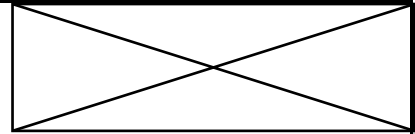




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STATE OF CONNECTICUT
DEPARTMENT OF ENERGY AND
ENVIRONMENTAL PROTECTION
BUREAU OF ENERGY AND TECHNOLOGY POLICY

2013 - 2015 Conservation and Load Management
Plan - SBEA Impact Evaluation

Technical Meeting held at the Department
of Energy and Environmental Protection, 79
Elm Street, Hartford, Connecticut, on June
10, 2014, beginning at 10:00 a.m.

H e l d B e f o r e:

DIANE W. DUVA,
Hearing Officer

1 A p p e a r a n c e s :

2 For DNV GL:

3 THOMAS LEDYARD

4 *THOMAS FRANKS

5 *KENNETH AGNEW

6

7 For Northeast Utilities:

8 GEOFFREY EMBREE

9

10 For UIL Holdings:

11 PATRICK MCDONNELL

12 ROY HALLER

13 *DENNIS O'CONNOR

14 *MICHAEL GHILANI

15 *DICK OSWALD

16

17 For PURA:

18 SERA EVALUATION CONSULTANT TEAM

19 *LORI LEWIS

20

21 For Greater New Haven Chamber of

22 Commerce:

23 *AMY THOMPSON

24

25

1 A p p e a r a n c e s: (Cont'd.)
2 F o r t h e C o n n e c t i c u t E n e r g y E f f i c i e n c y
3 B o a r d:
4 L E S T U M I D A J
5
6 F o r C B I A:
7 E R I C B R O W N
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24
25 * P r e s e n t b y t e l e p h o n e .

1 MS. DUVA: Yes, let's start
2 the record. So we're recording and
3 transcribing this meeting because it is an
4 evaluation effect meeting.

5 Are we good? Okay.

6 So today is June 10, 2014.
7 And here in Hartford, in the Ensign Room, we
8 have an evaluation report being presented by
9 Tom Ledyard.

10 And we have other people who
11 are in the room in Hartford and people on the
12 telephone.

13 I am Diane Duva of the
14 Department of Energy and Environmental
15 Protection.

16 We have Tom Ledyard of --

17 MR. LEDYARD: DNV GL.

18 MS. DUVA: Thank you.

19 And we also have -- go ahead
20 and identify your name and your affiliation.

21 MR. EMBREE: Geoff Embree with
22 Northeast Utilities.

23 MS. DUVA: And also?

24 MR. HALLER: Roy Haller,
25 H-a-l-l-e-r, UIL Holdings.

1 MS. DUVA: And we also have a
2 consultant for the committee?

3 MR. TUMIDAJ: Les Tumidaj with
4 the Energy Efficiency Board, the C and I
5 consultants.

6 MS. DUVA: And on the
7 telephone, go ahead, Amy.

8 MS. THOMPSON: Amy Thompson,
9 Greater New Haven Chamber of Commerce.

10 MS. DUVA: Okay.

11 And we also have Mike?

12 MR. GHILANI: Yeah, Mike
13 Ghilani with UI, United Illuminating.

14 MS. DUVA: We also have Tom
15 Franks.

16 Go ahead, Tom.

17 MR. FRANKS: Tom Franks, DNV
18 GL.

19 MS. DUVA: And then --

20 THE COURT REPORTER: Can you
21 give me one moment. I'm having a small
22 technical difficulty.

23 MS. DUVA: Sure. We're going
24 to pause to let the court reporter get the
25 computer operational.

1 THE COURT REPORTER: Please
2 excuse me.

3 MS. DUVA: That's okay. But
4 I'll take the opportunity just to say there's
5 a couple of other people who called in but we
6 don't know your names.

7 (Pause.)

8 THE COURT REPORTER: I got it.
9 Thank you.

10 MS. DUVA: Okay. We're good.

11 So I think where we left off
12 was Mike Ghilani was identifying himself and
13 his affiliation. Okay.

14 So Mike Ghilani of United
15 Illuminating.

16 We also have Tom Franks. Go
17 ahead and say your name. This is because
18 we're just getting back to putting this on
19 the record. Go ahead and say your name, Tom
20 Franks, again.

21 MR. FRANKS: Tom Franks, DNV
22 GL.

23 MS. DUVA: Okay. Go ahead,
24 Lori.

25 MS. LEWIS: Lori Lewis on

1 behalf of the PURA, SERA Evaluation
2 Consultants.

3 MS. DUVA: Okay.

4 And go ahead, Ken.

5 MR. AGNEW: Ken -- Ken Agnew,
6 DNV GL.

7 MS. DUVA: Okay. Go ahead,
8 Dennis.

9 MR. O'CONNOR: Dennis
10 O'Connor, small business administrator, UI
11 Company.

12 MS. DUVA: Who else has joined
13 us on the telephone?

14 MR. OSWALD: Dick Oswald from
15 United -- UI Planning.

16 MS. DUVA: Great. Thank you.
17 Mike, tell where you're from.

18 MR. EMBREE: He's from UI as
19 well.

20 MS. DUVA: UI? Okay.

21 And then also in the room, we
22 have -- go ahead, Eric.

23 MR. BROWN: Eric Brown, with
24 the Connecticut Business and Industry
25 Association.

1 MS. DUVA: Okay. We can
2 begin.

3 Go ahead, Tom.

4 MR. LEDYARD: Okay.

5 Thank you, everyone for -- for
6 calling in or joining us here in Hartford. I
7 appreciate the opportunity. I always enjoy
8 the opportunity to present the impact
9 findings, especially in my home state.

10 I work out of Middletown,
11 Connecticut. I have two colleagues on the
12 phone, Ken Agnew from Wisconsin, who was
13 instrumental in -- in helping me piece
14 together the billing analysis work that we'll
15 discuss, and Tom Franks who's involved in a
16 great deal of other Connecticut evaluation
17 work and had interest in understanding this
18 process and -- and hearing the presentation.

19 One of the other people I
20 wanted to call out is Jeff Zinda. He is
21 in -- also in the Middletown office, and he
22 was instrumental in coordinating and
23 overseeing a lot of the metering and
24 verification work that we did, which was a
25 big part of the evaluation.

1 The evaluation we did was on
2 the 2011 program year of the small business,
3 or SBEA Program. The evaluation began in the
4 summer of 2012. The metering occurred
5 between October of 2012 and October of 2013.
6 And the final report has been completed and
7 filed. We received comments from both UI and
8 CL&P on that document. We addressed those
9 comments, and that report is now considered
10 final.

11 The presentation itself will
12 largely mimic the report. I'll go over the
13 study goals and objectives that were laid out
14 at the outset. I'll go over the activity or
15 what the program tracked in savings for the
16 2011 program year. I'll review the
17 methodologies that we employed to evaluate
18 the study, and then I'll go over the study
19 results.

20 And there's really three
21 sections of this that I'll go over. The
22 first one will be the on-site with the
23 metering that we performed. The second will
24 be review of the PSD that we performed, or
25 the document that -- that drives the energy

1 savings estimates. And then the third one
2 will be will be the billing analysis. And
3 then I'll, at the conclusion, I'll talk about
4 our final conclusions and recommendations.

5 And there are -- they're 25
6 slides, so if you want to keep track of how
7 far along we're going, I don't anticipate
8 this being more than 30 to 40 minutes.

9 The studies and objectives,
10 there were two primary studies -- objectives
11 of the studies. The first one is to estimate
12 a program level electric gross savings
13 estimates, plus or minus 10 percent precision
14 at that 90 percent level of confidence.
15 That's sort of a standard target, a precision
16 target for evaluation studies in the
17 industry. The second was around energy
18 savings. The second goal was to estimate
19 SBEA electric demand savings or peak demand
20 savings coincidental for summer on peak and
21 seasonal peak, at plus or minus 10 percent at
22 the 80 percent confidence -- level of
23 confidence.

24 This is more -- this goal
25 drives from essentially ISO New England FCM

1 submission requirements that -- that requires
2 that DRVs put into the forward capacity
3 market and meet 80/10 criteria overall. So
4 that's why this one is so important.

5 And so, one of the other sort
6 of subcategories, or sort of a subgoal that
7 we had along the way was to disaggregate
8 results from measures with sufficient sample
9 size and provide primary realization rate
10 discrepancies. And let me talk about that
11 for a moment, in that, for many years, we
12 would provide realization rates, which is
13 simply the relationship between what we find
14 in our gross savings estimate and evaluation
15 and what's been tracked in the tracking
16 savings and in the tracking system at the
17 utilities. And that's the realization rate.

18 And what it used to be, we
19 would simply provide a realization rate, and
20 it would be 80 percent or 90 percent or
21 110 percent, so whatever it might have been,
22 and we wouldn't have -- and then we would
23 provide information on what drove those
24 realization rates, but it wouldn't be
25 terribly quantitative.

1 So one of the things we're --
2 we've been doing the last several years is
3 providing sort of the changes in savings that
4 occur that drive the final realization rate.
5 And I'll show you more about that in a
6 moment. But it helps sort -- when you're
7 talking about improving program impacts and
8 program designs, it helps you figure out
9 where -- where the issues lie in improving
10 realization rates in the future.

11 And then, finally, one of the
12 things that we sought to do was to provide
13 recommendations to update the current PSD
14 with results from the study. You know, the
15 typical program evaluation cycle has
16 implementation, and then we come in and
17 evaluate, and then we provide recommendations
18 that then help improve realization rates.

19 Well, inside that, you have
20 this PSD document in which the more that
21 PSD -- in which you try and have impact
22 evaluation findings also inform changes to
23 the PSD. And the idea here is that, as the
24 PSD becomes more and more refined as more and
25 more evaluation cycles occur, your

1 realization rates become better and better.
2 You become better able to track more accurate
3 energy savings and more refined energy
4 estimates moving forward.

5 MR. BROWN: Tom, just two
6 quick questions at the outset. One --

7 MS. DUVA: Eric, could you
8 identify your name for the court reporter?

9 MR. BROWN: Oh, I'm sorry.
10 I'm sorry. Yeah. Eric Brown.

11 MS. DUVA: From the CBIA.

12 MR. BROWN: First -- first of
13 all, acronym alert?

14 MR. LEDYARD: Oh, I'm sorry.

15 MR. BROWN: PSD is?

16 MR. LEDYARD: Program Savings
17 Document.

18 MR. BROWN: Okay.

19 And secondly, can you just
20 give a quick understanding of what the
21 universe of facilities we're talking about
22 that are in the SBEA program?

23 MR. LEDYARD: Yeah. Yeah, I
24 can. So there's small business. I think
25 it's -- oh, I don't remember what the

1 criteria was. It might have been -- Goeff,
2 do you know what's the criteria of the small
3 business?

4 I should know it offhand.

5 MR. O'CONNOR: If I can jump
6 in? Dennis O'Connor.

7 It's up to 200 kW of demand
8 use. What that equates to roughly is
9 anywhere between a 22 to 25,000 dollar a
10 month electric bill. So anything below that,
11 that falls under commercial, we wouldn't do
12 the -- the large grocery store, such as Stop
13 & Shop or the IGA markets, midsize
14 manufacturing all the way down to little
15 bodegas.

16 MR. BROWN: Great. Thank you.

17 MR. LEDYARD: Right. And, in
18 fact, the types -- and it comes up on another
19 slide -- the types of sites that we visited
20 were retails, restaurant, medical offices,
21 office buildings, you know, regular small --
22 small office buildings kind of thing.

23 Yeah. And I apologize for
24 the -- the jargons.

25 So this is the 2011 program

1 year activity. And, you know, as you might
2 expect, among this -- among this important
3 population, you know, a fair amount of the
4 savings, the bulk of the savings is in
5 lighting. And it's, you know, 80 percent
6 regular lighting, and then CL&P had another
7 7.2 percent of what was referred to as
8 "high-performance lighting."

9 But refrigeration is actually
10 making a reasonable -- refrigeration has been
11 creeping up over the years as more and more
12 folks have put on that measure type. I've
13 been evaluating small business programs for
14 quite a while. And in fact, this year there
15 was a talk at the -- at the program when
16 we're -- when we were trying to lay out the
17 design of the evaluation, whether or not we
18 wanted to focus more on refrigeration, other
19 measure types than lighting than we had in
20 the past because it is becoming more
21 important.

22 One thing I'll note is that
23 NEEP is actually doing a refrigeration load
24 state study right now, so that -- that sort
25 of takes some of the impetus off the need to

1 do, you know, a focused study on that measure
2 type in Connecticut.

3 THE COURT REPORTER: You said
4 NEEP?

5 MR. LEDYARD: Northeast Energy
6 Efficiency Partnership.

7 THE COURT REPORTER: Thank
8 you.

9 MR. LEDYARD: Well, this is
10 just a fun graphic, I guess, more than
11 anything else. One of the things we do like
12 to do is just get a sense of where all the
13 program savings are occurring. And as you
14 might expect, they do occur in larger towns
15 and cities where there are more customers.
16 But still, the breadth of the program
17 coverage across the state is actually -- it's
18 very good, from sea to shining sea kind of
19 thing.

20 MR. HALLER: So Tom, what does
21 the red categorize?

22 I -- I wasn't -- when I was
23 looking at the actual slides --

24 MR. LEDYARD: Uh-huh.

25 MR. HALLER: -- I didn't see

1 any reds in your legend.

2 MR. LEDYARD: Any reds?

3 MR. HALLER: I mean, all

4 around the Hartford area --

5 MR. LEDYARD: Yeah.

6 MR. HALLER: -- I'm seeing

7 what appears to be red.

8 MR. EMBREE: Yeah. It's

9 green. Sorry.

10 MR. LEDYARD: Oh, in the

11 picture?

12 MR. HALLER: Okay. So is --

13 is that color the same as the greater than

14 300,000-kilowatt hours?

15 MR. LEDYARD: Yeah. I think

16 so. Yeah.

17 MR. HALLER: Okay. Then we're

18 good.

19 MR. LEDYARD: Yeah.

20 MR. BROWN: You're seeing red?

21 MR. HALLER: Yeah. Hartford

22 is red.

23 MR. LEDYARD: Oh, I see

24 Hartford.

25 MR. BROWN: Okay. You need to

1 get your eyes checked.

2 MR. LEDYARD: So on-site
3 methodology. So one of the -- so there were
4 two -- as I discussed earlier, there were two
5 primary evaluation methods that we -- that we
6 used in the study. One of them was on-site
7 with metering and verification, and one of
8 them is a billing analysis. And typically,
9 you know, I think of these conceptually as
10 the on site with metering verification is a
11 bottom-up study. Billing analysis is more of
12 a top-down study.

13 So this is the bottom-up
14 study. And one of the first things you do
15 when you do an on-site approach is you do a
16 sample design. So you take that population
17 that you saw earlier, two slides ago, and you
18 figure out which of those you want to
19 statistically select to go visit on-site and
20 perform metering and verification.

21 And so we did a couple of
22 iterations of a sample design, and this is a
23 final one that we used. And what you'll see
24 is I -- we -- because we're trying to have
25 two goals, we're trying to get energy savings

1 of plus or minus 90 and peak demand savings
2 at plus or minus -- at -- at 90 plus or minus
3 10, and peak demand at 80 plus or minus 10,
4 we had two -- I was interested in having two
5 sort of slices of the sample design. The
6 first one on the top half is energy savings.
7 The bottom half is the summer peak demand
8 savings.

9 And so what you see here is
10 that we -- we tried to target 90 that -- on
11 the energy savings, where we targeted plus or
12 minus 8.6 percent at the 90 percent
13 competence interval, and on peak demand we
14 target -- we try to get a 9.5 percent. The
15 total sample size was 60. And 42 of those
16 sites were lighting, and 18 of those were
17 nonlighting.

18 Now, you might note that the
19 proportion of the sample design, the
20 proportion of sites and lighting versus
21 nonlighting is not the same as the proportion
22 of sites that were in the population. That's
23 because once we got to what we thought was a
24 very credible sample size for lighting, we
25 then pushed some of the sample size into the

1 nonlighting to increase some of our precision
2 on those numbers.

3 And so you can see that we
4 actually were able to get better than 10
5 percent on lighting in the design and then
6 get something better than 30 percent on the
7 nonlighting. And these are sort of the
8 trade-offs you make when you go through the
9 sample design process.

10 So one of the things I liked
11 about this study is it was a very data-driven
12 study. And what I mean by that is we did a
13 lot of metering and verification at the 60
14 sites we visited. One of the things that we
15 did, because peak demand estimates were so
16 important to the study, we did long-term
17 metering. We installed lighting loggers and
18 elite loggers for what turned out to be
19 roughly 12 months.

20 On the slide, you can see
21 where I flagged the winter peak -- on-peak
22 period and the summer on-peak period to show
23 that we -- we actually metered during those
24 periods, which means we were able to get
25 actual operating data from those windows of

1 time.

2 Elite loggers are -- sometimes
3 I bring these loggers along as a show and
4 tell. I didn't do it today. But elite
5 loggers are -- they're true meter loggers.
6 You know, you plug it in, and it actually
7 tracks the power. The lighting loggers, on
8 the other hand, simply track when the light
9 goes on and off.

10 So, during the study, we used
11 approximately -- or we metered approximately
12 370 lighting data points. We used far more
13 loggers than that, but that's how many data
14 points we had, and 17 elite power logger
15 points.

16 Any questions at all at this
17 point? No?

18 (No response.)

19 MR. LEDYARD: So when we did
20 the -- when we did our metering and
21 verification, what we -- what we're trying to
22 do is do what you call -- or what we call the
23 metering and verification protocol Option A,
24 which is where you take a combination of
25 stipulated factors, which in this case are

1 wattages for lighting, which was the primary
2 measure type, and then you measure the key
3 factors like quantity and hours of use to
4 calculate the savings. And they're done in
5 fairly large spreadsheets, as you can
6 imagine. They're relatively complex because
7 they -- they take into effect interactive,
8 they take into effect quantity changes and
9 operating changes and percent on, that kind
10 of thing.

11 And as I said before, both the
12 lighting and the nonlighting savings were
13 analyzed to show the drivers of the final
14 realization rate. And what I mean by that
15 is, if there was adjustment to the track --
16 if there was an adjustment to savings due to
17 a documentation error that we found, or if
18 there was an adjustment to savings due to the
19 different technology that we found on site or
20 of a different quantity of the technology on
21 the site, we essentially bucketed the savings
22 to accommodate for each change and -- and for
23 each event that might have occurred. That
24 would move the savings away from what was
25 tracked.

1 And the nonlighting measures
2 primarily were door heater controls, vending
3 machining controls and ECM fans, fan controls
4 and motors.

5 So this is where I have Ken on
6 the phone. Ken oversaw the billing analysis
7 work. And essentially what we did was a
8 fixed-effects billing analysis. And the
9 reason we did the billing analysis was
10 because, at the very outset, actually, with
11 Dick Oswald, there was a real interest in
12 understanding whether or not a billing
13 analysis could be performed on this group, on
14 this type of program.

15 A billing analysis can be
16 cheaper when it works. A billing analysis
17 can be relatively empirical, you know,
18 because it's driven by consumption data which
19 is tied to the revenue stream of the utility,
20 which means it's usually pretty darn good.
21 So these are all -- these are all good things
22 to think about trying to do.

23 So we've tried to do a
24 billing -- or so -- so we did perform a
25 billing analysis on these -- on the -- on the

1 program. And the fixed effects billing
2 analysis essentially used participant
3 pre/post consumption data. And then it, in
4 fact, has another mechanism. Ken can
5 explain, if you want the details, of how --
6 of actually using the participants themselves
7 as part -- to create a control group, sort of
8 a proxy control group.

9 The billing analysis utilized
10 participant consumption data from May of 2009
11 through February of -- through February,
12 March of 2013. And the thing to remember
13 here is, essentially, when you do a billing
14 analysis, you need a year -- since we're
15 looking at the 2011 program year, you needed
16 a year of pre, a full year of pre; so in
17 other words, all of 2010. And you needed a
18 full year of post in, essentially, 2012 and
19 beyond.

20 Well, one thing that's
21 critical, it's a threshold issue for a
22 billing analysis that you get all the billing
23 data for all the spaces that are treated in
24 the program. And oftentimes, this is going
25 to be done reliably in the residential sector

1 or some -- some sectors.

2 For small business we've had
3 problems with it before, and so we tried --
4 and so one of the things that -- that --
5 well, I'll get into it more in a moment, but
6 the billing analysis results were
7 significantly lower than the M and V results.
8 And one of the things we suppose is occurring
9 is that we simply didn't have all the billing
10 data that we wanted for the -- for the
11 treated premises, for the treated buildings.
12 And without that, it's simply not a -- it's
13 not a good tool to estimate energy savings.

14 So these are the M and V
15 analysis results, and it's a scatter plot.
16 And on the -- on the Y axis you have our
17 estimate of energy savings, and on the X axis
18 you have the tracking estimate of energy
19 savings. And I've color-coded the -- the
20 lighting sites to be light blue, and I've
21 color-coded the -- the nonlighting sites to
22 be darker blue.

23 And the diagonal line, the
24 line that goes directly up the diagonal --
25 there are actually two lines there -- well,

1 one of them is directly up the diagonal --
2 is, in fact, what the realization rate would
3 be -- is the line that all the sites would
4 fall on if the -- if our estimate of gross
5 savings fell exactly on what your estimate of
6 the tracking savings were.

7 And so one of the things you
8 see immediately is that -- well, there's a
9 couple things. Well, one of them is that the
10 lighting realization rate was almost dead on
11 with 99 percent realization rate overall.
12 And the nonlighting realization rate was off
13 by roughly 20 percent or so.

14 But one of the things you see,
15 which is a little unusual, actually, is there
16 were -- are very few outliers in here.
17 Usually you see one or two that are just
18 crazy one way or crazy in the other way, and
19 that's done to have some, you know, profound
20 effect on the final numbers, but in this case
21 things actually behaved really well on the
22 whole. So that's -- so I think that's good
23 news.

24 The overall program level
25 realization rate is 96.2 percent. Again,

1 that's because the lighting is so much of the
2 program savings that that lighting
3 realization rate actually pulls everything
4 up. It pulls up the nonlighting stuff.

5 MR. McDONNELL: So on the
6 nonlighting stuff --

7 MS. DUVA: Pat, could you
8 identify yourself and affiliation for the
9 court reporter.

10 MR. McDONNELL: Oh, I'm sorry.
11 I'm Pat McDonnell from UI.

12 For the nonlighting stuff, is
13 there any -- I realize as you pick -- as you
14 pick apart the data, you get a smaller and
15 smaller sample, and I think that's
16 problematic. But are there any trends that
17 you can identify in the nonlighting measures
18 that would make you say that these are
19 more -- these deviated from the reporting
20 savings more than others?

21 MR. LEDYARD: Yeah. And I'll
22 get to that, actually. That's a good point
23 because that's one of the key -- that's one
24 of the key findings I wanted to talk about.
25 And I mean, I'll give you the short. I'll

1 save you some of the trauma.

2 MR. McDONNELL: You can
3 explain it.

4 MR. LEDYARD: So one of the
5 things we found -- one of the big drivers
6 that was at -- I believe it was 10 or
7 11 percent of the negative change was due to
8 what -- what we're calling "documentation
9 errors." You know, in other words things
10 where it looked like it could have been
11 calculated more closely to what the PSD was
12 having it and try and be calculated for.

13 And what that means is that --
14 and I talked actually to the engineer that
15 did all this, the nonlighting work, yesterday
16 about this. And essentially, what -- what
17 he's saying is that there -- actually, it was
18 followed as closely as you could, but a lot
19 of times there were other extraneous factors
20 that could have been used in making those
21 savings estimates better, that were still in
22 a PSD formula itself.

23 So -- so one of the things
24 you'll see is that I make a recommendation
25 that we, sort of, you know, maybe keep a

1 closer eye on the nonlighting PSD,
2 consistent -- you know, applying PSD
3 consistently to the nonlighting measures, but
4 I'm actually not suggesting a change to the
5 PSD form because those -- those formulas
6 actually look pretty darn good to us.

7 MR. McDONNELL: Okay.

8 MR. LEDYARD: Yeah. It's a
9 great question. Thank you.

10 So this is the M and V
11 analysis result. And so what you have here,
12 it's a little confusing at first, but let me
13 see if I can clear -- let me see if I can
14 clear up things. You have -- you have the
15 overall -- so you have the overall sample
16 size was 60, as we discussed. You have all
17 the different changes that could have
18 occurred between the -- between the point
19 where the savings estimate was estimated in
20 the tracking system and where you get to a
21 gross realization rate at the bottom.

22 And then you have the kWh
23 changes, the actual absolute kWh savings
24 changes that occurs from one jump to the
25 next. And then I have four columns. And

1 there -- and one -- the first one is simply
2 the incremental ratio, or the change from
3 the -- the estimate on that line to the
4 estimate before that line. So it's simply
5 the relationship between the current -- you
6 know, the documentation adjustment, and the
7 tracking adjustment is the adjustment -- is
8 the incremental ratio adjustment factor.

9 Then the next two columns are
10 the cumulative one, which simply shows you
11 the change in overall realization rate that
12 occurs when you use the tracking system
13 estimate as the -- as the -- the point of
14 comparison.

15 And the only reason I do that
16 is because some people like to think of it
17 one way and some people like to think of it
18 the other way, so -- including me.

19 So anyways -- so what you see
20 here is that, overall, you don't see a lot of
21 big changes from, you know -- as I said
22 before, the final realization rate is
23 96.2 percent. In the final report, I
24 actually provide this exact same table for
25 lighting and for nonlighting. So you can see

1 the changes from lighting and nonlighting
2 separately.

3 And one of the biggest
4 changes -- one of the biggest changes that we
5 noted was in the HVAC interactive adjustment.
6 And this is one thing that's kind of a funny
7 thing -- well, it's not funny, but it's -- in
8 Connecticut, the program savings document
9 takes savings -- takes interactive savings
10 for lighting, and that's a bit unusual,
11 honestly. I don't -- in fact, I don't
12 know -- I don't know of any other technical
13 reference documents or any of the other ones
14 that do that. I haven't seen it. So it's
15 actually very unique.

16 And one of the things it did
17 in this study was -- so whereas for a lot of
18 other studies the interactive actually
19 becomes a credit that's added on, it's almost
20 like a little, you know, boost to the savings
21 because they don't track it. In your case it
22 actually became a little bit of a -- there
23 was a negative adjustment to that. And the
24 reason why is because -- the biggest reason
25 why -- well, there's a couple reasons why.

1 And I'll go into them in a moment.

2 But there -- the two biggest
3 ones were sometimes you were taking
4 interactive savings for installs that weren't
5 necessarily in a cooled space, in a
6 mechanically cooled space. And the other one
7 is that the COP assumption in the 2011 PSD
8 was different than what we found on site. It
9 was actually a poorer -- or less efficient
10 cooling unit installed in the PSD than what
11 we found on the site.

12 Oh, and there's my -- the
13 pluses and minuses of the things that move it
14 up and down.

15 MR. BROWN: Those are red and
16 green, by the way.

17 MR. LEDYARD: Yeah.

18 And so here's the summer peak
19 demand savings results. And what I have
20 here, instead of showing you the incremental
21 and the cumulative changes in realization
22 rate, I'm showing you summer on peak and
23 summer seasonal.

24 In Connecticut -- and I don't
25 know where Connecticut stands right now. I

1 don't know where CL&P and UI stand, but --

2 MR. EMBREE: We currently are
3 doing seasonal.

4 MR. LEDYARD: You're doing
5 seasonal still or no?

6 MR. EMBREE: Yes.

7 MR. LEDYARD: Yeah? Okay.

8 I was asked to both of them
9 and so -- and we did. And for those of you
10 who -- so the on peak is essentially a set
11 period of windows from June through August,
12 you know, weekday, one to five summer, five
13 to seven winter and with the winter being
14 December, January, I think. And it's the
15 performance during those hours, the average
16 performance during those hours.

17 The summer seasonal and the
18 winter seasonal actually is more defined by
19 when -- when -- it's when consumption
20 actually exceeds a certain threshold that's
21 been estimated by ISO.

22 And so what we found -- and
23 this has been pretty steady for a lot of the
24 evaluations I've done, is that summer
25 seasonal actually tends to be a little

1 better. It tends to be a little bit higher
2 number. For lighting, you don't see it as
3 much as you do for air conditioning and other
4 things that are truly weather dependent, but
5 nonetheless, you still see lighting as coming
6 up as a -- with a higher adjustment factor.

7 MR. McDONNELL: So back to the
8 HVAC interactive adjustment again.

9 So is your recommendation
10 going to be that we fix that in the PSD or we
11 just take it out?

12 MR. LEDYARD: Yeah. So here's
13 the thing -- so here's -- and I'll get to
14 this in a moment, too.

15 So what we -- so in the report
16 I recommended that you adjust it, right, and
17 then, in a comment to the report, I was told
18 that in 2013 you did adjust it. So it was
19 one of those things where I think your
20 natural program improvement process simply
21 made an adjustment.

22 MR. McDONNELL: Just a little
23 background. We put it in because a previous
24 evaluation said, well, you're missing this
25 and you're not compensating.

1 MR. LEDYARD: Yeah.

2 MR. McDONNELL: I'd be happy
3 to take it out, I mean.

4 MR. LEDYARD: No. No. No. I
5 wouldn't take it out at all. In fact, I kind
6 of like it, you know. And really -- and I
7 think it should be more of an industry
8 standard, you know, because it's recognized
9 as being a real credit and being a real
10 impact, so...

11 So one of the things you'll
12 see here is the operational adjustment, and
13 that, like I just said, that's essentially
14 the amount of -- that's, in my mind anyway,
15 it's -- it's the consumption or it's the --
16 it's the percent on during these -- the
17 summer on peak and the summer seasonal
18 windows.

19 And what you'll see is that
20 there was an adjustment, a downward
21 adjustment, and it's the most significant one
22 of all of them, on operational adjustment.
23 And operational simply means that it's the
24 difference between what -- what's estimated
25 in the PSD versus what we found in the

1 operation of the various measures, and that's
2 the biggest change.

3 One of the things that I did
4 in the report -- and for those of you at home
5 I'm on Slide 14. I -- we took the coincident
6 factors from our evaluation, and we took the
7 coincident factors from the PSD by -- by
8 building type. And this is where I was
9 talking about where the building types were
10 for the -- for the lighting measures in
11 particular.

12 And although the operating
13 adjustment was the primary driver of lower
14 peak demand savings, when I looked at the --
15 sort of the PSD facility ones -- because you
16 don't use overall one. You apply them to
17 vary -- to facilities depending on what type
18 is participating. When you -- when I looked
19 at it by facility type, it actually didn't
20 suggest any changes at all. It was one of
21 these things where the -- all of your
22 estimates and our estimates all were
23 statistically the same.

24 So one of the things you'll
25 see is that, although that -- that adjustment

1 is the biggest adjustment to the peak savings
2 estimate, I'm not actually making a
3 recommendation to the PSD because there was
4 nothing that fell significantly different
5 than what's currently being assumed.

6 Geoff?

7 MR. EMBREE: And we just note
8 that that kind of research can be very
9 expensive to do. So it's good value to just,
10 kind of, have that added check as part of the
11 study.

12 MR. LEDYARD: Right. Yeah.
13 Your point being that, hey, if we were going
14 to try and go down this road, it would get
15 expensive.

16 MR. EMBREE: Yeah.

17 MR. LEDYARD: Yeah.

18 MR. EMBREE: So you might as
19 well get it for free --

20 MR. LEDYARD: Yeah.

21 MR. EMBREE: -- while you were
22 out there anyway.

23 MR. McDONNELL: So just -- I
24 realize you're not recommending a change, but
25 just out of curiosity, what were -- what kind

1 of things drove the lower coincidence factors
2 in the retail and the restaurant?

3 MR. LEDYARD: You know, I
4 don't know. I don't know.

5 One of the things I didn't do
6 in the report, and I -- and I should have in
7 hindsight. Because a lot of times
8 I'll present -- I'll show actually the load
9 shape. I'll show actually the percent on --
10 as a profile so you can see -- and even
11 show -- show the overall, show the retail,
12 show the, you know -- and so that you can see
13 that.

14 MR. McDONNELL: Right.

15 MR. LEDYARD: And we didn't do
16 it in this. And I could actually do it just
17 on the side because it's, you know, it's
18 fairly -- it's simply new.

19 MR. McDONNELL: I always
20 thought that, you know -- I'm pleased to see
21 the office was actually better than what we
22 claim. Because I always thought offices, you
23 know, people go on vacation in the summer and
24 they turn -- they leave their lights off,
25 because they're not there.

1 MR. LEDYARD: Right. Yeah.

2 MR. McDONNELL: So I'm
3 wondering, you know, are we taking that into
4 account?

5 And then retail and
6 restaurant, you take that, you know, they're
7 open. They're open, kind of thing, or
8 they're not.

9 MR. LEDYARD: Yeah. Yeah.

10 MR. McDONNELL: It's mostly
11 lighting.

12 But I'm curious. If you can
13 tease that out --

14 MR. LEDYARD: Yeah. I mean,
15 our numbers are pretty close -- you know --

16 MR. McDONNELL: Well 68
17 versus --

18 MR. LEDYARD: Well, yeah --
19 no. Yeah. Retail is off, isn't it? Yeah.

20 MR. McDONNELL: A restaurant,
21 and retail would be even more.

22 MR. LEDYARD: Yeah, yeah.

23 MR. BROWN: So where
24 would the -- the municipal and government
25 facilities in here are -- they could be

1 within the office sector or they could be
2 within the others?

3 MR. LEDYARD: Yeah. I --

4 MR. BROWN: So in those 19
5 projects?

6 MR. LEDYARD: Yeah. I think
7 they're in an office in this one, I believe.
8 I can confirm that if you want.

9 MR. BROWN: Well, I just kind
10 of --

11 MR. LEDYARD: I also don't
12 know how many are actually in here. You
13 know, I don't -- is there a municipal
14 initiative?

15 MR. HALLER: This is Roy from
16 UI. So the -- for small business in UI's
17 service territory, you would not have any
18 municipality facilities in that -- in that
19 mix.

20 MR. EMBREE: Yeah. I'm
21 thinking about the City of Middletown and
22 EO -- it was all pretty much the EO
23 evaluation, I think, whereas by community, it
24 probably wouldn't have fit in that small
25 business.

1 MR. LEDYARD: So I think there
2 might be other programs that target those
3 more explicitly, or maybe their assumption
4 exceeds what's --

5 MR. BROWN: Yeah. Well, this
6 is Eric at CBIA. So this is helpful because,
7 I guess, maybe, because I'm in this building,
8 I have this two-by-two diagram in my head.
9 And one of them was sort of with respect to
10 utilization. And this may be outside of the
11 scope, or maybe it's coming later, but I'll
12 tee it up now since we kind of started to get
13 into it, was -- was, you know, sort of the
14 private sector C and I versus municipal and
15 government. And it sounds -- looks like this
16 is pretty highly -- high percentages of
17 private sector commercial/industrial.

18 And then the other, sort of,
19 split I'm wondering about, if I understand
20 this program correctly, it's both low or
21 no-interest financing but also some incentive
22 options or rebate options as well.

23 And so just in terms of
24 utilization, again, this may be out of the
25 scope of what you did, but what sort of the

1 breakdown is between those who use the
2 financing versus those that --

3 MR. LEDYARD: Right.

4 MR. BROWN: -- or maybe it was
5 a combination. I'm not sure, but that's --

6 MR. LEDYARD: Yeah. So that
7 was not in the study, but I can tell you
8 this, that there is a subsequent study that
9 Tom Franks and Lori are actually deeply
10 involved in, who are looking at financing
11 explicitly because it's such a -- well, it
12 can be a program driver or barrier, right,
13 and I want to make sure we're on the right
14 side of the issue. And to begin that, you
15 need to understand it. So there is quite a
16 bit of focus coming up on that, in fact, a
17 study directed exactly at that issue. Good
18 point.

19 So this is my busiest slide.
20 And I'll apologize in advance. But it
21 actually is fairly straightforward, and in
22 the report it's much more detailed, so I'm
23 not going to spend a lot of time here on it.
24 But what we did do, I mentioned the PSD, the
25 Program Saving Document review, and

1 essentially looked at the PSD formulas. We
2 looked at the PSD inputs, and we tried to
3 figure out -- or tried -- not tried -- we
4 tried to, one, just make sure the formulas
5 are correct, you know, in -- in stark terms,
6 that they make -- that they're sort of
7 conformed to industry standards, and then, to
8 also see if there's any other conclusions or
9 thoughts we might have on how they can be
10 improved.

11 And again, this is detailed
12 more in the report. And really the only
13 thing that came up is the COP issue, which
14 Pat mentioned before. And you'll see that in
15 the recommendation coming up momentarily.
16 And, you know, like I said before, we -- we
17 made a recommendation that it be adjusted to
18 reflect what we found on site, but in fact,
19 the utilities have beat us to the gun, you
20 know, beat us -- beat us to the -- to the
21 punch.

22 So as I mentioned before, the
23 second meter -- the second impact approach
24 we -- we used in this study was a billing
25 analysis. And these are the billing analysis

1 results. And one of the things you'll see is
2 the realization rate is much lower. I mean,
3 on the other one we had virtually 96 percent.
4 In here, we're coming up with a third of
5 that.

6 And we explored different
7 billing analysis approaches. We explored the
8 use of different billing analysis data
9 because one thing you can do is you can
10 become more and more stringent about the type
11 of data you use in the analysis. You start
12 off with all billing data, and then maybe you
13 limit it to people where you definitely have
14 a year pre or post, and you limit it to
15 people that -- that didn't -- then you limit
16 it to accounts that didn't have changes in
17 account numbers.

18 You know, you start limiting
19 it more and more to people that you think are
20 more and more representative of -- or more
21 and more capable of showing program savings
22 through their consumption data. And even
23 when we applied those more stringent data
24 requirements, the billing analysis number
25 didn't budge. It stayed at 34 percent.

1 And so one of the things
2 that -- that we finally concluded is that --
3 and I'll talk about this in a moment too --
4 is that the small business program just might
5 not be a good candidate for a billing
6 analysis. The overriding concern being
7 simply that if you don't have all the billing
8 data, you're not going to come up with all
9 the savings.

10 So if you have a site that
11 happens to have two -- two meters or two
12 accounts and each -- and -- and that entire
13 site was treated, and you only get one
14 account, then your savings, you know, in --
15 in gross terms are halved because you don't
16 see the other half. And that sort of
17 phenomenon can really sell the billing
18 analysis.

19 So in a moment you'll see that
20 I recommend that we -- that -- and what the
21 report does, in fact, is push forward the M
22 and V results as being the -- the formal
23 final estimate of savings and that the SBEA
24 program undertake a billing -- you know,
25 that the -- that the billing analysis is

1 desired for the future, that some process
2 will be put in place to make sure that we're
3 getting all the meters, all the accounts,
4 every time we touch one of these
5 participants.

6 And this just summarizes what
7 I was just talking about. One of the things
8 I will point out -- and Ken has been on the
9 frontline of this issue with me across the
10 region. You know, I've had three or four
11 clients. I do a lot of small business study
12 work. And I've had three or four clients in
13 the Northeast -- well, in New England, where
14 we've had very a similar impact, where we've
15 done a bottom-up M and V approach, and we do
16 a top-down billing analysis approach.

17 And -- and the results are
18 surprisingly the same as what we found here
19 in Connecticut. And it happened in New York
20 and Massachusetts, specifically, very
21 recently, like during the same evaluation
22 window. And our conclusion is largely the
23 same across the board, that we just are not
24 convinced we had all the billing data to do
25 those -- to do it -- to do it correctly.

1 MR. EMBREE: Is that impacted,
2 maybe, by the fact that on the bottom-up
3 analysis you did a lot of metering, you're
4 looking at a lot of lighting, so you have a
5 fair amount of confidence in those results?

6 MR. LEDYARD: Yeah. That's
7 right. And I'll touch on -- and that's
8 exactly right. So one of the things Mike
9 asked me --

10 MS. THOMPSON: I couldn't hear
11 the question or comment. Could you repeat
12 it -- repeat it please, Tom?

13 MR. LEDYARD: Sure. Well, go
14 ahead Geoff.

15 MR. EMBREE: Yeah. That --
16 that was Geoff. I was saying that maybe the
17 reason that he's able to make such a strong
18 conclusion about favoring the bottoms-up
19 approach over the billing analysis, is that
20 we have a lot of very solid metering data.
21 We were examining the lighting measures, and
22 there was not a ton of variation.

23 So, ordinarily, if you have
24 two different approaches, you would -- you
25 would, kind of, try to weigh both of them,

1 but you're saying that you have a lot of
2 confidence.

3 MR. LEDYARD: Yeah. That's
4 exactly right. And so -- and -- and, you
5 know, I appreciate your comment.

6 One of the reason -- and this
7 is reason one, essentially, for relying on
8 the M and V results, Geoff, is because, you
9 know, historically, we do rely -- for small
10 business programs of this nature we rely on M
11 and V, and the -- and the reason is fairly
12 straightforward. I mean, often there's an
13 audit in advance that tells you what was
14 there and the quantity. Often we go out to a
15 sample and we verify what was installed, and
16 then we do metering on all the operation of
17 them, you know. So it's very empirical, and
18 it's very hands on, and it's very eyes on.

19 And in my mind, it naturally
20 feels more rigorous for programs of this
21 type, where you know the pre, you know the
22 post, and you're -- and you're measuring
23 the -- now billing analysis has their own
24 advantages and disadvantages also. But in
25 this case, I think it was pretty clear that

1 the M and V results are firm.

2 Now, the one thing that I
3 would point out about the M and V results is
4 that, you know, recruitment it's -- it --
5 recruitment is important, right. If -- if
6 what you have is M and V results of only the
7 people that you could get ahold of and go out
8 and visit, well, that's an M and V result
9 with some kind of bias to it.

10 So one of the things we try to
11 do, and we did a good job adhering to this
12 actually in the report is, you know, make
13 sure that when we call people we're trying to
14 get out to those people. And we're not --
15 and if they're not there or whatever, they're
16 out of business, we're not just dropping
17 them. We're trying to keep track of them,
18 because that's one thing that can have a
19 profound effect on the M and V side, is -- is
20 incorrect recruitment and introducing bias in
21 the results there.

22 And in a lot of ways that
23 might be one of the softer -- one of the soft
24 points in the M and V approach actually. And
25 it often goes undiscussed in reports, but

1 it's important. So --

2 Yes, Les?

3 MR. TUMIDAJ: Yeah, Les
4 Tumidaj.

5 In -- maybe not in this study,
6 of course, but in some the other work you
7 just mentioned, have you folks been able to
8 dig a little bit deeper and diagnose what's
9 going on? I mean, the implication, you're
10 missing two-thirds of the meters, for
11 example, in these other studies, or what does
12 this really mean?

13 MR. LEDYARD: Yeah.

14 MR. TUMIDAJ: Inadequate data?

15 And separately have you guys
16 ever looked at just a subset of buildings
17 just -- just for the fun of it? We have
18 unambiguous metering, and to see what -- that
19 you have, what kind of correlation we had
20 between the M and V results and actually the
21 performance. So the latter, ultimately --
22 it's kind of what matters, you know, overall
23 to society.

24 So I'm kind of curious.

25 MR. LEDYARD: A great -- great

1 point. Okay. So I have two things.

2 So in a study I did in New
3 York, in upstate New York, we had the -- we
4 did long-term metering also. And one of the
5 things that happened in that study was we did
6 the billing analysis earlier in the
7 evaluation site, you know.

8 MR. TUMIDAJ: Uh-huh.

9 MR. LEDYARD: So we started
10 metering and then we did the billing
11 analysis. We realized, oh, the billing
12 analysis isn't right -- or not that it's not
13 right, but it's coming -- Ken is going to
14 scream at me here in a minute -- but -- but
15 the billing analysis was coming back with
16 divergent results from what we were finding
17 on site.

18 So the issue becomes, is it --
19 is it this metering issue? So when we we're
20 going back out to sites, we actually gathered
21 more and more meter data. We gathered -- we
22 actually scoured the site for additional
23 accounts and meters, and then we did an
24 analysis of that subset. And in that subset,
25 Les, was -- it might have been 15 sites. I

1 mean, it wasn't a lot, but it did improve the
2 realization rate significantly. So that's
3 one thing that we did on the billing analysis
4 side.

5 MR. TUMIDAJ: I'm sorry. How
6 significant? I'm just kind of curious.

7 MR. LEDYARD: No, it went up
8 to 70 percent, 80 percent, somewhere in
9 there. I mean, it made a big jump, you know.
10 But again, it was a small sample size, and it
11 wasn't -- it wasn't designed from the outset
12 to be that way --

13 MR. TUMIDAJ: Right.

14 MR. LEDYARD: -- but it was
15 something that we did to try and understand
16 what was happening and whether or not it
17 could have that kind of effect.

18 MR. TUMIDAJ: All right.

19 MR. LEDYARD: And then the
20 other thing I can say is that, in -- in New
21 York, I'm actually doing a lighting control
22 study in the small business sector right now.
23 We're doing premetering and postmetering for
24 occupancy sensors. And one of things we're
25 doing as part of that process is checking for

1 meters at all 70 of those sites that we're
2 going to. And we're doing it more -- what's
3 the word -- more diligently, you know, more
4 comprehensively this time so we can really
5 get a better handle on whether or not this
6 issue is at play or not.

7 MR. TUMIDAJ: All right.

8 MR. LEDYARD: Yeah.

9 MR. TUMIDAJ: I'd be really
10 interested in seeing that.

11 MR. LEDYARD: Oh, yeah.

12 MS. LEWIS: This is Lori
13 Lewis.

14 When Tom -- in fact, Ken can
15 contribute. We've had these discussions. So
16 we talked about the sensitivity of, you know,
17 is it 12 months pre/post, or isn't it, and
18 who do you take out, by what criteria. What
19 Ken found was a great stability, I mean, a
20 really solid stability in that realization
21 rate, which indicates it's not sensitive to
22 the variants or some of the reasons why you
23 would take out these different groups. And
24 you tend do that in most billing analysis
25 to -- as a validity check.

1 Then we've got these much
2 lower realization rates. We have a very
3 stable billing analysis, and the realization
4 rate is lower, which matches the hypothesis
5 that we're -- we're missing meters, as Tom
6 explained. If you're missing meters that
7 have any savings associated with them, you're
8 going to show a lower realization rate. I
9 mean, that's by the math, simple math.

10 So it's not absolute proof
11 that's what's going on, but all the evidence
12 points that that hypothesis is correct. And
13 sometimes people are able to get billing
14 analysis results for small commercial more
15 than they are other C and I. And there
16 are -- states recommend that, once in a
17 while, you pilot, you test. You get the same
18 answers in both; it's extremely strong.

19 But, in general, across all
20 evaluations of these programs, in general,
21 the accepted methodology for C and I is using
22 methods in IPMV, International Protocol of
23 Measurements and Valuations, and to ensure
24 that there's metering or measurements of the
25 most uncertain factor, which was done here.

1 So I kind of see it as the pilot test. And
2 everything matches the fact that we have a
3 problem with having all the meters associated
4 with the savings.

5 MR. TUMIDAJ: That's a great
6 response. I very much appreciate that, but
7 it also poses a challenge. At some point,
8 this industry, our industry, has to bridge
9 that gap because we have to really understand
10 billing performance, at some point, for this
11 stuff to ultimately makes sense.

12 I very much trust what we're
13 getting in the M and V, as far as the savings
14 are concerned. And I'm disturbed that we're
15 off by two-thirds. That's a lot of meters
16 that have been missed. There's something
17 going on there that we need to get a handle
18 on eventually, sooner rather than later, as
19 an industry and as a program as well;
20 otherwise, I'm not sure if we can really
21 speak with confidence, in the broader
22 societal basis, what we're accomplishing.

23 MR. McDONNELL: And when --
24 when you do it -- I'm sorry. Pat McDonnell
25 from UI. When you do a billing analysis, how

1 would you identify or account for a change in
2 the business operations, because the economy
3 was kind of soft in -- in the years before
4 the evaluation period. It has gotten better.

5 So you might have a small
6 manufacturer that had maybe one shift, went
7 to two shifts, or had, you know, more
8 machinery operating more frequently. How do
9 you deal with that?

10 MR. LEDYARD: Ken, can you
11 bail me out on this one?

12 MR. AGNEW: Yes. Ken Agnew
13 from DNV GL. Excuse me. I think that's a
14 great question, and that actually is
15 another -- that that's another aspect of the
16 challenge of billing analysis.

17 I like the fact that you have
18 this great empirical data that's connected to
19 the revenue system, et cetera, and -- and
20 then you have to figure out how -- how well
21 can we get to the numbers we want, from an
22 evaluation perspective, with those data. All
23 we can do is some sort of pre/post delta.
24 And what we really want is the program change
25 that -- that is affecting that pre/post

1 change, but there's always nonprogram change
2 happening as well. There's just general
3 economic stuff, even -- even more general
4 than you're talking about. Just, you know,
5 a -- in normal year without a recession, and
6 so forth, there may be just a general
7 increase because you -- you've got a
8 low-level increase in activity as time goes
9 on.

10 Over the last five years, that
11 increase could be quite a bit more dramatic,
12 potentially, and there are various ways
13 that -- that we try to correct for that. On
14 the residential side, it's a little easier to
15 come up with actual comparison groups of
16 households that you -- you believe are
17 representative of the general trend that's
18 going on in the -- in the marketplace.
19 That's much harder with commercial buildings.

20 And you're absolutely correct
21 that -- that, if there is -- underlying all
22 this, if there is a correlation, if -- if
23 buildings are more likely to come in and do a
24 program like this on a ramp-up kind of trend,
25 you know. So if they're more likely to come

1 in and do a program like this when occupancy
2 is relatively low, and in the -- in the
3 postprogram period occupancy is higher, or as
4 you said, if they're -- because they are able
5 to bring in another shift, those kinds of
6 things, we can't account for those. We don't
7 have that information.

8 And that -- that's one more,
9 and there are a number of places where we --
10 we can't -- we can't confidently know whether
11 we can address those things. And that --
12 that ultimate lack of confidence is -- is why
13 the results from the on-sites -- the on-site
14 approach, ultimately, for all of these
15 evaluations that we did out East really
16 became the primary results.

17 MR. LEDYARD: Ken, what about
18 the notion of the participants as, you know,
19 using participants as a control group or
20 using -- you know, somehow incorporating a
21 control group in the analysis to account for
22 that.

23 MR. AGNEW: Well -- so in --
24 in the methodology that we used for this,
25 there is no -- there -- there are no other --

1 there's no explicit control group or
2 comparison group. There are -- I want to
3 avoid going too far into the weeds here. The
4 approach that we used here, it's a quite
5 common approach.

6 If the -- in its simple terms,
7 you are trying to account for general trends
8 that are happening across the population, the
9 models -- if -- if for, in any given month,
10 for the -- there may be 10 percent of the
11 sites are -- are changing from pre to post,
12 are -- are taking part in the program, but
13 the other 80 or 90 percent are not. They are
14 still only in the pre period or they're only
15 in the post period. So the model allows
16 those other sites to inform what kind of
17 trend is going on underlying outside of the
18 program.

19 So it's a -- it's a model
20 approach to dealing, to try to address that
21 nonprogram change that might be going on
22 between the pre and the post period. So I
23 won't go any -- I can go deeper into that if
24 you want, but that's the approach that we
25 used here. It's quite common.

1 The other way to try to
2 address that issue is to pull in some sort of
3 comparison group. You can pull in program
4 participants for this program that, for
5 instance, participated in 2010 or 2009. We
6 know that they are all in the post period of
7 their program participation, so we know that
8 they're not going to be putting in a big, you
9 know, set of new lights because they did it
10 two years ago or two years previous. And so
11 we can use them as, sort of, the steady-state
12 nonprogram evidence of change.

13 And we do that on the -- on
14 the residential side, not very commonly here,
15 because frequently these programs are -- are
16 not particularly stable over time and -- and
17 it's not clear that that kind of a comparison
18 group is -- is all that effective. You can
19 even go more general. You could just try to
20 pull in an altogether different sample of
21 commercial buildings as your comparison
22 group, but once again, there's quite a bit of
23 variability in the populations out there.
24 And -- and getting a good match is always a
25 concern with a comparison group.

1 You can cause just as much
2 trouble by getting a comparison group that
3 doesn't match very well as by, you know, as
4 by not having a comparison group.

5 So the approach that we used
6 here is actually one that is recommended in
7 the universal methods protocol, which -- with
8 Mimi Goldberg here at DNV GL and I actually
9 put together. It -- it's one of our primary
10 recommended approaches precisely because it
11 does address a lot of the pre/post nonprogram
12 change, and it doesn't bring in the concerns
13 related to a mismatched comparison group.

14 So I'll stop there before I
15 get too far in the weeds. I can go deeper if
16 people want it, but I'll stop there.

17 MR. LEDYARD: I think that's
18 deep enough.

19 MS. LEWIS: I think -- this is
20 Lori. I absolutely agree with Ken. It was
21 nice that I got to work with him and sort
22 of -- some of these things we could probably
23 debate for a long time, the little minutia
24 but, on the most part, quite agree in terms
25 of what was done and how far to take it.

1 I mean, the stability is one
2 thing, but there's -- there's definitely
3 economic theory that, given the time period
4 we've got, we could underestimate the
5 realization rate due to coming out of
6 recession. But most of the billing analysis
7 in those residential that have tried to use
8 aggregate economic variables over time have
9 not found that effect. A few have, but
10 it's -- it's not universal. And the biggest
11 thing that swamps all of those concerns is
12 whether you have all the meters -- so the
13 fact -- not to spend a lot more on this data,
14 bringing other variables or doing that. And
15 I've seen and been involved where you do
16 subsets with surveys, in terms of occupancy
17 of floors, and I've also been involved where
18 we did on-sites and more like IPMVP Option C,
19 sort of individual billing analysis for large
20 C and I. And that tended to work where you
21 had a lot of detail, but it still did not
22 prove itself to be more convincing or
23 cost-effective than the M and V when you went
24 to that degree.

25 MR. LEDYARD: So slide 20 --

1 well, thank you for the -- thank you, Ken.

2 Thank you, Lori.

3 Pat, is that okay?

4 MR. McDONNELL: Perfect.

5 Thanks.

6 MR. LEDYARD: Yeah. So I'm

7 down to conclusions and recommendations.

8 Essentially, this is a summary slide of some
9 of the savings results I've presented to you
10 earlier. I've highlighted -- or I guess I've
11 placed arrows next to the big results that I
12 think we should take away.

13 Well, conclusion one is fairly
14 simple. The program is doing a lot of, you
15 know, it's generating a lot of energy savings
16 as far as we can tell, based on the M and V
17 results, and that's good news.

18 The second conclusion I have
19 is that, hey, the -- the program savings
20 document is producing reasonable estimates of
21 impacts. When you see a realization rate of
22 96.2 percent, and even 90 percent for summer
23 seasonal, those are -- those are relatively
24 good numbers.

25 One of the things that the

1 SBEA program benefits from is multiple
2 previous evaluations, you know, sort of an
3 evaluation is done or recommendations made,
4 the PSD improves, and then the savings get
5 better. And then, here we come along, you
6 know, two or three evaluation cycles later,
7 and the PSD is doing a decent job. So I
8 think -- in some ways, I think this is
9 evidence of a system that can work pretty
10 well.

11 Conclusion three we've
12 discussed. I don't believe the SBEA is a
13 good candidate for program level billing
14 analysis simply due to the uncertainty around
15 the relationship between accounts and trading
16 spaces.

17 I understand Les' point, which
18 is simply, hey, if at some point, as a group,
19 we can't get -- we can't find savings in the
20 actual bills, you know -- you know, it sort
21 of softens our stance on what this is
22 actually accomplishing. I mean, it
23 doesn't -- I don't think it undermines it
24 entirely, but look, it would be nice to
25 certainly see it, right.

1 So to the extent that it is
2 desired, Les, and -- and in Connecticut, that
3 there may be -- be a better system employed
4 to make sure that all those billing meters,
5 accounts, are all being gathered
6 systematically.

7 The RFP didn't -- we
8 calculated winter and connected demand
9 savings numbers simply because, you know, we
10 could. I mean, we had all the data. We had
11 everything we needed. And so we -- and so we
12 did all that.

13 And one of the things that
14 popped out was that the -- some of those --
15 and Pat, this goes to the tracking systems a
16 little bit. We found that the -- some of
17 those numbers are -- well, some of them were
18 zeroed. You know, for some reason, some of
19 the winter savings were zero, and some of the
20 demand savings were just off quite a bit in
21 the tracking systems. And I was wondering if
22 it was almost because there's so much focus
23 on some of the other things, that maybe these
24 two savings estimates that are tracked are
25 not tracked as rigorously as the other ones.

1 And so one of the things I
2 recommend is that -- that for those two
3 elements, the winter and the connected demand
4 on the sponsors, just keep a closer eye on
5 how the PSD is asking them to calculate
6 savings.

7 MR. EMBREE: Yeah. I would
8 say that connecting kWh is maybe not as much
9 a concern because we've got the summer and
10 winter. In the past, winter was less of a
11 concern, but it's becoming increasingly
12 important, as you know, with the gas pipeline
13 constraints and all that.

14 MR. LEDYARD: Yeah.

15 MR. EMBREE: So I -- I
16 would -- I would think that, presently, we're
17 doing a much better job on winter.

18 MR. LEDYARD: Well, that's the
19 other thing, Goeff, and it's something that
20 should always be remembered. I looked at the
21 2011 program year. I mean, there's been two,
22 two and a half years of activity since then
23 in your tracking systems, you know. So some
24 of this might be clearer now than it was, you
25 know, two and a half years ago.

1 And then here's the -- the
2 conclusion about the COP. You know, we -- we
3 recommended that -- that simply just making
4 sure that when an interactive is applied that
5 it's done in mechanically cooled spaces, and
6 for lighting, installed in mechanically
7 cooled space, and that this COP assumption be
8 updated. And then, I know in the footnote
9 that, in fact, it has been updated, so this
10 recommendation has been taken care of by the
11 utilities.

12 MR. EMBREE: The reason we use
13 that 3.5 instead of the 2.9, which might be
14 more appropriate for small businesses, is
15 because we have to cover large C and I, which
16 you didn't really get more efficiently.

17 MR. LEDYARD: Right. Right.
18 Right. I mean, you guys actually went above
19 what we had recommended.

20 MR. EMBREE: Right.

21 MR. LEDYARD: So...

22 Oh, and Pat, this is what we
23 were talking about earlier with the, you
24 know, the -- the -- the biggest -- the
25 biggest issues with the nonlighting was

1 simply in that documentation adjustment. And
2 in the report we give a little bit of detail
3 on what that -- what actually drove that.
4 But it wasn't the actual PSD formulas or the
5 assumptions so much as it was simply getting
6 the right tracking savings numbers in the
7 system for those. Again, this is 2011. It's
8 got a minor change.

9 And that's all I had. Sorry
10 it went long, but I'm open for other
11 questions, concerns, comments.

12 MR. BROWN: Yeah. Great --
13 great presentation. Thank you, Tom.

14 This is Eric with CBIA. Kind
15 of related to Pat's question, which was
16 focused on the nonlighting, in the lighting
17 arena, do you have a sense of -- you talked
18 about trends, trends there; in other words,
19 the universe of -- of SBEA candidates that
20 have done lighting -- or I guess my
21 impression is completely unscientific -- is
22 that a great deal of businesses have already
23 done lighting retrofits.

24 Is there anything in your work
25 that indicates that there's, sort of, the

1 size of the marketplace that's still
2 untouched out there with respect to -- to
3 lighting specifically?

4 MR. LEDYARD: You know, we
5 didn't touch on this, but I'm pretty sure --
6 actually it might even be us. I don't -- I
7 think there's a potential study that are
8 going to be happening in Connecticut soon, if
9 it's not happening already. I thought that
10 actually one of my colleagues at DNV GL was
11 contacted to do one.

12 Does that ring a bell, Roy?

13 MR. HALLER: I haven't heard
14 anything yet.

15 MR. LEDYARD: Because,
16 usually, that's not part of a potential
17 study. Because that's a legitimate concern,
18 you know, when have you reached saturation on
19 a measure type when you need to move on to
20 another measure type or find the --

21 MR. BROWN: Or find, you know,
22 underserved markets that, for whatever
23 reason, haven't sort of caught on to this.
24 You know, maybe the manufacturing community
25 is going gung ho with this, but you know, the

1 office-based community has not or something
2 like that.

3 MR. LEDYARD: Yeah.

4 Well, you bring up an
5 interesting point. And that's one of the
6 things that we're doing in the small business
7 research area is we're starting to look at --
8 we mentioned the -- the financing and some of
9 those issues. And sometimes it's not --
10 it's -- it's removing barriers as much as it
11 is improving incentives or offering rebates,
12 you know. And so part of the exercise, I
13 think, this program is starting to go through
14 is looking at what barriers might still exist
15 with these other studies that could be
16 decreased that might open up some further
17 program activity.

18 MR. EMBREE: Yeah, I just --
19 that, like you said, this is 2011. It is a
20 concern. And since then, we have continued
21 to push programs like this that are both
22 small C and I and a large C and I.

23 MR. LEDYARD: Yeah, what's
24 your take on that, Roy?

25 Like on this notion of the

1 small C and I market getting a little --

2 MR. HALLER: Well, I think
3 what happens is it comes in waves because of
4 the evolution of technology. You know, so
5 you get to -- I mean, to your point here, we
6 do have pockets that might be untouched, and
7 we might have some T12s in there, for
8 example.

9 If I had to make a guess, my
10 guess would be that those would be in some of
11 the more urban areas, economically distressed
12 areas. You know, so in 2014, that becomes
13 more of a focus, and so we're attacking that
14 or we're addressing that.

15 The other thing that's
16 happened is --

17 MS. LEWIS: I can't hear what
18 is being said. Maybe if someone could
19 summarize, repeat, or maybe you move the mic
20 when someone is speaking.

21 MR. HALLER: So this is Roy
22 from UI. And basically, what I was saying,
23 Lori, was that in some areas, like urban
24 distressed areas, there may be a tendency to
25 have pockets of technologies that are less

1 than efficient and less than desirable.

2 We're changing those.

3 In 2011, you know, your
4 predominance of lighting technology was going
5 to T8s, some reduced wattage T8s. So that's
6 something that was transpiring. Now you're
7 looking at LEDs. You know, so that's an
8 example of how the technology changes.

9 And, you know, I'm not going
10 to say that there's a lot of repeat business,
11 but if -- if you have somebody who's an early
12 adopter on the technology side, he may see
13 the values in going to LED lighting
14 specifically on the exterior, as opposed to
15 the interior, at this point. Or your space
16 may need some upgrades for lighting and, you
17 know, your ceiling pattern might change a
18 little bit, so you might go to LED
19 two-by-two. So those are some things that
20 come into play. So I think we're addressing
21 it. And I think we're staying at least
22 consistent with the technology wave.

23 And to your question earlier,
24 Eric, about financing, again, in UI
25 territory -- and I'm sure it's fairly close

1 to small business in the CL&P territory --
2 about 97 percent of the projects are
3 financed. So, I mean, the predominance is
4 financing.

5 MR. O'CONNOR: You know, Roy,
6 this is Dennis at UI, if I can jump in.

7 And on the -- that financing,
8 historically, we're showing about 95 to
9 97 percent qualify for the financing. And of
10 those, we probably have 40 percent
11 participation for the customers that do not
12 qualify because of poor credit. It will
13 probably go down to about 20 percent of them
14 decide to participate because they just can't
15 come out of the pocket with the balance after
16 incentive. All customers qualify for
17 incentive.

18 MR. BROWN: Thank you.

19 MR. EMBREE: That's a great
20 point about technology. And just the other
21 day, I finally got to demo one of the new
22 LEDs that would fit right into an electronic
23 ballast so you don't have to go through and
24 replace the fixture. And that is big for us
25 to kind of get, because we had been reluctant

1 to kind of go halfway and then have a
2 maintenance issue later. So that could be
3 big for us.

4 MR. McDONNELL: And even
5 the -- a lot of restaurants would have
6 recessed incandescents that they want to dim.
7 So you just have nothing to get those places.
8 Now you can put an LED in there, and there's
9 a lot of those options. And you know,
10 there's a lot of T5 activity that's been
11 measured, replaced with metal halides.

12 MR. TUMIDAJ: If I recall --
13 this is Les -- we had an earlier discussion
14 on small business. Maybe it was late last
15 year. And I think you folks estimated about
16 30 percent of the market had access, small
17 business had been penetrated directly by the
18 programs. That doesn't speak to spillover
19 and so on which meant there's still a
20 large --

21 Now obviously the rest of that
22 market, at least presumably that market has
23 done something during that period of time,
24 nonetheless there is -- just suggest there's
25 still a very significant market that would be

1 amenable to some of the high-performance
2 lighting technologies, which also lend
3 themselves to very sophisticated control
4 regimens which was not the case in the past
5 in a much more cost-effective way. So that
6 suggests there's still a lot of potential
7 activity out there as we're going through the
8 cycle.

9 MR. HALLER: And this is Roy
10 again. I'd also add to Les' comment, that
11 some of that gets picked up with Energy
12 Opportunities. You know, because if you have
13 a retail establishment, let's say, maybe a
14 national chain there, they're inclined to go
15 with the rebate form which falls under the
16 Energy Opportunities Program because it's
17 easier for their methodologies. You know, so
18 that's one example.

19 Another example is many times
20 there's some customers out there who think
21 that the small business prices are a little
22 bit higher than they could get. You know,
23 that's a true statement. It is. But they
24 can go to the rebate, or we can serve them
25 under Energy Opportunities.

1 So you know, in most cases --
2 in many cases I think those type of customers
3 get served with our programs.

4 MR. LEDYARD: Well, that's all
5 I had. I always appreciate the opportunity
6 to work in Connecticut. And I always
7 appreciate the opportunity to come up and
8 present it.

9 MS. DUVA: Are there any other
10 questions on the phone?

11 (No response.)

12 MR. McDONNELL: I'd just like
13 to say the study was another great job,
14 high-quality result, very thorough.

15 MR. LEDYARD: Thank you very
16 much. Okay.

17 MS. DUVA: Thank you, tom.

18 MR. LEDYARD: You're welcome.

19 MS. DUVA: Thanks everybody
20 for participating.

21 We're going to conclude the
22 report presentation and question and answer
23 session. Going once. Going twice.

24 (Whereupon, the above
25 proceedings were concluded at 11:41 a.m.)

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CERTIFICATE

I hereby certify that the foregoing 76 pages are a complete and accurate computer-aided transcription of my original verbatim notes taken of the Technical Meeting in Re: 2013 - 2015 CONSERVATION AND LOAD MANAGEMENT PLAN - SBEA IMPACT EVALUATION, which was held before DIANE W. DUVA, Hearing Officer, at the Department of Energy and Environmental Protection, 79 Elm Street, Ensign Room, 5th Floor, Connecticut, on June 6, 2014.

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