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COMMITTEE HEARING
BEFORE THE
ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA

In the matter of,)
) Docket No. 15-IEPR-01
)
Integrated Energy Policy)
Report (IEPR))

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

THURSDAY, FEBRUARY 26, 2015
10:00 A.M.

APPEARANCES

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Chair Robert Weisenmiller

Commissioner Janea Scott

CEC Staff Present

Heather Raitt, IEPR Program Manager

Ivin Rhyne, Office Manager, Supply Analysis Office

Nancy Tran, Supply Analysis Office

Chris Kavalec, Supply Analysis Office

Anise Brian, Supply Analysis Office

Akoush Katam, Supply Analysis Office

Lynn Marshall, Supply Analysis Office

Leon Braithwaite, Supply Analysis Office

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P R O C E E D I N G S

1
2 FEBRUARY 26, 2015

10:00 A.M.

3 COMMISSIONER MC ALLISTER: Well, thank you,
4 everybody, thank you all for coming. This is a very
5 auspicious occasion, the first workshop in the 2015 IEPR
6 cycle. This is a full IEPR, so this is all the bells
7 and whistles will apply.

8 And just yesterday, at the business meeting, we
9 adopted the 2014 IEPR update which Commissioner Scott,
10 to my right, ably led and facilitated a really broad
11 variety of discussions. Focused on transportation but,
12 really, you know, sort of a partial update as well, and
13 a bunch of other topics. A very interesting and a great
14 product that came out of that.

15 And I want to thank Heather, and Raquel, and all
16 of the -- yeah, Stephanie, all of the staff drivers of
17 that document. I mean, really, the train, as many of
18 you know and those of you who don't, will find out, but
19 trains definitely run on time, on the IEPR team.

20 And so, there's no rest for the weary, we're
21 starting the next cycle, now.

22 And so, I'm Commissioner Andrew McAllister, and
23 I actually led the 2013 IEPR and somehow agreed to do it
24 again. But I'm very excited, actually, about kicking
25 off here and we have a bunch of very high, important

1 topics to work on through the year.

2 And namely, the topics that are directly related
3 to the Governor's goals that he announced in January,
4 specifically regarding renewables and energy efficiency.
5 I'm the lead on energy efficiency. We're going to talk
6 a lot about that this IEPR, particularly our existing
7 buildings and how we can do better to create the
8 foundational tools and the informational landscape that
9 we need to identify the best opportunities, target
10 those, and go after them, and facilitate the market to
11 do that. So, that's of that more to come.

12 Today, we're kicking off with really the basic
13 kind of necessary foundational discussion that will
14 inform the forecast on econ demo, on economic
15 demographics and the broad assumptions that go -- or the
16 various assumptions that go into the modeling and
17 forecasting. This is a core responsibility of the
18 Energy Commission.

19 To my left is Chair Weisenmiller and he knows
20 better than probably anybody in the State the ins and
21 the outs of the forecast, and how -- at the same time,
22 how important it is. I mean, think -- really appreciate
23 the Chair's dedication to getting the forecast right,
24 and making sure that it's rigorous, and as good as it
25 can be, and as well-informed as it can be, and as

1 analytically high quality that it can be.

2 And that's also reflect in the staff's -- that
3 you're going to hear today, present on this issue.

4 And it's a really a key tool that California
5 uses another state's look-to as a best practice. And it
6 goes over to the other agencies, the ISO and the PUC.
7 We'll be expecting some representation from the ISO.
8 Not sure of the PUC today, but certainly through the
9 course of the year we'll hear from all of the relevant
10 agencies and probably share the dais with them on
11 multiple occasions.

12 So, I wanted to give the Chair an opportunity to
13 say a couple of words, and Commissioner Scott, and we'll
14 get moving. So, thank you all for coming.

15 CHAIR WEISENMILLER: Yeah, I just want to thank
16 everyone for coming and thank the staff for their hard
17 work in this area.

18 As Commissioner McAllister said, this is one
19 of -- what has been historically one of our premier
20 activities. It's one where by statute other agencies
21 are directed to give some deference to our forecast in
22 planning. And as you go forward, it's really important
23 that -- you know, we're trying to develop these in a
24 collaborative fashion, particularly with the PC and the
25 ISOs so that there's pretty much common understanding

1 and acceptance, but we sort of get their input. As
2 we're moving forward, we get to a real consensus on
3 these issues.

4 And, obviously, when you look at -- you know,
5 the results come out and eventually you can print them
6 out to how many significant digits you dare. But,
7 essentially, anyone who's been doing this long enough
8 knows that there are inherent uncertainties. And
9 forecasting the future is particularly hard.

10 And so, looking at, first, the groundings in the
11 assumptions are certainly key, but a lot of the outcome
12 and trying to understand the key assumptions and then
13 trying to understand their uncertainties are certainly
14 part of the way to get to really realistic numbers at
15 the end.

16 So, I think this is a good step. Obviously,
17 reach out to the IEPR staff saying, okay we -- I guess
18 Janae just had the evening off. I guess you had the
19 scoping document, you know, before going from one IEPR
20 to the next. But, you know, certainly appreciate your
21 long and hard work on this project.

22 COMMISSIONER SCOTT: Good morning. I'm
23 Commissioner Janae Scott and we did just finish the 2014
24 IEPR update, so perfect timing for today's kickoff
25 workshop.

1 I'll just echo many of the things that you heard
2 Chair Weisenmiller and Commissioner McAllister say about
3 the importance of the assumption, the good work we're
4 doing together with the ISO and the PUC to have a joint
5 forecast.

6 And I think this year, from a transportation
7 focus, I'm the Lead Commissioner on transportation, it's
8 going to be really interesting to see some of the
9 transportation electrification assumptions and different
10 information. And we'll start with a little bit of those
11 and we have a more in-depth workshop in a few weeks on
12 that topic, but I'm very much looking forward to it.

13 COMMISSIONER MC ALLISTER: Thanks. So, Heather
14 Raitt, take it away.

15 MS. RAITT: Okay. I'll just go over a few
16 housekeeping items. I'm Heather Raitt, I'm the Program
17 Manager for the IEPR.

18 In the atrium, the snack room is on the second
19 floor. In the event that there's an emergency and we
20 need to evacuate the building, please follow staff to
21 Roosevelt Park, which is across the street and diagonal
22 to the building.

23 Today's workshop is being broadcast through our
24 WebEx conferencing system, so parties should be aware
25 that you're being recorded. We'll post the audio

1 recording in a few days on the website and we will have
2 a written transcript posted in about a month.

3 Today, we'll have presentations by staff and the
4 opportunity for public comment at the end of the day.
5 We're asking parties to limit their comments to three
6 minutes during the public comment period. And we'll
7 take comments, first, from those in the room, followed
8 by those on WebEx, and then the phone-in-only
9 participants.

10 For those in the room who would like to make
11 comments, please fill out a blue card and go ahead and
12 give it to me. And when it's your turn to speak, please
13 go to the center podium and speak into the microphone.

14 For WebEx participants, you can use the chat
15 function to tell our WebEx coordinator that you'd like
16 to make a comment during the public comment period, and
17 we'll relay your question or open your line at the
18 appropriate time.

19 Materials for this meeting are available on the
20 website and hardcopies are at the table, in the entrance
21 to the hearing room.

22 Comments are due on March 11th.

23 And with that, I'll turn it over to Ivin Rhyne.

24 MR. RHYNE: All right, good morning. My name is
25 Ivin Rhyne. I'm the Office Manager for the Supply

1 Analysis Office, in the Energy Assessments Division
2 here, at the Energy Commission.

3 But more relevant to today's workshop, I am
4 acting as your MC for this first workshop in terms of
5 the activity that's really setting the stage, as the
6 Chair and the Commissioners have mentioned, for a lot of
7 the analysis that's going to be going on with regard to
8 the 2015 IEPR.

9 We are required under statute to look at and
10 attempt to make reasonable assessments of what the
11 future conditions might hold for energy throughout the
12 State of California. And we look at energy on a number
13 of fronts. And in doing so, we have to look at a lot of
14 the different sectors and attempt to assess them.

15 So, one of the things I'm going to do today,
16 before we get into the meat, what's going to be
17 presented by our key staff members, our technical leads,
18 is just set the stage for what this process is that
19 we're going through and maybe also share some key
20 caveats as to what it's not. We want to make sure that
21 everyone who participates in this today understands what
22 we are both attempting to do and not attempting to do.

23 So, first of all, what we're doing is developing
24 a set of cases that we are calling the IEPR common
25 cases. And this is an important terminology.

1 There are a number of models that are used here
2 at the Energy Commission and as we go through and run
3 these models it is often asked, after the fact, well,
4 how does this case compare to that case? Perhaps a case
5 run in the transportation model compared to a case that
6 was run in our electricity demand model.

7 And so in doing this, in creating these common
8 cases, we're now able to point to cases where there are
9 the same underlying assumptions run throughout the whole
10 process. And I'll talk about the methodology that we
11 are using to create those cases and refine those
12 assumptions.

13 And, finally, we'll talk about what some of
14 those input assumptions are. I won't be sharing
15 specific numbers, but I will be sharing some of the key
16 areas of which there are shared input assumptions. And
17 in some cases, where there might have been some
18 conflicting assumptions, how we resolve those conflicts.

19 So really, the purpose here is to create three
20 cases that translate across sectors. The energy sectors
21 across California are complex, but they are
22 interdependent and interrelated.

23 So, our transportation sector, our electricity
24 sector and our natural gas sectors all connect to each
25 other under various circumstances. And as policies and

1 infrastructure changes, and as technology changes they
2 become more and more interconnected.

3 And so, by connecting the process by which we
4 conduct our forecasting and analysis, we are creating a
5 stronger analytical basis for policy discussions.

6 But one of those key caveats that we really need
7 to start out with is that this is not an integrated
8 modeling approach. And by integrated modeling, I'm not
9 suggesting that the Energy Commission owns or operates a
10 super computer that allows us to run all of these
11 sectors simultaneously and achieve some pristine results
12 that are exactly transferrable across all sectors.

13 What we in fact do are run multiple, large,
14 complex models independently. We then show those
15 results in a predictable way across those models, rerun
16 those results, and then hand them back off. And that's
17 a process that we consider a coordinated modeling
18 process, rather than an integrated modeling process.

19 And just to be clear, this is not a new activity
20 here at the Energy Commission. We started this
21 coordination with the 2011 IEPR. We expanded that
22 process in 2013. And, in fact, some of you may have
23 attended a very similar workshop two years ago, where I
24 got up and ran my mouth a little about that process
25 then, and you may even recognize some of the graphics

1 that we share today. And then, we're continuing to
2 refine that process as we go forward.

3 So, what are these common cases that we're
4 talking about? Well, really just saying this is the
5 high case or the low case isn't a specific enough
6 terminology to be very clear as to what it is that we're
7 talking about. High what? High prices, high demand,
8 high heat degree days? What are we really talking
9 about?

10 And so, the terminology we're using here is
11 we're talking about energy demand. That's sort of the
12 core metric. We have three world views that we're
13 presenting throughout the IEPR common cases. A mid
14 energy demand case, a high energy demand case, and a low
15 energy demand case.

16 All modeling requires starter guidance. All
17 modeling requires us to make assumptions and put those
18 inputs in, and then run the model to generate what we
19 think the final values are.

20 We are beginning by updating some recent natural
21 gas production cost curves, and updated economic and
22 demographic data, both of which you'll hear about in
23 presentations today.

24 But really, at the beginning of this whole
25 process we have to start with the forecast that was made

1 in the 2014 to 2024 process. And you'll see that,
2 that's CED. That's the California Energy Demand, or
3 some people might know it as the demand forecast. That
4 refers to the electricity demand here in California. It
5 is produced as part of the IEPR process.

6 We're beginning with that final demand forecast
7 at our starting point for this process. And as you'll
8 see, if you remember the graphic from two years ago, I
9 know everyone has it plastered up on their wall, just
10 like I do, you'll remember from that process. We also
11 did a little bit here.

12 We begin by starting with that demand forecast
13 and then running our Production Cost Electricity
14 Dispatch Model, which covers the entire Western Electric
15 Coordinating Council.

16 Those results of the electric -- the gas burn
17 for electric generation are then handed off to our
18 natural gas modeling team. We then run that. Again,
19 that's an independent model. They run that model.

20 Now, that particular model covers all of North
21 America. It includes assumptions about imports and
22 exports of natural gas, because this is a national, and
23 actually an international marketplace. And so, the
24 model has to be large enough to cover all of that
25 marketplace. And, specifically, North America is the

1 key segment.

2 Out of that model, sets of both prices and
3 quantities of natural gas used throughout the North
4 American region are handed off to two other models. One
5 is the California Transportation Demand Model, of which
6 you'll hear some about today.

7 And that's important because we have a growing
8 sector in the -- a growing segment, I should say, in the
9 transportation area of natural gas-powered vehicles.

10 We also hand off that natural gas -- those
11 natural gas prices to our California Energy Demand
12 Model, which include models that attempt to capture how
13 for residential, industrial and commercial users of
14 natural gas will respond to those price series.

15 Both of those models then hand off -- the
16 California Transportation Demand hands off back to the
17 North American Gas Model, and the California Energy
18 Electricity Demand Models both hand off back to the
19 Electricity Dispatch Model for a second pass.

20 So, we have a first pass which will give us
21 preliminary results and then we do a second pass, which
22 will give us revised results. Between those two passes
23 we will take comments, we will hold workshops. And each
24 modeling team will work independently to conduct those
25 workshops. We will also work together, in an

1 interdependent fashion, to share those results and make
2 sure that our processes and our assumptions remain
3 consistent throughout.

4 So, what are some of the input assumptions that
5 we're talking about? Well, there are a number that
6 really matter. They are found in all of the models.
7 And as you can see on the screen, those include GDP,
8 inflation, gross State product, population changes,
9 energy efficiency improvements, of which that's going to
10 be a major topic in this upcoming IEPR, demand response.
11 And things like carbon prices, and weather, and HDD and
12 CDD. If you're not intimately familiar with modeling
13 lingo, that's heating degree days and cooling degree
14 days. In other words, how often is it so hot that
15 people need to run their air conditioners or so cold
16 that they need to run their heaters in their homes, and
17 businesses.

18 All of these assumptions are foundational to a
19 number of models. And in most cases, an increase in any
20 of these will likely lead to increases across the board
21 for all of the models. But that is not always the case.

22 In some cases, there are tradeoffs between the
23 high and low energy demand cases. High and low demand
24 cases, really for one sector, in some instances can come
25 at the expense of demand in other sectors. Some

1 tradeoffs are necessary in defining those high and low
2 cases.

3 And what we chose in order to define how we
4 would proceed was what we called the major driver test.
5 And just to put it briefly, if an input is a major
6 driver to one model, but a minor driver in others, then
7 it is the model for which it is a major driver that we
8 use as the controlling factor. In other words, the
9 direction of movement for the assumption is set by
10 whichever model has it as a major driver. And when
11 we're lucky enough to have it such that there's only one
12 model in each case, it's a major driver.

13 So, really, where were there conflicting
14 variables and then which models did we choose? Well,
15 electricity price is an important variable. But, for
16 example, if electricity price goes up or down, it has a
17 larger impact on residential and commercial end-use
18 electricity, but perhaps a smaller but inverse
19 relationship with regard to transportation.

20 So, people might be less inclined to buy
21 electricity vehicles. But, obviously, the electricity
22 model, it would have the larger effect.

23 The similar results in natural gas price, so we
24 use the natural gas model to drive -- as the controlling
25 model.

1 Crude oil price and EV penetration, we follow
2 the transportation model.

3 Coal price, the direction of coal price, we'd
4 follow the electricity model and natural gas vehicle
5 penetration, we follow the transportation model.

6 In each of these cases there will be further
7 clarification, both through this workshop and other,
8 future workshops held by each of the individual modeling
9 teams. So, if you have questions about what those exact
10 values are, for example what policies were included or
11 not included, I would encourage you to participate in
12 not only this workshop, but in future workshops for each
13 of the teams.

14 And then finally, as we look at these models we
15 need to understand what the results mean. The mid case
16 is a reasonably expected trajectory given our best
17 available input. And I say reasonably expected rather
18 than given any certainty.

19 The Chair, I think, quite ably put it. There is
20 a vast amount of uncertainty associated with not just
21 the models themselves, but all of the input assumptions.
22 So, we make our best professional judgment. We use
23 input from processes like this to make sure that we have
24 the widest range of thinking on these subjects, and then
25 we make our decisions about how these inputs should be

1 tailored, up or down.

2 The high and low energy case demands are,
3 themselves, also a reasonable range, but the last bullet
4 I think is the key. You should not take the high and
5 low energy demand IEPR common cases as the most extreme
6 possible cases.

7 Each of us can think of price spikes or demand
8 spikes, perhaps in different marketplaces, that would
9 shoot above or below the high and low bands that may be
10 presented as a result of this result. Those are
11 obviously extreme and in most cases narrow
12 circumstances.

13 These are the high and low energy demand cases
14 are not attempting to capture those most extreme
15 scenarios. They are, in fact, reasonable trajectory
16 scenarios, high and low.

17 The next steps, as I mentioned there are going
18 to be more workshops on a number of these processes.
19 The next one being March 10th. We will be holding a
20 webinar on the production cost model inputs. That is
21 the model that we use to estimate the electricity
22 dispatch throughout the Western United States.

23 And on March 19th, there will be a workshop on
24 transportation inputs. Throughout this process we will
25 be refining our common case assumption and inputs. And

1 each modeling group is going to build other scenarios.

2 And that's, I think, the final, important point
3 that I want to make. The IEPR common cases, the three
4 cases that we are building as a result of this process,
5 do not prevent or limit any of the individual teams as
6 they look at scenarios, or I should say they don't
7 prevent us from looking at scenarios that ask the
8 question what if. What if this were to occur? What if
9 that were to become more or less, higher or lower? It
10 allows us to explore those. But those individual
11 scenarios, the "what if" scenarios, those are to some
12 extent separate from these IEPR common cases.

13 Finally, I would encourage everyone to
14 participate in the process that we have set up here. It
15 is a public process. And the information necessary to
16 participate is here and we'll have it again on later
17 slides.

18 So, with that we're going to start transitioning
19 into the presentations by each of our experts. I'm
20 going to ask the experts, we have them here around the
21 table. They'll be presenting from their chairs. And
22 then, as they need me to advance slides they'll just
23 say, you know, next slide and we'll go from there.

24 We will pause between each major segment and
25 we'll open the floor to clarifying questions. If you

1 have more than a clarifying question, if you want to
2 make extensive comments, I will ask you to hold those
3 comments and submit the blue cards, as Heather mentioned
4 earlier.

5 So, first up we have Nancy Tran, who will be
6 presenting on the economic and demographic assumptions.
7 And we'll pull up the presentation.

8 And Nancy, the floor is yours.

9 MS. TRAN: Thank you. Good morning, my name is
10 Nancy Tran and I am from the Demand Analysis Office.
11 Today I'll be discussing California's economic and
12 demographic outlook.

13 We need to define the economic and demographic
14 assumptions for energy demand forecast. We'd also like
15 to provide a general economic overview because the
16 economy is important in other analytical work within the
17 Commission.

18 More specifically, the purpose of this
19 presentation will be to give an overview of the economy
20 and demographics.

21 Some background information that is considered
22 in the demand forecast. We're going to summarize
23 comments from experts on the post-recession landscape.
24 And our experts are our data vendors, which is Moody's
25 Analytics, IHS Global Insights. We also use the

1 California Department of Finance. And we have economic
2 academic experts that we use from UCLA's Anderson
3 Forecast, Jeffrey Michaels, of the University of the
4 Pacific, and Dowell Myers of USC, who is a demographic
5 expert.

6 And lastly, we're going to describe major
7 uncertainties over the next ten years.

8 This is the agenda for today's presentation.
9 California's energy policy has made significant progress
10 in reducing energy consumption through efficiency and
11 other demand-related efforts.

12 However, economic and demographic patterns
13 remain the most significant patterns -- the most
14 significant factors in determining energy consumption.

15 For example, this graph clearly shows the impact
16 of the economy on electricity consumption by plotting
17 statewide employment alongside consumption over the last
18 couple of decades.

19 This also shows the impact of the recession on
20 energy demand. As you can see, the arrow is pointed
21 down at 1990, 2002 and 2008.

22 The effects of the great recession are
23 particularly apparent as both employment and consumption
24 take a large dip beginning in 2008 and only a little
25 over six years are they approaching pre-recession

1 levels.

2 Turning to the forecast for just a moment, here
3 are key economic drivers that we use in our forecast.
4 These are inputted into our forecasting models.

5 Okay, now I want to start by looking back at the
6 recession. During the recession California experienced
7 downturns everywhere. Over one million Californians
8 lost their jobs. And as we all know, there was a huge
9 housing bust, with home values declining on average 45
10 percent throughout California.

11 California also experienced increased mortgage
12 defaults, foreclosures, short sales, and increased
13 income inequality.

14 This slide shows the severity of the situation.
15 As you can see, in 2009 California had dropped by six
16 percent. California's annual employment growth has
17 returned to pre-recession levels at an annual rate of
18 three percent in 2012 to 2013.

19 This also shows that after 2011, California is
20 recovering faster than the nation. And we don't expect
21 another recession.

22 This graph shows, again, that California was hit
23 harder than the nation. To look at this another way,
24 this slide shows the unemployment rate. California was
25 hit harder with 12 percent unemployment. The rest of

1 the nation was hit with a little less than 10 percent in
2 2010. California -- well, as you can see, California is
3 on the road to recovery at 7.6 percent unemployment rate
4 in 2014.

5 Recessions are measured in change by GDP. And
6 sometimes there is a delay in reflection of the
7 unemployment rate.

8 The next slide. Housing is starting to rebound
9 for single and multi-family units. Economists have
10 stated that this trend is going to continue. Single-
11 family housing will continue to grow a little bit faster
12 than multi-family units.

13 Now, we're going to move on to California's
14 demographics. This slide shows historical population in
15 California. Population growth is slightly slowing down
16 since 20 to 30 years ago. For example, in this last
17 year population was less than one percent versus 1.8
18 percent average annual growth from 1980 to 2000.

19 The next slide. And although population trends
20 have slowed, population is estimated to grow one percent
21 over the next 25 years, and this is according to the
22 Department of Finance.

23 Now, we're going to go into two important
24 aspects of population growth, which are birth rates and
25 migration. Our experts have stated the following

1 drivers are associated with population growth. And at
2 the very last bullet, death rates are minor because
3 death rates have little variability. So, effectively,
4 they're not able to raise growth.

5 An important component of population is
6 migration. According to demographic experts, net
7 migration will continue to be positive due to
8 international immigration. California's inland
9 population growth is expected to be faster than the
10 coastal region. In fact, this has been occurring for
11 the last few years. And coastal regions still have a
12 higher population than the inland regions.

13 Population growth is projected to be less than
14 six percent for coastal regions and 15 to 16 percent in
15 the inland regions. And this is from 2014 to 2025.

16 Now, an important demographic characteristic we
17 like to pay attention to are housing trends. These
18 trends will be different and in large part by the
19 patterns of baby boomers on the millennial. There
20 aren't expected changes in the millennial. However,
21 with expected retirees in the next few years, baby
22 boomers will increase.

23 Millennial tends to be greener in their choices,
24 with more innovative green technologies for easier
25 energy and lifestyle efficiencies. This means

1 programmable technology through their cell phones, being
2 able to program their thermostats, their lights, their
3 home security system. And this is according to the
4 National Association of Homebuilders, as they assess the
5 demands and needs of different generations.

6 Millennials, as opposed to baby boomers, like to
7 live in cities versus the suburbs. So, this could mean
8 a reversal in population growth trends from coastal to
9 inland regions.

10 Going back to the economy, I'm going to talk
11 about short-term, mid-term, long-term growth. And a key
12 driver is the rebound of construction in California. A
13 key driver is -- this table shows residential and
14 nonresidential permits. And as you can see, there's a
15 fairly large increase in numbers from 2011 to 2014.

16 Other short-term economic drivers include low
17 mortgage and foreclosure rates, low oil and gasoline
18 prices. And as for the government recovery, this is
19 specific to local and state governments, where
20 government jobs can increase. And federally, more
21 defense spending benefits areas such as San Diego.

22 Mid-term growth will come from a boost in a tech
23 and housing sector. Our experts expect growth, so gross
24 state product to grow at around three percent per year.

25 Turning to long-term growth, the most recent

1 economic forecasts have downgraded their assumptions on
2 potential growth due to the long-term damage on the
3 economy that was inflicted by the most recent recession.
4 And it is expected to be greater than initially
5 anticipated. The scarring effect refers to decreased
6 entrepreneurship, reduced household formations, damaged
7 credit from borrowing, rate, mortgage lending standards,
8 minimal labor force participation, and reduced investing
9 in capital stock.

10 However, long-term growth is expected to keep
11 pace with the nation. Because of the high-tech industry
12 and investments in the infrastructure, overall the next
13 ten years will be about two percent growth compared to
14 over two and a half percent 20 years ago.

15 Now, we're going to summarize the economic and
16 demographics for four major regions in California.
17 We're going to start with Southern California's Los
18 Angeles Region. Los Angeles is among the largest and
19 most diverse of the regions. The unemployment rate has
20 decreased to less than eight percent. The expansion of
21 technology firms is occurring in Los Angeles and is
22 generated competition for firms in Silicon Valley and
23 the San Francisco Bay Area.

24 Potential shipping changes caused by the
25 widening project of the Panama Canal will affect the Los

1 Angeles Region because they have the two largest port
2 sin that region, the Los Angeles Port and the Long Beach
3 Port. It is expected to be less container traffic.
4 However, the magnitude of drop off is uncertain. Also,
5 the Panama Canal will allow larger tankers to transit
6 the canal, possibly reducing the cost of moving oil from
7 the U.S. Gulf Coast to the West Coast. But this also
8 depends on the level of canal fees that will occur.

9 Moving onward to the Sacramento Region. The
10 Sacramento Region is a healthcare hub and it's
11 benefitting from new hiring and investments in the
12 industry, thanks to the Affordable Care Act. And as
13 well as the demand for healthcare services as our baby
14 boomers age, and our millennials begin to create
15 families of their own. The unemployment rate is less
16 than seven percent.

17 We expanded the Sacramento Region to include
18 Kern County. Kern County is home to the five most
19 productive petroleum fields in California. Nearly seven
20 percent of jobs in Bakersfield, alone, are linked to
21 petroleum. And that's the highest percentage among all
22 the largest metropolitan statistical areas within the
23 nation.

24 Most of us are benefitting from the low prices
25 at the pump. However, places like Kern County, who

1 benefit from the oil industry, are now suffering and the
2 County recently declared a fiscal emergency. Petroleum
3 companies pay millions of dollars in property taxes to
4 the county, which goes towards public safety and
5 schools. When the price of the oil drops, the value of
6 that land goes down, so fewer tax dollars are going to
7 the county. And for the upcoming fiscal year, that's
8 about \$61 million that Kern County will lose because of
9 these low oil prices.

10 It's unknown at this time what the Kern County
11 Board of Supervisors are going to do to make up the
12 budget shortfall, but this is becoming a ripple effect
13 because the drilling companies are laying off employees
14 because their profits are dwindling.

15 However, this might fix itself soon because
16 prices of oil may go up. This issue will be discussed
17 in our new workshop, on March 19th.

18 The next slide. Moving back down south, to the
19 San Diego Region, the unemployment rate is currently
20 less than six percent. Growth is expected in
21 biotechnology, defense, manufacturing. San Diego is one
22 of California's most concentrated sectors of clean tech
23 employment, with more than 850 companies.

24 These companies represent 10 percent of all
25 total green jobs in California, 13 percent of renewable

1 energy jobs in the State, and 11 percent of energy
2 efficiency and green building jobs in the State.

3 And lastly, we'll head back up north to the San
4 Francisco Region. This region has suffered less during
5 the recession and recovered at a much quicker pace.
6 They're unemployment rate is about four percent. The
7 tech boom has caused strong wage growth and this sector
8 continues to be the main driver in this region's success
9 as tech firms have the ability to integrate their
10 products into infrastructures of business in all
11 industries.

12 Housing shortages will lead to faster house
13 price appreciation and a need for construction growth.

14 The next slide. There are many predictions
15 about the California economy. Experts predict positive
16 growth for California. However, there are economic
17 uncertainties.

18 Well, first, this is going to be our fourth
19 driest year on record and if the drought continues, it
20 will adversely affect the agriculture sector with higher
21 food prices and a loss of income.

22 As gasoline and oil prices continue to be low,
23 it will fuel the economy, except for Kern County.
24 However, we may return to higher prices. Again, in your
25 next workshop on March 19th, we'll discuss this.

1 For the impact of baby boomers and millennials,
2 the uncertainty here is the future of living pattern.
3 And the scarring effect, we're not sure how long the
4 scarring effect will last and how severe it is. And,
5 lastly, whether migration patterns to inland regions
6 will continue.

7 So, in conclusion, we're recovering faster than
8 most states. Growth is fueled by high tech. Population
9 is growing at a slower rate.

10 You can define traditional as minus new
11 electrification. Our claim is that traditional
12 electricity usage will grow at a lower rate than in the
13 past because of the scarring effect on long-term growth
14 and the low population growth, as well as efficiency
15 efforts. The ultimate amount of growth will be
16 determined by the degree of electrification, such as
17 electric vehicles in ports, and trains.

18 That concludes my presentation. Are there any
19 questions?

20 COMMISSIONER MC ALLISTER: No, that's really
21 good. I guess I was wondering about the sort of green
22 job numbers that you had in, let's say in the San Diego
23 Region, I guess, and sort of what the source of some of
24 that information was?

25 MS. TRAN: It's strictly from San Diego. It's a

1 government -- it's their local government business
2 economic site.

3 COMMISSIONER MC ALLISTER: Okay, so that's like
4 (indiscernible) -- yeah, okay. Great, thanks.

5 CHAIR WEISENMILLER: I guess the thing I wanted
6 to understand is more the inland/coastal dichotomy. And
7 it seemed like the inland was the most -- more heavily
8 hit than the coast by the recession. And at the same
9 time, certainly, we have growth seems to be more inland
10 than coastal, in terms of what we're looking for. So,
11 just trying to understand whether that's a lower base or
12 just the natural demographics of housing forcing people
13 inland.

14 MR. KAVALEC: Yeah, so there are sort of two
15 things going on in the inland areas -- two things going
16 on in the inland areas. There's more growth because of
17 lower cost of living and lower housing prices. But
18 those areas are also very -- some of them are very
19 depressed, as well. Out in the desert, the lower San
20 Joaquin Valley, the Northern Valley above Sacramento.

21 And I guess I'm not sure if I'm answering your
22 question, but part of our job is, you know, in our
23 forecast is to accurately reflect that when we produce
24 our climate zone forecasts. What will be the net effect
25 of more population growth, along with a more depressed

1 economy in those areas?

2 CHAIR WEISENMILLER: Yeah, precisely. I think
3 that's precisely what our job is. I was just trying
4 to -- thinking about it, you know, I remember I went and
5 met with all the CMUA members at one state and they just
6 answered around the room on how they were doing.

7 And except in San Francisco, which felt overrun
8 by construction everywhere, everyone else was like the
9 economy's down, sales are down, and it was really a
10 pretty bad story. That was probably more like two -- it
11 was a couple years ago. And, you know, last time in San
12 Bernardino County, again, they were just hammering me,
13 the Inland Empire, in just how bad the economy was
14 there.

15 And so, they certainly felt the recession. But
16 at the same time, certainly, our projections are for
17 more growth in those areas. But just as I go out in the
18 field that's the message I'm getting. So, just again
19 trying to put things more in perspective or make sure --
20 I mean, obviously, you're going to use the projections
21 of the various entities and pull them together. I just
22 am trying to reconcile that sort of in-the-field people
23 saying, oh, my God, we were hammered and we're hurting,
24 with sort of the growth projections.

25 MR. KAVALEC: Yeah, so there has been trend

1 toward migration inland for the last 10, 15 years.
2 However, when the recession hit, the inland areas got
3 hit more severely and it lasted longer. And that
4 migration into the inland areas slowed down. It was
5 still -- growth was still higher than other coastal
6 regions, but it slowed down significantly.

7 Now, with the recovery and as I said, the inland
8 areas took a longer period of time to start recovering,
9 at least according to our experts, now that migration
10 pattern, higher growth inland versus the coast, will
11 pick up again.

12 CHAIR WEISENMILLER: Okay. Also, I guess UC
13 Davis has done some studies on the impacts of the
14 drought on agricultural. I'm just trying to make sure
15 we tie it into those.

16 MR. KAVALEC: Yeah, as I understand it, they
17 looked at the impact of the drought in 2014 and found
18 that we had lost around 17,000 jobs related to the
19 agricultural sector, and output was down by a couple
20 billion dollars.

21 So, in terms of reflecting that in the forecast
22 that's tough because, you know, we could have the
23 rainiest year on record next year, you know. So, we
24 typically assume an average rainfall.

25 CHAIR WEISENMILLER: Yeah.

1 MR. KAVALEC: So, but I think the more critical
2 issue is related to energy on the supply side, anyway,
3 when it comes to the drought, and renewables, and so on.

4 CHAIR WEISENMILLER: Well, obviously, we take
5 some attempts to take into account climate change
6 impacts long term. But you're right, presuming that,
7 hopefully, the drought is more a short-term phenomenon
8 than --

9 MR. KAVALEC: Let's hope so, yeah.

10 CHAIR WEISENMILLER: Yeah, hopefully. I guess
11 the other thing, one of the big changes last time was we
12 much -- we found it was really a substantially lower
13 population forecast. I just wanted to see how the
14 numbers are holding up, whether we're matching that or
15 not?

16 MR. KAVALEC: So, you mean -- yeah, so, really,
17 all three of our sources for population have reduced
18 their expectations of population growth in California in
19 the future.

20 CHAIR WEISENMILLER: Uh-hum.

21 MR. KAVALEC: So, we'll have a high, mid and a
22 low scenario. But relative to previous forecasts, all
23 those scenarios are based on lower population growth
24 for, you know, the aging of the population, less
25 domestic migration in California. Although,

1 international migration is expected to continue.

2 COMMISSIONER MC ALLISTER: Can you talk about,
3 so you have the Moody's and IHC, the sources that we
4 have for some of our data -- well, backing up, one of
5 the things we're trying to accomplish going forward, you
6 know, in this forecast and in future ones is get a more
7 granular appreciation of all of this.

8 And could you talk about the level of geographic
9 specificity that this data is available at and how that,
10 you know, does or doesn't facilitate kind of getting to
11 more localized analysis?

12 MR. KAVALEC: Yeah, we had some discussions with
13 them, along with our academic expert panel, on the level
14 of disaggregation that's reasonable in terms of economic
15 and demographic projections. And Moody's and Global
16 Insight both insist that when you're at the county level
17 you're already pushing it.

18 Below the county level, like it's a census tract
19 level or something, Moody's and Global Insight don't
20 even attempt to produce forecasts at that level. They
21 don't think they can produce anything credible.

22 So, really, for us the unit, the most
23 disaggregated unit in our forecast is at the county
24 level.

25 There are other methodologies. For example,

1 through REMY (phonetic), that attempt to go down into
2 census tract levels, and we've talked to them a little
3 bit. But they're basically just providing a framework
4 for you to do that. You have to fill in all the answers
5 in terms of where the developments are going to be,
6 where the big industrial customers are going to move,
7 and so on.

8 COMMISSIONER MC ALLISTER: So, I guess, I'll say
9 that there are counties that lend themselves to that
10 kind of analysis more than others. I mean, you're going
11 to have a lot more population in an L.A. County than in,
12 you know, a San Bernardino or something.

13 MR. KAVALEC: Yeah.

14 COMMISSIONER MC ALLISTER: Yeah, or Tulare
15 County or something. And that's where the population is
16 and that's where much of the infrastructure is. And so,
17 you know, I'm wondering kind of how going forward we
18 might be able to work with some of the local
19 stakeholders, the COGS (phonetic), the folks who
20 actually do the planning in those areas to maybe push
21 forward on fronts where it might make sense. And I'm
22 not sort of projecting what those might be but, you
23 know, work with the counties or the NPOs to try to
24 project with a little more granularity as we go forward.

25 MR. KAVALEC: Yeah, I think that's -- I mean, if

1 we're going to go beyond the county level, that's our
2 next step, we have to take advantage of whatever
3 projections are provided by the local city governments.
4 And, of course, we have to talk with the -- get whatever
5 information we can, energy-wise, from the utilities
6 since they're experts on their own service territories.

7 COMMISSIONER MC ALLISTER: I mean that's
8 exactly, that's kind of where I wanted to get is that,
9 you know, it's not just about the econ demo, but it's
10 also about the tending on the energy side, specifically.
11 And I'm thinking more for the energy efficiency, but
12 it's really relevant across the board, I think.

13 MR. KAVALEC: Yeah, and I always say that in our
14 forecasts there are two types of forecasts. There's
15 what I call a fundamental forecast, which is based on
16 equations, and economic, and demographic drivers, and so
17 on. And then there are sort of shifting, or
18 disaggregating that forecast to more local levels.

19 And to me, it seems that this is where the split
20 is going to occur between a fundamental forecast, at the
21 county level and higher, and a more disaggregate
22 forecast is going to have to be more a shearing off of
23 an existing forecast, rather than a fundamental
24 forecast.

25 COMMISSIONER MC ALLISTER: I agree with that. I

1 think you're going to have -- you're going to head to
2 the time to a new methodology, at some point, when you
3 get down to the lower scale.

4 MR. KAVALEC: Right.

5 COMMISSIONER MC ALLISTER: And that's
6 appropriate. I think that's probably -- that's practice
7 and that methodology discussion is one that I think over
8 the coming cycles, starting now, but developing it
9 across the agencies so that it's most relevant for us is
10 really a worthwhile thing to do. You know, within
11 reason and resources.

12 MR. KAVALEC: Yes.

13 Okay, so we're going to move to the next
14 presentation in this section, which coincidentally will
15 be presented by Chris Kavalec, with the Demand Analysis
16 Office. He'll be speaking on the economic scenarios and
17 projections for key economic and demographic indicators.

18 So, Chris, all yours.

19 MR. KAVALEC: I actually have two consecutive
20 presentations here, so I've combined them into one
21 package.

22 And I'm going to talk a little bit about the
23 timeline for the demand forecast, the idea of demand
24 scenarios, and then turn to the economic, demographic
25 common cases, as Ivin has defined them, that are going

1 to drive our demand scenarios. And then talk about our
2 efficiency and demand response assumptions. And then we
3 will have other presentations that support our demand
4 forecast, as well as other work, distributed generation,
5 electrification, and rates, both electricity and natural
6 gas rates.

7 Okay, our next milestone coming up here is data
8 that we receive from the load-serving entities that
9 comes in on -- or that's due on April 15th. And we get
10 data from them on efficiency, demand response,
11 distributed generation, historic sales and peak demand.
12 And they also produce a forecast for the next ten years,
13 for these demand forms.

14 And part of our work in the preliminary forecast
15 is to compare our forecast with what the utilities are
16 predicting and attempt to resolve any differences.

17 So, our workshop where that topic will be
18 discussed, our forecast versus the utility forecasts,
19 will be at the beginning of June. We'll then have,
20 after incorporating comments and including some other
21 work, which I'll get into later, we will have a revised
22 forecast workshop in November and December of this year.

23 In the past, we've had a revised forecast around
24 the October timeframe. However, we would like to
25 incorporate in the revised forecast the summer loads

1 that we get from Cal-ISO, which we don't get until
2 October. So, we could out a revised forecast like
3 October, but everybody's first comment is going to be
4 why don't you have the summer loads incorporated in.

5 COMMISSIONER MC ALLISTER: We talked a little
6 bit, or talked with Heather kind of informally about,
7 okay, the statute says we're supposed to get the IEPR
8 out in the calendar year, and all that, but in practice,
9 as you're pointing out, there's just lots of tweaking to
10 do. If we want to do it right, we have to wait for that
11 data in October.

12 So, I wonder, maybe the Chair can comment on
13 this, but sort of adjusting the timeline to sort of not
14 put the Lead Commissioner in a bind. I mean, the
15 Legislature's wanting the thing out, you know, because
16 we're trying to do it the best way we can, and it's sort
17 of the timeline is dictated by events in a way so --

18 CHAIR WEISENMILLER: Yeah, I think the reality
19 is, although again, (inaudible) -- will probably jump up
20 and strangle me. Is that at one point I was working,
21 actually, for a utility, trying to figure out how the
22 PUC was doing on responding to the various legislative
23 directions in terms of timings, and it was all fairly
24 bad was the bottom line.

25 COMMISSIONER MC ALLISTER: It's not like the

1 Legislature's really complaining that much.

2 CHAIR WEISENMILLER: Yeah, so I haven't gotten
3 why are we getting this report in February, instead of
4 December, so I could it read it over the holidays, you
5 know. So, yeah, I think we're just going to continue --

6 COMMISSIONER MC ALLISTER: It would be nice to
7 be in sort of full compliance, if possible, you know,
8 but not a huge deal.

9 MR. KAVALEC: Yeah, our plan is not to move back
10 the adoption, itself, it was just to move -- reduce the
11 time between the revised forecast and the final forecast
12 and adoption.

13 Okay, next. Okay, defining our demand scenarios
14 and I refer to the baseline here, we have our forecast
15 broken down into two components. The main baseline
16 demand forecast and then an additional piece that
17 includes additional achievable energy efficiency. And
18 together, the baseline and the AAEE savings give us a
19 managed forecast.

20 So, I'm sticking here with baseline demand
21 scenarios. As usual, we will have three cases, a high,
22 a mid and a low. Where in the high case we have higher
23 economic and demographic growth, lower rates, lower
24 self-generation impacts, which means higher sales.
25 Climate change impacts, we get temperature scenarios

1 produced for us by the Scripps Institute of Oceanography
2 and they provide multiple scenarios, 12 to 15. And we
3 typically choose one of the higher scenarios, in terms
4 of temperature change, to use in the high demand case.
5 And in the mid demand case we pick a scenario from
6 Scripps right around in the middle.

7 Low electrification meaning, basically, more
8 electric vehicles in the high demand case.

9 And the opposite in the low demand case, and
10 then our mid, we have assumptions in between the two and
11 that's our more likely case, I guess we call it. And
12 that's typically the forecast that's used in resource
13 planning.

14 Okay, so our economic and demographic common
15 cases that will be used in our demand forecast, along
16 with other analysis.

17 Three takeaways, from Nancy's presentation
18 earlier, that are important to the forecast. We are
19 aware of the scarring effect and the impact it's had on
20 long-term growth. However, there's very few experts now
21 talking about a second recession. And that's important
22 in defining our scenarios.

23 The combination of housing recovery, and
24 increase in new construction of housing, plus the aging
25 of baby boomers, and more and more empty nesters, and

1 the characteristics of millennials to form smaller
2 households, this is likely to reduce average persons per
3 household. Which all else equal means more households,
4 and the household is the unit which we use to drive our
5 residential forecast. And I'll talk about the
6 implications of that in a minute.

7 And then our migration patterns within the
8 State, it's indeed we're resuming higher population
9 growth within the State. Well, that makes our climate
10 zone analysis important, looking at the inland areas
11 versus the coastal areas, particularly when we're
12 talking about peak impacts.

13 Next. So, we have a total of nine scenarios
14 available to us from Moody's and Global Insight. I
15 didn't provide a full description of each one. But as
16 an example, in the higher demand cases you have
17 assumptions like a faster recovery in Europe, oil prices
18 staying lower longer.

19 And then the opposite in the lower cases, oil
20 prices begin to go back up more quickly, and the EU
21 continues with its economic issues without any
22 improvement.

23 So, of these eight cases, I guess it's eight or
24 nine cases, I used a very scientific method to develop a
25 range by choosing the highest and then the lowest in

1 terms of growth among these different scenarios. And
2 then our mid case is our Moody's -- what Moody's refers
3 to as their baseline or most likely case.

4 Next, so a quick look at some of the key
5 economic variables that drive our forecast, as well as
6 other analyses.

7 First, personal income. We have the three
8 scenarios, high, mid and low in the green, dark blue,
9 and purple, respectively, for our new forecast.

10 And the mid case scenario that we used in our
11 last forecast, the 2014 update, is shown in red. And
12 you can see here, hopefully, that the personal income is
13 almost identical between our new proposed economic
14 scenario and what we used in 2014.

15 Next, roughly the same case for statewide
16 employment. Again, the red curve is basically on top of
17 the dark blue. Those are the two mid cases, the old and
18 the new. A little bit higher growth in employment, a
19 little bit more optimism about employment growth versus
20 the last forecast. But overall, very little difference.

21 Manufacturing output, you'll see the two, the
22 mid and the low cases crowded together there. And this
23 is typical of Moody's, which we use for the mid and the
24 low case for manufacturing output. They're
25 manufacturing output predictions are not very responsive

1 to their definition of scenarios, not very responsive to
2 changes in GDP, and so on. So you have, as usual, the
3 mid very close to the low, and the mid as well very
4 close to what we used in our forecast update in 2014.

5 And Global Insights, also as usual, is much more
6 optimistic about manufacturing production in California
7 than is Moody's.

8 I want to take a moment to talk about number of
9 households because this is important to the forecaster.
10 The difference we're showing here is important to the
11 forecast. Typically, in the past, we had been fairly
12 conservative when it comes to projecting changes in the
13 average size of households. The more, the bigger drop
14 off you have in average household size, all else equal,
15 the more households you're going to have.

16 And so, we've been conservative because we
17 haven't seen much of a pattern change in the historical
18 data. It's remained relatively flat. However, we now
19 have DOF, Moody's and Global Insight all saying there's
20 going to be a reduction in average household size,
21 meaning more households.

22 And as Nancy discussed, there are good reasons
23 to believe this is going to happen. We have more and
24 more empty nesters with, potentially, smaller homes, an
25 increase in new construction, and millennials who tend

1 to form smaller households. So, overall there's reason
2 to believe we're going to have a drop off in average
3 persons per household.

4 So, the results of all this, if you look at the
5 red line there at the bottom, this was our mid case
6 assumption for number of households in our previous
7 forecast. And as you see, it coincides with our new,
8 proposed low case for number of households. That's
9 because we're assuming a drop off in all three of our
10 scenarios in persons per household, which increases the
11 number of households.

12 So, this is what I'm proposing, but I'd like to
13 hear from the utilities, what their own expectations are
14 in terms of household size, assuming you use a household
15 size or number of households in your own forecasts.
16 We'd like to hear what you think. Not necessarily
17 today, but in comments, written comments afterwards.
18 Because as I said, this is an important component of our
19 forecast and we have two mid cases now, the previous
20 versus the new, that differ by a couple hundred thousand
21 households in the forecast period.

22 COMMISSIONER MC ALLISTER: Is that coming from
23 your data sources, Moody's, et cetera?

24 MR. KVALEC: Yeah.

25 COMMISSIONER MC ALLISTER: So, projection of

1 number of households.

2 MR. KAVALEC: Yeah, so the -- actually, I should
3 go back. Could you go back three slides? Yeah, right
4 there.

5 So, I defined in general what our economic cases
6 were going to be. For population and households it's
7 slightly different. I forgot to go over this earlier.
8 We like to include a scenario from the Department of
9 Finance because they're the experts in California
10 demographics.

11 COMMISSIONER MC ALLISTER: Right.

12 MR. KAVALEC: So, in this case our low demand
13 case, or low growth case comes from DOF. Moody's base
14 case gives us our mid demand for both population and
15 households. And then in high demand we have Global
16 Insight.

17 And as I said, all three of these, the two
18 vendors and DOF, are predicting reduction in average
19 household size over the next ten years. So, that's
20 going into -- I propose that as going into our forecasts
21 for our three scenarios.

22 COMMISSIONER MC ALLISTER: Okay, great. So,
23 we're talking households but, essentially, you know,
24 population I guess is there. Equivalent for information
25 on, you know, the other building sectors, commercial,

1 and kind of square footage type stuff, do they do any of
2 that as part of the data they provide to us?

3 MR. KAVALEC: They don't. We get our floor
4 space data from Dodge.

5 COMMISSIONER MC ALLISTER: Oh, okay.

6 MR. KAVALEC: Okay, and that's a whole other
7 story.

8 COMMISSIONER MC ALLISTER: Yeah, I know, that's
9 a different -- it's kind of a parallel discussion, so
10 not exactly this, but putting all the pieces together is
11 kind of important. Thanks.

12 MR. KAVALEC: Okay, up to slide 15 here. Well,
13 I guess I'll stop there, and before the next part of my
14 presentation and ask for questions or comments.

15 COMMISSIONER MC ALLISTER: No, I'm good. Chair?

16 CHAIR WEISENMILLER: Yeah. No, I was going to
17 say the one that's just been mentioned, just on the
18 demographics, just the statistic one. Actually, when
19 the (inaudible) -- is that from 2007 to now, so our net
20 zero on immigration from Mexico into the U.S.
21 Obviously, if you go back to .201, or whatever, up to
22 that period of time it's much higher.

23 MR. KAVALEC: Right, which is one of the reasons
24 why persons per household was remaining flat rather than
25 dropping, as the DOF has been predicting.

1 CHAIR WEISENMILLER: Yeah.

2 MR. KAVALEC: Okay, efficiency and demand
3 response, the next slide. First, efficiency. As usual,
4 we have new initiatives to account for within our
5 forecast. In this case, we have new appliance standards
6 which are expected to be adopted in May, I understand.

7 Our practice is to wait until standards have
8 been finalized and adopted before we include them in the
9 forecast. So that means in May, that means that new
10 appliance standards will appear in our revised forecast,
11 but not in our preliminary forecast.

12 COMMISSIONER MC ALLISTER: So, by that you mean,
13 just to be perfectly clear, that it basically goes into
14 the base case? It sort of moves from AAEE over into
15 just the --

16 MR. KAVALEC: That's right. What we used to
17 call "committed", but we don't use that term anymore.

18 COMMISSIONER MC ALLISTER: Yeah, exactly. Go
19 where, yeah, we all are going to get committed.

20 MR. KAVALEC: We have new IOU programs for 2015.
21 And then we have 2014 and 2015 POU programs to account
22 for. And we will have, by the time of our revised
23 forecast, new estimates for additional achievable energy
24 efficiency coming from new IOU potential study ongoing
25 at the CPUC.

1 CHAIR WEISENMILLER: Well, hopefully, we'll have
2 EMV also. I'm tired of getting new, potential studies,
3 but no EMV.

4 MR. KAVALEC: Yeah, as I understand it --

5 COMMISSIONER MC ALLISTER: Who are you looking
6 at?

7 MR. KAVALEC: -- the EM&V, the '10 to '12 study
8 is going to be built into the new, potential study. And
9 it's also, the '10 to '12 EM&V results were used to
10 adjust the 2015 reported savings for the IOU programs,
11 as I understand it.

12 CHAIR WEISENMILLER: Right.

13 COMMISSIONER MC ALLISTER: Yeah.

14 MR. KAVALEC: Yeah, but there's always a long
15 lag between the --

16 CHAIR WEISENMILLER: I'm hoping you're doing the
17 independent assessment of that?

18 MR. KAVALEC: Or course.

19 COMMISSIONER MC ALLISTER: And where do the POUs
20 and IOUs sort of compare along these lines?

21 MR. KAVALEC: Well --

22 COMMISSIONER MC ALLISTER: Not in terms of their
23 results, but sort of just where they fit into the base
24 forecast versus AEEE, that kind of thing?

25 MR. KAVALEC: The POUs typically only fund one

1 year ahead, so we would have something for 2015 as, you
2 know, finalized, adopted, whatever you want to call it,
3 program savings.

4 The IOUs operate in three-year cycles, but they
5 have -- because, just because of different conflicts and
6 other proceedings they've done 2013-2014 as one lump,
7 and now 2015. But they're typically practice is to go,
8 you know, at least three years ahead, and that may
9 increase to seven to ten years.

10 COMMISSIONER MC ALLISTER: Yeah, I was going to
11 ask how are you proposing to deal with the rolling
12 portfolio concept in terms of where you stick the
13 anticipated savings?

14 MR. KAVALEC: Yeah, the way I think of it is
15 there -- I think there will be a component of that which
16 we could call, you know, approved, and included in the
17 committed forecast once that all gets hashed out.

18 But I think there will continue to be programs
19 that won't yet be defined within the rolling portfolios
20 that would have to stay as part of the future potential
21 and, therefore, AAEE savings.

22 COMMISSIONER MC ALLISTER: So, where would that
23 discussion happen between -- is that in the DOG
24 (phonetic) -- or is that in -- sort of where does that
25 discussion between PUC staff -- so get a sense for the

1 forecast of what's likely to occur in terms of their
2 program structure.

3 MR. KAVALEC: Yeah, these are typically, well,
4 in the last cycle and in this cycle we've -- the
5 potential study participants, Navigant and CPUC, have
6 been reporting and discussing the findings for the
7 potential study in DOG meetings. And that's going to
8 continue in this cycle, too. And we've had a couple
9 meetings, already, for the new, potential study.

10 COMMISSIONER MC ALLISTER: Okay, thanks.

11 MR. KAVALEC: So, our estimates for additional
12 achievable energy efficiency will come as before for the
13 IOUs from the potential study.

14 We are going to attempt to do something similar
15 for POUs in this cycle, which we didn't do last time,
16 taking advantage of the demand form data they submit,
17 whatever EM&V studies are available for the POUs, and AB
18 2021 reports, and so on.

19 Hopefully, with all those sources and more
20 discussions with the POUs, we can come up with something
21 credible in terms of AAEE savings.

22 A little bit more about the potential study.
23 They incorporated their expectations after discussions
24 with us, future building and appliance standards, as
25 well as federal standards. And, of course, future

1 incentive and behavioral program savings out ten years.

2 And then we have a slew of programs, policies
3 we're interested in, and I've listed here some. But our
4 plan is to work with Navigant and the CPUC to
5 incorporate these policies into the potential study
6 through one or more scenarios to reflect potential in an
7 AB 758 world or a PACE world.

8 However, the potential study is being done in
9 two stages. State one, which is going on now, and state
10 two which will be later in the year, and into next year.
11 And the reason they're doing it like this is they needed
12 to produce something quickly, both for developing the
13 2016 goals at the CPUC, and providing something in our
14 forecast for 2015.

15 So, this is being done in a rush, so it's
16 basically a refresh of what they did in 2013. The real
17 analysis for things like zero net energy, and AB 758, is
18 not going to happen until stage two. So, that means it
19 won't be part of the 2015 IEPR forecast.

20 It's conceivable, it's reasonable to expect that
21 we could include the second stage, the results from the
22 second stage in our forecast update next year.

23 COMMISSIONER MC ALLISTER: So, you're talking
24 just not having it even be in the AAEE?

25 MR. KAVALEC: Well, when you introduce a

1 specific policy like, say, Proposition 39.

2 COMMISSIONER MC ALLISTER: Right.

3 MR. KAVALEC: You've got to do some additional
4 analysis in terms of targeting, you know, the building
5 types you want to target, gathering more data,
6 developing specific measures. So there will be -- in
7 the potential study they do sort of a broad brush, so
8 there will be savings coming from schools and other
9 building types that would, in real life, be part of what
10 Proposition 39 provides. But they're not addressing it
11 specifically.

12 COMMISSIONER MC ALLISTER: I guess I would
13 encourage us -- so, these are pretty different, zero net
14 energy and OEO we're going to try to do. So, that could
15 elicit some general sense of what the results of that
16 are likely to be, you know, assuming some level of
17 success with that. I mean, we have a clear policy
18 mandate across the agencies, or policy goal across the
19 agencies, so that's a very specific discussion.

20 You know, AB 758 is more of a portfolio of
21 initiatives so not really, in and of itself, evaluatable
22 in terms of its expected impact. It really would be
23 measure by measure or, you know, initiative by
24 initiative, but one of those initiatives, you know, such
25 as Prop. 39.

1 And then we'll have -- well, we already have a
2 pretty large group of approved implementation plans,
3 with specifics in there, that we have in this building
4 already. So, that -- you know, those won't be evaluated
5 savings with the NMB (phonetic) reports this year,
6 obviously, because they're just now -- the shovels are
7 just coming out, really, on those projects.

8 But we do have, I think, have a good sense of
9 what the schools are going to do in terms of projects.
10 So, how can we kind of parlay that into some sense going
11 forward?

12 CHAIR WEISENMILLER: The other question we have
13 is that some of it we're getting into attribution
14 questions.

15 COMMISSIONER MC ALLISTER: Yeah.

16 CHAIR WEISENMILLER: And particularly, in the
17 additional savings area you could easily see a situation
18 where we'd be saying, well, this is going to happen
19 because of Prop. 39, and the utilities are saying it's
20 going to happen because of their --

21 COMMISSIONER MC ALLISTER: Incentive programs.

22 CHAIR WEISENMILLER: -- incentive programs, and
23 God knows what else.

24 COMMISSIONER MC ALLISTER: Yeah.

25 CHAIR WEISENMILLER: Somehow, there's probably a

1 list of things that happen which, you know, may be
2 attributable to any number of things. But, certainly,
3 in each of those programs they may want to attribute
4 everything to them. But we have to worry about double
5 counting there.

6 I was also a little bit curious, because the
7 first line is about future building standards, but when
8 we get to zero net energy, I remember you and I both
9 scratching our head trying to figure out what in the
10 hell the building standards were going to be in 2023, or
11 whenever. When, you know, we've gone to zero net energy
12 for residential it's like, okay, well, what's the encore
13 for the next two standards after that which, somehow,
14 Navigant is projecting. You know, sort of what's the
15 difference between the two.

16 COMMISSIONER MC ALLISTER: Yeah, so just
17 following up on the Prop. 39 issue. I mean, I think,
18 yeah, there will be many -- there will be a number of
19 projects, hard to say how many, that actually get done
20 and save energy, but have zero participation from the
21 portfolio of utilities.

22 So, those are real savings that happen and
23 upgrades that happen but aren't -- you know, they impact
24 demand, but aren't necessarily within the wedge that has
25 to be with programs.

1 MR. KAVALEC: Right.

2 COMMISSIONER MC ALLISTER: So, I think we
3 probably ought to think that through.

4 CHAIR WEISENMILLER: Yeah, but isn't some of
5 this the up-to-code-question? So, if the utility
6 programs aren't funding, getting the savings to code --

7 COMMISSIONER MC ALLISTER: Yeah, to some extent.
8 To some extent.

9 CHAIR WEISENMILLER: To some extent. And again,
10 as we're trying to parse this out -- you know, it's
11 interesting to make a list here, but there's nothing to
12 discuss on that issue, on what that might mean.

13 COMMISSIONER MC ALLISTER: Yeah, that's right.
14 But I guess there's some sense that there are many
15 projects that may be just to code, that the schools are
16 getting funding to do that are producing savings. And,
17 you know, the big question is would they have happened
18 without the Prop. 39 funds. And I think there's -- you
19 know, I'd like to dig into that issue a little bit to
20 see what we think, how we think. For the moment, how we
21 think they're going to influence demand.

22 I don't actually -- for our purposes here, I
23 don't actually care about the attribution per se, but
24 really just how they impact demand. And then we know
25 they will, so we kind of need to think about that, I

1 think.

2 MR. KAVALEC: Yeah, we can definitely have more
3 internal discussions on this.

4 COMMISSIONER MC ALLISTER: Yeah.

5 MR. KAVALEC: And develop our own estimates.
6 However, you know, this is the natural platform to
7 account for things like Proposition 39. Because, as you
8 said, there's going to be overlap with other programs.

9 COMMISSIONER MC ALLISTER: Right.

10 MR. KAVALEC: So, it's good to have one platform
11 to do everything so you can account for any, you know,
12 overlap between different types of initiatives.

13 CHAIR WEISENMILLER: No, I think having -- my
14 big concern, as I said, was making sure, A, we're
15 accounting for everything, but we're not double counting
16 for everything.

17 MR. KAVALEC: Right.

18 CHAIR WEISENMILLER: And so, you know, obviously
19 I would tend to say the PUC EMV programs, the
20 attribution has really been phenomenally difficult. And
21 I'm just saying let's not repeat making attribution
22 something that gets in the way of getting accurate
23 numbers out.

24 MR. KAVALEC: Yeah, exactly.

25 CHAIR WEISENMILLER: Either under or over

1 accounting.

2 COMMISSIONER MC ALLISTER: Yeah, we don't have
3 to make the attribution problem our problem in terms of
4 the forecasts.

5 CHAIR WEISENMILLER: Right, that's all I'm
6 saying.

7 COMMISSIONER MC ALLISTER: The PUC will have to
8 work it out for them to figure that out. But that's
9 really a like ratepayer money issue more than an overall
10 demand issue. Yeah, thanks.

11 CHAIR WEISENMILLER: Again, as you know, there's
12 been this big evolving issue of to the extent the PUC
13 incentives are tied to going beyond curve code. Then
14 we're left with how do we achieve the savings up to
15 code?

16 COMMISSIONER MC ALLISTER: Yeah, so really what
17 we're talking about here is a code compliance
18 penetration problem. I mean, in large part, anyway.
19 So, what is our -- for existing buildings, you know,
20 Prop. 39 is an existing building population, and to what
21 extent we believe that projects are happening and
22 bringing those buildings up to code.

23 And so, you know, how much of that is happening
24 incrementally because of Prop. 39. That's really the
25 fundamental question.

1 MR. KAVALEC: You're probably aware of the
2 baseline analysis that's starting with the -- we're
3 doing with the CPUC, looking at actual compliance issues
4 and other opportunities for savings, and end uses that
5 don't meet the code and, particularly in existing
6 buildings.

7 COMMISSIONER MC ALLISTER: Yeah, I think that's
8 a very, very necessary discussion. So, I'd really like
9 to see that moving along and get as much of that into
10 each successive forecast as possible.

11 CHAIR WEISENMILLER: Yeah. Well, I had to
12 listen to testimony, yesterday, about how no one
13 complies with our existing building standards so --

14 COMMISSIONER MC ALLISTER: Exactly. So, to that
15 extent 758 is, you know, hopefully going to be a
16 discussion for it and working on the compliance problem.
17 But I think in terms of getting, you know, anticipating
18 real savings that we can sort of say they're likely to
19 come from that effort, I think that's pretty difficult
20 until we get down the road and we have some experience.

21 And, you know, again, we're going to have a lot
22 of discussion in the 758 context, and further down the
23 road on the IEPR, about end-use data for purposes -- not
24 just for the forecast, but for other kind of market
25 activation purposes. And I think that's a really

1 important discussion at the policy level going forward.

2 So, thanks.

3 MR. KAVALEC: Okay. The next slide. The final
4 topic, demand response. The latest terminology to use
5 when talking about demand response that gets
6 incorporated on the demand side is load modifying demand
7 response. And the actual definition of what constitutes
8 load modifying demand response is still being discussed
9 at the CPUC.

10 But currently, we include two types of load
11 modifying demand response in the demand forecast. Non-
12 event-based, which includes time of use rates and load
13 shifting. And then event-based, which is critical peak
14 pricing and peak time rebates.

15 As I say, this discussion or the definition of
16 load modifying is still being hashed out. And when that
17 gets resolved, it's likely we're going to have more
18 programs to include as load modifying demand response in
19 our demand forecast.

20 We get these numbers, what we currently use,
21 from annual IOU Load Impact Reports that come out in
22 April. Currently, in the last forecast at least, we had
23 a total impact on load out ten years, between 200 and
24 300 megawatts. This is for all the IOUs combined.

25 And as I said, this is going to become more

1 significant once we resolve the specific definition of
2 load modifying versus supply side demand response.

3 We are also, at the same time, working with CPUC
4 and Cal-ISO staff on an analysis of TOU rates.

5 CHAIR WEISENMILLER: Actually, based on the
6 direction of President Picker, myself, and Steve
7 Berberich, that also had better include fixed charges
8 and other rate design changes, period.

9 MR. KAVALEC: They are in there.

10 CHAIR WEISENMILLER: That's good.

11 MR. KAVALEC: So, we are expecting much more
12 widespread penetration of TOU rate structures starting
13 in 2018 or so, on the residential side. So, we thought
14 it would be prudent to attempt to start measuring what
15 the potential impacts of widespread TOU rates on the
16 residential side are going to be in terms of load.

17 And we have developed six scenarios that assume
18 varying levels of participation and hourly structure,
19 and do include fixed costs, fixed charge. We're
20 concentrating on the residential side. However, we're
21 also looking at small commercial, which hasn't been
22 totally integrated into TOU rates, yet.

23 Two of the scenarios that we're developing are
24 specifically to address the duck curve issue, and that
25 is low net supply during the middle of the day, followed

1 by a steep ramp up to your peak in the evening.

2 So we, and ISO, specifically, is looking at
3 projected load shapes out ten years and attempting to
4 develop a rate structure to address the duck curve.

5 There are obviously many uncertainties in this
6 kind of analysis given we're talking about new hourly
7 structures that we don't have any experience with. And
8 we have to base the results in terms of people's
9 response to various pilot programs that have happened
10 around the country.

11 We don't have anything, really, in terms of
12 experience with a much larger general population TOU
13 rate impact.

14 So, anyway, my point is there are a lot of
15 uncertainties. And our position, at least up to now, is
16 that this analysis will be stand-alone and won't be
17 incorporated directly into the demand forecast.

18 COMMISSIONER MC ALLISTER: Are you -- there has
19 been quite a bit of work done on this, or at least a few
20 reasonably large studies in California on time of use
21 and on, you know, some of the technology components
22 like, you know, how do people respond to thermostats and
23 some like that. But there is some analytical work on
24 response to time varying pricing, right?

25 MR. KVALEC: Yeah, so there's enough studies

1 out there to where I think we can come up with something
2 reasonable for --

3 COMMISSIONER MC ALLISTER: Yeah.

4 MR. KAVALEC: -- in terms of pricing
5 elasticities, how people respond. But, you know,
6 there's wide variation in those pilot studies and so
7 you're going to have a large -- you know, any way you
8 view this, a large band of uncertainty.

9 COMMISSIONER MC ALLISTER: Yeah.

10 MR. KAVALEC: So, we thought this would be a
11 good first step just to develop a general sense of what
12 these impacts might look like. And then, when we have
13 specific plans to look at it at some point in the
14 future, we can hopefully incorporate impacts directly
15 into the forecasts.

16 COMMISSIONER MC ALLISTER: Yeah, great.

17 CHAIR WEISENMILLER: Yeah, that makes sense.
18 Again, I think this year starting the analysis and just
19 trying to understand the potential, but certainly not in
20 the baseline at this point, right. I don't know whether
21 the PUC decision you can process, but no one anticipates
22 that being done in time to really give you a chance to
23 make it into the forecast variables.

24 COMMISSIONER MC ALLISTER: Yeah, and this is
25 also an area where it's relevant for the existing

1 building stock. And if it drives -- you know, if we
2 find that there's major driving of behavior change
3 through rates, and that that has potential to drive the
4 Governor's third goal, then we obviously want to put
5 that into context. Right now, it's not -- doesn't have
6 to be in there, but this could change.

7 CHAIR WEISENMILLER: I think the other thing to
8 make sure they're on the table is the last time, after
9 we'd gone through, after doing energy efficiency, I
10 think we then rolled into the PUC's LTP, and people
11 looked at the DG or the behind-the-meter forecast and
12 said, oh, my God, they don't match up. So, in this
13 year's process we need to find a way to again get some
14 consistency on assumptions on self-gen, the behind-the-
15 meter stuff, be it DG, rooftop, you know, CHP, you know,
16 storage, whatever. We need to have a conversation with
17 the technologies, among the three agencies, and get
18 that. Because, ultimately, the net load numbers, as you
19 said, again, are what we're trying to get to in some
20 point. And that of not just energy efficiency, but if
21 there's a lot of rooftop solar, that also affects what's
22 going on or what the need is.

23 And so, basically, you've done a lot of analysis
24 on it. I mean, the PUC has done analysis, also. So, we
25 just need to figure out a way to -- DOG workshops, or

1 whatever, to at least get out some of these differences.
2 Obviously, ZEV's sort of another area, although I think
3 that conversation is more with the Air Board. Although,
4 I would anticipate the PUC to get somewhat more
5 interested in those forecasts, also.

6 MR. KAVALEC: Okay.

7 CHAIR WEISENMILLER: The other one which, again,
8 just to make sure it's on the record, that's very
9 important to President Picker, is as the PUC gets more
10 into, you know, distribution planning that trying to
11 figure out a way to map -- as far as you can
12 disaggregate down into their planning areas, since
13 they're trying to make sure that when the distribution
14 plans come in the summer, you know, that it's relatively
15 consistent with our adopted forecast. Although, there's
16 a certain amount of magic, or whatever, to try to
17 convert our forecast as far as you've gone down to what
18 a substation load is. As you know, it's a really
19 disaggregated area. But some way of trying to get --
20 President Picker really wants to -- and this is
21 certainly a strong point, trying to get some consistency
22 between the DG that's submitted and our forecast.

23 MR. KAVALEC: Okay.

24 COMMISSIONER MC ALLISTER: At some level what
25 our interface is, you know, too much granularity is no

1 longer a good thing. But for if we are -- if we're
2 serious, I mean if we are serious about the climate
3 goals, we've got to be able to get to a point down the
4 road and agree across the agencies that we have some
5 equivalence, or some appreciation of where different
6 resources compare and don't. And so that we can -- and
7 for advancement purposes needs to be at a relatively
8 local level, right, in terms of distribution grids. So,
9 what's the pathway to get to that agreement across the
10 agencies.

11 CHAIR WEISENMILLER: Yeah, and again I think all
12 of us know that going from where we've gone down to that
13 level is going to have a lot of uncertainty. But at the
14 end of the day someone has to do it. I mean, certainly
15 in all these various models. And so, at least if
16 there's a conventional wisdom on it and it's
17 transparent. That's the other thing I really want is to
18 make sure everyone knows this is how you get from A to
19 B. You know, it may not be perfect, but at least this
20 is the convention and there's discussion among planners
21 on what's the best way to do that.

22 COMMISSIONER MC ALLISTER: Yeah, and along with
23 that sort of the risk of uncertainty assessment, you
24 know, like where you get to an answer. You know, what
25 are the air bars and can we -- you know, are they too

1 wide to be able to actually use it for planning. That's
2 a pretty key piece of data that needs to be dragged on
3 down to the lowest level.

4 CHAIR WEISENMILLER: Yeah, so anyway, I think
5 conceptually, again, I'm thinking more that we're trying
6 to sync up generally the preferred resources, not just
7 energy efficiency this time. And at least have an
8 understanding about how to get to the -- how this can
9 feed into the distribution learning process.

10 MR. KAVALEC: Okay, well, that was all I had.

11 MR. RHYNE: Okay, good. Thanks Chris. All
12 right, thank you, Chris.

13 So, our next presenter is Anise Brian
14 (phonetic), and I'm going to pull up here presentation.
15 Anise.

16 MS. BRIAN: Good morning, my name is Anise Brian
17 and I work in Transportation Energy Forecasting Unit, or
18 TEFU, of the Demand Analysis Office. And I'm here today
19 to talk about Transportation Electrification and
20 Electricity-Using Transportation.

21 Next, please. I think that the best way to
22 start this thing is to kind of clarify what we mean by
23 transportation electrification. And what I have done
24 here is to divide this transportation electrification
25 into two sectors, on-road and off-road. And we borrow

1 the on-road from mostly the DVM, that identifies all
2 vehicles that go on public roads should be at the DMV.

3 As you can see here, in the second rectangle to
4 the right, we also have public transit which includes
5 short-distance light rail and high-speed rail. So,
6 obviously, these are not on roads as we see them, but
7 they are -- so I put them all into one category and
8 called them on-road.

9 And another reason why we make this distinction
10 is that for the on-road transportation we have our own
11 internal models and we use them.

12 Whereas for the off-road, as I will explain
13 later, you're going to solicit the services of another
14 consultant.

15 On-road transportation refers to -- or
16 transportation electrification for on-road travel
17 transportation is basically travel with personal
18 vehicles, and that is for both residential and
19 commercial customers, as well as mass transit, like
20 light rail, like buses, like conventional rail that we
21 have in California, and there's one high-speed rail that
22 is going to begin operation in 2022.

23 On-road transportation also relates to goods
24 movement and service trucks. And this is we're talking
25 about freight, goods movement, but also service trucks

1 that are used in short-term purposes for activities,
2 such as utility trucks that are serving utility
3 customers, and garbage trucks, concrete mixers, et
4 cetera.

5 Off-road transportation electrification refers
6 to the extent to which seaports and airports, for
7 instance, will be electrified. We call this off-road
8 because many of the equipment and vehicles are in these
9 ports and not all of them are registered. Not all of
10 the equipment are registered.

11 And other off-road vehicles are marine vehicles,
12 recreational, agricultural, or warehouses, and
13 construction and mining. So, they're used in all of
14 these different sectors.

15 I should add that in the past forecast, in the
16 past IEPRs, what we have done is we have taken off-road
17 vehicle numbers from EIA, and we have been using a
18 simple growth model to grow them over the forecast
19 period.

20 Obviously, the intrinsic assumption in that kind
21 of methodology is that none of these off-road
22 electrifications are going to happen. The Commissioners
23 advised us to incorporate electrification and that's
24 what we're doing this time around.

25 The next, please. Off-road transportation, this

1 is a table that we have borrowed from EPRI's 2011 Report
2 on the project. These are basically examples of
3 different vehicles and equipment that are operating
4 correctly on transportation fuel.

5 As you can see here he's using, for instance,
6 the gasoline, et cetera, but they all have
7 electrification options. And so, with our off-road
8 transportation electrification we'll try to hash out how
9 much of it is going to remain diesel, how much of it is
10 going to be electrified and what is that going to do to
11 electricity demand for this sector.

12 As you can see here, in this particular table
13 that EPRI has, they include passenger rate as off-road.
14 And, actually, they refer to it not as off-road, they
15 refer to it as non-road. But we are using a way in our
16 on-road model, so that is one difference between the
17 two.

18 This slide is focusing on the transportation
19 major forecasting models that we own here, at CEC, and
20 with these models we are able to project sector-specific
21 demand for transportation image. These sectors include
22 freight, transit, personal auto for both commercial
23 sectors, commercial light-duty vehicles, as well as
24 residential light-duty vehicles, and aviation models.

25 All of these models are economic models. And

1 what that means is that they account for the impact of
2 time and cost of an activity on the demand for a
3 product. So, if price of something goes up, obviously,
4 the demand for that something is going to go down. When
5 it comes to transportation, another type of cost that is
6 involved when it comes to travel is the travel time.

7 So, when time of travel goes up in one area,
8 then also one mode, then consumers are going to use
9 another mode.

10 In addition to the cost and time of an activity,
11 we also did economic models that account for income
12 and/or economic output in different choice processes.
13 If there is a growth in income, obviously, there's going
14 to be a growth in diesel ownership. And with the growth
15 in diesel ownership, then we are going to see an
16 increase in new vehicle sales, which is going to
17 increase the market of electric vehicles being
18 purchased.

19 All of our models only account, when it comes to
20 the transportation energy, they account for the tank-to-
21 wheel energy consumption.

22 The next slide, please.

23 COMMISSIONER SCOTT: Can you say just a little
24 bit more about the tank-to-wheel consumption?

25 One of the reasons I ask is I was thinking on

1 the slide before that one, for ships. And, you know,
2 the primary fuel, of course for ships, while they're
3 traveling across the ocean is that residual fuel. But
4 then they come and they plug in when they get onshore.
5 So, when you're accounting for tank-to-wheel, that's not
6 counting that part?

7 MS. BRIAN: Well, these are the models that we
8 operate in -- actually, see, this is our own model.

9 COMMISSIONER SCOTT: Uh-huh.

10 MS. BRIAN: So those for the ships we are
11 using -- actually, we are going to talk about this a
12 little bit later. Aspen Environmental Group, and we're
13 going to have them to do that forecast.

14 COMMISSIONER SCOTT: I see.

15 MS. BRIAN: So, this is why it specifically
16 relates to the models that we build and operate inside
17 the Commission.

18 COMMISSIONER SCOTT: Okay.

19 MS. BRIAN: This slide talks about the light-
20 duty vehicle demand, which is a major part of
21 transportation electrification. And our light-duty
22 vehicle demand models are quite unique and actually more
23 extensive than many others that are offered in other
24 State agencies. They cover all kinds of fuels,
25 everything ranging from diesel gasoline, hydrogen,

1 electricity, ethanol, et cetera. So, we cover a wide
2 variety of fuels in our models.

3 And as such, what we do is create a competition
4 between them. So, the model is allowed to substitute
5 between different fuel types, as we are required to do.
6 These models (inaudible) -- for inter-fuel competition,
7 and between all the different fuels. So, if the price
8 of gasoline goes up or down, then it is going to have an
9 impact on demand for other types of fuels.

10 Other key factors that we have, in addition to
11 fuel prices for instance, is the diesel price which has
12 a prominent role in the demand for electricity or demand
13 for market for different fuel types.

14 If the diesel prices of one fuel type are very
15 high, that is going to mimic demand for vehicles with
16 that fuel type, and vice-versa.

17 We also allow for fuel economy, range,
18 acceleration, and a whole bunch of other factors that we
19 incorporate in our model to be able to forecast light-
20 duty vehicle demand.

21 I should also say that our model is also the
22 only one that I know that distinguishes between
23 commercial and residential sectors. And that is
24 important because commercial buyers have a different
25 behavior compared to residential buyers. A commercial

1 buyer may want to buy, for instance, a PHEV because that
2 gives them the flexibility whenever they are going on
3 their business trips to shift fuel.

4 Residential customers may have higher
5 preferences for EV, for instance, because then they can
6 just charge their vehicles overnight and they can go the
7 distance that they want, and they usually travel smaller
8 distances.

9 Commercial owners may have preferences for time
10 it takes to get to a fuel station. On the other hand,
11 residential customers may want -- residential buyers of
12 vehicles may only be concerned with the fact of can they
13 charge their vehicle or can they fuel in certain
14 locations or not. So, time is not as much of a factor
15 for them, as it is for the commercial buyers of
16 vehicles.

17 We also use a simple growth model to forecast
18 electric vehicles, so that one is not necessarily a
19 behavioral model. But our light-duty vehicle demand
20 models are behavioral economic models.

21 The next slide. Other transportation
22 electricity use, we also have transit models. One of
23 them is called urban transit model and the other one is
24 called intercity transit model to refer to short
25 distance and long distance travel. And, therefore, to

1 the extent that these sectors are electrified, we also
2 account for those.

3 When it comes to long distance travel, we are
4 accounting for high-speed rail. Commissioners directed
5 us last IEPR to account for high-speed rail and we did
6 so. But the high-speed rail, at the present time, is a
7 post-process stage of our model. We first generate our
8 demand in our own models and then we account for the
9 impact of high-speed rail on everything else. If more
10 people are traveling with high-speed rail, that means
11 fewer out that are traveling on road and, therefore, we
12 have to make adjustments for it.

13 And then we also have our own model for goods
14 movement and service trucks, where we are accounting for
15 different fuel types in this sector.

16 There is another unit in the Demand Analysis
17 Office, another model that's called transportation,
18 communication and utilities. And this model accounts
19 for electricity demand used in the transportation
20 sector. So, these are the stationary uses of
21 electricity and that amounts to electricity used, for
22 instance, in bus stations, in rail stations, in fuel
23 stations, et cetera, et cetera. And that is a separate
24 model from the one that we are operating.

25 Environmental group will be forecasting

1 electricity use in seaports and airports, as they have
2 other off-road stationary and mobile equipment uses in
3 transportation.

4 Next, please. The key uses to our on-road
5 transportation energy demand forecast, as everybody can
6 imagine, is energy prices. Energy prices are going to
7 be very important. It's one of the significant factors
8 that drives our model. And our staff is forecasting
9 petroleum-based fuel prices, this is based on EIA crude
10 oil prices. I'm sure you all have heard about what has
11 happened to crude oil prices these days. So, nobody
12 really dared to forecast crude oil prices these days.
13 And we are waiting for EIA to generate their forecast.
14 Hopefully, mid-March, EIA is going to be presenting
15 their crude oil price forecast and we are going to use
16 that to generate our own transportation fuel or liquid
17 fuel price forecast, which is gasoline, diesel, ethanol,
18 et cetera.

19 Electricity and natural gas price forecast are
20 the same as those used in the division's electricity and
21 natural gas demand models. My colleagues, later, are
22 going to talk about electricity and natural gas price
23 forecast.

24 When it comes to plug-in electric vehicles,
25 which is the major component of this transportation

1 electrification, other inputs are quite important. And
2 that is what we call, in general, refill attributes, the
3 most important of which are the vehicle prices. So, the
4 relationship or the energy price of these vehicles,
5 compared to other vehicles are very important in the
6 decisions of the household whether to buy these vehicles
7 or not. Since we are forecasting, for instance, the
8 diesel prices for EVs are going down in the future, then
9 that is going to move up demand for EVs in the future,
10 as their prices become more competitive with other fuel
11 types.

12 If price of fuel cell vehicles are higher than
13 price of EVs, customers are going to buy more EVs and
14 fewer FCVs, and vice-versa. So, these are important
15 factors that are going to determine demand for PEVs.

16 I should say, also, that when we are forecasting
17 demand, the penetration has been mentioned so far is
18 that we do not -- our models are going to generate
19 demand for these vehicles. So, we are forecasting the
20 sale of these vehicles and then, every year, we are also
21 forecasting population of these vehicles.

22 Penetration usually is there for penetration
23 rate and some people take that as an assumption. This
24 year is the output of our model, so EV penetration, PHEV
25 penetration, FCV penetration, these are outputs of our

1 model, not an input.

2 In addition to vehicle prices, obviously, fuel
3 economy is going to be important, and all these other
4 attributes, which is acceleration, et cetera. These are
5 provided by CRVH (phonetic). CRVH will be presenting
6 their forecast or their preliminary forecast in the
7 March 19 workshop.

8 Likewise, the petroleum fuel prices are also --
9 the forecast for those are going to be presented in the
10 March 19 workshop.

11 Another very key component or very key input to
12 our PEV demand models are customer preferences. And
13 what we do here is assume this -- in the past we have
14 assumed that these preferences are going to remain the
15 same over the forecast period. One can imagine,
16 however, with all the population shift that we were just
17 talking about, Nancy was talking about, the growth of
18 millennial, the baby boomers, et cetera, depending on
19 what this ratio is then preferences could be different.
20 By age, these preferences could be different.

21 I also want to say that our model, however, does
22 not account for these age profile of the household. We
23 only account for income of the household, not the age
24 profile of the household. So, we could very well be
25 missing that because we know that millennials would have

1 higher preferences for technology gadgets, such as PEVs,
2 and if they are growing then they should be buying more
3 of these vehicles.

4 On the other, if we have more baby boomers,
5 empty nesters, they are using fewer vehicles and they
6 are not as comfortable, probably, with these vehicles.
7 But we are not accounting for that age profile.

8 Are these preferences going to change over time?
9 Absolutely. We already have seen some changes in
10 preferences. And the question is how do we project
11 these changes in preferences in a way that would not be
12 considered arbitrary.

13 So, we know for a fact that these preferences
14 have changed and they will change in the future as more
15 and more of these vehicles are entering the market. The
16 suggestions on these, on projecting the changes in
17 preferences, we would be very happy to incorporate
18 those.

19 I should also add that another -- in addition to
20 all the economic and demographic forecasts that Chris
21 and Nancy talked about, we also use what is called
22 American Community Survey. And we divide all of the
23 households into different income categories, different
24 number of workers, and different household sizes.

25 So, we are forecasting demand for each of those

1 household categories. So, if income of certain groups
2 of households goes up, obviously, the number of vehicles
3 that they are buying is going to change. If household
4 size declines, as Chris and Nancy have been proposing,
5 that can reduce the number of vehicles. And if the
6 number of vehicles that households are purchasing is
7 reduced, then obviously new vehicle sales are going to
8 slow down and, you know, all the other vehicles are also
9 going to also go down, too, as well.

10 Again, another factor that is very important
11 when we are talking about households with different
12 incomes is the fact that a lot of people are projecting
13 inequity in income distribution is going to grow over
14 time. But again, we don't have a good source to project
15 income inequity growth. And that is very important
16 because if you have more low-income households, low-
17 income households have a tendency to stick to the
18 conventional fuels. The higher income households have
19 the tendency to buy those vehicles, to buy the newer
20 vehicles. Also, the higher income groups, who are
21 projected to move more into California, tend to buy more
22 vehicles.

23 And our models are telling us that the more
24 vehicles the household has, the more likely they are to
25 buy PEVs.

1 So, all of these are important. But again, we
2 are not accounting for age, we are not accounting for
3 gender, and we are not accounting for income
4 distribution. And all of those are important. Not that
5 we don't want to, it's just that we have limitations on
6 what we can do with the model.

7 When it comes to other transportation
8 electrification assumptions and inputs, Aspen
9 Environmental Group will be presenting their methods and
10 their forecasts later in the IEPR cycle. But they do
11 not have, there is no preference-based or economic
12 models for off-road vehicles and equipment.

13 This is as opposed to ours, which are behavior
14 based and an economic model.

15 And Aspen Environmental Group will attempt to
16 use projections that are extrapolations of present
17 inventories from different agencies, and they are going
18 to use whatever data and resources that already exist in
19 order to come up with this forecast.

20 I just saw something last week, from ICS, that
21 has generated a transportation electrification forecast,
22 and it included some of the off-road vehicles in it.
23 So, I'm sure that Aspen Environmental Group is going to
24 account for all of those differences.

25 The next, please. These are the proposed demand

1 cases. Obviously, our cases are going to be the same as
2 everybody else. We have low energy prices, and what
3 that means is that all of the energy prices are low,
4 whether it is liquid fuels, like diesel, gasoline, or
5 electricity and natural gas, all of them are low
6 together.

7 In the mid case, mid demand case, all of them
8 are in the middle together.

9 And in the low energy demand case, all of them
10 are high together.

11 So, what that means is that this is going to
12 limit the changing the relative prices of these
13 energies. When all of them go up, or all of them go
14 down, or all of them are direct lines this is going to
15 limit the scope of price differentials in fuels.

16 So what we do, we have our own transportation
17 demand cases, where we are varying prices in a different
18 way. We have what is called high petroleum demand case,
19 which is going to use low liquid fuel prices, high
20 income, and high CNG, electricity and hydrogen prices.

21 When we have high petroleum demand case,
22 obviously, we're going to have a lower PEV demand
23 forecast.

24 Likewise, we are going to have a low petroleum
25 demand case, which is going to be the opposite of the

1 above. We are going to raise the liquid fuel prices,
2 that is petroleum-based fuels, and we are going to also
3 use low income, low CNG, low electricity and hydrogen
4 prices.

5 And in the past, what it does it is our low
6 petroleum demand case generates a higher PEV demand than
7 the common cases. And the high petroleum demand
8 generates a lower PEV demand than a high case.

9 We should also say that all of these demand
10 cases make certain assumptions. When it comes to
11 vehicles, we ask Sierra Research to observe that all of
12 the Federal and State regulations are in place, and all
13 of the regulations for OEMs, and fuel suppliers are
14 going to be in place. That is one of the directions
15 that we give to Sierra Research for that.

16 We should also say that vehicle and liquid fuel
17 prices are independent of California demand. And that
18 is important because what this is saying is that whereas
19 fuel prices are going to influence demand in California,
20 demand in California is not influencing fuel prices.

21 Why? Because we are a small part of basically a
22 global market.

23 Likewise, when it comes to vehicles, whereas
24 vehicle prices are going to determine demand in
25 California, demand in California does not necessarily

1 influence vehicle prices in the international market.

2 So, these are important, both the vehicle market
3 and the petroleum prices are highly globalized markets
4 that are influenced by other forces.

5 COMMISSIONER MC ALLISTER: So, just a quick
6 clarification here. So, but which is not to say that
7 the prices in California are the same as they are in
8 other places, right?

9 MS. BRIAN: Yes.

10 COMMISSIONER MC ALLISTER: You have a good
11 handle on the retail prices in California, right, our
12 mixes and all that.

13 MS. BRIAN: Absolutely.

14 COMMISSIONER MC ALLISTER: Now, on the -- do we
15 consider or is it a factor, really, the fact that we do
16 have the seasonal mixes and the prices kind of jump
17 around a little bit depending on how they're ramping up,
18 or ramping down, and the weather and all that kind of
19 stuff? Is that a factor that is necessary to take into
20 account, the seasonal mixes?

21 MS. BRIAN: It would be good if we can include
22 seasonal and regional differences in prices. It would
23 be very good if we can account for those. But our model
24 is a long-term demand model and we are just forecasting
25 annual demand. And we are forecasting annual prices,

1 which is going to smooth out all these regional and
2 seasonal price differentials.

3 COMMISSIONER MC ALLISTER: Thank you.

4 MS. BRIAN: I think that's it. And these are
5 all the different examples of different -- you see in
6 agriculture, for instance, all of these are -- I tried
7 to find an electrified version of those, so all these
8 pictures that you see are electrified.

9 MR. RHYNE: All right, thank you, Anise.

10 Just a housekeeping note. If you'll notice,
11 we're pushed out into the lunch hour. We're going to go
12 ahead and continue on through. We've got three more
13 speakers before we're done and I think we'll be able to
14 keep pretty close to our schedule today.

15 So, I'll ask everyone to sort of join with me as
16 we sort of Ironman our way through the rest of these
17 presentations. This is all -- and if your head isn't
18 swimming, yet, we've got a couple more just to try and
19 keep everything together.

20 So, this is the interesting part of what we do.

21 CHAIR WEISENMILLER: No, that's --

22 COMMISSIONER SCOTT: Right. Go ahead.

23 CHAIR WEISENMILLER: That's good. I think you
24 may see some of us periodically disappear, but we'll be
25 back.

1 But anyway, a couple questions. One of them was
2 I was going to ask, we have a pretty good process, now,
3 in terms of collaborating with the PUC on the energy
4 efficiency numbers. I'm trying to make sure we've got
5 similar collaboration going on with the ARB on the
6 transportation side?

7 MS. BRIAN: We have been actually in the process
8 of -- the consumer preferences that I mentioned before,
9 these are a result of a survey that is -- they are now
10 about a million dollars or so. And we have been
11 collaborating with ARB in the design of those surveys
12 and, actually, the questions that go into it. We have
13 been working with UC Davis and EDPH EV Center, and all
14 those. So, we are collaborating with a number of
15 agencies, including ARB and Caltrans.

16 CHAIR WEISENMILLER: Great, that's good. And I
17 suspect the PUC, over time, will get to -- given these
18 fueling charging infrastructure questions, may get more
19 interest in these numbers, too.

20 One observation, but when we talked about
21 electrification of the ports, I was going to say
22 certainly Long Beach has a lot of great programs there.
23 And I would certainly encourage people to visit that or
24 at least incorporate that.

25 COMMISSIONER MC ALLISTER: All right.

1 COMMISSIONER SCOTT: I had one on the -- you
2 asked about the consumer preferences and, I'm sorry, I
3 slid the chair just a bit.

4 But I always recommend, also, that you work
5 with, you know, John Butler, Kyle Leanie (phonetic), in
6 the Fuels and Transportation Division because we do have
7 some studies at UC Davis, and other places, where
8 they're looking at certain things like consumer
9 preference, or other information that might be handy as
10 you're putting together this piece.

11 MS. BRIAN: Thank you.

12 COMMISSIONER SCOTT: Uh-hum.

13 MR. RHYNE: Wonderful, thank you.

14 Our next presenter is Akoush Katam (phonetic),
15 who will be speaking to the role of distributed
16 generation in the upcoming demand forecast.

17 MR. KATAM: Hello everybody, my name is Akoush
18 Katam and I'll go with the DG generation forecast for
19 the 2015 IEPR.

20 The next slide. One of the things I wanted to
21 start out with is the different data sources we use to
22 get a handle on the amount of installation occurring in
23 the State. Prior to the demand forecast we use utility
24 rebate programs to get an idea where these PV systems or
25 co-gen systems are being installed.

1 Some of the examples of these programs are the
2 California Solar Initiatives, the Renewables Program,
3 the New Solar Homes Partnership, and the Self-Generation
4 Center Program.

5 As long as people continue to participate in
6 these programs, the data from these programs are very
7 helpful. But as in the case of the CSI, the California
8 Solar Initiative, the incentives have dropped off and in
9 some cases are no longer there for some of the
10 utilities, the program data is not as reliable to get a
11 handle on the amount of installation occurring.

12 COMMISSIONER MC ALLISTER: Actually, I don't
13 want to raise the flag on that because I think there has
14 been discussion and I'm not, frankly, not up to date on
15 it. But, you know, I was very involved in the Solar
16 Initiative when it was operating, you know, prior to
17 coming to the Commission. And I agree, that source of
18 data is just incredible, it's precious for being able to
19 use in this context and many, many other contexts.

20 So, my understanding was that there was the talk
21 at the PUC, at least, of requiring collection of that
22 data and plugging it into the database, possibly via the
23 interconnection process at each utility. And I'm
24 wondering if you have a status update on that?

25 MR. KATAM: Yeah, I believe there was a

1 decision, at least last year, on that topic. And I
2 think the utilities are supposed to start reporting that
3 later this year. But in the meantime, we do have gaps.

4 COMMISSIONER MC ALLISTER: So, we have a gap in
5 the utilities' tracking of solar -- or at least their
6 release of public information regarding small, or
7 behind-net-meter PV installations?

8 MR. KATAM: Yeah, specifically, the publicly
9 available sources.

10 COMMISSIONER MC ALLISTER: Yeah, I guess, and so
11 at the Energy Commission I would -- I mean, certainly,
12 the utilities know when they have interconnection --
13 they know which of their customers have PV. And so, and
14 they also would have some good handle on the
15 interconnection date. I mean, a competent utility would
16 certainly have that.

17 So, I guess I'm wondering if at the Energy
18 Commission, whether or not it's public, we need to be
19 asking for that information. Maybe you already are.
20 But sort of that's kind of -- you know, that's the main
21 course in terms of data for the forecast. So, I think
22 we need to be able to make sure that we're going to be
23 able to eat that. Please do not mention my metaphors.

24 MR. KATAM: The next slide. So, as far as the
25 progress towards meeting the net metering caps, the PUC

1 asked the utilities to submit their progress. And we
2 noticed that at least our collection of public data did
3 not quite line up with what the utilities were reporting
4 to the PUC. And this table here tried to show the
5 difference in the 2013 cumulative stock here. You can
6 see we were off by roughly 200 megawatts. And so, we're
7 trying to figure out how to get a handle on this missing
8 data.

9 And we kind of had two options, shorter term and
10 the longer term. Short term was to request PV
11 interconnection data directly on demand forms. And so,
12 at least a few of these have already submitted their
13 interconnection data for 2012 to 2014. And we did put
14 out notice that the discrepancy from 2013 to 2014 has
15 continued to grow.

16 So, it's going to be key for us to get a handle
17 on these installations.

18 COMMISSIONER MC ALLISTER: Okay, well, great. I
19 would actually ask the utilities to provide that
20 information to us in its entirety, so we don't have to
21 just rely on public sources. And that they, you know,
22 explain the discrepancy between what they're reporting
23 to the PUC and what's publicly available. I think
24 that's a pretty no-brainer.

25 CHAIR WEISENMILLER: Well, no, I was going to

1 take a step further and ask if anyone from the utilities
2 is here or, if they prefer, certainly in their written
3 comments they can address that specific question.

4 COMMISSIONER MC ALLISTER: Absolutely.

5 MR. KATAM: So, asking for the interconnection
6 data for the IEPR was kind of a plug for now. And for
7 the longer term we wanted to take a look at our existing
8 data regulations and figure out, you know, what we had
9 to do to collect this data on a more regular basis.
10 That's something that's still ongoing. You know, if
11 we're going to have to go through a rulemaking, that's
12 going to be a fairly lengthy process, but it's an option
13 we are considering.

14 COMMISSIONER MC ALLISTER: I think that probably
15 that's great, I'm glad to hear that. And I think there
16 are probably other options just working across the
17 commissions to make sure that, again, as an
18 interconnection process that all systems have to go
19 through, and that seems like an obvious place to kind of
20 impose a reporting requirement.

21 It's not necessarily our job to do that, but
22 certainly working across the commissions maybe we can
23 move in that direction.

24 This is a key topic for public policy. I mean,
25 this is not just they're our customers kind of thing.

1 We have been promoting DG for decades, now, and as it
2 scales up it's very critical to know, just as it is on
3 the demand side as we talked about earlier, it's key to
4 know what people -- what systems are out there impacting
5 the electricity grid.

6 So, obviously, I'm very interested in solving
7 this problem in a structural way.

8 MR. KATAM: I was going to say, we do have data
9 collection on interconnection from the utilities, but it
10 has a pretty high sized threshold for reporting systems.
11 It starts reporting at 100 kilowatts. And this is a lot
12 on the residential and the smaller commercial so --

13 COMMISSIONER MC ALLISTER: Yeah, I think that
14 100 kW is kind of a symptom of the way -- of practice,
15 more than any -- the utilities' are still, on the
16 residential interconnection, the residential
17 installation, they still know that that customer has
18 solar and when it was interconnected.

19 So, I think there's a -- there is solid
20 information there to be obtained and we need to work on
21 how to get that done.

22 MR. KATAM: Yeah.

23 COMMISSIONER MC ALLISTER: So, and again, I'd
24 concur with the Chair. You know, if there are utility
25 representatives here that can comment on that, it would

1 be great to hear what their approach is going to be to
2 getting us that information.

3 MR. KATAM: The next slide. Again, just on the
4 PUC decision, what post-CSI did, you know, when that's
5 up and running we will use that because it does have a
6 potential, a lot of available information, so we look
7 forward to using that.

8 For the non-PV, in the combined heat and power,
9 we do get -- we've been able to receive regular reports
10 from large CHP plants. This comes to us under our Form
11 1304. These plants are largely industrial and mining
12 co-generation plants.

13 COMMISSIONER MC ALLISTER: Actually, can I jump
14 in again, just to finish that previous point.

15 MR. KATAM: Sure.

16 COMMISSIONER MC ALLISTER: So, we're talking
17 about a PUC decision that's going to cover the IOUs.
18 Where are we with getting net-metered information, net-
19 metering information from the POUs?

20 MR. KATAM: Oh, the POUs' report, kind of their
21 version of the CSI Program through our Renewables
22 Office, and we've seen -- you know, we collect that data
23 from them. So, that's how we track the POUs' places.

24 COMMISSIONER MC ALLISTER: Do we have any way
25 to -- so, in the case of the IOUs, we sort of saw that

1 there was a gap between the publicly-available data and
2 what they were reporting to the PUC. Is there any
3 comparable way to true up or calibrate the POU report
4 data?

5 MR. KATAM: Right now they're still going strong
6 so I don't think we're missing any kind of
7 installation --

8 COMMISSIONER MC ALLISTER: Oh, they're still
9 providing rebates for even the small residential?

10 MR. KATAM: So far, I think that's my sense.

11 COMMISSIONER MC ALLISTER: Okay.

12 MR. KATAM: But I can check back up on it.
13 Modifying our existing regulations would solve a lot of
14 problems because it applies to IOUs and POUs.

15 COMMISSIONER MC ALLISTER: Yeah.

16 MR. KATAM: And it doesn't distinguish between
17 net metering or anything like that. It's just whatever
18 the system is, whether it's a PV, micro-turbine, et
19 cetera, so --

20 COMMISSIONER MC ALLISTER: Right. Okay, thanks
21 a lot.

22 MR. KATAM: Yeah. The next slide.

23 I think the Chair had mentioned a little bit
24 earlier about some of the issues in the last forecast
25 about how some -- some of the changes we need to make to

1 kind of address differences in the forecasts we're
2 having for customers' IDG. One issue was on the
3 residential side to move away from these accepted
4 average rates and to using more actual retail rates.
5 And to facilitate that, we definitely needed some
6 residential load shape data.

7 We did request that through our forms and,
8 again, a few of the utilities have already submitted
9 that. So, we're looking to get the rest of them to
10 submit that data so we can continue making these
11 revisions. This also allows us to treat net metering in
12 more detail than we had in the past.

13 The next slide, please. Another change that we
14 made for this cycle was updating our PV (inaudible)
15 profiles. In prior cycles we relied on the New Solar
16 Homes calculator for that.

17 In this instance, the PUC had agreed to trade a
18 series of production profiles for them and we were able
19 to obtain the data through an NDA (phonetic), so we're
20 looking forward to using that.

21 COMMISSIONER MC ALLISTER: This is a shift from
22 modeled data to metered data, is that right?

23 MR. KATAM: Yeah, so in the New Solar Homes
24 Partnership calculator we're using more default, whereas
25 what we obtained from the PUC were estimated generation

1 data from the bulk of the CSI systems up to 2012. So,
2 it has a much more granular coverage than what we've
3 been using in the past.

4 COMMISSIONER MC ALLISTER: Okay, but it was
5 still model data or it was metered data?

6 MR. KATAM: It was similar data, but they did
7 calibrate to whatever metered data they had access to.

8 COMMISSIONER MC ALLISTER: Oh, okay, got it.

9 CHAIR WEISENMILLER: I know the ISO is also
10 trying to do the rooftop solar forecast, so it's good
11 that all three agencies try to coordinate on that.

12 MR. KATAM: Yeah, we've actually had quite a few
13 discussions already with the utilities on DG, than in
14 prior forecasts. So, hopefully, this will go a long
15 ways to resolving some of these issues.

16 The next thing of interest that has been --
17 energy storage. I know looking at the -- actually, the
18 program data, it's about 75 or so megawatts of storage
19 moving through -- that have been installed and moving
20 through the application process. And so, we're very
21 interested in accounting for the storage.

22 But, you know, we're not getting any luck in
23 getting good performance data on how these systems work.
24 But a PUC staffer has informed me that in the next
25 evaluation report for the program, they're going to take

1 a preliminary look at storage impacts. And so, when
2 that comes out we'll be looking into incorporating data
3 from that report.

4 COMMISSIONER MC ALLISTER: So, just one
5 clarification. So, just what's the role of the -- so,
6 it's my understanding, and just correct me if I'm wrong,
7 I guess, so you're trying to look at hourly or time --
8 time of use of impacts, or rate impacts in a more
9 granular level, like hour-to-hour, to gauge consumer
10 benefit or to gauge -- sort of what's the purpose of the
11 more detailed rates, the time of use, you know, and the
12 production profiles? You're mapping those together and
13 then to get to what end?

14 MR. KATAM: Well, in the past when we used --
15 set the average rate, I think it doesn't mimic,
16 replicate the private benefits of adopting PV. And so,
17 if we move to more actually -- or the tariffs, or the
18 actual rates people are displacing from the PV system
19 and buying from the utility that can certainly help
20 improve results. And then having production profiles
21 more mapped to our climate zones will help improve
22 results.

23 COMMISSIONER MC ALLISTER: But the end result
24 being to gauge what uptick is likely to be based on the
25 economic benefit to the customer.

1 MR. KATAM: Right.

2 COMMISSIONER MC ALLISTER: Okay. Now, I know
3 where we're headed.

4 MR. KATAM: The difficulty is the extent the
5 PUC's going to rate design, which --

6 COMMISSIONER MC ALLISTER: Yeah, exactly.

7 CHAIR WEISENMILLER: Yeah, presumably, that
8 third or fourth tier is being smoothed.

9 Just a couple questions I had is one, as part of
10 SCHIP are you also doing fuel cells? Again, assuming
11 they're being the meter.

12 MR. KATAM: Yeah, we do get historically
13 installation of fuel cells and we have a forecast for
14 commercial sector fuel cells co-gen, so that's where
15 that's coming from.

16 CHAIR WEISENMILLER: That's good. Now, we had a
17 workshop in December on storage programs, and I will
18 point you to the SMUD testimony there. My recollection
19 of what they said is there was no problems on control
20 technologies, although SMUD has done a lot of R&D on
21 storage, that they were not optimistic. At least, a lot
22 of the storage systems they put in didn't work, I guess
23 is a better way of putting it. So, that would be at
24 least good to look at that part.

25 And, finally, I was going to say on storage,

1 just to make your life even more complicated, some of
2 the demand response proposals actually include storage.
3 So, I think the one at Susan Kennedy's firm is about 50
4 megawatts. It basically does demand response by having
5 behind-the-meter storage. Which, when it's time to --
6 among other times, when it's time to curtail, they
7 basically pull out of storage, you know, that.

8 MR. KATAM: Yeah, there are other programs that
9 we've heard about, the same kind of ideas, and it just
10 complicates a lot of things but - -

11 CHAIR WEISENMILLER: Right. You're up for it,
12 yeah.

13 MR. KATAM: So, my question would be on that, I
14 haven't kept up with this completely, but are we
15 expecting that grid operators will be controlling the
16 storage in these -- in DR programs or --

17 CHAIR WEISENMILLER: Well, again, it gets to the
18 nature of the programs. So, in that specific example,
19 although I guess we could also do -- so, there's a
20 couple of ways you could solve storage, right. One way
21 of storage is to say, okay, I'm going to do a demand
22 response program, put together a number of buildings, do
23 some aggregation of those buildings, but also have the
24 storage there to really backup if I have to.

25 The other way is you can fill storage, and

1 people do, is to say demand charges are high or getting
2 higher, and so I will put the storage unit in behind the
3 meter, shift things around to reduce your rates. And
4 that would certainly just be controlled by the customer
5 or by the aggregate. You know, in that latter, you
6 know, rate thing would be controlled by the customer or
7 the aggregator. While the demand response programs of,
8 again, I keep calling Susan Kennedy, and I'm sure she's
9 not the only one that's actually using -- you know,
10 having at least very -- she's controlling it -- has a
11 contract with her to deliver the results. So,
12 indirectly, it's Edison really determining when the
13 thing operates.

14 COMMISSIONER MC ALLISTER: I mean, up to now in
15 California, since there hasn't been a robust demand
16 response market, really, the customer -- the second
17 model that the Chair just described, that's kind of the
18 one that people are free to do because, you know,
19 there's customer arbitrage, trying to keep their demand
20 charges down and make sure that they don't get a spike
21 that's going to cost them for the next 12 months, or
22 whatever.

23 So, the customers have been free to do that, but
24 the storage technology is just kind of catching up in a
25 way that allows them to do it at some scale. But at the

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1 same time, now, these markets for demand response
2 services are likely to crop up and be more real to
3 people. So, both of those things are going to be part
4 of our efforts going forward.

5 CHAIR WEISENMILLER: Yeah, and some of that
6 storage is more thermal than batteries.

7 COMMISSIONER MC ALLISTER: Yeah.

8 CHAIR WEISENMILLER: There's a couple of ways
9 you can deal with the demand charges, right.

10 MR. KATAM: The reason I brought that up is
11 it's -- the way it's operating is, I would think, going
12 to be key in determining whether this is considered a
13 load-modifying or a supply side.

14 And, you know, if it's load-modifying, it's
15 going through our forecast. If it's on the supply,
16 considered supply side, it's not.

17 COMMISSIONER MC ALLISTER: Yeah. And then, you
18 know, beyond that if we're talking broadly carbon
19 impacts, then when you charge or when you discharge
20 really is fundamental to understanding what the sources
21 that you're offsetting or not actually are. So that
22 storage throws a lot of different complications into the
23 determinations of what it's role's going to be or into
24 just the system in general.

25 CHAIR WEISENMILLER: I would say that's trying

1 to straighten out interconnections and some of the
2 interconnections have taken three years. And start
3 watching the tariff and the first question is are you a
4 load or a resource, and that stops storage. And, you
5 know, you go on to the next point where you ask if
6 you're a load or resource and it comes to total stop
7 again. We're making progress on that.

8 MR. KATAM: The next slide. So, one of the
9 things we want to do is work with the DOG to get better
10 data sharing, especially with the utilities and other
11 stakeholders that may have this kind of data, especially
12 with storage. We're getting the charge and discharge
13 profiles and how it all ties in with other forms of DG.

14 Next slide. There are some initiatives on the
15 way to the PUC, from the passage of AB 227 that calls
16 into a lot of things for the PUC to consider. Some of
17 the important things that would have an effect for the
18 DG forecast is the residential retail rate reform.
19 There's a couple of components for that. There's a
20 flattening of the tiers, imposing a fixed customer
21 charge. And also, look towards the time-of-use rates in
22 the 2018 to 2020 timeframe, I believe.

23 There's also the net metering redesign or how
24 that will change once the caps are met, or the 2017
25 timeframe for shifting from current net metering systems

1 to a different one.

2 There's also distribution resource planning
3 which will have a kind of granular focus on BG. A lot
4 of these things are still up in the air and kind of
5 going on the process of moving through the PUC. So,
6 we're going to take a look at how these things get
7 resolved and incorporate what we can in the timeframes
8 we have.

9 And there's also, for the PV, the expiration of
10 the tax credit.

11 These are some of the broader uncertainties that
12 I wanted to kind of mention up here. And one of the
13 things I was curious about was how do they see the
14 impacts of these things and BG adoption.
15 And, hopefully, we'll see something in the comments on
16 that.

17 CHAIR WEISENMILLER: Yeah, it would certainly be
18 very good to get comments on these specific issues.
19 And, hopefully, not just the utilities, but also some of
20 the consulting firms.

21 MR. KATAM: I think that was the --

22 COMMISSIONER MC ALLISTER: I think you laid
23 out -- those are exactly the uncertainties that are all
24 in here. Yeah, thanks very much.

25 MR. KATAM: Thank you.

1 MR. RHYNE: All right, so thank you very much.

2 And our next presenter is Lynn Marshall, who
3 will be talking about the approach we're using this year
4 to estimate retail electricity prices. So, Lynn.

5 MS. MARSHALL: Right, so I'm providing
6 projections of retail electric rates to the demand
7 forecast models.

8 Now, each of the major sector models,
9 residential, commercial, industrial, and also
10 transportation take as an input annual average
11 electricity rates. So, while we're certainly facing
12 some potential impacts from time of use changes and rate
13 redesign, we can't at this point with the models on an
14 annual time set, translate those effects into rates,
15 into the models.

16 So, I'm focusing on the effects, changes in
17 annual full load requirements and how they'll affect
18 average rates.

19 The next slide. So, to put this in the context
20 of a modeling system that Ivin discussed earlier, the
21 rate model takes as its input assumptions about economic
22 and demographic projects and, in particular household,
23 new construction. And then, from the production model
24 we're using the results from the common cases on
25 generation by technology mix, fuel burn, heat rates and

1 that, of course, is driven in part by the natural gas
2 price forecast.

3 But we're also going to be using a lot of the
4 information submitted on the IEPR supply forms. First
5 of all, we'll have resource balance information. And
6 then, within the demand forecast there's two forms which
7 request rate-related information. Revenue requirements
8 by major cost category and revenue allocation to
9 classes.

10 So, given where we are in the process, I won't
11 have a lot of this final information until the second
12 iteration of this process. In particular, the forms
13 that request revenue requirements by cost categories
14 aren't to be submitted until June 1st. So, I'll be
15 folding that information in, in June.

16 So, today I'm going to talk about the data
17 sources, modeling approach, and in particular I'll focus
18 on the IOU construct. For the POUs, I'll be following a
19 very similar methodology using the information that they
20 submit.

21 So, in the previous IEPR cycles we've been
22 developing rate projections using the E3 greenhouse gas
23 calculator that was developed for the CPUC. And
24 projecting rates really was not its primary purpose and
25 we found it really didn't work well within our modeling

1 system.

2 So, for this cycle we've developed an in-house
3 model. Essentially, a set of structural equations where
4 we can model each of the major elements of revenue
5 requirements at a more granular level. And we can
6 include in that allocation of revenue requirements to
7 functional categories. So, taking into account that
8 some revenue requirements are allocated to the
9 generation requirement, which is paid only by bundled
10 customers, and some are allocated to distribution, which
11 is paid by all customers.

12 And then within we include the demand forecast,
13 with a price elasticity adjustment, consistent with the
14 demand forecast model.

15 So, we're forecasting the IOUs and the POUs
16 separately and then we'll construct the weighted
17 average, and that will be the input map to the demand
18 forecast sector destinations, and that will be the input
19 into the demand forecast models.

20 The next slide. I'll talk about, go through the
21 approach for forecasting the various elements of revenue
22 requirements.

23 So, this is an overview of recent trends. And
24 here's PG&E's annual revenue requirements. Total is
25 currently about \$13 billion. And you can see purchase

1 power is usually the largest, definitely the most
2 volatile as it's driven by variation in natural gas
3 prices.

4 But you can also see the second largest
5 category, almost a third of rates is its distribution
6 revenue requirement.

7 And then a much smaller percentage, but also
8 growing rapidly, well, but hard to see, the
9 transportation element. That's increased from about 5
10 percent of the rate to 10 percent over the last five to
11 eight years, so that's another rapidly growing category.

12 The next slide. So, for Edison there's a
13 similar story. You will notice with the loss of SONGS,
14 so the purchase power element has increased a lot in the
15 last two years and also, now, the generation element of
16 the revenue requirement has decreased since they've
17 removed SONGS from their rate base.

18 And then, finally, I have San Diego. Similar
19 story, transportation is up to, now, about 15 percent of
20 their rate.

21 So, I'll talk about each of the major categories
22 and how we're going to model -- what data sources and
23 modeling.

24 So, the first category is fuel-in purchase
25 power. So, that includes natural gas purchased for

1 utility-owned generation and other fuel purchase. And
2 then all their purchase power, including renewables,
3 conventional and greenhouse gas costs.

4 So, calculating the net energy per load, taking
5 into account utility-owned generation, and pricing that
6 using the CPUC avoided cost approach of using a heat
7 rate applied to gas prices, with the carbon cost
8 adjustment.

9 For the renewables element of purchase power,
10 using the IOUs' August 2014 reports on cost
11 quantification reports, which report expected generation
12 and all the current cost of renewables under contract.
13 So then, the model internally calculates the additional
14 renewables needed to be procured to meet their target,
15 and the additional market purchases needed to meet their
16 net energy per load requirement.

17 Okay, so next slide. So, for the overview of
18 the general rate case element. So, this is, for PG&E,
19 it includes the recently adopted general rate case. So,
20 what you can notice about this is that the operating and
21 maintenance costs relatively small. There's a lot of
22 overhead, taxes, administrative cost.

23 But the largest portion is association with the
24 rate base, right. So, we have depreciation expense,
25 which is the return of capital on additions, and we have

1 the rate of return. The weighted cost of capital is
2 currently around 8 percent for all the utilities. In
3 this low interest rate environment, that's probably not
4 going to increase for several years.

5 And for PG&E, about 72 percent of that is
6 associated with distribution assets. So, distribution
7 rate base is, I think, an important element of this
8 forecast to pay attention to.

9 So, the next slide. Think of the traditional
10 drivers of distribution infrastructure growth, new
11 customers, growth in peak demand, interconnections, and
12 then a certain amount of ongoing maintenance and
13 reliability upgrades that aren't driven by -- so much by
14 demand growth.

15 But, of course, we're at this really significant
16 juncture here for distribution infrastructure
17 investment. We won't see the resource plans until July,
18 but I think we maybe had a foreshadowing of what those
19 will look like with some proposals by PG&E and San Diego
20 to invest in infrastructure to support electric vehicle
21 integration. And those would become, essentially, part
22 of the distribution rate base, potentially.

23 So, how are we going to forecast that? We've
24 started a -- we have a technical support contract just
25 starting that's going to have two elements. It's going

1 to develop forecasting methodologies that we can use
2 within our process, if we take advantage of some of our
3 econ demo drivers, to forecast the portion of
4 distribution infrastructure growth driven by demand and
5 customer growth.

6 And then, also, in conjunction with some other
7 work that we have a pilot study going on, looking at
8 cost-effective strategies for integrating distributed
9 resources. So, we'll develop some scenarios to look at
10 how this distribution infrastructure may unfold under
11 various cases.

12 So, we're hoping by -- so, according to the
13 schedule, by next summer we should at least have some
14 initial results on that, that we can incorporate.

15 Okay, the next slide. So, utility-owned
16 generation, pretty straight forward. So, we'll use the
17 historic data calibrated to our production simulation
18 model output for the various common cases. And then use
19 historic data to forecast -- we project estimates for
20 ongoing O&M and maintenance costs.

21 Okay, and then next, transmission costs. So,
22 most of our transmission-associated investment is under
23 the auspices of the CAL-ISO's transmission planning
24 process. And as part of that, they do prepare estimates
25 of the effect on the transmission access charge.

1 So, go to the next slide. So, this shows the
2 forecast from their 2013 and 2014 transmission planning
3 process. They're expected to have revised estimates of
4 this from their draft 2014-2015 transmission plan. That
5 should be available in April, so we'll incorporate those
6 estimates.

7 And then, as part of our tech support contract
8 we're also going to evaluate the transmission
9 forecasting methodologies for things like the
10 infrastructure growth, and how that might interact with
11 expanded penetration of distributed resources and
12 renewables.

13 Okay, and then we can go on to the common cases.
14 You've seen this before, but the basic story for rates
15 is you have -- in the high case we have high demand,
16 chief staff, and in the low case we have weak econ demo,
17 low demand, and high natural gas prices.

18 So, on the next slide. These are very
19 preliminary results. I don't have all of the results of
20 the recent production simulations models folded in, yet.
21 But they're indicative of I think the results we'll see.

22 So, as you saw with Chris's econ demo scenarios,
23 there is more upside in the high cases, so we have more
24 potential impacts on rates in the high case. And that's
25 also true of the natural gas and the carbon prices we're

1 using. So, the variation's about one-and-half cents on
2 the upside and only one cent down on the low side. And
3 I ran this for all three of the IOUs.

4 So, you can show Edison. We lost Edison.
5 There's a similar result -- there's a two-cent impact in
6 San Diego on the upside, a larger impact there.

7 So, okay, do you have any -- so questions?

8 CHAIR WEISENMILLER: Yeah, I have a couple. I
9 think we both do.

10 So, the first question is in terms of the
11 utility current financial situation, do any of them have
12 significant financial over or under questions?

13 MS. MARSHALL: Well, it's interesting when --
14 so, San Diego has submitted their general rate case and
15 they requested an increase, but there actually would
16 not -- even if they got the full increase which, of
17 course, they won't.

18 CHAIR WEISENMILLER: They won't, yeah.

19 MS. MARSHALL: It would be a very -- I think,
20 actually, it would be a rate decrease because of the
21 balancing account effects.

22 CHAIR WEISENMILLER: Yes.

23 MS. MARSHALL: So, there seems to be an overage
24 there. That's the only major one I can think of.

25 CHAIR WEISENMILLER: Yeah, I remember when I was

1 doing retail rate forecasts that sometimes they overrun
2 their collections.

3 MS. MARSHALL: Yes.

4 CHAIR WEISENMILLER: Real significant. The
5 other thing was I was obviously looking at pending or
6 projected rate cases.

7 MS. MARSHALL: Right.

8 CHAIR WEISENMILLER: Others, you've indicated,
9 typically, if you look at the utility projections they
10 assume 100 percent recovery. And I think the PUC
11 informally uses more like 50 percent of --

12 MS. MARSHALL: Yeah, so right now, so in the
13 Edison rate case, the record is closed, so we probably
14 get a decision this year. But I'm not making any
15 adjustment for that because -- so, Edison requested an
16 increase. So, ORA have proposed decreases. So, I think
17 at this point I'll just leave it as it is.

18 CHAIR WEISENMILLER: Well, that's typical that
19 the utility asks for an increase and then -- it's about
20 half.

21 MS. MARSHALL: Well, there might be both
22 increases, and then you can split the difference. So, I
23 think splitting the difference is that I leave nothing
24 changed until I get it.

25 In San Diego, I think the intervenor testimony

1 briefs will be available in April and May, and so I may
2 be able to fold that in in terms of a likely effect on
3 their rates.

4 CHAIR WEISENMILLER: Yeah, certainly, if you can
5 talk to the folks in the Energy Commission on what
6 they're expecting on the stuff they're revising, their
7 internal forecasts.

8 MS. MARSHALL: Okay.

9 CHAIR WEISENMILLER: Anyway, it gives us another
10 data point. At least, again, as we try to collaborate,
11 the more we're consistent, is better.

12 MS. MARSHALL: Yes.

13 CHAIR WEISENMILLER: The other one is in terms
14 of just thinking -- I mean, do you go to the next step
15 and say this is what it means for the residential rate
16 class, as opposed to the industrial rate class based
17 upon however the Commission now does revenue allocation,
18 as opposed to rate -- I'm not talking about rate design,
19 but revenue allocation.

20 MS. MARSHALL: Yeah, so right now I'm using the
21 current factors for revenue allocation and rate design.
22 But in the way the model's set up that's an annual
23 factor. So, to the extent of decisions, or some -- or
24 you could do a sensitivity on how those revenue
25 allocations could impact. You know, if we converge

1 closer to marginal costs for residential customers how
2 would that -- so, that's definitely a case that some --
3 an exploratory analysis that could be done.

4 CHAIR WEISENMILLER: Okay.

5 MS. MARSHALL: Yeah.

6 COMMISSIONER MC ALLISTER: Let's see, so on the
7 transmission stuff, I guess you're -- yeah, so you're
8 working closely, I imagine, with the ISO to kind of keep
9 a handle on that?

10 MS. MARSHALL: Yeah, they'll be providing --
11 they actually do a little -- a transmission access
12 charge forecast and they -- for each of the approved
13 projects. And they're actually in the process of
14 revising that model. So, hopefully, in the next month
15 or two I'll be able to incorporate that.

16 And it's nice because it's a very transparent
17 calculation of what cost assumption they use, and all
18 the various parameters they use to calculate revenue.
19 So, we could model -- one of the things we could as part
20 of the tech support work is to evaluate all of the other
21 assumptions and see how that -- to be consistent with
22 our own forecasting approach.

23 COMMISSIONER MC ALLISTER: Yeah, I mean I think
24 that would be good due diligence, so just really
25 clarifying that that's happening.

1 So, the rate cases are generally every two
2 years, right. So, how do you -- so, you have this sort
3 of near-term onslaught of information to sort of figure
4 out, okay, where is our starting point in the near-term.
5 But could you talk about, a little bit, about what
6 happens in those middle years and the later years in
7 terms of where your assumptions kind of pan out?

8 MS. MARSHALL: Right, so I'm using -- so, I have
9 recent -- PG&E, I have an adopted value through 2016.

10 COMMISSIONER MC ALLISTER: Right.

11 MS. MARSHALL: I don't have that for Edison or
12 San Diego. So, I'm assuming rate -- to develop these
13 initial scenarios, I assume 6 percent rate base growth,
14 which is kind of a recent trend.

15 So, we have to make some estimate to come up
16 with something like a reasonable forecast. And as we
17 get into this, I think part of our -- especially, with
18 distribution tech support analysis, is to really explore
19 how the proposals that are out there, and strategies for
20 integrating distributed resources could impact that.
21 So, those are the types of scenarios we want to --

22 COMMISSIONER MC ALLISTER: Yeah, so I agree with
23 that. I think at the energy that the utilities can
24 spread across their rate base changes, at these
25 different scenarios you're going to end up with

1 potentially, you know, reasonably different results over
2 time. So, it's good to see -- it's good to hear that
3 you have sort of a yearly tweak that you can make.

4 MS. MARSHALL: Yes.

5 COMMISSIONER MC ALLISTER: So, that helps. So,
6 I'm trying to get a sense of what the long-term vision
7 is for this and it sounds like you've got a nice way to
8 get from where we are now to where we may be going, and
9 explore scenarios.

10 So, two other questions. One, where are we --
11 it seems like this analysis is really heavily dependent
12 on IOU information and working with the PUC on that, and
13 the formal rate case progress, I guess.

14 Where are we with the POUs? I would want to
15 encourage us to dig into at least the big ones, do
16 similar forecasts for them.

17 MS. MARSHALL: Yeah, I intend to. And because
18 this is a new model and there's just a plethora of data
19 available for the IOUs, I really focused on that, first.
20 And then this spring, as we get the demand supply forms,
21 and rate information from the POUs, then I'm going to
22 focus on them. And I will be using their information as
23 much as possible.

24 COMMISSIONER MC ALLISTER: So, we have the
25 platform to get that information?

1 MS. MARSHALL: Yeah, those are requested. So,
2 we have the demands -- on the demand forms we're
3 requesting, we have some rate-specific information which
4 requests costs, procurement costs, capital investment
5 plans, generation and transmission, fuel expenses. So,
6 if they complete the forms, then that will be very
7 useful. In particular, a historic data so that I can
8 calibrate our forecast methodologies, especially for the
9 larger one, to their specific rate characteristics.

10 COMMISSIONER MC ALLISTER: Okay, great. And
11 then I have just a clarifying question on your slide 9,
12 the PG&E general rate case. I just don't understand the
13 percentages there and what you're trying to convey with
14 that?

15 MS. MARSHALL: Okay, so this isn't a graph of
16 the rate base. So, you're right, that's not 70 percent
17 of that. But I'm saying so that -- those top two
18 layers, okay, those are the part of their total general
19 rate case revenue requirement associated with earnings
20 on the rate that's two parts associated with capital
21 investment. There's the earnings on the rate base and
22 there's the depreciation expense, which is a return of
23 principal.

24 So, of that, that total top two bar area, 72
25 percent of that is associated with distribution assets

1 as opposed to generation assets.

2 COMMISSIONER MC ALLISTER: Oh, okay.

3 MS. MARSHALL: So the point is here, when you
4 want to look at projecting general rate case revenue
5 requirements, you really want to focus on distribution
6 infrastructure.

7 COMMISSIONER MC ALLISTER: Yeah, yeah. I guess
8 I'm just not -- so the percentages there, over to the
9 right, don't seem to match up to the size of the wedges.

10 MS. MARSHALL: Oh, that. Okay, annual cost
11 element -- well, look at the top bar, annual average
12 growth rate.

13 COMMISSIONER MC ALLISTER: Oh, the growth rate,
14 I'm sorry.

15 MS. MARSHALL: Yeah.

16 COMMISSIONER MC ALLISTER: Okay, my bad. Okay,
17 got it. So, the scale's in the side of the bars and the
18 growth rates are the other side

19 MS. MARSHALL: Okay.

20 COMMISSIONER MC ALLISTER: Okay, got it, thanks.
21 Okay, that's all I have. Okay, great. Thanks, Lynn.

22 MR. RHYNE: All right, thank you very much.

23 And for our next presentation, Leon Braithwaite
24 will be talking about the North American Natural Gas
25 Model. Leon.

1 MR. BRAITHWAITE: Thank you, Ivin.

2 Commissioners, good afternoon. My name is Leon
3 Braithwaite, if you didn't know that before. I work in
4 the Supply Analysis Office, upstairs.

5 The next slide, please, Ivin. This afternoon I
6 will be speaking about two items. Item number one is
7 the key elements of our natural gas model. That is
8 known as the North American Market Gas Trade Model.
9 You'll hear me refer to that as NAMGAS.

10 The second item that I will be talking about are
11 common cases, at least from the perspective of the
12 natural gas model, and that we are doing for IEPR 2015.

13 The next slide, please, Ivin. But before I do
14 that, before I get deeply into what we are going to do
15 this afternoon, I just want to take a step back and
16 explain to you how we got to where we are today.

17 The NAMGAS Model is created in what we call the
18 market bill of platform. It's a platform that we have
19 leased from Deloitte Market Point. They are the owner
20 of this platform and we have been leasing this
21 particular platform for quite a number of years. We
22 then construct our model within that platform.

23 In the 2013 IEPR, we decided to take the World
24 Gas Trade Model, which was the model that we previously
25 ran here at the Commission, and narrow the focus to only

1 North America. To do that, we had to do several things.

2 Number one, we reconstructed the California
3 portion of the model so that we can more focus on
4 California. Because here we are in California, we live
5 here and want to know what's going on, at least in the
6 world of natural gas. We removed all non-North American
7 structure.

8 And, of course, natural gas being an
9 international commodity, we had to (inaudible) some sort
10 of north or some sort of structure to simulate the
11 international portion of the natural gas market.

12 We also added -- so, as a result, we added some
13 functional notes for the import and export of NRG. We
14 added some structure to represent the natural gas demand
15 in the transportation section. This we had not done
16 previous to 2013, but now we do have individual demand
17 use that will take care of demand in transportation.

18 And we intend to maintain this structure -- to
19 maintain this structure for our 2015 work that we are
20 now engaging in.

21 The next slide, please. So, if I can just give
22 you a simplified view of the model. What we do have is
23 the following. We have natural gas supply basins
24 connected to interstate pipelines and intrastate
25 pipelines, and that is connected to demand centers.

1 The model, once we upload our data, the model
2 then is arranged between three main components. At the
3 end of the day, we will produce amounts of supply,
4 demand, and HUB prices. We then use those HUB prices to
5 generate end-use prices. This process, this procedure
6 is an offline procedure. This is not done inside the
7 model. All of our end-use work (inaudible) -- use is
8 done outside the model.

9 The next slide, please. So, if you can look at
10 what is going on in our first component, the major
11 component, which is the supply basin, we have two things
12 that we need in each of these basins. We need a
13 resource assessment. That resource assessment tells us
14 how much natural gas or how much natural reserve is
15 available and how much of it is recoverable.

16 But in order to recover this commodity, we must
17 have some sort of extraction cost. So, this comes into
18 play as a resource cost.

19 We put these two items together to come up with
20 what is known as our natural gas supply cost curve,
21 which is shown on the next slide. Ivin, please.

22 So, if we go, if you look at this curve and you
23 start from your far left, and go to the right, this
24 started in 2007. We put the schematic starting in 2007,
25 the blue curve. The red curve is 2011. The green, I

1 would say is 2013. And that purple, odd-looking color,
2 is the 2015 curve.

3 Now, I just want to be clear about something.
4 This particular curve doesn't appear anywhere in our
5 model. What you are looking at is an aggregation of
6 somewhere between 300 and 400 gas supply curves to
7 produce this curve that you are seeing.

8 Well, what is evidence here is that the curve is
9 shifting to the right. What that means is that we are
10 having more gas available at lower cost. This is the
11 effect of technology. And as you know, there is a lot
12 of discussion about this in the press, in terms of the
13 development of shale resources. The shale resources are
14 contributing to this phenomenon we're seeing in these
15 curves, more gas available at lower cost.

16 And we must remember, also, during this time
17 period we are producing somewhere between 20 and 23 PCF
18 of natural gas, but yet the curve continues to shift to
19 the right. More gas, at lower cost.

20 The next slide, please, Ivin. In the demand
21 centers we have disaggregated our demand centers into
22 five sectors, residential, commercial, industrial, port
23 generation, and transportation. Now, each one of these
24 sectors needs some starting in demands. And please
25 underline the word "starting", because they are just

1 starting demands.

2 So, how we do this, how we get these starting
3 demands is through some sort of regression analysis. We
4 have regression equations for each one of the sectors.
5 We go through this process with the independent grid,
6 which are listed here on our slides.

7 For example, industrial sector, our independent
8 grid was recent historical demand for natural gas,
9 natural gas prices, core prices, industrial product and
10 core weather. These independent grid is going to
11 generate our starting demands that we will input in our
12 model. This process is also done offline.

13 The next slide, please. On this slide, we see
14 the independent variables for core generation. Core
15 generation gets a lot of attention and we do see quite a
16 (inaudible) -- grid.

17 The independent grid was there, our two-time
18 electric generation, weather, natural gas price, load
19 price, renewable electrical generation and core price.
20 These independent variables is what we use to get our
21 starting demand in the core generation sector.

22 We also have independent variables that we use
23 to get the starting demand in the transportation sector.
24 Now, this is only applied outside California because for
25 inside California, our colleagues in the Transportation

1 Department will provide us with the necessary values to
2 run our model.

3 We also have the elasticities that we use in
4 each one of those sectors. Each sector has its own
5 elasticity.

6 So what happens is the price is determined in
7 the model, where demand will fluctuate depending on the
8 elasticity that we input. So at the end of the day, we
9 will get out a demand that is different from what you
10 started with because of the fact prices change within
11 the model and it changes the demand within the model.
12 It's the general model dynamic every -- maybe 20,000
13 times, maybe 40,000 times before we can get our final
14 solution.

15 The next slide, please, Ivin. So these are the
16 three common cases that we use to (inaudible) -- as a
17 part of this process that we are engaging in. We will
18 have a mid-energy demand case. We can call that our
19 reference case. We have a low-energy demand case and we
20 have a high-energy demand case.

21 What we are attempting to do here is to try to
22 put some boundaries around the uncertainties in prices,
23 in supply and in demand. Boundaries, we are trying to
24 establish a zone of uncertainty, if you will.

25 The next slide, please, Ivin. So in the mid-

1 energy demand case, our initial starting demand in the
2 United States, in 2012, we have about 22.1 PCF. For
3 generation we have 7.7 PCF. In 2030, in the United
4 States, it's about 26.2 PCF. For generation, it's about
5 10.6 PCF. Remember these are starting demands.
6 At the end of the day these are going to look a little
7 bit different because of the elasticity contained in the
8 model.

9 We are going to have some core conversions.
10 Right now we are talking about 50 gigawatt. That may
11 change as we go through our process. That's where we
12 begin in 2014.

13 The Renewable Portfolio Standards, California
14 released its environment on time, where right now
15 assuming a five-year delay in other states, we are
16 hoping to get some feedback from our stakeholders on
17 this assumption. And we will certainly consider any
18 input that we may get in regards to that.

19 CHAIR WEISENMILLER: Yeah, can I ask a question?
20 The question I have for you, Leon, is obviously the
21 Obama Clean Energy Plan, which gets to reducing coal and
22 increasing renewables, among other things, and they
23 have, EPS, very specific plans for every state.

24 MR. BRAITHWAITE: Yes.

25 CHAIR WEISENMILLER: There's a lot of

1 controversy on those, but I was just trying to figure
2 out in terms of our assumptions on either coal
3 conversion or renewables how that tracked back to the
4 Obama or EPA plan?

5 MR. BRAITHWAITE: Well, Commissioner, right now
6 we are going through our analysis on this very issue.
7 And as I said, this coal conversion number that we have
8 here, where this is just our first level estimate. We
9 are expecting this number actually will probably rise as
10 we go through our forecast cycle.

11 But really, at the end of the day, this will be
12 50, 60 gigawatts. It just depends on what our analysis
13 shows at the end of the day. But we are taking those
14 things that you're raising into consideration as we go
15 through this analysis.

16 CHAIR WEISENMILLER: But again, EPA has said,
17 just in terms of your timeline, keeping in perspective
18 that this summer they will come out with a final plan.

19 MR. BRAITHWAITE: Sure.

20 CHAIR WEISENMILLER: Now, whether that's July or
21 September, you know, it may have some implications for
22 us. At least there's some doubt on precisely when in
23 the summer.

24 But, you know, generally we've been very
25 supportive of that plan, particularly in the California

1 context. But again, looking out across the nation,
2 there's at least a data point to give a lot of
3 consideration to.

4 MR. BRAITHWAITE: Once EPA comes out with this
5 plan, Commissioner, we do plan to take that plan, go
6 through it, and see how it affects our work. And
7 wherever it's necessary for us to make changes and
8 incorporate the EPA direction, we will incorporate that
9 into our work.

10 CHAIR WEISENMILLER: Okay, that's good. And
11 Melissa has been pretty active on that. In fact, she
12 was just in Denver, Monday, on the sort of response.
13 So, the more you can forward her back into this, the
14 easier it will be for you to get on top of what's in the
15 plan.

16 MR. BRAITHWAITE: I most certainly will,
17 Commissioner.

18 Continuing with the mid-energy demand case, we
19 have two categories of natural gas reserves in the
20 model. One we call the pooled reserve, the other we
21 call the potential.

22 The pooled reserves are those reserves that only
23 operational maintenance cost is required for production.

24 The potential reserves, on the other hand, both
25 capital costs and operational maintenance costs are

1 required for production.

2 At this point in time we are looking at about
3 360 PCF in the United States of pooled reserves in our
4 model. On the potential, at \$5.00, we are looking at
5 about 1,376 PCF.

6 We also have some investment parameters for
7 resources, about 12.2 percent. On the pipelines it's
8 about 8.4 percent, and so on.

9 We also have something called a backstop
10 technology and I just want to explain that for one
11 second. A backstop technology is the following, it is
12 unspecified. It's not anything that you would
13 recognize, it's just unspecified. What happens there,
14 theoretically, is if prices within the model rises to
15 \$9.00, and if it's sustained, then this new technology
16 would bring in the energy units that will replace the
17 natural gas in the world of our model. That's what our
18 backstop is. So, right now it's unspecified at \$9.00
19 per million -- I'm sorry, per thousand cubic feet.

20 We also have a technology factor. Right now, we
21 are assuming technology will increase at about a one
22 percent rate.

23 The next slide, please. On the low-energy
24 demand case we are looking at core conversion of 80
25 gigawatts of coal-fired generation. And, of course, as

1 the Commissioner rightfully pointed out, we will be
2 taking into consideration the EPA's work that is
3 projected to be out in the summer. We will still be
4 taking that into consideration as we continue to
5 construct these cases.

6 We are assuming a high economic growth, around
7 3.5 percent. We are assuming on meeting the RPS
8 standards all over the United States, except in
9 California. In all cases, California will be meeting
10 its RPS standards.

11 NRG, we are looking at some NRG exports. That
12 is still under consideration. That may change as we go
13 through this process.

14 And we will take -- this particular scenario, we
15 will take this in a high-cost environment. All other
16 things being equal, a high-cost environment will tend to
17 shrink the resource bases.

18 The next slide, please. In a high-energy demand
19 case, we are talking about converting about one gigawatt
20 of coal-fired at this time. As I said before, we will
21 be taking into consideration EPA's work as we finalize
22 these numbers.

23 We assume that all states meet the RPS targets
24 on time. Economic growth will limp along at about two
25 percent. We will assume technology grows about two and

1 a half percent, expanding the resource base.

2 We're also going to put this scenario into our
3 low-cost environment. All other things being equal,
4 this will also tend to expand our resource base, our
5 natural gas resource base.

6 The next slide, please, Ivin. The last thing I
7 want to talk about is the development of the end-use HUB
8 prices. Now, this is done outside the model, not
9 inside. So, what happens is once our model is -- once
10 you have gotten a nice solution to our case, we will
11 extract the HUB prices from the model. We'll then, in a
12 spreadsheet, we will get the sheet to what it costs to
13 move the gas from one of the HUBs, which one of those
14 HUBs we choose, whether it's PG&E HUB, or Merlin HUB or
15 SoCal HUB. We see what it costs to move the natural gas
16 from that HUB to (inaudible) --

17 Once we get a transportation cost, we will add
18 the transportation cost to the HUB price and we'll get
19 an end-use price.

20 Now, that's a very brief explanation of what
21 happens. It's a little more complex than that. My
22 colleague will continue. Peter can probably tell you a
23 lot more about this.

24 But this is essentially the process that we go
25 through in terms of getting our end-use prices.

1 The next slide, please, Ivin. This takes me to
2 the end of our presentation. Before I end, I just want
3 to say the following. We are seeking input in nearly
4 all of these assumptions. If our stakeholders, or
5 anyone else, has any input to what we are doing here, we
6 would love to hear from them.

7 With that, I'll end my presentation and I'll
8 take any questions that you may have on the dais. Thank
9 you very much.

10 CHAIR WEISENMILLER: All right, that's good. As
11 I said, I think my major point is, yeah, EPA.

12 MR. BRAITHWAITE: Definitely.

13 COMMISSIONER MC ALLISTER: I don't have any
14 questions. Thanks.

15 MR. BRAITHWAITE: Thank you very much,
16 Commissioner.

17 MR. RHYNE: Okay, so we've reached the point in
18 the day where we can open the floor to public comment.
19 We'll begin with folks here in the room. If you have
20 questions or comments, I don't think we've collected any
21 blue cards yet today. I'll ask, if you have a question
22 or comment, you can come to the center dais, the center
23 podium there. Please identify yourself, identify your
24 affiliation, and then you can make your comments.

25 I'll ask everyone to keep them relatively brief

1 and succinct.

2 So, we'll first open it here in the room. Once
3 all the speakers in the room are done, we'll open the
4 questions and comments to folks who are participating
5 online.

6 So at this time, if there are people in the room
7 with questions or comments, please feel free to approach
8 the podium.

9 MR. ALVAREZ: Good afternoon, Commissioners,
10 Manuel Alvarez with Southern California Edison. One
11 just quick question for Chris. On the Moody's and the
12 Global Insight data, if I recall you use the averages of
13 the figures that come out of those documents or -- I can
14 follow up later, if necessary.

15 MR. KAVALEC: I'm not sure what you mean, the
16 average of what?

17 MR. ALVAREZ: The average of the data that you
18 get from Moody's and Global Insight, do they give you
19 just a single point, or just a single point of
20 information? Or I thought there was a series of data
21 that was filed.

22 MR. KAVALEC: Yeah, so they provide scenarios.
23 So, we pull out the scenarios. We don't do any
24 averaging between different scenarios.

25 MR. ALVAREZ: Okay, that's fine. And I guess

1 the other question I just wanted to raise was the
2 question that Commissioners brought up, about the solar
3 information.

4 MR. KAVALEC: Yeah.

5 MR. ALVAREZ: We're aware of the gap between the
6 data and we're trying to work on that right now.

7 COMMISSIONER MC ALLISTER: Okay.

8 MR. ALVAREZ: As of today, I haven't heard any
9 real concerns about that. And if there is, I'll let you
10 know, the availability of that information.

11 COMMISSIONER MC ALLISTER: Yeah, I mean I
12 have -- I've heard some concerns just like, boy, it's
13 hard to dig in and get that information. But I don't --
14 the quality of the content, I haven't heard anything.

15 MR. ALVAREZ: Yeah, every time I deal with data,
16 I deal with it in multiple levels from the conceptual
17 are to the actual, practical collection and the filing
18 of that information, and the storage, and where it
19 resides within the company.

20 COMMISSIONER MC ALLISTER: Yeah.

21 MR. ALVAREZ: So, thank you.

22 COMMISSIONER MC ALLISTER: Okay, thanks.

23 MR. VONDER: Okay, hello, Tim Vonder from San
24 Diego Gas & Electric. Thank you for the presentation.
25 It was informative.

1 What we -- so, maybe through dissemination
2 through the DOG would be the inputs that you're going to
3 be using to do your forecast in kind of a laid out form,
4 so that we can see them?

5 For example, we'd be interested in knowing, you
6 know, the specific releases and dates of each of the
7 Moody's, and Global Insight scenarios, so that we could
8 put the same data down as you're using, and maybe
9 compare it to what we're going to be using.

10 So, the detail of that nature, if you could kind
11 of make that available through DOG, to the IOUs, then we
12 can see that.

13 And as you develop the scenarios on the input
14 for DG and EV, and so forth, if you could -- when you
15 fill out forms, like we fill out, if we could provide
16 more detail so that those assumptions can be documented.

17 Because when we -- after your forecast is
18 finally adopted, we use your forecast for many different
19 reasons and sometimes we need to get at the detail
20 that's in there, and if it's documented all in one place
21 that would help a lot.

22 And we'll be following up with written comments,
23 you know, some of the things I'm saying right now. And
24 I think that's about it for right now.

25 MR. KAVALEC: Well, thanks for the additional

1 work you're making us do.

2 (Laughter)

3 MR. VONDER: Sorry.

4 MS. BIRD: Thank you, Commissioners and staff
5 for the very helpful presentation. I'm Katherine Bird,
6 from PG&E.

7 And I wanted to respond, specifically, to the
8 questions of Commissioner McAllister, and his concern on
9 the difference in the PV forecast. And we're really
10 interested in working together with the staff on truing
11 that up, perhaps through a DOG process. And,
12 particularly, we're interested in discussing the cost
13 assumptions because some of the CSI-based cost
14 assumptions really may not be accurate anymore.

15 Also, I think our teams are interested in
16 perhaps transitioning from a payback approach, in terms
17 of cost to, given the current environment, where so many
18 leases are available, or low-cost loans, or no-cost
19 implementation. So, our team would really like to work
20 together on truing those forecasts up and getting
21 closer.

22 And I might, now that we have actually submitted
23 our form on the PV interconnection data, already and,
24 hopefully, that's helpful.

25 MR. KAVALEC: Yeah, that's helpful and thanks

1 for submitting that data.

2 MS. BIRD: Okay, great. And then, you know, in
3 terms of what other data's not being submitted on your
4 form, that we're also going to submit through the CPUC
5 process, certainly we'd be happy to look at integrating
6 that.

7 COMMISSIONER MC ALLISTER: Great. So, I'm all
8 about, definitely in support of looking at better ways
9 to model adoption and what the true drivers of that are.
10 And, obviously, customers respond to the information
11 they have, and PPAs are a key part of the marketplace in
12 that way. Absolutely supportive of that.

13 And I guess I was really asking just about the
14 accounting problem of how many systems there are, and
15 what their capacity is, and when they were
16 interconnected to PG&E's grid, and concern that there
17 was a discrepancy, seemingly, between two sets of data
18 that PG&E -- that both of which PG&E generates, or at
19 least plays a key role in. So, one being the CSI, you
20 know, participation, and the other being what we -- you
21 know, a larger group of installations that's being
22 reported to the CPUC and those two things not adding up.

23 MS. BIRD: Well, I think part of the problem,
24 and I'm not the subject expert, you know, we had a
25 discussion with Melanie McCutchin (phonetic), and your

1 staff, earlier.

2 COMMISSIONER MC ALLISTER: Yeah.

3 MS. BIRD: But I think part of the problem is
4 that the CSI data doesn't capture all the market. And
5 so, the new form that the staff has requested is
6 actually more comprehensive and should address part of
7 that.

8 COMMISSIONER MC ALLISTER: And so that would
9 have the right -- that would reflect the numbers that
10 are being submitted globally, the global numbers that
11 are being submitted to the PUC, so --

12 MR. KAVALEC: Yeah, so that's coming straight
13 from their interconnection, instead of the program.

14 COMMISSIONER MC ALLISTER: Yeah, okay. So, I
15 have an interest in just having there be a long-term
16 solution to tracking behind-the-meter installations of
17 all technologies, not just solar.

18 MS. BIRD: Right.

19 COMMISSIONER MC ALLISTER: And just having that
20 all be a matter of course and not having to have this
21 kind of a discussion again. And I think we're headed
22 there at the PUC. And with that kind of thing, too, I
23 just wanted to raise the flag until it actually is in
24 place.

25 MS. BIRD: Right, and I think we, too, support

1 that because we're concerned about the discrepancy. So,
2 thank you so much.

3 COMMISSIONER MC ALLISTER: Yeah, thank you.

4 MR. CHAUDHURY: Good evening, Commissioners and
5 the staff. I'm Sharim Chaudhury. I work for the
6 Southern California Gas Company and I have a question
7 for Chris. And Chris, Commissioner McAllister asked you
8 earlier about the granularity of the demand forecast.
9 And you had mentioned that the basic model that you have
10 is going to spew out for the forecast at the county
11 level. And maybe outside your model, somehow we could
12 take your forecast and provide more granularity to it.

13 So, is that some of what you are thinking of for
14 the 2015 IEPR? I'm trying to understand what the demand
15 forecast will be out, what the final forecast would look
16 like.

17 MR. KAVALEC: Yeah, so in terms of further
18 disaggregation beyond our climate zones, that's
19 something we're going to have to take up when we're done
20 with the forecast. There's no firm plan on how,
21 specifically, we're going to further disaggregate, yet.

22 MR. CHAUDHURY: Okay, thank you.

23 CHAIR WEISENMILLER: But again, one -- two
24 issues that Chris is dealing with on that further
25 disaggregation, and one is as far as we can tell, on our

1 econ demo forecast, uniform across the State on a
2 disaggregated basis has sort of become impossible. So,
3 certainly, if you have solutions there, that would be
4 great.

5 The thing, which I think ultimately on the
6 disaggregation, the more disaggregated data we're
7 getting from you, the easier it is to benchmark between
8 that.

9 MR. CHAUDHURY: Yeah, I sympathize with Chris
10 because as a modeler, you know, I know how difficult it
11 is to get the driver, the economic and demographic
12 driver, at a very disaggregated level and the quality of
13 that. So, thank you.

14 MR. KAVALEC: So, Sharim, do you at all attempt
15 to do forecasts below the service territory level for
16 SoCal Gas?

17 MR. CHAUDHURY: No, currently we do at the
18 service territory level, okay, we don't do it at county
19 level, but that's something we are thinking about.

20 MR. KAVALEC: Okay, thank you.

21 COMMISSIONER MC ALLISTER: And I guess I would
22 just say, so the econ demo is a limitation because it
23 doesn't get granular. And that makes sense, right,
24 because to get the trends you need a lot of -- you have
25 to do statistics on a lot of data to find where the

1 trends actually happen.

2 But in terms of energy consumption and, you
3 know, buildings data, and the distribution grid, itself,
4 and there are lots of sources of information that
5 actually are more disaggregated than that. And so, I
6 think the question we started at before was how -- you
7 know, what methodologies you're going to use that don't
8 require the same kinds of econ demo at the localized
9 level, but that still let you do some kind of
10 forecasting from that, say, county-wide baseline.
11 Right, and so where do you actually -- what kinds of
12 things can you say about trends in say construction,
13 land use, whatever to get at smaller scales in terms of
14 the gas distribution grid or the electricity
15 distribution grid that allow you to do better planning.
16 And so, I think that's where we're all trying to get at
17 is defining, thinking about what the limits of that
18 actually are. You know, not throwing up our hands on
19 the econ demo and saying, hey, we can't go further. But
20 figure out how we can go further and whether that's
21 relevant.

22 MR. CHAUDHURY: Thank you.

23 CHAIR WEISENMILLER: Chris, the other two things
24 I was just going to add is, obviously, along the econ
25 demo the other thing we have to make sure, as we're

1 looking at the preferred resources, that they're equally
2 disaggregated. You know, just saying that a particular
3 energy efficiency program does something this much
4 service territory-wide, you know, you're going to get to
5 how do you start doing that allocation.

6 And at the same time, having said that, it's
7 very hard to get very specific to disaggregation.
8 Ultimately, when people want models -- you know, at some
9 point it is substation by substation. And, obviously,
10 that's not what Chris is or can forecast.

11 But in terms of at least everyone having a
12 conversation about how do you go from that, what it can
13 do, down to that spreading it out among really detailed
14 stuff for the power models.

15 MR. CHAUDHURY: Yeah, I agree. Thank you.

16 MR. KVALEC: And retirement is looking better
17 and better.

18 (Laughter)

19 CHAIR WEISENMILLER: Yeah, I've actually been
20 assured this Administration, those of us are older, you
21 know, it's perspective. It's like the Governor's 76 and
22 it's like what do you mean

23 MR. RHYNE: Thank you. Any further comments or
24 questions from the audience here in the room?

25 All right, seeing none, it looks like we have --

1 MS. RAITT: There seems to be one person on
2 WebEx who had a question. Raymond Johnson, I think
3 we're going to open your line, if you're there and have
4 a question?

5 MR. MARTINEZ: Yes, it's actually Ed Martinez
6 from Southern California Edison. I'm just using
7 Raymond's log in.

8 MS. RAITT: Okay, great.

9 MR. MARTINEZ: I'm in the Long-Term Demand
10 Forecast Planning Division of Edison. To follow up a
11 little bit on what Manny had asked you earlier, we had a
12 senior slide (inaudible) -- for specification, so we
13 weren't sure if you were doing an average of both
14 Moody's and Global Insight. It looks like you're
15 doing -- you're using Moody's just for a couple of
16 baselines, and you're using Global Insight for some
17 alternative scenarios.

18 Could you just quickly comment now, or at a
19 later date could you just give us, I guess, some of your
20 impression or assessment as to what caused you to use
21 Moody's as a baseline, instead of Global Insight?

22 MR. KAVALEC: Yeah, it's actually very simple.
23 Because in our contract with Moody's right now, we get
24 data down to the county level and we don't get that with
25 Global Insight.

1 MR. MARTINEZ: Okay.

2 MR. KVALEC: It makes it easy.

3 MR. MARTINEZ: Okay, I can understand that. So,
4 thanks a lot.

5 MS. RAITT: Is there anyone else on the WebEx,
6 Stephanie?

7 Okay, then we can go ahead and open up the phone
8 lines. We just have a couple of phone lines. So, if
9 you're on the phone line and you had a question, we're
10 going to open up the lines and this is the time to ask.

11 It sounds like we don't have any. I think we're
12 done with the public comment.

13 COMMISSIONER MC ALLISTER: All right, so any
14 other comments from the dais here?

15 Well, I'll just -- I'll bring us home. I guess,
16 so I would qualify this as a successful first IEPR
17 workshop. I'll make the executive decision to say that.
18 And, you know, perception is reality, right.

19 So, but I definitely appreciate, again,
20 everybody being here. This discussion always is -- it's
21 super interesting for the initiated because, really, we
22 all know how important it is.

23 But it also can be a little bit insider baseball
24 because the initiation, right, is long and arduous. So,
25 a lot of us, I think -- the discussion isn't necessarily

1 the most accessible one to say the public. So, I think
2 these issues really are representative of how
3 complicated some of these -- you know, long-term
4 forecasting is, and some of its importance maybe gets
5 lost in the discussion.

6 But again, I just want to pull us back to the
7 importance of getting a good, solid forecast. And just
8 the history that we have of doing it and the adjustments
9 that we make forecast to forecast, and the world throws
10 curveballs at you, and you've got to figure out how to
11 adjust and still have a credible story about what's
12 likely to happen going forward.

13 And our staff knows that in spades and really
14 does a good job on their particular sectors pulling
15 together these cases, and making the right assumptions,
16 and kind of -- there's a lot on the one hand. On the
17 other hand, it takes both. And those calls can seem
18 subjective, but we all try to ground them in reality the
19 best we can.

20 So, and we rely on the comments that come in
21 from the utilities and from other interested
22 stakeholders, knowledgeable parties, and our contractors
23 who provide us with data to ground those decisions, and
24 to make sure that we're proceeding in a way that makes
25 sense, and have some consensus around it.

1 So, this is really where the rubber hits the
2 road in that regard. And, you know, this is the place
3 where we want to kick off the IEPR. It's really
4 appropriate that we're talking, the forecast is really
5 ground zero for the IEPR, itself, and for many folks
6 that are going to be doing work based on it in the
7 future.

8 So, anyway, thanks for indulging me there.
9 Really appreciate Ivin, Heather, the whole team that's
10 been working on these. Thank you very, very much.
11 Obviously, your expertise comes out very clearly.

12 So, with that I'll wrap this up and consider us
13 adjourned.

14 Did you want to say anything else, Heather?

15 MS. RAITT: I'll just make a plug that we have a
16 sign-in sheet at the entrance to the hearing room. And
17 if you didn't sign in, if you could go ahead and sign
18 in, that would be great.

19 COMMISSIONER MC ALLISTER: And March 11th for
20 comments on this topic.

21 So, thanks very much. I think we're done for
22 today.

23 (Thereupon, the Workshop was adjourned.)

24 --oOo--

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