

BEFORE THE
CALIFORNIA ENERGY COMMISSION

In the Matter of:)
)
Staff Workshop re Incremental)
Impacts of Energy Policy Initiatives)

STAFF WORKSHOP ON INCREMENTAL IMPACTS
OF ENERGY POLICY INITIATIVES RELATIVE TO THE
ADOPTED DEMAND FORECAST

CEC Building
1516 Ninth Street
First Floor, Hearing Room A
Sacramento, CA

WEDNESDAY, FEBRUARY 3, 2010

1:00 P.M.

Reported by:
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CEC STAFF PRESENT

Chris Kavalec, Demand Analysis Office
Mike Jaske, Electricity Supply Analysis Division
Seymour Goldstone, Chief Staff Economist

CPUC

Carmen Best

Itron

Mike Ting

Also Present (Via WebEx)

Robert Berman, Berman Economics
Richard Aslin, Pacific Gas & Electric
Tim Vonder, San Diego Gas & Electric
Faramarz Nabavi, RETI Stakeholder Steering Committee

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1 P R O C E E D I N G S

2 FEBRUARY 3, 2010

1:05 p.m.

3 DR. KAVALEC: Welcome to the Staff Technical
4 Workshop on the Incremental Impacts of Energy Efficiency
5 Policy Initiatives Relative to the 2009 Integrated Energy
6 Report Demand Forecast. I am Chris Kavalec from the Demand
7 Analysis Office.

8 And some housekeeping first. Restrooms are out
9 the doors to your left, there is a drinking fountain if you
10 go out the door, go to your right, and then go under the
11 stairs against the far wall. There is a snack bar on the
12 second floor, and in the event of a fire alarm, please
13 follow Energy Commission staff out the doors to Roosevelt
14 Park across the way there.

15 So this workshop is meant to be technical, that
16 is, that we are dealing with the technical issues related to
17 the Incremental Uncommitted Analysis. The bigger picture
18 policy-type questions, how this forecast is going to be used
19 and so on, will wait until our policy workshop, which is
20 scheduled for February 17th from 1:00 to 5:00 here at the
21 Commission. Comments for this workshop and technical
22 comments on the report, we would like to have those by
23 Monday of next week, February 8th. I think the announcement
24 says February 5th, but we extended that to February 8th. With
25 the announcement and the agenda for the February 17th policy

1 workshop, we will also be posting a list of questions for
2 stakeholders that we would like to have you take a crack at
3 answering during the workshop.

4 Okay, we want to get to Itron's presentation on
5 the analysis, methods, results, and uncertainties, as quick
6 as we can, but first Mike Jaske from the Energy Commission
7 and Carmen Best from the CPUC are going to provide some
8 background, so we will start with Dr. Jaske.

9 DR. JASKE: Thank you, Chris. Okay, so I am just
10 going to give a relatively short background as to how we got
11 into this project. In some respects, this is all in the
12 Staff Report, but since we are not focusing on the staff
13 report, but rather focusing on the Itron report for this
14 appendix, this will just give you a bit of background if you
15 have not yet dived into the Staff Report.

16 Okay, this is obviously why we need to get to Mr.
17 Ting as quickly as possible, so that I will not stand here
18 fumbling around trying to run this machine.

19 So, obviously decision-makers are pushing high
20 energy efficiency, goals have been announced as far back as
21 the 2003 Action Plan, and released in various forms and
22 various forums following probably up to current. This is a
23 listing that is more particularly relevant to the issue of
24 what these numbers are and how they relate to Demand
25 Forecasts, and how those both relate to the resource

1 planning process and a great deal of the staff report tries
2 to establish the background about this. In particular, in
3 what was called the 2006 LTTP Proceeding, the PUC was
4 attempting to make use of the 2007 IEPR Demand Forecast as
5 the basis for determining utility procurement authority. It
6 wanted to deal with additional energy efficiency beyond what
7 was in that forecast, it sort of arose in a numeric way;
8 late in that PUC proceeding, there was a difficulty in
9 actually determining what was separate and apart from what
10 was included in the demand forecast, the whole issue of
11 duplication and overlap, and so the conclusion -- a
12 particular conclusion was reached for purposes of
13 establishing procurement authority, but everyone agreed they
14 wanted to do this in a more analytically satisfactory way
15 the next time around, which I will get to in a second.

16 Sort of almost going on at that very same time was
17 the PUC's 2008 Goals process, it started with Itron doing
18 things at the potential level for the IOUs, and then helping
19 the PUC in the form of the Goals study, itself, that is the
20 genesis of the model used in this project, the so-called
21 SESAT model. The PUC eventually adopted goals based on that
22 analysis. And, importantly, it is stretching the range of,
23 or the scope of, energy efficiency initiatives beyond just
24 those run directly by IOUs, to run programs to include
25 Energy Commission Standards, Federal Appliance Standards,

1 and other things part of PUC's Energy Efficiency Strategic
2 Plan that it is not clear what entity will eventually
3 implement.

4 Broadly speaking, there are four categories of
5 programs, IOU programs, plus naturally occurring standards
6 that AB 1109, so-called Huffman requirements for lighting,
7 and then the big goal eventually. The basic approach that
8 was established by Itron in their support of the PUC for the
9 2008 Goals Study, the definition of the programs, the design
10 of the scenarios, all of that has largely been continued in
11 this particular project, the emphasis being on re-running
12 the analysis to as carefully as time and resources allow, to
13 determine what is truly incremental about those initiatives.

14 So in order to attempt to avoid the difficulties
15 of the 2006 LTP Proceeding, the PUC asked, and the Energy
16 Commission agreed to undertake an analysis of additional
17 energy efficiency savings, focusing on what is, as I said a
18 moment ago, incremental to the base Demand Forecast. We
19 have been working on this now just about two years, and we
20 are finally getting to, hopefully, some payoff.

21 The Energy Commission decided it was going to do
22 this sort of in two parts, despite recommendations from IOUs
23 to adopt the concept of a Managed Demand Forecast, which is
24 to, say, include these hypothetical policy initiatives
25 directly within the forecast itself, the Energy Commission

1 decided they wanted to retain its distinction between
2 committed and uncommitted, that it has had since practically
3 the beginning of the Energy Commission's planning process
4 back in the late '70s, and these two definitions help
5 clarify what is committed and what is uncommitted.

6 So we launched the project with the assistance of
7 Itron, funded mostly by the PUC and, only at the very tail
8 end of this effort by the Energy Commission, to do three
9 things: to upgrade the energy efficiency assessment of
10 committed programs, which would show up in the forecast
11 itself, there has been a lot of discussion of that in the
12 various workshops, and in the 2009 IEPR process; secondly,
13 to develop incremental savings estimates for this range of
14 things that, from the Energy Commission's perspective, are
15 called "uncommitted," but it is not any uncommitted, it is
16 precisely the hypothetical programs that were established in
17 the 2008 Goals Study; and then, finally, transfer that
18 capability developed by Itron in-house to the Energy
19 Commission and be able to use that looking forward.

20 So, I think you are all largely aware of the
21 extent to which we sort of went back to ground zero to re-
22 ground our utility program analysis in the data that was
23 available through the EM&V process in the activities
24 undertaken by the IOUs up to a certain point, and then in
25 the most recent round of program evaluation activities by

1 the PUC Energy Division, itself. We definitely upgraded
2 what we were doing and, of course, included within those
3 adopted forecasts, the continuation of the very high levels
4 of utility program activity that first started in the '06,
5 '08 cycle, now all the way up through 2012.

6 So in the particular focus now on the incremental
7 analysis, in order to attempt to minimize duplication
8 overlap and come as close as time and resources allow to
9 truly incremental consequences of the same set of
10 hypothetical programs, we gave Itron a lot of end-use detail
11 and the driving assumptions, economic and demographic, and
12 other things that were included in the final demand
13 forecast. Just as an aside, I have probably been in this
14 position half a dozen times now, trying to describe the
15 schedule for this overall project, and clearly, if you will
16 recall things I have said in the past, we tried to sort of
17 parallel this effort with our own demand forecasting
18 project, that really proved not to be realistic, and so
19 these efforts have largely ended up being sequential, it has
20 the advantage, of course, as Itron using all of the final
21 elements of the adopted demand forecast, but having the
22 disadvantage that, here we are beginning the February 2010
23 after the IEPR itself has already been adopted by the Energy
24 Commission and put to bed. So, ideally, I suppose in some
25 future cycle, we would want to do this in a time schedule

1 that fit within the IEPR, but that just simply was not
2 possible this cycle.

3 The essence of what we are trying to do, of
4 course, is to juxtapose the scenario definitions that were
5 first put together in the 2008 Goals Study with reality, and
6 as time has marched forward, things that were considered
7 part of the goals scenarios are now considered committed and
8 are in the forecast, so obviously they are no longer a
9 contributor to any incremental savings. And so adjusting
10 for that is a simple and obvious step. Secondly, of course,
11 we want to be sure that Itron SESAT analysis starts from all
12 of the minutia of the adopted forecast, and so, as I
13 indicated earlier, we provided a lot of end-use detail to
14 Itron so they could mesh their starting point with the
15 forecast as closely as was feasible. And then, of course,
16 undoubtedly, where there are two significant models and
17 numerous assumptions that could differ, and basic structures
18 of the models, there still was, and perhaps even is,
19 ambiguity about how these modeling constructs fit together
20 and, in the end, there was a mechanism developed that would,
21 in effect, try to assure that whatever those ambiguities,
22 the savings called "incremental" were, in fact, not in the
23 base demand forecast.

24 These five points are sort of obvious. That is
25 the scope of what has now been produced, a draft staff

1 report with the Itron document as an attachment, and two
2 other attachments written by the PUC Energy Division having
3 to do with a recitation of the whole PUC goals setting
4 process and what they are today, and then a treatise on how
5 the PUC Energy Division foresees these results being used in
6 the forthcoming LTTP Proceeding.

7 These are the steps that remain: any clarification
8 of the technical documentation as a result of this workshop
9 and comments, and as Chris pointed out earlier, we have
10 changed the due date to give folks a few more days; the
11 Energy Commission's Policy Workshop, the notice for which
12 came out either late yesterday afternoon or this morning, so
13 that is now announced for February 17th, and it will -- as
14 best I understand -- include both the IEPR Committee and
15 Commissioner Weisenmiller representing the Energy
16 Commission's Electricity and Natural Gas Committee. As a
17 result of that workshop, make tweak the Staff Report, add
18 to, subtract from, its description of the process and the
19 policy issues, transmit that to the PUC, and then, of
20 course, we will all be interested in some focus on the
21 remaining or the next cycle and all sorts of improvements
22 that might be possible for it.

23 So that is my basic background about how we got
24 from early 2008 to today. So, Carmen, can you give us a
25 little insight into the PUC's?

1 MS. BEST: Thank you, Mike. My name is Carmen
2 Best, I am with the CPUC and today I am representing Energy
3 Division, but there are several other people from Energy
4 Division in the broader CPUC than are here today, as well.

5 It has been a very collaborative effort that we
6 have put together to come here as Mike had mentioned, and I
7 just wanted to share a little bit more about the role and
8 the interests of the CPUC in this process.

9 Essentially, the CPUC and the CEC, and the
10 utilities, have been collaborating going back to the
11 original '04 Goals decision, probably before that, to make
12 sure that the numeric goals that were holding the investor-
13 owned utilities of California are reflective of the
14 available potential in the market, and also that they are
15 achievable, and that they somehow reflect the most recent
16 information that we have on how to achieve those savings,
17 and that they reflect the best available knowledge about
18 what those savings would be. And I think that this is
19 another step in that process to understanding what the
20 impacts are of those savings, and how achievable they are.

21 In the '04 Goals decision, the Commission laid out
22 a long-term commitment to cumulative goals and, in the '08
23 Goals decision, as Mike had noted, they took another step in
24 expanding this definition, and also the horizon of the goals
25 out to 2020, and the breadth of the activities that would be

1 included in those IOU goals, and that is one of the reasons
2 that we are here today, is to discuss the quantification of
3 those impacts over that longer timeframe.

4 I also wanted to note that this process of
5 essentially calibrating the CEC forecast with the '08 Goals
6 Study to quantify the long-term potential impacts of these
7 activities has been a very collaborative process between the
8 CEC, the CPUC, Itron, and also the utilities through the
9 DFEEQP, as Mike had already noted. But I think that has
10 made the analysis stronger and the results also of greater
11 interest to all parties that have been involved. The
12 outcomes of this study, of course, are very relevant to the
13 Procurement Planning proceedings which will be kicking up
14 this year, and I defer to my colleagues on that, and Simon,
15 who will be leading that stuff, going forward.

16 It is important to note that the California Public
17 Utilities Commission has called for the numeric goals that
18 are set by the Commission to be used in the long-term
19 procurement planning, and I also wanted to note that there
20 is a precedent at the Commission that the goals have been
21 adjusted to reflect new information over time and, like I
22 said earlier, I think this is another opportunity to further
23 understand what those goals mean and how they can be
24 incorporated into PUC policy to meet our objectives.

25 I look forward to questions today and, as Mike

1 noted, I wanted to call your attention to the two
2 attachments that are in the CEC Staff Report, that share
3 both a summation of the history of the CPUC goals and
4 adjustments that have been made to them over time and the
5 policy grounding behind those and, as well, there is a
6 Attachment C that discusses the implications of this study
7 potentially for the long-term procurement proceeding. So I
8 wanted to call that to your attention, as well. And that is
9 all I have.

10 DR. KAVALEC: And we will now hear from Mike Ting
11 of Itron, who is going to go through the details of how we
12 did this analysis and what the results look like, and what
13 uncertainties we had to deal with.

14 AUDIENCE MEMBER: Is there anything magical about
15 February 8th for the comments to be submitted? You said
16 February 8th, right?

17 DR. KAVALEC: Right.

18 AUDIENCE MEMBER: Because that is next Monday.

19 DR. KAVALEC: Right.

20 AUDIENCE MEMBER: Could you change that to the
21 10th? That might be more practical. This is a lot of new
22 information to try to synthesize and boil down to a few good
23 comments in what would amount, to me at least, in probably
24 half a day of actually being able to look at it.

25 DR. KAVALEC: Yeah, the idea was to get the

1 comments in, in time to go through them before the 17th
2 workshop. What do you think, Mike? Another two days?
3 Okay, so there you go, Rick, through Wednesday of next week.

4 AUDIENCE MEMBER: Thank you. I appreciate that.

5 MR. TING: Thanks, Chris, Mike. I am Mike Ting, a
6 consultant at Itron. I did the lion's share of the work on
7 this modeling and report, to date. So let's see, the way we
8 wanted to do this, ideally, so this is a lot of material, I
9 see most of the same cast of characters from the working
10 group, but there are obviously some folks that I have not
11 seen before, and I think there are a bunch of people on the
12 phone who probably have not heard this before, but I think
13 what we wanted to do was hopefully get through the entire
14 thing and then have Q&A mostly at the end. So I would just
15 request that maybe keep a running list of your most burning
16 questions. If you really have to interrupt, then I guess
17 that is just the way it will go. I will also -- or if you
18 want to ask me, and I might tell you that I could get to it
19 more easily at the end, and I will try to keep a tally
20 myself. If you do not hear me, please speak up,
21 particularly on the phone.

22 So this is just an overview of what we are going
23 to do. For those of you who have had the report and had a
24 chance to look at it, it is pretty similar in structure,
25 just briefly, I will review the objectives, I think they

1 were probably pretty clearly stated already; I will provide
2 an overview of the 2008 Goals Study, which we are going to
3 refer to again and again, so hopefully we will ground people
4 on that study in and of itself because it forms really a
5 major foundation for the work that we are talking about
6 today. I will talk about the approach and the methods
7 applied specifically to this study, highlight some of the
8 key scenario definitions and assumptions, obviously spend
9 some time talking about results and comparisons. I am going
10 to spend a fair bit of time talking about the key
11 uncertainty issues for the sake of transparency and full
12 disclosure, and also just for the benefit of all parties
13 going into the next phase of this, namely the LTTP
14 proceeding. And then, hopefully, do most of the Q&A at the
15 end. And if I get through quick enough, we will have a
16 substantial amount of time for Q&A at the end.

17 So just to recap the study objectives, they have
18 been stated a couple times. The bottom line, analytically
19 for us, was to produce quantitative estimates of the savings
20 from [quote unquote] "uncommitted" program activities that
21 were included specifically in the '08 PUC Goals Study, and
22 ergo reflected in the current adopted goals, savings from
23 those uncommitted activities that are incremental to the
24 savings from programmatic activities imbedded in the 2009
25 IEPR forecast. And so we are producing a forecast of

1 uncommitted savings, not a load forecast -- a forecast of
2 uncommitted savings, and so the savings forecast is then
3 going to be integrated to produce a managed load forecast
4 for the next procurement proceeding.

5 Now, in order to do this analysis, we had to come
6 up with some key framing definitions that we stuck with for
7 the length of the study, these are the four key ones, I
8 believe that Mike Jaske already defined "committed" vs.
9 "uncommitted," he might not have used the same words as I
10 do, but the difference mainly being committed programs are
11 funded and fully authorized versus the uncommitted programs
12 where funding has not be secured or regulatory oversight
13 actually established. The periodicity of committed programs
14 versus uncommitted programs is also essential, committed
15 programs go through 2012, so this is stuff that is active in
16 the forecast period, so 2008 through 2012; and then the
17 uncommitted program period is 2012 forward, so for this
18 exercise, it is 2013 through 2020. So those two timeframes
19 are important to keep in mind and we show them, explicitly,
20 again when we help frame the results and try to interpret
21 them.

22 So I am just going to walk through a real brief
23 overview of the '08 Goals Study that we conducted for the
24 PUC. The study itself was essentially a set of scenario
25 analyses, and we were looking at savings potential from a

1 variety of different programmatic efforts -- IOU programs,
2 State and Federal programs -- and the objective of it was
3 really to come up with a comprehensive assessment of savings
4 potential from not only a variety of mechanisms, but also a
5 variety of perspectives, and I will touch on this again
6 later, but, for example, from the perspective of the IOUs
7 vs. the perspective of society-at-large. And, you know, to
8 be able to broaden the pallet of delivery mechanisms and
9 perspectives, to try to help inform the PUC Goals Study
10 process as best as possible.

11 The analysis itself was designed from the
12 beginning to leverage as much of the detailed data analyses
13 that were conducted for the 2008 potential update study, so
14 Itron had conducted a study of the savings potential from
15 IOU programs in 2006, there was an effort to refresh that
16 potential study two years after, so 2008, and in the report
17 we refer to it as the "Potential Update Study," that study
18 was what we call a very detailed bottom-up study, we are
19 looking at measure level cost and savings and adoption for,
20 you know, 300 plus unique measures, using the asset models
21 developed by Itron as an Itron product, but this is a big,
22 complex, detailed bottom-up potential assessment. The
23 output, the primary output of that study was looking at the
24 achievable market potential for IOU programs, specifically.
25 So looking at how much savings are realistically achievable

1 at specific levels of measure incentives and marketing
2 expenditures, for example, how much is realistically
3 achievable through IOU programs, specifically, over a
4 specific time horizon.

5 Now, the analytical approach that we developed for
6 the goals study, we wanted to leverage that analyses and
7 those results as much as possible, we did not want to
8 reinvent the wheel again, specifically because that study
9 was just wrapping up when we were starting the goals study.
10 And we also wanted to be able to broader the scope a little
11 bit, not stay focused solely on IOU programs because there
12 are all kinds of stuff happening in California and
13 nationwide. The asset model is limited to -- is
14 specifically meant to address achievable market potential
15 from IOU programs, so we wanted to try to build a tool and
16 analysis that examines things from other delivery mechanisms
17 like codes and standards, for example. So we built a
18 spreadsheet modeling tool that used -- that incorporated the
19 inputs and the results of the '08 potential study as
20 starting points for exploring alternate scenarios.

21 This slide is really just kind of breaking down
22 the main mathematics; it is actually quite simple for anyone
23 who has done any type of end-use decomposition analysis
24 before. The basic analytic identity is total energy
25 consumption is a product of unit energy consumption, so this

1 is a residential example so you can think of it as a
2 refrigerator, kWh per home per refrigerator times the
3 saturation, the share of homes with refrigerators, times the
4 number of households. Right? Fairly simple analytic
5 identity multiplicative... And some of these things can
6 change over time; namely, number of households, obviously,
7 but also the UECs, and UECs change as a function of energy
8 efficiency and changes in the energy service demand. So we
9 decompose the UEC variable into basically three components,
10 this is among the bottom half here, this is the base or
11 start year, you know, year zero UEC where we are at now, and
12 then multiply by -- the second term is changes in the
13 technical efficiency, and the third term is changes in
14 energy service demand. Changes in technical efficiency
15 obviously bring the UEC down, changes in service demand can
16 bring the UEC up or down, for example, if you have more
17 fixtures in your home that is going to increase the service
18 demand, smaller refrigerators might decrease service demand.
19 So the UEC can change because of changes in either one of
20 those variables, and we wanted to isolate changes in
21 technical efficiency, savings related to changes in
22 technical efficiency. So that is reflected in this
23 decomposition.

24 The baseline data that was used in the '08 Goals
25 Study, we used the same key sources that were used in the

1 two previous potential studies in California, namely the
2 most recent RASS and CEUS Surveys, and also all of the
3 industrial end-use analysis that had been conducted by KEMA
4 for the industrial potential studies, they were
5 subcontracted by Itron on both the '06 and '08 studies, and
6 so we used all their baseline development work, as well.
7 For the forecasts of changes in building stocks over time,
8 we used the new construction rates and decay rates that were
9 reflected in the CEC Demand Forecast, and this is the
10 vintage 2008 forecast, this is the one that was available, I
11 believe, fall of 2007. So that was the vintage of the
12 forecasting that was available to us when we did the Goals
13 Study, the original Goals Study. So that was the baseline
14 data.

15 We used the same sets of inputs in the Goals
16 Study, the original Goals Study. And I allude to, you know,
17 we developed alternative policy scenarios, and savings from
18 things other than IOU programs. This slide is just
19 summarizing all the scenario analyses that we did. The ones
20 that I will talk about more later that are germane to this
21 incremental uncommitted savings analysis are IOU programs,
22 obviously, and then there were three sets of kind of policy
23 scenarios -- well, actually two sets of policy scenarios,
24 and then two different perspectives on them; so, first is
25 the big, bold energy efficiency strategies, these are very

1 briefly, for those not familiar, initiatives that were
2 initiated by Commissioner Gruenich, and I think this was
3 spring of 2007, I believe, and they set targets for -- there
4 are three pieces, there is a small HVAC initiative, and that
5 is really trying to get optimally performing AC as a
6 retrofit, and then there are two reconstruction initiatives
7 -- residential and commercial, and they both have targets
8 for zero net energy new buildings. That is kind of the
9 essence of these programmatic initiatives.

10 We also looked at future codes and standards in
11 three groups, AB 1109, which is referred to as the Huffman
12 Bill that was passed in, I think, 2007, and setting new
13 standards for lighting, general service lighting. In
14 California, their strengthening of Title 24, which is the
15 CEC mandated to investigate every three years, and revisions
16 to federal appliance standards, going forward, also co-
17 compliance programs, trying to increase co-compliance with
18 Title 24. But those kind of -- these other policy delivery
19 mechanisms, we analyze them from two perspectives, primarily
20 the perspective of the IOU, versus the societal perspective,
21 and the reason that is important is that, take the case of
22 the lighting standards from the Huffman Bill, right,
23 lighting takes account for a fairly large share of the IOU
24 portfolios; your new standard is basically going to change
25 the baseline, it is going to obviate some of the measures

1 that are available to be incented in IOU programs, so they
2 interact. Changes in codes and standards interact with what
3 is available to the IOUs to offer programmatically. And so
4 we wanted to try and get a handle on what the magnitude of
5 those interactions might be. You know, conversely, the
6 societal perspective on codes and standards is, you know,
7 you might change the baseline and you are also going to get
8 a significant savings from something like implementation of
9 the Huffman Bill, and we wanted to get a handle on how big
10 those societal savings might be, as well.

11 So we ran all these -- we developed these
12 individual scenarios, and then, to get to kind of translate
13 those into a internally consistent set of -- we call them
14 Straw Man cases, but really we are trying to get to
15 internally consistent set of policy choices that lead to an
16 outcome to use for goals setting. And so you can see on the
17 first column, the left-hand column of this table, this is
18 kind of like these are all the different mechanisms that we
19 modeled, and then it is marked "low," "mid," and "high," and
20 so we constructed Straw Man cases with different choices,
21 discrete choices in each of these cells, to construct a
22 total goal level associated with these low, mid, and high
23 cases. And I will not spend too much time on this, but this
24 just kind of summarizes, you know, we will be talking later
25 about low, mid and high goals cases, and this is how those

1 cases were composed. They were composed of specific choices
2 about these specific mechanisms, so, you know, how far do we
3 get towards implementation of the Huffman Bill? How
4 aggressive is the future for Title 24 and appliance
5 standards? How far do we get with meeting the Big Bold
6 Initiative targets for zero net energy homes? So this is
7 the exact composition of the low, mid, and high cases that I
8 will be circling back to, later on.

9 So that is kind of -- that is the five-minute or
10 ten-minute version of the Goals Study, and I would be happy
11 to answer more detailed questions about the Goals Study at
12 the end. It is available on the ED website and has been for
13 a while, along with a full set of appendices with all the
14 supporting data.

15 So for this study, right, we wanted to -- you
16 know, the task was to figure out how much of what was
17 included in the Goals Study is uncommitted and how much of
18 the savings from those uncommitted programs is incremental
19 to the savings already imbedded in the IEPR forecast. So
20 the approach that we had to do this was basically four
21 pieces, we needed to define scope and boundaries, which was
22 really critical, we had to calibrate the end-use baselines,
23 we wanted to make sure that we were not introducing any
24 systematic bias because, you know, our refrigeration UEC was
25 way off from theirs, or our housing forecast was different

1 from theirs. Then we transformed -- we had to exercise and
2 transform some of the savings estimates produced by CEC's
3 end-use forecasting model into inputs that could be used in
4 the SESAT process, and then, after all that, rerun
5 everything and actually do the calculation of incremental,
6 uncommitted savings based on those revised results. So I am
7 going to step through each of these pieces.

8 Obviously, the first step was we wanted to define
9 the analytic scope on some of the boundaries that I was
10 referring to. The first step was common base year, this
11 might seem obvious for everyone, but the CEC forecasting
12 model has a base year of 1975 versus using the 2006 base
13 year for the Goals Study, so obviously those are very
14 different reference points, and we wanted to make sure we
15 get to apples and apples as much as possible, so we settled
16 on 2006 for this study. The geographic scope was limited
17 strictly to the service territories of the IOUs, and this is
18 a subtle point, but important because the CEC forecast is at
19 the planning area level, which is distinctly different from
20 IOU service territories. So, for this, since the goals are
21 at the service territory level, we wanted to make sure that
22 our estimates of incremental committed were also at the
23 service territory level for the three IOUs. And finally,
24 the last step is the programmatic scope, and I call it
25 programmatic scope because it is really trying to figure out

1 substantively what is in the '09 IEPR forecast, and what is
2 in the '08 Goals Study, and how much overlap, and
3 specifically where there is.

4 So the last step is actually where we focused --
5 we spent a lot of time -- and this is actually one of the
6 key parts of this study -- we learned a lot. This slide
7 kind of summarizes the findings and analysis, so we worked
8 very closely with the ED staff -- sorry, with CEC staff --
9 to really dig down into the guts of the CEC's energy
10 forecasting model, and really figure out specifically which
11 programs they were modeling through the committed program
12 period. And this summarizes the finding of that effort.
13 Both IOU programs are included in the '09 IEPR forecast and
14 the '08 Goals Study. There were some, you know, obviously
15 in the Goals Study, we also had Title 24, we had the Huffman
16 Bill, we had big bold, the IEPR forecast included Title 24
17 savings that we did not count in the Goals Study, and that
18 was from Title 24 -- basically kind of their Title 24
19 triggered retrofits, so when you do remodels of a certain
20 size in the commercial sector, it trickles Title 24
21 compliance. In the Goals Study, we only had savings from
22 new construction compliance with Title 24. Those kind of
23 Title 24 triggered retrofits were mainly in commercial
24 buildings and mainly in commercial lighting systems. The
25 CEC also included residential and commercial price effects,

1 which were their way of modeling naturally occurring
2 savings, so there was also some overlap there. So these are
3 all for the committed program period. When we get out to
4 the uncommitted period, obviously all of the mechanisms that
5 we included in the Goals Study were also there, inactive and
6 producing new first-year savings in the uncommitted program
7 period. In the case of the IEPR forecast, there were three
8 pieces, three delivery mechanisms that were producing new
9 first year savings in the uncommitted period; they had
10 obviously ongoing price effects from changes in the
11 electricity prices. And they also had what is referred to
12 in the IEPR Report as additional residential lighting
13 savings, and those are credited to, at least a partial
14 implementation, of the AB 1109 lighting standards.

15 So I know I went fast, I just want to make sure --
16 okay. So using that information that was kind of summarized
17 in the previous slide, there is obviously some overlap in
18 those three mechanisms, you know, residential price effects,
19 commercial price effects, and this additional residential
20 lighting savings category. There is some overlap between
21 those three mechanisms, and some of the savings are from
22 uncommitted programs in the Goals Study, specifically
23 naturally occurring from IOU programs and savings from AB
24 1109.

25 So we worked very closely, again, with the CEC

1 forecasting staff to come up with an agreed upon way to
2 avoid double counting in those three particular mechanisms.
3 And so this slide is really kind of summarizing the
4 programmatic scope, what do we count -- what savings do we
5 count from uncommitted programs as being incremental? And
6 there are three primary adjustments that we came up with,
7 one is for effects, savings from residential programs,
8 residential IOU programs, and we did not want to double
9 count the residential price effects that the CEC had
10 included, and so we decremented the naturally occurring
11 savings for residential programs as forecasted by Itron,
12 previously. And the reason that we just treated it as a
13 decrement and not fully duplicative is that the CEC only
14 actually estimated price effects related to the
15 miscellaneous end use, as opposed to all or more residential
16 end uses. So it was very limited, plus the elasticity was
17 small, to say the least. So we treated it as a decrement to
18 residential naturally occurring.

19 For commercial programs, the CEC's price effects
20 were much stronger, and we did a comparison with the
21 naturally occurring from commercial programs that came out
22 of the asset model, and they are actually quite similar, so
23 we decided that, in concept, they were 100 percent
24 duplicative between the two efforts, and so rather than
25 treating theirs as a decrement or ours as a decrement, for

1 the purposes of calculating incremental savings, incremental
2 savings only occur from new net savings from IOU programs
3 from 2013 forward. Okay, everybody is nodding heads. All
4 right. I know that can be confusing, but in principle, we
5 decided that they are 100 percent duplicative, so we did not
6 count any incremental savings from commercial naturally
7 occurring, or commercial price effects.

8 For the AB 1109 lighting standards, we determined
9 that the way that the CEC estimated that it was really just
10 a partial implementation of those standards, for the Goals
11 Study, we used basically CFLs as a proxy, which turned out
12 to be very close to the way it was actually codified in
13 Title 20 last fall in August of '09. Obviously, by that
14 time, it was too late for them to -- they were too far along
15 in their IEPR modeling process to actually stick to the
16 definition that came out in Title 20, some phasing issues
17 there between the two efforts. But what they ended up doing
18 was kind of a partial implementation of AB 1109, so we
19 treated their estimates as a decrement to our estimates of
20 savings from the new lighting standards.

21 For industrial programs run by the IOUs, as well
22 as future revisions to Title 24 federal appliance standards,
23 and implementation of the Big Bold Initiatives, all of the
24 new first year savings from those programs in the
25 uncommitted period were treated as strictly incremental, it

1 was determined that there was no overlap between the two
2 forecasts. Okay? So once we got through that process,
3 obviously we wanted to recalibrate all the end-use baselines
4 and the service demand drivers that were used in the '08
5 goals forecast, we wanted to make sure that we were
6 harmonized with the values that were used in the '09 IEPR
7 forecast. You know, there were basically two key components
8 of this calibration process, one was the -- we wanted to use
9 the exact same service demand driver, so housing stocks,
10 commercial floor stocks, and industrial base load is just
11 analytically what we used as the driver for industrial, and
12 we can get into that if you want, it is a little -- it is
13 not super straightforward to explain. But, you know, these
14 are high level service demand drivers, so we adopted exactly
15 the same forecasts of these three key service demand drivers
16 in this study. And, you know, they were slightly different.
17 You can see at the bottom box here, it kind of summarizes
18 how different they were. You know, these are largely the,
19 you know, the '09 IEPR forecast reflected some recession
20 effects and so, obviously, that impacts total stock
21 additions in residential/commercial buildings over 20 years
22 because they had a dip in GDP in new construction rates in
23 the early years of their forecasts, so you can see how the
24 bottom line is that, by the time you get out to 2020, the
25 total commercial building stock and the total commercial

1 industrial load growth were significantly lower than
2 previously.

3 We also calibrated the end use baseline, so this
4 is the year zero of the forecast. Largely, they were
5 consistent, and when we interacted, all of the revised
6 service demand drivers and all the end use UECs and
7 saturations, we came out pretty close without doing any
8 adjustments, but we did do a few because we lined up all the
9 baseline UECs and saturations and compared them to make sure
10 they were not out of whack. But we did make a limited
11 number of adjustments, and they are kind of itemized here.
12 We revised the residential space heating and refrigerating
13 UECs and saturations, and we adopted the CEC values. We
14 revised the peak to energy ratios for all residential end
15 uses -- and I will get back to that in a minute -- and those
16 two adjustments were done for all three IOUs. For San Diego
17 Gas and Electric, we had two additional revisions, basically
18 we see in saturations and also the peaked energy ratios for
19 commercial interior lighting.

20 Now, this shows the final kind of calibration
21 values in energy and peak demand terms. One thing you will
22 notice is that we calibrate the '06 actual sales and we end
23 up calibrating to the forecasted '09 summer peak load,
24 coincident system peak load. And the reason we did that,
25 the first time we used '06 and '06 was an unusually hot

1 summer, and we used all of the peaked energy ratios from
2 '06, and obviously the peak numbers were large. So we
3 decided -- and this is a change from the last, from the
4 workshop we had in December, I think we mentioned it, but we
5 had not implemented it. So for this time, we wanted to make
6 sure that we used peaked energy ratios that were reflective
7 of a normal weather year, and so we chose 2009 as kind of
8 the calibration year for coincident peak demand, and so the
9 bottom half of the box shows where we landed relative to '09
10 forecasted coincident peak.

11 And just to ground everyone in the goal of this
12 calibration process is not -- for us, anyway -- is never to
13 dial it into 0.00 percent because to get there would require
14 very -- you are making a square peg for a round hole. What
15 we aim to do is to get within a range that we feel
16 comfortable with, and that is usually plus or minus five
17 percent for a potential study. So this is where we landed,
18 you know, and in all the work we try to avoid introducing
19 systematic bias, and calibration is an important step where
20 sometimes people dial it in all the way artificially and it
21 can introduce systematic bias. So we went through, we
22 defined all these analytic boundaries, we have calibrated
23 the baseline, one of the last steps was to transform the CEC
24 savings estimates across all these different delivery
25 mechanisms, and transform them into inputs that could be

1 used in the SESAT modeling framework. Specifically, this is
2 in the second bullet, into percent reductions in base year
3 UECs, that is how savings are expressed going into the SESAT
4 framework. So to do that, CEC provided a variety of time
5 series data, average and marginal UECs and this is all at
6 the end use building type and vintage, and IOU service
7 territory level. They did a special run of their model
8 without price effects, basically turning the price effects
9 off so that we could isolate the magnitude of those effects,
10 and then for -- they also provided special estimate -- time
11 series estimates of their savings specifically from AB 1109
12 and these Title 24 triggered retrofits in commercial
13 buildings. And then we transformed all these things into
14 these percent reductions in base year UEC values, you know,
15 the primary purpose was so that we could use them in SESAT
16 in the right metric, in the right unit, but it also is a
17 way, another way, to help avoid or minimize systematic bias.
18 So, you know, when you add Gigawatt hours to Gigawatt hours
19 from two different modeling platforms, you can get a
20 perverse result like exceeding technical potential, for
21 example, or in the other extreme, resulting in load growth
22 from a savings measure, I mean, it happens and that is
23 related because you have different base year UECs or, you
24 know, some other type of disconnect that, if you just try to
25 add absolute savings to absolute savings from two different

1 platforms, you can get some perverse results. So doing this
2 unit transformation and normalization process was also
3 designed to try to minimize that type of bias. But, you
4 know, despite all we can do, the nature of this type of
5 study is that we cannot eliminate all systematic bias, and
6 that is just the truth of the matter. We are trying to meld
7 inputs and results from two different modeling platforms.
8 So we do all this work, we have calibrated the baseline, we
9 have figured out what is in, what is out, we have
10 transformed all the necessary numbers into quantities that
11 the SESAT model can use, and then we re-run everything and
12 then we calculate incremental uncommitted. It seems very
13 simple. I will get back to that in a minute.

14 I wanted to touch first on just the scenarios
15 themselves. Like I said previously, the goal study
16 scenarios and the documentation associated with those have
17 been available since the goals decision came out, so this is
18 almost two years, maybe the better of a year and a half. I
19 am not going to delve into the details of each one of the
20 scenarios and the assumptions that went in there, and in
21 large part, all of the scenario definitions and assumptions
22 were identical to those that were used in this study. Mike
23 Jaske alluded to the fact that we did make some revisions to
24 try to incorporate, you know, knowledge learned since the
25 time that the goals study was conducted, which was the fall

1 of '07, spring of '08. Specifically, there were two things,
2 two assumptions that were revised to kind of better reflect
3 reality as we know it today, and they were specific to the
4 2008 revision to Title 24, which ended up not happening,
5 more or less, and the assumptions that were used to describe
6 the standards associated with the implementation of AB 1109.
7 So I had said previously that we use CFLs as a proxy when we
8 did the '08 Goals Study, but since that time they have
9 actually been codified into Title 20 as of August of last
10 year, and so then we adopted those more specific -- well,
11 the specs that are in Title 20 now. And so we made those
12 adjustments. The detailed descriptions of all the scenarios
13 are replicated and provided in Section 3 of our Technical
14 Report that you guys all have now, and I would be happy to
15 answer any questions or provide clarifications associated
16 with those more detailed assumptions and definitions in Q&A,
17 but for purposes here, I want to get to the end, and I am
18 going to skip that, but I will tell you specifically more
19 about what was changed versus the '08 Goals Study. In the
20 '08 Goals Study, we had regular three-year updates to Title
21 24 at various levels of aggressiveness. I think it ranged
22 from down to five percent decrease in UECs every three years
23 to 15 percent or something like that, but it was regular
24 every three years.

25 In the 2008 Title 24 proceeding, two things of

1 relevance happened, the standards themselves were
2 essentially unchanged, and the implementation date was
3 shifted out to 2010, so they were effectively -- there was
4 no significant real revision to the current 2005 Title 24.
5 So we wanted to reflect that, obviously, in this exercise
6 and so we took out the assumed '08 revision to Title 24.
7 Easy enough. For internal consistency, we also -- the
8 savings from the Big Bold Initiatives interact with the true
9 societal net savings from the Big Bold Initiatives, and
10 since it is also a new construction measure, they interact
11 with the Title 24 baseline that is in place at the time, and
12 so we also revised the assumed interactions with the Big
13 Bold Initiatives over that intermediate timeframe -- '08
14 through 2011.

15 So like I said previously, in the '08 Goals Study,
16 we had the Huffman Bill implementation, we used CFLs as a
17 proxy, number one, and we also assumed kind of a linear
18 progress towards the Huffman targets as defined in the
19 original legislation, linear progress between 2011 and 2020.
20 And that phase-in was just an educated guess on our part.
21 It turns out the way it is actually codified in Title 20 is
22 that it does phase in in 2011, but there is an interim
23 standard of -- I do not know if I have it on the next slide
24 -- no, I do not -- the interim standard in 2011 is 20 lumens
25 per watt, more or less, it depends on the output range of

1 the lamp. But 20 lumens per lamp is -- it is less than a
2 CFL, let's put it that way, it is more than current
3 incandescents, but it is significantly less than a CFL, and
4 then it ramps up to 45 lumens per watt in 2018, which is
5 slightly exceeding kind of the market average CFL right now,
6 but it is pretty close. But the periodicity associated with
7 that, the way it is specified in Title 20, we tried to
8 replicate that as closely as possible for this study, which
9 is not quite linear. It has a little S-shape to it, the way
10 we implemented it, so that is different. And we also had to
11 -- since these new standards interact significantly with IOU
12 programs supporting CFLs, we revised the interactions with
13 the IOU programs, as well. So that is a summary of what
14 changed and, again, the details of what did not change are
15 obviously documented in the report.

16 So we have all this, we have revised baselines, we
17 have new inputs, we have some revised assumptions, what do
18 we do with all that? We basically re-ran savings forecasts
19 for each of these scenarios, and what that produces is, at
20 first, is just a comparable set of savings forecast for the
21 low, mid, and high goals cases, and the savings mechanisms
22 embedded in the '09 IEPR forecast. So at least we have
23 gotten to the point where we can then start adding and
24 subtracting and doing other manipulations, or as good of
25 apples to apples type of thing that we can get to. Now, you

1 know, we modeled things at the mechanism level, so Huffman
2 Bill, Title 24, IOU programs, etc. We recomposed the low,
3 mid, and high goals cases according to the same criteria
4 that I showed before, this table is the same as what I
5 showed before, but to serve up as a reminder, right, we have
6 revised estimates for each of these delivery mechanisms from
7 the two different forecasts, and then we kind of recompose
8 the low, mid and high goals cases.

9 Now, I am going to show you that straight result,
10 kind of low goals case versus the IEPR forecast, etc., in a
11 second. There are a few kind of -- in terms of interpreting
12 the results, two things to take note, and we talked about
13 this explicitly in the report. For simplification, we
14 combined just for data display -- we combined the
15 residential and commercial price effects with the additional
16 res lighting savings, so that is -- and it is labeled as
17 such, but I just wanted to be clear, otherwise you get too
18 many small wedges dancing around and it is hard to read. We
19 also combine the savings from the Title 24 triggered
20 retrofits in existing commercial buildings with savings from
21 IOU programs, you know, as modeled by the CEC, so I am
22 talking about the mechanisms that were modeled by the CEC;
23 we combined those two results for presentation here, so just
24 in case people are wondering, those Title 24 savings that
25 they model are still in there, they are just shown together

1 with the IOU program savings. Probably, the utility folks
2 are going to notice that the low, mid, and high outcomes do
3 not exactly match what is in the current adopted goals, the
4 two main reasons for that, and for me it makes sense, but it
5 might not be obvious to everyone, the two main reasons that
6 we are using slightly different forecasted demand drivers,
7 and we saw exactly how much those are different previously,
8 we also use different peaked energy factors for the
9 residential sector than previously, and so that is only
10 going to impact the peak megawatt numbers, not the gigawatt
11 hours numbers. And we also had slightly different
12 assumptions related to the '08 Title 24 and the
13 implementation of the Huffman Bill standards. Those are
14 different from the '08 Goals Study, so obviously the results
15 are going to look slightly different because of that.

16 And just for clarification, the savings, the
17 results that I am going to show here and that are shown in
18 the report are over the forecast periods, specifically. We
19 are showing cumulative savings over the forecast period.
20 That is different from how the CEC staff shows energy
21 efficiency savings in the IEPR Reports, they show them
22 cumulative starting in 1975. And they also show savings
23 from, for example, 2005 Title 24 out through 2020. Our
24 Goals Study did not -- we did not model future savings from
25 existing standards in the '08 Goals Study, that is just a

1 point of clarification, we had -- if the standard was
2 anticipated to revise, then we estimated future savings from
3 that, going forward. But, for example, we did not have
4 savings from the 1990 refrigerator standard in these set of
5 results. All that type of thing is already included and
6 modeled by CEC forecasting staff. Does that clarification
7 make sense? Or am I confusing people? Okay. It seems
8 obvious to some, but it causes confusion with others, so I
9 wanted to make sure that was clear.

10 So, like I said, this is the results for the low
11 case compared to the savings in the CEC -- in the '09 IEPR
12 forecast. And I had struggled with Excel to get this to
13 show correctly, but through the committed program period,
14 the savings embedded in the '09 IEPR forecasts are actually
15 slightly larger than the low goals case, so that is why the
16 dotted line show how the low goals kind of savings wedges
17 are actually behind the blue and light yellow wedges. Does
18 that make sense to everyone? It is really difficult to get
19 Excel to do this, so this is the best I could do. But the
20 bottom -- the story line is that, through the end of the
21 committed period, the CEC savings are actually slightly --
22 the savings from committed programs estimated by the CEC are
23 slightly above the low goals case through 2011. And then
24 the low goals case kind of peaks up at the end. The primary
25 reason behind this is the CEC -- and, again, you could see

1 from the size of the blue wedge, which is the IOU programs
2 versus that light yellow wedge, which is price effects, you
3 know, it is almost all IOU program savings. And the same is
4 true in the low goals case, you cannot really see it. This
5 dotted red line, that is the IOU portion of the low goals
6 case in the committed period, and it accounts for the vast
7 majority, 90 plus percent. But the primary reason why they
8 are slightly different is that the low goals case assumed
9 what is referred to in the '08 potential study as "base
10 restricted market potential," and at the time this was
11 reflecting kind of weighted average incentive levels circa
12 2005-2006. And it turns out that the weighted average
13 incentive levels and actual portfolio since then has been
14 higher than that. The CEC's estimates, assumptions relative
15 to incentive levels were actually based on program filings,
16 which, as I just said, were higher on weighted average terms
17 than what we are assuming the base restricted market
18 potential case in the asset study. So that was a mouthful,
19 but basically the incentive levels assumed in the goals
20 case, in the low goals case, were lower than what were
21 actually done, and the actual levels are what, from program
22 files, is what the CEC used in the '09 IEPR forecast, so
23 that is the primary reason why they are different. There
24 are a couple of reasons that I will touch on later, but that
25 is the main one.

1 Now, going forward from 2012 into the uncommitted
2 period, one of the things that you will see, I actually hid
3 it, I do not know why I did that, you can see that the
4 cumulative savings from IOU programs and the CEC's forecast
5 start to decay pretty significantly over time, and that is
6 because the assumption that there are no efforts to, you
7 know, continuing IOU programs basically, there are no kind
8 of -- program efforts stop in 2012, and then when things
9 reached the end of their useful life, you lose the savings,
10 so that is the concept behind that savings decay. The low
11 goals case obviously continues to grow because all these
12 mechanisms, IOU programs, Title 24, they are continuing to
13 be in place and actually grow over time. The biggest piece
14 of the low goals case in 2020 is IOU programs follow by the
15 Huffman Bill, which is that orange wedge. And some, you
16 know, small but still significant contributions from
17 provisions in Title 24 and federal appliance standards, and
18 progress towards these Big Bold Initiative targets for zero
19 net energy homes and buildings.

20 Now, so this is the energy case and we switch to
21 peak demand. The story over the committed period is largely
22 the same as before, the real difference is in the
23 uncommitted period, mostly in terms of the composition of
24 total cumulative savings in the low goals case because where
25 this is the coincident peak demand case, things that have

1 savings that are more coincident with a system peak
2 obviously show up larger, and this manifests itself if you
3 look at the difference between savings in the Huffman Bill
4 and savings from zero net energy homes. The savings in zero
5 net energy homes are larger linked to AC, whereas Huffman
6 Bill is strictly lighting. Lighting has a very different
7 load shape than AC, so it has very different peak demand
8 impacts, and you can see how that manifests itself in
9 aggregate here, so the composition of savings from peak
10 demand perspective is significantly different from the
11 energy kWh hour perspective. And you will see this again
12 when we walk through the other cases.

13 This is the mid goals case for energy. Now, this
14 one, I did not have any problems with Excel, but the CEC
15 forecast obviously stays the same, the mid goals case has
16 what we call a full incremental cost assumption for IOU
17 programs, so you are assuming higher incentive levels
18 offered through IOU programs, and that actually obviously
19 buys you a lot more savings, so that is the primary
20 difference between the low and the mid case. Because of the
21 increases option of stuff through IOU programs, particularly
22 lighting, the incremental savings from the implementation of
23 the Huffman Bill are relatively smaller, right? If people
24 buy up more CFL's, by the time Huffman is implemented, the
25 incremental savings from Huffman gets smaller, that is one

1 of these interactions that I was talking about, and you can
2 see the magnitude of that interaction here, I can flip back
3 two slides to see how big the orange wedge is this time
4 around. And then it gets smaller because we are still
5 forecasting the same total outcome for the standard. But
6 the incremental impact of that standard is relatively
7 smaller because the IOU's have made a lot more progress in
8 terms of market transformation for lighting by the time that
9 standard takes effect.

10 This is for the mid goals case, the peak demand
11 savings version, same kind of story as before. You can see
12 the savings from the peak demand savings from the Big Bold
13 Initiatives play a much more prominent role, especially
14 relative to the Huffman Bill and IOU programs. I think I
15 will just leave it at that for now.

16 And finally the high goals case, and the primary
17 difference between the mid goals case and the high goals
18 case is there is no difference in the level of IOU program
19 funding, and so that red wedge is more or less the same.
20 You do see bigger impacts from the Huffman Bill, Title 24,
21 Appliance Standards, and relatively less from the Big Bold
22 Initiatives and that is because there are more aggressive
23 assumptions about Title 24 and more aggressive assumptions
24 about, you know, having success implementing the Huffman
25 Bill. So the reason that the big bold -- the impacts from

1 the big bold go down, is because Title 24 is getting more
2 and more aggressive over time, so, again, the incremental
3 impacts from the zero net energy home relative to the
4 standard are lower than in the mid case.

5 And finally, the peak demand savings forecast in
6 the high goals case, again, largely the same story as
7 before; savings from the Big Bold Initiatives for zero net
8 energy homes is taking up a much larger share compared to
9 the energy case.

10 So now that we have all these revised set of
11 results, revised and hopefully comparable results, these
12 form the basis for calculating what we are actually
13 interested in, and that is what portion of savings from
14 uncommitted programs are incremental to the savings already
15 in the IEPR forecast. And this is specifically from 2013
16 forward. And the second bullet just kind of reiterates what
17 we went through before and that is the key step to doing
18 this calculation is knowing or determining which programs,
19 which delivery mechanisms are incremental to the ones
20 imbedded in the '09 IEPR forecast and which ones are
21 duplicative or overlap.

22 So this is also a repeat of before, but I just
23 want to make it clear, the table summarizes the way that the
24 "adjustments," what specific delivery mechanisms in the
25 goals cases were considered as uncommitted programs, and any

1 adjustments that we made from savings from those programs --
2 this is from 2013 forward -- any adjustments that we made to
3 avoid duplication or double-counting from stuff that was in
4 the '09 IEPR forecast. So, again, these are cumulative
5 savings from these programs as modeled in the '08 Goals
6 Study from 2013 forward with those adjustments. And so,
7 having said that, there are a couple things to understand
8 about that methodology, that calculational methodology of
9 trying to make those decrements and using 2013 forward, etc.
10 The method that we used to calculate incremental uncommitted
11 does not account for any differences between the CEC savings
12 estimates and the goals case savings in 2012, right, so as I
13 showed you before, they do not line up perfectly in 2012,
14 but we do not do anything mathematically or analytically
15 about carrying that gap forward, or incorporating any part
16 of that gap forward. Does that make sense? So the
17 differences that exist between the two savings estimates and
18 the two models in 2012 does not factor into the calculation
19 of incremental uncommitted the way that we have done it to
20 date. Okay? The second point is that we saw in all the
21 previous charts that the IOU program savings in the IEPR
22 forecast do decay pretty significantly over time. The
23 accounting methodology that we came up with in collaboration
24 with CEC and ED staff was to essentially treat cumulative
25 savings from IOU programs through 2012 as constant, going

1 forward, so we did not actually incorporate any of the
2 projected savings decay as modeled in the IEPR forecast. We
3 did not incorporate any portion of that savings decay in our
4 calculation of incremental uncommitted, so we effectively
5 treat it as constant. And the reason we did that is to
6 conform to the current PUC policy rules with respect to the
7 IOUs being responsible to replace decayed savings from
8 previous program cycles. So, by treating cumulative savings
9 from IOU programs through 2012 as constant, going forward,
10 so we are only counting new first year savings from IOU
11 programs, 2013 forward, we are not incorporating any -- it
12 does not reflect in the incremental uncommitted calculations
13 any replacement of decayed savings, those are assumed to be
14 associated with committed programs
15 -- replacement of decayed savings. I am looking
16 specifically at Phil. This is a sticky model, I want to
17 make sure that, conceptually, everybody understands.

18 So I am supposed to repeat the question for the
19 folks on the phone, but I am not sure that I got it. So the
20 question was, how does this assumption about the way that we
21 treated or did not choose to address savings decay in the
22 incremental uncommitted savings analysis -- how did that
23 impact the result? And I am going to get to that explicitly
24 in the uncertainty section. Phil's question, I thought it
25 was, how was savings decay treated in the asset potential

1 study, but that was not it? So Phil's question was, the
2 September rule from the PUC was that the IOUs are
3 responsible for replacing 50 percent of decayed savings;
4 now, the formative stage of this methodology was prior to
5 that point, so the rule in place at that point in time was
6 100 percent, or was implied to be 100 percent. So right
7 now, this bullet that I am talking about here, the policy
8 rule that I am referring to here, is that the IOUs would be
9 responsible for replacing all of the decayed savings, so
10 that is the assumption that is embedded by -- assuming that
11 those cumulative savings through 2012 are constant over
12 time, going forward from there, it is basically saying that
13 replacing all of the savings decay from those previous
14 program cycles is associated with committed programs and not
15 uncommitted programs. Does that -- at least for now, does
16 that make sense? Okay. I need to keep on track, so...

17 Sy's question was how does the PUC's policy deal
18 with changes in decay rates due to changes in prices. And I
19 cannot -- I am not ED staff, so I cannot tell you. I cannot
20 answer that, I do not work for PUC.

21 So let's -- I just want to make sure that these
22 points were clear so that we interpret the results that I am
23 going to show correctly, that is all, and we are going to
24 talk about the sensitivity of that particular assumption
25 later. So, just to be sure that everybody understands, the

1 results that we are going to show do not interact at all
2 with the savings decay assumptions that are imbedded in the
3 IEPR forecast, okay? Mr. Jaske?

4 DR. JASKE: So just to try to set the stage, this
5 issue is written up in detail in the staff report, and what
6 Mike is describing is a convention we adopted for the
7 terminology to use to describe this phenomenon. So decay
8 and its replacement is a function of committed program
9 savings, whereas, his analysis is an analysis of the
10 incremental savings of uncommitted programs. So the staff
11 report writes up as an issue what to do about this issue of
12 savings replacement from committed program decay. And so
13 keep in mind that there is now in effect two questions asked
14 of the PUC, you know, when this whole package goes, which
15 one of the scenarios, or how to treat the three different
16 scenarios, and what to do about committed program savings
17 decay. So that is an evolution of the nature of the
18 question going back to the PUC for the PUC to decide what to
19 do compared to, you know, where we were a year ago, in
20 thinking about what this analysis was all about. And the
21 PUC has issued some decisions, as Carmen's appendix notes,
22 that deals with facets of this, not completely clear to me
23 that the PUC has ever really confronted this issue on a
24 longer term, going forward, you know, sort of planning
25 basis. So that is where I think things are from the staff's

1 perspective. And so let's try to let Mike move forward with
2 his analysis of the incremental programs.

3 MR. TING: And, you know, the way I want to frame
4 it is just to make sure that everybody in the room and on
5 the phone interprets these results for what they are and
6 what they are not, right? So I want them to understand the
7 basics of the methodology to make sure you interpret the
8 results correctly. So, these are kind of the bottom line
9 results and aggregated across the residential, commercial,
10 industrial, low, mid, and high. We show them by kind of the
11 primary categories, these four main categories of
12 uncommitted programs. And these are the Gigawatt hour
13 results across all three IOU service territories aggregated
14 together, so it is probably less meaningful for the IOU
15 folks in the room, but for purposes of presentation, we are
16 just showing the aggregate results across the three
17 utilities. We are looking at the last column, 2020 savings;
18 we are looking at incremental uncommitted energy savings
19 ranging from around 10,600 Gigawatt hours, all the way up to
20 14,300, roughly. Those are not very meaningful for people
21 generally -- who knows what a Gigawatt hour is? That is
22 roughly -- I am not sure if I wrote this down -- someone is
23 going to have to correct me if I get this wrong, but I think
24 that is between 10,000 to 14,000 Gigawatt hours of savings
25 from 2013 through 2020, is the benchmark, that is 50-70

1 percent of the growth in sales forecasted in the same period
2 in the '09 IEPR forecast, right? So it is roughly half to
3 three-quarters of the growth in sales over the same period
4 in the '09 IEPR forecast. That is probably the most
5 meaningful benchmark for these large numbers. You can look
6 at the relative contributions across these uncommitted
7 programs, just take the mid case; for example, you could see
8 the more than half, the lion's share from IOU programmatic
9 activities from 2013 to 2020. You can see that the relative
10 impact of the Huffman Bill varies slightly, and that is
11 because of interactions with IOU programs, mainly. So it
12 varies from 3,600 Gigawatt hours in 2020 in the low case to
13 1,600 in the mid case, to 1,800 -- well, sorry, 2,400 in the
14 high case, and that is reflecting both in the low case the
15 assumption is that we do not quite get to full compliance
16 with the Huffman -- you know, we do not quite hit the
17 original Huffman targets by 2020, whereas, in the high case,
18 we hit them. But it is also interacting with the level of
19 IOU programmatic efforts through the beginning of the phase-
20 in period. So you get bigger impacts in the low case
21 because, you know, the IOUs are achieving less lighting
22 savings by the time you get to the implementation phase;
23 whereas, in the mid case, you get relatively more savings
24 captured through IOU programs by the time the standards take
25 effect, so then the incremental impacts from Huffman go

1 down. But from an energy point of view, obviously, IOU
2 programs are taking up the lion's share of incremental
3 uncommitted. And then, you know, it is fairly well
4 distributed between the new lighting standards revisions to
5 Title 24, the new federal standards that are on the
6 rulemaking calendar, and progress towards the next year
7 energy targets for new homes and buildings.

8 So Rick's question was, was the results that just
9 showed just the tabular version of the earlier charts, and
10 the answer is no. So this chart is -- we rerun the models,
11 right, we recalibrated the baseline, we revise the inputs,
12 we have done all that other legwork. And we re-run the
13 models, and this is what you get, and this is just so we get
14 comparable results between the two forecasts. Then we
15 implement these changes summarized in that box, right?
16 Number one, incremental uncommitted is only from the first
17 year savings from 2013, forward, for these particular
18 mechanisms with these particular adjustments. In this case,
19 it is two decrements and then, you know, we are only
20 counting new net savings from IOU commercial programs, okay?
21 Does that make sense? And so these numbers reflect the end
22 result after those adjustments, and only counting 2013,
23 forward.

24 Yeah. All the tabular data for the graphs are in
25 there, as well as more detailed versions of these final

1 results for incremental uncommitted by sector, and delivery
2 mechanism, and case. I know that was confusing for people
3 in the earlier drafts, and I admit it probably was not very
4 clear. But hopefully it is clear now. So this is the
5 energy results. These are the bottom line results in terms
6 of peak demand, and as you can probably anticipate from the
7 earlier charts, they are different than terms of
8 composition. And they are also slightly different in terms
9 of slope. It is a little bit more aggressive in terms of,
10 you know, savings rates per year. And that has largely to
11 do with the relative contribution of the Big Bold
12 Initiatives for zero net energy homes and buildings because
13 they take up -- they ramp up -- the interim milestones for
14 those programs kind of kick-up in the latter half of the
15 forecast period, and the peak savings associated with those
16 programs are relatively more than IOU programs, or the
17 Huffman Bill, that have relatively flatter load profiles
18 associated with those savings. You know, and the ultimate
19 illustration of this is that. So, bottom line number, 2020
20 load case is 4,000 megawatts, mid case is 5,300, high case
21 is 6,400. Those benchmarked to the incremental load growth,
22 coincident peak load growth in the '09 IEPR forecast from
23 2013 through 2020 is, I believe, 75 percent in the low case,
24 close to 100 percent in the mid case, and 125 percent in the
25 high case, so that means, in the mid case, the incremental

1 uncommitted savings for peak demand represent zero load
2 growth. That is kind of the first blush interpretation of
3 it, so zero load growth from 2013 to 2020. And in the high
4 goals case, you would actually, first blush, a total
5 reduction. Don?

6 So Don Schultz is offering a different way to
7 normalize this and, you know, I am not a load forecaster, so
8 I clearly do not have all the right benchmarks in mind, but
9 I am just trying to ground some of these big numbers, and
10 numbers that actually mean something for planning purposes.
11 So Don is offering a different normalization that the 2017
12 results more or less represent the equivalent of two gas-
13 fired base load plants. Is that what you are saying? It is
14 one way to interpret the outcome, yeah. So I do not want to
15 claim that this means zero load growth, or negative load
16 growth, or zero procurement authorization, or anything like
17 that because that is probably not what it means. But I am
18 not a load forecaster or a procurement guy.

19 So Tim's question is, if we had taken into account
20 the decay rates in this EC forecast, in the methodology for
21 estimating incremental uncommitted, how would that
22 directionally impact the numbers on this chart? And the
23 answer is they would go up, so more incremental uncommitted
24 savings. So that is the case where replacing decayed
25 savings would be associated with uncommitted programs,

1 rather than committed programs. Okay, so you know, I only
2 had two -- that is all I have to look at the bottom line
3 results, and, well, sorry, before I leave that, the other --
4 as I said before, the big difference between the energy
5 results and the peak demand results is the relative
6 contribution of the Big Bold Initiatives for zero net energy
7 homes can take either the mid or the high case and, you
8 know, look at the exact contribution to the total. You
9 know, we are talking 40-45 percent of the total, that is a
10 very big chunk, and I am going to talk about this later, but
11 I just wanted to point that out specifically. Obviously,
12 IOU programs are still one of the primary contributors, but
13 in the peak demand case, the savings from the incremental,
14 uncommitted savings from the Big Bold Initiatives, as
15 reflected in the goals study and the current adopted goals,
16 you know, becomes a pretty major player. And I am going to
17 talk about that more in a bit.

18 So with all that in mind, I want to spend the next
19 10 slides or so -- and I am miraculously slightly ahead of
20 schedule, I think -- should we just power through to the
21 end? For my own thirstiness, I am going to get through
22 these next 10 slides and then we can take a break and have a
23 Q&A after that. Is that okay? Okay.

24 So I want to spend the rest of the time right now
25 just talking about the key caveats and uncertainty issues.

1 So any exercise of this type, where at the end of the day we
2 are trying to, 1) predict outcomes from future actions,
3 which is inherently uncertain, as any forecaster will tell
4 you, and then, on top of that, we are trying to interact and
5 meld inputs and outputs from two different modeling
6 platforms in a way that avoids significant systematic bias,
7 all right? And has some semblance of internal consistency,
8 this double-edged sword going on here. For us, you know, in
9 the face of this, the primary task was to reconcile -- well,
10 sorry -- in the big picture, there was no way that we were
11 going to be able to reconcile all the differences between
12 the two modeling platforms, period -- certainly not in the
13 time allotted for the study. What we did try to do was
14 focus our efforts on reconciling what we felt were the most
15 important differences in inputs and methodologies and
16 assumptions, specifically -- and I am summarizing these four
17 bullet points -- reconcile the biggest differences in the
18 way the baseline end use -- energy consumption and peak
19 demand -- are characterized, specifically UEC's, saturations
20 -- and this is at the end use and market segment level by
21 service territory -- and making sure that we are using the
22 same forecast of energy service demand drivers, which sounds
23 dumb, but unfortunately it is something that is -- it is
24 kind of fluffed over scarily often. We also want to make
25 sure we did our savings accounting freeze in the same base

1 year, savings expressed in common metrics, and make sure
2 that we did as much due diligence as possible to identify
3 and reconcile any areas of duplication in terms of programs
4 and delivery mechanisms that were included in both models,
5 and come up with ways to address double counting and avoid
6 double counting from any overlap that does exist. So this
7 is where we focused our efforts. Obviously, there are some
8 differences that do remain. The overall level of
9 uncertainty is, you know, not easily quantifiable, if at
10 all, at the current state of knowledge and tools and data.
11 Based on our professional judgment as the analyst who
12 conducted this study, we feel that there are basically five
13 key areas of uncertainty, and we have a dedicated section of
14 the report that talks about these in depth, and I will just
15 try to summarize each of these for you guys now. So those
16 key differences are -- and this was stuff that was not
17 reconcilable for purposes of this analysis -- electricity
18 price assumptions, differences in the committed savings
19 estimates, annual savings trends over time, as opposed to
20 the total cumulative savings at the end of the forecast
21 period, obviously the issue of savings decay, as we alluded
22 to earlier several times, and uncertainty associated with
23 achieving the Big Bold targets for zero net energy homes.

24 So with regards to electricity price assumptions,
25 in the '09 IEPR forecast, it assumes a 50 percent increase

1 in real prices -- Chris has got to help me out -- from 2013
2 forward? From 2010 to 2020. Oh, I got that wrong, sorry.
3 It is 2010 to 2020. In the Itron potential Update Study,
4 the '08 Itron Potential Update Study, the electricity prices
5 were assumed to be flat in real terms, so they grew with
6 inflation, so obviously the IEPR forecast prices are
7 increasing in real terms over time, whereas the prices were
8 flat in real terms in the Itron Update study. Go ahead,
9 Jaske.

10 DR. JASKE: Flat circa what year?

11 MR. TING: This would be -- oh, that is a question
12 for Jean Shelton. I would guess 2006, I am not sure. 2006?
13 I think 2006, that was the base year, so... Sy?

14 I am talking about uncertainties associated with
15 trying to do this analysis; in particular, trying to figure
16 out what is incremental between two different forecasts on
17 two different modeling platforms. And these are, by our
18 assessment, the five most significant ones related to how
19 these outcomes are going to be used in the procurement
20 proceeding. Yes, and the fact is that we -- in terms of
21 commercial price response, Sy, that did not factor into the
22 bottom line incremental uncommitted values because we
23 assumed that they were 100 percent duplicative between the
24 two. So ergo, any uncertainties associated with either
25 value are not germane to the findings of the study.

1 Okay, but we still have got two different price
2 forecasts for electricity across these two studies. In
3 principal, that affects naturally occurring adoptions and
4 any other price-related customer behavior. Now, you know,
5 analytically, it is very easy to envision, okay, we just use
6 the same price forecasts and rerun asset; unfortunately,
7 doing that type of asset analysis like that is actually not
8 that easy, it requires -- that model takes a whole rack of
9 servers, it takes a lot of time and money to do that in the
10 real world, and so it was kind of out of scope for the
11 purposes of this study. But, it is feasible from an
12 analytic point of view; there are time and resource
13 consequences of that that were beyond the scope of the
14 current contract. So I am trying to tell you what the
15 uncertainties are, how it impacts the analysis, and give you
16 an assessment, or at least an idea of what options are on
17 the table, going forward, for the next time around.

18 I talked about before in some of the area charts
19 about differences, you know, we look at the 2012 values
20 between the delivery mechanisms in the '09 IEPR forecast and
21 what was in the Goals Study, and how they did not line up,
22 the low Goals case was below the CEC levels, the high Goals
23 case -- the high and mid -- were above. As I said before,
24 that is primarily related to differences in the incentive
25 level assumptions that were imbedded in the low, mid, and

1 high versus the Goals cases versus in the '09 IEPR forecast.
2 So in the low Goals case where the weighted average
3 incentive level was below, it was actually filed and
4 approved through 2009, and then we are in the current
5 filings through 2012, versus what was assumed in the low
6 Goals case, which was that base restricted market potential
7 case, and that is weighted average incentives circa 2004-
8 2005. Whereas in the mid, high Goals cases, the incentive
9 levels are soon to be equivalent to full incremental costs,
10 which is obviously beyond what the utilities actually
11 offered recently and have filed for the next cycle.

12 There are also differences in realization rates
13 and net to gross assumptions, and I will not go into the
14 details, this is talked about more in the report.
15 Reconciling the differences related to realization rates and
16 net to gross is something that could be done without having
17 to rerun asset, for example, or something that is that
18 resource intensive. Ideally, we would want to leverage all
19 of the ex post evaluation studies that are currently being
20 finalized. None of those studies were available at the time
21 of either the '08 Goals study, or when the CEC staff was
22 doing the '09 IEPR forecast. So if that type of
23 reconciliation was to occur, you know, it is highly
24 advisable to leverage the full set of approved '06-'08 ex
25 post evaluation findings to make sure that, you know,

1 everything is used in the same sources.

2 Nonetheless, it is important to reemphasize for
3 everyone here that any differences in the savings from
4 committed programs in the two models, none of those
5 differences through 2012 were incorporated into our
6 estimates of incremental and committed savings, going
7 forward from 2013. So this is reflecting kind of
8 differences in the way that committed programs are modeled
9 between the two modeling platforms, right? But specific to
10 IU programs. But those differences are not incorporated or
11 accounted for in the current estimates of incremental
12 uncommitted savings. Right, because we are only looking
13 from 2013, forward. Does that make sense? I just want to
14 make sure -- there are ways to address these differences so
15 that we get to -- when we look at committed savings
16 programs, we actually get into more of a similar outcome,
17 but despite those differences, they are not impacting the
18 calculation of incremental uncommitted the way that we have
19 done it for this study. Simon.

20 So, Simon asked do we have all the data to
21 actually do the comparison based on the analysis done to
22 date of, you know, committed savings from CEC's delivery
23 mechanisms including CEC forecasts and stuff, including the
24 Goals cases, and the answer is yes. And we show that in the
25 area charts, that is why we have that vertical line of 2012,

1 so you can -- you know, you can get a feel for the magnitude
2 of that across the low, mid, and high cases. And these are
3 the main reasons why they are different, and in the case of
4 harmonizing the rebate levels, we would have to rerun assets
5 with the same set of incentive level assumptions. But,
6 again, rerunning asset is a fairly resource intensive
7 exercise, it was beyond the scope of the contract that we
8 had. Harmonizing things like realization rates and net to
9 gross is a little bit easier to do, in principal. In the
10 ideal case, both studies would leverage the results of the
11 '06-'08 ex post evaluations that are not yet approved and
12 available to the public in whole. So there is some
13 uncertainty in annual savings trends and this is -- we kind
14 of elevated this to topic in the report basically because of
15 the context of how it might be used in the LTPP where some
16 of the results for interim years prior to 2020 could be
17 relatively more important, and so we wanted to specifically
18 acknowledge that the SESAT framework is designed primarily
19 to focus on producing robust outcomes for the endpoints of
20 the forecast year, so in this case, 2020. And we leveraged
21 the results of stock turnover modeling outside of the SESAT
22 framework itself, to get at the year-to-year trends. So the
23 specific stock turnover modeling efforts that I am referring
24 to are the stock modeling in asset, which is very detailed,
25 and the new construction rates and decay rates that are

1 developed by the CEC, reflected in the IEPR Demand
2 Forecasts, so we are replicating those verbatim. And so
3 things related to, so for example, Title 24, the stock
4 turnover modeling is fairly straightforward, right? You are
5 just looking at new construction additions and the
6 cumulative way it impacts that over time. Where the highest
7 uncertainty is, the temporal dynamics of savings from the
8 Huffman Bill, the AB 1109 lighting standards, the way that
9 it was modeling in the '08 Goals Study, as I mentioned
10 previously, we had a linear progress starting in 2011,
11 towards the targets that were in the legislation. For this
12 study, we tried to mimic the specifications that are now in
13 Title 20. There is uncertainty with respect to the way the
14 Title 20 -- for us -- the way the Title 20 was specified was
15 by specific product segments, so they divvied up the market
16 into output bins -- high output lamps, medium output lamps,
17 so there are like five of them. There is not enough market
18 data to be able to segment the lighting market by output bin
19 in terms of sales or how those are applied to fixtures. So
20 we were not able to actually directly simulate the stock
21 turnover, and therefore the cumulative savings over time
22 associated with the way that the Huffman Bill standards are
23 codified in Title 20. On top of that, the volume and
24 diversity of vendors and suppliers in this market is large,
25 probably larger than any other product that is regulated

1 under Title 20, and you know, potential leakage is a
2 significant issue for this particular standard over time,
3 and obviously could have significant impacts on actual
4 realized savings, particularly through the first year or two
5 years, or three years of the final 45 lumens per watt
6 standard that takes effect in 2018. So there is uncertainty
7 with the way that we have kind of mimicked the interim --
8 the phase-in and the impact of the interim standards, as
9 well as uncertainty with the endpoint relative to the issue
10 of leakage associated with the final standard and the 2018
11 standard that has been codified now.

12 Okay, savings decay, everyone's favorite topic.
13 This is just really a summary of everything we talked about
14 this afternoon, the way it is done in the IEPR forecast is
15 that savings from IU programs to K from 2013, forward. This
16 simulates the theoretical absence of IU programs over the
17 uncommitted program period. And so, you know, measures have
18 reached the end of their useful lives, and then people do
19 not replace them. For purposes of calculating incremental
20 uncommitted, we effectively treated them as constant, going
21 forward from 2013. So -- and this is again to conform to
22 current PUC policy rules. So the question came up, you
23 know, what does that mean towards the bottom line if you had
24 -- so this chart is an example of using an idea of what the
25 size of decayed savings replacement is and how that might

1 impact incremental uncommitted savings if we were to include
2 those, replace the decayed savings as associated with
3 uncommitted programs. So the size of the purple wedge here
4 at the bottom actually shows the magnitude of savings decay,
5 going forward from 2012. And you can look at the relative
6 size of that purple wedge in 2020 compared to the size, for
7 example, of the red wedge, which is IOU programs and they
8 are roughly the same, so it is a significant sensitivity.
9 This is clear. Sure, Rick.

10 So this slide illustrates the relative magnitude
11 of that assumption and the sensitivity is large. So it
12 should also -- but the size of this purple wedge also
13 reflects the specific measure of decay assumptions that are
14 embedded in the IEPR forecast. And so you have to consider
15 them for what they are.

16 So obviously on that chart, you know, given the
17 measured decay assumptions and methodologies in the IEPR
18 forecast, that is the size, the relative magnitude of the
19 sensitivity that we are talking about, but it has to be
20 understood for what it is, it is based on a certain set of
21 assumptions and methodologies. The same is true in the
22 asset forecast. The asset forecast includes measured decay,
23 as well. The approach to actually quantifying measured
24 decay was significantly different from how it is done in the
25 '09 IEPR forecast. In both cases, they are -- we are using

1 the data that is available to us, but the truth is, there is
2 not comprehensive data or studies to prove either estimate
3 definitively. And if and when this becomes this issue is --
4 you know, where the rubber hits the road, either in terms of
5 the IEPR proceeding, or the long-term procurement
6 proceeding, or the efficiency proceeding, or wherever, if
7 you are going to argue over whether it should be in, or out,
8 or how it should be treated, it is 50 percent, 75 percent,
9 whatever, there is uncertainty, I would argue, large
10 uncertainty over the magnitude of that, overall. They have
11 their approach, we had our approach. Honestly, we do not
12 know where the truth is because there are not enough studies
13 and not enough observed data across the entire spectrum of
14 measures that are being offered by IOU programs to
15 definitively support either methodology that is currently
16 out there. So there is a need to have comprehensive
17 quantitative assessments to measure decay, to find out what
18 it really is in aggregate, across a large range of measures.
19 That needs to happen. And so, you know, specifically we are
20 talking about regular timely market saturation studies, not
21 one-time studies, but ongoing tracking studies, panel
22 studies of participants, right? Time series analyses of ex
23 post evaluation findings. This is what -- these are
24 specific examples of the types of things that are needed to
25 support robust estimates of measure savings to K in

1 aggregate, associated with IOU programs. So everybody needs
2 to not necessarily hang their hat on the size of that purple
3 wedge, right? Okay, I will just talk for myself. Because
4 we know that nobody knows, really -- nobody can argue that
5 they know where the truth is and have it grounded in
6 anything that is a comprehensive set of observations in the
7 real world, right? It is all anecdotal. That is my
8 characterization.

9 So, I do not want you to assume that the height of
10 any of those wedges is incremental uncommitted in year 20
11 because the starting point for those calculations is new
12 savings in 2013, forward, and all the decrements that we
13 specified before, so it is not as easy as that, and it is
14 easy to get hung up on the height of any of these wedges in
15 2020, but that is not incremental uncommitted, it is 2013
16 forward and you have to take into account the overlap in the
17 decrements that we identified previously.

18 I recalled a high estimate of savings decay, but
19 that is just off the cuff, given what I know, which is
20 probably a fairly shallow understanding of, you know -- I
21 saw the high level assumptions in methodologies, but I do
22 not claim to have a comprehensive knowledge of the CEC
23 methods, but I would call it --

24 My point is that, you know, the methodology for
25 calculating incremental uncommitted, based on these revised

1 model results that we did, you could see that the assumption
2 related to savings decay is sensitive, right, the total
3 result that we showed you is sensitive to that assumption.
4 That is the number one point. Number two is that, if you
5 are going to incorporate any level of savings decay into an
6 estimate of incremental uncommitted, we would have to have a
7 comprehensive way, a defensible way, to do it. And right
8 now, there is not a comprehensive data set to support a
9 robust number estimate for savings decay. Period.

10 DR. JASKE: Let's let Mike finish his
11 presentation, we will take a little break, and then we will
12 have Q&A. But before we do that, I will repeat what I said
13 an hour ago. The staff report explicitly says the PUC has
14 to decide two things, what to do about the incremental
15 savings, and what to do about savings decay from committed
16 programs. So it is framed as best and boldly as we could
17 think to write it out in the staff report, so there is no
18 danger of this issue, you know, falling through the cracks
19 at this point, given what we wrote down, the transcript of
20 this event, but those are two separable decisions that the
21 PUC, in some future process, has got to deal with. So Mike,
22 let's move on to the next subject.

23 MR. TING: So you know, my takeaway from here, and
24 I hope you take it away, is the size of that wedge,
25 honestly, is an island certain in and of itself. So before

1 you get too hung up about the size of that thing, know that
2 the size of it is uncertain. If you are going to deal with
3 it going forward, we have to reduce that uncertainty
4 significantly.

5 So, the last and final major uncertainty is, you
6 know, relative -- the savings contributions from achieving
7 these targets for zero net energy homes, the targets that
8 are associated with these big bold strategic initiatives, so
9 all of the programmatic activities and delivery mechanisms
10 that were analyzed in the Goals Study, with the exception of
11 the Big Bold Initiatives, all of them have very well
12 established funding sources, program administrators, and
13 regulatory oversight, all of them, with the exception of Big
14 Bold. And by the original characterization of this
15 initiative, it is not just an IOU program, it is really kind
16 of that more holistic market transformation type of effort,
17 that is how it was described in the original -- I do not
18 know if it was a decision or Commissioner Gruenich's once
19 you laid this out in May of '07 -- was it a decision? Okay,
20 anyways. So we are talking a significant departure from
21 traditional delivery mechanisms and legislative and other
22 legal mandates. So there is uncertainty in how these
23 savings are actually going to be delivered logistically. On
24 top of that, so regardless of uncertainty in how those zero
25 net energy homes programs are actually going to deliver --

1 who is going to do it, where is the money going to come
2 from, etc. -- achieving those whole market targets for zero
3 net energy home penetration which, for example, is 100
4 percent of all new residential homes will be zero net energy
5 by 2020, that is the Big Bold target for the residential new
6 construction sector -- 100 percent of all new construction
7 in 2020 zero net energy. These are super aggressive from a
8 technology point of view, from a vendor capacity and
9 supplier point of view, from a program delivery point of
10 view. So, ergo, it is reasonable to describe those savings
11 outcomes that we have shown associated with the Big Bold
12 Initiatives for zero net energy homes and buildings as
13 highly uncertain. Since none of these delivery mechanisms
14 exist, some of the technologies exist at a demonstration or
15 pilot level, but you know, we did not try to model adoption,
16 for example, explicitly. We modeled those savings as
17 penetration weighted, technical potential -- it is hidden by
18 that little thing there. So that is the last bullet on this
19 slide, we will make sure that everybody reads it, right? To
20 understand what the numbers are for what they are -- they
21 are penetration weighted technical potential, assuming you
22 get that level of market penetration in the new construction
23 segment, and that is the best that we could do. The
24 relative contribution of these things from an energy point
25 of view, you could characterize as modest -- roughly 20

1 percent or a fifth from an energy point of view --
2 incremental uncommitted. From a peak demand point of view,
3 this jumps all the way up to almost 45 percent by 2020
4 across all three initiatives. You know, 90 percent of the
5 savings from the Big Bold Initiatives that we included as
6 uncommitted programs are these zero net energy home
7 initiatives -- or zero net energy homes and buildings,
8 right? So that is what we are talking about. Zero net
9 energy homes and buildings account for 45 percent of the
10 total current estimate of incremental uncommitted peak
11 demand savings by 2020. So, again, this is the other piece
12 of the total pie, you know, where the outcome itself, the
13 total outcome, is highly sensitive to this particular
14 mechanism. And whether or not there are any adjustments for
15 that or not, it is critical to actively monitor that market
16 and to have some basis for actually measuring and assessing
17 progress towards those specific goals on a regular and
18 timely basis, and evaluate the likelihood of achieving the
19 interim milestones and the ultimate milestones of those
20 initiatives. So that is all I will say.

21 DR. KAVALEC: So how about we take a 10-minute
22 break and be back here at 3:35?

23 (Off the record.)

24 (Back on the record.)

25 DR. JASKE: We have on the agenda about six

1 minutes, by my watch, for non-clarifying questions. So
2 let's launch into those and we will see how it goes, and
3 maybe we will take more than six minutes. If anyone has
4 really complicated questions, you should probably come over
5 here and ask it so it gets recorded, and so the people who
6 are on WebEx can also hear.

7 MR. TING: Is this a wireless mic?

8 DR. KAVALEC: One other thing, if you do not get a
9 chance to ask a question, or something occurs to you later,
10 feel free to e-mail me. My e-mail address is on the
11 presentation coming up and if I cannot answer it, I will be
12 happy to ask Itron.

13 MR. TING: How about a show of hands of people who
14 have questions. Is it just Tim and Rick? Does anyone not
15 named Tim, Rick or Phil have a question? Anyone on the
16 phone have a question? Apparently someone had a question on
17 the phone, but we do not know if they are still there. Does
18 anyone else in non-staff in the room have a clarification or
19 a question on the technical analysis that we did? That is a
20 no. So apparently someone on the phone had a question
21 previously. Is this person still there?

22 MR. BERMAN: Yes.

23 MR. TING: Ah ha. Fire away.

24 MR. BERMAN: Can you hear me?

25 MR. TING: We can.

1 MR. BERMAN: Pardon? Hello?

2 MR. TING: Yes, we can.

3 MR. BERMAN: A couple of questions, a couple of
4 areas, one is where you were talking about for appliance
5 standards, but I did not hear any mention of the federal
6 transformer efficiency standards that went into effect in
7 2010. Were those figured in any way into your analysis?

8 MR. TING: No. We were looking at efficiency
9 measures on the customer side of the meter.

10 MR. BERMAN: So you are looking only at -- you are
11 not looking at how generation of demand respond to
12 efficiency on the DMV system at all?

13 MR. TING: No. So the exact list of federal
14 standards -- we use the six-year rulemaking schedule that
15 was available at the time of the '08 Goals Study as our
16 basis for the assumptions about which standards would come
17 when, and those are summarized in the Section 3 of the
18 report. And so, if I recall correctly, this is -- the
19 specific standards that we simulated were residential
20 central air-conditioners, residential room air-conditioners,
21 package terminal heat pumps, and package terminal AC units
22 in commercial sector, and I am forgetting something I know
23 -- residential dishwashers, I think.

24 MR. BERMAN: So it is only retail demand you are
25 looking at, you are not looking at the effect on generation

1 itself?

2 MR. TING: Correct.

3 MR. BERMAN: So that might, in fact, be falling
4 instead of rising.

5 MR. TING: Sorry?

6 MR. BERMAN: So would the effects of Smart Grid
7 and so forth -- the results might be very different.

8 MR. TING: I would not venture to know.

9 MR. BERMAN: Okay. Then a question on your
10 projections for providing lighting standards, my impression
11 was that the savings with CFLs is about peaked out. Am I
12 misinformed about that?

13 MR. TING: Peaked out in terms of market
14 saturation?

15 MR. BERMAN: Yes.

16 MR. TING: Oh, I do not think so. You mean
17 currently?

18 MR. BERMAN: Yes.

19 MR. TING: That the market is saturated with
20 CFL's?

21 MR. BERMAN: Well, that there is basically been a
22 huge conversion and that the savings -- that it is going to
23 be about five at this point, at the current level?

24 MR. TING: I do not believe that is true.

25 MR. BERMAN: Okay.

1 MR. TING: So, just for clarity, the forecast that
2 you saw for the low, mid, and high Goals cases, the IOU
3 program piece of it, includes a substantial amount of
4 savings from lighting measures, most of which is CFL's, but
5 it also includes non-CFL measures, so we are talking Super
6 T-8 linear lamps, lighting controls, other non-CFL measures.
7 But CFL measures certainly account for a significant portion
8 of that savings from IOU programs up until the time the
9 Huffman standards become basically the baseline, which would
10 obviate CFL's from being offered from IOU programs.

11 MR. BERMAN: So the savings from CFL's, whether
12 they be part of the IOU program or part of the Huffman
13 standard just continues to grow?

14 MR. TING: Uh, you could put it that way, yes.

15 MR. BERMAN: Is that realistic?

16 MR. TING: Based on the market saturation that I
17 have seen, yes. Certainly we are far from market saturation
18 for CFL's, especially in the residential sector.

19 MR. BERMAN: Okay, thank you.

20 MR. TING: You are welcome. Anybody else on the
21 phone? Okay. All right, Rick, all you.

22 MR. ASLIN: Okay. Well, my name is Richard Aslin
23 and I work for Pacific Gas & Electric Company, and I just
24 wanted to say that I think a lot of good has come out of
25 this analysis, and also the DFEEQP team that has gotten

1 together over the last at least year, and I think a lot of
2 interesting observations have been made, and I do think that
3 this kind of analysis, as difficult as it may be, to both do
4 and to kind of review and try to -- I will use the word
5 "critique," but not in any sort of harsh fashion -- I think
6 it is worthwhile. So I have learned a lot over the last
7 year. One thing that I did, though, when I got the report
8 is I said, okay, well, there is a lot of stuff out there on
9 energy efficiency and goals and all those kind of things,
10 can I take some numbers that come from other sources and
11 actually come up with something that really reconciles to
12 the numbers that are being shown in this analysis? And
13 really, one of the very first things that I did, I just went
14 to the Goals decision, and I looked at that Goals decision,
15 and I wonder if you could do something for me. Could you go
16 back to that chart that had the table with the incremental
17 uncommitted, especially the megawatts one? Yeah, that is
18 the one. Thanks. Okay, so I am looking at the goals
19 decision and that is decision 08-07-047, and specifically I
20 am looking at the table -- it is table 82, Total Market
21 Gross Goals - IOUs. And when I look at the total market
22 gross goals, 2012 to 2020, the cumulative total market goals
23 for that entire period, 4,542 megawatts, now I look at your
24 analysis here for the mid case, and I see that just that
25 incremental uncommitted is 5,352. And that is the first

1 place I started to get a little disconcerted. So if you
2 could -- can you explain how to reconcile those?

3 MR. TING: So this has almost everything to do
4 with the peaked energy factors that we used in the '08 Goals
5 Study. The peak demand values that we calibrated to and for
6 the Goals Study used '04 actuals, so '04 was a historically
7 mild year. That is just the way it was, and we did not
8 think to calibrate it to a forecast in a normal weather year
9 for that exercise. These numbers are -- the peaked energy
10 ratios reflect normal weather year as embodied in the '09
11 forecast for system peak demand from the '09 IEPR. Does
12 that make sense? So the peaked energy factors -- so if you
13 did the same comparison on energy, how did your comparisons
14 look? Or did you not look?

15 MR. ASLIN: On the energy, they actually looked
16 pretty close.

17 MR. TING: Right.

18 MR. ASLIN: Yeah, they looked pretty close, but I
19 can understand how temperature --

20 MR. TING: It is related to the -- the '08 Goals
21 Study used -- I will say unfortunately -- historically
22 modeled weather year for the calibration year for peak. I
23 mean, intuitively, does that interaction make sense to you,
24 then?

25 MR. ASLIN: I understood what you said, I would

1 have to think about whether it intuitively makes sense, but
2 I understand what you said.

3 MR. TING: Well, and the other thing to keep in
4 mind is that the peaked energy factors for peak demand,
5 particularly for Big Bold, make a big difference.

6 MR. ASLIN: Yeah, I will get to the Big Bold, I
7 think that is another thing.

8 QUESTION FROM THE FLOOR: Have you run the numbers
9 using the 2004 peaked energy ratio?

10 MR. TING: No, but I could.

11 MR. ASLIN: Did you have a slide that had the
12 table that showed the -- yeah, I would be very interested in
13 knowing this thing that Simon just mentioned, which was, you
14 know, how much did the goals change? Because we have a
15 decision, we had a whole process, and --

16 MR. TING: The energy numbers are almost exactly
17 the same.

18 MR. ASLIN: Well, in my review, my quick review
19 that I did, so do not hold me to this, but in the quick
20 review that I did, I did not really have that much problem
21 with the energy part of the analysis. It is actually pretty
22 consistent with our understanding of energy efficiency with
23 respect to energy demand growth, which is that, if you were
24 not doing the energy efficiency, you probably -- your demand
25 growth would be about 50 percent higher, or would be twice

1 as high as it is, so you get about a 50 percent offset in
2 what demand otherwise would have been -- which is pretty
3 close to what you are getting, and I just updated the
4 forecast for Pacific Gas and Electric Company, and I ended
5 up getting something that was pretty consistent with what
6 would come out of this fully mitigated analysis for the
7 energy, but I really am having a hard time with the peak
8 capacity one because that is essentially -- I think you
9 mentioned this -- it is essentially no growth in the base
10 case, 2013 to 2020, and then it is negative growth in the
11 peak, and during that same time the California economy, that
12 is all hope, is going to grow, and we are going to add more
13 people and I do not think we ever had a period in the
14 history of California where we have not needed more energy
15 in order to facilitate that sort of growth. So anyway, so
16 that was one question -- can we reconcile the Goals decision
17 with the mid case? So if people can think about how to do
18 that, that would be good. And that is probably a question
19 for the PUC as to how they want to handle that.

20 The other clarifying question I had was, on the
21 Big Bold energy efficiency strategies, what I thought one of
22 your slides said was that 90 percent of the peak savings in
23 that category -- and that category was like 60 percent of
24 total peak savings, I think --

25 MR. TING: Forty-five.

1 MR. ASLIN: Okay, so 50 percent of total peak
2 savings, so about 50 percent of the incremental uncommitted
3 peak savings have to do with one thing, which is zero energy
4 homes and zero energy commercial buildings?

5 MR. TING: Uh huh, new commercial buildings, so
6 both new construction.

7 MR. ASLIN: Right. And I am just wondering if
8 maybe we could see a little bit more on that in terms of
9 what was the assumption about how many homes that is, and
10 kind of like where they are located with respect to climate
11 zones, and all that kind of stuff.

12 MR. TING: Well, the driving assumptions are
13 listed in Section 3. I could point you to the table.

14 MR. ASLIN: Okay.

15 MR. TING: Why don't I just do that. This is
16 Section 3.2, and then the market penetration assumptions and
17 the unit savings assumptions are in Table 3.1 and Table 3.2.
18 And, you know, by their own characterization, by their own
19 meaning, PUC, Commissioner Gruenich and staff via the
20 strategic plan and various drafts leading up to the
21 strategic plan that was adopted, they are aggressive, i.e.,
22 100 percent penetration of Tier 2 homes in new construction
23 by 2020, Tier 1 and Tier 2 and Tier 3 refer to the
24 thresholds for the California Solar Homes Partnership, so to
25 get in for those incentives, you have to do efficiency

1 first, and there is Tier 2 level and Tier 3 level. Tier 2
2 is 35 percent relative to '05 Title 24, Tier 3 is 55 percent
3 relative to '05 Title 24. So we are talking, by 2020, 100
4 percent of all new homes are Tier 2, and 90 percent are Tier
5 3. That drives that result, entirely. That and the new
6 construction rates are embedded in the '09 IEPR.

7 MR. ASLIN: Okay, so I just want to elude back
8 here, this is just so we are clear on this. In the Goals
9 decision, the one that I was just referring to previously,
10 it does lay out even there what the megawatt savings are for
11 Big Bold energy efficiency strategies.

12 MR. TING: We have the exact same scenario
13 assumptions -- these are the same set as was used in the
14 Goals Study, the only difference is the peaked energy
15 factors.

16 MR. ASLIN: Right, but I just want to point out
17 the vast difference here -- vast. It is like in the Goals
18 Decision, it is like less than a thousand megawatts, and in
19 your mid case, it is 2,000 megawatts, and in your high case
20 it is almost 3,000 megawatts, so I think that is just really
21 -- we have the thing that is the most uncertain which is
22 driving the outcome. And I guess my final question --

23 MR. TING: Is that a question?

24 MR. ASLIN: No, that was a commentary. Editorial.

25 MR. TING: Sit down.

1 MR. ASLIN: You can delete that later. Just -- I
2 did have a question about precision or accuracy of the work.
3 Is there any statistical test that can be done to show what
4 is the error band around these estimates of the incremental
5 uncommitted?

6 MR. TING: No, not that is real defensible, I
7 mean, we did not attempt to quantitatively bound uncertainty
8 for this study. Now, in the Goals Study, we did low, mid,
9 and high cases for every mechanism systematically, and we
10 showed results for those bounded results for each mechanism,
11 but when it came time to construct the straw man cases, to
12 set goals, that previous matrix -- right -- ED staff shows
13 -- right, we collaborated with them to come up with, okay,
14 so we have low, mid, and high estimates for each of these
15 mechanisms, and then we basically made choices for each cell
16 to form the low, mid, and high case, but within a case it
17 was not bounded itself by -- you know what I mean?

18 MR. ASLIN: Uh huh.

19 MR. TING: So -- yeah.

20 MR. ASLIN: Okay, thanks.

21 MR. TING: No attempt to quantitatively bound the
22 results for a given Goals case was done for the Goals Study,
23 or for this study.

24 MR. ASLIN: Okay, all right. And thanks very
25 much. I really appreciate all the work you have done over

1 the last year or more on this, so -- and you know, I guess
2 we have one or two more workshops to go.

3 DR. KAVALEC: So, excuse me, Tim, let's try to do
4 two more questions so that we can get on to the rest of the
5 workshop.

6 MR. VONDER: Okay, I am Tim Vonder with San Diego
7 Gas & Electric. I kind of would like to offer a suggestion.
8 In looking at your work, I think you did a very nice job,
9 and I would give you an A-. And I think I would give you an
10 A- because you followed the rules, but if you could kind of
11 produce an additional scenario, break the rules and produce
12 an additional scenario, I would probably raise it to an A.
13 And what I have noticed is there is an inconsistency between
14 what the Energy Commission staff did when they produced
15 their forecast and what you did when you produced your
16 analysis, and that is in the regard of taking this useful
17 information from these ex post studies that were done on
18 achieving savings from the IOU programs, and I think the
19 studies that were ready and on the table at the time all of
20 this was done was studies that involved savings up through
21 2005. And I think, if I remember correctly, the amount of
22 savings that they adjusted it down to was approximately 65-
23 68 percent of what was initially claimed as being achieved
24 as to what was actually achieved. And then I think the
25 Energy Commission used that information when they put

1 together their forecast, and they made some assumption then,
2 using a realization rate of carrying that forward in some
3 fashion for the rest of the committed programs up through
4 2012. But because of the rules that you were following, I
5 think the PUC rules were that you were to assume 100 percent
6 of total market achievable and so you assumed, I think, in
7 your analysis that we would actually achieve everything that
8 is stated here. And if you could produce a scenario that
9 would at least, you know, assume something less than 100
10 percent achievable, and be more consistent with the way the
11 Energy Commission did their forecast, that, I think, might
12 be beneficial.

13 MR. TING: I understand your point, but for
14 clarity, so you are talking about -- you are saying that the
15 Goals scenarios and the underlying potential -- achievable
16 potential forecast assume 100 percent realization rates.

17 MR. VONDER: Right.

18 MR. TING: That is not accurate.

19 MR. VONDER: Ah.

20 MR. TING: So they do assume 100 percent
21 incremental cost rebates, but that is different from 100
22 percent realization rate from ex ante claims. Right? The
23 realization rate is relative to an ex ante claim.

24 MR. VONDER: Okay, right.

25 MR. TING: So, just for clarity, the IOU portion

1 of this study, and the Goals Study, is based on '08 Itron
2 potential updates that were conducted for the IOU's by
3 Itron, using the asset model, the adoption forecast for all
4 the forecasts of achievable market potential that come out
5 of that asset study are calibrated -- were calibrated to all
6 of the '04-'05 ex post results that were available at that
7 time plus the -- it was not the full set, but the per unit
8 kind of -- you could think of them as ex ante savings, you
9 know, per unit ex ante savings assumptions for each measure.
10 So, first of all, the adoption forecast was calibrated to
11 observe the option rates, right, that were available from
12 '04-'05 ex post evaluations. So in terms of forecasting,
13 for example, adoption response to a certain level of
14 incentive, those are actually calibrated to observe data
15 from '04-'05. In terms of the savings assumptions
16 associated -- per unit savings for measures, specifically
17 measures, the '08 potential study used all of the -- you can
18 think of them as most of them ended up being in the 2008
19 DEER, it was still '05 DEER at the time, but Itron was the
20 prime contractor for the DEER Update Study, and so we
21 incorporated all of the updated DEER data that we had
22 available at the time of that, so we are talking -- I think
23 this was circa 2007 when the final runs of those asset
24 models were being produced, so we had preview of the major
25 revisions to '04-'05 DEER that were reflective of actual

1 realization rates from '04-'05 ex post studies. Does that
2 make sense?

3 MR. VONDER: So far.

4 MR. TING: So, therefore, the realization rates
5 observed in '04-'05 programs were largely reflected in terms
6 of per unit savings in the '08 potential forecast. In
7 addition to that, the adoption rates themselves were
8 calibrated to actual '04-'05 observations.

9 MR. VONDER: Okay.

10 MR. TING: So, in principal, although the
11 methodologies in the two modeling frameworks are different,
12 right, one is using a top down realization rate in the
13 growth assumption, the other is using calibration to
14 historical data, right? And the kind of DEER '08 preview
15 data, if you will, that was available, that was ground in
16 the realization rates in the '04-'05 cycle, right? It is
17 just two different approaches to arriving at the same
18 outcome, which is the actual expected savings from programs,
19 not straight up ex ante claims. Right?

20 MR. VONDER: Okay, so --

21 MR. TING: Now, the extent to which one is higher,
22 you know, more optimistic than the other, I cannot tell you
23 because we did not strictly analyze that.

24 MR. VONDER: And I guess, then, to bring all of
25 this together, and to kind of compare it to like what Rick

1 was talking about when he was saying, you know, these are
2 the goals that are in Decision '07, okay, you are using
3 efficiency measures that are different, possibly lower,
4 let's say -- just assume lower -- than what was used to
5 produce that Goals Study. So when we compare this to the
6 Goals Study, there is a -- I do not know -- we are more than
7 meeting the Goals? I am not quite sure where that goes. If
8 the Goals were built on a measure of efficiency that is
9 higher than the measure efficiencies that you used in your
10 analysis, where does that take us?

11 MR. TING: The only thing that is different is the
12 peaked energy factors for residential end uses, which we
13 talked about already, we have slightly lower total forecasts
14 in the growth in housing stock, the commercial floor stock,
15 than before. So those -- one is an upward adjustment, one
16 is a downward adjustment. We had some slight revisions in
17 space heating UEC's, but you do not really -- those do not
18 manifest themselves very much in these results, particularly
19 the peak results, they are zero. We did revise the base UEC
20 for space cooling in SDG&E, I think it went up, so that is
21 an upward revision to the peak results, for sure. But in
22 terms of why we use this adjusted set of scenario
23 assumptions versus the Goals Study, I would direct you to
24 the clients and not the contractor.

25 MR. VONDER: All right. But, I guess, just then

1 in summary, what you are saying is that you did really make
2 some adjustments like the forecasting staff did when they
3 adjusted downward the realization rate. You made some
4 similar adjustments, but at a more detailed level in terms
5 of measured efficiency --

6 MR. TING: It is just a different approach to try
7 to simulate the same expected value outcome. One is the
8 direct application of realization rates net to gross ratios,
9 the other is to calibrate to observed adoption and use
10 savings inputs that reflect the best knowledge of
11 realization rates to date, and incorporate that already on
12 the front end.

13 MR. VONDER: Okay, thanks.

14 DR. KAVALEC: So we can take one last question.

15 MR. GOLDSTONE: I have a question, but I have a
16 rhetorical question, so it will be short. And actually, I
17 want to blame Mike Ting for this question because you said
18 something earlier -- I am not going to ask you this
19 question, okay? But you inspired the question. So I am
20 going to ask the question for all of the modelers. You said
21 earlier -- I forgot who was asking you -- but you said it
22 would not be defensible -- someone was asking if you could
23 come up with a bound of uncertainty and you said it would
24 not be defensible. Did I get you right? You said something
25 like that.

1 MR. TING: Someone asked me to put a quantitative
2 bound on uncertainty and I could give you one, but it --

3 MR. GLADSTONE: But you used the word that it was
4 not "defensible." That is what caught my --

5 MR. TING: And off the cuff.

6 MR. GLADSTONE: It is interesting you said that
7 because we are in a project in which we are trying to
8 evaluate the demand modeling methodologies at the Energy
9 Commission, and we have a framework, and our framework says
10 it is not defensible to put forth a point forecast unless
11 you can give the policymakers some idea of the bound of
12 uncertainty, because if you do that the policymaker might
13 believe your point forecast, despite all your caveats and be
14 badly misled. So my question to the modelers is do you
15 think our framework is right or wrong? And let me know
16 because that is the one we are applying. And a related
17 point, which makes me think the framework is right, is if I
18 think of what models and modelers can do -- and, by the way,
19 I have a lot of respect for computer modeling, in my youth I
20 used to do it and I learned a lot from computer modeling, so
21 I know you can model that -- but one of the things that I
22 think computer models can do, that human brains cannot do,
23 is deal with complex interdependencies, and what we have
24 here -- all these different uncertainties, you know, like
25 the decay uncertainty, the price uncertainty, the economic

1 growth uncertainty, these are interdependent with one
2 another. So if you look at each one, if you look at each
3 uncertainty one at a time and you try to add them up to get
4 a bound uncertainty, you way exaggerate the uncertainty.
5 But if you think hard about the interdependencies and try to
6 nail those down, you will learn a lot about real
7 uncertainty. And I think if you use models in that way, you
8 will in fact be able to come up with some defensible -- not
9 only defensible, but downright insightful and useful ideas
10 about how to bound uncertainty. So that is where I am in my
11 thinking, that is where we are in our thinking, so I am
12 inviting any of you modelers to communicate your thoughts on
13 that. I am looking for help because I feel bad, I am at
14 odds with one of the best modelers here, and he tells me one
15 thing, and I am in a totally different thing, so I am
16 worried now.

17 MR. ASLIN: My comment on that would be, yes, I
18 agree, there is a lot more to looking at a distribution than
19 looking at the expected value. You have to have the
20 uncertainty bounds, but I would go beyond that and say the
21 other really really crucial thing is it has to be
22 verifiable, you have to be able to give your model to
23 another person, and that person has to be able to run your
24 model and get the same result that you got. I want
25 verifiability and transparency.

1 MR. GLADSTONE: You want the bound of uncertainty
2 and stability for someone else to verify your bound of
3 uncertainty.

4 MR. ASLIN: Yes.

5 MR. GLADSTONE: Okay.

6 DR. KAVALEC: Okay, so let's move on. I have a
7 real quick slide presentation here. Okay, first off, I want
8 to mention something I should have mentioned before for
9 those that have not been through this process. We ask that
10 questions or comments be submitted to our Dockets Office,
11 and if you look in the announcement for the workshop, it
12 gives you specific directions on how to do that. And, as I
13 said, if any additional questions crop up in the next few
14 days, there is my e-mail address, I will try to handle
15 those. Also, I want to acknowledge the tremendous amount of
16 work that Itron put into this and thank Mike for a great
17 presentation on a very difficult subject.

18 Okay, so I want to just give a little bit of
19 perspective on the numbers that Mike has presented this
20 afternoon, starting with the 2009 IEPR forecast itself, and
21 then looking at how incremental uncommitted savings look
22 relative to the total forecast, and how these incremental
23 uncommitted savings look relative to the total committed
24 savings in the forecast.

25 Okay, in terms of getting eventually to a managed

1 forecast, which is the CPUC's goal, we are starting off at a
2 lower point than we were versus our 2007 forecasts. This
3 first draft shows for the three IOU service territories
4 combined electricity sales forecasts for the 2009 forecast
5 and the 2007 forecast, and you will notice quite a
6 difference between the two, around 7 percent lower in --
7 that should actually say 2018 because the 2007 forecast does
8 not go up to 2020 -- and that comes from more pessimistic
9 economic projections, more efficiency, higher electricity
10 rates, a 15 percent increase in this forecast versus flat
11 rates in the last one, and more self-generation. And here
12 is the same thing for peak, again, a lower forecast versus
13 2007, but not as big a difference, only 5 percent lower --
14 again, that should be 2018 -- and the reason for that is
15 that, just from observation, we have seen in the last year
16 or so that peak demand has not been dropping as quickly as
17 total energy demand, or total consumption.

18 Okay, so next, here is what the three scenarios
19 look like compared to our 2009 IEPR forecast for the three
20 IOU's combined. The three lines below the green line
21 starting in 2013 are what our forecast would have looked
22 like had we incorporated these incremental uncommitted
23 impacts into our sales forecast. So they would constitute
24 by 2020 a 5-7 percent reduction. Now, again, this is not a
25 complete -- this is not the end of the story because, to get

1 to a managed forecast, you also have to take into account
2 other types of demand side resources like additional self-
3 generation. And for peak, as we have seen, much larger
4 impacts. You can see in the red, the mid case, and the
5 black, the high case. We have zero or negative peak growth,
6 8-12 percent reduction in 2020 versus our peak forecast for
7 the three IOUs combined. And that was due as Mike pointed
8 out mainly to the Big Bold assumptions regarding the Big
9 Bold Initiatives and its impact. And committed savings --
10 here is the committed savings that are included in the 2009
11 IEPR forecast for the three IOUs combined, broken out by
12 category. And these, we tracked back to 1975, so on the
13 left-hand side of the graph, which did not come out very
14 well, it starts with 1990, and we already have savings above
15 zero, and that is because we track savings all the way back
16 to 1975. So you have an accumulation of appliance standards
17 and building standards, particularly, from the mid-'70s.

18 And now these incremental committed savings for
19 the mid case scenario stacked on top of our total committed
20 savings from the previous graph, and you will notice a line
21 in the middle there, that allows us to compare incremental
22 committed impacts with incremental uncommitted impacts,
23 starting in 2012, and you will notice that, by the time we
24 get to 2020, the two are roughly the same -- incremental,
25 uncommitted is roughly equal to additional committed impacts

1 that are in the forecast during that period.

2 And finally some other issues. This was going to
3 include more elements, but we left most of those for the
4 Next Steps presentation at the end. So we are left with
5 other elements of uncertainty. Mike spent a lot of time
6 talking about specific technical uncertainties and these are
7 sort of more general technical uncertainties. First of all,
8 rates. We assume one rate forecast behind this analysis
9 that is a 15 percent increase between 2010 and 2020, and we
10 do not look at the implications of other rates. There are
11 many that forecast a rate increase of 30 percent or more in
12 the next 10 years, and that would presumably affect what the
13 CPUC decides in terms of how aggressive to be on energy
14 efficiency programs since higher rates would be more
15 "naturally occurring savings." And also, yes, there is the
16 uncertainty related to what price response actually is, so
17 you have got to throw that in there, too.

18 Second, reliance on voluntary programs, we are
19 sort of in uncharted waters here, we are really ramping up
20 voluntary IOU programs, which rely on voluntary activities,
21 and it could be that we have already picked all the low-
22 hanging fruit, and it is going to be much more difficult to
23 get additional savings than we assume.

24 Economic uncertainty is just a reminder that we
25 live in very uncertain economic times. And we have

1 attempted to account for policy uncertainty in doing the
2 three scenarios, but we did not incorporate economic
3 uncertainty. This analysis is based on one economic
4 forecast. A more perfect analysis with more time would have
5 incorporated different economic scenarios, and included that
6 as part of the analysis. So that is something to think
7 about for next time.

8 Model reconciliation, I just wanted to reiterate
9 Mike Ting's point about the importance of consistency across
10 all of our models. This lack of consistency created
11 uncertainties that would not have been there had we had a
12 more integrated approach, and a more integrated approach is
13 our goal for the next round of this work.

14 Okay, let me ask now, are there any other public
15 comments that folks want to make? Sure, go ahead.

16 MR. ASLIN: Richard Aslin, Pacific Gas & Electric
17 Company. So what I wanted to just clarify was that the rate
18 projection that is used in the base case forecast, and also
19 in the incremental uncommitted analysis is a 15 percent
20 increase in real rates, which translates roughly into a 40
21 percent increase in nominal rates. Is that your
22 understanding of that, Chris?

23 DR. KVALEC: Depending on what you assume about
24 inflation.

25 MR. ASLIN: I was just going to assume inflation

1 is 2.5 percent per year on average.

2 DR. KAVALEC: Okay.

3 MR. ASLIN: Okay. The other kind of -- I do not
4 know if you have this or not, but if you go back a couple of
5 slides, one more, that one. Do you have that same slide for
6 the peak?

7 MR. KAVALEC: No, I do not, unfortunately.

8 MR. ASLIN: All right --

9 MR. KAVALEC: But it would be very similar. The
10 dark blue would be a little bit larger because of higher
11 peak impacts.

12 MR. ASLIN: Okay, so there is some significant
13 portion of energy efficiency savings in the uncommitted
14 period that is already embedded in the base case forecast
15 that was adopted?

16 DR. KAVALEC: The only what you could call
17 uncommitted savings that were in the IEPR forecast were
18 those additional residential lighting savings. And also
19 naturally occurring, or price effects.

20 MR. ASLIN: Okay, so let me --

21 DR. KAVALEC: So everything else was included in
22 the Itron analysis for uncommitted, but not included in the
23 IEPR forecast.

24 MR. ASLIN: All right, maybe I am just getting
25 hung up on the terminology here, so in this period where

1 there is a dark blue and a light blue, the light blue that
2 is above the line, how would you characterize that? It says
3 committed savings, so I am taking that to be -- it is
4 embedded energy efficiency savings that take place in the
5 uncommitted period, but are due to current program
6 standards.

7 DR. KAVALEC: Yeah, additional residential
8 lighting savings, and do not forget we have a 15 percent
9 rate increase going on between 2010 and 2020, which is
10 creating savings.

11 MR. ASLIN: Okay, all right. Because I mentioned
12 this to you yesterday, but I was looking at the tables in
13 the forecast report, the California Energy Demand Report,
14 and one of those tables showed, or it looked like it showed,
15 here is the amount of energy efficiency that is embedded in
16 the baseline forecast; and for the peak forecast, when I
17 added that up, I got something that was pretty close to
18 1,350 megawatts.

19 DR. KAVALEC: Right, yeah. And the reason that is
20 not directly comparable is because this is all incremental
21 to 2006, whereas those numbers that you were looking at,
22 embedded in the forecast, are relative to 1975. So this is
23 just what is incremental to 2006. What did I say? Right, I
24 am saying in the incremental case, it is relative to 2006.

25 AUDIENCE MEMBER: Right, but in the committed

1 savings for, say, 2016, it assumes you replace something by
2 2016 with a 1975 appliance.

3 DR. KAVALEC: Right, which is -- that is what I
4 was attempting to say. It is relative to 1975, so it is not
5 directly comparable.

6 MR. ASLIN: Okay, I will have to give that some
7 further thought. Thanks.

8 DR. KAVALEC: We can talk about it some more if
9 you want. Okay, if there are no other public comments --
10 yeah, okay, we have a WebEx comment.

11 MR. NABAVI: Hello?

12 DR. KAVALEC: Faramarz?

13 MR. NABAVI: Yeah, can you hear me?

14 DR. KAVALEC: Yeah, go ahead please.

15 MR. NABAVI: I have a few questions with respect
16 to the IOU programs and Itron's classification. So my
17 questions are pertaining to the previous presentation.
18 First, I am wondering, with respect to the IOU program
19 relative to the other categories, why is it that IOU
20 programs have a much higher gigawatt hour/megawatt ratio
21 versus other programs?

22 DR. KAVALEC: Michael, answer your question.

23 MR. NABAVI: Please speak up because the audio is
24 very very faint.

25 MR. TING: Okay, this is Mike Ting. The general

1 answer is that the load shapes of the measures in the IOU
2 portfolios on average are more flat, right, because you have
3 to look at most of the portfolios is residential/commercial
4 lighting, for example, or industrial measures, and those are
5 associated with end uses that have a relatively flat load
6 shape as opposed to the Big Bold Initiatives that are really
7 focused on HVAC, which is a very peaky end use and produces
8 relatively high peak savings compared to energy savings.
9 Does that make sense?

10 MR. NABAVI: That does, and I can barely hear you,
11 but I understood what you said. And then, in terms of
12 categories of Title 24 and IOU programs, which ones of these
13 have already had a period of implementation? That is -- let
14 me rephrase that -- which ones of these are there already
15 actual results in data that have been collected for prior
16 periods -- projections and forecasts?

17 MR. TING: Do you mean -- so, well, I think the
18 answer is only the '06/'08 IOE programs. You are saying is
19 there any type of verification data used to verify any of
20 these forecast numbers? Is that what you are asking?

21 MR. NABAVI: Right, just being able to understand
22 -- are these forecasts that are based on best available
23 assumptions? Or is there a historical experience for any of
24 these programs that, you know, for example, may have been --
25 when I look at the graph, I see that the --

1 MR. TING: I am sorry, I did not catch the tail
2 end of what you just said.

3 MR. NABAVI: I am sorry. So for various
4 categories of Title 24 federal standards and the Huffman
5 Bill, those appear to begin in 2010, and --

6 MR. TING: Correct. And your question is, is
7 there any evidence that the Big Bold --

8 MR. NABAVI: There is no data on any of those.

9 MR. TING: For Big Bold, you are definitely
10 correct, that is something we tried to cull out in the
11 uncertainty sections specific to the Big Bold Initiatives,
12 is that there is very little tracking data relative to
13 penetration of zero net energy homes in the new construction
14 market to validate any of those assumptions in the early
15 part of the forecast.

16 MR. NABAVI: Okay.

17 MR. TING: Now, to be clear, for the IOU portion,
18 there will be shortly a pretty comprehensive set of ex post
19 evaluations of the '06-'08 program cycle that could be used
20 in principal to validate some of the forecasted numbers for
21 IOU programs through that same period that you see in this
22 study. It is important to know that the IOU portion, which
23 comes out of the previous Itron assets modeling study, those
24 adoption forecasts were calibrated to actual observed
25 adoptions over the '04/'05 program cycle, specifically.

1 MR. NABAVI: Right.

2 MR. TING: Right, so it is important to understand
3 that they are not strict ex ante, some forecaster in blocks
4 just drawing lines out. Those -- the adoption functions
5 were actually calibrated to observed '04/'05 program data.

6 MR. NABAVI: Why is it that the IOU programs, the
7 blue portion, if you will, that is included into the adopted
8 forecast -- why is it that drops off after 2012? I am sure
9 it is your materials somewhere.

10 DR. KAVALEC: That just represents the fact that,
11 by committed savings for the IOU programs, that means we are
12 only included IOU program impacts through 2012. There are
13 no new program impacts beyond that period in our IEPR
14 forecast, so what happens after that is you see the decay as
15 measures wear out.

16 MR. NABAVI: Basically what that is saying is, for
17 example, this is the result of the implementation of IOU
18 programs up to 2012, so there will still be savings
19 associated with, for example, CFLs that were distributed by
20 IOU's up to 2012.

21 DR. KAVALEC: Yes, that is right.

22 MR. NAVAVI: Thank you very much. I appreciate
23 it.

24 DR. KAVALEC: Okay, thank you. Okay, so we will
25 close with a brief presentation on Next Steps.

1 DR. JASKE: Okay, so you have this hand-out, I am
2 not going to go into it in any gory detail. In the
3 immediate time horizon, of course, we have asked for
4 comments, I guess, if I am recalling our dialogue correctly,
5 we are now requesting that you provide them by February 10th,
6 as opposed to February 5, which is what it says here, and
7 earlier we had said the 8th, so February 10. There is, of
8 course, the IEPR Committee Workshop, or IEPR/Electricity and
9 Natural Gas Committee Workshop on the 17th and, as Chris said
10 earlier, there will be -- or at least it is our expectation
11 that, connected with the agenda will be some questions that
12 the committee itself is sponsoring to help frame the
13 discussion in that workshop. Of course, following that
14 workshop, we will get some direction from the committee
15 about how to modify the staff report, we will take some time
16 to do that, and we will be then transmitting that final
17 package to the PUC for them to take the next steps in their
18 process. And there are, of course, some hints about what
19 those next steps are in Appendix C, I believe, of the Staff
20 Report.

21 So then, you know, in the time horizon beyond
22 that, part of the current Energy Commission contract with
23 Itron is to get some training and, as part of that, get some
24 documentation, more formally organized, about how to run it
25 and interpret its results, and we are going to be attempting

1 to implement that tool for a publicly owned utility because,
2 as has been noted, the work funded to date only deals with
3 the three IOUs. And the PUC and Energy Commission have
4 agreed to release this current version of SESAT with the
5 documentation, such as it will be, within the limits of our
6 contract publicly, and if that proves to be insufficient,
7 then somebody somewhere is going to have to find some more
8 funding to improve upon that.

9 Then, stepping somewhat back from the particulars
10 of this study and SESAT is the question of the working group
11 and identifying some candidate areas of focus for that over
12 the course of whenever, and of course eventually getting
13 concrete and focusing on the 2011 IEPR cycle. I think there
14 is obviously in this last point quite a number of things
15 floating around that the next round of the PUC's goals
16 process is going to have to deal with, so once that gets
17 framed and launched, which I understand will be in this
18 calendar year, to be completed in 2011, then that becomes a
19 particular formal forum for resolving perhaps some of what
20 we have been talking about today.

21 And then, over the longer haul, of course, there
22 is a number of fundamental methodological issues that we
23 need to be thinking about, you know, how do you interrelate
24 wholly separate models? Is there some other model out there
25 that does all of this in some more integrated way? Can the

1 current models be adapted to more clearly be harmonized to
2 one another? Energy Commission has a bunch of sort of
3 feeder models that have been run, have been prepared and run
4 from time to time, that are the source of some of the inputs
5 that go into the main forecasting models, and at that level,
6 you now, we are getting into measure level impacts. But
7 they are not nearly as comprehensive even as what Itron has
8 now, and perhaps we should be thinking about getting rid of
9 those and making more use of asset or some other more
10 holistic measure type model ourselves.

11 And somewhere downstream, I am sure Management is
12 going to be asking us to think about the analogue to this
13 effort for the other aspects that are demand side policy
14 initiatives, the distributed generation, whether rooftop,
15 PV, or other things, as long as it is on the customer side
16 of the meter, anyway, the DR, the CHP, whatever. So there
17 is a host of things of that sort that collectively are also
18 -- at least in concept -- parallel to this energy efficiency
19 effort that the policymakers are driving toward and
20 establishing goals for, but for which there are, at best,
21 only crude understandings of what their demand impacts are,
22 and no holistic way to bring all of that together. And
23 clearly, Appendix C written by the Energy Division staff,
24 you know, conceptually says all of those things need to be
25 taken into account in the forthcoming LTTP cycle. But if

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I, PETER PETTY, a Certified Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Workshop; that it was thereafter transcribed into typewriting.

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

IN WITNESS WHEREOF, I have hereunto set my hand this ____ day of February, 2010.

PETER PETTY