption and per capita peak are both declining. And the revised self-generation forecast reduces peak by about 200 Megawatts by 2020 due to the increased PV assumptions. And the load factor is higher than we had in June, but it is still declining.

This is a table. You will note there is a difference in history for 2008, for both peak and energy, and that is because in June we were still working on some of the estimates for self-generation on consumption and the peak number reflects both difference in self-generation estimates. And the June forecast was actually a weather-adjusted peak number, and the forecast we have now is theoretically the actual peak 2008 number.

The forecast is higher than the forecast in June, partly by incorporating the increased consumption numbers in 2008 as a benchmark to calibrate to. The recovery is greater than was forecast in June. And the growth rate now, after the recovery, is similar to that in the 2007 forecast. The peak forecast starts at essentially the same point, but grows slightly faster. There was not as great a difference

between the 2007 and June forecast as there was in the consumption forecast.

Per capita consumption is relatively the same story as total consumption, it is relatively -- it grows after the recovery and then declines at a slower rate than the draft forecast, but slightly faster than the June forecast. Per capita peak, similar story. It grows at a slightly higher rate, but still declines faster than the 2007 forecast, partly caused by the increase in PV estimates of self-generation on peak.

And the load factor continues its decline. Forecast load factor is based on our assumptions of adjusted normal weather, adjusted for the heating and cooling degree date ratios for a 12-year to 30-year average on both heating and cooling loads, and assuming normal peak weather.

Residential forecast was adjusted upwards due to the inclusion of 2008 consumption data. Now it grows at a slightly faster rate. Household income increases slightly over the June forecast. Use per household increases slightly. The lighting savings that we talked about here and there reduce per household consumption approximately 5 percent in 2011 and beyond, from the 2004 levels. So this is a graph of the revised forecast, the starting points adjusted upward, and the growth after the recovery is slightly higher.

Use per household has a short-term decline with some of the conservation programs that are not counted in the model, and it increases slightly after that in the same range as recent history. Household income and PG&E does not -- I am not sure how these charts came out, but kind of -- the charts went over the words. The household income does not increase quite as much as it does in the Edison service area, if I remember correctly. But it still is higher than what was projected in 2000 -- in the June forecast.

Residential peak is pretty much identical to what we had in the June forecast. And so is peak use per household.

Commercial building forecast is higher, it is now similar to the 2007 projection, the new -- the revised floor space is closer to 2007 levels. There is additional conservation which -- I mean, the conservation programs included in the forecast result in a declining use per square foot. And the peak results follow mainly the differences in the consumption forecast. The forecast starts at a slightly lower point, mid-term it is the same as 2007 forecast now, and then tapers off toward the end of the forecast period at slightly lower growth rate. And that is driven by the changes in the floor space forecast, which now are closer to the 2007 values than they were to the draft forecast.

And use per square foot is essentially the same. In all three forecasts, there is the dip because of the economic downturn in the short-run, but in the long-term, all the forecasts are relatively similar.

Commercial sector peak has similar differences that are driven by the consumption forecast, but the peak forecast is somewhat lower than the CED 2007 forecast now, based on our more recent assumptions of commercial contribution to peak. And use per square feet is actually lower now because of our change of assumptions in the commercial contribution to the peak. But the trajectory is relatively the same in all three forecasts, it is just a matter of a different starting point.

The industrial sector now has a higher forecast and the same as Edison's more rapid recovery of peak forecast is higher. After this short dip, industrial consumption is projected to be slightly higher than it was in the 2007 forecast now. And peak is much higher based on our estimate of the industrial contribution of peak to the total PG&E system peak. But the trajectory of the forecast follows essentially the trajectory of the consumption forecast.

And the other sectors are relatively small and I am just trying to show some of them for completeness. TCU sector, we used a linear trend analysis, whereas we used

somewhat different economic drivers than the preliminary forecast. But now the TCU forecast grows at more of a trend rater population. And that is also shown in peak where it is essentially over a year trend in history.

The Ag forecast is higher based on some more recent information that we got from PG&E, but more recent history is based on dry forecast years, and the actual forecast is based on normal rainfall years and both the draft and the revised forecast remain relatively constant in the forecast period. And the peak is the same for Ag and Water Pumping, is the same story. We used slightly higher assumptions for the starting point, but a relatively constant forecast.

Efficiency savings are similar to what was presented in Edison. It should be pointed out that the gray area is from 1990 to 2008, is actual consumption which is why the gray area goes up and down. The savings appear to go up -- appear to increase and decrease with the forecast, but if you put the savings on the bottom of that graph, they would be continually increasing. What I was trying to do was show what the savings are in relationship to the total forecast and did not want to zero-base the savings. And the same thing for peak. We also have a difference of history in self-generation. In this case, the history is lower based on revised QFER estimates and revised self-reported

estimates from self-generation programs. So the assumed starting point is lower than in the draft forecast, but using 2008, the average of 2008, and 2009 installations and applications for installations, we end up with a higher forecast by 2016, by about 200 Megawatts, which provides additional peak reduction. And this is a graph of the difference between the non-PV and the PV reduction on peak.

The economic scenarios for PG&E, in the high economic case, both consumption and peak increase around 2.3 percent and in the low economic case, they decrease about 1.8 percent. And these are the trajectories around the base case for electricity consumption and peak demand. So with that, I will take any questions.

VICE CHAIR BOYD: No questions.

COMMISSIONER BYRON: I do not have any either and, unless there are any clarifying questions from the audience, let's go ahead and hear from PG&E.

MR. ASLIN: Well, hello again. My name is Richard Aslin and I work for the Pacific Gas & Electric Company, and I put on this title "Work in Progress for Discussion Purposes Only," so that is exactly what it is; it is really more just to guide my thinking. I had a couple of days to quickly review the revised forecast, so it is just kind of my initial thoughts, things that I observed. It is going to be sort of similar to what Art Canning had to say.

One thing that I was very encouraged by is the development of the econometric models for the major market segments. I think that might help us to at least have some sort of common forecasting methodology that we can look at and start to ask ourselves questions, for example, I am very familiar with things like income elasticity, price elasticity, and things like that, so that is sort of the language that I tend to talk in when I am thinking about forecasting. I have a problem thinking about end-use modeling sort of structures, so I think that will help us. I think it might also help us resolve some of the issues around how much is embedded, what this take back effect is, and things like that. So I am very encouraged by that.

I think there still remains a disconnect between the historic period growth rates, especially for commercial, and the forecast period growth rates, and then there is still this disconnect which I pointed out in -- I think it was the last workshop that we had -- between the relative growth rates of residential and commercial in the forecast period versus the historic period, wherein the historic period, they tend to move very closely together, which makes sense to me, they should move fairly closely together. Somehow in the forecast period, they are very disconnected. So I would like to see a little more work done there.

I am going to skip point 3 because Chris and Tom

were very effective in explaining this to me, so I am just going to skip that for now. And just as Art had mentioned, I am really not going to focus on any sort of comparisons between PG&E's modeling and what are results are and the CEC's revised forecast, because our modeling is different and it is fully mitigated already. Without knowing what this incremental uncommitted amount is, we cannot really compare the two forecasts. Also, our forecast includes electric vehicle projections, it includes some climate change effects, and things like that. So they are not really strictly comparable. I am really just going to focus on things I noticed, that I thought were maybe a little inconsistent internally in the revised forecast.

Finally, it would be useful if, at least in one of the tables, the PG&E forecasts could be shown on the sort of what we call the TAC level, so that it would be consistent with the ISO's definition of PG&E. That way, I could look at the historic data, so, for example, the 2007-2008 observed. Then I could actually verify, you know, here is another source that says that is what the load was in history.

COMMISSIONER BYRON: Mr. Aslin, what was the acronym you used? TRC?

MR. ASLIN: TAC.

COMMISSIONER BYRON: TAC, which stands for?

MR. ASLIN: Transmission Access Charge, that area.

COMMISSIONER BYRON: Thank you.

MR. ASLIN: So just moving on to the first thing, which I think is probably the most important and maybe the area where there could be some changes made between now and the final forecast. So what I am showing you here is that -- well, first of all, I chose a slightly different forecast period here, so the historic period on this table is 1990 to 2007, and the forecast period I chose was 2012 to 2020, and the reason I chose that was it is sort of after, you know, we get into the recovery phase, it is also during this "uncommitted period," so I think the comparisons are a little cleaner there. So what you will see is that, during the historic period, 1990 to 2007, residential average growth -- this is peak that I am looking at here -- was just a little bit over 2 percent, right around 2 percent. In the forecast period, in the uncommitted period, so there is not a lot of energy efficiency programs savings that are baked in here, the growth rate is also around 2 percent. So the forecast period is pretty consistent with the historic period. Then, when we move to the commercial, you see that, in the historic period of 1990 to 2007, the commercial growth is actually 2.66 percent, so it is a little bit higher than residential, actually quite a bit higher when

you compound that half a percent over a number of years. Then you go to the forecast period, and all of a sudden it is 1 percent. So it declines by about 60 percent, the growth rate. Residential growth rate only declines by 2.5 percent. And I still do not see any reason for that. It seems to me that it should be the case that the commercial growth should be moving fairly similarly to the residential growth over, you know, eight to ten year timeframe, because that is what it has done in history. I just do not understand why there is this big break from the history. So there is a break from the history both in the growth rate for commercial, so the growth rate is less than half of what it was in the history and, also, there is a break in the relative growth rates between residential and commercial. They are moving lockstep in the history and then, all of a sudden, they are disconnected in the forecast. And that is very important because the commercial and Ag together is 40 percent of the total peak, but commercial by itself is 30 percent of the total peak, so as that commercial growth rate changes, that changes the entire growth rate of the forecast.

I am also not really sure about the agricultural growth rate because, here, it is negative, but -- I think I mentioned this last time also -- it seems reasonable to expect that, as we go forward, there is going to be more

groundwater pumping in Ag. We already know that is current and we also know that a lot of Ag customers are switching over from diesel and other sort of engines for pumping to electric engines for pumping, though it should be the case that, if anything, the growth rate for Ag should be similar to what it is in history, also. But instead, instead of being positive, it is actually negative.

So this chart had some really small print, but all I was questioning here was, so between the draft forecast and the revised forecast, energy consumption in 2018 increases by 5.5 percent, but peak consumption only increases by 1.5 percent, and I was not -- I am not sure why that happens. So maybe Chris and Tom can explain why it is that we move from the draft to the revised forecast, energy consumption goes up 5.5 percent, that those same underlying economics and demographics only produced a 1.5 percent increase in the peak.

And as I mentioned to Chris, we have some sort of disconnect, I think, on the data for the photovoltaics. So I ran the forecasts by our group that handles the CSI and the SGIP programs, and what they told me was that, in 2008, the installed photovoltaic capacity for those programs was 83 Megawatts, and that, thus far, through August in 2009, the installed capacity was 44 Megawatts. And so it was their opinion that it would be very difficult to achieve --

what I have here in this chart is I have taken what is in the forecast tables, that is the column that says "CEC Forecast Incremental Peak Reduction," and I have translated that into incremental capacity additions. Now, I did not know they used .5 when I did this, so I used .4; but, nevertheless, the projection here was that the incremental capacity additions for 2009 would be over 200 Megawatts. I think that is what -- 200 Megawatts. And so we are not anywhere near that in 2009, thus far. So maybe we can get together and talk about how that works. And also, if we can get together and talk about the 2008 peak reported because we are a little bit disconnected there, as well.

COMMISSIONER BYRON: What do you show for the '08 peak?

MR. ASLIN: Well, at the PG&E planning area level, I do not show anything because this forecast is on a basis, which is not a basis which either PG&E is using, or the ISO is using, so I cannot actually do that. But I did receive information from -- I think it was Tom -- on what the PG&E service area peak was, and we are off by a few hundred Megawatts. And I think that might have to do with -- there were a number of demand response programs that were called on the day of the peak in 2008.

COMMISSIONER BYRON: Mr. Aslin, maybe I misunderstood you, I thought you were referring to your

calculated number, 102 Megawatts of installed PV in 2008.

MR. ASLIN: Oh, yeah. I was saying that there are a couple of areas where I would like to work with Chris and Tom in order to make sure we have the same source data for a starting point. One of them was the installed photovoltaics for 2008 and 2009, in which we have much lower numbers than what are being showed here. And the other one was that, for the peak forecast itself, the Megawatts of peak at the time of the 2008 peak, we also have a disconnect on what the starting point is there. But my point with this slide is that, you know, if we installed 83 Megawatts of photovoltaics in 2008, and we are at 44 Megawatts through August of 2009, it is very unlikely that we are going to ramp up to installed capacity of 200 Megawatts in 2009, you know, 150ish Megawatts or so in 2010, 2011, 2012, 2013, and 2014. PG&E's internal forecasts, what we are using, is 65 Megawatts per year of installed capacity just throughout the whole forecast. So, at the end of the day, we end up internally with a reduction to peak in 2020 of 450 Megawatts, which is comparable to the 688 Megawatts in the revised forecasts. And I think that 450 Megawatts is probably pretty close to what you had in the draft forecast. Did that answer your question?

COMMISSIONER BYRON: Yeah, I followed everything you said.

MR. ASLIN: Okay, I am going to skip this because Chris and Tom explained to me how I was misreading this.

COMMISSIONER BYRON: Okay, good.

MR. ASLIN: So, let's see, just concluding remarks. The revised forecast is definitely moving in the right direction and I think this development of an econometric forecasting model will be very helpful. I think there still needs to be some work done, especially in the commercial segment growth rates for both energy and peak. I think that is still too long, it is very much disconnected with both history, all commercial growth, and the history of relative growth rates of residential and commercial. I think the photovoltaic assumption should be scaled back a little bit more, keep more close to what they were in the draft forecast. And I am very much looking forward to seeing the analysis on what the incremental uncommitted is. I think that will be a big missing piece of the puzzle and will allow us to make better comparisons between the results of the various forecasting models. And that is all I have.

COMMISSIONER BYRON: Well, good. Thank you very much. Let's see if we can get some responses from staff on some of your points.

MR. GORIN: On the peak disconnect, the 2012 to 2020 includes reductions that are approximately 200

Megawatts in residential, and 300 Megawatts in commercial self-generation, which served to reduce the peak, that were not included in the 1990 to 2007 time period. And that is a similar explanation for the difference between consumption and the peak chart because the consumption chart is total consumption, which is bundled and direct access sales, plus self-generation. And the peak growth rates are bundled and direct access sales less self-generation estimates. So the peak growth rate is developed by using self-generation as a reduction to peak where that is included in the consumption estimates. So there would be a disconnect between those two and it probably would be better to look at the growth of net energy for load as a comparable growth rate to the net peak, which I believe is 41.2 in our forecast, and we can make some comparisons to that. Also, in commercial, there is more of a 1:1 reduction from lighting savings on peak than there is in residential because we have all the lights on in here, and they will be on probably in peak time of the day, whereas, in residential they are not on as much. So that will cause a disproportionate reduction in peak savings for commercial that is not directly transferrable to residential.

The PV estimates, we did use -- the 2009 estimates are actual installations plus applications, which are not, to my knowledge, installed yet. So that could be a

difference in the way we are counting things.

DR. KAVALEC: Let me just add, for the difference between commercial and residential, there are two other things going on aside from what Tom talked about. The first is the rate increase. That has much more of an effect on the commercial sector than it does on the residential. Commercial energy use in our models is much more responsive to price than is residential. And I should say that is not just our models, most studies tend to show the commercial price elasticity's are higher than for residential. So that is one reason. Another reason is that, in our Economy.com base case, the increases in personal income are relatively large compared to increases in employment. And it is increases in personal employment that drive the residential forecast, where commercial is more reliant on employment. And the third thing is there is more -- a higher growth in self-generation in the commercial sector than in the residential sector, so that affects peak. In terms of --

COMMISSIONER BYRON: If I may just for a second, then how do you answer Mr. Aslin's point or question as to why the residential and commercial peak historically have been closely linked? And they are not linked in our forecast. Did I get that correct?

MR. ASLIN: Yes, that was an observation that I had made.

DR. KAVALEC: Yeah, and my attempt to answer that was to say that the growth in PV installation is much higher in the commercial sector, which affects peak in our forecast. And that was not happening, obviously, in the historical period.

COMMISSIONER BYRON: Okay, sorry I did not follow all that. Thank you.

DR. KAVALEC: Rich also asked about why our peak was only 1.5 percent higher in the revised forecast versus the draft, and that difference was a lot less than it was for consumption. And the reason for that, as I explained earlier, is that in the draft forecast we made an adjustment upward of the peak forecast in order to account for early indications of peak demand. Had we not made that adjustment, then there would be a much larger difference in peak between the preliminary and the revised. And, yes, I agree we have a big disconnect in the PV case, so we will just have to sit down and have a phone call and take a look at the respective data that we are using.

MR. ASLIN: Okay, yeah, that would be great. One thing I would say, for the commercial -- so in our econometric models for long-time lead, we did use employment as a driver of the commercial peak and commercial sales, but we discovered that employment really was not a good indicator because it is just the California economy is

becoming sort of less and less energy intensive per employee, so we changed to using something that Economy.com does produce, which is the gross metro product, you know, real output per production for various SICs, which you can map to your models, probably. So I would think it would be worth looking at whether using a driver like GMP actually does close that gap, because GMP and income are actually -- they are identical. They have to equal each other over some period of time.

DR. KAVALEC: Yeah, let me just add that we do not use employment directly to forecast commercial energy. Employment is used to project floor space. And we still think it is a pretty good predictor of floor space.

MR. ASLIN: Right, well, yeah, I very much look forward to talking to you about the photovoltaics, and hopefully we can also get the same number for the 2008 peak.

DR. KAVALEC: Okay.

MR. ASLIN: Thanks. Thanks very much.

COMMISSIONER BYRON: Good, thank you. Good comments, good responses. So are we now pressing on with San Diego Gas & Electric? The staff forecast results for the San Diego Gas & Electric Planning Area in Comparison to SDG&E's Forecast?

MR. GORIN: We have a similar story for San Diego that you heard earlier today, 3 percent higher for revised

forecast in 2010, 5 percent higher in 2018. We are still 5 percent lower than we were two years ago in our forecast. Peak forecast, however, is 2 percent lower, and that is due to increased estimates of self-generation. We have actually the 2010 and 2018 -- I neglected to mention this in the earlier presentations -- the growth rates now in the revised forecast are more similar to what was projected in 2007 than they were in the draft forecast, whereas we had, for consumption, it is 1.4 in 2007, and now it is 1.24 as opposed to our June projection of less than 1 percent for consumption. The consumption forecast is adjusted upwards for inclusion in our 2008 consumption history. After the recovery, the growth in San Diego, however, is similar to what was projected in June, still lower than what you projected in 2007. Peak, the growth rate is relatively similar in all three cases, just the starting points are different. The starting point is lower in the revised forecast based on differences in weather adjusted peak and also increased estimates in self-generation. Per capita consumption is relatively constant after the drop from the current economic conditions. There is a slight recovery and then a slight decline over the forecast period, rather than the constant decline we were projecting in June. Peak is relatively a similar story, although lower because of the self generation estimates. And the load factor now, using

more recent data, is essentially the same as we were projecting it in 2007, although it continues its decline at the low end of the recent history, the spectrum of recent history. I will note that the higher load factors in the 2000 era are caused by actually cooler weather in San Diego, which reduces the peak in relationship to total consumption because the historic load factors are based on actual weather and not weather normalized.

Residential forecast, we adjusted the starting point upward, it grows at a slightly faster rate. Use per household is now projected to increase slightly. Household income is growing faster than it was in June. And there is little difference in the peak forecast because of the inclusion of more self-generation and PV. So this is the residential forecast, it grows -- adjusted from the starting point -- it grows similar to what was projected in June. Residential use per household now projected to grow slightly, although not at the level we were projecting in 2007. Household income is between the two forecasts, it grows now -- after the recovery, it is projected to grow at a rate similar to that projected in 2007. And interesting to note that, in the San Diego County service area, there was no short term dip in household income that occurred in other parts of the state. Residential peak, virtually the same for all three forecasts. Residential peak per

household, the same story.

Commercial sector, the revised forecast grows faster than the draft forecast, extra floor space, use per square foot declines. So this grows at a faster rate than the draft forecast and after the recovery it grows similar -- maybe a little slower than what we projected in 2007. Floor space is higher than what we projected in June, although it does not get to the level that we were projecting two years ago. Use per square foot after the recovery declines because of standards in efficiency programs and lighting savings. Commercial sector peak follows a similar pattern to consumption, where it grows faster than in June, but not to the level that we were projecting two years ago. Use per square foot, PV per square foot is virtually the same in all forecasts.

The industrial sector is now higher, which is sort of a broken record for all the service areas, more rapid recovery and the forecasts are now higher than they were in 2007. This is the industrial consumption forecast, so the output is projected to be higher in the San Diego area than it was in both 2007 and the draft forecast. This is also adjusted from a higher starting point in 2008, by using a 2008 consumption forecast. I did not show this for the other utilities, it is in the report. So basically we are assuming a higher starting point for industrial use per

value of dollar output. But the trajectory is the same. You could argue that this may be conservatively high, given the historic trend, but it seems that at some point the increases in productivity are going to have to level out the way we were projecting. Industrial sector peak follows a similar pattern to sales forecasts and is now higher than it was in 2007. I left the other sectors out because they are a very minor portion of the San Diego planning area. They are in the report if anybody cares to read them and needs to get to sleep.

The efficiency savings, same story. Self generation reduces the peak about 100 Megawatts, which is the difference in peak forecast, and we worked very diligently with San Diego to be able to revise our self generation estimates of history. These are the savings estimates, similar story to the previous utilities. You can see the difference in self generation, especially in recent history, and this is caused -- this difference came about by San Diego providing us information that we did not have before, and hopefully this is a more accurate representation -- the blue line is a more accurate representation of self generation history in the San Diego service territory, and it agrees with what San Diego is using in their forecast. The forecast of PV and self generation is based on similar methods to the other utility planning areas where we used

2008 and 2009 installations and applications. And so now history looks a lot smoother than it did in the preliminary forecast, there is no peak and valley in history, and hopefully it is a better forecast.

Economic scenarios -- consumption and peak on the high case go up about 1.7 percent, and in the low case go down about 2.1 percent. So there is less upward movement in the San Diego area compared to some of the other utilities. And the downward movement is about the same. So with that, if there are any questions or response from San Diego.

COMMISSIONER BYRON: Thanks, Mr. Gorin.

MR. VONDER: Hello. My name is Tim Vonder with San Diego Gas & Electric Company. And I would like to say that, as far as the staff's forecast and the way it turned out, we really have no major problems with the way it is right now. We spent our time and our effort, a lot of time and a lot of effort, between the preliminary forecast and the revised forecast, working with staff on mainly data issues, helping them on the starting point of the forecast because we wanted their forecast to reflect the 2008 actuals and, like Tom said, we worked with them on getting other data correct like self generation and weather data, and so on and so forth. So I think our efforts so far have paid off. We have come a lot closer together in terms of working with the same data. But I think from this point, going

forward, there is still going to be a lot of work to be done, and some of the things that Edison has said, and PG&E has said, concerning uncommitted, I believe is really important. And, as we approach the next phase of our forecasting efforts, that is, working toward moving to the long term -- the LTP process, and at that point, the uncommitted and the energy efficiency goals will come into play, and that is going to be an important step and we want to work hard to ensure that that is correct. I mean, like Chris mentioned, there is still some issues when we take a look at the goals in the future, some adjustments are going to have to be made because, currently, there is some overlap in the demand forecast such as lighting, as he pointed out, and there is also the realization factor that we have noticed in the past through these evaluation studies, and currently staff is using the 70 percent realization factor, so when we consider the goals, I am sure we will want to consider if they should be adjusted for a realization factor, too.

And then, I think there are differences due to timing. The new goals are going to start -- what -- the 2010 to 2012, and in the forecast here, there seems to be some overlap with committed going all the way to 2011, so I think minor adjustments are going to have to be made somehow to put the two in sync. So, anyway, I guess what I would

like to say is so far so good, but there is probably a lot more work to do from this point to the next, and we are certainly willing to help all we can and do our part.

COMMISSIONER BYRON: Good. Thank you. Any response from -- I was intrigued to see household income on the San Diego Gas and Electric service territory has not been affected greatly. I wonder if that contributes to your general satisfaction with these forecasts. You have to come to the microphone, please, if you want to respond. And I am glad to see that, by the way.

MR. VONDER: I really cannot comment on that one other than my own wallet, and I would say there is an effect. No, I am sorry, I cannot get into detail on that one.

COMMISSIONER BYRON: Well, good.

VICE CHAIR BOYD: Next.

COMMISSIONER BYRON: If there is no further questions there, we will continue on. Am I correct to assume the next one is the Sacramento Municipal Utility District, Staff Forecast Results for the Sacramento Municipal Utility District Planning Area and Comparison to SMUD's Forecast.

MR. GORIN: These are actually our results and we did not make comparisons with the utility forecast. We will leave it to the utility forecasters to speak to our

forecast. Actually, SMUD is a little bit different. Economy.com was not as kind as Sacramento County as the rest of the counties. They must have realized there was a few state workers here.

COMMISSIONER BYRON: Yeah, it is all those state employees dragging down that income.

MR. GORIN: So this forecast is lower than our draft forecast by 4 percent, but it recovers to 3 percent lower by 2018, and the economic forecast is the major driver of that. And the forecast is 8 percent lower than our 2007 forecast. The peak forecast is similar to the draft forecast, but that is still 7 percent lower than we had two years ago. And the growth rate from 2010 to 2018 are lower -- they are higher than the draft, there is a bigger drop in our projection from 2008 to 2010 than there was in the draft forecast. So this forecast for SMUD is lower than previous two forecasts. Peak forecast is relatively the same, a slightly lower starting point based on historic peak. Per capita consumption is way down in the starting point, recovers, but declines slightly, the same basic pattern in some of the other utilities, although probably a greater drop to 2010 from current levels. Peak is the same because we figure that people are still going to use their air conditioners when it is hot because that is what they have them for. And the load factor is relatively constant and

does not decline very much, mainly because SMUD is pretty much saturated in their air conditioning loads compared to the other utilities.

Residential forecast is lower. After the recovery, it grows at a slightly faster rate. Residential forecast is projected to take a slightly lower drop than it was in the June forecast, and a lot lower than was projected in 2007 because there is a difference in household income projections. And some of this may be the way, in 2007, we computed household income, but this is still a big drop from what we are projecting in 2007 and it is a drop from what was projected in June using the December 2008 Economy.com projections.

COMMISSIONER BYRON: Big does not quite cover it. That is enormous.

MR. GORIN: Oh, it is a function of scale on the graph. But you are right. And that translates to a drop in use per household, although with the efficiency programs, it still drops, but it gets in -- after the recovery, it is relatively constant. SMUD has a lot of efficiency programs that are working to temper growth in use per household. On consumption and residential peak, it is similar to the previous forecast and peak use per household would be similar to previous forecasts also. Commercial forecast is the same similar story to residential, it is lower in the

draft. There is a lower starting point because I think we assumed a short term vacancy rate of commercial buildings, and that is also reflected in the peak forecasts, so there is a drop in commercial consumption in the near future, but it recovers to grow at a similar rate to the draft forecasts after about 2014. Floor space, which is probably the only service territory that there was no precipitous change in the floor space projections and it is due to the economic drivers that we used. Commercial sector peak starts slightly lower than the draft forecast.

Industrial sector, which is a relatively small portion of SMUD, is lower because of inclusion of the 2008 data that start the forecast with -- and it has a similar recovery that was built in to the draft forecast, but the long term growth was somewhat flatter than the draft forecast. Industrial sector peak is lower than the draft forecast, follows the same pattern as the consumption forecast. Savings for SMUD are a little bit higher than most of the other utilities, and I was scratching my head as to why that was, and they have utility programs that are fairly aggressive. And the Building and Appliance Standards for SMUD are affected by ancient history in that SMUD had the highest rate of electric heat in California when Rancho Seco was going to run forever, and so they had a high incidence of electric baseboard heat, which got turned into

heat pumps, so that is an artifact of the way we calculate savings and assume that we did not get any smarter since 1975, so you have an effective 50 percent savings for electric heating, and you do not have as much of a percentage -- as high an incidence of electric heat in other service areas.

The economic scenarios for SMUD, on the up side, they increased about 2.1 percent; on the down side, they decreased about 2 percent, and relatively similar to the other service areas. I would have thought there would be a higher up side to SMUD, but apparently it is kind of a universal agency, both Global Insight and Economy.com have similar opinions. So, with that, we have a representative from SMUD here. Do you have any questions?

VICE CHAIR BOYD: No questions. I just got suckered into buying a heat pump about 20 years ago.

COMMISSIONER BYRON: Do you prefer to have your electric resistance heating?

VICE CHAIR BOYD: I blew it up about five years ago.

COMMISSIONER BYRON: So let's go ahead and hear from our SMUD representatives, then.

MR. TOYAMA: Good afternoon. I am Nate Toyama from the Sacramento Municipal Utility District. There are copies of this presentation outside, as well. When we first

started the earlier -- in May or March when we first submitted a forecast, we had already had somewhat of a recession forecast anyway that we were getting from our forecasters who used Global Insight, and so much of our forecast had already included a recession component in it. We tend to look at recession in two distinct manners, one is a slow growth in our customer base, which we are seeing now, and a second component being a reduction in average energy use and in peak use, which we are also experiencing, as well. However, when we did the forecast, it was back in March, and we are currently updating our forecast for SMUD's 2010 budget, but that will not be available for a month or so, or a couple months and it is approved by our Board. And so, when I looked at the more recent forecast by Tom, it still has some interesting components in the sense that the CEC forecast is still a little bit above SMUD, probably about 5 percent, and this is a peak demand forecast. The most recent changes made in the more immediate forecast are very comparable, in fact, they are almost identical, it is going -- it is the recovery that we differ, and in the recovery we begin to recover in 2011, with a slow recovery, then by 2011-2012, almost a full recovery. And this is sort of, at least for our economic consultant, this seems to be the consensus among them, as well as some other consulting firms in California. This is peak, the same is true for

energy. This is sales. One thing about the sales, and these numbers I pretend are here -- I tried to make the CEC's forecast comparable with SMUD's forecast. We have some differences in the way that we present these numbers, but in general they are fairly close. This is very similar to the peak, except that the CEC's forecast has a fairly large drop in 2010 in terms of energy use. We see drops in our commercial class, but it is partly related to recession and it seems to be more of a business cycle trend that we are observing. We had not seen much of a drop at all in residential energy use. And I think that our conclusions are basically that, even though we are seeing slow growth and perhaps some vacancies in our residential rental market, people have to go somewhere. And after moving back home, or moving in with their parents, or with friends, we certainly note that energy use is highly related to the per capita energy use, and so we had not seen a statistically significant reduction in our residential use, which keeps that number for '10 not as low as the CEC's, it is still low, at least compared to last year, but it is not as low. I think on a calculated day reduction over 2008, it was about a 3 percent. We are projecting about a 2 percent reduction in energy use for 2010 over our previous forecast. The final slide I have is the way we like to characterize our energy efficiency and our PV savings. What I did was I

took the numbers from Table 5.2 in the draft, 5.3 in the PV savings, which were Tables 1.2 and 1.4 in the report. What I did here was I annualized our savings because that is sort of the way we keep track and the difference really -- or at least part of the difference that I can tell between the CEC's forecast and SMUD's forecast, relate to the annualized savings going forward. In Table 5.2 for energy -- or this is retail sales -- we see an annualized savings roughly in the 70-85 Gigawatt hours per year. From our experience, at least the last two years, we have seen about 130 Gigawatt hours per year. Going forward, we expect to reach in the future anywhere from 140 to perhaps 200 Gigawatt hours per year on the energy side. For the peak side, we see the same thing. We have the annualized savings going out from 2011 to 2015, to 2020, roughly in the 20 to about 20 Megawatts a year. From our program participation, we are seeing roughly about anywhere from 30 to 35 Megawatts a year in our peak savings, so, again, substantially more than what the CEC is giving SMUD in the forecast. And, finally, the PV savings, as well, are much lower than what we have in our forecast. Looking at the incremental savings for PV, we are looking at maybe 4-5 Megawatts a year in PV savings -- peak savings, by the way -- as opposed to the 1 Megawatt a year that CEC is calculating in their forecast. On the energy side, for incremental savings, CEC has about 3

Gigawatt hours a year, we expect that to be more like 10 Gigawatts a year. And so, again, much smaller than what we are using in our forecast. So anyway, I am thinking that these might explain about the 5 percent difference that we are observing in both the peak and energy forecast as we go out to 2020. When I looked at these slides that Tom presented, it looked pretty closely to our last year's forecast where we were looking at fairly flat usage on a per capita basis, or on a per customer basis, for both energy and peak. But now, with SMUD's aggressive programs in energy efficiency, we expect the energy use per customer, both on the capacity side, as well as the sales side, to decline slightly over time, even with the recession going on, which we expect to see. When we recover, it will still be lower than what we observe now. Anyway, that is my presentation. I would like to entertain questions if anyone has any.

COMMISSIONER BYRON: Mr. Gorin, care to respond to the differences that Mr. Toyama pointed out?

MR. GORIN: Well, I think one of our objectives over the next cycle is we are going to work more closely with the POUs to reconcile the deficiency programs and, you know, working more closely with SMUD to maybe track their proposed savings better than we have in the past. But it is kind of nice to be higher than somebody for a change --

maybe.

DR. KAVALEC: Hi, Nate. Let me just ask, it looks like you are including first-year savings beyond 2009 there. The savings that you show there, you are including first-year savings beyond 2009, right?

MR. TOYAMA: Right.

DR. KAVALEC: And so that is a big difference, at least as far as the totals that we stop -- we consider 2009 the last committed year, and so that all we have after that is peaking savings from 2009 to previous years.

MR. TOYAMA: Right.

DR. KAVALEC: So I just wanted to make that point. And the other point was I would like to talk to you about the assumptions you are making for the PV systems, and what information you are using. So maybe we can have a phone call some time real soon?

MR. TOYAMA: Right. Yeah, in looking -- reading the document, I mean, it is clear that what the differences are in terms of how you account for our programs, and so if we were to have a similar accounting method as you, or if you were to adopt our programs or our intended goals and plan, they would be very similar. Like you said, I looked at this 2010, 2020, are the incremental savings going back to the beginning of 2010, and when we look at our goals, our goals for energy is about 1,400 Gigawatt hours, so that

would explain the differences by 2020. For Megawatts, we are looking at about 400 Megawatts for savings.

DR. KAVALEC: Right.

MR. TOYAMA: Which would put you right about -- or which would make our forecast practically identical for all practical purposes.

COMMISSIONER BYRON: Okay, thank you.

MR. TOYAMA: Thank you.

COMMISSIONER BYRON: Thank you, Mr. Toyama. So I think we are going to press on to the last of the staff forecast results for the Los Angeles Department of Water and Power Planning Area and Comparisons to LADWP's Forecast.

MR. GORIN: I think we have a representative from LADWP on the phone, Michael Cockaigne, is that correct?

MR. COCKAIGNE: I am on the phone, but I was told not to speak today.

COMMISSIONER BYRON: Well, that certainly did not come from us, Mr. Cockaigne, so if you wish to speak, we will be glad to hear from you, otherwise we will go ahead with Mr. Gorin's presentation.

MR. COCKAIGNE: Okay, thanks.

MR. GORIN: I am going to try and go through this relatively quickly so everybody can get home. We did some more extensive work on LA and looked at some of the population and assumptions we were making for the City of

Los Angeles, and as a result, the forecast is about 2 percent higher in 2010, increases to 7 percent higher in 2018, and now the revised forecast is back to the 2007 levels by 2018 and the peak forecast is actually 2 percent higher than the draft. For 2010 to 2018 growth rates, we actually doubled the growth rates that we had in the draft forecast, although the forecasted growth is still below 1 percent for both peak and energy, and it is also higher than it was in 2007. So after the short term decline, we have now a higher growth rate than we had in both 2007 forecast and the draft forecast and the new revised forecast is actually higher than it was in CED 2007. Same story with peak forecast, it is now increasing higher than both the previous forecasts. Per capita consumption, after the projected dip in the near term, relatively constant over the forecast period, rather than declining as it was in the draft forecast. Peak is now more similar to what was projected. Per capita peak is more similar to what was projected in 2007 than in the draft forecast.

The load factor is slightly increasing rather than relatively constant as in the draft forecast. This has to do with the mixture of assumed end use -- peak end uses -- or sector peak differences in the LA planning area, compared to the draft forecast.

For residential forecast, higher forecast caused

by higher income. This next point is a little convoluted, but we reduce the persons per household assumptions which adds more households, given similar population, and so that increases use because there are more households and the use per household increases because there is more income per household. So the residential forecast now rose at a faster rate than both previous forecasts. Household income after the relatively flat near term grows at a rate similar to that of the 2007 forecast now. Persons per household, we -- and this is a minor decrease in persons per household by about a 100^{th} of a person per household, but you start multiplying that by millions and is kind of like currency trading, it increases the number of households four-tenths of a percent. As you can see, in 2007, we were projecting flat household growth, which we are not projecting anymore. Residential use per household, we increased that based on -- increased the starting value based on more recent inclusion of the 2008 data, but the greater household income drives that up at a level comparable to -- the growth rates comparable to what we had seen in 2007. Residential peak is also higher, driven by consumption differences.

The increased floor space projections for LA, commercial building sector, is now projected -- well, after a short term decline, it grows at the rate it did in 2007. Commercial floor space projections now are essentially what

they were in 2007 and a little bit higher in the forecast. Commercial peak grows similar to what the consumption forecast results grow at.

Industrial sector, same story as the industrial sector in most of the other utilities, more rapid recovery, and the peak and energy forecasts are now higher than they were projected to be in 2007 after about 2013. So short term dip and a greater recovery from consumption in peak for the industrial sector in LA. Energy savings are similar to the other utilities, although there are less utility program savings currently in LA than in a lot of the other utilities in the peak savings.

The economic scenarios, there is slightly more variation in LA. The consumption and peaking high case is about 2.3 percent on the upside, in the low case, it is about 2.5 percent. So basically one of the greatest questions in the LA forecast is the migration of the population in the South Coast from the Edison -- projecting what is going to happen if people from the Inland Empire are going to move into the City of Los Angeles, so it makes it rather difficult to project LADWP. Well, it might be a minor impact on Edison, it is a much larger impact on LA. So there are a lot of population pattern questions that are yet to be answered.

COMMISSIONER BYRON: Are you suggesting they are

moving to Los Angeles for lower utility rates?

MR. GORIN: No, I am suggesting that they may work in Los Angeles, and they do not want to spend all that time driving, and there is a rather high foreclosure rate in the Inland Empire right at the moment. So there are a lot of unanswered questions that are yet to be determined there. So if Mr. Cockaigne wants to say anything about our presentation, it is open.

MR. COCKAIGNE: Well, I will just say that this latest forecast is closer to what we are doing internally. That makes me pretty happy. I think a lot where we come together is in the demographic, the household growth. I totally agree that the big question is the migration issue. The recent pattern is that the city is growing faster than these other areas, but that could be an economic blip, and not a long term trend. In fact, I talked to, for example, Los Angeles Economic Development Council and they think it is a blip, that the traditional migration pattern will be [inaudible] traditional path. So very difficult to forecast that. Like I say, in recent years, the growth has been coming back into the city, so I think the earlier issue on the EE forecast that I saw earlier, I currently have the PVs in my forecast, what the forecaster is showing would be above my forecast, so how that plays out will be interested. And also, I think on the energy efficiency issue, my issue

there, you are showing low utility programs for LADWP, but actually we have quite an aggressive program going. My issue on energy efficiency is, the first three years are pretty well known, once you get started entering 2013, you are relying on technological change a lot, and capturing that energy efficiency. So it is really getting the timing and the amount of energy efficiency going forward, it is really going to be something that is very difficult to forecast. And that is really all I have to say.

COMMISSIONER BYRON: Mr. Cockaigne, thank you for not speaking, then, this afternoon. Those are helpful comments. We appreciate that.

MR. COCKAIGNE: Okay.

COMMISSIONER BYRON: Any response, additional thoughts? Okay, thank you. Are we still accepting some written comments with regard to this latest forecast, gentlemen? Or are we done accepting comments?

MS. KOROSEC: We are accepting written comments until October 2nd.

COMMISSIONER BYRON: Good, I was hoping that was the case. All right, thank you. I think we are down to the last presentation of the afternoon before public comment, if there is any. Am I correct?

MS. KOROSEC: Yes.

COMMISSIONER BYRON: Update on Uncommitted

Forecast. Dr. Jaske.

MS. KOROSEC: Yes, Dr. Jaske.

DR. JASKE: Good afternoon. For the record, Mike Jaske with Energy Commission staff. I am giving you a brief status report or update on the incremental uncommitted sub-project. Just a little bit of background, currently the activities that are underway today, and then, lastly, the schedule.

So, of course, the genesis of many of these questions about energy efficiency was in the 2006 LTPP proceeding at the PUC. We had been working closely with the PUC since then to try to deal with this and really carrying along two fronts, improving energy efficiency that is in the demand forecast, and then determining what is incremental beyond that, as a result of further program activities. It has been a variety of things that modify the forecast, sometimes intrinsic to the models themselves, such as creating residential lighting end use and the input assumptions for that end use, and then, as has been explained in a lot of detail today, and in the discussion, a lot of analysis of energy efficiency measures and savings outside of the models that have essentially been subtracted off the raw forecast to produce the final result. And as has earlier been indicated, PUC is planning on using a managed forecast for the 2010 LTPP Proceeding, and the

Energy Commission is sticking with its distinction between committed and uncommitted, so therefore that requires a separate effort to produce an uncommitted analysis that is truly incremental. And if there is any lesson that has been learned in the years since we have had workshops and discussions on this subject, it is that producing that incremental impact is completely dependent upon the base forecast and how it treats energy efficiency. So part of my message in the status report is to say that we are still looking at the majority of this work as being in front of us because there have been so many changes in the base forecast, both in the preliminary version documented in May, and discussed in workshops, and then again in this revised forecast. So it is only just now that we are sort of letting all of that stabilize and therefore have a foundation for computing the incremental part.

So to remind you, we are going to quantify the impacts of various scenarios adopted by the PUC in their goals study and the corresponding decision. In the DFEEQP Working Group meeting that we had last week, the PUC staff asked that we evaluate all three of the futures that were included in the goals study and adopted in the decision. Formerly, they had been asking that we just do high and mid, and they are now asking that we also do the low case. We believe we have the resources with the support that they are

providing through Itron to do that, so we are proceeding on that basis.

Broadly speaking, we need to adjust those scenarios to remove the things that are embedded now in the base forecast, I believe Mr. Aslin referred to this kind of adjustment, and then any other things that are sort of thought of as though they were policies or programmatic elements of the forecast, and the most obvious example of that are the Huffman bill and/or federal lighting standards.

So we are preparing a product that is being developed for use by the PUC, they are going to ask their IOUs and perhaps consultants to IOUs to evaluate portfolios of resource additions, in light of these different influences on the base demand forecast. We are very heavily relying upon the good auspices of the PUC to make Itron staff in their modeling capability available to us. This is going to be sort of the starting point of Energy Commission staff, the development of capability in this area, and we are in fact laying the groundwork now for sort of a transition period where we actually hire Itron to help train us on this model and the necessary inputs. Whether we stick with this in the longer run is not clear, but we want to have a capability that we can run ourselves. And, in particular, we are using a model to develop Itron called SESAT. As I indicated before, there are various ways that

that model needs to be adapted to make its assumptions consistent, econ demo and saturation inputs being one of those, adjust for the programmatic things that are in the forecast, and then of course there is a whole set of measure savings that are not in the models, but being used to adjust the raw model forecast in order to actually produce the revised forecasts be put forward for your consideration.

COMMISSIONER BYRON: Dr. Jaske, care to tell us what SESAT stands for? SEASAT?

DR. JASKE: I do not think I actually know that.

COMMISSIONER BYRON: I thought maybe it had some meaning.

DR. JASKE: I suspect it does have meaning, but I am sorry I cannot describe it to you. Oh, here is a typo, so having updated the projection in the input assumptions, we are going to run SESAT for each of three scenarios, not two scenarios, as it says on this first bullet. We will then compare the results of that scenario to the revised forecast, and then the difference becomes the incremental effect of that particular scenario. We will have three of those. Itron will develop a technical report that documents the methods, the assumptions and, of course, the results themselves.

What we are thinking of at this point is that we will construct a sort of combination product, a staff report

that lays out the background of why we are tackling this issue, how it came up in the '06 LTPP Proceeding, the fact that the PUC has asked us to look into this, provide a brief overview of the approach we are using and whatever limitations we think are germane, and how we suggest that it be used in further work, and then attach the Itron document as an appendix to that staff report.

So broadly speaking, this is where we are in the middle of the slide, September 2009, we are hoping that we can produce the remainder of this project on something like this schedule, so a draft report in the first part of December, a workshop some time in either later December, or the very beginning of January, and then a final report no later than the end of January. This schedule is acceptable to both CPUC staff, but not later than this.

Now, this concludes my slides, but I want to draw one particular thing to the Committee's attention, and that is this clearly follows the adoption of the IEPR itself, and the Draft IEPR which is in preparation, you know, will not be able to include all these final results. The Draft IEPR describes this, that is underway, what it is intended to accomplish, but of necessity, the schedules simply do not match. When the Committee brings forward the IEPR to the full Commission, I think we need for the Committee to be granted some sort of trailer responsibilities and authority,

I am not sure how to describe that, but this project, and perhaps there are other things that the IEPR Committee needs to provide oversight to, on behalf of the full Commission even though it will be after the adoption of the '09 IEPR itself. And somehow the IEPR staff and Committee need to work out precisely how that gets accomplished, but PUC staff would like this to have some degree of blessing by the Commission, and so it seems like the oversight of the IEPR Committee makes the most sense since you have been hearing this story over and over many months now, and our best situation to say whether ultimately what we produced does pass muster. But with that, I conclude, and I would be happy to answer any questions.

COMMISSIONER BYRON: Thank you, Dr. Jaske. You did answer the question with regard to the 2010-2011 LTPP order instituting rulemaking the PUC is doing, that they set the schedule as long as it is no later than January Final Report published, correct?

DR. JASKE: That is correct.

COMMISSIONER BYRON: And if I follow you, you are looking for some continuity in oversight on the part of this Commission to see this work through, even though we will finish the IEPR and seek approval of that IEPR from the full Commission in early December.

DR. JASKE: That is correct.

COMMISSIONER BYRON: I think that makes really good sense. We will likely have committee assignments in January, but I will be more than happy to make that commitment and provide this continuity on this topic into 2010. However, this does remind me of a song, and a book, and a movie from 20 years ago, you may recall it, my children were certainly interested in it, it is called "The Never-Ending Story," it was very popular amongst 8-year-olds.

DR. JASKE: Well, I think that there are definitely some parallels. I believe I probably stood at this podium about a year and a half ago, somewhere around March 2008, and said we would take a crack at this project, but we would make only as much progress as we could make, and it was my speculation that we would not fully resolve this issue in this IEPR cycle, and I think that is undoubtedly going to prove to be the case. I should also say that we are, as Ms. Horwatt indicated before on other matters, we are anticipating sunshining some more detail than I have been able to show here about our methodology and assumptions in future DFEEQP Working Group meetings, so that particularly the IOU representatives who, of course, have a vital interest in what this product ultimately looks like, have an opportunity to get into the details along the way.

COMMISSIONER BYRON: Good, so you have some of

those scheduled, as well, over the next couple of months?

DR. JASKE: I think we actually have one for about the middle of October already scheduled.

COMMISSIONER BYRON: All right, thank you. I have no further questions. I would like to go ahead and open it up, then, to public comment. We welcome any and all public comment at this time if there is something you wish to add from earlier presentations, or anything in general to this topic. Ms. Horwatt?

MS. HORWATT: Hi. This is Andrea Horwatt again, and I just wanted to express my great empathy with the position that Dr. Jaske finds himself in. This is an incredibly difficult issue to grapple with and, having been in and out of this issue for a number of years, I fully appreciate why it is taking the amount of time that it is and the level of resources because it is extremely difficult, it is important, and I think it also opens our eyes on the fact that we are going to have many many difficult measurement issues going forward in a planning context because, now, in addition to IOU energy efficiency programs, we will now be seeing the impact of advanced metering programs, and that will affect the measured level of savings. We are getting interactive effects with integrated DSM programs. All of this stuff comes together in a very big complex measurement activity, and it is

setting the stage for something that is going to be continuing for a long time, and I think it is going to take some very smart folks at all the regulatory commissions, the IOUs and the POUs, to try to wrap our brains around how we are going to do this. And we look forward to being part of this interesting challenge.

COMMISSIONER BYRON: Good. Thank you for your constructive comments. Resources are always in short supply around here these days, but we always give the tough tasks like this to Dr. Jaske.

MS. HORWATT: Good idea.

COMMISSIONER BYRON: Any other comments? Dr. Ferguson, are you still with us?

DR. FERGUSON: Ah, there it is. Yes, I am still with you, believe it or not.

COMMISSIONER BYRON: Did you want to comment at this point?

DR. FERGUSON: I did. I sent out a file last week. I wonder if we could put a chart up.

COMMISSIONER BYRON: They are working on it.

DR. FERGUSON: There it is. Somehow the June draft report escaped RETI's attention. When it was finally called to our attention, it had significant results for RETI planning, so I am very interesting now in the update. I am going to make a request because I do not trust these numbers

that I have in my slide, and it would be very nice if we could get some help from Energy Commission staff doing this de rigueur. Of course, what the demand forecast means for transmission planning is considerable. To date, we have been using the IEPR of 2007 long forecast which the Commission staff kindly projected out to 2020 for us. The RETI planning to date grew phased away is relatively insensitive to the consumption forecasts, but now we get into detailed planning together with the CCPG, it is just going to be important. What we need to know is what, you know, given any particular consumption forecast, what the amount of grid connected renewable energy that needs to get added in the 33 percent of the requirement which is what RETI is using. But also, we need to know how much non-renewable energy, presumably fossil, is going to be displaced in the process. And I tried to do these calculations as best I can for several different scenarios. The blue bars represent the amount of renewable energy that needs to be added to the Grid over and above our estimate of 2008 levels, in order to meet the 33 percent RPS requirement interpreted as to mean 33 percent of retail sales. The green bars represent the presumably fossil, or non-renewable energy that would be displaced in the process. The bars on the right-hand side are what we have been using. And as you can see, in that forecast, consumption grew substantially

and much of the renewable energy was to fill load growth, a relatively small amount would be displaced. And to tell you the truth, RETI has not really focused on this displaced energy. Are these imports that are going to decrease? Are they once you retire once-through cooling plants? Or exactly what they are really has not been discussed. But, as you can see, it is a relatively small fraction, so we have been focused primarily on what it would take to put that renewable energy online. The left-hand bars represent a no growth scenario, and I remind you that our self generation forecast is different from yours, so, in fact, because of the self generation, there is a actually more fossil generation displaced than the grid connected renewable energy, and that is the difference in those two bars. The next step in the June 2009 low rate case was what was around and in the executive summary of the draft report. As you can see, there is some growth and we do not displace quite as much fossil. In the most recent update, which I guess is now a mid-rate, the consumption goes up some more, so the amount of displaced fossil goes down. I through in an intermediate case there. And then you get back to the one we used.

COMMISSIONER BYRON: Is that the unlabeled case that shows 33,048?

DR. FERGUSON: It was just one in the middle

somewhere that I stuck in. I do not think it corresponds to anybody's particular --

COMMISSIONER BYRON: All right.

DR. FERGUSON: The reason I think a term like this is valuable is because, after all, it is those green bars that we are trying to get by building transmission and incorporating renewables to make the blue bars, and we get a lot of flack for considering building power plants in the desert and all that, and the green bars is the reason we are doing all that. Of course, if we did not do any renewables at all, it would all be fossil, and we would get no displacement whatsoever. But that -- the goal of this whole exercise is to try to reduce greenhouse gas emissions and that is somehow related to the green bars, depending on whether it is coal or gas that is displaced. At any rate, I know some of these calculations are going on now. I am talking to staff, some of them may be going on in the Energy Commission and in the ARB, and various working groups. I would strongly recommend that we include a chart with this kind of information in the final IEPR. I think it puts the whole load forecasting issue in a perspective that a lot of people are interested in. I do not know if that is possible at this late stage, but basically that is my request. I again echo the sentiments that have been expressed by many. I think the staff is doing a hell of a job trying to keep

track of all this stuff -- it is a nightmare for me -- I hope it is easier for them. That concludes my comments.

COMMISSIONER BYRON: Okay, so I just want to make sure that I grasped what you are asking for. You are asking for a better characteristic of the non-renewable decrease in this forecast?

DR. FERGUSON: Well, both of them. I am not sure that I am calculating, you know, [inaudible] and everything else, and I am actually calculating retail sales correctly, you know, based on our PV assumptions. So, yeah, I mean, I would just like some help getting these numbers right on both the bars to really understand what it is we are talking about, the additions that are going to have to be made, and how much fossil that are nonrenewable generation legislation.

COMMISSIONER BYRON: Okay. Dr. Jaske has approached the microphone. Let's see what he has to say.

DR. JASKE: Mike Jaske, Energy Commission staff. Were the Governor to sign one of the renewable bills, we would have a clearer basis for knowing how to compute the blue bars. But now that we have the executive order directing ARB to develop its own regulations, it now becomes more murky what it is precisely will be the basis of 33 percent --

COMMISSIONER BYRON: Because the regulations have

yet to be developed?

DR. JASKE: That is correct. And they will not be developed for quite a number of months. So one can do computations of the sort that are being requested to produce the blue bars, sort of assuming that the current RPS formula stays into effect and that it is 33 percent of retail sales, and that means that certain kinds of end uses are excluded like pumping loads, and one can go through that. Computing the green bar, which was at least a scenario that staff conducted as part of its contribution to, I believe, the June 29th RPS workshop, becomes more complex. That is the result of a production cost modeling analysis, a review of those results to determine the extent to which such results are credible. That deals with the question of whether it is in-state versus out-of-state that is being displaced. And I am not clear whether, in any IEPR timeframe that that kind of reanalysis can be done using this new forecast. Perhaps if RETI needs this over some longer time horizon, you know, that can be done. But I think not in the timeframe of this IEPR.

COMMISSIONER BYRON: Dr. Ferguson, don't you make some simplifying assumptions, and does it matter to you whether it is in-state or out-of-state generation that we are displacing?

DR. FERGUSON: Yes, this chart does not make a

distinction. I am not sure how anybody can know which it is going to be, so I mean, we hear from Dave Freeman that he is going to close IPP and use the DT line to bring in solar, but who the heck knows? These are not at that level of detail. All I can say is we are trying to get together with the CCPG, and we are trying to get an initial priority plan done by -- it probably will not be until the end of this year, by early next year. We are going to use some kind of projections one way or the other, so to the extent that could help staff with that, we would appreciate it. And I was not at the RPS workshop that Mike mentioned, so I am not sure quite what they came up with there. But it would just be helpful and if staff can help us out with this, that would be great, if not, we will go it alone. But we do need to use the new load forecast and reinterpret what we have been doing and see how much difference that makes.

COMMISSIONER BYRON: I think you did hear from Dr. Jaske that staff is available, probably not in the time frame associated with completing this forecast for this IEPR, but certainly assistance -- we will go out of our way to provide whatever assistance we can to the stakeholders steering committee of the Renewable Energy Transmission Initiative. And I think you know that staff is available as a resource in that regard. But, again, it is probably not going to be as part of this IEPR. Am I correct, gentlemen?

I am seeing nods in the affirmative.

DR. FERGUSON: Well, fair warning, we will proceed.

COMMISSIONER BYRON: All right, good. And, you know, we want that independence of the stakeholder steering committee and that calculation, please consider the assistance and input this Commission would provide as just that -- assistance and information that you could use to determine that -- what do you call this, Dr. Ferguson? The net short calculation?

DR. FERGUSON: Well, not quite, but pretty close.

COMMISSIONER BYRON: Okay, it is part of that calculating process. Any other public comments? I am sorry, Dr. Ferguson, was there anything else?

DR. FERGUSON: No, thank you very much.

COMMISSIONER BYRON: Okay, any other comments? Well, seeing none, I think we are just about done here. As I said earlier in the day, I probably should have said in my earlier remarks, because we take these IEPR workshops for granted, we are nearing the close of the IEPR season -- we are in the harvest period now, there are only a few workshops remaining as I recall. And it would seem to me, this being the third workshop on this particular subject in the last four or five months, we are making progress with regard to communicating and getting our definitional parts

all figured out with regard to the imbedded energy efficiency in our forecast. I would like to certainly thank the participation of the IOUs and the POUs that were here, present, or on the phone. We do welcome your written comments and I believe Ms. Korosec said the deadline for that is October 2nd?

MS. KOROSEC: That is correct.

COMMISSIONER BYRON: We have little latitude there and I really welcome your input by that date. I am also very glad to see some optimism returned to the economic forecasts that are embedded in our forecast, at least for most areas of the state. I would like to congratulate and thank staff for the work in their revised forecast and also in their efforts to incorporate all the public input that we have been receiving. As I said, I think this is the never ending story. We will continue to work on this. But I think we are close. And we are going to go ahead and recommend this forecast in our IEPR, but I think there is a little bit of work yet to be done before we get to that point. Ms. Korosec, anything else we should add?

MS. KOROSEC: No, I think that has covered everything.

COMMISSIONER BYRON: Thank you, all. We will be adjourned.

(Whereupon, at 4:42 p.m., the workshop was

adjourned.)

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CERTIFICATE OF REPORTER

I, KENT ODELL, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission 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 meeting, nor in any way interested in outcome of said meeting.

IN WITNESS WHEREOF, I have hereunto set my hand this 1st day of October, 2009.

KENT ODELL