UNITED STATES OF AMERICA + + + + + DEPARTMENT OF ENERGY + + + + ++ FRAMEWORK PUBLIC MEETING FOR RESIDENTIAL CENTRAL AIR CONDITIONERS AND HEAT PUMPS + + + + + Thursday, June 12, 2008

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The meeting came to order at 9:00 a.m. in Room 1E-245 of 1000 Independence Avenue, S.W., Washington, D.C. Douglas Brookman, Facilitator, presiding.

PRESENT:WES ANDERSONUS DEPARTMENT OF ENERGYMICHAEL KIDOUS DEPARTMENT OF ENERGYANDREW DELASKIAPPLIANCE STANDARDSAWARENESS PROJECT

ANITRA GASSETT MITSUBISHI ELECTRIC BILL MCCULLOUGH LENNOX INTERNATIONAL, INC. BRIAN DOUGHERTY NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY BRICE BOWLEY GENERAL ELECTRIC APPLIANCES

CARL BERGT CHARLIE MCCRUDDEN

CRAIG MESSMER DANIEL J. ARNOLD DONALD M. BRUNDAGE DOUGLAS BROOKMAN

EDWARD SCHMIDT

ERIC STAS

RHEEM MANUFACTURING CO. AIR-CONDITIONING CONTRACTORS OF AMERICA UNICO INC. NORDYNE P.E. SOUTHERN COMPANY FACILITATOR

NORTHEAST ENERGY EFFICIENCY PARTNERSHIPS US DEPARTMENT OF ENERGY

PRESENT (continued):

CONSULTANT FOR FRED J. KELLER CARRIER CORPORATION GARY FERNSTROM PACIFIC GAS AND ELECTRIC COMPANY GREGORY ROSENQUIST ERNEST ORLANDO LAURENCE BERKELEY NATIONAL LABORATORY HARVEY SACHS AMERICAN COUNCIL FOR AN ENERGY EFFICIENT ECONOMY ANDREW HOLLIDAY AIR-CONDITIONING CONTRACTORS OF AMERICA HUNG PHAM EMERSON CLIMATE TECHNOLOGIES, INC. US DEPARTMENT OF ENERGY JAMES RABA JAMES WALTERS AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE JAMES LYONS NEWPORT PARTNERS, LLC JIM CRAWFORD TRANE JOHN FOX UNICO, INC. CARRIER CORPORATION JOHN MANDYCK JOSEPH MATTINGLY AIR-CONDITIONING, HEATING, & REFRIGERATION INSTITUTE KARIM AMRANE AIR-CONDITIONING, HEATING, & REFRIGERATION INSTITUTE KEN SAGAN NATIONAL ASSOCIATION OF HOME BUILDERS LENNOX INTERNATIONAL KYLE GILEY INC. LANCE DELAURA SOUTHERN CALIFORNIA GAS COMPANY LANE BURT NATIONAL RESOURCES DEFENSE COUNCIL LAURA VAN WIE MCGRORY ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY

MARK STANGA

MICHAEL CHRISTOPHER NAVIGANT CONSULTING

DAIKIN INDUSTRIES, LTD

PRESENT (continued):

MICHAEL W. WOODFORD

DRD AIR-CONDITIONING, HEATING & REFRIGERATION INSTITUTE

MICHAEL MCCABE US DEPARTMENT OF ENERGY MIKE RIVEST NAVIGANT CONSULTING PATRICK O'CONNOR KENT & O'CONNOR INCORPORATED PAUL DOPPEL MITSUBISHI ELECTRIC PAUL KYLLO SOUTHERN CALIFORNIA EDISON

ROBERT WILKINS DANFOSS, INC. RONALD LEWIS US DEPARTMENT OF ENERGY SRIRAM SOMASUNDERAM PACIFIC NORTHWEST NATIONAL LABORATORY STEVE ROSENSTOCK EDISON ELECTRIC INSTITUTE TALBOT GEE HEATING, AIR-

CONDITIONING & REFRIGERATION DISTRIBUTORS

INTERNATIONAL

ENERGY SOLUTIONS

NATIONAL COMFORT

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TIMOTHY BALLO EARTHJUSTICE

TOM ROBERTS CFM DISTRIBUTORS

VINCE MUCCIOLA

PRODUCTS

W. VANCE PAYNE

INSTITUTE OF STANDARDS

AND TECHNOLOGY

C-O-N-T-E-N-T-S AGENDA ITEM PAGE . . . . . .5 Opening Remarks from Interested Rulemaking Overview . . . . . . . . . . . . . . . . 63 Market and Technology Assessment, Screening Analysis, Engineering Analysis, and Preliminary Energy Use Analysis, Markups for Equipment Price Determination, and Life-Cycle Cost and Payback Period Shipments Analysis and National Discussion of Issues and Adjourn

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1 PROCEEDINGS 2 (9:03 a.m.) 3 WELCOME 4 MR. BROOKMAN: Good morning, 5 everybody. Welcome. 6 This is the framework public 7 meeting for residential central air conditioners and heat pumps. 8 9 My name is Doug Brookman, and I'll 10 be helping to facilitate this meeting along 11 with all of you. 12 We are fortunate this morning to 13 have many representatives from the Department of Energy. Thanks to all of you for being 14 15 here on time so we can get a start on time. 16 Do you wish to make welcoming remarks here at the outset? 17 Ron Lewis. 18 19 MR. LEWIS: Good morning, everyone, 20 and thank you for being here. First I want to note that in 21 22 trying to accommodate some requests to be sure

to get this done before the ASHRAE conference, when everybody would be tied up with that, we hurried as best we could, and it didn't give you much notice by the time we got it out the door, and we apologize for that.

We were doing our best trying to accommodate the requests, and unfortunately it didn't leave as much advance notice time as we would like. And sorry for that; I apologize for that.

11 But we are glad you are here. And 12 we're glad we've got such good turnout. And 13 this is a very important rulemaking, and we are very interested in your input, and getting 14 15 everything that you can give us for input to make the right decision. And we look forward 16 to a very active day and good dialogue. 17

18And we again thank you for being19here.20MR. BROOKMAN: Okay. So it's our21tradition to ask each person to introduce him

22 or herself. And say your name and

Page 7 organizational affiliation. 1 And not all of this will be 2 3 captured in the record, but we have a 4 registration list, so we will know who is 5 here. 6 But if you'd simply, I'm going to 7 go around the room, say your name and organizational affiliation please. 8 9 (Attendees introduce themselves) 10 INTRODUCTION AND AGENDA REVIEW 11 MR. BROOKMAN: Thank you. 12 Okay, thanks again to all of you 13 for being here on time, and for showing up at this meeting. 14 15 The Department of Energy counts on 16 this kind of consultation and participation to 17 figure out what to do, how to get this right. And so they really appreciate your being here, 18 19 as do I. 20 All of you have a copy of the 21 agenda in your packet. In the packet also is a whole series of very colorful descriptive 22

Page 8 1 slides. We are going to be going through 2 those as the day proceeds here. 3 There are also some statements, 4 some submissions for the record from 5 individuals for your consideration. 6 I am going to take a quick run 7 through the agenda here, and then we are going to proceed with the day. 8 9 I'm doing the first element there, 10 introduction and agenda review, right now. 11 Following this agenda review, I am going to 12 provide, we are going to provide, an 13 opportunity for any individual that wishes to do so to make brief opening remarks about 14 issues that are of key concern to you. 15 We hope you will keep them brief. 16 17 We don't intend for you to read a lengthy statement into the record. There are other 18 19 avenues to do that. And I guess four or five 20 individuals, six individuals, have asked the 21 department to speak, so we are going to recognize those individuals first. Then any 22

1 others that wish to chime in, we'll ask you to 2 do so at that point.

Following those opening remarks, we will have a rulemaking overview, and then we will go from there to a description of test procedures. We'll take a break mid-morning, around about 10:45 or so.

8 Following the mid-morning break 9 we'll have market and technology assessment 10 screening analysis, engineering analysis, and 11 preliminary manufacturing impact analysis 12 descriptions. And all that information will 13 be in the packet that is provided to you, 14 those colorful slides.

We'll have lunch today around about noon. And you are on your own for lunch. When we get to it, we'll describe that more fully.

Following lunch, energy use
analysis; markups for equipment price
determination and lifecycle costs and payback
period analysis; and other series of detailed

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1 descriptions on these analyses, plural. 2 And following that, shipments 3 analysis, national impact analysis. We'll 4 take a break mid-afternoon. And then we'll 5 also have more description on the notice of 6 proposed rulemaking analyses collectively. 7 Round about 3:30 this afternoon, if we get there that fast b there is a lot of 8 9 content here b if we get there that fast, 10 there is yet another opportunity for any of 11 you to make closing summary kind of remarks, 12 things you wish to emphasize to the 13 department's benefit. Questions and comments about the 14 agenda? 15 16 I'd ask for your consideration, as 17 we go along today, what I think is not much 18 more than common courtesy really. Please 19 speak one at a time. Please say your name for 20 the record. You don't need to say your 21 organizational affiliation every time. You 22 can just say your name, that will be enough.

1 This gentleman here, Eric, will 2 have a complete transcript of this meeting, 3 court reporter present. So please say your 4 name for the record. 5 Keep the focus here if you would 6 please. Turn your cell phones on silent, if 7 If you need to have a conversation you would. with someone next to you that is going to last 8 9 more than about 20 or 30 seconds, please take 10 it out of the room. It's disruptive. 11 And I'm going to ask you as best 12 you can to be concise, to share the air time. 13 There are a lot of people here, and there are a lot of things people want to say. We want 14 to hear all of it. 15 16 I hope that you seize this 17 opportunity today. This is your opportunity to start to influence these proceedings in a 18 19 way that benefits you. So please do that. 20 And finally I'm going to be cuing 21 people to speak as best I can by name. I also wish to encourage follow on comments. 22 It is

1 helpful for the department to hear the point 2 and counterpoint. So that is a little bit challenging for me and for you, but we can 3 make it work. 4 5 So please help me to make that We are going to be both cuing people 6 work. 7 this week, and encouraging follow on comments as well. 8 9 I think that's all I've got here 10 at the outset. I already said that the 11 general format is as follows. These slides, which you have copies of, we will have a lead 12 13 presenter, and that lead presenter will be going through the slides one by one, and 14 15 occasionally there is a pause with specific questions. 16 17 So there is an opportunity for 18 question, answer and comment as we go along, and that will be obvious as we look at the 19 20 slides. 21 Questions, comments, here at the 22 outset?

OPENING REMARKS FROM INTERESTED PARTIES 1 2 MR. BROOKMAN: Okay, do you have the list? So these individuals have asked to 3 4 speak here at the outset, brief introductory 5 remarks, perhaps summary remarks about issues 6 that matter to you. 7 And the department has listed them alphabetically. And Karim Amrane is the 8 9 first person. 10 MR. AMRANE: Good morning. My name 11 is Karim Amrane, and I am vice president of 12 regulatory and research at The Air-13 Conditioning, Heating and Refrigeration Institute. 14 The AHRI is a national trade 15 association of manufacturers of residential 16 17 and commercial HVAC equipment. HR 350 member companies account for more than 90 percent of 18 the residential and commercial air-19 20 conditioning, space heating, water heating and 21 commercial refrigeration equipment manufactured in North America. 22

AHRI appreciates the opportunity
 to provide input on the framework document for
 residential central air-conditioners and heat
 pump.
 Our members have worked very hard

over the past 20 years to improve the energy
efficiency of residential central airconditioners and heat pumps. Today central
air-conditioners and heat pumps are over 50
percent more efficient than what they were in
the early `80s.

12 These achievements are remarkable, 13 and gives credit to an industry that has been 14 pro-active in addressing environmental issues 15 such as ozone depletion and global warming, 16 global climate change.

AHRI looks forward to a full and open rulemaking process. We believe that the advanced notice of proposed rule is an important step that should be included in the rulemaking process as it offers an early opportunity for stakeholders to provide

1 feedback, comments and data to DOE.

We also look forward to a more 2 3 thorough and rigorous analysis by DOE. We 4 have seen anomalies during the last rulemaking 5 on residential central air and heat pumps that 6 if not corrected for this rulemaking would 7 result in a flawed standard. DOE needs to step back and review 8 9 past analysis to understand where improvements 10 need to be made. For example there is 11 evidence that the incremental cost of \$335 12 between the 10 and 13th SEER, suite air-13 conditioner, and DOE predicted was severely underestimated. 14 15 Further, industry data shows that equipment sales were down by 79 percent in 16 2007, while part sales increased significantly 17 18 suggesting that many consumers have opted to 19 repair older equipment rather than purchase 20 new products. 21 At the same time sales of full air-conditioners have significantly increased 22

since 2006 when the 13 SEER standard became 1 2 effective. These are indications that the 3 4 last energy conservation standard for 5 residential central air and heat pumps were 6 not economically justified for many consumers. 7 It also means that the energy 8 saving estimated by the DOE were probably 9 overstated as well. 10 AHRI intends to submit for the 11 record data that will support its claims. 12 In moving forward we urge the 13 department to fully consider the impact of climate change legislation being debated on 14 15 Capitol Hill. The bill before the Senate would set a hydrofluorocarbon HFC cap at 267 16 million metric tons CO2 equivalent in 2016 17 when this rule takes effect, some 39 percent 18 19 below estimated industry demand. 20 On the other hand, higher energy 21 efficiency, air-conditioners and heat pump, require more refrigerant charge because of 22

1 large operators and condensers.

2 As an example new 13 SEER products 3 require on average 20 to 30 percent more 4 refrigerant charge than the 10 SEER unit that 5 they have replaced. Therefore it is 6 imperative that DOE carefully study the impact 7 of climate change legislation on the availability and price of HFC refrigerants. 8 9 There is a real possibility that price will 10 skyrocket, and that not enough refrigerants 11 would be available to meet the new energy conservation standard. 12 13 Finally if adopted by DOE, regional standard for central air-conditioners 14 15 and heat pump would present unique enforcement challenges. While the current minimum 16 national standard has been effectively 17 enforced since the enactment of NAECA by the 18 19 industry, through its voluntary certification 20 program, the same will not be possible if 21 regional standards are promulgated. Any regional standard above the 22

base national standard will require 1 enforcement of product distribution and 2 installation. It is critical for the 3 4 development of a successful enforcement plan 5 that all interested parties such as 6 manufacturers, distributors, contractors, and 7 code officials be involved in the discussion. AHRI looks forward to working with 8 9 the department and others in establishing a 10 workable and credible enforcement plan. 11 Thank you for the opportunity to 12 present our views. We will provide more 13 detailed comments in writing. MR. BROOKMAN: Thank you. And the 14 15 department of course appreciates details and specifics just as you describe there. 16 That is 17 helpful today. Paul, Paul Doppel, Mitsubishi 18 Electric. 19 20 MR. DOPPEL: As b speaking today, 21 I'm speaking on behalf of Mitsubishi Electric and the ductless products that we offer to the 22

marketplace.

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2	Three things that are important
3	for us in this rulemaking. One is, we would
4	still like to have consideration for a
5	separate product class for the ductless one to
б	one products. Again, they are significantly
7	different in application from the central air-
8	conditioning systems.
9	There is another sort of caveat to
10	that in that most of the ductless products
11	today have incorporated an advanced technology
12	in compressors with inverter-driven
13	compressors, which was not on the list of
14	technologies being looked at by DOE, I think
15	it was on page 29 of the framework document.
16	We believe that the inverters and
17	compressors add a whole new dimension to how
18	comfort is provided. I went into a lot more
19	detail on that in my written comments.

20 But because of this inverter-21 driven compressor technology, testing should 22 be considered to be done in a different

1fashion. We have not explored this with any2test laboratories yet, but one concept that we3have is maybe a continuous test, changing the4temperatures in the test rooms, and allowing5the system to adjust to the temperature6changes, thereby using its own controls to7change the environment.

8 Currently, there are a lot of 9 inconsistencies in the test procedures. In 10 one test procedure ductless products are 11 required to do a pre-purge and a post-purge, 12 which central air conditioners are not 13 required to do.

All the controls of the ductless 14 15 products are disenabled, and the products are forced to be run like a simple unitary on and 16 off system, when these products are made to 17 run over a continuous span. So if there is 18 19 not a separate test procedure, then these 20 inconsistencies need to be corrected. 21 The multi-splits are a different 22 class. They have been incorporated in the

1230 standard with the variable refrigerant
 flow products. And those products, because of
 the way their capacities and the way they can
 be applied are more comparable to the central
 air conditioning systems.

6 However, there is one very severe 7 penalty that they have to go through with 8 testing, and that is that they are required to 9 turn off one of the indoor units anytime the 10 test is þ or the compressor is run at minimum 11 speed.

12 If you compare this to if you had 13 a central air-conditioning system that was 14 also variable speed, there is no requirement 15 for that central air-conditioning system to 16 block any part of the coil, to do anything 17 other than run the system at normal.

But you have a multi-split, and again it is required to turn one of the indoor units off. So you are p it's being tested unfairly compared to another system. And we feel that this inconsistency needs to be

corrected.

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2	And we can provide information on
3	the differences we have seen on the testing
4	previously, and with this new requirement. So
5	we think that needs to be corrected also.
6	So just quickly in summary, we
7	still would like to see a separate product
8	class for the one to ones. We'd like to see
9	the testing inconsistencies done away with in
10	that.
11	We'd like more consideration being
12	given to the converter-driven compressor
13	systems, and testing inconsistencies for the
14	multi-splits, we'd like to see that corrected
15	also.
16	MR. BROOKMAN: Thank you.
17	MR. DOPPEL: Thank you.
18	MR. BROOKMAN: Talbot?
19	MR. GEE: Sure. Since the written
20	copies were provided, we'll spare everybody a
21	line by line reading of our comments.
22	I'm vice president of HARDI, which

1	is the Heating-air-conditioning-refrigeration
2	distributors, international. We represent
3	over 1,000 companies, 450 of which are
4	domestic. Wholesale distributors of heating,
5	ventilation, air-conditioning, refrigeration
б	products, accessory supplies, and controls
7	too; a pretty diverse group.
8	And frankly this is a pretty
9	unprecedented involvement for us, which is
10	part of the reason why our comments were made
11	a little longer, because we felt somewhat the
12	need to introduce ourselves to anybody who may
13	be seeing those.
14	But unprecedented due to the fact
15	that HARDI or its members have not been overly
16	involved in these rulemaking proceedings
17	before, but never before have we seen one that
18	maybe so directly could affect our segment of
19	the channel.
20	We feel it's important to point
21	out that our members recently polled showed an
22	average of 46 percent increase in base unitary

prices of central air-conditioning and heat
pump equipment since the last increase in the
standard. And while that is attributed to a
whole lot of different things, the fact
remains that, that is a significant increase
in base model prices.

7 Over that same time there has been 8 an average 12 percent decrease in unitary 9 sales by our members. And as referenced by 10 AHRI, we are seeing an increased business in 11 repairs of existing systems as versus 12 replacement.

13 Throwing that all in, our biggest concern is that the DOE fully considers what 14 15 we've already seen in our industry before making any drastic changes going forward, 16 because we are already having enough barriers 17 and obstacles to selling new higher efficiency 18 19 HVAC systems right now, and we have serious 20 concerns that are effectively getting closer and closer to pricing out the average American 21 22 consumer, homeowner. The base level prices

have increased so much, and the complexity of the installations have gotten more involved, too, to where there are serious disincentives to replacing systems, and keeping on line long old systems, legacy systems that are obviously much less efficient than anything we've rolled off the assembly line recently.

8 We have serious concerns about the 9 limitless unknowns and our belief that there 10 is a major enforcement issue with any efforts 11 to regionalize these standards.

12 We have worked very closely with 13 contractors organizations, and NATE, the technical organizations, to try to help raise 14 15 the professionalism and the stature of the best installers in this industry. And our 16 concern is, regionalizing in an unenforceable 17 environment will actually encourage all of 18 19 their competitors who may not be following all 20 the letters of the law. And it would really set up an opportunity for bootlegging and 21 other activities that are frankly market 22

1driven, because consumers will be demanding2lower cost, lower installation cost. And to3some they would view that they were serving4their customers by working maybe outside of5what the written law may be at that given6point in time.

7 Secondly, we have some concerns about what the ramifications of 8 9 regionalization might be on incentive 10 programs, not the least of which would be 11 Energy Star. How would these programs adapt 12 to a regional system where currently right now 13 14 SEER and 8.2 Energy Star levels, but if those are not b if there are higher minimums 14 15 in certain regions, what does Energy Star do to address that? 16 Our members have benefitted 17 18 greatly from the Energy Star label, and do 19 everything we can to try to maintain the 20 integrity of that Energy Star label, and we do

22 could be in question if you regionalize it.

have serious concerns that that integrity

21

And there are actually different Energy Star
 labels across the country.

I would also say too that the implications very specific to wholesale distributors with unitary central AC products relates back to the physical size of the products. As they get higher in efficiency, they increase in size.

9 There are basic logistic issues 10 that our distributors have had to deal with, 11 and it's added cost to the channel, not to mention difficulties oftentimes for the 12 13 installers as well. So we also want to reinforce that for the DOE's consideration, 14 15 because any look at increasing the standard or anything like that is going to relate back to 16 an increase in the physical size, increase raw 17 materials, increase refrigerant charge, and we 18 19 do have concerns about long-term availability 20 of our new replacement refrigerants.

21 So in summary, we are happy to be 22 here. We are anxious to be involved in all of

Page 28 But we felt it was important to kind 1 this. 2 of introduce ourselves somewhat because we have not done this before, and we look forward 3 4 to working to highlight the very unique issues 5 to wholesale distributors in the middle of 6 this channel. 7 Thank you. 8 MR. BROOKMAN: Thank you. 9 The next person that requested to 10 speak is Charley McCrudden. 11 MR. McCRUDDEN: In the interests of 12 brevity I think I am going to just quickly 13 review my comments. ACCA, we support the ANOPR phase 14 15 as part of this process. We feel that is critical to finding the best possible solution 16 that is out there. 17 And secondly I just want to say 18 19 that we are very concerned with the 20 implementation and enforcement of regional 21 standards. This is one that will come down on 22 our members. We are the last people touching

Page 29 the box. And as Talbot highlighted, we are 1 2 concerned with moonlighters with illegal contractors who can bring what is essentially 3 4 a perfectly legal product outside an imaginary 5 border, and undercutting, and playing on an unlevel playing field against our members. 6 7 We are very hopeful that we can 8 find b we can come to a good responsible 9 conclusion to this rulemaking on time. 10 And we are happy to be here, and 11 looking forward to making contributions to 12 this process. 13 MR. BROOKMAN: Thank you very much. Patrick O'Connor. 14 15 MR. O'CONNOR: Thank you. 16 MR. BROOKMAN: Thank you. 17 MR. O'CONNOR: Thank you very much. I appreciate the opportunity to speak for a 18 19 couple of minutes. 20 I represent the American Supply 21 Association. ASA is a national organization serving wholesale distributors and their 22

suppliers in the plumbing, heating, cooling
and pipe valve and fitting industries. Our
members are the distributors and manufacturers
and manufacturers' reps of many products that
DOE regulates, including central airconditioning systems and the heat pumps.
Our two principal concerns, issues

8 that we'll be commenting on in writing in 9 response to the framework document and 10 throughout the rulemaking, is the impact of 11 the regional standards on the distribution 12 channel.

13 The framework document recognizes that there are three different distribution 14 15 channels essentially that move products from manufacturers to consumers. Our feeling is 16 that regional standards are going to create 17 distortions in those distribution channels. 18 19 Currently we have what I would 20 call a national distribution channel, three 21 national channels. With regional standards, we create now a series of sub-distribution 22

Page 30

channels.

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2	Those channels are going to be
3	subject to price sensitivities. Because
4	regional standards are going to be based on
5	what I would call artificial state boundaries,
б	there is nothing to prevent product from
7	moving across those state boundaries, moving
8	from one region into another region.
9	Particularly there are price sensitivities.
10	We would hope that DOE would look
11	at those price sensitivities.
12	There is also the issue of
13	enforcement. Regional standards do not ensure
14	that there will be enforcement of those
15	standards within a region. We would expect,
16	for example, say in the Northeast, that there
17	will be some states in New England that will
18	choose not to enforce a regional standard in
19	those states.
20	Lack of enforcement again creates
21	distortions in the distribution channel. And
22	we would hope that DOE would look at that in

your economic analysis of regional standards. 1 2 We will be trying to assist you with that in the comments that we submit. 3 4 I will say that we will be under 5 the gun in trying to meet your July deadline to comment on the framework document. 6 7 Therefore I would echo the earlier document that we would support the ANOPR process, to 8 9 provide for a more thorough robust addressing 10 of some of these key economic issues. 11 Thank you very much. 12 MR. BROOKMAN: Thank you very much. 13 Tom Roberts. MR. ROBERTS: Tom Roberts with cfm 14 15 Distributors. I'm sure some of you are probably wondering where is there a 16 distributor here. Why is there a small 17 distributor from the Midwest here. 18 19 But I guess maybe that is the most 20 interesting part is that this proposed 21 rulemaking affects people like me as you have 22 heard from my counterparts possibly as much or

1 more than anyone else.

I also serve as chair of the HVAC
systems council for HARDI right now. So I
represent also those people.

5 And the demographics or the size 6 description of our company just happens to 7 about hit the average distributor in the U.S. 8 who performs this function.

9 And I too am going to summarize my 10 comments so I don't torture you with a slow 11 reading. But several things that really occur to us are that the role of distribution, 12 13 whether it's an independent distributor or a company owned distribution function, performs 14 that function of the dissemination of the 15 equipment; the proper matchup of the 16 equipment; and in effect the application of 17 split-system components. 18

19And that role is somewhat complex,20and although we pride ourselves on having21relatively fast moving product through our22channel, we have long tails of slow moving

1 items that last in the channel, and for us to 2 transmit the change to the contractor base is 3 always expensive, and it's always a cost that 4 seems to get overlooked. 5 The distribution role, and the

6 change effect in that role. So those costs I
7 think really need to get properly accounted
8 for.

9 Then we are also concerned, very 10 concerned, about the impact of the potential 11 for climate change legislation on the 12 availability of refrigerants, and what that 13 does to higher efficiency equipment.

We are very concerned about
regional standards. I think they make just
about as much sense as a state-by-state CAF
requirement. Why not have a corporate average
fuel requirement for each state?

19 It just þ it's one of those ideas 20 that sounds like a good idea until you look at 21 a climate change map and realize that the 22 shapes on that map are a whole lot different

than the state borders.

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2 So we would like to find an 3 alternative to that because we don't believe 4 that is workable for all the reasons that Lou 5 stated previously.

6 And then the price, the pure 7 I go out on projects everyday with my price. contractor customers, and I'm customers of 8 9 most of the manufacturers here. And I can 10 tell you that consumers are making bad choices 11 today. It's not possibly solely the cause of 12 the previous rulemakings, but because of the, 13 in our case, 45 percent increase in base model costs, there are consumers that are making the 14 15 decision to continue to use a product that but for that cost increase they would have 16 replaced with a much more efficient system at 17 a lower cost. And they are prohibited for 18 doing that for obvious reasons with their 19 20 household budget or business budget.

21 And so they are continuing to use 22 a product that while on paper it may look like

Page 36 that old 9 SEER or 8 SEER or 10 SEER unit, it 1 2 isn't that bad. That 16-year-old 8 SEER, or 9 SEER or 10 SEER unit may be operating at 5 3 4 SEER or 6 SEER or 7 SEER. 5 So when you really drill down to 6 the street level and see what's happening, we 7 put people in the position to make bad decisions if we are not careful. And that 8 9 concerns me a lot. 10 And unfortunately, the people who 11 can least afford to pay those continuing 12 energy bills are the ones that are making the 13 worst decisions. We look for ways to sell high 14 15 efficiency equipment. There is no one in the channel that wants to sell high efficiency 16 equipment more than the distribution side. 17 We make higher gross margins on higher efficiency 18 19 equipment, so why wouldn't we? However, we see this tradeoff. 20 21 I'll give you one specific example. One of 22 the more popular systems right now for the
clever consumer or contractor is a hybrid
system utilizing an electric heat pump and a
fossil fuel backup source.

4 And yet if you take b if you look 5 at the example of making a minimum efficiency requirement or a regional standard that 6 7 increases the efficiency of say the furnace from an 80 percent to a 90 percent furnace, 8 9 even though that is not the subject of this 10 rulemaking, that may preclude the customer 11 from putting the hybrid system in if he only 12 has a choice of a higher cost component, a 13 minimum efficiency standard within the system.

So he is back to putting in a 14 15 system that actually will use more energy because he has priced himself out b the 16 regional standard or national standard has 17 priced him out from putting in a flexible fuel 18 19 system. And that we're really concerned 20 about, because that system has become very 21 popular and in the absence of a national 22 energy policy having a consumer make their own

Page 38 energy policy based on flexibility is a really 1 2 important decision. So again, we are interested in 3 4 being a part of the process, and we know that 5 the desire for higher standards is well intended. But we think that there are 6 7 unintended consequences of these decisions that aren't fully understood at the 8 9 policymaking level. 10 Thank you. 11 MR. BROOKMAN: Thank you. Those are all the individuals that 12 13 told the department in advance that they wish 14 to speak. 15 We want to provide also an 16 opportunity to others to do so. 17 Yes, why don't you come forward to the microphone. And I'll start, though, with 18 Jim first. 19 20 Please say your name, everybody 21 that speaks for the record. MR. CRAWFORD: This is Jim 22

Page 39 Crawford, Training Company. And I did request 1 2 in advance. MR. BROOKMAN: Sorry, we didn't get 3 4 your name. 5 Jim, go ahead. 6 MR. CRAWFORD: The point I'd like 7 to make, several points I'd like to make. One is, the fact that we are in a 8 9 period of unparalleled uncertainty and 10 political volatility and we need somehow 11 collectively to work much more closely 12 together than we have in the past. There has 13 been a lot of b here's an analysis. Throw it over the wall in the past. 14 15 And that simply is not going to work, and I won't go into details on that. 16 Ι 17 think it is fairly obvious. I will cite now a few facts, and I 18 19 will give the reporter these notes so he's got 20 the website links to some assertions that I'm 21 making. 22 The bills in Congress have been

mentioned, and that simply cannot be 1 2 overstated that the impact of Lieberman-Warner, Boxer, Marky, can have on this 3 4 industry. And they will come home to roost at 5 exactly the time that this process will be going into force. 6 7 If we look at some of the examples 8 of the volatility, aluminum prices are up two 9 to one in the last five years. It makes it 10 very difficult to make precise estimates of 11 the cost of a product. 12 Copper prices are up four to one 13 in the last five years. There is a national epidemic of stealing condensing units to 14 15 recover the copper from the coils. Natural gas prices for the 16 electric utilities are up by 50 percent in the 17 last five years. They are up about two to one 18 19 in the last six years. 20 Coal prices, coal being the 21 principal energy source for generation of electricity, coal prices are up three to one 22

1 over the last five years.

2 Additional factors, the decoupling 3 of utility sales and earnings makes future 4 utility rates and consumer savings from 5 reduced energy consumption very uncertain. At least seven states have considered or are 6 7 experimenting with decoupling. Others are engaged in discussions through NARUC and 8 9 elsewhere. 10 So the volatility that we are 11 facing requires a very realistic view to the 12 precision that one can achieve with analyses, 13 and running wild guesses through a crystal ball just gives you a crystal ball view of 14 15 wild guesses. And in the past that has been treated as, oh, somehow or other an additional 16 17 dimension of precision came out of that process, and it doesn't. 18 19 Thank you. 20 MR. BROOKMAN: Thank you. 21 Please. 22 MR. BRUNDAGE: Don Brundage,

1 Southern Company. The last time we gathered 2 for this four-year round of fun, one of my 3 major concerns was the effect of higher standards on the dehumidification capability 4 5 in hot humid climates. Those concerns are 6 even stronger now with some of the proposed 7 changes in building codes. The proposed IECC 8 2010 standard would dramatically improve the 9 requirements for windows and for building 10 envelope, reducing sensible load, providing a 11 much poorer sensible latent ratio.

And the fact is standard minimum 12 13 efficiency equipment will not b with a home built to those sorts of standards b be able to 14 15 maintain proper humidity conditions without a supplemental dehumidification system, which if 16 you built a second system in there rather than 17 an integrated piece of equipment that is well 18 19 designed, it is going to use much more energy 20 than a system specifically designed for it. 21 But your current test standard b I'm not an 22 expert on this, but I think your manufacturers

would have a difficult time with the current
SEER test procedure the way it is written,
designing something with good dehumidification
capability that could meet the SEER 13
standard.

6 I would be much more b I'm 7 officially neutral right now on regional standards. I'd be much more enthusiastic if 8 9 Congress had in its wisdom allowed other 10 performance standards requirements other than 11 SEER, such as latent capacity in the bill. 12 But coming out of this process needs to be 13 products that are functional and work in hot humid climates, which the current path we've 14 15 been on in the past just doesn't happen. This is a complex issue, and I 16 17 don't know all the answers to it, but it would appear to me that regional standards would 18 19 provide a good opportunity to address these 20 specific issues.

I know the manufacturers anddistributors have spoken a lot about the

problems of that. To some extent it's sort of like locks sort of keep honest people out. If you have a state that enforces building codes, and does their job properly, this will not be a problem, because something that doesn't meet the regional standard will not get a building permit.

8 States that don't, maybe that's an 9 incentive for them to start enforcing what 10 they ought to do for public health and welfare 11 better.

There are a number of other issues 12 13 related to this that I will address in comments, but one way or another, whether 14 15 through original standard or through a single national standard, the humidity issues in hot 16 humid climates need to be addressed better 17 18 than they are currently. 19 Thank you. 20 MR. BROOKMAN: Thank you. 21 Please. 22 MR. FERNSTROM: I'm Gary Fernstrom,

consultant to the Pacific Gas & Electric 1 2 Company. And I'd like to compliment the industry for the 50 percent improvement in 3 4 efficiency of these products that has been 5 accomplished over the last 20 years. However, in opening remarks I 6 7 heard a number of reasons why the current standards or for that matter more rigorous 8 9 future standards are not merited. These included lack of cost 10 11 effectiveness, and a number of other reasons. 12 So I would just like to agree with 13 the comments of the Southern Company, and say out in California, we have a serious need for 14 15 a hot dry climate air conditioner, and we believe regional standards are the only way to 16 17 get there. We also believe that California 18 19 has done a good job of enforcing its building 20 standards. So for the millions of consumers 21 22 that we serve, that have trouble paying their

electric and gas bills, we believe there 1 2 should be more emphasis on improved 3 efficiency, and focus on the operational cost 4 of this equipment, rather than simply the 5 first cost. If we expect to meet California's 6 7 climate change goals, and make our customers able to afford to use the air conditioning 8 9 equipment they purchase, we are going to need 10 to find a way to make it more efficient. 11 MR. BROOKMAN: Thank you. 12 Steve Rosenstock. 13 MR. ROSENSTOCK: Steve Rosenstock, Edison Electric Institute. 14 15 I just wanted to, again, 16 appreciate the department for its openness and all the information that they are trying to 17 provide as soon as they can. 18 One issue that I know that we'll 19 20 be discussing that will be of concern to 21 utilities, it came up last time, is the issue of the connection between SEER and EER. 22

For many utilities SEER gives a great annual type of information in terms of energy usage, electric usage. But then there is the EER issue, which at that test condition is really kind of a better indicator of what is happening on those peak days.

7 And for many utilities that are planning or deciding about, what does the 8 9 future look like in terms of their needs for 10 generation if they are vertically integrated, 11 or if they are working with the regional ISOs 12 in terms of, there's regional planning in 13 terms of what are the region's needs in terms of new generation. 14

15 The issue of EER, and the 16 connection or disconnection as it were between 17 higher SEERs and EERs is important to many 18 member companies, and I know that Energy Star 19 now has one of the metrics is not only SEER 20 and HSPF, but it's also EER for the Energy 21 Star heat pumps.

22

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And I know that by law that DOE is

required to look at SEERs and HSPFs as we look 1 2 at higher and higher SEERs, and if there is disconnect, where higher SEER units have flat 3 4 or even lower EERs, it might be time to 5 consider looking at EER requirements as part of this. 6 7 Again, I don't want to add any burdens or costs, but from an industry 8 9 perspective, we need to kind of keep track of 10 what is going on with EERs as you raise the 11 SEER levels. 12 Thank you very much. 13 MR. MANDYCK: Let me see, Lance Delaura. 14 15 MR. DELAURA: Just very briefly, I wanted to say the two separate energy utility 16 companies, Southern California Gas Company and 17 STG&E are fully supportive of the regional 18 19 standards concept, for all of the reasons that Gary Fernstrom mentioned. 20 21 We also think it is very important 22 to include the EER as was just mentioned a

That is very important to us with 1 minute ago. 2 peak demand. It's a very large issue in California. We think it's going to be an 3 issue for others across the country. 4 5 We think there are ways b and we 6 can explore this as we discuss today b there 7 are ways to strike a balance between the regional standard. I definitely hear the 8 9 concerns of the manufacturers, and we work 10 with all of you guys, and we depend on you, 11 and I think to a certain extent you depend on 12 And my hope is that we can find a way to us. 13 make this work in everybody's best interest, but I do think that the regional standards are 14 15 the right thing to do. 16 Thank you. 17 MR. MANDYCK: Thank you. 18 Harvey Sachs. Please speak close 19 to the microphone. 20 MR. SACHS: Harvey Sachs, ACEEE, worrying about tipping my empty coffee cup 21 22 here.

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Page 50 1 First I'd like to acknowledge the 2 process here and to thank everybody. Second I'd like to echo the 3 comments of my friend and colleague, Jim 4 5 Crawford of TRANE, that the assumption that 6 analytical precision tracks with accuracy has 7 proven poorly founded, and it is important for 8 us to work on a process that gets us speaking 9 the same language and driving toward results 10 that will work for everyone. We are certainly 11 open to that. 12 I'd like to raise b well, 13 secondly, we certainly support the concept of regional standards. We have been thinking 14 15 about this for a number of years. But I'd like to make two comments 16 17 in that regard. The first is, the test method is busted. If we try to do this without 18 19 thinking about the test method, I believe we 20 are going to get ourselves further and further into trouble. 21 Among other things it plays on 22

Page 51 both hot dry and hot humid, is the strong 1 2 difference between fuel-determined, fuel-3 measured external static pressures and those assumed in the test. 4 5 And among other things, we are imposing a major challenge on the 6 7 manufacturers to produce equipment that both works well on the test and rates well, and 8 9 actually serves customer needs in the field, 10 where we have typically 2-1/2 to perhaps 4 11 times as much external flow resistance as is 12 assumed in the rating method. 13 There are a lot of other problems We don't have to go into them now. 14 with it. 15 And I think I want to stop at that b well, one other little thought which is 16 just, if we are thinking in terms of the 17 rating method as the underlying foundation, we 18 19 open ourselves to consideration of regional 20 standards that reduce to regional rating 21 formulas, regional weighting changes that can 22 be normalized to a national SEER level,

Page 52 whether that is 13, 14, 19 or some other 1 2 number, and thereby preserve the ability of 3 manufacturers and incentive programs to market 4 nationally, while giving us the regional 5 differences in design and performance that will matter in delivering efficiency including 6 7 necessary health and safety precautions for all regions of the country. 8 9 Thank you. 10 MR. BROOKMAN: Thank you. 11 Other comments here at the outset? Andrew Delaski. 12 13 MR. DELASKI: Andrew Delaski, Appliance Standards Awareness Project. 14 Is this one? 15 MR. BROOKMAN: I think so. 16 Mikes are working better than normal today, for some 17 18 reason. 19 MR. DELASKI: You must know me as a 20 regular here. First of all I want to 21 22 congratulate DOE on getting the fuel measuring

off the ground. I know it's a busy time for 1 2 the office, for the building technology 3 program, and particularly for the standards 4 program. 5 I think Ron told me that there are 6 now 35 rulemakings underway. What's the 7 latest count, Ron? Is it up from that? But it's a busy time. 8 9 It's like 37 projects; MR LEWIS: 10 they are not all rulemakings. There are some 11 other things. 12 MR. DELASKI: One of your ways to 13 consult and make the work go more smoothly is to consolidate your projects into one 14 15 rulemaking. 16 So I want to congratulate DOE on 17 doing a good job of sticking with its schedule. I know meeting the schedule 18 19 deadlines are an imperative that has been 20 impressed upon the agency and upon staff from 21 very high up in the agency. I think it is doing a commendable job. 22

Page 54 1 Both with respect to those items 2 that are b all the items int eh schedule, those that are subject to the consent decree, 3 4 and those that are subject to more recent 5 congressional deadlines. 6 I also want to take a couple of 7 minutes to provide my perspective and a little bit of context for this particular rulemaking. 8 9 This is an extraordinarily 10 important rulemaking. Among the work the 11 department is currently undertaking in the 12 standards program, this rulemaking ranks among 13 the one or two top priorities in my view, and to the impact on the nation potentially in 14 15 energy savings, energy consumption. There are a lot of reasons why the 16 17 potential impact is big for the nation as well as for the industry. You've heard discussion 18 19 of climate change legislation, and there are 20 very broad far-reaching potential impacts on 21 this rulemaking. 22 It stands to reason, I think we

all know, I don't have the data in front of 1 2 me, but air conditioners are a very large portion of national energy consumption. 3 4 Residential central air conditioners remain, 5 I don't have the data in front of me as I said, but I think it remains the single 6 7 largest residential electric consumption, and it's certainly one of the top one, two or 8 9 three residential energy electricity consuming 10 products. 11 At the national level it rolls up 12 into a considerable portion of national 13 electrical consumption goes to air conditioners. 14 15 It's also, as you have heard from utilities that just spoke, a very important 16 contributor to peak demand. Central air 17 conditioners define summer peak. Anybody who 18 19 is on the north b on the East Coast last week 20 knows that. 21 In my local paper they reported 22 the other day that the peak in NSTAR service

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1 territory was 4,100 megawatts on Tuesday, up 2 from our normal peak of 3,300 megawatts. And that was because it was 98 3 4 degrees in Boston. 5 Air conditioners define summer It is incredibly important rulemaking 6 peak. 7 for addressing the peak level of demand in the country which relates to the need to build new 8 9 power plants, the need to improve our 10 transmission and distribution systems, NERC, 11 the National Electrical Reliability Council, has put out the call. We have an electrical 12 13 reliability crisis in this country over the next 20 years as we look at how are we going 14 to address the need of increased peak demand 15 to address the need for increased transmission 16 and distribution. 17 Efficiency is a big part of that 18 solution. Air conditioners are the chief 19

21 will make a unique opportunity and play a key 22 role in how are we as a nation going to

contributor to peak electrical demand.

20

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This

address this electrical reliability challenge
as NERC has defined it.

3 We've made tremendous progress in 4 air conditioner efficiency. Gary pointed out 5 a 50 percent improvement over the last 20 6 years, and that improvement goes, I think lays 7 at the doorstep of the engineers of the airconditioner manufacturers, who have improved 8 9 products tremendously over the past 20 years. 10 Standards have played a key role in driving that forward. 11 It's clear that the 12 manufacturers care a lot about efficiency. 13 They care a lot about climate change; they care a lot about the environment. 14 15 Look at their marketing materials. Look at their websites. It's clearly part b 16 unlike many other products, the efficiency is 17 a defining characteristic of air conditioners; 18 19 it's how you sell the product in significant 20 measure.

Not true for many other productsregulated by the department.

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1	So but at the same time
2	manufacturers have to meet the needs of
3	consumers for comfort, for cooling, to
4	broadcast and deliver the comfort needs, as
5	Southern Company pointed out; and they also
6	have to meet the builders' market, or that
7	part of the market that focuses primarily in
8	most instances on give me the thing that costs
9	the least; price remains a very important
10	driver in the marketplace, one that often
11	works at odds with improved efficiency.
12	The SEER 13 standard established
13	in 2001 was the result of the last rulemaking
14	on this product effective in 2006 made a big
15	contribution. We advocated strongly for that
16	standard, the coalition that I work with. It
17	was þ the industry came to embrace it. The
18	manufacturing side of the industry came to
19	embrace it first, Goodman supporting the
20	standard initially, the second largest
21	manufacturer by volume. Then the other
22	manufacturers in time, in the fullness of

Page 59 1 time, came to support that standard. In the 2 industry now as a whole, we today have the standard in place, and it's making significant 3 4 contributions to energy savings. 5 Subsequent to promulgation of SEER 6 13, the industry has deployed a range of 7 efficient products, and I congratulate you on that; it's a significant improvement. 8 9 Sine then the Energy Star program 10 is working. We are seeing products with SEERs 11 as high as 21. As has been noted, the test method 12 13 is broken. It's not clear what the limits are in terms of the current SEER test method, and 14 where that can take us. 15 The final reason I want to 16 emphasize why this rulemaking is particularly 17 important is that it's the first rulemaking in 18 which the DOE will consider using the 19 20 authority to establish regional standards as 21 established by ESA 2007. Some argued for regional standards 22

Page 60 in the last rulemaking. The Consumer 1 2 Federation of America for one argued for the notion that we should have had regional 3 4 standards coming out of the last air 5 conditioner rulemaking. Many of us argued for regional 6 7 standards in the furnace docket. Now thanks 8 to in very large parts to the actions of 9 Chairman Boucher, Chairman Dingell, the 10 ranking members on the Republican side, 11 Chairman Bingaman and his counterpart on the 12 Republican side, we now have regional 13 standards authority in the law in DOE. It's incumbent on DOE to act on that authority in 14 15 this rulemaking to consider regional standards. 16 17 Also that language specifically was hammered out between the manufacturing 18 19 industry and ACEEE. The authority in the law 20 is now clear, and DOE has to act on that 21 authority to consider regional standards. 22 So in summary, we've made in my

Page 61 view we've made tremendous progress in air 1 2 conditioner efficiency thanks in considerable part to standards, but certainly not 3 4 exclusively to standards. 5 And we look very much forward to 6 participation in this process as we determine 7 where to go to next. MR. BROOKMAN: Thank you. 8 9 MR. DELASKI: I also have a comment 10 on process, but maybe that is appropriate for 11 later. 12 MR. BROOKMAN: We will get to that 13 later, yes. Other comments? I see I'm going 14 15 to let everybody go through first, then we will return. 16 Other comments from individuals 17 who wish to emphasize a point or two at the 18 19 outset? 20 Okay, Jim, do you want to make 21 another comment? Jim Crawford. MR. CRAWFORD: Yes, Jim Crawford. 22

1 In response to a few comments about regional 2 performance of air conditioners, quite simply some of the assertions made are not consistent 3 with the facts of how air conditioners 4 5 operate, and I think that collectively we have got to run this thing to ground, because 6 7 otherwise we are going to be proceeding on false premises. 8

9 Air conditioners have a remarkable 10 ability that they automatically without any 11 controls adjust themselves thermodynamically 12 in response to the load, providing higher 13 latent capacity when there is a high latent 14 load, and providing no latent capacity when 15 the indoor relative humidity is very low.

And that has to be recognized as very important. Which is a different point than part of what Don said, because there are very definite changes taking place in building loads, due to for example super insulation. MR. BROOKMAN: Okay. So then let's proceed then with the rulemaking overview.

Page 63 1 The slides, you have them in your possession 2 here, and Wes Anderson is going to lead off. RULEMAKING OVERVIEW 3 4 MR. ANDERSON: Good morning, ladies 5 and gentlemen, my name is Wes Anderson. 6 I'm the project manager for this 7 particular rulemaking. And this is the first of a series of public meetings. 8 9 And as I would like to emphasize, 10 we are looking for your comments, as some of 11 you have spoken so far. 12 What we are going to do today is 13 to give you our broad overview of our analytical approach, methodologies, and on 14 energy conservation standards and residential 15 central air conditioners and heat pumps. 16 17 This is a forum for public comment, so it should be a 60-40, 60 you, 40 18 19 us, to encourage you guys to b we also want to 20 get your input as far as data, as some of you 21 have promised, your analysis, and some of your hypotheses. 22

1 As Doug mentioned earlier, in the framework document as well as in this 2 presentation you will see blue boxes that will 3 4 be time for b we'll present questions to you. 5 And we want your inputs, get your thoughts, 6 and on the issues for that specific question, 7 so that helps us organize our input data from 8 you. 9 Feedback: when you want to submit 10 comments, please, there is an email address 11 Also you can mail it by snail mail to here. 12 Ms. Brenda Edwards, who mostly views mail 13 already, and as far as notice, there are two different addresses for courier, if you want 14 to have a courier deliver it, versus snail 15 mail or email. 16 17 With email if there is a comment, please have a signature in there, so it's 18 proof of submission. 19 The docket number needs to be 20 placed for the RIN, or the Regulatory 21 Identification Number, needs to be on there to 22

1 keep our records straight.

2 Very important, the comment period of July 7th is also a holiday weekend, so be 3 4 cognizant of that, if you are doing 5 information through the post office. 6 This is another b this is our 7 agenda for the day. This slide talks about the reasons 8 9 why we are doing this. I want to emphasize 10 that this is a backlog rule-making. It's 11 under consent decree, so the schedule has to be maintained. 12 13 The second bullet addresses the historical statutory statements, and the final 14 15 paragraph gives you why we are doing it now. This slide is sort of to give you 16 a correlation of how our analysis relates to 17 the EPCA requirements that were set forth for 18 DOE to look into. 19 20 For instance, the impact on 21 utility performance would be done in the 22 engineering analysis, and screening analysis.

Each one of these seven factors will be 1 2 addressed on the right today. We will give you, like I said, the overview so you will 3 4 have some understanding of what our approach 5 is. Today, as I said, this framework 6 7 document presentation, this is a kickoff. There will be subsequent meetings to this. 8 9 The reason for it is to give 10 notice to the public, and availability of framework. Also the framework is on the web 11 12 page previously. 13 But there is, at the end of the slide, there will be the web page address. 14 15 And if you have any questions or concerns, some of you have called me about that, and we 16 17 are going to make those adjustments later on. The presentation will be placed on 18 19 the web page as well as the minutes subsequent 20 to this meeting. The web page is at the bottom of 21 this slide. 22

1	These are the dates, the
2	milestones that we are trying to reach, or we
3	will reach. July 7th is the close of the
4	comment period, the advanced notice of
5	proposed rulemaking published in the fall of
6	2009. The ANOPR will be in the late fall of
7	2010, for final rule publication on June 2011.
8	And for which the effective date
9	is five years hence.
10	MR. CRAWFORD: Jim Crawford. Is
11	there any flexibility on that July 7th date?
12	That is very short notice for us to respond to
13	the many, many questions that are posed in the
14	framework document.
15	MR. BROOKMAN: Ron Lewis.
16	MR. LEWIS: As you know, Jim, we
17	are on a real tight schedule to try to get a
18	lot of things done, and this is only the
19	framework document.
20	So we established a date, and
21	trying to encourage everybody to get their
22	input in by then. Certainly if we get some

1 input in after that we are not going to ignore 2 it. It's trying to b in trying to keep the 3 urgency to this, and encourage people to get 4 things in in a hurry, we have set those dates. 5 And in some cases, to move 6 forward, to get all the analysis done and get 7 all the reviews and approvals and all the 8 rest, those dates become important to have. 9 We can't do the analysis 10 significantly until we've got the input from 11 people, the analytical or the framework 12 document is the just the starting point. So 13 it's not as critical as it is when we get further down the stream. When we get into 14 15 like the NOPR, if there have been any delays we'd have very little time to adjust to it. 16 17 It's really to be able to consider 18 the input, and put it into our analysis. And 19 if we started we don't have the time to do 20 re-analysis a whole lot if we get input that 21 changes directions. So we are trying to 22 encourage everybody to get the input in as

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1 early as possible. And as we get later down into like the NOPR, we are going to have to be 2 3 pretty strict about it. 4 But on this phase, and looking at 5 the short time available, we certainly would 6 not ignore something that came in shortly 7 thereafter. 8 MR. CRAWFORD: Do you know the 9 people will be out of the office during this 10 time, for a week to 10 days, between now and 11 then, for the ASHRAM meeting? MR. BROOKMAN: We have several 12 13 additional people who I think wish to comment on this. 14 Tom and then John and then back to 15 Harvey briefly. 16 17 MR. BRUNDAGE: You mean Don? 18 MR. BROOKMAN: Yes. 19 MR. BRUNDAGE: Don Brundage, 20 Southern Company. 21 MR. BROOKMAN: Thank you, Don. 22 MR. BRUNDAGE: I echo the comments

of Mr. Crawford, because I'm in a lot of the 1 same meetings. 2 3 Also I'd like to make the point 4 that 10 days notice from the time of the 5 notice in the Federal Register to having a 6 meeting is just not acceptable, especially for 7 those of us who are not in the Washington This is incurring significant 8 area. 9 additional costs to my company for making last 10 minute travel arrangements. I would request 11 you go back to the usual 30 days notice on 12 meeting arrangements. 13 MR. BROOKMAN: Thank you. John Mandyck. 14 15 MR. MANDYCK: I would just like to þ John Mandyck from Carrierþ echo theþ I 16 appreciate, Ron, your offer of flexibility on 17 that date, and just echo the fact that the 18 19 department gave us less than 10 days notice 20 for 55 major questions that affect the future of this industry. I can tell you our industry 21 22 will not be able to respond by July 7th. And

Page 71 so we do need that flexibility to give you the 1 2 thoughtfulness and the data that is required 3 to answer the questions that you asked at the 4 thing. 5 MR. BROOKMAN: Thank you. 6 Harvey. 7 MR. SACHS: I also would support b 8 Harvey Sachs b I also would support modest 9 relaxation of that date, given the factors 10 that have been mentioned above, noting that 11 you are offering 1.5 months from Federal 12 Register notice to final remarks due, and then 13 a subsequent 15 months for your ANOPR analysis. 14 15 That is striking only because in the work that this industry has been doing on 16 17 commission of buildings we increasingly find that a front-end investment of time in getting 18 19 a better understanding of everyone's objectives has more than paid off in high 20 21 quality, better results, and more likelihood of keeping the time span. 22

Page 72 1 So we think that there is some 2 transferability from lessons, from the complex project management of construction to this 3 4 process, and again for that analogy we would 5 support some extension. 6 MR. BROOKMAN: Ron Lewis. 7 MR. LEWIS: I appreciate all those And I again offer apologies for the 8 remarks. 9 short notice. We were working desperately to 10 get this out before the ASHRAY meetings, which 11 were requested by many people, so that you 12 could have that opportunity also to gather 13 together and collectively share your thoughts and concerns in that group format. 14 15 So the delays along the way were not intentional, and we did our very best, and 16 it was a close call whether we were going to 17 hold this or not, and we decided at the last 18 19 minute that we would try to do that, and 20 certainly connected to that, then, extending 21 the comment period would be a rational thing to do. 22
Page 73 1 So we don't have any problem with 2 considering that, and we may publish another date or just the email list that we've got, we 3 4 may notify people of another date. 5 But it's a kind of issue where we 6 want to maintain a sense of urgency, and to 7 Harvey's point, we realize doing it right at first, that is our preference as well. 8 The 9 problem we have, especially in the backlog and 10 consent decree area, is it's a date certain we 11 have to deliver by, and any delays on the 12 front end, the cumulative build-up effect, 13 it's a tremendous effort to get these things out the door by the time that is required. 14 15 So we are trying to keep the sense of urgency in everybody's face as it is in 16 ours, because we are held under court order to 17 deliver these. 18 19 MR. ANDERSON: And also make sure 20 we get your information; that's very 21 important, especially your email address. 22 MR. BROOKMAN: I want to ask Ron,

do you think you might know whether it would 1 2 be possible to extend the deadline by the end 3 of the day today, orp 4 MR. LEWIS: Yes. 5 MR. BROOKMAN: Yes? Okay, that's 6 good to know. 7 So then I'll just go right down the line here: you first, and then top 8 9 MR. DOPPEL: Ron, how is it 10 possible to know for sure that we are on your email list? 11 12 MR. LEWIS: I guess I was just 13 talking to the general counsel here. We will have to do a short announcement in the Federal 14 15 Register as well. But the more time effective is to email everybody. So just make sure that 16 your email address is at the table here. 17 Make sure you leave your card and your email 18 address there. 19 20 MR. BROOKMAN: So that was Paul 21 speaking, and now Hung. 22 MR. PHAM: Hung Pham, Emerson

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Page 75 Climate Technologies. Considering ANOPR is 1 not until fall `09 I wonder if we could 2 3 request a little change in the procedure, is 4 that you know it would be more collaborative 5 if DOE could publish the comments after the 6 July receipt of those. 7 Traditionally we don't get to review those until the ANOPR or even later. 8 9 MR. LEWIS: We will take that as 10 input, and then we'll have to make some 11 decisions back here, sop MR. BROOKMAN: A lot of these 12 13 process features are pretty well mapped out. Kyle. 14 15 MR. GILLEY: I support the comments 16 made regarding the July 7th deadline. But I 17 also wanted to bring up one other date that is 18 of great concern to our industry, and that is the effective date of the standard being June 19 20 of 2016. 21 June is not at all appropriate as 22 far as implementing an AC heat pump new

1 standard in the marketplace. We are in the 2 middle of a summer season, we're in the peak season for air conditioners and heat pumps. 3 4 There needs to be some consideration given to 5 changing that June date. 6 MR. LEWIS: What would you 7 suggest? 8 MR. GILLEY: Certainly in the past 9 we have gone with a January date. I can't 10 speak for our side, but that seems to be more 11 reasonable from a Lenox perspective, not 12 something in the middle of peak summer season. 13 MR. BROOKMAN: Thank you. Andrew, and then I'm coming to this side of the room 14 15 next. 16 Yes. 17 MR. DELASKI: So a few comments on 18 some of these process issues, I want to go 19 back to. 20 MR. BROOKMAN: Yes. These are 21 important, yes. 22 MR. DELASKI: Regarding the date, I

think it's fine to extend the date a week or 1 I think it's critical that the two. 3 department extend the date formally. I think 4 this sort of open, get-them-in-when-you-can kind of notion, we are open to hearing your comments whenever we can get them, I think that doesn't serve the public and it doesn't serve the department. There needs to be a firm deadline. MR. BROOKMAN: You want a formal submission in the Federal Register or something like that? MR. DELASKI: That is my second Which is that email lists don't point. substitute for the Federal Register notice. There are people who would like to be here today who are not here, okay? Not everybody is on your list. I don't know who is on your It's not a matter of public record. list. The email list I appreciate the notice; I got the notice last Tuesdayp some of the folks in the room got the notice toop but

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some folks here I think didn't get the notice.
 There are a lot of folks who are not in this
 room today who might have been here, if they
 had had adequate notice.

5 So the email list is great; I 6 appreciate the early heads-up for those of us 7 who are on the inside, and we are all sitting on the inside right hereb that is useful. 8 9 But there are manyp it's a public process, as 10 a matter of good public process, I think it's 11 a problem to not use the Federal Register. 12 That's why it exists.

13 So I would really strongly recommend that you publish if you are going 14 to revise the dates, just revise the firm 15 The department is obligated to look at 16 date. those comments, and if you get in beyond that, 17 then you are kind of taking a risk, I think. 18 19 MR. BROOKMAN: Okay, Pat, and then 20 I'm coming back to thisp 21 MR. DELASKI: I have a couple more, 22 Doug, but you can come back to me if you'd

like. 1 2 MR. BROOKMAN: Well, I'm sorry. 3 No, go ahead, say it now. MR. DELASKI: On the issue of the 4 5 notice for this workshop, by my count it was six days notice in the Federal Register. 6 It 7 came out last Friday. That is not much 8 notice. I mean, it's better than we get on 9 the lamp proceeding, where the notice came out 10 after the workshop. 11 (Laughter) 12 MR. DELASKI: So you all should 13 count yourself lucky you're not a part of the lamp industry. 14 15 But I would mention that my understanding is that in that particular 16 17 docket, the department got two comments, one from a group of advocates that I work with, 18 19 and one from the industry. Not exactly broad 20 public participation at that particular 21 juncture, and that was in the ANOPR phase of the rulemaking. 22

1	Now the department in the
2	framework document note, outlines as a
3	commitment to an open public process, and we
4	all agree with that. An open public process
5	is critical to this. But I don't think that
6	six days' notice achieves that objective of an
7	open public process designed to, as you ask
8	for in the framework document, to facilitate
9	and encourage participation.
10	I think thatþ for instance, I
11	spoke with staff from two states, state of
12	California staff, and public officials from
13	the state of California and the state of New
14	York. They would have liked to have been here
15	today, they told me, but they could not be
16	here today, because of travel restrictions.
17	If you are a state employee in California, and
18	you say, "Hey boss, I want to go to Washington
19	with three days' notice, the fares are
20	\$2,000," the answer is, you can't. The
21	governor could approve it, but we are not
22	getting that kind of staff. As a civil

servant at the DOE you understand the
restrictions that the state employees face on
travel. It's a financial burden to a utility
company, but for state government officials,
you set up a burden that is insurmountable
with this kind of notice.

7 And that framework workshop, you 8 know, is a problem. But I suggest that at the 9 ANOPR or NOPR stage, I think we are talking 10 about really ab something that is not reasonable in terms of the definition of what 11 12 would be a reasonable public process, for what 13 as we've all talked about, a very important rule-making. Those have got to be fixed. 14

15 I have a couple of ideas on how it could it be fixed. One idea was that you 16 could have noticed this workshop two months 17 ago. Don't lose time on the schedule; notice 18 19 the workshop two months ago, notice it on 20 April 12th. I know the framework document 21 wasn't ready yet, but the framework document 22 didn't go into the Federal Register. Notice

1 the workshop, you have to stick to your
2 schedules, that would be one notion of how you
3 could do it.

4 Another suggestion would be the 5 same as Don's suggestion, which is just give 6 30 days' minimum notice. I don't think it 7 would have set us back that far, the department back that far, if we had 30 days' 8 9 notice, and this workshop had occurred 21 days 10 from now, or 24 days from now, other than 11 today. And I think you would have had much 12 better participation from a broader set of 13 stakeholders. 14 My next comment, Doug, I'm 15 shifting topics here, but I have another one for the 2015 date. 16 17 MR. BROOKMAN: Let's stay on this 18 frame, please. 19 Yes, Pat. MR. O'CONNOR: Yes, just one 20 21 question. 22 MR. BROOKMAN: Say your name, Pat,

for the record. 1 2 MR. O'CONNOR: Excuse me? 3 MR. BROOKMAN: Say your name for 4 the record. 5 MR. O'CONNOR: Oh, Pat O'Connor, American Supply Association. 6 Sorry. 7 Is there an electronic docket set up for the framework document? And if so will 8 9 the comments that are submitted to the 10 framework document be available electronically 11 through that docket? MR. ANDERSON: That was one of the 12 13 earlier questions. We are going to talk about putting access to the comments. Generally we 14 15 just we'll talk about that later, but there is a web page that has all the information 16 17 that you would want to find either on the 18 public meetings, the announcements, the 19 framework document or the Federal Register 20 note. Everything that goes into the 21 22 Federal Register goes to this web page. Ιt

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Page 84 1 says at the bottom of the page here. 2 MR. O'CONNOR: I understand that. I want to know there will be electronic access 3 4 to all the comments. 5 MR. ANDERSON: Not all the 6 comments, no. 7 MR. O'CONNOR: Why? 8 MR. ANDERSON: That's justp 9 generally we don't address all the comments, 10 even in the final rule. We address the 11 comments. 12 MR. O'CONNOR: I'm not talking 13 about addressing the comments. I'm talking about access to the actual comments. 14 15 MR. BROOKMAN: Yes, the ones that are submitted. 16 MR. O'CONNOR: The ones that are 17 18 submitted. Will they be electronicallyp 19 MR. BROOKMAN: Let me recognize Ron 20 Lewis. 21 MR. LEWIS: We have never done that 22 to date. We are working to try to do that.

1 We have not done that. We are not set up at 2 this point. We are working towards that 3 endpoint, and I can't promise you when that 4 is going to happen, but we are working 5 towards that as part of our activities right 6 now. 7 So we take your input and your 8 desire, and we note that, we agree with that, 9 and we are working towards that. 10 MR. BROOKMAN: Hey Ron, some people 11 are new to this proceeding it seems to me. 12 Maybe you could describe briefly what your 13 standard practice has been. You respond top selectively, to 14 15 major comments, typicallyb as the process goes on; is that correct? 16 17 MR. LEWIS: Yes, the comments are all considered. They are all looked at. 18 19 Most frequently they are aggregated together 20 where there is a commonality, where there are 21 things that fit together. They are addressed 22 many times, because they are duplicative,

where there are several people with the same
 comment.

3 And there is consideration given 4 to those thematically, rather than by the 5 person giving that input, and they are addressed in the narrative in the ANOPR. 6 7 There are occasions when there is 8 a single commenter that has an issuer that no 9 one else has commented on, and that's noted. 10 Normally there is an attribution 11 in there of where comments have come form. 12 Mike Rivest from Navigant has been here for a 13 long time. I don't know if there is anything else, Mike, that youp 14 MR. BROOKMAN: Mike Rivest. 15 16 MR. RIVEST: I think the question 17 pertains to the availability of comments for other commenters to see what each other have 18 19 written about. And that's typically been a 20 hard copy docket here at the department. MR. BROOKMAN: Are all comments 21 22 that are received by the department, are they

1 I do agree with those folks that have made 2 the comment that we need to work together. 3 This is getting more complicated every time 4 we go through this cycle, and if we can see each other's comments in real time I think it 5 will accelerate the discourse and result in a 6 7 better product sooner. MR. BROOKMAN: I want to stick with 8 9 these process issues right now until we have 10 exhausted this comment. 11 Charley and then to Andrew. 12 MR. McCRUDDEN: Charlie McCrudden, 13 Air Conditioning Contractors of America. Last week's heat wave sort of 14 15 drives home for my members, July 7th date is going to be very tough. This is our busy 16 time, and my members don't sit in offices. 17 18 They are pretty much in vans going house to 19 So for them to provide me with their house. 20 comments on these 55 questions is something 21 they are going to have to do at night. 22 Then on Kyle's point about the

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June 2006 effective date, it's going to be 1 2 very awkward for my members to sell one system one day in the middle of the busy 3 4 season, and then a much more expensive system 5 the next day. Because the questions that we 6 all solve here impact really my members, 7 because they are the face of the industry. 8 They are the ones handing the bill to the 9 homeowner. If they are forced to sayb if a 10 consumer says to them, "My cousin just bought 11 a system last week, and only paid for the 12 basic system this much; what happened?" 13 It's my member who has to say, "Well, there is this long process that 14 started back in 2008, and here is where we 15 16 are, and this is what happens." 17 So I think that there is probably 18 a much more appropriate date to make the 19 transition. I think in the middle of the 20 very busiest time of the year for us is much 21 þ 22 MR. BROOKMAN: Ron Lewis.

1 MR. LEWIS: If you look at the 2 date, the mathematics, it was simply five years from the time that it is required, that 3 4 we are required to deliver this, and that was 5 the time it said in the prior rule for 6 effective date. So we will certainly 7 reconsider that and take a look at it. 8 MR. BROOKMAN: Okay. Andrew, and 9 then I will come back to the two of you. Ι 10 want to see if we can summarize these 11 comments here. MR. DELASKI: On the issue of 12 13 making the material on the website, on the department's website, I think it's a great 14 idea. 15 I think it's important that the 16 17 department follow the principle that all the public gets equal access to the material the 18 19 department is producing. I think using the 20 email list for notices is a fine mechanism. If there is some delay for everyone to see 21 22 it, that is fine. But sending stuff just to

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some select group of stakeholders I think is
 probably a problem from a public process
 point of view.

4 It also strikes me that putting 5 PDFs up on a website isn't rocket science. 6 And I know you have internal processes that 7 are by you can't just do things willy-nilly, 8 you have to go figure out who in the 9 department should process that. And I think 10 it's also notb the technology, you put up 11 this framework document probably pretty 12 quickly, I guess putting up another 20 to 30 documents as PDFs is fine for the framework. 13 MR. BROOKMAN: Ron Lewis. 14 15 MR. LEWIS: I'm not going to go into great detail of all the things going on 16 17 But there are a lot of things that at DOE. we do with websites and securityp there are 18 19 things that are complicating this. I have a 20 contractor looking at, that they're getting 21 comments off that we are working towards 22 that, integrating that with other larger

1 initiatives along the way... I totally agree 2 with the desirability and the efficacy of 3 having those available. We are working 4 towards that.

5 MR. BROOKMAN: Robert, and then 6 Paul.

7 PARTICIPANT: Well, I tell you, one 8 convenience of having not been engaged in the 9 previous ones wasp previous rule-makings on 10 this is, we didn't know that this incredibly 11 tight schedule was unusual. Because we had 12 real concerns about that, and we want to 13 point out not only the extension for these initial comments, but also the effective 14 15 date, but specifically when you are talking about regional standards, where you are not 16 looking at an existing bit of regulation that 17 you are tweaking, but really starting from 18 19 scratch, for us it's a whole new world as far 20 as how to pull up the analysis on that. 21 So that I don't see how we could 22 possibly meet that July deadline either.

1	But that effective date, I want to
2	tie into that that all the members of the
3	channel coordinate their marketing and sales
4	programs well in advance for that peak
5	season, and our members have to forecast
б	their inventoring and stocking requirements,
7	and so that even extends out the requirements
8	for that þ to happen even earlier.
9	And we already had matching
10	component system issues with the 13th SEER
11	transition which happened at the end of
12	January, so you can only imagine what it'd be
13	like during peak season. So then you may be
14	able to get the new standard condensing
15	system, but you may not have access to the
16	necessary matching components.
17	So again, we echo Kyle's and
18	others comments that that effective date
19	needs to be in off-peak times.
20	MR. BROOKMAN: Okay, thank you.
21	Paul.
22	MR. DOPPEL: Paul Doppel. Two

1 thoughts on the implementation date, 2 effective date. That date in the past has been for the manufacturers to change what 3 4 they're manufacturing, and not the consumer 5 or the contractor. The contractor doesn't have to make that change from one day to the 6 7 next; the product is made before that. 8 So that's going to be the same? 9 Okay. 10 The second point, those of us who 11 import products would like to have 12 consideration given also to products 13 manufactured on the date could still be brought into the country after, because with 14 15 things that go on in the ports, the last time we had to have the product in country on the 16 17 effective date, and p MR. LEWIS: To that point. 18 19 MR. BROOKMAN: Ron Lewis. 20 MR. LEWIS: I'll have to check with 21 the general counsel. I believe we need to refer to the definition of manufacture. 22 Ι

1 think it's a clearly broad definition that
2 includes importation. So we'll have to check
3 that.

MR. DOPPEL: Well, and the last 4 5 time we did have to have the product in country before January 1st, and again, we lose 6 7 control of that in being able to bring things into ports, if there is a ports record, 8 9 things like that, then we could be severely 10 impacted on that. So we'd like 11 consideration given to that. 12 MR. BROOKMAN: So we are moving 13 towards the kind of content that we are going to cover as a natural course as we proceed 14 15 here and during the course of this workshop. 16 And I just want to get these 17 overview comments on process issues and limitations now, and then we will proceed 18 19 with the content that's stacked and 20 scheduled.

Harvey. I would like to makethese as brief as possible so we can move on.

Page 96 MR. SACHS: I would like to thank 1 our colleague for the suggestion that 2 3 comments be posted. And Ron, this really winds up being a major bureaucratic issue for 4 5 the department. I think some of us will urge 6 you to post a link to an external site where 7 we can work to have all our comments posted. We would much rather have you do 8 9 that, because we think it's much more 10 appropriate. 11 Since the hope has offered this, 12 and since the general has asked for greater 13 collaboration. MR. BROOKMAN: Karim, and then Pat. 14 15 MR. AMRANE: I just wanted to respond to Paul on the issue of importation. 16 It's really vague as part of the language. 17 So I think... it's really for importaters... 18 19 at the same time. 20 MR. BROOKMAN: Pat, you're next. 21 Thank you. 22 Final comments then on these

1 process issues? The department I guess is 2 going to try then to give you an answer by the end of the day on the submission date for 3 4 the comment related to this meeting, and 5 perhaps other things. And then Andrew. 6 7 MR. DELASKI: I want to comment on the effective date. 8 9 MR. BROOKMAN: Yes. 10 MR. DELASKI: Can you put back a 11 couple of slides please, Wes, to the slide 12 that shows the authority in NOPR where this 13 will be conducted. Can you give a citation? MR. BROOKMAN: It's slide 12. 14 15 MR. DELASKI: We want the citation. The slide #10. 16 So this will make me, as I 17 understand it, is being conducted under 42 US 18 Code 69-5(e)(3)(b). So this is the second 19 20 required rule-making under NACA for central air conditioners. 21 22 I just want to read from that,

this (e)(3)(b) section. It's very short, 1 Doug, I promise.. 2 3 MR. BROOKMAN: Go ahead. 4 MR. DELASKI: The secretary shall 5 publish a final rule after January 1st, 1994, 6 and no later than January 1st, 2001, to 7 determine whether the standards in effect for central air conditioners and central air-8 9 conditioning heat pumps should be amended. 10 Such rule shall provide that any amendment 11 shall apply to products manufactured on or 12 after January 1st, 2006. 13 Now I just want to highlight this, so this is not confused with the rule that 14 15 was completed in 2001. The rule that was completed in 2001 is that required under 16 paragraph A. So this is the language in 17 18 which we are operating. 19 So my question for the department 20 is, where is January b where does June, 2016 21 come from as your effective date on this slide? 22

1 MR. BROOKMAN: Maybe we should give the department a chance to figure out 2 3 how to respond to that, and then b and they 4 can do that a little later on in the day, 5 because they don't seem to have an answer at 6 this very moment. 7 Eric Stas. MR. STAS: Eric Stas. I think the 8 9 answer from what you read there, Congress had 10 prescribed a five-year lead time. And 11 obviously you didn't hit the initial target 12 of the statute, that's why we're in the fact 13 of the situation. So this, what we propose here reflects maintaining that five-year lead 14 15 time. MR. DELASKI: I see. So it's a 16 17 question of interpretation. It doesn't say five-year lead time. That's not what the 18 19 language says. It says 2001. You are just 20 taking that five-year lag, and you are saying 21 "Well, we missed it by a decade. We are 22 going to go ahead and push this one forward

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1 by a decade as well."

2 MR. STAS: Right, but what it says 3 is, we shall issue an effective date or 4 whatever, it's five years.

5 MR. DELASKI: The lag, it doesn't 6 say five years, it specifies 2006. But I 7 think the point I'm trying to make here is 8 that you are not, under the plain meaning of 9 the law, you are not bound to any particular 10 date when this rule would go into effect. 11 Since January 1st, 2006, has gone by.

12 So myb I think you have some 13 flexibility here to go to January start date. I also think that the lag time between the 14 final rule and the effective date is a matter 15 that has to be inserted in this rule-making 16 to meet the criteria of 320.50. That is, 17 that you need to meet the criteria, taking 18 19 into account how are you going to maximize 20 energy savings, cost effective energy 21 savings, taking into account effective date, 22 and minimize manufacturing impact. We've

1 heard a lot about manufacturing impacts being 2 high for the June date. So you'd have to meet the NACA criteria, using date as a 3 4 variable. 5 And that may mean four-and-a-half year lead time or five-and-a-half year lead 6 7 time, it may be a three-year lead time. Ι 8 think the department has to be open to 9 looking at what the appropriate lead time 10 would be to help you meet the NACA criteria. 11 MR. BROOKMAN: So one obvious 12 question would be, does the consent decree 13 stipulate, mandate, this stuff? Or is it not Ron Lewis. mandated, stipulated? 14 MR. LEWIS: The issuance is 15 The effective date is up to the 16 stipulated. interpretation by general counsel. So we are 17 18 not going to answer that today. And most of 19 these issues, by the way, we are taking your 20 input, and there are things that we still 21 don't have the answers for, and we are going 22 to have to get back to you.

1 MR. DELASKI: I think the good news 2 on this is that it gives you flexibility to 3 address some of the concerns that you are 4 hearing today about minimizing some impacts 5 on the industry. 6 MR. LEWIS: That's why we have our 7 crack legal staff here, to hear your input. MR. STAS: Eric Stas, DOE. We want 8 to encourage everyone to give us their 9 10 comments or detailed comments on this issue, 11 and what your flexibility is. Is it a 12 January 1 date that is best? Is it something 13 in the spring, do you want to move closer to that five-year period or some other period? 14 15 MR. BROOKMAN: Thanks to all of you for commenting. This is useful, useful 16 comment for the department to hear. 17 Now then let's proceed with the 18 slides. 19 20 PARTICIPANT: Shall we go to test 21 procedures with Sriram's source on it? 22 MR. BROOKMAN: Yes, let's do that.

1 Sriram is up next. 2 TEST PROCEDURES 3 MR. SOMASUNDERAM: Good morning. 4 My name is Sriram Somasundaram. 5 As with any products standards rulemaking, we have to make sure that the product has a 6 7 relevant and updated test procedure in the books. 8 9 For this particular covered product of central air conditioners and heat 10 11 pumps there was a test procedure final rule 12 published last October p October 22nd, 2007, and the test procedure itself is listed in 10 13 CFR 430, subpart B, appendix M. 14 15 Since then, EISA 2007, the Energy 16 Independence and Security Act, amended EPCOT 17 to direct DOE to consider updated test procedures for any products whose standards 18 19 were going to be revised or updated before 2010, or by 2010. 20 21 And therefore this product falls 22 under that amendment, and EISA requires DOE

to include standby mode and off-mode energy 1 consumption within the test procedure. 2 It also directs DOE to include 3 4 these criteria in the standard b in the 5 efficiency descriptor itself while setting 6 the standards, or independently as a separate 7 measure of the standard rule-making. DOE understands that the standby 8 9 mode and off mode energy consumption for the 10 case of the central air conditioners and 11 heat pumps means it is the energy consumed by 12 the equipment when essentially the equipment 13 is off, turned off, or on a standby mode, which means that when the equipment is not 14 15 providing heating, cooling, or ventilation. 16 Finally, I wanted to say that DOE 17 expects to propose an amendment to the test procedure as required by the amendment to 18 19 EPCOT, and as you know, the timeline for test 20 procedures final rule is before the NOPR, 21 before the standards rule-making is 22 published, which as you saw in the timeline

1 slide, was fall of 2010.

2 So what I wanted to clarify here 3 on the last bullet was that DOE expects to 4 publish a proposed rule for test procedure 5 later in 2009, and then a final rule by October 2010, so it'll precede the NOPR 6 7 publication of the standards rule-making. 8 MR. BROOKMAN: Okay, Karim on this 9 point first, and then to Don. 10 MR. AMRANE: Karim Amrane, HOI. 11 We have a very different 12 understanding of the Energy Policy Act with 13 respect to standby power for central air. In fact there is no mention of 14 15 central air in the Energy Policy Act. So I guess I'm not sure why DOE is interpreting 16 17 the legislation as being mandated to look at standby power where they are not listed at 18 all. 19 20 And I hope that my friend, Harvey, 21 will support me here, because we worked together at removing central air from the 22

1 language in the bill. 2 MR. BROOKMAN: Thank you. 3 I see we are looking at the 4 statute here. 5 Do we have other comments of this 6 ilk while we are doing our research over 7 here? Please, Don, and then I'll come to you, Ted, I believe. 8 9 MR. BRUNDAGE: Don Brundage, 10 Southern Company. 11 Just a quick comment on the test 12 procedure issue. I was ready to jump up and 13 object after reading this text here. What you just described on what 14 15 you are going to do for test procedure is very reasonable, but it is not what you have 16 17 on the slide, what is itp can this bullet be corrected on the version that is posted on 18 the DOE website? 19 20 Because youp it really makes no sense to have a test procedure that is not 21 integrated, and part of the NOPR. Because 22

that is the definition that is the ruler for 1 2 measuring efficiency, and that needs to be 3 done by the new test procedure in the NOPR. 4 And that's not what this bullet says. Ιt 5 says you are going to propose amendments by 6 October, 2010, not have a finished test 7 procedure that you extend the NOPR for to the fall of 2010. 8 9 MR. BROOKMAN: I believe Sriram 10 said a proposed amendment by 2009, and then b 11 MR. SOMASUNDARAM: Final rule. 12 MR. BROOKMAN: b a final rule by 13 2010. (Simultaneous voices) 14 MR. SOMASUNDARAM: We'll correct 15 it. 16 MR. BROOKMAN: So we will correct 17 18 that slide. Thank you for calling that to 19 our attention. 20 Other comments on this slide, #16? 21 Yes, Ted, please. 22 MR. POPE: Ted Pope. I just want

to confirm my understanding that EISA 2007, 1 2 that DOE is required to assess the full test method, and not just the standby mode 3 4 component. I think that is what the slide 5 says, but while you are looking at the 6 language I just want to be clear on that. 7 MR. BROOKMAN: Can you respond to that one? 8 9 MR. SOMASUNDARAM: Yes. You mean 10 the EISA requirement? The EISA requirement 11 is specifically to look at this aspect into 12 any of the covered products. And the 13 relevant test procedures. In other words to specifically address the standby mode and 14 15 off-mode energy consumption as a factor. MR. BROOKMAN: So I see Michael 16 Kido. 17 18 MR. KIDO: Yes, there is actually, 19 if you look at EISAÞ I can give you precise 20 citationþ 21 MR. BROOKMAN: You can't hear him? 22 Michael, you've got to speak up a little bit.
1 MR. KIKO: All right, can you hear 2 me now? 3 MR. BROOKMAN: Yes, that's good. 4 MR. KIKO: If you go to EISA, there 5 isp if you looked at 121 stack 1562, that's 6 the precise site, there is a section covering 7 test procedures, and itp there is a section in there that basically states that standby 8 9 mode and off-night energy consumption have to 10 be considered as part of the test procedure 11 measurements. 12 So if you would like, I can show 13 it to you right now. MR. SOMASUNDARAM: I have the 14 15 document here. And actually if you go further down there is a section that talks 16 17 about deadlines, and then lists the product for which DOE has to do thep has to look at 18 19 the standby power, and they list the dates by 20 which DOE has to issue a final rule on test 21 procedures. And central air are not listed. 22

Page 110 1 MR. KIDO: That is correct. Those 2 are specific deadlines for those specific 3 products. But there's still the requirement 4 that standby mode and off-mode be considered 5 as part of the test procedures that the 6 department promulgates. 7 So that isp MR. BROOKMAN: For all covered 8 9 products. 10 MR. KIKO: Right, for all covered 11 products. This is an outgrowth of that 12 particular provision. 13 MR. BROOKMAN: Maybe since there is a statutory interpretation and text involved, 14 15 the two of you could put your heads together at the break, the coffee break, and anybody 16 17 who wishes to join you can huddle right over 18 here next to the door, and maybe you can 19 arrive at a shared interpretation at that 20 point. 21 Hung, and then to Harvey. 22 MR. PHAM: Hung Pham, Emerson

Climate. 1 2 Again, that issue, I thought the test procedures today does have an on-off 3 4 cyclic test, and I think it does reflect that 5 today, because when we run those tests today 6 it's measured. 7 I wonder if the department has looked at that? 8 9 MR. BROOKMAN: Can you respond to 10 that one, Sriram? 11 MR. SOMASUNDARAM: I am not sure of 12 the particular intricacies. 13 MR. BROOKMAN: Your tests show that those features are included? 14 15 MR. PHAM: Yes. 16 MR. BROOKMAN: Karim. 17 MR. AMRANE: This is Karim again, and I second what Hung is just saying. 18 19 That's correct, it is. And maybe Brian 20 Dougherty from NIST can here also testify to 21 that as well, because he writes with this procedure. 22

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Page 112 1 MR. BROOKMAN: Brian, do you want 2 top just find a microphone, and let us know 3 what you got. Brian, your name please. 4 5 MR. DOUGHERTY: They are correct. Brian Dougherty at NIST. There is a cyclic 6 7 test procedure to give the C sub D value, and that is 20 percent on, 80 percent off. 8 So 9 that standby period of that 80 percent is 10 accounted for in the C sub D. 11 MR. BROOKMAN: Thank you. 12 MR. DOUGHERTY: So it's 13 incorporated into SEER and into HSPS. MR. BROOKMAN: Explain to us what 14 15 the confusion is. Where are people confused? I'm serious. 16 17 MR. DOUGHERTY: I mean standby 18 power is a big issue. So it just gets 19 globally thrown across. But certain test 20 procedures do cover it, and this is one case 21 that it is. 22 MR. BROOKMAN: Your name, this

Page 113 gentleman first, and then we'll go around. 1 2 This gentleman here. 3 MR. McCULLOUGH: Bill McCullough 4 with Lenox. 5 One of the points of confusion I think is for an air conditioner, many times 6 7 the standby power is in the furnace, and there is a transformer that provides power 8 9 for the control side. 10 This is focused on air 11 conditioning and heat pumps, and so that part gets hidden. 12 13 MR. BROOKMAN: Okay, your name, please? 14 15 MR. KELLER: Fred Keller, Carrier. And I think part of the confusion is that the 16 17 current standard includes the standby power when the unit is in the operating mode. 18 So the unit can cycle on and off, the control 19 20 system is still powered. But it does not 21 include the power for like the heating period 22 of time when you are in thep if it's the

Page 114 1 heating mode, you have got the cooling system 2 completely turned off. It doesn't include that power in the number. 3 4 MR. BROOKMAN: Okay, Andrew. 5 MR. DELASKI: It strikes me that if 6 the test method includes standby and includes 7 the documentation, that the department would come to the conclusion that no revision is 8 9 needed for the test method. 10 So this is simplyp it strikes me 11 as being a data question that could be 12 answered just through analysis. But the 13 department under the law is compelled to answer that question. 14 MR. BROOKMAN: Harvey, I dropped 15 16 you out of the queue. I'm sorry, you're 17 next. We have specific questions we wish 18 19 to put up, some of which will lead us towards 20 these answers. But Harvey go ahead, and then 21 we'll move on. 22 MR. SACHS: I want to defer getting

1 b this is Harvey Sachsb I want to defer 2 getting back to Karim on his question to me about last year's conversations. But in the 3 4 meantime, what strikes me about the test 5 procedure questions, and this goes on what 6 Don and Hung I think both have alluded to is, 7 the test procedure, the rating method, is absolutely key for the analysis. 8 It is the 9 yardstick, and this is intimately tied up 10 with the regional questions. 11 If we are going to do a hot dry, 12 which is shifting the bin hour waiting to 13 some economic value, that is absolutely key for any further analysis, and I just do not 14 15 understand why the department has not included this in its framework. 16 17 MR. BROOKMAN: So let's then, in your comments, if you would, please, make 18 19 sure and describe fully how the departments 20 should sequence these things. 21 Gary. 22 MR. SACHS: Oh, we will address

1 that in large type, sir. Thank you. 2 MR. FERNSTROM: So Gary Fernstrom for PG&E. I'd absolutely like to agree with 3 4 Harvey. Harvey stated earlier the test 5 procedure was broken, and we need to 6 reevaluate it in order to get the information 7 to determine the performance of this equipment in the various climate zones that 8 9 we would like to see its efficiency improved. 10 MR. BROOKMAN: Karim. 11 MR. AMRANE: Karim Amrane, HOI. Ιf 12 you want to re-evaluate the test procedures 13 the way you want to re-evaluate, Harvey, I mean this is going to require it's not going 14 15 to require one month or two months; it's So I don't see how 16 going to require years. you will be able to finish this rule-making 17 18 in three years, honestly. 19 So let's stop the discussion and 20 make sure that we understand what we are 21 talking about here. We are talking about the 22 revamp of the test procedures; we are talking

about years.

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2 So if you want to do that, then we 3 are not going to come up with new efficiency 4 standard by 2016. I mean it's not going to 5 happen. 6 MR. BROOKMAN: Harvey. 7 MR. SACHS: I appreciate Karim's I think that we have a lot of 8 comments. 9 variables to consider, including lead time 10 for design, including the rating method, to arrive at 2016. 11 12 If the benefits are important 13 enough we might think that late 2016 works. But I think that these issues are important, 14 15 and to defer this may give us the wrong outcome in terms of stringency versus waiting 16 methods, where we are thinking stringency 17 will satisfy hot dry needs or hot unit 18 19 issues, when they are just not related as far 20 as I can tell to a higher SEER. So I think that I speak for a 21 22 number of people in believing that if we

1 don't address the rating methods in some way, 2 and understand their impact, we are really 3 beating our drums, and not going to achieve 4 any meaningful gains either for the 5 manufacturers or the energy budget. MR. BROOKMAN: I want to recognize 6 7 But I'm thinking at this point Ron Lewis. that perhaps some of you are more empathetic 8 9 towards the department's positions. 10 Ron. 11 MR. LEWIS: I just wanted to correct that the focus date is not 2016; it's 12 13 2011, because that's in the consent decree. 14 That's when we have to issue this by, so 15 that's what our eye is on, is delivering that, the effective date with the help of GC, 16 we will find out what our flexibility is 17 But that has no impact on what we 18 there. 19 have to accomplish by 2011 in issuing it. 20 The test procedure on AC has been updated probably more frequently and more 21 22 recently than almost anything else that we

1 have got, and there has been input on that. MR. SACHS: And we were invited not 2 to participate, if I might interrupt, in the 3 4 test procedure update, last round. Harvey 5 Sachs. 6 MR. BROOKMAN: So Ron, please. 7 MR. LEWIS: So what would be most 8 helpful is, in this dialogue that has been 9 going on here, is specifics of what people 10 feel are necessary and not just a general 11 kind of approach, but if there are things 12 that you think are missing, or things that 13 you think we need to do specifically, to give it to us in specifics and not generalities. 14 15 MR. BROOKMAN: Just to confirm, Ron, you anticipate that the timetable that 16 Sriram laid out is doable? 17 MR. LEWIS: The time that we have 18 that's limited, and I think it's been 19 20 reinforced here that in order to move forward with a standard, you need to know the test 21 22 procedure, and that the tradition over the

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1 last 10 years, I guess, maybe longer than 2 that, I don't know before that, was to have 3 the test procedure, the final rule, done 4 before the NOPR, before the standard was 5 done. And that was the model that we're 6 working by, and that is in the report to 7 Congress, I believe. 8 So that is the model that is up 9 there, to have that accomplished by then. So 10 to get that accomplished, to have time to put 11 out a NOPR on a test procedure, get comments, 12 be able to respond to that and get a final 13 rule out in time, we are in a crunch. There is not a whole lot of time to look at. 14 15 So if you have issues, you have specifics, it's very important that you lay 16 those out early, because we have such limited 17 time. 18 19 MR. BROOKMAN: Okay, so I have 20 several people who wish to speak. Lance and 21 then Paul and then Jim.

MR. DELAURA: This is Lance. I

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1 absolutely agree with what was said in terms 2 of the test procedure being updated. It's 3 really the essence for each of the regions. 4 There really needs to be a specific testing 5 method that matches the regions. We will file more about this in 6 7 our written comments, but a couple of thoughts. We mentioned EER earlier, that we 8 9 think that is essential. The test protocols 10 should accommodate other technologies beyond 11 air-cooled expansion unitary equipment. 12 We think the protocols should 13 reflect a more realistic static pressure. And then there is a whole series 14 of issues in terms of rates for the area that 15 this is going to be considered. So are there 16 time-of-use rates in effect for those areas? 17 California is one of the areas that is 18 working with time-of-use rates that creates a 19 different scenario. 20 21 There is the time value of energy 22 that is to be considered. Is energy on-peak,

Page 122 1 off-peak, those sorts of things. So there is 2 a lot of detail to get into. But we will submit, I think the 3 4 other California utilities will do the same, 5 detailed explanations and recommendations 6 along these lines. 7 MR. BROOKMAN: Thank you. 8 Paul. 9 MR. DOPPEL: Paul Doppel. And 10 while we are on test procedures I'd just like 11 to reiterate that there are several issues 12 where the ductless mini splits and multi-13 splits have inconsistencies with central air conditioning products in the test procedure 14 15 that need to be corrected by the 2010. MR. BROOKMAN: Thank you. And so 16 17 the department really requests specifics, and specifically the fixes, I think. 18 MR. DOPPEL: Those will be 19 20 provided. 21 MR. BROOKMAN: Jim. MR. CRAWFORD: Jim Crawford. 22 Ι

1 want to agree with what I thought Harvey was 2 saying earlier, and the first thing is, if 3 these changes we are talking about, if these 4 are changes that are going to affect how one 5 measures and establishes the efficiency performance under the law, then they are 6 7 going to impact every aspect of the analysis 8 process.

9 And if we went so far as to 10 incorporate some of the thoughts that the 11 last speaker suggests, we probably could be 12 working on this for another 10 or 15 years.

And until such time as we know what changes the department is proposing on the test procedure, it's virtually impossible for us to intelligently comment on those changes.

And that has got to be resolved before, again, before you can go very far with the analysis process. If you take the discussion that has been floating around here for the last 20 or 30 minutes, if all those

1 factors have to be considered, you need to
2 havep you need to be at your final rule on
3 the test procedure probably two to three
4 years before your final rule on the product
5 itself.

6 MR. BROOKMAN: So let's leave it to 7 the department, then, to define looking ahead, how they intend to address the test 8 9 procedure issue, what their timetable would 10 be, what the steps they are going to take 11 are, and I'm going to suggest that we move to 12 the next slide, and try and answer the 13 question so we stay fairly much on track here this morning. 14 15 And Sriram, you have a comment before we move to 17? 16 17 MR. SOMASUNDARAM: Yes. Just to add to what Ron Lewis was saying earlier, DOE 18 19 has contracted with NIST top and Brian 20 addressed this issue earlierp to help us get

21 the updates to the test procedure done in

22 time.

So we do have a task for NIST to 1 2 give us all the updates, both from the 3 industry standpoint, and also from the 4 regulatory standpoint, and it needs to be 5 addressed. MR. BROOKMAN: Ron, and to address 6 7 this issue, DOE will lay out a schedule or a 8 set of steps that it intends to follow? Or 9 is it just something that NIST is going to 10 do? 11 MR. LEWIS: We will take the NIST 12 is working in a support role to help us to do 13 what we are responsible for. So it's not NIST's responsibility to do this. And we 14 15 will b we have to have a plan to act to. So we are taking all the input, and although 16 this is very helpful, a lot of the input, we 17 are not going to have the answers to 18 19 everything right away. We are going to take 20 all the input and go back and re-huddle, and 21 take a look at what we have heard today, and 22 take a look at where we are and where we go

1 from here.

2	So there are a lot of things that
3	are variable. That is the reason for this
4	public meeting is to get this input, so we
5	can go back and take a look at it, and get
6	comments on what web our starting point.
7	This is the starting point, and
8	the starting point only. So we have laid out
9	what our thoughts are right now, we are
10	getting input, and then the natural process
11	is to go back, consider all the comments
12	given, and devise our plan from here forward.
13	MR. BROOKMAN: Thank you.
14	Okay, so then, Don, final comment
15	before we move to slide #17.
16	MR. BRUNDAGE: Yes, Don Brundage,
17	Southern Company.
18	This is one of those things that
19	it's hard to figure out where to fit in but
20	may simplify the discussion of test procedure
21	changes.
22	One of the comments in discussing

this issue in the state of Florida, and I 1 2 have discussed it with Andrew also, is that 3 if you have for health and safety reasons 4 a local jurisdiction wants to establish a 5 minimum sensible ratio for equipment sold in the area, not to try to pre-empt NACA on 6 7 efficiency, but to set performance standards 8 to make sure that public health and safety is 9 protected, is that allowed under NACA? Could 10 a state not allow certain NACA limited 11 products as part of its building code that 12 did not have, say, adequate dehumidification 13 capability? If the department would clarify 14 15 that, some of the need for dramatically 16 changing the test procedure might go away if the states were provided flexibility to not 17 allow equipment that is still suited to meet 18

the cooling needs in the local jurisdiction.

MR. BROOKMAN: Okay, thank you,

21 Don.

22

19

20

Now on to slide #17. As you look

1 at these items, we will start with 1.1, and 2 it's a rather, a couple of very specific 3 questions. 4 Sriram, do you want to read them 5 so we have them in the record? 6 MR. SOMASUNDARAM: Right. So these 7 are the first three questions that we are requesting feedback on. 8 9 And they also appear in the 10 framework document under Section 1. 11 So the item 1.1 is specifically 12 requesting comment and feedback on how DOE 13 might address the standby power modes and the magnitudes of the standby power consumption 14 when the unit is turned off or on standby 15 mode. 16 17 Item 1.2þ MR. BROOKMAN: Let's do one at a 18 19 time. 20 MR. SOMASUNDARAM: Sorry. MR. BROOKMAN: Comments on that one 21 first. I want to establish some momentum 22

1 Comments on power modes and magnitudes here. 2 of standby power consumption. MR. ROBERTS: This is Tom Roberts. 3 4 That is adequately addressed by the current 5 standard. Tom Roberts. 6 MR. BROOKMAN: Other comments with 7 respect to this? Karim. MR. AMRANE: Karim Amrane. I wish 8 we had done the homework here. I mean those 9 10 are addressed in the test procedure, and very 11 strange that DOE is asking questions on its 12 own test procedures that apparently DOE 13 doesn't know it covers already. MR. BROOKMAN: Okay. Craig, you 14 15 want to add on? MR. MESSMER: Craig Messmer. 16 Are you looking for like specific wattage when 17 the fans are turned off? Transformers? 18 19 MR. SOMASUNDARAM: In terms of the 20 control systems, what may be turned onp or 21 what may remain on when the compressor is not 22 providingp the compressor or the fanp is not

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Page 130 providing any airflow for cooling, heating or 1 ventilation. 2 3 MR. BROOKMAN: So Craig, can you address that? 4 5 MR. MESSMER: Well, we make fan 6 coil units, and I know that some of our 7 circuit boards are under 10 - 12 watts. So you want to use that number, that's what we 8 9 would have. 10 MR. BROOKMAN: Yes, Jim. 11 MR. CRAWFORD: Doug, I think that 12 if there is a question here of merit, it 13 needs to be fleshed out and submitted to the industry so that considered responses can be 14 15 made rather than knee-jerk responses sitting around the table. 16 MR. BROOKMAN: You think this is 17 too specific, and the answer requires 18 19 consultation inside the industry? 20 MR. CRAWFORD: I think it's not 21 specific enough. 22 MR. BROOKMAN: I see.

1 MR. CRAWFORD: I don't think the 2 question is specific enough. And I don't 3 think that the answers that we would give 4 today would be a legitimate basis for any 5 decisions. 6 MR. BROOKMAN: What about the 7 second question? DOE invites comments on whether it would be technically feasible to 8 9 incorporate standby power consumption into 10 the SCER metric, or whether it instead should be considered as a stand-alone measure 11 12 for this rule-making. 13 MR. CRAWFORD: Until I see the question for 1.1, it's kind of difficult to 14 15 measure 1.2, to answer 1.2. But any presumed 16 power consumption that is added to the test 17 procedure without adding cooling capacity to go along with it is automatically going to 18 19 suppress the performance rating number. 20 That creates all kinds of rather 21 difficult problems throughout the industry where today it's a 13 and tomorrow it's a 22

1 12.5. That'sp I'm concerned that we are 2 changing the yardstick, and the public has 3 gotten pretty well accustomed to a yardstick. 4 It doesn't say that maybe it shouldn't be 5 some other measure. 6 MR. BROOKMAN: Let's hear from a 7 few others. Gary and then Andrew. 8 MR. FERNSTROM: Okay, from PG&E's 9 point of view, when we assess the energy 10 efficiency performance of a product, we need 11 to know what power that product is demanding 12 each of 8,760 hours a year. 13 So it would be important for us to know what the standby power is, irrespective 14 15 of what cooling that product may or may not be delivering. 16 17 MR. BROOKMAN: Andrew. 18 MR. DELASKI: Gary addressed the 19 part I wanted to say. But also I think with 20 respect to a change in the questions, if we 21 suddenly begin taking into account modes that 22 are not currently reflected in the energy, in

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the current test method, my understanding of 1 2 the law is that DOE is obligated to true-up 3 test methods, or true-up the standard in a 4 way that things that comply today, a machine 5 that complies with standards today complies 6 tomorrow, so we are not changing the standard 7 by changing the test method. I think that I just wanted to 8 9 confirm that. 10 MR. BROOKMAN: Lance. MR. DELAURA: Just a quick comment. 11 12 Standby power loss is in quick comment. 13 Standby power loss is in general, regardless of the type of equipment. It's a large focus 14 15 for California and the California Energy Commission which unfortunately because of the 16 timing was not able to be here today so I 17 18 guess I'll speak for them, that we don't want to ignore that issue. It's very large, and 19 20 it impacts demand. It impacts the peak load. 21 MR. BROOKMAN: So will they or you 22 or somebody submit those as comments to the

1 department? 2 MR. DELAURA: Yes, we will make 3 sure that the California Energy Commission is 4 aware of what is discussed here today, and 5 they will make their own independent 6 comments. 7 And when I say I'm speaking for 8 them, I am speaking as an observer of their 9 process. 10 MR. BROOKMAN: Thanks for 11 clarifying that as well. 12 I'm going to go then to Kyle, and 13 then to Brice. Please. MR. McCULLOUGH: Bill McCullough. 14 15 One of the things, there is more to the question that we can't answer here but we 16 would need to consider in this for an air 17 conditioner when in the off cycle if there is 18 19 a call for heating in a gas furnace 20 technically it would not have any standby 21 usage. And what percent of the time would that period be?

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MR. BROOKMAN: Okay. 1 2 MR. McCULLOUGH: And so that would 3 need to be considered in exactly do you 4 account for the transformer off power, you 5 could get the VA of that differently from a 6 heat pump to an air conditioner. 7 MR. BROOKMAN: Okay. Brice. 8 MR. BOWLEY: Brice Bowley, General 9 Electric. I think part of the question is, 10 is really what is standby power. I think 11 that is why the cycle portion of the test method has been included with evaluating 12 13 these units, it's really the unit isn't performing its intended function whenever 14 15 it's turned on, which is why you need to address these different modes and energy 16 usage, at the hope, during the entire 17 operation of the unit. 18 19 I think the question is, you could 20 design a unit such that the fan runs 21 continuously, so is there really a standby 22 mode in that unit? Again, I think it's much

better to address it with the test method as 1 2 it is with the cyclic portion. 3 MR. BROOKMAN: Harvey Sachs? Jim, 4 did I drop you out? I think I dropped Jim 5 out. Go ahead, Jim, and then Harvey. 6 MR. CRAWFORD: The question sort of 7 touched on here is what is standby. And one of the things that is not recognized, 8 9 certainly on Capitol Hill, and maybe in this 10 building, is that there is a reason for the 11 power consumption for transformers, for thermostats and controls. 12 13 And a principal reason is personal safety and fire safety. The most egregious 14 15 example of standby power is doorbells. That little transformer sits there and sucks up 16 watts, 8,760 hours a year, and gets pushed 17 three times a year for about two seconds. 18 19 Why do you do that? You do that 20 to avoid line voltage switching. You do that 21 in an HVAC system to avoid line voltage thermostats, which are notoriously 22

unreliable, notoriously wide dead bands. 1 2 That power supply is providing a 3 useful function every hour of every day of 4 the year. It's notp it doesn't know it's in 5 standby, because it's working. MR. BROOKMAN: Gary, follow on, and 6 7 then I'm coming to Harvey. 8 MR. FERNSTROM: Okay, just a real 9 quick comment. There is no dispute there. 10 These transformers are impedance protected, and that's a safety issue. That's why they 11 12 have the standby mode they do. 13 However, that usefulness that utility could be provided more efficiently 14 15 with a different type of product other than a magnetic transformer. 16 So what we are looking at in 17 California is how the efficiency of that 18 19 service can be improved. And I think there 20 is an enormous opportunity to improve 21 doorbell transformer efficiency. 22 (Laughter)

1	MR. BROOKMAN: Harvey Sachs.
2	MR. SACHS: I only want to ask two
3	questions, one is that given that the service
4	of continuous ventilation is being provided,
5	and used in a reasonable fraction of houses,
6	we are again back to the so-called furnace
7	fan issue of where the efficiency of that
8	service provision is to be evaluated.
9	And I state that as a question.
10	The other one that is much more
11	important to me today is what I call item
12	1.4, that we have not asked forp given any
13	request for feedback on what, if anything,
14	has to be done to the rating method to enable
15	the department to adequately consider
16	regional standards?
17	I mean we've got this 800-pound
18	gorilla sitting over in the corner of the
19	room, and we are worrying about the mice.
20	MR. BROOKMAN: So Harvey and
21	others, if you could advise the department of
22	what that information would be, I'm certain

1 they would appreciate that. 2 MR. SACHS: I assure you, we will 3 require no second invitation. 4 MR. BROOKMAN: Thank you. 5 I want to provide an opportunity to comment on item 1.3. I also want to 6 7 provide an opportunity shortly for us to take a break. So take a peek at it. DOE also 8 9 invites comments on the necessary changes to 10 the existing DOE test procedure for central 11 air conditioners and heat pumps to account 12 for standby power consumption and its 13 measurement. I think we have touched on this 14 15 considerably already, but final comments before we move on? 16 17 Okay, we have made good progess. We have had really very straightforward and 18 19 effective dialogue already today. It's 10 minutes after 11:00. 20 I'm 21 going to suggest we take a break. We will resume at 11:25. 22

Page 140 1 While you are walking in this 2 building, make sure to wear your building pass, and also we are likely now since we are 3 4 taking a late coffee break to work at least 5 until 12:30 before we break for lunch. So if 6 that means you need a banana for your blood 7 sugar, go get it. (Whereupon at 11:10 a.m. the 8 9 proceeding in the above-entitled 10 matter went off the record toe 11 return on the record at 11:28 12 a.m.) 13 MR. BROOKMAN: Okay, let's start. So we are proceeding as the agenda 14 15 lays out, and next we are going to hear market and technology assessments, screening 16 17 analysis, engineering analysis, and preliminary manufacturing impact analysis 18 19 from Mike Christopher. 20 Hey, folks, let's settle down please. Mike Christopher is our next 21 22 presenter.

Page 141 1 MARKET AND TECHNOLOGY ASSESSMENT, SCREENING 2 ANALYSIS, ENGINEERING ANALYSIS, AND PRELIMINARY MANUFACTURER IMPACT ANALYSIS 3 4 MR. CHRISTOPHER: Thank you, Doug. 5 I'm Mike Christopher with Navigant Consulting. And the next few chunks of the 6 7 agenda we are devoting to the analyses that will be conducted for ANOPR, the Advanced 8 9 Notice of Proposed Rulemaking. 10 Those analyses will begin 11 following the conclusion of the comment 12 period for the framework whenever that may 13 be, and will finish in the fall of next year. So the first four analyses in 14 15 this, that are conducted for the ANOPR, are market technology, screening, engineering and 16 a preliminary manufacturing impact analysis. 17 The first of these, the market and 18 19 technology, is a collection of data by DOE to 20 characterize the industry and the market for 21 residential central air conditioners and heat 22 pumps, and also is a chance to identify those

technologies and designs that can improve the
 efficiency of these products.

So what DOE does is looks at data 3 4 such as shipments, trends in the market and 5 forecasts, looks at regulatory and nonregulatory initiatives that may also have 6 7 impacts on efficiency; and as I mentioned, identifies the technologies that can be used 8 9 to improve efficiency. 10 This is just a general request for 11 feedback, item 3.1. DOE is looking for any information that stakeholders can provide 12 13 that would assist in developing this characterization and this list of 14 15 technologies. 16 MR. BROOKMAN: Yes, please, Kyle. MR. GILLEY: Kyle Gilley. Just a 17 18 clarifying question. When we talk about 19 market trends, does that also include things 20 like repair versus replacement phenomenon 21 that we've been seeing in the marketplace?

MR. CHRISTOPHER: That is typically

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1	looked at I believe in the LCC analysis.		
2	Shipments analysis and LCC; so that would be		
3	a different analysis.		
4	MR. GILLEY: So that goes into the		
5	shipment analysis?		
6	MR. CHRISTOPHER: Yes.		
7	MR. BROOKMAN: Which comes later.		
8	Which comes later.		
9	MR. CHRISTOPHER: We will talk		
10	about that later in the day.		
11	MR. BROOKMAN: Gary.		
12	MR. FERNSTROM: So there is a broad		
13	range of technologies, some of which have		
14	been identified to us from the California		
15	Cooling Technology Center, which we work		
16	closely with. They are going to be		
17	submitting some comments regarding that. But		
18	one I'd like to mention right now is, we		
19	should definitely be looking at water cooled		
20	condensers.		
21	MR. BROOKMAN: Thank you.		
22	So other comments on information		

Page 144 1 sources? 2 Karim, thank you. 3 MR. AMRANE: Karim Amrane, AHRI. Ι believe that water cooled condensers are 4 5 outside of the scope of this rulemaking. I 6 think we are talking about air conditioned 7 cooling only. MR. BROOKMAN: Okay. What about 8 9 the other products, Karim? 10 MR. AMRANE: Water cooled 11 condensers are covered under a different part 12 of the regulation. 13 MR. BROOKMAN: Just to follow on, 14 Gary, but I want to return to Karim in a 15 moment. Go ahead. 16 17 MR. FERNSTROM: Well, my responding question would be why this type of equipment 18 is available in California in residential 19 20 models which are within the scope of this 21 rulemaking. 22 MR. BROOKMAN: That was Gary.
Go ahead. 1 2 MR. CHRISTOPHER: I don't want to quote the CFR without it in front of me, but 3 4 if anyone has the definition on hand of what 5 a central air conditioner is, I believe it's air cooled. 6 7 MR. BROOKMAN: Yes, Ted. MR. POPE: Would that also apply to 8 9 a system that uses evaporatively cooled air 10 to cool the coil? 11 MR. CHRISTOPHER: I don't have an 12 answer to that. 13 MR. FERNSTROM: Gary from PG&E. Ιf we exclude water cooled condensers simply 14 15 because they are deemed to be outside of the scope, we are foreclosing a look at a 16 17 significant energy efficiency improvement opportunity here. 18 19 It would seem to me that would be 20 a mistake. 21 MR. BROOKMAN: Thank you. Jim Crawford. 22

1	MR. CRAWFORD: I guess as a
2	manufacturer of water cooled equipment, I
3	want to thank the gentleman for his promotion
4	of water cooled equipment. But this is an
5	air cooled air conditioner heat pump standard
6	that we are dealing with. And if we want to
7	open it up and try to put all kinds of
8	equipment under one rating system, we will be
9	here when the youngest of you retires.
10	MR. BROOKMAN: Thank you. Yes, let
11	me go with Don and then Harvey.
12	MR. BRUNDAGE: A quick comment.
13	It's not all a disadvantage if this is not
14	within the scope. Because if it's not within
15	the scope of the NACo rulemaking, then that
16	leaves it free for your local jurisdiction to
17	set its own standards, which in the case of
18	California tends to be a preferable route
19	anyway.
20	MR. BROOKMAN: Let me let Karim
21	follow on there.
22	MR. AMRANE: Karim Amrane from

Page 147 1 No, I mean water cooled, a culvert for AHRI. 2 example, and actually I think they are 3 covered. It's not like they are not. 4 (Simultaneous voices) 5 MR. BROOKMAN: Okay, Harvey. 6 MR. SACHS: Harvey Sachs. Just for 7 the record I get the sense we are compounding 8 two classes of equipment, water cooled 9 equipment versus water sprayed evaporative 10 condensive units. And I think that 11 distinction is important, and I believe that 12 Gary Fernstrom was referring to the former, 13 and Ted Pope to an indirect form of an evaporative cooled condenser, not to water to 14 15 refrigerant heat exchange. 16 MR. BROOKMAN: Okay, thank you for that clarification. 17 18 I am going to suggest we move on 19 to slide #22 then, current product classes 20 and standards. 21 MR. CHRISTOPHER: The current 22 product classes which I'm sure most of you

are familiar with, and the current standard 1 2 levels are here. They include split and single package, air conditioners and heat 3 4 pumps; small duct high velocity systems 5 currently have their own product class; as 6 well as space constrained air conditioners 7 and heat pumps; and currently through the wall systems, both split and package, have 8 9 their own product class. However, the 10 definition of through the wall products is 11 such that this product class ceases to exist on January 23rd, 2010. And we will talk a 12 13 little bit more in a minute as to the implications of that. 14 Another note to make here is that 15

although small duct high velocity systems
have a standard that is codified in the CFR
of 13 SEER 7.7 HSPF, there currently is
exceptional relief in place for the three
manufacturers that have applied for that in
the form of standards at 11 SEER and 6.8
HSPF.

Page 149 1 DOE intends to look at these 2 product classes, in this rulemaking, maintaining split and single package air 3 4 conditioners, heat pumps, as well as small 5 duct high velocity systems. 6 And continuing with space 7 constrained air conditioners and heat pumps. And there are two items for feedback here, 8 9 the first of which DOE is looking for 10 feedback on these product classes. And item 11 3.3 would like to know, are there other 12 classes that DOE should look at, and should 13 all of these classes be considered. MR. BROOKMAN: Don first. 14 15 MR. BRUNDAGE: Don Brundage, 16 Southern Company. There are products under development which are not really commercial 17 now, but likely would be by the time of the 18 19 final rule to independently control humidity and space cooling, either through residential 20 21 systems for things like hot gas reheat from 22 GHP AC system.

My question is, would that fall 1 2 under one of the existing product classes as defined, and if not, should it potentially 3 4 have a separate class? My concern is that, 5 and this is all the chicken or the egg issue 6 because of test procedure, if you have 7 something that directly goes after humidity control and doesn't produce more sensible 8 9 cooling, it's going to show p it's going to 10 do very poorly under the current test 11 procedure, and probably would have trouble 12 making SEER 13. 13 If it does fall under the definition with existing product classes, I 14 15 would suggest that it might be useful to carve out a separate class for a premium 16 separate controller, humidity b 17 dehumidification, and space cooling to 18 19 prevent restrictions on this product entering 20 the market. 21 The manufacturers could probably answer better on this than I could, but the 22

Page 151 1 numbers I have seen, these things use 2 substantially more energy for the same amount 3 of sensible cooling. But they dehumidify quite well. 4 5 MR. CRAWFORD: But SEER and EER are not predicated just on sensible cooling. 6 7 It's total cooling. MR. BROOKMAN: That was Jim 8 9 Crawford. 10 MR. CRAWFORD: And latent cooling 11 is often actually more efficient than 12 sensible cooling. 13 MR. CRAWFORD: I guess my question is, is it a different enough product in 14 15 characteristics and performance that it 16 deserves a separate product class. 17 MR. BROOKMAN: Yes, please, your name for the record. 18 MR. ARNOLD: Dan Arnold of 19 20 Nordyne. I'd like DOE's legal counsel to 21 comment on whether my interpretation of NACA is incorrect. Because I believe that NACA 22

prohibits consideration of technologies that 1 2 are currently not available in the market. So in other words the standard 3 4 cannot be set for something that is in 5 development or is conceivable but not 6 commercially currently available. 7 MR. BROOKMAN: Eric Stas. MR. STAS: Eric Stas, DOE. 8 DOE has 9 traditionally looked at things which are a 10 working prototype for example that could be 11 brought into the commercial realm, things 12 that are strictly R&D we haven't considered. 13 MR. BROOKMAN: Don Brundage. MR. BRUNDAGE: Don Brundage, I want 14 15 to clarify b I'm not suggesting setting a standard for it. I'm suggesting defining the 16 product classes to not unduly prohibit these 17 products when they come into the market. 18 19 I think it'd be premature to set a 20 standard, but I don't want to have the way 21 the product classes are defined, it'd be a 22 barrier when they are introduced. But by

Page 153 1 forcing them into one of the existing classes 2 þ 3 MR. BROOKMAN: So is there a simple 4 answer to this question? Yes, Karim. 5 MR. AMRANE: Karim Amrane, I think 6 the answer is the waiver process. I mean 7 they can always file a waiver if they cannot meet the standards. 8 9 MR. BROOKMAN: Okay, so then the 10 questions that are on the table here now are 11 these product classes, what you think of 12 them, and should there be other product 13 classes considered. Paul and then to Harvey. 14 MR. DOPPEL: For the ductless 15 products, again we would recommend that 16 17 consideration be given to the ductless mini-18 splits as a separate product class, because 19 they are installed differently; they cover a 20 different market segment than central air 21 conditioning; and their general size usage, 22 their average size usage in the industry is

Page 154 somewhere around between 12 - 15,000 bTUs, as 1 2 compared to the larger central air 3 conditioning systems, and also the variable 4 refrigerant flow products have sort of 5 included the ductless multi-splits, and we 6 feel that the BRF products need to have a 7 separate product class also. 8 MR. BROOKMAN: Thank you. 9 Harvey. 10 MR. SACHS: The comment would just 11 be on Mr. Brundage's request for alternative 12 ways to deal with the enhanced 13 dehumidification products. And one of those would be a rating method change which might 14 15 involve moving from 8067, interim conditions, to some other set, and there are a lot of 16 ways, and this is not the place nor time to 17 18 get into the details, but to suggest that an 19 alternative rating route might be a possibility for that class of products. 20 21 MR. BROOKMAN: Is that what you 22 would suggest for the department to consider?

Page 155 1 MR. SACHS: Darn straight I want to consider it. I'm not sure it's the answer. 2 3 MR. BROOKMAN: Okay, please, your 4 name for the record. 5 MR. MUCCIOLA: Vince Mucciola. MR. BROOKMAN: If you would please 6 7 use the microphone. This is fully recorded 8 here. 9 MR. MUCCIOLA: Vince Mucciola, 10 National Comfort Products. 11 We are the only member of AHRI 12 that is a through-the-wall condensing unit 13 and heat pump, and I would like to see us be able to continue that through-the-wall 14 15 classification in these planning states. 16 MR. BROOKMAN: Thank you. 17 MR. CHRISTOPHER: Just a quick comment. We will look at that in a couple of 18 19 slides, and any comments you have then we'd 20 appreciate. 21 MR. BROOKMAN: Okay, Mike then Jim. MR. CRAWFORD: The point has been 22

made twice that VRF is something new and 1 2 unique. Variable refrigerant load 3 implemented in various ways has been in the 4 market for well over 30 years, and the 5 current test procedures accommodate that and 6 recognize it and have for over 20 years. 7 MR. BROOKMAN: Okay, so it's Bill. MR. McCULLOUGH: Bill McCullough 8 9 I guess I would second Jim's with Lenox. 10 comment on the VR, variable refrigerant volume units, and for many splits, while they 11 are installed differently, the consumer uses 12 13 them still for the same purpose, and I think they should remain in the same product class, 14 15 much as air conditioning in single package units are in the same product class. 16 MR. BROOKMAN: Okay, thank you. 17 18 Did you have a comment? Is it 19 Brice? No? Okay. So then additional 20 comments on, are these the product classes that the department should use? Should there 21 be others? 22

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Page 157 1 I guess we've heard b Harvey. 2 MR. SACHS: Bill, Bill McCullough, 3 the comment you made is most interesting in 4 terms of defining product classes by consumers' view of service. And I guess it's 5 6 intriguing, because it would argue for 7 example for integrating the ground-source heat pump rating method with the one at issue 8 9 today. 10 It's seen as providing the same service by the consumer. 11 12 MR. BROOKMAN: You wish to expand 13 to that class as well, Harvey? MR. SACHS: I don't think that that 14 15 is going to enable us to get this proceeding done within two lifetimes, but I'm just 16 trying to suggest that the service argument 17 while being important is one that the 18 19 industry itself has resisted in conjunction 20 with other categories of equipment. 21 MR. BROOKMAN: Yes, Hung. 22 MR. PHAM: Hung Pham, Emerson

Page 158 I just listening to the comments 1 Climate. here have a concern relative to whether DOE 2 needs to relook at what the intent is for the 3 4 efficiency and test procedure standard. 5 Looking back 20 years ago it came about as a means to compare different 6 7 equipment under the same conditions, as much as possible. 8 9 The intention is for the consumer 10 to be able to buy equipment A and equipment B 11 and know that a 14 SEER is X percent better than a 13 SEER. 12 13 I think we are now raising questions that are not along the line of the 14 15 uniform test standard. We are talking about DOE coming up with an application standard, 16 17 something that can reflect two refrigerators, one in a home here and I open the door 10 18 19 times, and the other guy only opens it three 20 times, and I want to reflect that energy 21 savings. I think we need to realize that 22

there is a limit on how far DOE can go with 1 2 that, time of use, and heat loading, and all of those things. I think if we continue to 3 4 want to handle those, it may have to be a 5 very different approach, meaning DOE may have to modularize this somehow so there is a 6 7 platform, and then somebody else can take it and plug in different numbers, whatever. 8 But 9 then it will lose the meaning of the national 10 standard. 11 MR. BROOKMAN: Lance first. 12 MR. DELAURA: This is my soapbox 13 I think that this is our chance statement. to get it right, as a group, and this is 14 15 going to be difficult no matter what we do. And I think to make the right choices, and to 16 look at all the embedded elements that are 17 going to be affected by this, not only now 18 19 but for the foreseeable future, is extremely 20 important. So if there is extra pain, now is 21 the time to do it. 22 MR. BROOKMAN: Paul, Gary, this

gentleman, and then Karim as briefly as
 possible.

MR. DOPPEL: Okay, just to b Paul 3 4 Doppel b just to clarify what we are 5 referring to as variable refrigerant flow, or 6 VRF systems, the definition from the draft 7 standard at ARI 1230, an engineered direct exchange multi-split system incorporating at 8 9 least one variable speed compressor, variable 10 capacity compressor, distributing refrigerant 11 through a piping network to multiple indoor 12 fan coil units each capable of individual 13 zone temperature control, to proprietary zone temperature control devices and common 14 communications network. 15 And those are b there are two 16 17 further subcategories, VRF multi-split, and

18 VRF heat recovery and multi-split systems,

19 and these types of systems are newly

20 introduced to the U.S. market within the last

21 six years.

22

MR. BROOKMAN: And your citation

1 again is what? MR. DOPPEL: This is the ARI draft 2 standard 1230. 3 4 MR. BROOKMAN: So I'm not sure I 5 got it there. So what are you saying about 6 the product classes and this list. 7 MR. DOPPEL: This is what b there 8 was some exception taken to my call for a 9 separate product class, and just to make sure 10 that everyone understands what we are calling 11 VRF, this defines what VRF is. MR. FERNSTROM: So Gary Fernstrom, 12 13 I'd like to go back to the application issue briefly. We have--for automobiles--city and 14 15 highway mileage rating. I don't think it's at all unreasonable to have for air 16 conditioning equipment two or three different 17 application relative ratings. 18 19 MR. BROOKMAN: Thank you. 20 Your name, please? 21 MR. ARNOLD: Dan Arnold of Nordyne. 22 I'm glad you brought up the automotive

1 analogy, because that, as an engineer who 2 works and lives with this test procedure 3 everyday, people ask me, how do I describe 4 SEER in layman's terms, and I tell them it's 5 basically like city miles per gallon, cyclic 6 measurement of energy efficiency of the unit, 7 and EER, now that we have that published and available, is the steady state; it's like 8 9 your highway miles per gallon, but Hung 10 Pham's point, I'm not quite agreeing with the 11 fact that the test procedure is broken. Ι 12 don't really understand the assault on the 13 test procedure. It does serve as a 14 comparison for consumers to compare one unit 15 to another unit. In my 25 years in the 16 industry we have done our own analysis internally that shows the energy efficiency 17 that was represented by SEER is fairly 18 19 accurate as a general rule. 20 We do publish extended performance 21 ratings. All manufacturers do it different, different conditions, different wet bulb/dry 22

Page 163 bulb conditions, they are available on 1 2 websites. People do use them, so if you want to compare an air conditioner other than the 3 4 standard 8067 indoor test procedure rating 5 point, that information is freely out there for dealers and contractors to use. 6 7 So I just am not agreeing that the test procedure is broken. I think it served 8 9 us pretty well over the years. 10 Karim and then Paul. Go ahead, 11 Paul. MR. DOPPEL: As a result of the 12 13 October 22nd final rule, the multi-split products now carry three different efficiency 14 15 ratings, SEER ratings, one for ducted combinations, one for non-ducted 16 combinations, and one for a mixed 17 combination. 18 19 So if we were to do this by regional, then that would multiply that to 20 21 probably nine different b possibly nine different ratings for those products. 22

Page 164 1 MR. BROOKMAN: Gary, go ahead. 2 MR. FERNSTROM: Gary Fernstrom. 3 I'd like to go back to the highway and city 4 analogy again. You know we in effect have 5 the supercongestion of high humidity in the 6 south, and we have the ultra hot temperature 7 in the California central valley, with low 8 humidity, which might be the super highway 9 with a high speed limit. 10 So I think it all has to do with 11 the temperature and humidity issues that we 12 are taking the measurements out. 13 MR. BROOKMAN: Jim Crawford. MR. CRAWFORD: Jim Crawford. 14 Ι 15 guess two points or two things floating around here. 16 17 One is, I think the department needs to very promptly identify what measures 18 19 are legitimately under consideration, consistent with the law so that we can see 20 how far these horizons are spreading. 21 We are talking about a lot of 22

1 things that are fine at the philosophical 2 level, but are they consistent with the law? 3 MR. BROOKMAN: You say measures, 4 you mean the stuff that b 5 MR. CRAWFORD: The SEER, EER, 6 whatever, hot and dry, hot and wet, all these 7 various measures that we've talked about, do they have anything to do with the law? And 8 9 if not, perhaps this is not the venue for 10 discussion. 11 The second point, I will come back 12 to the VRF issue, a Japanese manufacturer not 13 present here today, Daikin, imported VRF 14 systems back about 25 years ago. They were multi-splits, and they were modulated in 15 terms of refrigerant flow. It was nothing 16 17 new. 18 MR. BROOKMAN: Dave. You'll pass? 19 Lance? 20 MR. DELAURA: I think just a quick 21 The very essence that we are going comment. 22 to have really three regions, if two

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additional regions are adopted, is the real
 reason that all of these technical issues are
 being discussed.

If there was a one-size-fits-all 4 5 approach, you wouldn't have two additional It would be the same old same old. 6 regions. 7 You've got two new regions which is going to 8 make three; it is going to be a complicated 9 process. And as I said before, I think it is 10 our opportunity to get it right. If we are 11 going to have the regions, the rigor needs to 12 be there to ensure that having those regions 13 is reasonable, and that it actually makes sense, and that it makes sense for consumers. 14 15 MR. BROOKMAN: So what is your b what would you be advocating with respect to 16 17 these measures? MR. DELAURA: I think it's the same 18 19 thing we said before. Depending on the 20 region that you have the standard for, there

are going to be intricacies. And at some
point we should talk about that as well.

1 What are those regions? What do they look 2 like? And that is going to drive a lot of 3 those processes. If the regions look very 4 similar, which they won't, then the test 5 procedures will be similar. The fact that 6 they will be different, there is going to be 7 different dictates in terms of what the elements are. 8 9 MR. BROOKMAN: Kyle. 10 MR. GILLEY: Just a couple of 11 clarifications there. DOE has the authority 12 to make it up to two regions. The other is, 13 there has to be justification for doing so. That statement implied that it's just a 14 foregone conclusion, that there is 15 justification for regional standards, which 16 will be a debated point throughout this 17 entire discussion. 18 19 The other thing I would point out 20 as it relates to regional standards, is that 21 it was a political solution brought about by 22 Congress in reaching a compromise during the

1 legislative discussion.

2	So to assume that there is any
3	technical justification whatsoever for
4	regional standards is a stretch.
5	MR. BROOKMAN: Okay, I want to
6	return to final comments with respect to
7	these product classes, and then we are going
8	to move on.
9	Yes.
10	MR. ROBERTS: Tom Roberts, and this
11	is kind of a carry over question, but I had
12	to get this in. The regional discussion is
13	interesting. We hear a lot about California.
14	So just for a real layman here, could you
15	just tell me what region California is in,
16	and is it hot and dry or is it average?
17	MR. DELAURA: It is undefined yet.
18	MR. ROBERTS: But could it be?
19	MR. DELAURA: It could b part of it
20	could be.
21	MR. ROBERTS: Part of the state?
22	MR. DELAURA: Yes, the coastal

1 portion maybe not. But yes. 2 MR. ROBERTS: I think that is a 3 perfect answer. 4 MR. BROOKMAN: Let's move on then. 5 Michael, 24. 6 MR. CHRISTOPHER: So we wanted to 7 call attention to a couple of these products, one of which is the SDHV systems, and as I've 8 9 noted, the three manufacturers that have 10 filed for exception relief have received that in the form of standards at 11 SEER and 6.8 11 12 HSPF. 13 This was effective January 23rd, `06, and remains effective until DOE issues a 14 15 new standard if any. So in this rulemaking DOE is 16 17 considering keeping SDHV a separate class, and conducting an analysis to determine what 18 19 the most appropriate standard level for the 20 system is. 21 And to that end, DOE is looking for feedback in particular on SDHV systems 22

including the information that is listed here 1 2 in NM 34. 3 MR. BROOKMAN: Yes, Craig. 4 MR. MESSMER: Craig Messmer with 5 Unico. It looks like I'm the only SDHV 6 manufacturer here today. 7 Absolutely we want to continue the 8 separate product class. We do have a 9 separate product test standard, and it is 10 considerably different than the normal 11 products that you have, and we also think 12 that that is probably one of the criteria of 13 having a separate product class of any type is to have a separate test standard. 14 15 DOE did an analysis on SDHV in 16 2002. We have b we thought that was an 17 excellent analysis. Unfortunately it didn't get done in time to be included before the 13 18 SEER rule. We would love to see some kind of 19 20 legislative action that would allow the 21 separate product class to actually have an official minimum standard instead of the 22

1 exception process.

2	That's not anything that DOE can
3	do, we understand that. But we strongly
4	encourage them to do some kind of analysis or
5	whatever is appropriate for this product
6	class, if the standards do change. We
7	certainly would work with the department in
8	establishing what an appropriate standard
9	would be for this class. So we'll submit
10	information on that.
11	MR. BROOKMAN: Thank you.
12	Yes, Harvey.
13	MR. SACHS: ACEEE supported the
14	waiver for these terms under the proviso that
15	a firewall was erected. That firewall was a
16	change in the rating method to 1.25 inches
17	ESP.
18	This effectively limits the
19	possibilities of this class being sold into
20	conventional markets, as a way of þ that and
21	the economics as a way of subverting 13 SEER
22	in the mainstream market.

Page 172 1 We think that is an example of the 2 use of rating methods, and if that is more 3 easily done with the appropriate firewalls as 4 a separate class, we are okay with that. 5 MR. BROOKMAN: Okay. Other 6 comments with respect to SDHV systems, and 7 particularly you see what the department is asking for p market shares, shipments, cost 8 9 and performance data, design specifications. 10 Craig? 11 MR. MESSMER: Since we are the only 12 ones in this room, I would hope that we could 13 get more data than just our company on that. 14 So I would encourage the DOE to contact the 15 other manufacturers the same, since they are not here today. 16 17 MR. BROOKMAN: Okay, Karim, is that 18 data you would gather, or you have gathered? 19 MR. AMRANE: We have really two 20 manufacturers within the p 21 MR. MESSMER: Three. There are 22 three.

Page 173 MR. AMRANE: There are three. 1 So 2 far we can gather the information. 3 MR. MESSMER: That would be great. 4 And the department would greatly appreciate 5 that. Thank you. 6 MR. CHRISTOPHER: To your knowledge 7 are there any other manufacturers of SDHV? MR. AMRANE: I believe that's about 8 9 it. 10 MR. CHRISTOPHER: Okay. So as I mentioned, we would come back to through the 11 12 wall þ 13 MR. LEWIS: Before you proceed. MR. BROOKMAN: Ron Lewis. 14 15 MR. LEWIS: Just looking at the time and the number of pages and where we 16 17 are, we are way way way behind schedule, and 18 if there are ways to be more succinct, it is 19 important that we get your input, and if we 20 want to put in a placeholder and say you've 21 got a concern and express an interest, and 22 promise to submit comments, if there is a way

that we can get through it. Nobody wants to
 be here until midnight tonight, and we want
 to cover all the topics.

So it's just a request that as we move forward, if we would be conscious that we have lost a lot of ground here. It's good time spent, and a lot of good input, but just be conscious of that as we move forward.

9 MR. CHRISTOPHER: A lot of the 10 comments, a lot of the issues raised in this 11 section are really looking for written 12 feedback and data. So it's not necessary to 13 make a comment unless there is a serious 14 concern, you can put that forward.

MR. BROOKMAN: That's good. That'shelpful.

MR. CHRISTOPHER: Okay. So I mentioned we come back to these through-thewall products. These include two main types, the split systems which are condensers that use conventional air handler, and package systems which are similar to package terminal

air conditioners and heat pumps; however the
 air is ducted to the interior space as
 opposed to being a ductless system.

There are currently standards that are the result of an engineering analysis that was conducted several years ago, I don't know the exact year. Split systems currently at 10.9 SEER, 7.1 HSPF, and package are at 10.6 SEER, 7.0 HSPF.

10 And as I mentioned before, this 11 class in the definition there is a provision 12 often referred to as the sunset provision, 13 where this class is no longer in existence as of January 23rd, 2010. And in review of the 14 15 previous rulemakings and the discussion that went on leading up to the final rules of the 16 13 SEER, it's our understanding that these 17 through-the-wall products were originally 18 19 part of the so-called space-constrained 20 products, and therefore the intent is that 21 they become part of the overall space constraining class, when that sunset 22

1 provision is reached.

2	And therefore DOE will assume þ
3	and because that provision expires in 2010,
4	standards would be effective 2016, that's
5	when the analysis assumes the þ it's in our
6	analysis, that's when we assume all the
7	factors. DOE will assume a 12 SEER baseline,
8	7.7 HSPF, or 7.4 HSPF for the through-the-
9	wall systems.
10	So we are looking for feedback on
11	that, and any available data that are for
12	through-the-wall products, or any other
13	space-constrained products. And it's item
14	3.5 here.
15	MR. BROOKMAN: Yes, Jim.
16	MR. CRAWFORD: Jim Crawford, Trane.
17	And I would cite page 26 of the framework
18	document, which makes the point that these
19	products are being used in new construction,
20	and I find it strangely inconsistent that we
21	have various product classes that don't meet
22	the performance of the mainstream products

1 and we are preparing apparently to continue to let that situation exist far into the 2 3 future. 4 I don't understand why we can 5 allow 10s and 12s in a market that requires a 6 minimum of 13, and talk about b and we are 7 going to continue that practice in the future. 8 9 MR. BROOKMAN: Thank you. 10 Please, Tom. 11 MR. ROBERTS: Was there b I was trying b I'm stumped by that too. Is there 12 13 any meat on that bone? Is there some logic I guess it was replacement logic 14 to it? 15 possibly at the beginning. I agree with Tom, that it goes 16 into new construction an awful lot. It's the 17 chosen system because it does dive under the 18 19 rate. 20 MR. BROOKMAN: Okay, thanks for 21 that comment. 22 Kyle.

		Page
1	MR. GILLEY: As a manufacturer of	
2	this equipment that has a very special	
3	application, we will file formal comments on	
4	it.	
5	MR. BROOKMAN: Okay.	
6	Other comments on through-the-wall	
7	air conditioners and heat pumps.	
8	Yes, your name again, please.	
9	MR. MUCCIOLA: Vince Mucciola,	
10	National Comfort Products. I understand the	
11	concern about the new construction, but we	
12	are really turning our backs to existing	
13	openings that would be catastrophic for	
14	people to do replacements, high rises and	
15	what have you, and we are turning our backs	
16	to the public who would have to incur those	
17	costs to try to change openings on the 20th	
18	floor, or look for other ways to provide air	
19	conditioning.	
20	It only leads back to the question	
21	that we had about repairing old systems, that	
22	these old systems that are out there are 4,	

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Page 179 5, 6 SEER units by today's standards, and at 1 2 least it gives them efficiencies that are better than what they had before. 3 4 MR. BROOKMAN: Thank you. 5 MR. CRAWFORD: But that is no 6 reason to permit its use in new construction 7 in the future. MR. MUCCIOLA: We didn't say 8 9 anything about new construction. We said we 10 could have a new construction unit, but we 11 should still continue to look at, what do we 12 do about existing openings out there. 13 MR. CRAWFORD: I refer you to the framework document. 14 MR. BROOKMAN: So those last few 15 comments from Jim Crawford. 16 Okay, final comments on this 17 subject? 18 19 All right. Yes, one more, and 20 your name please for the record. 21 MR. STANGA: My name is Mark Stanga, and actually I am here for Daikin 22

1 Industries. I am here just to b I'm afraid 2 that maybe we've moved a couple of slides past where the last reference to Daikin came 3 4 up, and I wanted to set the record straight 5 about that. Daikin in fact did have a 6 7 distributor selling multi-split modular refrigerant flow systems of some type some 8 9 years ago, but Daikin has not had any 10 equipment for sale in the U.S. that is inverter driven of the kind that as Paul 11 12 Doppel from Mitsubishi mentioned is within 13 the scope of the new AHRI draft standard 14 1230. I just wanted to make that clear. 15 16 MR. BROOKMAN: Thanks for that clarification. 17 18 Okay. 19 MR. CHRISTOPHER: Thank you Doug. 20 Okay, the last type of product that we want 21 to call attention to are the ductless split 22 systems. We have had some comments and
1	discussion on already. These include both
2	mini-splits, the one-to-one, and the multi-
3	splits.

And it's our understanding they still represent just a small bit of the market, the domestic market.

7 And in the final rule for the test procedures that was in August of last year, 8 9 DOE did state that it believes the ductless 10 splits compete primarily with the 11 conventional split systems. Therefore in 12 this rulemaking DOE is considering keeping 13 those as part of the conventional product split system product class. I think we have 14 15 heard some comments already contrary to that, and we appreciate those. 16 17 Again, item 3.6 is asking for any information data that relates to ductless 18 splits. 19 20 MR. BROOKMAN: Yes, Paul.

21 MR. DOPPEL: Question for DOE. 22 What þ you mentioned there that it is a small

Page 182 fraction of the domestic market. At what 1 2 point of market share would we become more 3 significant? What is the threshold, 1 4 percent, 2 percent? 5 MR. BROOKMAN: Lewis. MR. LEWIS: Not only are we not 6 7 prepared to answer that question right now, but I'm not sure that it's the kind of 8 9 question that adds to clarification right 10 now. 11 I think what we want to do is we 12 are putting up a straw man of what our 13 understanding is right now. And if somebody has other data that counters it or says you 14 15 are wrong, to show us different. I don't know that there is a 16 17 definition or an exact percentage or something, but evidently the data we have 18 19 does not show it to be significant in large 20 portions. So if you would have data that 21 would help us to better understand that, the 22 plea will go out several times today, please

1 to help us to see more clearly on issues. 2 So it's a matter of, we are 3 dealing with the data we've got right now, 4 and anybody that has other information that 5 could help us to see more clearly it would be beneficial. 6 7 MR. DOPPEL: Okay, Paul Doppel 8 aqain. We will try to provide what we can 9 within ARI guidelines, and just for further 10 clarification, we would concede that multi-11 splits would compete with central air 12 conditioning systems, but not the mini-13 splits. Mini-splits should be a separate product class, because there again they are 14 used for room air conditioning, and not 15 central air conditioning. 16 MR. BROOKMAN: Additional comments? 17 18 Let's move on to technology assessment. 19 MR. CHRISTOPHER: Okay, so the 20 other part of the market, technology 21 assessment, is the technology assessment. This is where DOE identifies different 22

technologies that can be used to improve the 1 2 efficiency of air conditioners and heat pumps. We have received several comments 3 4 today so far on this. 5 I am not going to list all of But just for example, as you know, 6 these. 7 increased evaporator-condenser coil area; higher efficiency compressors; and 8 9 evaporator-condenser fan motors for example. 10 And general requests for comment, 11 what technologies or design options if any should DOE add to or remove from this list? 12 13 And please provide any rationale. MR. BROOKMAN: Tom Roberts. 14 MR. ROBERTS: Tom Roberts What is 15 the nature of the request? 16 I don't understand it. I mean the standard is really 17 18 a prescriptive standard, and I don't understand the specific reference or the need 19 20 to include the specific technologies. 21 MR. CHRISTOPHER: Well, the 22 standard is actually not a prescriptive

standard.

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MR. ROBERTS: No, I'm sorry, I said 2 3 it the opposite way. In other words, why the 4 specific use of technologies? I don't 5 understand it. MR. CHRISTOPHER: Well, we'll get 6 7 to an engineering analysis, that we are primarily taking an efficiency level 8 9 approach. But we still conduct a screening 10 analysis and a technology assessment just as 11 we do with every rule, and that information 12 will supplement that efficiency level 13 approach as we are looking at how manufacturers b what it means to go from a 13 14 15 SEER to a 14 SEER, and does that involve a particular technology, or are there many 16 17 different ways to go about it. 18 MR. BROOKMAN: So you can see the 19 list, and what do you think? Should there be 20 technology approaches that should be added? Or should some of these items be removed from 21 the list? 22

Bill. 1 MR. McCULLOUGH: I would say one of 2 the things that needs to be considered in 3 4 this, and someone mentioned earlier a view, 5 is this currently on the market, close to the 6 market, or is it a research mode? And I am 7 jumping ahead a bit here to slide #30, because the cost difference of that would be 8 9 strikingly different if it is available now 10 on the market versus something that may 11 become available on the market. Things like 12 fuel cells. Can you do it? Sure, but is it 13 b does it provide a good cost benefit for the Probably not. 14 consumer? So it was both a comment and a 15 question: is there going to be consideration 16 given to what stage that we believe this 17 technology is in? And then will that be 18 considered. 19 20 MR. BROOKMAN: Ron Lewis. 21 MR. LEWIS: One of the analyses 22 that we do is engineering analysis, and there

1 is a screening analysis that is done that 2 looks at the feasibility and availability and 3 other things. There is a tight focus given 4 to the practicality and what is available. 5 It is b we are required, one of the first 6 slides that we showed were the seven factors 7 that Congress requires us to consider. 8 And they require us to start at

9 max tech and work our way down and go through 10 the feasibility of things. They have to be economically justified, I always get the two 12 of them confused, and technologically 13 feasible.

And in going through that, we go out of our way to try to know as much as we can about the universe of the products that are available; what is their state; and then go through the consideration. That then further gets into the lifecycle costs and all that.

21 So there is a lot of detail gone 22 into looking at þ we don't just go on the

promise of something to come, and its potential. We need to get some substance to try to back up what we are considering. 3 4 So it's not to rule it out. We are required to start at max tech, the way max tech has been looked at before is, it's 7 something that is not R&D. It's something that is close to commercialization, or in the stream right now, something that has been validated, and is here and real. It's not conceptual. So the process is pretty robust in 13 all those considerations. MR. BROOKMAN: Ted. MR. POPE: Ted Pope. Particularly assuming that there is ongoing discussions of regional standards, PG&E and I'm sure the other utilities, and energy commission and so forth, in the West, would strongly recommend consideration of evaporatively precooled air conditioning systems.

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MR. BROOKMAN: Thank you.

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Page 189 1 Other candidates for adds or subtracts from this list? 2 Jim Crawford. 3 4 MR. CRAWFORD: What is a dual port 5 expansion valve? 6 MR. CHRISTOPHER: I don't have a 7 technical definition for you. MR. CRAWFORD: Well, unless you can 8 9 define it, I suggest you take it off the 10 list. 11 MR. BROOKMAN: Harvey. 12 MR. SACHS: Harvey Sachs. I would just ask Mr. Lewis for the definition of 13 "here." In terms of these technology 14 options. Does "here" mean available in U.S. 15 products, or available in substantial scale 16 17 of the global market, and particularly it might refer to things like modulated 18 19 compressors that are here niche products, and 20 very high in premium products, and may be more common as a fraction of the market in 21 22 some other countries. So they are listed.

Page 190 1 They are listed, but Mr. Lewis 2 brought up the term "here". 3 MR. LEWIS: I take your challenge 4 to add greater precision to that. I am not 5 going to do it right here. There's the word, 6 here, again. I will take into consideration 7 your sensitivity to that, of what is the geography or the universe it's in. So thank 8 9 you for that question. 10 MR. BROOKMAN: Fred. 11 MR. KELLER: Fred Keller. I would 12 just suggest that DOE adopt the NASA 13 technology readiness levels, and have a level of TRL-7 or greater as a technology being 14 15 included. It's a fairly well documented method of rating technologies for their 16 17 readiness to go to market. MR. BROOKMAN: Thank you. 18 19 MR. LEWIS: Excuse me, is there a 20 place where that is on their website? 21 MR. KELLER: I think you can just 22 Google massive technology readiness levels,

1 and you will get a wealth of information. 2 MR. BROOKMAN: Thank you. So other comments, final comments 3 4 perhaps, on this list, what should stay in, 5 what should be supplemented, what should be 6 removed? 7 MR. CHRISTOPHER: This goes to what 8 Ron was talking about, the screening 9 analysis. So in technology's estimate, we 10 sort of take an all-encompassing view of 11 everything that is out there. And there are 12 these four factors, that really come from the 13 seven factors in APCA that requires you to look at the technological feasibility, 14 15 practicability of manufacturing still in service, any impacts on product utility, or 16 availability to consumers, and impacts on 17 health or safety. 18 19 And so from this all-encompassing list of technologies, if one of these factors 20 21 is not met, then DOE does not look at it any further. 22

1 So typically what that means is 2 that technologies that are not commercially available or not close to commercialization 3 4 are not typically included. 5 So following the screening analysis with this filtered down list of 6 7 technologies, DOE conducts the engineering 8 analysis. And the purpose of the engineering 9 analysis is to construct what we call a cost 10 efficiency or a manufacturer's selling price 11 efficiency curve, which is really just the 12 relationship of price or cost to the SEER or 13 HSPF level, and this relationship is used in the analyses that are conducted downstream, 14 15 including LCC and payback period, manufacturer impact analysis, employment 16 impact analysis. 17 It's a methodology that DOE will 18 19 follow in conducting these curves, these 20 cost-efficiency curves, will be to first 21 establish a baseline, and in this rulemaking that's fairly simple. DOE will use the 22

current standards in each product class. 1 2 From establishing a baseline, do you estimate the cost of these baseline 3 units, and that will be done through a 4 5 reverse engineering approach, also called the 6 tear-down approach, through which you 7 estimate the costs of products in each class 8 at a representative capacity. 9 Once the cost of baseline units is 10 established, you will look at the cost of 11 units above that baseline up to and including 12 the max tech, which runs both to what we said 13 earlier, and then DOE will document the results including supplementing with any data 14 15 or information from any manufacturer catalogs, websites, trade publications, and 16 17 other sources. So there are three items here for 18 19 In general DOE is looking for comment. 20 feedback on the use of an efficiency level

previous rulemaking, to determine the cost-

approach, and this approach is used in the

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1 efficiency relationship.

2 Item 5.3 is looking for feedback 3 on what appropriate representative capacity 4 to use for each product class. And for the 5 conventional split and single package product classes, DOE will typically use a three-time 6 7 unit. But DOE is also looking for 8 9 information on how it could consider the 10 limitations of products that are not at the 11 representative capacity. Those are at much 12 smaller and much larger capacities, and how 13 it can take that into account as well. MR. BROOKMAN: Several specific 14 15 questions. 16 Yes, Lance.

MR. DELAURA: This sort of goes to the point about the time-of-use rates, when you talk about payback and lifecycle, why it would be important if you were considering the regional standard, let's say in California, where there are those types of

		Page	195
1	economics, it will make the economics of		
2	payback look very different for high		
3	efficiency units.		
4	MR. BROOKMAN: Thank you.		
5	Andrew.		
6	MR. DELASKI: Can you back up a		
7	slide, please?		
8	MR. CHRISTOPHER: Sure.		
9	MR. DELASKI: So on your third		
10	chevron there, estimate costs of units above		
11	baseline, could you just elaborate a bit on		
12	how you make those estimates?		
13	MR. CHRISTOPHER: Sure, well some		
14	of that comes from physical tear downs. Some		
15	of that comes from just knowledge of our		
16	experts in determining what it costs to		
17	increase the surface area of a coil for		
18	example. And then some of that comes from		
19	data on specific design options like motors,		
20	and things like that.		
21	MR. DELASKI: My memory is getting		
22	a little bit fuzzy here, but I think in the		

1 last rulemaking we ended up with three sets 2 of costs, costs that were submitted by the 3 manufacturers, that were then published along 4 with costs that were developed by DOE, which 5 led to a lot of confusion. I hope we can avoid that in this particular rulemaking, but 6 7 I wonder how does manufacturing input to your 8 process in how you come up with these costs? 9 MR. CHRISTOPHER: The intent here 10 is to do the cost estimation through DOE and 11 its contractors. 12 MR. BROOKMAN: Karim. 13 MR. AMRANE: Karim Amrane, AHRI. As I stated this morning, I think there is 14 15 evidence that whatever those cost efficiency curves b and it's not just the curve, it's 16 the markup and everything else that comes up 17 with that, ended up underestimating literally 18 19 the cost of a 13 SEER unit today. As Andrew 20 was saying, we provided data last time that 21 was at the end of the process not taken into consideration. 22

But we believe that our data was
much closer to reality than what DOE came up
with.

4 So I guess while not opposing DOE 5 doing what DOE wants to do, in terms of using 6 its own reverse engineering analysis. But we 7 believe you need to step back and look at 8 what you've done, and assess where things 9 need to be improved.

MR. BROOKMAN: Thank you.

11 MR. DELASKI: I support the notion 12 of some sort of retrospective analysis to see 13 how good a job did you do last time in coming 14 up with cost estimates?

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15 The challenge, and I think Jim Crawford did an excellent job early on of 16 saying b talking b stepping us through what 17 had happened to commodity prices over the 18 19 past five years or so. The challenge is 20 going to be to disentangle the impact of the 21 standards from things that are happening on the market independently of the standard. 22

1 But knowing b having some 2 retrospective analysis would be very, very valuable. 3 4 MR. BROOKMAN: Fred. 5 MR. KELLER: I agree with the need for retrospective analysis, and I think it 6 7 should include more than just the cost It should also look at the 8 estimate. 9 technology assumptions that were made in the 10 prior rulemaking. It said higher efficiency 11 compressors were going to be available; et 12 cetera, et cetera. I think you ought to look 13 at all of those and see how many of those actually became reality. 14 15 MR. BROOKMAN: Thank you. 16 Yes, Talbot. MR. GEE: Yes, Talbot Gee with 17 Hardy. From the distributor's standpoint, I 18 19 don't know if this was considered in previous 20 cost evaluations too, but the total system 21 cost, not just the condensing unit, but everything else that is required to achieve 22

Page 199 1 that rating, that performance, which has been 2 a telling point to our members who have tried to fulfill this upgrade. 3 MR. BROOKMAN: Tom. 4 5 MR. ROBERTS: And just real 6 quickly, the last go round seemed like it was 7 a theoretical addition of components. When 8 you can jump to the end and say, really it's all about what the consumer cost difference 9 10 is. 11 And that's the thing where we lost 12 b left out lots of components. The 13 additional freight cost due to larger units, et cetera, et cetera, et cetera. 14 15 And I don't know how you could do that other than to get better interaction 16 from manufacturers' distribution and 17 contractors to give you a landed cost to the 18 19 consumer to use real numbers. Then when we 20 do the next retrospective, I think you would 21 be much closer. 22 MR. BROOKMAN: Thank you.

Bill. 1 2 MR. McCULLOUGH: Bill McCullough. I would also ask that one of the things that 3 4 I'm not sure was considered with the April 5 23rd, 2006 NACA, to consider the cost of the 6 units, as the SEER goes higher, the units get 7 bigger, manufacturers can ship less product on trucks. That therefore drives the cost 8 9 up, and that is a very real cost. 10 MR. BROOKMAN: Thank you. 11 Additional comments: efficiency 12 level approach, representative cooling 13 capacity, and very small and very large capacities, all three. 14 Jim Crawford. 15 16 MR. CRAWFORD: Jim Crawford, item 17 5.3, I think that for some of your products, one capacity may not be adequate to get the 18 19 variabilities that they have to deal with. 20 In particular as you get into the larger 21 residential product there are physical constraints that you deal with that cause 22

1 that to be not well represented. 2 And one example today would be in 3 inverters. A compressor inverter, to drive a 4 five-ton unit, you are in a totally different 5 price curve or cost curve than you would be 6 for say a two or three-ton unit. 7 MR. BROOKMAN: Thank you. 8 Yes, Andrew. 9 MR. DELASKI: I wanted to just 10 briefly come back to this issue of a 11 retrospective. I mean the reason to do a 12 retrospective isn't so much to beat up on 13 somebody one way or the other on how well did we estimate the last time. It's obviously to 14 15 inform doing a better b can we get closer this time in doing the DOE estimates. 16 17 I think it's a mistake though to 18 go back and say, well, did manufacturers 19 build it the way that we thought would be 20 most cost effective? Because the answer is 21 going to be no. No. You had a performance 22 standard, and the manufacturers go about

their business of meeting that performance 1 2 standard, the best that they can, as costeffectively as they can. 3 4 Once they put their engineering 5 expertise to it, it far outdistances the 6 engineering expertise the department could 7 apply to it. So I think you are going to find 8 9 that, no, it wasn't complied with the way DOE 10 thought they might comply with it, at least 11 cost basis. It would have been complied 12 quite differently, maybe differently by 13 different manufacturers, though. I would look at the overall cost 14 15 impact you estimated, and how close was that, as opposed to, did we get each step of the 16 17 process right. 18 MR. BROOKMAN: Yes please, Ron 19 Lewis. 20 MR. LEWIS: I was going to try to 21 sum up this great exchange of inputs here. 22 But it's one thing to say you got it wrong,

1 but to have any sense of pointing to the 2 areas where it was wrong, and what was wrong 3 to your observation--that sense of precision 4 can save us time, and I'm going to stress 5 throughout the day, we are under court order. 6 We've got a delivery date certain that 7 anything that you can give us that gives us 8 clarity versus just a general request to go 9 back and revisit something which just can 10 gobble up a lot of time, and we may not come 11 to the same conclusion you do after that. 12 So if you want to make your point, 13 you want us to see through your perspective, I just recommend highly that in a timely 14 15 basis you give us the most specific input you can, so we take another look at it through 16 that perspective, and understand what your 17 18 concerns are. 19 Just in general to go back and 20 redo it may not serve either of us very well. 21 MR. BROOKMAN: Jim Crawford. 22 MR. CRAWFORD: To elaborate just a

1 little bit on the point that Andrew was 2 making, there are design technologies that 3 are brought up repeatedly by the department, 4 and for which they paid for studies on and 5 off about the last 35 years having to do with 6 air movement. 7 And the conclusions that they come 8 up with are always wrong. They want us to

9 use backward inclined fans, and they want us 10 to use air coil blades on prop fans, and 11 we've been aware of those technologies.

We in our industry are well aware of various fan technologies. Some of us manufacture big backward inclined fans with airfoil blades. We know about those things, and they simply don't work in cost-effective residential product.

18 MR. BROOKMAN: So let's then 19 provide a final opportunity for comment on 20 the questions you see on slide #32 related to 21 the efficiency level approach first, and 22 representative cooling capacity, we have

heard a comment or two on that one. And I 1 2 don't think we've heard much yet on very 3 small versus very large capacities, and very 4 large capacities, and the limitations on 5 those. 6 Paul. 7 MR. DOPPEL: Paul Doppel on the 8 representative cooling capacity. What may be 9 typical for a central air conditioning system 10 would be somewhere in the range of around 11 30,000. However, for ductless mini-splits 12 it's 12,000, so again, that's a need for a 13 possible separate class, a prior class for Because again the typical size is so 14 those. 15 much smaller, and the application is different. 16 17 MR. BROOKMAN: Hung. 18 MR. PHAM: Hung Pham, Emerson Climate. I think in the last round I believe 19 20 DOE probably didn't treat the indoor section 21 more explicitly. 22 I think as we went through the

higher SEER that turned out to be a much 1 2 bigger impact, particularly to the point that 3 Jim brought up there about two-ton, three-4 ton, five-ton indoor size is really a factor 5 I think, may need to be looked at very 6 carefully. 7 MR. BROOKMAN: Yes, thank you. 8 Craig. 9 MR. MESSMER: Craig Messmer. We 10 absolutely have to consider the smallest and 11 the largest. If you look into the directory 12 today, you will find almost no one-ton split-13 system units, heat bumps. If you look at the higher efficiency units, they have again 14 15 missing capacity tonnages. So this has to b you can't just pick the middle size which is 16 17 representative. That's the easiest perhaps. But we are going to be faced with 18 19 the phasing out of certain capacity units if 20 we continue to increase efficiencies without 21 regard to capacity. 22 MR. BROOKMAN: Okay. Thank you.

1 So final comments on this set of 2 slides? I think we have pretty much covered it. 3 4 Then I am going to suggest we take 5 lunch. Before we go to lunch, though, we 6 have an announcement. 7 Ron Lewis. MR. LEWIS: I realize that a lot of 8 9 times that the meeting carries on for longer 10 than some people had planned, and they are 11 trying to make airplanes, et cetera. So 12 rather than wait until the end of the day, we 13 did discuss the options on getting comments in, and we will in a Federal Register notice, 14 announce that we will extend the date from 15 the current date for comments of July 9th to 16 17 the end of the month, July 31st, giving 3-1/218 more weeks. So we appreciate that input. We 19 don't want to put you in an uncomfortable 20 position. 21 We are just asking that if you would, please, our history has been that most 22

people take all the time available, and we
get all the comments in like the last 24
hours.

If you do have the comments early, if you have them done, we are extending the time, but we would appreciate your getting them to us as soon as you can so we can thoroughly put the attention to your comments, before we are just flooded with everybody's.

Thank you.

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MR. BROOKMAN: We are a little bit 12 13 behind schedule, but we will make it up when we return from lunch. It's pretty hard to do 14 lunch in less than an hour here. So it's now 15 12:30. I'm going to suggest that we return 16 17 at 1:30 and resume promptly at that point. This room will be locked, so you 18 19 can leave stuff in it. Please wear your 20 badge here in the building. 21 How many of you, is this your first trip here to Forrestal? A few of you. 22

Page 209 There is a cafeteria, a sandwich kind of a 1 2 place, and some hot food, just one floor 3 below where you got your coffee. Most 4 everybody will be trooping en masse 5 underneath, down one floor and all the way over to the cafeteria on the far side. 6 So 7 follow the crowd, and we will resume at 1:30. 8 (Whereupon at 12:32 p.m. the 9 proceeding in the above-entitled 10 matter went off the record to return on the record at 1:32 p.m.) 11 12 MR. BROOKMAN: Thanks for being We're a little bit 13 back here on time. behind, but none of us are going to be here 14 at seven o'clock this evening. So we'll see 15 if we can stay as focused on the content and 16 17 the comment as possible. As I understand it, Brenda, at the 18 19 break you're going to hand out a list of 20 participants today so that we'll have that 21 available to people as well.

So, Mike, are you ready to go?

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1 Not quite? Close? 2 I appreciate this morning. There 3 was a lot of good exchange, and that's very 4 helpful to the department. So let's keep 5 that up and also stay focused at the same 6 time. 7 MR. CHRISTOPHER: Okay. I'm 8 ready. 9 MR. BROOKMAN: Okay. 10 MR. CHRISTOPHER: All right. So 11 DOE will look at baseline all the way up to mass tech and a number of levels in between. 12 13 These are some of those, not all inclusive, but some of the ones that DOE will look at 14 15 are the Energy Star and the Consortium for Energy Efficiency Levels. These are listed 16 17 here. For example, for split system air 18 19 conditioners, Energy Star which corresponds 20 to CE-01s, 14 SEER, CEE Tier 2, 15 SEER, et 21 cetera. The maximum available that DOE has 22

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1	identified in the three ton size is 21 SEER
2	for split and 16.6 SEER, I should say, for
3	packaged.
4	For heat pumps, the maximum
5	available DOE has identified is 19 and a half
6	SEER and 10.8 HSPF and 16.4 SEER and 9.0 HSPF
7	for packaged.
8	MR. DOPPEL: If I may
9	MR. BROOKMAN: Paul.
10	MR. DOPPEL: Paul Doppel.
11	There are ductless products that
12	are at the 23 SEER level for the heat pump.
13	MR. CHRISTOPHER: Okay. Thank
14	you.
15	MR. BROOKMAN: Thank you.
16	MR. CHRISTOPHER: So as I
17	mentioned, DOE is going to look at the levels
18	that we listed, but there may be other levels
19	analyzed, and DOE is required to look at the
20	maximum technology level. However, that does
21	not necessarily correspond to the maximum
22	available, those four that I just listed.

Page 212 So there's two items for feedback 1 2 here. DOE is looking for input on the efficiency level of the plants to use, and is 3 4 also seeking input on what appropriate mass 5 tech levels are for each product class. And then DOE is also looking for 6 7 what are appropriate levels for SDHV systems 8 and space constrained products. 9 MR. BROOKMAN: Okay. Yes, please. 10 Hung first and then Karim. 11 Hung Pham, Emerson MR. PHAM: Climate. 12 13 One concern I have about the mass tech is that it is a variable speed 14 15 technology. That is a new technology that I'm not sure that we have all looked at the 16 impact of how the power is measured with 17 inversion and all of that. If we're going to 18 go to talk about millions units and like 19 20 that, I think there is probably some need for 21 defining the measurement a little bit better. I'm not talking about the test 22

Page 213 1 procedure. I'm talking about the power 2 measurement. 3 MR. BROOKMAN: Let's let Don follow on, Karim. 4 5 Are you following his stream of 6 comment? 7 MR. BRUNDAGE: I have a separate 8 comment. 9 MR. BROOKMAN: Okay. Karim then. 10 Thanks, Don. 11 MR. AMRANE: Karim Amrane, HRI. 12 I guess the level that you're 13 looking at, for example, you're picking the C level. I mean, why is it that you're picking 14 15 the C level? Is it because they're out 16 there? 17 MR. CHRISTOPHER: They're there. 18 They're out there, yes. 19 MR. AMRANE: I know they are out 20 there, but is there any particular reason? 21 Because we are assuming here, yes, 22 you are assuming that, for example, on heat

1 pumps that whatever the 15 SEER, 8.5 HSPF is 2 something that makes sense, and it might not make sense. 3 4 MR. CHRISTOPHER: It may not be 5 cost effective. It may not work. It might not be cost 6 MR. AMRANE: 7 effective. It might not even make sense. Ι mean, the fact that CE came up with those 8 9 levels doesn't mean that they are really

10 something that you need to look at.

I think specifically heat pumps, you look at the relationship between CR and HSPF like you did, for example, in the previous rulemaking --

15MR. CHRISTOPHER:That is16something that --

17MR. AMRANE: -- to be sure that18there is correspondence between the SEER and19the HSPF.

20 MR. CHRISTOPHER: Okay, and that's 21 something that we intend to do, and we 22 started to look at it.

Page 215 1 MR. BROOKMAN: Mike, so these are 2 products that you know are generally available and they're listed and they're in 3 4 catalogues and they're being sold? 5 MR. CHRISTOPHER: Yeah, and AHRI has a database of products that we've looked 6 7 at that we can use to look at the 8 relationship such as SEER and HSPF. 9 Okay, okay. MR. BROOKMAN: Don. 10 MR. BRUNDAGE: Just to clarify, 11 you say you're going to look at 14, 15, 16 12 and 21 for split systems. You're also 13 looking at the base level of 13, aren't you? MR. CHRISTOPHER: Correct. 14 15 MR. BRUNDAGE: Okay. Because the way this is written implies that 13 isn't 16 17 even on the table on this rulemaking. So that may be something that needs -- to just 18 19 take a base level in this chart may make it 20 clarify things. 21 MR. BROOKMAN: Thank you. Thank 22 you.

1 Lance. 2 MR. DELAURA: Just a quick comment 3 on CE as a CE number. These may not be the 4 right levels, but CE does look at the 5 national perspective when they're setting 6 program standards, and they do look at the 7 availability of equipment, and they certainly don't just look at a particular state. They 8 9 look at what's out there, what customers 10 demand, and what they can provide rebates on. 11 So generally the CE levels are 12 pretty good in terms of a proxy of what sells 13 in the marketplace. MR. BROOKMAN: 14 Thank you. 15 Yes, Jim. 16 MR. CRAWFORD: Jim Crawford, 17 Trane. 18 I'm not sure exactly what point 19 Hung Pham was making, but I think I know, and 20 it's a point that maybe deserves a little bit 21 of elaboration. Some of the technologies that we are going to consider do not draw 22

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sinusoidal currents from sinusoidal way 1 2 forms, and as a consequence they generate lots of harmonics, and those harmonics can be 3 4 managed to a degree, but those harmonics are 5 of concern to the utilities, legitimate concern to the utilities. 6 7 And if you get into a situation 8 where you were to have a very large installed 9 population of those, then those air 10 conditioners would begin to look like a bunch 11 of battery chargers, and the battery charger 12 is a very unpleasant load to the electric 13 utility. Maybe that should be monetized in 14 15 some way also. That's interesting. 16 MR. BROOKMAN: 17 MR. PHAM: Thank you, Jim. 18 MR. BROOKMAN: Yes, please. 19 MR. ARNOLD: Dan Arnold. 20 I just want to make sure that 21 what's included in the analysis is the fact that I think we can all agree in this room 22

1 that it would be preferable to sell a heat 2 pump to a straight air conditioner with 3 electric resistance back-up heat. So the 4 consumer does have a choice when they go to 5 either install a heat pump or replace a heat 6 pump, and that is an air conditioner with 7 electric resistance back-up heat. I know it was discussed at the 8 9 last rulemaking. I'm not sure how to capture 10 it in the analysis, but it should be 11 considered. 12 MR. BROOKMAN: Thank you. Thank 13 you. And what about the second item, 14 15 SDHV and space constrained products? Yes, Craig. 16 17 MR. MESSMER: Craig Messmer of 18 UNICO. 19 All of the SDHV product manufacturers do not make enough for a unit, 20 and we believe that whatever minimum 21 22 efficiency for conventional systems, whatever

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Page 219 condensing units, heat pumps come out of that 1 rule would be used as the baseline for 2 analyzing the SDHV product line. So we'd 3 4 start there and then work up. 5 Certainly having the mass technology relooked at again would be useful, 6 7 but I wouldn't like to see any statements based on that. 8 9 What is suggested MR. BROOKMAN: 10 as mass tech in the table above, does that 11 comport with your view of reality? 12 No, no. There's a MR. MESSMER: 13 separate document that DOE published in 2002 that shows the mass technology for SDHV 14 15 that's not on this chart, but they showed, I believe, 13.4, and that's assuming a 14 SEER 16 nominally sized outdoor unit. 17 Certainly it might be a higher 18 19 maximum today, but we don't believe that SDHV 20 should be required to have two-stage 21 condensing units when the minimal for 22 conventional might be single stage, for

example.

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2 So anyway, we probably would have 3 to have a separate chart for efficiency 4 levels to be looked at, but since it's such a 5 small product class, we would agree they 6 would just start with the baseline and 7 consider that the outdoor unit. MR. BROOKMAN: 8 John. 9 MR. MANDYCK: John Mandyck with 10 Carrier. 11 Is there anything compelling DOE 12 to look at whole numbers only in the analysis 13 for the SEER standard? MR. CHRISTOPHER: The short answer 14 15 is simplicity, but if there's compelling reason to look at fractional SEER, you know, 16 17 we'd like to hear your opinions on that. MR. BROOKMAN: John, do you think 18 there's a benefit in that? 19 20 MR. MANDYCK: I was just curious 21 as to why there were only whole numbers here. 22 MR. BROOKMAN: Yes, please, Fred.

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Page 221 1 MR. KELLER: I would just 2 elaborate. Is it possible that DOE would set a SEER minimum, a fractional number rather 3 4 than a whole number? 5 MR. CHRISTOPHER: It's certainly I think DOE would not be precluded 6 possible. 7 from doing that for any reason. Yes, Talbot. 8 MR. BROOKMAN: 9 MR. GEE: Yes, Talbot Gee. 10 One thing just for consideration is when you're looking at market penetrations 11 12 at these various levels and everything like 13 that into the cost analysis, take into consideration that a lot of these levels are 14 incented in some way, shape or form, that 15 should this become a new minimum, it might be 16 reasonable to assume that those incentives 17 might not any longer exist. 18 19 So I'm not sure exactly how you get to that endpoint, but take into 20 consideration what role current incentives 21 22 might have had in the market adoption at

1 these levels and the effect of there
2 potentially not being any incentives at these
3 levels should a minimum raise any of these
4 points.

5 MR. BROOKMAN: Okay. Lance. 6 MR. DELAURA: Just to go back to 7 the CE point and also from a utility perspective, the levels rise on efficiency 8 9 for many different pieces of equipment, and 10 the utilities and others that provide rebates 11 continually look at this. There's going to be a new baseline established whenever the 12 13 regional standards and the national standard goes into effect, and it will be measured 14 15 against that. So typically what we see with CEE 16

15 IS CE becomes Energy Star at some point. 17 is CE becomes Energy Star at some point. 18 Energy Star moves up. The bar just keeps 19 getting raised, assuming equipment is 20 available that you can rebate, and you just 21 keep raising the bar. It's the cycle of 22 doing this that's been going on for nearly 30

years.

1

2 So I wouldn't be as concerned about the rebates or the incentives to 3 4 customers going away. It will just be at 5 different levels for different pieces of 6 equipment. 7 MR. BROOKMAN: Go ahead. Follow 8 on. 9 Yeah, I guess I should MR. GEE: 10 go farther and say the concern is the 11 percentage of that rebate or that incentive 12 has to grow in alignment with the increased 13 cost of product. So if the minimum SEER goes up, then you can't just take that same level 14 15 of rebate and push it up. And our concern is that those 16 17 funds are finite, and you get to a point of diminishing returns. 18 19 MR. DELAURA: I think that's a 20 good point, but the rebates are typically 21 provided for the energy saved. It's not so 22 much based on what the cost of equipment is.

Page 224 1 It's looking at what the energy savings are. 2 So assuming that savings is there, there will be the analysis that will back 3 4 rebates that will go with that. 5 MR. BROOKMAN: Okay. Jim. 6 MR. CRAWFORD: Jim Crawford. 7 I'm just going to state the 8 obvious. As we go to higher and higher SEERs 9 and HSPFs, we are in a territory of 10 significantly decreasing return. For every 11 point that you make, you get less than you 12 did for the point before, and in the 13 territory that we seem to be headed for, that's a very significant factor. 14 MR. BROOKMAN: Some final comments 15 on this slide? I'm going to keep pressing us 16 17 ahead. Andrew. 18 19 MR. DELASKI: Yeah, I just want to 20 reiterate for this slide the point that I was 21 going to make earlier about the 22 appropriateness of SEER as a regional metric;

1 that these levels appear to be appropriate to 2 evaluate for the base national standard, but the right levels to consider for the regional 3 4 standards that should be considered at the 5 point, I think, could very well be different depending on what that metric is, or looking 6 7 at alternate metrics, and EER brought up earlier today potentially a useful metric for 8 9 determining performance in a hot, dry 10 climate.

11 I mean, let's just be real clear. 12 It doesn't make sense to measure efficiency 13 in Phoenix the same way using the climate of Chicago. So looking at a regional standard 14 15 that puts Phoenix -- and these aren't the right levels. We should be looking at 16 something else that tells us how that air 17 conditioner operates in Phoenix. 18 19 So how would you MR. BROOKMAN:

20 suggest the department modify it?

21 MR. DELASKI: Well, one suggestion 22 that has been brought up earlier today would

Page 226 1 be to look at the EER levels for the hot, dry 2 climate. That was a suggestion that I think should be considered. 3 4 MR. BROOKMAN: Yeah, I figured 5 we'd get some push-back on that. Karim. 6 7 MR. AMRANE: Karim Amrane with 8 HRI. I think we've been there before on 9 10 this EER issue, and the last time we looked 11 at it, DOE decided not to adopt an EER 12 because of concerns that we won't be getting 13 the savings that we would be getting with a SEER rating only. 14 15 So, again, I mean, what you're asking, Andrew, and what others are asking as 16 far as the test procedures is something that 17 18 maybe as a group here we could look at, but 19 we're talking about two different things. We're talking about test procedures versus 20 21 minimum energy efficiency standard, and if we 22 want to link the two together, we need first

1 to address the test procedures, and that on 2 its own will require much more time than 3 three years that DOE has to finish this 4 rulemaking. 5 MR. BROOKMAN: Okay. Yeah, a middle 6 MR. DELASKI: 7 ground, I guess, might be to get EER-95, which is the current test method. You're 8 9 right, Karim. Many of the advocates 10 recommended in the last rulemaking that the 11 department set a standard which would have 12 two parts, a minimum SEER and then a minimum 13 EER that would be a median value of products meeting that SEER to assure performance. 14 15 The department at the time said we could do that, but they choose not to in 16 17 large part -- there were several reasons, but one reason was that SEER and the EER 18 19 correlated guite well after CR-13. 20 But the department also showed 21 that once you got past CR-13, the correlation 22 broke down and that peak performance as you

1 get to the higher and higher temperatures if 2 the SEER goes up it can be a significant 3 concern. So the determination in the last 4 5 rulemaking, I think, doesn't tell where this 6 natural median might go. 7 MR. BROOKMAN: Okay. Jim. MR. CRAWFORD: Jim Crawford. 8 9 And I think that this little bit of discussion highlights the fact that one of 10 11 the things that the department should be 12 doing first is defining what metrics they are 13 authorized to require in this rulemaking, and out of that range, whatever that set of 14 15 metrics is, whether it be one or ten, which metrics they are going to use for the 16 national standard and what metrics they would 17 use for regional standards. Because without 18 that, we're in a game here where nobody knows 19 20 the players or the cast. 21 MR. BROOKMAN: So let me note that 22 the next slide refers to regional standards.

1	Briefly, Don.
2	MR. BRUNDAGE: Yeah, I think to
3	clarify a little, what I would like I realize
4	it's way too early to say what regional
5	standards ought to be, but some sort of legal
6	statements from DOE on what the rules are and
7	how much flexibility they have on regional
8	standards and what the metrics can be because
9	I've set in this room several times before
10	and heard from DOE that SEER is the only
11	thing you can measure air conditioners on.
12	That's the only thing you can use, and we
13	hear different things.
14	And just state plainly and not
15	make you look through court cases on what are
16	the ground rules we're operating under.
17	MR. BROOKMAN: Okay. Thank you.
18	Let's proceed. This is 35.
19	MR. CHRISTOPHER: Okay. I think
20	we're all pretty familiar with the
21	requirement in the EISA 2007's regional
22	standard in Section 306, and it does permit

DOE to establish standards for one or two regions on top of a base national standard. So effectively that would be like three regions.

5 The standards for the additional 6 regions are intended to be more restrictive 7 than the base national standard, and the 8 boundaries that DOE, the Secretary can define 9 are contiguous states only, and Alaska and 10 Hawaii can be included in one of those 11 regions.

12 So Doug, I don't know if you want 13 to flip a few back again, but these questions 14 cover a lot of what we've already talked 15 about so far today.

MR. BROOKMAN: Yeah, exactly, a good portion of this, but maybe people could be more specific about the first question: what would be appropriate regions. Maybe there's a map somewhere or something that you could point us to, Pat.

MR. O'CONNOR:

22

Neal R. Gross and Co., Inc. 202-234-4433

Yeah.

When the

legislation was being considered on the Hill,
 we tried to convince without success to the
 Congress to make sure that the regions do not
 split a metropolitan area. Neither the
 manufacturers nor the ACEEE would agree with
 us on that.

7 But we're very concerned if you 8 split a metropolitan area, for example, and 9 this isn't a good example, but you've got 10 northern Virginia, Washington, D.C., and 11 It's a metropolitan area, actually Maryland. 12 consolidated statistical metropolitan area. 13 For the distribution channel, that whole area product moves back and forth across the 14 15 river. To split that metropolitan area would have significant competitive impact, 16 particularly if there's a price difference 17 between the higher efficiency unit and the 18 national unit. 19 20 This is not a good example. 21 Better examples are other states where you have smaller metropolitan areas, but still 22

significant areas. Several hundred thousand 1 2 people, I think, in the Quad Cities area, Illinois and Iowa, some of the Kansas-3 Missouri areas. 4 5 We would hope that DOE would look 6 very closely at that because that really 7 impacts Item 1-6 because if you split 8 metropolitan area, you are going to have an 9 impact on distribution and distributors and 10 installers in those metropolitan areas. 11 So I hope regardless of the fact that Congress in its wisdom didn't see fit to 12 13 write that into the bill, that you would look at that very carefully. 14 15 MR. BROOKMAN: Thank you. 16 And I'm hoping in this conversation we're about to have about 17 regional standards that we're not going to 18 19 re-trod the ground we already went over this 20 morning. 21 Harvey. 22 MR. SACHS: I very much appreciate

Page 233 1 that comment, and I believe that ACEEE's 2 position was to be supportive of giving the 3 Secretary authority to consolidate a region, 4 a metropolitan area into one of the two 5 contiquous regions that it touched. 6 MR. BROOKMAN: So we want 7 additional comment on how this might get configured by the department. 8 9 Gary. 10 MR. FERNSTROM: Gary Fernstrom. 11 So a point that I hadn't raised 12 previously with respect to California is that 13 we have coastal regions as well as hot, central valley regions, and if the regional 14 15 standards are implemented through the states or if they're enforced through the states, I 16 believe California would want to have the 17 option of requiring the more rigorous 18 standards in the climate zones where they 19 20 make sense and not in the coastal climate 21 zones where perhaps they don't make so much 22 sense.

1	MR. BROOKMAN: Okay. John
2	Mandyck.
3	MR. MANDYCK: This is John
4	Mandyck, Carrier.
5	That question was resolved in the
6	legislation. I mean, that was debated over
7	and over. So that decision has been made.
8	MR. BROOKMAN: And what was the
9	resolution?
10	MR. MANDYCK: That the whole
11	states can be (speaking from an unmiked
12	location.)
13	MR. BROOKMAN: Thank you.
14	Steve Rosenstock.
15	MR. ROSENSTOCK: Steve Rosenstock.
16	Yeah, I guess as a follow-up, it's
17	interesting if you look at the climate mass,
18	and you discussed it earlier, I assume.
19	California, 16 climate zones; so, you know,
20	to have 16 separate regulations within
21	California might not make too much sense
22	unfortunately, and other areas. I know

Page 235 someone was talking about Phoenix. Well, 1 2 Flagstaff, Arizona has a similar climate zone 3 to parts of Idaho. So there's actually other 4 data just to see kind of how the climate 5 zones all kind of go, and that might have an impact on some of your analysis. 6 7 Thanks. MR. BROOKMAN: Charlie. 8 9 MR. McCRUDDEN: Charlie McCrudden, 10 Air Conditioning Contractors. 11 Let me just to sum up what I was 12 going to say, everywhere that Pat said 13 distribution channel or referred to wholesalers or distributors, insert the word 14 "contractors" because we have the exact same 15 concerns, whether it be with a metropolitan 16 area or how this all works. 17 I'm anticipating your next 18 19 question, which is: what is the solution? 20 And I don't know what the solution is in part 21 because I don't know precedent that we can look to that we can sort of model the 22

1 solution after. Maybe there is one that 2 exists on another product. I don't think there's one under NECA. I don't know. 3 And I think that stresses the 4 5 importance of doing this very carefully, because this is precedent setting. 6 7 MR. BROOKMAN: Lance. 8 MR. DELAURA: One potential 9 solution for California would be to have the 10 national standard, whatever it is, as the 11 coastal standard so that you don't have the 12 coastal residents paying the extra cost for a 13 benefit that they wouldn't receive, and then for those hot or more extreme climates have 14 15 that be the regional, if you will, standard. MR. GILLEY: Again, we don't 16 17 believe DOE has the authority. MR. BROOKMAN: Kyle, please, say 18 19 your name for the record. 20 MR. GILLEY: Kyle Gilley. 21 I mean, based on the statute, we 22 don't believe DOE has the authority to do

Page 237 1 that. 2 MR. BROOKMAN: I see John and 3 Karim. Both of you go ahead. 4 MR. AMRANE: Exactly same. 5 MR. BROOKMAN: The same response, 6 John, yes. 7 Andrew, gop ahead. 8 MR. DELASKI: I guess I just 9 wanted to make the point. I agree. The law 10 is pretty clear. It says state boundaries. 11 I think it's pretty clear on that point. 12 The point that I wanted to make 13 though is that when you have a one size fits all national standard, it applies to every 14 climate zone in the United States. Regional 15 standards create the opportunity to have 16 17 greater cost effectiveness for consumers by breaking the U.S. up into having one base 18 national standard and two regional standards. 19 I would submit that boundaries 20 21 should be drawn in a way that maximize cost effective energy savings as required by the 22

statute for the buyers and users of the
 product.

3 MR. BROOKMAN: Craiq. MR. MESSMER: 4 Craig Messmer. 5 I'm going to agree with what he 6 just said sort of. Instead of thinking about 7 climate zones, we should be thinking about hours of operation and how they may closely 8 9 align with one another, but really we're 10 talking about, I think, justifying the cost 11 justification of an air conditioner. So 12 generally the northern regions don't operate 13 an air conditioner as long as they do in the So that maybe should be the way the 14 south. 15 map is drawn rather than by climate. Something to consider. 16 17 MR. BROOKMAN: Pat. MR. O'CONNOR: Pat O'Connor, 18 19 American Supply Association. 20 I hope when DOE looks at drawing these boundaries it takes into account the 21 22 willingness of the state when forced the

Page 239 standard. We have some history with this 1 2 back with water heater standards in the late '80s and '90s, where states had the 3 4 opportunity to set their own standards. 5 The State of New York had a heater standard, a very efficient heater standard, 6 7 but chose not to enforce it. Entities like the State Housing Authority of New York were 8 9 contracting with out of state vendors to 10 provide nonefficient heaters because the 11 state was choosing not to enforce it. 12 We went to the Attorney General of 13 New York and his Secretary of Energy at the time and were not able to compel compliance 14 15 by the State of New York. So I hope as you draw these 16 17 boundaries you consider the willingness of a state to enforce the standard that's applied 18 19 Again, we would guess that there are to it. 20 some states, using New England as an example 21 within the New England region, that will 22 probably just choose not to enforce it

1 because it's against their traditional values 2 to enforce it. So there are benefits to these 3 4 higher efficiency standards. I'll concede 5 that, but those benefits only accrue if there's a true enforcement mechanism, and to 6 7 just rely on the goodwill of consumer as the enforcement entity, I don't think that makes 8 9 sense. 10 So, please, DOE, as you go forward 11 look carefully at establishing some metrics to determine if the states want to 12 13 participate or not. I understand California The State of New York probably does, 14 does. but other states I don't know. 15 16 MR. BROOKMAN: Please say your 17 name. 18 MR. SCHMIDT: Ed Schmidt, 19 Northeast Energy Efficiency Partnerships. 20 I would encourage as we look at 21 regions and as we look at, again, the issue of EER that we also look at wholesale 22

electric markets and think about how many 1 2 hours of peak we're talking about and the 3 impact of a very few number of hours of peak 4 on prices at the retail level both for the 5 consumer as well as the manufacturer and 6 distributor up and down the supply chain. 7 A case in point would be New 8 England where it was 98 degrees Tuesday in 9 Hartford, and there was a lot of humidity and 10 there was a lot of air going. It will be 45 11 degrees tonight. EER in that region and 12 defining that region based on these dynamics 13 is huge. 14 MR. BROOKMAN: Thank you. 15 Joe Mattingly. 16 MR. MATTINGLY: Joe Mattingly, 17 AHRI. We don't want to get into it here. 18 19 It would be a big argument, but we had the 20 issue of enforcement of federal standards by 21 a state in previously litigation with the California Energy Commission, and I think the 22

result of that taken by all the parties, and 1 2 certainly I would maintain that states, in fact, do not have legal authority to enforce 3 federal standards. 4 5 MR. BROOKMAN: I guess you've 6 gotten a rise out of Andrew first and then 7 we'll go to Don. Let's try and make this brief 8 9 here. 10 MR. DELASKI: Yeah, I'll make it real brief. I think we need to look at the 11 12 I think it was negotiated as part of law. 13 the regional standards compromise that states could adopt a regional standard into the 14 building codes, but I'll look at the 15 16 language. That would be 17 MR. BROOKMAN: helpful and supply that language to the 18 19 department. We're not going to put a fine 20 point on legal interpretation here today I don't think. 21 Ted and then I'll come back to 22

1	Don.
2	MR. POPE: Ted Pope.
3	I'm not a lawyer, and I'm not sure
4	PG&E's lawyers have looked at this in detail
5	yet, but I think I want to make sure we're
6	being clear. We agree that the statute says
7	the lines are drawn on the state boundaries,
8	but what I think we're suggesting now is that
9	we'd like DOE to look at when it crafts the
10	rules for state implementation and
11	enforcement or compliance that there's an
12	allowance for states to enforce the regional
13	standard in some places and the base federal
14	standard in others. I think that's what
15	we're looking for and not trying to rewrite
16	the federal law.
17	MR. BROOKMAN: Thank you.
18	Don.
19	MR. BRUNDAGE: I just want to make
20	a point that for the hot, humid climate
21	standard the driving force is not going go be
22	degree days. It's going to be humidity.

What I would like to see out of a hot, humid 1 2 standard is something that is a requirement that better meets the needs of hot, humid 3 4 climates. 5 MR. BROOKMAN: And that would be? 6 MR. BRUNDAGE: Some to find a way 7 to require better humidity control, and maybe 8 it's as simple as going to CR-14, and that by 9 default tends to get variable speed, which 10 helps a lot, but there needs to be some way. 11 The most important criteria to us is to have equipment that works, not 12 13 something that on paper is a little more efficient. 14 15 MR. BROOKMAN: Let me direct your attention, folks, if you would, to Item 1.5 16 and 1.6 on Slide 36. That's why I want to 17 18 make sure I give you a final chance to 19 comment should you have something additional 20 that's not been said already. 21 Tom. 22 MR. ROBERTS: Just briefly, the

micro climate consideration in California is 1 2 duplicated throughout the United States, and you'd have to address micro climates 3 4 everywhere. For example, in Missouri, we 5 have the Ozarks, a very hot, humid environment around a bunch of lakes. 6 There 7 contractors recommend and select different systems, and the consumers generally choose 8 9 humidity control systems. 10 However, the answer to it, I 11 think, is definitely not raising the SEER 12 standard to 14 because no one is going ot get 13 a variable speed, two stage product at 14 because we're all going to reengineer to the 14 15 least common price point at 14. So I think we mistake standards 16 with choice, and the comment about systems in 17 18 Phoenix and systems in Chicago, we don't 19 design those the same way. The contractors 20 don't select them and offer them the same 21 way, and the consumers don't choose them the 22 same way.

So there's already an awful lot of
 choice going on.

3 MR. BROOKMAN: Okay, Bill. Go 4 ahead.

5 MR. McCULLOUGH: One item that I 6 think is going to be very important to this, 7 and it's really your Item 1-6, is who enforces these standards. We have customers 8 9 that regard us -- I mean, I can't imagine 10 that a regional standard with some region, 11 there's not going to be a dealer or a 12 customer or a contractor that's not going to 13 wind up serving both areas.

So who enforces and looks at and 14 15 verifies that that product installed meets that standard? And it becomes very complex 16 even now, today. It's very confusing for 17 18 consumers. With the energy guide label we 19 say the unit is 13, and we install it with 20 variable speed, and it may get 14, or we 21 install a unit that it says for higher SEER 22 it has to be installed with a variable speed,

1 but yet it doesn't.

2 So that's a key part of this, and 3 who owns this, how is it going to be 4 enforced, and what's the penalty for not 5 following the law. 6 MR. BROOKMAN: Okay. So then a 7 final comment from Talbot, but I do want to 8 encourage all of you to make very detailed 9 comments and submit them to the department 10 because we're moving on. 11 Right, and frankly, I MR. GEE: 12 think Harvey just wanted to kind of re-13 address the basic assumption here. We're kind of jumping ahead assuming that this 14 15 region were this standard, this region were that standard. 16 17 I think there's still a question as to just simply raising the standard, be it 18 19 federally or regionally. Does that directly 20 lead to energy savings? I think there's a 21 concern there because we've seen the increase 22 in the repair business of existing systems.

Page 248 1 So the assumption that this is all 2 based on is that if you raise the standard 3 you're automatically going to save energy, 4 and we're not necessarily convinced that's 5 true federally or regionally. 6 MR. BROOKMAN: Okay. Then on to 7 37. 8 MR. CHRISTOPHER: Okay. I'm going 9 to try and go through these a little faster. 10 In engineering analysis, one of 11 the things we do is we look at the 12 manufacturing markup, and this is a way to 13 convert the production cost that the teardown analysis, the reverse engineering 14 15 analysis develops to a manufacturer selling price, and that selling price is what goes 16 17 forward to the down stream analyses where other markups are applied throughout the 18 distribution channels. 19 20 So components of manufacturer 21 production costs are listed and manufacturing 22 markup as well. The way that DOE goes about

developing the markup is looking at perfectly 1 2 available reports, such as SEC filings, 3 company annual reports, and then some private 4 reports. 5 In a minute I'm going to discuss 6 the preliminary manufacturer impact analysis, 7 and during those interviews DOE discussed this information with manufacturers to 8 9 refine, clarify. 10 So DOE is looking for feedback on 11 this planned approach for developing an 12 estimate of the manufacturing markup. 13 MR. BROOKMAN: John Mandyck. MR. MANDYCK: John Mandyck. 14 15 Where is transportation and warehousing accounted for in your analysis? 16 17 MR. CHRISTOPHER: Transportation as in freight? 18 19 MR. MANDYCK: Yes. 20 MR. CHRISTOPHER: That would be 21 part of the distribution chain and the 22 markups analysis. So that's a separate

analysis. This goes up through looking at
 what the --

MR. MANDYCK: But the manufacturer 3 4 has to ship it to a warehouse and then 5 warehouse it, and there's an impact on that 6 from a standard chain. So if you have larger 7 units, we have to put more trucks on the road 8 and get bigger warehousing space before it 9 even leaves our premises to go to the next 10 step in the distribution chain. 11 So I'm wondering where that's 12 factored into your manufacturer impact 13 analysis. MR. CHRISTOPHER: 14 Okay. Well, I can't comment as to whether that's 15 specifically included in the shipments 16 analysis. I don't know if it's going to be 17 addressed later today -- or the markups 18 19 analysis. 20 MR. ROSENQUIST: It's in the 21 manufacturing (speaking from an unmiked location). 22

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1	MR. BROOKMAN: So the comment was		
2	that it's in the manufacturer's markup.		
3	MR. ROSENQUIST: In the production		
4	class.		
5	MR. BROOKMAN: Please say your		
б	name again.		
7	MR. ROSENQUIST: Greg Rosenquist,		
8	Laurence Berkeley.		
9	MR. BROOKMAN: Greg Rosenquist.		
10	Okay. We got it.		
11	MR. MANDYCK: I guess a follow-on		
12	question. Was that included in the 13 SEER		
13	analysis? The impact of the standard on the		
14	transportation warehousing, was that included		
15	in the 13 SEER analysis?		
16	MR. BROOKMAN: I'm not sure we		
17	know the answer to that question right now.		
18	MR. DELASKI: We can get back to		
19	you on that.		
20	MR. BROOKMAN: Okay. Karim.		
21	MR. AMRANE: Karim Amrane, HRI.		
22	It was not included. We made		

1 those comments during the last rulemaking. 2 We disagreed with the markups. Actually we 3 provided you with markups, and in the end we opted not to use our numbers. 4 5 So we had a lot of disagreement 6 with the analysis that DOE did last time on 7 the markups, and I'm hoping that this time you will listen a little bit more to the 8 9 industry. 10 MR. BROOKMAN: Okay. Thank you. 11 Yes, Charlie. 12 And I think if you MR. McCRUDDEN: 13 can extrapolate those comments to beyond manufacturers, to the distributors and to the 14 15 contractors, I've heard stories about my guys who had to buy trucklifts because the higher 16 SEER products were so much bigger. They had 17 to buy different trucks, and also have two 18 19 people to make deliveries. 20 So it's not just going to be on 21 the manufacturers, and I may be jumping ahead 22 of myself on where this analysis is done,
## but that's something that I think is also of 1 2 concern. MR. BROOKMAN: Final comments on 3 4 markups. Tom. 5 MR. ROBERTS: Tom Roberts. 6 Not to jump ahead, but on the 7 manufacturing side now that we have been through this a couple of times, the 8 9 manufacturers have a much better idea as to 10 obsolescence, obsolescence and work in 11 process, obsolescence of finished goods, and 12 transitional costs associated with change, 13 such as loss of economies of scale in certain sizes. 14 I'd just like for those to be 15 16 included since we all know retroactively now about what those are. 17 MR. BROOKMAN: So then the 18 19 department would really like to see that 20 information, you know. Make sure that's there for them. 21 Talbot. 22

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Page 254 1 And does this -- Talbot MR. GEE: Gee -- does this also include the indoor 2 3 components that are required to achieve a 4 certain given SEER level? 5 MR. CHRISTOPHER: Yes. MR. GEE: 6 It does? 7 MR. CHRISTOPHER: Yes. 8 MR. BROOKMAN: So then on to 9 proprietary designs. 10 MR. CHRISTOPHER: So the 11 department may encounter proprietary designs 12 when it's looking at particular technologies 13 that are used to increase efficiency, and it will evaluate those that are available in a 14 15 working prototype. However, proprietary designs that 16 17 are the only path to a given efficiency level will not be considered, and that's to protect 18 manufacturers that don't have access to those 19 20 designs. 21 And any discussions of proprietary designs, of course, confidentiality will be 22

maintained.

1

2	And Item 5A asks are there any
3	proprietary designs that DOE should be aware
4	of and, if so, how should DOE go about
5	acquiring any cost data necessary to evaluate
б	those designs?
7	MR. BROOKMAN: Harvey Sachs.
8	MR. SACHS: I would just like to
9	note the superficial irony of being willing
10	to consider proprietary designs, but not the
11	problem of well established Western tradition
12	of water cooled evaporators.
13	MR. BROOKMAN: Other comments on
14	proprietary designs?
15	Charlie, we didn't get that.
16	Pardon me.
17	MR. SACHS: I said it was on
18	MR. BROOKMAN: Harvey, we didn't
19	get it.
20	MR. SACHS: I'm sorry. I used the
21	word "ironic," not "moronic."
22	(Laughter.)

Page 256 1 MR. BROOKMAN: So I guess we'll 2 let that one pass. Okay. So no comments, 3 additional comments, on proprietary designs. 4 Keep going. 5 MR. CHRISTOPHER: Yeah, thanks. 6 As part of the engineering we also looked at 7 outside regulatory changes, and these are --I guess the big example would be the phase-8 9 out of refrigerants, obviously the big one 10 being R-22. Manufacturers are currently 11 transitioning R-410A. 12 The ban on R-22 is beginning in 13 early 2010, and because this falls before the final rule for this rulemaking, DOE's 14 15 assumption is that manufacturers will be fully transitioned to some new refrigerant by 16 17 the time standards become effective, and the clear alternative to R-22 at this point is R-18 19 410A. 20 DOE understands there are other 21 issues here, such as the reduced availability of R-22 and the price, slightly increases in 22

Page 257 prices. So DOE is looking for feedback on 1 2 central impacts of reduced availability of R-22 and any other outside regulatory changes 3 4 that DOE needs to consider. 5 MR. BROOKMAN: Perhaps we can 6 consider these together. Hung first and then 7 Lance. I think we talk a 8 MR. PHAM: 9 little about R-22, but actually the concern 10 is R-410A that we are trying to transition 11 into. We are barely switching into it, and 12 we already get faced with Lieberman bill and 13 everything trying to phase it out again. So I think those are the big 14 factors that I think DOE needs to consider. 15 Even the supply of the new refrigerant might 16 be in question, let alone R-22. 17 18 MR. BROOKMAN: Thank you. 19 Lance. 20 MR. DELAURA: This isn't a 21 refrigerant comment. It's a time of use 22 rates comment, that we think it would be

Page 258 appropriate in this section to have a comment 1 about that. We'll submit written comments. 2 3 Okay. Thank MR. BROOKMAN: Okay. 4 you. 5 Charlie. 6 MR. McCRUDDEN: Charlie 7 McCrudden. I don't know the answer to this question. So I'm curious. Is this 8 9 considered a major rule? And if so, does the 10 Small Business Administration chime in with 11 the impacts on small businesses and such? 12 MR. BROOKMAN: Mike Kiddo. 13 MR. KIDDO: Yeah, it's my understanding that this would be a 14 significant rule. 15 MR. BROOKMAN: Louder, Mike. 16 17 MR. KIDDO: It's my understanding that this is a significant rulemaking, and 18 19 with respect to the SBA, they may provide 20 some kind of comment, but that would probably be during the NOPR process, not here. 21 22 MR. BROOKMAN: Fred.

Page 259 1 MR. KELLER: Yes, just a comment. 2 The question 5.9 you have in your 3 presentation is not the same as the question 5.9 --4 5 MR. CHRISTOPHER: I understand. MR. KELLER: -- in the framework 6 7 document. MR. CHRISTOPHER: Right, yeah. 8 9 MR. KELLER: Which refers to R-10 410A, not R-22. 11 MR. CHRISTOPHER: Right. 12 MR. ROBERTS: Tom Roberts. 13 It needs to be both. 14 MR. CHRISTOPHER: It should be both. 15 16 MR. ROBERTS: There's a 17 transitional shortfall in the gap on 210 for 22, but definitely it will affect that. 18 MR. BROOKMAN: Thanks for that 19 clarification. So then it should reflect 20 both. 21 22 MR. CHRISTOPHER: Yes.

		Page	260
1	MR. BROOKMAN: Okay. Good.		
2	Thanks. That's helpful.		
3	Tom.		
4	MR. CRAWFORD: Jim Crawford.		
5	MR. BROOKMAN: Jim Crawford.		
6	MR. CRAWFORD: I just wanted to		
7	underscore the fact that in his opening		
8	remarks Dr. Amrane provided some quantitative		
9	information on this availability issue for		
10	the HFC refrigerants. This is by far the		
11	most serious issue facing our industry, and		
12	the corresponding changes the most serious		
13	issue facing our society.		
14	MR. BROOKMAN: Thank you.		
15	Okay. Then let's		
16	MR. CHRISTOPHER: Let's move on.		
17	MR. BROOKMAN: move on.		
18	MR. CHRISTOPHER: So the fourth		
19	analysis that I'm speaking about today is the		
20	manufacturer impact analysis, and the MIA has		
21	three main phases.		
22	The first phase is conducted for		

Page 261 1 the ANOPR and phases two and three are 2 conducted for the NOPR, and in phase one DOE 3 looks at conduct industry profile and 4 conducts preliminary manufacturer impacts or 5 -- sorry -- preliminary MIA interviews. The industry profile is intended 6 7 to evaluate the structure and market characteristics, and this has some overlap 8 9 with the market technology assessment. 10 Produces an industry profile 11 report with aggregated findings and characteristics and identifies any critical 12 13 issues that require special consideration. Examples are types of subgroups of 14 15 manufacturers, access to technology, potential regulatory scenarios. 16 And when DOE conducts 17 MIA interviews, these occur during the 18 19 engineering analysis and include topics such 20 as shipments projections, conversion costs, 21 cumulative regulatory burden, for example. 22 So we don't have any specific

items of feedback on the preliminary MIA, but 1 2 at this point, Doug, do you want to? I'm 3 ready to hand off to Sriram. I don't know if 4 you want to. 5 MR. GILLEY: One clarifying 6 question. 7 MR. BROOKMAN: Kyle, please. MR. GILLEY: This says preliminary 8 9 manufacturer impact analysis, but given that 10 you're also looking at regional standards, it 11 appears to me that this also should include everyone in the distribution channel. 12 Some 13 of these things apply to our friends in the distributor and contracting community, and 14 15 they will incur a burden that needs to be analyzed in this rulemaking. 16 17 MR. BROOKMAN: Do you wish to 18 respond? It's taken into 19 MR. CHRISTOPHER: 20 consideration, but the idea of the analysis 21 is to look at impacts on manufacturers. It's a flawed 22 MR. GILLEY:

1 analysis if you're looking at regional 2 standards and you don't include everything in the distribution channel. 3 4 MR. BROOKMAN: Talbot. 5 MR. GEE: Well, and I actually 6 hadn't brought up because I thought I had 7 heard you say that there was a section -- I haven't peeked ahead -- a section on 8 9 distribution impacts. If that's true, then 10 just make sure that that point is expressly 11 included. 12 Sorry, Talbot. This MR. ROBERTS: 13 is Tom. I did peek ahead, and that point 14 15 is very well taken because the downstream portion is way over simplified, and you need 16 17 to consider the total channel impact, meaning factory driveway to consumer driveway all the 18 19 way through with the whole broad scope of the 20 project to get an accurate --21 MR. BROOKMAN: Since you peeked ahead, where is it about? 22

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		Page	264
1	MR. ROBERTS: It's the		
2	distribution channel discussion.		
3	MR. BROOKMAN: Okay. So let's		
4	make sure we land on that when we get there.		
5	yes, Paul.		
6	MR. DOPPEL: I'd like to recommend		
7	that you add some consideration to		
8	manufacturers who import product. There		
9	should be an impact analysis.		
10	MR. BROOKMAN: So how would you		
11	suggest that gets addressed?		
12	MR. DOPPEL: The time and cost it		
13	takes to bring products in. It's just talked		
14	about shipment and other types of things. So		
15	manufacturers who make overseas and then		
16	bring into the U.S. face some different		
17	issues.		
18	MR. BROOKMAN: Pat.		
19	MR. O'CONNOR: Pat O'Connor.		
20	Could you give us a little bit of		
21	feedback as to what the rationale would be		
22	for not including the entire supply chain in		

Page 265 1 the manufacturer's impact analysis to help us 2 focus our comments on the framework document? 3 MR. CHRISTOPHER: This is a 4 question on the process of the rulemaking, 5 and I don't know. You know, that's not a 6 question that I'm prepared to answer. 7 MR. BROOKMAN: Okay. Then I'm 8 going to suggest we move on to the next 9 slide, and Sriram is our presenter. 10 MR. SOMASUNDARAM: Can you hear me 11 now? 12 The next few steps of the analysis 13 are the energy use analysis, the markups. We will get to that in the next step, and then 14 15 the life cycle costs and payback period 16 analyses are the next three analyses steps. 17 So in the energy use analysis, essentially this is the step where DOE 18 19 determines the annual energy consumed by 20 these equipment, and we then multiply that by 21 the electricity price to get the energy cost 22 or the annual operating cost of the equipment

to feed into the life cycle cost and payback
 period analysis.

And we also are able to capture the energy savings potential of products with increased efficiencies in this step.

For households or for residential 6 7 buildings, we propose to develop residential building samples or household samples from 8 9 RECS data. RECS is the residential energy 10 consumption survey data, and in terms of what 11 the latest available source for RECS data is, 12 it's the 2001 survey data that is available 13 right now.

14 Unfortunately, the 2005 survey 15 data may not be completed and available for 16 our use at least in the ANOPR stages of the 17 rulemaking. So we suspect that given that, 18 we may have to use the RECS 2001 data.

Now, in combination with the RECS
data, we will also be using the efficiency
levels and the cost curves that the
engineering analysis produces to develop the

1 annual energy use for these households. 2 To elaborate this a little 3 further, I thought I'll show you a graphic 4 representation of how we intend to capture 5 the annual energy use from utility bill data 6 that is available as part of the RECS survey. 7 Combine that with the SEER of the stock equipment within the households. 8 9 We then scale the annual energy 10 consumption of the household by the higher 11 SEER levels that the engineering analysis 12 would propose us to develop costs for. So we 13 will have scaled up the unit energy consumption that is REC here for every 14 15 efficiency level per household. And that's the final figure in the 16 17 right extreme box that we will use to assess the energy consumption of the unit, and this 18 19 will be done for each product class, each 20 representative unit of a product class. 21 So at this point I'd like to pause 22 and say DOE seeks comments on this particular

1 methodology to be used. This is essentially 2 the same methodology that was used for 3 previous rulemaking. So there's nothing 4 different about it, except for the date of 5 the RECS data. MR. BROOKMAN: I'll start with 6 7 Lance and then go to Tom. 8 MR. DELAURA: Yeah, just a quick 9 The same comment that I made comment. 10 before, that the time of use rates are really 11 going to be critical to use to do the 12 appropriate calculation not only for 13 California, but if there are any other parts of the country that have time of use to make 14 15 sure that gets plugged into the analysis region specific. 16 17 MR. SOMASUNDARAM: And that will 18 be addressed in a subsequent presentation. 19 MR. BROOKMAN: Thank you. 20 Tom. 21 MR. ROBERTS: Tom Roberts. 22 Am I correct in assuming that

1 you're going to look at savings potential 2 versus 2001 actual data? Savings potential versus 2001 actual Census data? 3 4 MR. SOMASUNDARAM: I'm not sure 5 what you're referring to, Census data. 6 MR. ROBERTS: Well, here's the 7 The point is our products last an point. 8 average of 17 years. We're using seven year 9 old data. So the installed population is 40 10 percent replaced off of the data that we're 11 looking at, referencing. So the potential for savings is a lot less than what it looks 12 13 like if you're using 2001 baseline data. MR. BROOKMAN: Jim. 14 15 MR. SOMASUNDARAM: If I understand 16 your question correctly, what I meant to say 17 way we will use the utility bill data from the 2001 survey that was completed by 18 19 DOE/EIA, but will scale up the consumption 20 for the efficiency levels that we'll be 21 analyzing. So we'll simply be saying that 22

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Page 270 whatever the SEER of the existing unit in the 1 2 household is, we will assume that that has been scaled up to the SEER level that we are 3 4 analyzing and hence what the energy 5 consumption will be for that SEER of that 6 equipment. 7 MR. ROBERTS: But do you 8 understand my point, that since then about 30 9 to 40 percent of those units have been 10 replaced. 11 MR. SOMASUNDARAM: That's correct. 12 MR. ROBERTS: And so the 13 assumption is invalid. Okay. MR. BROOKMAN: Jim. 14 Jim Crawford. 15 MR. CRAWFORD: 16 I notice in the I had a question. 17 framework document you make reference to the 18 RECS, CBECS and the American housing survey. 19 Do you have access to those in a level of 20 detail deeper than what we do? 21 MR. SOMASUNDARAM: The RECS Yes. and CBECS, I believe we do have detailed 22

access to their survey data, but that's the
 one that may not be available for the 2005
 survey data.

4 MR. CRAWFORD: I understand that, 5 but my point is that it seems in the 6 framework document that you make reference to 7 some finer grain data than I think I have 8 access to.

9 MR. SOMASUNDARAM: That's right. 10 MR. CRAWFORD: And that makes it 11 very difficult for those around the table to 12 try to shadow the analysis to see whether or 13 not we concur.

14 MR. BROOKMAN: Harvey.

17

15MR. SACHS: May we return to Slide1647 for just a second?

MR. SOMASUNDARAM:

yes.

MR. SACHS: I'm concerned about the lower text in the left-hand bullet, SEER per household deduced from equipment age, et cetera. And my concern is that the energy used at high temperature bin hours is higher

1 in ways that SEER may not completely reflect. 2 MR. SOMASUNDARAM: That's correct. MR. SACHS: And so I'm curious 3 4 about the details. When you say SEER, are 5 you assuming that equipment operates at high 6 temperatures as estimated by SEER or are you 7 actually looking at the degradation of performance as perhaps reflected by EER? 8 9 MR. SOMASUNDARAM: Neither of the 10 above. We simply deduce the SEER number, the 11 number, the SEER level of that piece of 12 equipment in that household from the RECS survey results, and that will be based on the 13 vintage data that they provide us. 14 15 There is no way of knowing exactly what equipment goes into which household. 16 17 MR. SACHS: But that seems to be assuming that the SEER rating, the back 18 19 computed SEER rating with a piece of 20 equipment in the central valley of California 21 or in Mobile, Alabama is reflected by or related to in some significant way SEER, and 22

1 that goes to the heart of this question of 2 regional standards. MR. BROOKMAN: A follow-on and 3 4 then I'm coming to you next. 5 PARTICIPANT: I think on a volume weighted basis it should all wash out because 6 7 you're going to have --8 MR. SOMASUNDARAM: These are just 9 representative. 10 PARTICIPANT: -- some of those 11 units that are going to be located in St. 12 Louis, which is close to where your national 13 average is. Some are located in Minnesota. Some of them are in a hot, dry climate. 14 15 So I think overall when you're 16 using SEER and then looking at this big 17 population of units, it should wash that. 18 MR. SOMASUNDARAM: yeah, we're 19 only capturing the representative households. 20 I don't want to get into details here, but 21 it's a representative household for around 22 the country. And then we'll do a population

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1 weight for doing a state-by-state calculation 2 of the energy consumption. So it's all on a national level. That's the SEER metric 3 4 that --5 MR. BROOKMAN: Your name, please. 6 MR. WILKINS: I'm Robert Wilkins 7 with Danfoss. 8 I think your approach on the cost 9 analysis is good, assuming that you have all 10 of the factors from the manufacturers through 11 the distribution channel, and these 12 industries can help you with that. 13 However, keep in mind that about one-third of the market for central air 14 15 conditioning is new housing, and this is probably the appropriate analysis for that. 16 Two-thirds of the market approximately is 17 replacement, and that's where I'm missing a 18 19 point because those consumers have a choice, and it creates an elasticity of demand, and 20 21 as we raise the cost of high efficiency 22 equipment to 13, 14, 15, 16, it becomes

1 increasingly attractive to replace that old 2 compressor so that you have a unit at five, 3 six, seven, eight, and we miss a huge 4 opportunity to save energy when that occurs. 5 And I would urge the department to 6 look at that elasticity to see what happens 7 to those consumers in two-thirds of the market that have a choice, that can repair 8 9 that old, inefficient piece of equipment. 10 MR. BROOKMAN: Thank you. 11 Don. 12 MR. BRUNDAGE: A more subtle 13 comment on the energy analysis approach, and I went back and looked at the TSD from 2001 14 15 on this. As best I can tell, and correct me if I'm wrong, the department is assuming that 16 the SEER of a unit is the same from the time 17 it is installed until the time perhaps 17 or 18 19 20 years later that it is scrapped and 20 replaced, and there is no degradation of 21 performance during that time. 22 Is that a correct assumption about

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1 your analysis?

2 MR. SOMASUNDARAM: Yes. There's 3 no way of capturing the degradation 4 information at all. 5 MR. BRUNDAGE: It's not possible 6 to know it accurately, but it does exist, and 7 some sort of realistic assumption, even if 8 it's a one percent per year degradation would 9 be better than the overly optimistic implicit 10 assumption that you have. 11 MR. AMRANE: Karim Amrane, HRI. 12 But, Don, the same is true when 13 they forecast saving the future as well. DOE doesn't assume that the new standard will 14 15 degrade over time. So I think, you know, if you want 16 17 to do it that way, you have to be consistent all the way. 18 19 Oh, I agree. MR. BRUNDAGE: 20 You're overstating the savings by not 21 figuring the degradation. 22 MR. AMRANE: Yes.

Page 277 1 MR. BROOKMAN: Talbot. 2 MR. GEE: I was curious as to what consideration is made for increases in 3 4 building code improvement, envelope 5 improvements that might affect sizing, 6 equipment, obviously energy consumption. 7 Therefore if you're basing it on, say, '01, I mean, there are significant changes that will 8 9 happen between '01 and this rule. 10 MR. SOMASUNDARAM: Going forward, 11 we're going to talk about shipment analysis and efficiency related shipments in a 12 13 subsequent presentation. Greg will address 14 that. 15 But going backward, there is, again, no way of knowing how the building has 16 changed or how the usage has changed. So the 17 only way we're going to account for that is 18 19 by assuming that the SEER level is scaled up 20 to the present analysis levels. 21 MR. BROOKMAN: Charlie. Charlie McCrudden. 22 MR. McCRUDDEN:

Page 278 1 Do the life cycle costs and 2 payback period analysis consider rebates, tax incentives and other things out there 3 4 available to the consumer? 5 MR. SOMASUNDARAM: That's actually 6 captured in a separate analysis at the NOPR 7 stage called the regulatory or nonregulatory 8 approaches to the regulation that we are 9 looking out right now. 10 So options such as incentives and 11 rebates and Energy Star kind of incentive 12 programs, impacts of that are considered in 13 that step. MR. BROOKMAN: Jim. Final 14 15 comments now on the DOE's proposed approach. Jim. 16 MR. CRAWFORD: Jim Crawford. 17 I think that the point that 18 Southern California Gas made is an important 19 point, and I would urge the PNNL staff to 20 21 have the right hand talk to the left hand 22 because the international energy conversation

1 code center of expertise is PNNL, and they 2 perhaps could give you reasonable estimates as to what is happening relative to load 3 reduction on new construction as we go 4 5 forward. You know, we're talking about a 6 7 period here that's the latter half of the next decade. 8 9 MR. SOMASUNDARAM: Absolutely, and 10 some of the same people are involved. 11 MR. BROOKMAN: Don. MR. BRUNDAGE: I would like to see 12 13 just as a sensitivity analysis to run these numbers on what you get out of a new 14 15 building, such as the 2010 IECC, because it seems like there's an awful lot of assumption 16 of what happens when you stick in an old, 17 inefficient building with some of the new 18 changes in building code standards. 19 Some 20 comparison of what it would be for a very 21 well insulated building would be useful. 22 MR. BROOKMAN: Let's press on to

1 rebound effect.

2	MR. SOMASUNDARAM: Yes. This step
3	is referred to in several sections of the
4	framework document if you noticed. The first
5	time it occurs is in the energy use analysis,
6	and essentially this is one of a statement
7	that DOE will consider this effect in the
8	determination of the annual energy
9	consumption.
10	And for those of you who are not
11	familiar with this effect, it essentially
12	occurs when more efficient equipment is used
13	more extensively. In other words, it's run
14	longer or it's operated longer.
15	So the projected energy savings
16	may not be realized in the analysis, and the
17	literature out there that suggests that this
18	rebound effect may vary all the way from zero
19	to 50 percent for space cooling equipment,
20	and therefore, we're asking you for comments
21	that you might have on how DOE might consider
22	the rebound effect in this step of the

analysis.

1

2 MR. BROOKMAN: Steve Rosenstock. 3 MR. ROSENSTOCK: Steve Rosenstock, Edison Electric Institute. 4 5 A lot of utilities have run rebate programs for high efficiency air conditioners 6 7 and heat pumps. I know what I'm going to do. I'm going to ask member companies if they run 8 9 programs have they done some sort of load 10 research analysis for those customers in 11 house every couple of years before, couple of 12 years after, if they've noticed rebound 13 effect after the high efficiency equipment has been installed. 14 15 So hopefully there will be some 16 data for you to look at to do your analysis. 17 MR. BROOKMAN: Thank you. Other comments on rebound effect 18 19 and how that might be anticipated, calculated? 20 21 Jim. 22 MR. CRAWFORD: I'm against the

1 opinion of some of us that that effect is so 2 small it's not worth bothering to calculate. 3 I'm facing putting in a new air conditioner, 4 and I don't think it's going to change my 5 criteria or my wife's criteria for the 6 standard of comfort. I just don't see us 7 changing the thermostat setting because we 8 got a new unit. 9 MR. BROOKMAN: Other comments? 10 Okay. 11 MR. SOMASUNDARAM: There's ten 12 percent of shipments of these equipment, the 13 central air conditioners and heat pumps, that get installed in commercial buildings. 14 15 That's the assumption that was used in the previous rulemaking for this product, that 16 17 ten percent was the figure. Here on this slide we're basically 18 saying that if DOE decides to do a separate 19 20 analysis for those ten percent of their 21 shipments that get installed in commercial 22 buildings, we intend to determine the energy

1 consumption, annual energy consumption, those 2 buildings, using a whole building simulation approach and using a small office building 3 4 prototype that has already been doubled up 5 for some of our other work for DOE and 6 conducting that simulation over different 7 climate zones and using the CVEX data here to characterize the small office building 8 9 prototype and then to determine the annual 10 energy consumption from that, using the 11 simulation approach. 12 So the questions on the next slide 13 are essentially two questions. One is whether the ten percent number is still a 14 15 pretty accurate estimate of the products that go into small commercial buildings, and the 16 second question is what do you all think 17 18 about the approach that we have proposed here 19 for this particular analysis. 20 MR. BROOKMAN: Jim. 21 MR. CRAWFORD: The first observation is that if you're going to start 22

1 delving in this area, you need to separate 2 split systems from packaged goods. I think you're going to find that there's a 3 4 significantly higher percentage of package 5 that will be in the commercial application 6 than you will for split systems. 7 And you may find that there are 8 some classes of equipment that may be single 9 phase that you're not even considering, like 10 the package system with a strip heat or gas heat in the package system. 11 12 MR. BROOKMAN: Thank you. 13 Other comments on these two questions, particularly the ten percent 14 15 estimate? No endorsement, no refute? 16 (No response.) 17 MR. BROOKMAN: Okay, and what about the second item, 6-5? 18 19 MR. CRAWFORD: This gets back to 20 the question I asked earlier about whether or 21 not you're looking at information in greater 22 depth than we have available to us when we go

Page 285 on the EIA Website. It's my use of that 1 2 Website which is fairly frequent. They don't 3 cut it very fine, and almost anything would 4 fit in almost any of their classifications. 5 So if you've got a definition that you'd like us to evaluate, then write the 6 7 definition down and we'll evaluate it. MR. BROOKMAN: 8 Okay. 9 MR. SOMASUNDARAM: Okay. So now 10 we do come to the markups. This is the stage at which the economic information will be 11 12 generated to go into the life cycle cost 13 analysis. So the engineering analysis would give us the manufacturer's selling price. 14 In 15 other words, as the equipment leaves the dock of the manufacturer, that's the price that we 16 have at this stage. 17 And at this step of the analysis 18 19 is when we calculate the individual markups 20 as the equipment goes through the 21 distribution chain, through the

22 wholesaler/distributor to a contractor and

eventually to a consumer. And so we do need to develop these data in order to get the total installed cost of the equipment, which goes into the life cycle cost analysis, and this slide basically says the data sources that we will be using to obtain some of these markups.

8 The next slide, shows the proposed 9 distribution channels that we will be using 10 for this particular analysis. As you can 11 see, the Channel 1 goes through the steps of 12 manufacturer, distributor to a dealer or 13 contractor and eventually to a customer.

14 Channel 2 is slightly different in 15 the sense that the dealer-contractor is 16 replaced by a builder, a spec builder or a 17 custom builder that interfaces with the 18 wholesaler of the equipment and sells it or 19 installs it in the house for the customer to 20 use.

21 The third channel is unique in the 22 sense that it goes directly from the

1 manufacturer to a large retailer, as in Sears 2 or Home Depot, and the customer basically has the store install it in their households, and 3 4 so it's a shorter step to getting to the 5 product. 6 MR. BROOKMAN: Tom. 7 MR. ROBERTS: Yeah, Tom Roberts. 8 I think if you apply the Slide 43 9 to this slide and you really understood how 10 the market works, and if you sort of change 11 Slide 43 from manufacturer impact analysis to market impact analysis, you know that 12 distribution Channel 3 virtually doesn't 13 It's meaningless really, and 14 exist. 15 distribution Channel 2, at least the way you portray it -- now, there's something that 16 looks like that, but it has all the same 17 functions as distribution Channel 1, and 18 19 distribution Channel 2 actually looks kind of like distribution Channel 2, but it really is 20 21 distribution Channel 1 again. 22 So if you did Slide 43 and really

1 understand the way our whole distribution 2 channel works, you'll see that there's just a 3 need for one model for the most part, and it 4 will give you much better, accurate costs. 5 MR. BROOKMAN: Okay. Thank you. 6 Other comments on these 7 distribution channels? Yes, Pat. MR. O'CONNOR: Pat O'Connor. 8 9 I agree with what you said about 10 that there's probably just one distribution 11 channel if you drilled down into it, but that 12 being said, this slide assumes that there's 13 one national supply chain distribution channel because there's a national standard. 14 I think DOE has to look at the 15 geographical distinctions that will be added 16 17 to the distribution channel with regional standards. When I say "geographical," you 18 may have a distributor in Richmond who is 19 distributing product to contractors in a 20 21 number of different states. Why? Because Richmond is on the axis of I-64 and I-95. 22
1 So you really have to factor in 2 the geographical distinctions of regional standards, and in the slide before that when 3 4 you said the DOE will characterize 5 distribution channels, we will certainly 6 submit written comments as to how you should 7 characterize those distribution channels, but we would hope that we would be invited in, 8 9 whoever would like to, would be invited in to 10 sit down with you and talk through the 11 distribution channels because otherwise you 12 may not understand our written comments, and 13 I think a sit-down session would be much more productive because, again, the distribution 14 15 channel is going to be distorted because of the regional standards. 16 17 MR. SOMASUNDARAM: Two responses. One is the characterization of the 18 distribution channels is what would be kind 19 20 of described here as a kind of proposal, 21 proposed picture that DOE has presently. The regional differences comment 22

is very appropriate because that's the last
 question of Item 7-1, in fact. Are there any
 regional differences in the distribution
 channels? And we would very much like to
 hear if there are differences and what they
 are.

7 And going back to the previous 8 comment, I was going ot say that, in fact, we 9 would, if you would look at Item 7-2, we, in 10 fact, ask for specific fractions of shipments 11 that occur through each of the three channels 12 described earlier. In other words, if you 13 think that most of the shipments occurred through Channel 1, then we want you to 14 15 comment on that, and not so much through three or vice versa. 16 17 MR. BROOKMAN: Go ahead, Pat.

18 Keep going.

19 MR. O'CONNOR: Yeah, to follow up 20 on that, I think first we need an agreement 21 between industry and DOE as to what the 22 distribution channel is. If we disagree that

Page 291 there are three different distribution 1 2 channels, then it's kind of senseless for us 3 to try to tel you what percent of product 4 flows in which one of those channels. 5 We have to come to some agreement or agree to disagree before we really can 6 7 help you identify what's coming through the channel. 8 9 MR. BROOKMAN: Okay. Tom. 10 MR. ROBERTS: He said it. 11 MR. BROOKMAN: Okay. Talbot. 12 MR. GEE: Well, and I think I'd 13 expand on our dear distributor colleague across the table that I think this needs to 14 15 be two separate analyses basically. Frankly, there is the one based on the single national 16 standard, and then, frankly, a whole 17 different analysis on a regionalize standard. 18 19 They're really apples and oranges, the type 20 of analysis. 21 And, frankly, I think our opinion looking back, and it's our own fault for not 22

having been engaged more in the front end the 1 last time, but this whole segment has been 2 under characterized in the national 3 discussion. So I don't know if we can even 4 5 get past a national discussion to a regional 6 discussion until this part is done. 7 The second part to it is there's varying models within distribution that, you 8 9 know, I mean, I think there are worthy 10 discussions about central distribution 11 systems versus localized distribution 12 systems, which I mean, that of itself could 13 be a discussion that could go for a very, very long time. 14 15 MR. BROOKMAN: Harvey. 16 MR. SACHS: Two observations. One 17 of them is that this proposal misses two distribution channels that have been 18 mentioned today. One of them is the dealer 19 20 direct model used by at least one of the 21 major manufacturers which rolls up the distribution and manufacturing, and the other 22

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1

is the import model.

2 And given that and the 3 difficulties of this analysis, the question 4 comes whether cutting straight to the chase 5 of looking at a retail price survey, which is a difficult thing because of the way 6 7 different contractors price the markup on the 8 equipment versus the installation, but 9 looking strictly at the retail and perhaps 10 the manufacturer costs, the manufacturer's 11 free on board price and not worrying about 12 the details and what happens within the 13 distribution network might be adequate, might allow us to more easily look at the regional 14 15 questions, and might be more honest. Don't know, but it is a question that I would like 16 17 to raise. 18 MR. BROOKMAN: Tom. 19 I completely MR. ROBERTS: 20 disagree with that. You might as well use 21 \$335. 22 MR. SACHS: It's okay with me.

1 MR. ROBERTS: It's the essence of 2 the whole thing, and until you get into the texture of it, the two models you just 3 4 mentioned, importing, for example, primarily 5 goes through the same distributor-contractor 6 thing, and to my worthy brand competitor who 7 operates the one-step thing, he has the same buildings with the same people driving fork 8 9 lifts. The functionality is all the same. 10 So until you get into a full 11 understanding of the market impact analysis, 12 you don't accurately get a good idea of the 13 cost and so your whole payback analysis is flawed. 14 15 MR. SACHS: Let me just follow that if I might with a question, and it will 16 17 put you on the spot a little bit. MR. ROBERTS: Perfect. 18 19 MR. SACHS: You believe DOE is 20 capable of carrying out the analysis you 21 requested. I couldn't hear that 22 MR. ROBERTS:

1 question.

2 MR. SACHS: You believe that DOE is 3 capable of carrying out the analysis you've requested. 4 5 MR. ROBERTS: Oh, yes, I do, with 6 our help because we would offer -- I can 7 honestly say this -- we look forward to offering or providing a benchmark for you to 8 9 check against, a series of chain -- of 10 distribution markup multipliers that you 11 could check your results from. 12 MR. BROOKMAN: -- in that you can 13 provide the beginnings of those comments in writing, and then DOE certainly will follow 14 15 up with you to get a more complete understand. 16 Yes, Jim. 17 MR. CRAWFORD: I don't know 18 19 whether I'm close to an understanding or not. 20 Certainly I think everybody in the room who 21 is in the industry agrees with the comments that are coming from the distributors here 22

Page 296 about there being basically one model, and it 1 2 would be kind of nice to hear DOE say that 3 they at least think that that might be 4 possible and might be right so that we know 5 where we're going. Because until we know that, as was 6 7 just pointed out, we're looking at a chart 8 that's got three months and there aren't 9 three. 10 MR. BROOKMAN: Yeah. 11 MR. CRAWFORD: And we can spend 12 the rest of the day talking about why there 13 aren't three. MR. BROOKMAN: No need to do that. 14 15 I think we've covered it adequately here. Go ahead, Talbot. 16 17 MR. GEE: Well, and I want to 18 reinforce Pat's statement, too, that I don't 19 think we can accomplish this solely by 20 written comment alone. 21 MR. BROOKMAN: Yeah, right. No, I 22 think that DOE acknowledges that and

appreciates your willingness to sit down with 1 2 them, discuss this, find a way to get enough information for them to have an accurate 3 representation of the primary distribution 4 5 chain. 6 MR. GEE: You can even include the 7 single step guys. 8 MR. BROOKMAN: Yeah, okay. So 9 then I'm going to suggest we move on. 10 MR. SOMASUNDARAM: Okay. One 11 other I forgot to mention was somebody 12 mentioned U.S.' replacement products. That, 13 again, is as we understand a different market. We need to develop markups and 14 distribution channels for not only the new 15 products, but also replacement products. 16 So 17 that's where probably the chain stores come in to Channel 3. 18 19 MR. GILLEY: I didn't understand what you just said. 20 21 MR. SOMASUNDARAM: Where the 22 customer goes to purchase a replacement

Page 298 product, it may be a different way of getting 1 2 their product. 3 MR. GILLEY: That customer still 4 goes through a dealer. 5 PARTICIPANT: Yeah, and a wholesalers. 6 7 MR. GILLEY: That customer may 8 physically go into a retailer outlet, but 9 that dealer still makes a home visit for 10 himself. 11 MR. SOMASUNDARAM: No, they don't. 12 MR. BROOKMAN: Because of the 13 installation requirement and all of that. MR. ROBERTS: But they do. 14 15 MR. GILLEY: Yes, they do. That's 16 the business model. Yes, they do. 17 MR. ROBERTS: There's a misunderstanding there. That serves as the 18 19 place where you can walk in and meet someone 20 who will come out to your place, but there is 21 no place where you can go buy a retail 22 replacement system. I mean, it looks like

Page 299 It would seem that you're going into the 1 it. 2 big orange store and buying an air conditioner, but actually the people come out 3 4 in blue trucks. 5 MR. CRAWFORD: And I know who --6 Jim Crawford -- I know who supplies them. 7 (Laughter.) 8 MR. CRAWFORD: The orange door, 9 and what he's saying is right. 10 MR. BROOKMAN: Okay. John 11 Mandyck, go ahead. 12 MR. MANDYCK: This is John Mandyck 13 from Carrier. I know the outfit that supplies 14 15 Sears, and it's the same model. 16 (Laughter.) 17 MR. BROOKMAN: Okay. I'm glad 18 we've got some people that know some things 19 in this room. That's good. Okay. 20 MR. SOMASUNDARAM: And there were two more questions of use of baseline 21 incremental markups. The difference between 22

1 the two is the baseline markup applies to the 2 baseline efficiency equipment, and to that we 3 apply and to the higher efficiency equipment 4 we apply what's called incremental markup. 5 In other words, what is a cost markup for 6 higher efficiency equipment beyond baseline 7 efficiency? 8 And so any comments, written, 9 pertaining to these questions are welcome. 10 MR. BROOKMAN: Yes, Talbot. 11 I just suggest we may MR. GEE: 12 find that those aren't exactly increment. 13 MR. SOMASUNDARAM: Pardon? 14 MR. GEE: As you go up in 15 efficiency levels. 16 MR. SOMASUNDARAM: Right. They're 17 not incremental. That's right. 18 MR. BROOKMAN: Okay. 19 MR. SOMASUNDARAM: So can I go into life cycle cost and payback period 20 21 analysis? 22 MR. BROOKMAN: Yes.

1 MR. SOMASUNDARAM: Okay. This 2 particular step, again, assesses in a spreadsheet format. We calculate what life 3 4 cycle cost of having the equipment installed 5 as well as operating the equipment over the year is, and we determine this based on 6 7 several inputs and we're going to talk about each of the inputs separately during the 8 9 course of the next five or six slides. 10 But as part of the LCC analysis, 11 we also report a simple payback in the number 12 of years it takes to pay back the investment. 13 The general approach is to use a Monte Carlo type stochastic analysis to consider not only 14 15 variability in the input variables but also to look at different scenarios of the input 16 variables. 17 And for each product class we will 18 19 develop one analysis spreadsheet in the 20 workbook in the Excel format. 21 This particular graphic 22 illustrates the various inputs that go into

1 this particular analysis. This is ultimately 2 the economic impact analysis. Having gone through the process of the engineering and 3 the energy use used by the equipment, we 4 5 ultimately have to determine whether the 6 standard is economically justified, and this 7 is one of the ways of doing that. 8 And as you can see in this 9 graphic, there are inputs all the way from 10 engineering analysis, which gave us the 11 manufacturer's selling price to which the 12 markups are multiplied including sales tax to 13 get to a equivalent price to the customer.

We also develop the installation We also develop the installation cost as an input to the LCC analysis, which we then obtain the total installed cost of the equipment.

From the bottom half of the figure we obtained the energy consumption multiplied by the electricity price to get the annual energy expense or operating expense of the equipment, to which we input the repair and

1 maintenance cost to get the annual operating 2 expense over the year's operation. At that point then the lifetime 3 4 discount rate and future electricity and 5 future electricity price trends or 6 projections of how the electricity prices 7 might change over the analysis period are further inputs to the LCC analysis, which 8 9 then gives us the lifetime operating expense 10 that we have to use for the LCC analysis. 11 And each of the steps, each of the 12 yellow boxes that are on the right side of 13 the diagram we will explain individually. And now I'll call upon Greg 14 15 Rosenquist to talk about electricity price and discount rate assumptions. 16 17 MR. ROSENQUIST: Okay. Thank you, Sriram. 18 19 I'm Greg Rosenquist from Lawrence 20 Berkeley National Laboratory. I'll be 21 talking about two of the inputs to the LCC and payback period analysis, and that's the 22

electricity prices and the discount rates.
 I'll first be starting with the electricity
 prices.

4 They are used to convert the 5 energy consumption data from the energy use 6 analysis into energy costs, and DOE intends 7 to use marginal electricity prices in this analysis to come up with the energy cost 8 9 savings. The marginal price is the price 10 paid by the customer for the last kilowatt 11 hour of electricity purchased.

12 For residential electricity 13 prices, because typically, now, typically they consist only of energy use charges and 14 15 not demand charges or time of use rates. Simpler methods can be used which are 16 sufficiently accurate for developing marginal 17 18 prices. The department proposes two 19 approaches for doing this based upon two 20 different data sources. 21

One is the residential energyconsumption survey, or RECS. It provides

1 utility bill data by households. So you can 2 plot the monthly bill data against monthly 3 consumption data, fit a line to those points, 4 which actually you'd be surprised. On a 5 household basis that linear fit is pretty 6 good, and that slope is the marginal price 7 for that particular household.

8 Again, the problem with it, as 9 Sriram has pointed out earlier, is that all 10 we have is RECS 2001 data at this point, and 11 if the RECS 2005 isn't available, that means 12 if DOE decides to go forward with the RECS 13 data, we'll be dealing with seven year old 14 data.

15 The other option is to use data from the Edison Electric Institute. 16 EEI produces typical summer and winter reports 17 where they produce monthly bills for 18 19 residential, commercial, and industrial 20 customers. And for residential customers, 21 their usage or their bills are provided at three different usage levels for 22

approximately 180 different utilities. 1 2 So a marginal price can be deduced 3 between the two consumption levels. The most 4 recent data is from 2007, and so the benefit 5 of using this data is that it's very recent. Another alternative, of course, is 6 7 to take the 2007 data and to scale up the data from RECS 2001, and the advantage to 8 9 that is we can keep things at the household 10 level. 11 MR. BROOKMAN: You had a comment 12 Steve Rosenstock. now. 13 MR. ROSENSTOCK: Hi. Steve Rosenstock, Edison Electric Institute. 14 15 By all means feel free to use the It's publicly available data, and 16 EEI data. it's published. We do it twice a year, the 17 summer and then the wintertime. So as you go 18 19 through the analysis the data will be updated 20 basically annually in terms of the summer 21 usage. 22 I just wanted to say one caveat

1 though is that the EI data only covers, as 2 far as I know, just the investor owned 3 utility segment of the marketplace. So 4 that's covering, let's say, about 72 percent 5 of the population. Our data does not include 6 that information for municipals and co-ops. 7 So, again, it's covering 70 8 percent. It's not covering 100 percent. The 9 RECS data might be more representative of 100 10 percent of the data that's out there. So my 11 suggestion, use the EI data as you wish as a 12 supplement, not as the only data set I would 13 suggest. 14 Thank you. 15 MR. BROOKMAN: Thank you. thank 16 you very much. 17 Yes, Gary. MR. CRAWFORD: Jim Crawford. 18 19 Two points. One is the when you 20 are considering regional standards, I don't 21 see how you can do that without considering much more fine grained utility cost 22

structure. I mean, the national average
 figure is useless.

The second point that I would make 3 4 is that I think that if DOE, if the right 5 hand would talk to the left hand, EIA 6 publishes costs, I believe, on a monthly 7 So you don't have to go back to 2001. basis. 8 You may have to go back to 2001 for an 9 estimate of use, but you don't have to go 10 back to 2001 for the price. 11 MR. ROSENQUIST: Can I make a comment about that data? That data provides 12 13 sales and usage by utility. So you can deduce an average electricity price from that 14 15 data, but you can't derive a marginal price from it. 16 17 MR. CRAWFORD: Well, you know, back in the dark ages when we did this 18 19 before, there was a massive analysis

undertaken by a noted West Coast laboratory
comparing marginal prices and average prices,
and I seem to recall that after 20 man-years

1 of work, you came to the conclusion that there wasn't a heck of a lot of difference. 2 3 And within the precision of this 4 whole process that we're talking about, the 5 difference is insignificant. 6 MR. BROOKMAN: So Gary. 7 MR. FERNSTROM: Well, when we 8 consider regional standards, it seems to me 9 imperative that we use regional prices, and at least for our utility, PG&E, there is 10 11 quite a bit of difference between the 12 marginal cost and the average cost. This is 13 because of the current tiered rate structure, and for that matter, as Lance has pointed out 14 several times, the time of use cost behind 15 that rate structure and the movement in 16 17 California toward time dependent pricing. I don't think your methodology for 18 19 determining marginal price necessarily works, 20 given our rate structure. 21 MR. DELAURA: Can I just add on 22 something?

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Page 310 1 MR. BROOKMAN: Lance, please do. 2 And if you can suggest the way that this gets 3 fixed, that would be helpful. 4 MR. DELAURA: Just to add onto 5 what Gary said, in California certainly within the time frame of this rulemaking, 6 7 when the rule actually goes into effect, there will be time of use rates for 8 9 customers, and so this notion of the marginal 10 rate for a customer is going to be very 11 different, and the value of energy is going 12 to be treated very differently. 13 And so I guess this all goes back to the regions. If we know there's going to 14 15 be a specific region that's considered, at least, if not adopted, and California happens 16 to be a part of that, then I think what we 17 can do is we can have our rate design people 18 19 and certainly people from the California 20 Energy Commission would be happy to work with 21 you in doing that specific potential regions 22 analysis.

Page 311 1 But I agree with Gary completely 2 that to assume that we're going to take an 3 average of a marginal cost and assume that's 4 reflective of California is absolutely 5 incorrect. 6 MR. ROSENQUIST: Can I make a 7 couple of comments in response? MR. BROOKMAN: Go ahead. Please 8 9 do. 10 MR. ROSENQUIST: First Jim's. 11 We've looked at that EEI data from 2007, and 12 you're exactly right. The average prices 13 actually for every region, every Census division in a large state, with one of the 14 15 large states being California, the average price is greater than the marginal price. 16 17 In California though, the marginal price is significantly greater than the 18 19 average price. So it would be interesting to see, and once the time of use rates do come 20 21 out, whether that current difference that we're seeing in California with the current 22

Page 312 rate structure basically reflects what would 1 2 happen under a TOU rate structure. 3 Yes, please. MR. BROOKMAN: 4 MR. WILKINS: Robert Wilkins with 5 Danfoss. I am a little concerned about 6 7 using the average of 180 or 200 utilities, the marginal cost of 180 or 200 utilities. 8 9 From my own experience a few years ago in the 10 electric utility industry I saw there's a 11 wide variation in rates from low to high. 12 So I would urge you if you look at 13 that average -- I'll just pull a number out, ten cents per kilowatt hour, 12, whatever it 14 is now -- also do a test to see what effect 15 your decision would have on those that were 16 actually paying six cents per kilowatt hour 17 or those that were paying 15 cents per 18 kilowatt hour, and take that into 19 20 consideration as a sensitivity analysis. 21 Now, in fact, the consumer who's 22 paying that higher rate has the ability to

1 He can always buy a more efficient choose. 2 piece of equipment. That consumer that's 3 paying the six cents and might not be able to 4 justify whatever is justifiable at the 5 national average, we don't leave him any So he gets penalized. 6 choice. 7 And I just urge the department to look at that on a sensitivity analysis basis. 8 9 MR. ROSENQUIST: Can I just 10 respond to that real quickly? 11 A point of clarification. On the 12 EI data, again, we can develop a marginal 13 price for each one of those 180 utilities, and so when I said that the EI data shows 14 15 that the average price is greater than the marginal price everywhere except California, 16 what I'm saying is that we've aggregated the 17 prices for all of those utilities in the 18 19 particular regions based upon the number of 20 customers that they serve. So we can reduce that back down to 21 22 the utility level.

1 But I'm not speaking MR. WILKINS: 2 of the average versus the marginal cost. I'm 3 speaking of the average of the average across 4 the 180 utilities, that we're basing the 5 whole thing base on that one number, which is, let's say, to illustrate ten cents per 6 kilowatt hour, but there are millions of 7 Americans that are paying 15 to 18, and there 8 9 are also millions that are paying five and 10 six. 11 MR. BROOKMAN: Steve Rosenstock. MR. WILKINS: And we'll be able to 12 13 test that. 14 MR. BROOKMAN: Okay. Or John. Go 15 ahead, John. I think to some 16 MR. MANDYCK: extent we're losing perspective on this. 17 This is a rule that doesn't go into effect 18 19 until 2016, and when you figure getting 20 enough of the product on the market subject 21 to the new rule to have much impact, you're talking the biggest effect is 2020 and later. 22

1	You can make some broad
2	assumptions based on EIA forecasts of what
3	overall electricity or gas prices will be
4	then, which will be wrong, but we'll at least
5	have some quasi-logical basis on which they
б	came up with it.
7	But the difference between
8	marginal and average price is subject to
9	things like whether you're in a dereg market
10	or a regulated market, the regulatory whims
11	and fads of the day, and we are talking about
12	things that are 14 or 15 years from now.
13	It's also speculative. There's
14	more important parts of the analysis to spend
15	a lot of time on.
16	Thank you.
17	MR. BROOKMAN: Thank you.
18	Final comment, Steve Rosenstock.
19	MR. ROSENSTOCK: Just, again, just
20	in terms of trends, I think, you know, there
21	was talking about time dependent and time of
22	use, and there are several utilities that are

dealing with residential customers I'll say
 dead ahead real time pricing and critical
 peak pricing.

4 What the future rates are going to 5 be, it's anybody's guess when you get right 6 down to it, and I'm not trying to complicate 7 the analysis. I'm just saying that if you're trying to incorporate it, what you have to do 8 9 is incorporate what I call rate chaos 10 because, you know, there are some years 11 during the summer a residential customer 12 might be paying as much as, you know, during 13 a, quote, peak hour, as much as 50 cents a kilowatter hour, but the next summer even if 14 15 it's hotter, they might only be paying ten cents a kilowatt hour because of different 16 supply conditions or they've cut back. 17 And on the other hand, as well, is 18 19 that customers do respond such that that 20 could change the consumption patterns quite 21 dramatically as well. So you know, all of

these things could make it quite a bit more

22

1 difficult, but let's try to use as good data 2 as we have. 3 MR. BROOKMAN: Did you cover the 4 slide on commercial? 5 MR. ROSENQUIST: Not yet. 6 MR. BROOKMAN: Yeah, go ahead, 7 Gary. Go ahead. 8 MR. FERNSTROM: Gary Fernstrom. 9 One quick, last comment. You 10 asked for recommendations. California uses 11 time dependent valuation. That assigns a 12 marginal cost to a kilowatt hour in a 13 particular climate region for every hour of the year, and that would be a good 14 15 methodology for getting at this for California anyway. 16 17 MR. BROOKMAN: thank you. I want to see Slide 62, commercial 18 19 electricity prices, and then I want to ask 20 you after he's reviewed this and you've 21 commented whether you want to take a break or 22 not.

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1	go ahead.
2	MR. ROSENQUIST: Okay. In the
3	event that we do airlines, the commercial
4	applications of central air conditioners and
5	heat pumps, and it seems like we will be,
6	we're going to have to develop commercial
7	electricity prices, and the commercial
8	electricity prices are at least today much
9	more complex than residential prices. They
10	include demand charges, and typically a lot
11	of tariffs these days characterize those
12	demand charges as what I call hours charges,
13	where the energy use charges are a function
14	of the customer's demand.
15	In any case, we can use electric
16	utility tariffs to characterize marginal
17	electricity prices, and all the tariff is is
18	just the sort of rules that utilities use to
19	calculate the customer bills.
20	In coming up with the marginal
21	price, we determined the bills associated at,
22	let's say, a particular baseline level and

then standard level, and then we come up with the marginal cost savings, and those are calculated by taking the marginal energy price and multiplying it by the energy savings, then adding the demand charges times the demand reduction.

7 Now, this relationship between 8 marginal cost savings and marginal energy 9 price, demand price, energy savings and 10 demand savings have all been rolled up into a 11 relationship for two prior DOE standards 12 rulemakings, one on commercial unitary 13 conditioners and one on distribution transformers. 14

And what it does is it rolled up 15 the demand charges and energy charges into 16 what's called an effective marginal price, 17 which is a function of what's called a 18 19 marginal load factor. The marginal load 20 factor, which is a value between zero and 21 one, represents the demand savings from the particular efficiency measure to the average 22

energy savings.

1

2	So for an end use like air
3	conditioning, which is relatively peaky, the
4	value is like between 0.1 to 0.3. In other
5	words, it means that the demand charges
б	represent more of the cost of the bill than
7	the energy charges, and since demand charges
8	are more costly, that means that the relative
9	marginal energy price is much higher or
10	significantly higher than the average
11	electricity price.
12	So this relationship has been
13	built upon 2004 tariffs, and we can go ahead
14	and use this in the central AC analysis,
15	assuming that prices haven't changed
16	significantly since then.
17	MR. BROOKMAN: Steve Rosenstock.
18	MR. ROSENSTOCK: Steve Rosenstock,
19	EEI.
20	I've looked at the analysis, and
21	I've learned to live with it basically. I'm
22	not exactly totally convinced about it, but

one thing I want to say especially for this rulemaking, and again, it was discussed earlier -- forgive me if I was out -- in the last analysis when there's a nice correlation between SEER and EER both going up at the same time, I don't have a problem with it.

7 But now, based on what I've heard and what I've seen where there's a disconnect 8 9 between SEER and EER as you get up the SEER 10 chain above 14, 15, et cetera, there is a 11 possibility, a very high possibility if, 12 depending on your modeling, if you say the 13 EER stays flat or decreases as you increase It's not marginal demand savings. 14 the SEER. 15 It's marginal demand costs to the customer.

You have energy savings. You have energy costs go down, but demand costs go up, and I believe that, again, it depends on how you model and what the availability of the equipment is out there, but in the commercial side it's very easy to get energy savings at demand costs by doing this.

Page 322 1 Thank you. MR. BROOKMAN: Thank you. 2 3 MR. ROSENQUIST: And the 4 commercial electricity prices would reflect 5 that. If there wasn't a reduction in demand 6 from a particular SEER level, again, that 7 would be reflected in the commercial prices. MR. ROSENSTOCK: And if there was 8 9 an increase in demand, would that also be --10 MR. ROSENQUIST: Yes, certainly. 11 MR. ROSENSTOCK: Okay. 12 MR. BROOKMAN: Let me ask the 13 presenters, Wes and Sriram and Greq. We have at least another hour at this pace, right, 14 15 before we're concluded? I'm going to suggest we take a short break, and the coffee shop is 16 17 now closed. However, downstairs on the opposite side of the hall there are a whole 18 bunch of Coke machines, soft drink machines. 19 20 Okay? 21 So let's try just for ten minutes 22 so as best we can, which means we're going to

Page 323 1 resume at about 3:25. 2 (Whereupon, the foregoing matter 3 went off the record at 3:16 p.m. 4 and went back on the record at 5 3:26 p.m.) 6 MR. BROOKMAN: So Greg is back on. 7 Let's stay focused here if we can. 8 Okay. Go. 9 MR. ROSENQUIST: Okay. I'm going 10 to move on to the price forecasts. So after 11 we've developed marginal electricity prices 12 for a specific year, then issue then is how 13 do you forecast that out into the future, and the way DOE plans to do that is by using the 14 Energy Information Administration's annual 15 energy outlook. 16 17 And the AEO has several price projections, but what's typically used in 18 19 these analyses are the reference case and the 20 high and low growth economic cases. 21 So at this point I'll stop and see 22 if you have any comments on using the AEO to

forecast a marginal price out into the
 future.

MR. BROOKMAN: Ted, and what the 3 4 supplements or replacements might be. Ted. 5 MR. POPE: I don't know what year 6 AEO that you're using, but I think it was 7 2007 I looked at last, and I may have looked at it wrong, but it looked to me like that 8 9 forecast showed electricity in real terms not 10 coming back to the cost of 2006 until several -- a decade and a half or two decades in the 11 12 future, and that just struck a lot of us in 13 California as a fairly improbably outlook, given the probability of cap in trade in that 14 15 sort of policy framework in the future. 16 MR. BROOKMAN: Thank you. 17 MR. SACHS: Havey Sachs, ACEEE. Given the historical record of the 18 19 EIA forecasts, I've come to the conclusion 20 that there are others who ought to have their 21 votes weighed as well. There are a number of 22 private sector forecasts. EIA has been
Page 325 consistently low for the last five years or 1 2 so, and we would recommend that the 3 department pay attention to forecasts from 4 other nationally acknowledged organizations. 5 MR. BROOKMAN: Thanks, Harvey. 6 Other comments? Because I'm eager 7 for us to keep moving rapidly. 8 (No response.) 9 MR. BROOKMAN: We're moving ahead 10 then. 11 MR. ROSENQUIST: Okay. The next 12 input is the life cycle cost and payback 13 period analysis that I'll discuss is the discount rate, and discount rates are used to 14 15 convert streams of annual cost savings to a present value. 16 And for residential discount 17 18 rates, the plan is to use a similar approach 19 to what's used for most fairly recent 20 residential product rulemakings that DOE has 21 conducted. It's based upon deriving estimates of the finance cost of purchasing 22

the appliance, and that finance cost is based upon one of two things, either the cost of debt that's used to purchase the appliance or the opportunity cost associated with equity that can be pulled from things like savings accounts and money market funds to purchase the appliance.

8 The Federal Reserve Board's survey 9 of consumer finances has most of the data 10 that allows DOE to calculate, again, the 11 discount rates associated with the equity and 12 debt that's used to purchase these products. 13 Again, assuming we're going to be doing commercial applications on this 14 15 product, we'll have to come up with commercial discount rates, and again, the 16 plan is to use a purchase that had been used 17 in prior DOE rulemakings, specifically to use 18 this technique called the weighted average 19 20 cost of capital, and what that does is 21 determined the equity in debt that firms that purchased this product use to finance the 22

1 purchase of acquiring the particular product. 2 MR. BROOKMAN: So comments on this means of estimating discount rates. Steve 3 4 first. 5 MR. ROSENSTOCK: Steve Rosenstock, 6 EEI. 7 Just for that last part in terms of weighted average cost of capital, for the 8 9 last rulemaking, was that basically just for 10 small businesses that most likely are the 11 same entities that are likely to use this 12 product rather than all small versus 13 including weighting in the Wal-Marts and the large entities that are going to have lower 14 15 costs of capital? 16 MR. ROSENQUIST: The attempt will 17 be made to try to specifically identify the types of firms that buy these products. 18 So 19 they could be small firms, and they could be 20 the large firms that you're talking about like Wal-Mart. 21 22 Granted we're going to try to be

somewhat consistent with what's being done in 1 2 the energy use analysis where there a small 3 office prototype is being used to 4 characterize the type of buildings that are 5 using this product. 6 MR. ROSENSTOCK: I was going to 7 say the Wal-Marts aren't going to use these 8 products. 9 MR. ROSENQUIST: Right. 10 MR. ROSENSTOCK: So if you can 11 discount those out of your calculation. 12 MR. BROOKMAN: Tom and then Jim. 13 Quickly, if you're MR. ROBERTS: going to use the incremental, if you're 14 15 trying to be consistent with your energy use and use incremental, last unit numbers, why 16 17 don't you do that with credit? Why aren't you using the incremental rate to the 18 19 consumer? 20 MR. ROSENQUIST: Simply because we just don't have enough data to indicate 21 what the last type of debt or equity based 22

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1 vehicle that consumers used to purchase the 2 product. So instead we just look at the 3 4 full breadth of debt and equity holdings that 5 they have to figure out a distribution. 6 MR. BROOKMAN: Jim. 7 MR. CRAWFORD: Well, I'm going to 8 have to record this myself so that I can play 9 it back each meeting. The average consumer 10 debt is what, somewhere now around \$8,000, 11 per capita that is carried on short-term That means that we do know the 12 credit? 13 marginal rate. The marginal rate is the price of plastic, and that's what is going to 14 15 be the cost of this whether they buy it on plastic or whether they buy something else on 16 17 plastic and use some other resource for this. The cost for these purchases is the price of 18 19 plastic. 20 MR. BROOKMAN: Ted. 21 MR. POPE: I'm trying to recall.

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Greg do you -- Ted Pope -- do you factor in

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Page 330 default rates on credit cards as a negative 1 2 interest rate when you're calculating credit 3 card interest rates and in your factor? 4 MR. ROSENQUIST: No, we don't. 5 MR. POPE: Then we would recommend you consider that. 6 7 MR. BROOKMAN: Thank you. 8 Are there comments on these 9 methods? And also other comments related to 10 discount rates. 11 (No response.) 12 MR. BROOKMAN: Okay. 13 MR. ROSENQUIST: Okay. I'm going to turn it over now to Sriram to talk about 14 15 the rest of the inputs to the LCC analysis. MR. SOMASUNDARAM: Two other 16 17 inputs to the LCC analysis. The first is the 18 maintenance repair. 19 Now, the two bullets are the 20 assumptions we are proposing to make, and 21 that is DOE believes that routine repair and 22 maintenance costs may increase with more

efficient equipment simply because it may 1 2 incorporate technologies that are not currently available and, therefore, may 3 4 require a more sophisticated maintenance 5 routine to account for that. 6 And the second assumption is that 7 installation costs we assume are not going to change because of higher efficiency 8 9 equipment, and so on what are those 10 assumptions DOE seeks feedback? Whether it 11 is correct to assume that changes in 12 maintenance repair costs are warranted and 13 whether we can assume that the installation costs would remain the same with high 14 15 efficiency equipment. Yes, Karim. 16 MR. BROOKMAN: 17 MR. AMRANE: Karim Amrane, HRI. Well, you seek feedback on that at 18 19 the last rulemaking, and we provided comments 20 to you, and we disagree with this assumption, 21 and you opted to again reject our comments.

22 So we disagree. Those installation costs

Page 332 will increase with bigger units just because 1 2 of the fact that transportation will increase and things like that. 3 4 So, again, we've made those 5 comments, but you've decided last time to 6 ignore them. So hopefully we'll make those 7 comments again and this time you will accept 8 them. 9 MR. BROOKMAN: Thank you. 10 Harvey. 11 Karim, be prepared. MR. SACHS: I'm going to largely agree with you. 12 13 (Laughter.) MR. BROOKMAN: 14 There was a 15 qualifier in that statement. MR. SACHS: For those 16 17 manufacturers who are not adopting micro channel heat exchangers, but on the other 18 19 side of this, it's not clear whether the new 20 technologies will lead to higher maintenance 21 costs when those new technologies look to us, from reading the literature and talking to 22

manufacturers, include a great deal of 1 2 foregone advanced diagnostics and automated diagnostics. That should lead to smarter 3 4 machinery that will be to some extend self-5 correcting and to some extent will notify the 6 maintenance technician what to bring and what 7 to do. So it's not at all clear that you 8 9 might not have it backwards. 10 MR. BROOKMAN: Talbot. 11 MR. GEE: I think just a 12 noticeable difference would probably between 13 the last rulemaking and this one when it comes to maintenance cost could be the 14 15 potential price of refrigerant, especially when you're talking the higher efficiencies 16 that require larger charge sizes and 17 potential scenarios where that refrigerant 18 19 could possibly even exceed the value of the 20 warranty on the product. 21 MR. BROOKMAN: Gary. 22 MR. FERNSTROM: Gary Fernstrom.

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1	So the higher efficiency equipment
2	we've found, anyway, tends to maintain its
3	actual field performance better over a range
4	of charge, and it would seem to me that as
5	the equipment may lose charge, it may
б	continue to perform fairly well, which would
7	tend to reduce the cost of maintenance.
8	So I think there are indicators
9	going both ways with respect to the cost of
10	maintenance.
11	MR. BROOKMAN: Steve Rosenstock.
12	MR. ROSENSTOCK: Steve Rosenstock,
13	EEI.
14	MR. BROOKMAN: Well, wait, wait.
15	Gary, so how do they address that?
16	If it's going both ways, how does the
17	department approach that?
18	MR. FERNSTROM: I don't know that
19	I have a specific recommendation other than
20	we think to the maximum extent possible DOE
21	ought to consider field performance issues in
22	its investigation.

Page 335 MR. BROOKMAN: Does California 1 2 have that data? MR. FERNSTROM: We do have data on 3 John Proctor and others have done 4 that. 5 extensive study on the state of charge and the opportunity associated with maintenance 6 7 in the field. 8 MR. BROOKMAN: So you'll send us 9 that? 10 MR. FERNSTROM: So we'll be 11 submitting it. 12 MR. BROOKMAN: Thank you. 13 Steve. MR. ROSENSTOCK: Steve Rosenstock 14 15 EEI. 16 I know this came up last time, but 17 especially the size issue and space constrained areas, especially in multi-family 18 19 buildings where HVAC equipment and water are 20 shoved in the smallest closet possible. So 21 if you need to retrofit and there's a bigger 22 size, then the installation costs, you know,

there is a dramatic -- you almost have to
 build a new closet.

3 I'm not an expert. We have 4 experts here. Hopefully they can provide 5 information to the department about what about those retrofit cases going from ten to 6 7 13 or 14 in space constrained areas. What kind of impact was it on the installation 8 9 Hopefully they can provide costs? 10 information to DOE because that will be good 11 data. Charlie. 12 MR. BROOKMAN: 13 MR. McCRUDDEN: Yeah, and we do plan on providing that data. 14 15 My question, not a comment, but a 16 On the two bullet points you have question. 17 there, is there a place where you lay out your assumptions or describe your assumptions 18 19 so that they can be commented on? 20 MR. SOMASUNDARAM: We will when we 21 present the ANOPR analysis. 22 MR. McCRUDDEN: That will layout

Page 337 1 the assumptions that you're making already? 2 MR. SOMASUNDARAM: The assumptions 3 and the specific figures, yeah. 4 MR. BROOKMAN: Thank you. 5 Please, Tom. MR. ROBERTS: Quick question about 6 7 do you have something in your model for --MR. BROOKMAN: This is Tom 8 9 speaking. 10 MR. ROBERTS: I'm sorry. Tom 11 Roberts. 12 Do you have anything in the model 13 that takes into account the degradation for noncompliant installations, like, for 14 15 example, now we have a lot. We know they're units, 13 SEER units being installed on 16 17 improperly matched evaporators, especially to multi-family, to your point, and I don't know 18 19 how to get data on it, but does the model 20 have a C sub D for noncompliant installations? 21 MR. SOMASUNDARAM: I don't believe 22

Page 338 1 so. 2 MR. ROBERTS: Well, it really 3 should because it's a larger number than a 4 lot of the other things we've discussed. 5 MR. BROOKMAN: Could you estimate 6 that for the department? 7 MR. ROBERTS: I would. MR. BROOKMAN: That would be 8 9 helpful. 10 MR. ROBERTS: It will be 11 anecdotal, but I'd be happy to. 12 MR. BROOKMAN: That would be okay. 13 That's a start. Bill. 14 15 MR. McCULLOUGH: Bill McCullough. On the first comment about the 16 17 repairs is DOE assumes that the maintenance repair and installation costs will be 18 19 negligible for more efficient product. What 20 we have seen is higher efficiency product, 21 because of the price of it, is driving more 22 repairs of older product, and also higher

efficiency product, as we've mentioned here many times before, is in many cases much larger and clogged coils have a bigger effect than they would have in the past because it's so important for that difference.

And the other one, somebody 6 7 mentioned micro channel. While that may or may not have made smaller units in R-22, the 8 9 court is still in session about smaller unit 10 for R-410A, and then if you do have a leak in 11 that, then you're replacing probably the 12 entire coil, which gets back to the first 13 item that the replacement costs would be 14 driven up. 15 MR. BROOKMAN: Jim. Jim Crawford. 16 MR. CRAWFORD: 17 Relative to maintenance costs, part of the analysis will certainly get into 18 the range where modulation will be used. 19 20 We'll be using ECMs on blowers, fans, and

22 department to go out and get some replacement

21

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possibly on compressors, and I would urge the

Page 340 part costs of induction motors versus ECM 1 2 motors, and the conventional contact for mechanical control board versus the 3 4 electronic control board, and I don't think 5 that you will come to the conclusion that you 6 can service those at the same cost as you can 7 an electromechanical system. Thank you. 8 MR. BROOKMAN: 9 Equipment lifetime. 10 MR. SOMASUNDARAM: Yes. The last 11 input of the LCC analysis is the equipment 12 lifetime assumption, and we assume that the 13 lifetime will be the same for both baseline and higher efficiency units. 14 15 In the last rulemaking, DOE used an average lifetime of 18.4 years as the 16 17 assumption, and DOE seeks comments on this particular input factor. 18 19 Yes, go ahead. MR. BROOKMAN: I think the 18.4 20 MR. CRAWFORD: 21 years is not supportable, and I think that 22 the Census data and RECS support something

more like about 11 or 12 years, and I think 1 2 that the model that you're using, as I recall last time you used a model that kind of said 3 they all survived until about 18 years, and 4 5 then died that way. That's not the way things happen. 6 7 You have an exponential loss with a constant hazard function. So by the time 8 9 that you are out to the average life, you 10 have lost just under two-thirds of the 11 population. 12 MR. BROOKMAN: Karim. 13 Karim Amrane, HRI. MR. AMRANE: And, again, this question, we 14 15 submitted comments last time, and we pointed out that others like ASHRAE, for example, 16 17 goes for 15 years, something like that, and 18 you rejected our comments, too. 19 So we will be submitting comments again and hopefully this time you will take 20 21 our comments. 22 MR. BROOKMAN: Looking at this, at

Page 342 1 equipment that is at higher levels of 2 efficiency, that doesn't change any of the 3 assumptions and the way it plays out. 4 Yes. 5 MR. MESSMER: Craig Messmer. 6 I think when you do the equipment 7 lifetime you should also put a factor in there for equipment warranty. It has been my 8 9 observation that some of these repairs are so 10 expensive and the warranty doesn't justify 11 doing it. So people would rather just 12 replace the whole unit. So I'm not sure if 13 the assumption that we have one compressor change-out in a lifetime is really an 14 15 accurate way to look at it. 16 MR. BROOKMAN: Okay. Robert. MR. WILKINS: 17 I presume you're 18 getting to the end of the section that had to 19 do with the analysis and the approach. 20 MR. BROOKMAN: Yes. 21 MR. WILKINS: And just one further 22 comment going back to your flow chart, I

think this flow chart is on target for 1 2 selecting the possibilities when the unit is going to be replaced, especially for new 3 4 housing. But keep in mind the homeowner has 5 another choice as we've learned in the past 6 two or three years in the replacement market, 7 which is two-thirds of the market, and that 8 is to replace that compressor and not put a 9 new until in there. 10 So I'd urge you to look at not 11 only what's the best option when you replace 12 it, but trade that off against the consumer 13 repairing that old, outdated piece of equipment. 14 15 MR. BROOKMAN: Harvey Sachs. 16 MR. SACHS: Thank you. Harvey Sachs. 17 18 I'm awe of the opportunity to sit 19 here with some of the best technical people in the country from industry, as well as the 20 21 department's analysts. What I have heard today, and particularly in this discussion of 22

life cycle analysis is an enormous amount of
 anecdote and opinion, and I submit that the
 entire life cycle analysis approach is two
 steel beams floating on guicksand.

5 The department has shown a 6 tendency to use the life cycle analysis as 7 the driving agent to make its determination when there's incredible uncertainty in every 8 9 one of the assumptions we've made, from 10 service life to the trajectory of electricity 11 Life cycle analysis is the servant. prices. It's not the master, and I believe the 12 13 department has an obligation, and this really builds on something that Jim Crawford said, 14 to let us know what window is considered to 15 be equal life cycle costs. 16

We saw in a recent proceeding life cycle cost differences much less than a half percent, \$13 on a huge number for all of the options considered. This is meaningless, and I think the department owes itself and the industry some statement on how life cycle

Page 345 analysis is used because it's getting in our 1 way when we use trivial differences to make 2 3 important judgments, trivial and unsubstantiatable differences that are 4 5 compounded through the analysis to draw 6 important legal conclusions. 7 Thank you. I think Jim would have said the 8 9 same thing, but with different worlds. No? 10 MR. BROOKMAN: No need for you to 11 say the same thing. 12 MR. CRAWFORD: As long as you 13 weren't referring to my stuff as the anecdotal. 14 15 (Laughter.) 16 MR. BROOKMAN: Okay. So we got 17 good comment on equipment lifetime. Are we 18 ready to move on? Here we go. 19 MR. SOMASUNDARAM: So the last and 20 final step is shipments and NIA analysis that 21 Greg will talk about. 22 MR. ROSENQUIST: Okay. We come to

1 the last two components of the ANOPR 2 analyses, which are, again, the shipment 3 analysis and the national impact analysis. 4 Both outputs from the life cycle 5 cost analysis and life cycle cost and payback 6 period analysis and the shipment analysis fed 7 into the national impact analysis. First, let's start with the 8 9 shipments analysis. Its purpose is simply. 10 It's basically to quantify the impact of 11 standards on product shipments. The method 12 relies on developing a shipments model, which 13 relies on various data sources, but most importantly historical shipments data. 14 15 The model only considers shipments of the covered products, that is, of central 16 air conditioners and heat pumps, and again, 17 this shipment model that's developed is 18 19 intended to forecast shipments over the forecast period from the assumed effective 20 21 date, 2016, out 30 years to 2046. 22 The first part of the shipment

analysis is to develop what's called a base case shipments forecast, and this is the shipments forecast when no new standards are adopted.

5 And for residential shipments, we characterize two markets primarily for where 6 7 shipments are going to, product sales to new construction and product sales to units that 8 9 have failed and need replacement. DOE will 10 use this general approach to characterize the 11 shipments to split systems into single packet 12 systems.

13 For new construction systems, the basic method is to take housing starts and 14 15 multiply it by the saturation rate or product ownership rates in that new housing. 16 The forecasts of new housing come from the Annual 17 Energy Outlook, while the saturation rates 18 19 come from the U.S. Census Bureau in a report 20 called "Characteristics of New Housing." 21 Both sets of data are at the national level and also disaggregated down to 22

the census region level. Census regions are the four main regions of the U.S., the northeast, the midwest, the south and the west, and so at least for new construction we can characterize shipments possibly down to the regional level, that census regional level.

For replacement shipments the 8 9 methodology is to use a retirement function 10 that's built on the lifetime estimates in the LCC and payback period analysis and apply 11 that to an existing stock of central air 12 13 conditioners and heat pumps, and that existing stock is built up from historical 14 15 shipments data. So we will be asking stakeholders, particularly industry, for that 16 historical shipments data. 17

And since we're intending to do this at the product class level, we're hoping to receive that shipments data at the product class level. And because we also may need to do it at the census region level, we'll also

be asking for that data at the census region
 level as well.

3 The next step then is to finally 4 calibrate the model, and we'll be looking at the historical forecasts or what I like to 5 call back casts to the actually historical 6 7 shipments data, and any discrepancy will be attributed to existing households that don't 8 9 already own the appliance. And so we will be looking at trying to develop an historical 10 11 adoption rate in these households, and then 12 once we do, we'll carry that forward to 13 forecast future shipments.

Now, one thing that isn't in this 14 15 list that's come up in the course of today's discussions is the issue of how standards 16 will impact replacements versus repairs, and 17 18 again, just to maybe hold off on any 19 questions you have on that topic. I'11 20 hopefully get to that on the next slide. 21 MR. BROOKMAN: Jim. Jim Crawford. 22 MR. CRAWFORD:

1 You mentioned the use of census 2 regions, and that shows up several times in 3 the framework document. The census regions 4 are nowhere near fine grained enough if 5 you're going to start trying to establish 6 regions along state boundaries. 7 As you said, there are four census There are 50 states, and there's no 8 regions. 9 reason a priori to assume that the census 10 boundaries are appropriate boundaries for 11 regions for HVAC. 12 MR. BROOKMAN: Let's let him 13 finish and then we'll take every comment following the next slide. 14 15 MR. ROSENQUIST: This continues the discussion of base case shipments 16 17 forecast, but again, for the commercial sector, and again, this is under the 18 19 assumption that the analysis will have to be 20 done for commercial applications of central 21 air conditioners and heat pumps. The methodology for calculating 22

1 commercial shipments is basically identical 2 to that for residential, and I don't know if I needed to go through each one of these 3 bullets, but it's basically, again, to 4 5 characterize the shipments, the new construction, determine the shipments as 6 7 replacements to failed units, and then also characterize the shipments to existing 8 9 commercial buildings that don't already have 10 the appliance. 11 Finally, we come to the other 12 product classes, which aren't the primary 13 ones, which aren't the split systems and single package systems, but the small duct, 14 15 high velocity systems in the space constrained units. And here the plan is not 16 to use a detailed shipments model that I just 17 described, but just extrapolate off 18 19 historical trends because the assumption here 20 is that the shipments are not that great. 21 And of course, to be able to do 22 that, we're going to need that historical

1 shipments data from stakeholders. 2 So at this point there's a request 3 for comment or actually a request for data 4 from stakeholders for historical shipments 5 data down to the product class level, and 6 also down to the census region level, and if 7 needed, to go down to even a finer level of disaggregation, possibly to the state level. 8 9 MR. BROOKMAN: So has AHRI 10 supplied that information previously? And 11 can you do it again this time? Karim. 12 13 MR. AMRANE: Karim Amrane, HRI. I believe we did supply some of 14 15 the information in the past and probably we will. Again, we'll have to consult with the 16 membership first, but I don't see why we 17 shouldn't. 18 19 No, you're asking much more 20 information than you used to in the past. As 21 far as the product classes, duct through the 22 wall, and small duct, high velocity system,

Page 353 I'm not sure that we have historical data. 1 2 They were lumped within the rest before. So I don't know. It's something we'll have to 3 4 look into and see whether we can do it. 5 Now, the regional data, it's also something we'll have to see what we can do 6 7 here. 8 MR. BROOKMAN: Okay. Yes, please, 9 Talbot. I would also add --10 MR. GEE: 11 Talbot Gee -- I'd add another level of what 12 we're going to have to help supply, and not 13 to speak for the contractors, but contractors, too, because shipments simply 14 15 out of manufacturer docks even to where they 16 get shipped to still won't answer your question. You're going to need to know 17 18 final, if you can, where units are going, and 19 then also have some account, frankly, for the 20 stuff that gets made and purchased, but doesn't actually ever end up getting 21 22 installed, too.

Page 354 1 MR. BROOKMAN: Paul. 2 MR. DOPPEL: Paul Doppel. We're 3 going to try to get some information on the 4 ductless products so that we can show that 5 we're a little bit bigger than a small fraction of the market. 6 7 MR. BROOKMAN: Good. Thank you. 8 That's helpful. 9 Okay. Additional comments on 10 this, on the shipments forecast and the 11 approach? 12 (No response.) 13 MR. ROSENQUIST: Okay. I'll go on to the next slide, which is after we've 14 15 developed our base case shipments forecast, we have to do it now for the standard case 16 17 shipments forecast, and that's the case where energy efficiency standards are imposed on 18 19 the product. 20 The exact same data is used to 21 develop the standards case shipments 22 forecast. With the exception of one

important exception, here we try to take into
account the effect that standards have on
purchase price and also on operating costs to
figure out the sensitivity of sales, of
purchases of this equipment based upon what
the standards do to purchase price and what
they do to the operating cost.

8 And typically what we try to do is 9 we search the literature to see whether or 10 not there's any information on the 11 sensitivity to purchase price and operating 12 costs, but many times it's very difficult to 13 get that information. There's not a lot of 14 data out there.

15 So DOE may for this rulemaking 16 forecast specific shipments drops associated 17 with specific standard levels, and of course, 18 we'll be looking for input from stakeholders 19 on that possible approach.

20 The other thing that will be 21 considered in coming up with these shipments 22 forecasts is the effect of market pull

programs, things like manufacturer tax
 credits, consumer tax credits, and the Energy
 Star program.

4 And finally, for heat pumps and 5 only for heat pumps, DOE will consider fuel 6 and equipment switching. So if a standard is 7 determined to drop the sales of heat pumps, what we plan to do is to allocate that drop 8 9 in sales to increases in shipments of fossil 10 fuel fired furnaces, as well as electric 11 resistance furnaces.

12 Now, we realize that this is sort 13 of a maximum impact situation. But with this maximum scenario what we want to do is carry 14 15 this forward into the national impact analysis to see what sort of maximum effect 16 could happen to the national energy savings 17 associated with a particular heat pump 18 standard level and also with the effect on 19 20 national consumer economic benefits. Now, again, one thing I haven't 21 covered in these bullets is the possible 22

1 effect of standards on extending the repair 2 of units that would have failed if a new 3 standard hadn't been imposed, and this is 4 something that we considered in the last 5 rulemaking, and we made some very basic 6 assumptions about that.

7 We assumed a particular 8 sensitivity to purchase price, and we also 9 assumed that the equipment would last another 10 six years after the repair. So if we're going to incorporate that into our models, we 11 12 would certainly like input on sensitivity to 13 purchase price and operating cost savings, on a consumer's decision to extend the unit if 14 15 it was going to fail, but they choose to repair it instead, and how much longer that 16 unit would last. 17

18 MR. BROOKMAN: Steve Rosenstock.
19 MR. ROSENSTOCK: Steve Rosenstock,
20 Edison Electric Institute.

21 I think for this one you are good 22 that you're trying to look at substitution

1 and repair. So based on what I heard 2 earlier, I think you might need to track for 3 central air conditioners and heat pumps just 4 room air conditioner sales. If people are 5 substituting room air conditioners for 6 central air conditioners because they think 7 it's too expensive to repair or replace, if that's happening, I think DOE needs to 8 9 account for it somehow. 10 And then there was talk of the 11 hybrid systems. Again, I don't know what 12 percentage of sales those are in certain 13 regions, but, again, I don't know in terms of substitution, but they might play a role. 14 And then in terms of the 15 resistance, I'm pretty sure I remember from 16 last time in Florida it's not necessarily 17 It can be baseboard heat or even 18 furnaces. 19 just basically room heaters, portable room 20 heaters just like I'll all it the warm room 21 effect, that maybe especially in Florida. 22 They just heat up one or two rooms, and

1 that's all they care about in the wintertime 2 when they have the freak cold snap. 3 So I'm just saying that's another 4 possible substitution in certain parts of the 5 country that you need to look at. So, yeah, 6 and you have some data now. I mean, I think 7 you're going to get data from what happened starting in 2006 in terms of some of the 8 9 substitutions. So you can use that as well. 10 MR. BROOKMAN: Robert. 11 MR. WILKINS: Yes. Robert Wilkins, Danfoss. 12 13 2006 central air conditioning sales in the U.S. dropped by two million 14 15 units a year and remained flat in 2007. At the same time, room air conditioning sales 16 increased by two million units a year and 17 remain flat in 2007. 18 19 So you've got curves that are 20 consistently going along together that 21 sharply diverged in 2006. 22 The other interesting statistic

Page 360 is, and several of my colleagues and the 1 2 equipment manufacturers have told me very consistently that sales of replacement 3 4 compressors have jumped from 25 to 30 percent 5 in the year 2006. So there's strong evidence that 6 7 people aren't replacing them. They're 8 repairing them or they're working around 9 them, and I think that simply needs to be 10 included in the evaluation. 11 MR. BROOKMAN: Thank you. 12 MR. CRAWFORD: Doug, just very 13 quickly. MR. BROOKMAN: Yeah. 14 MR. CRAWFORD: Jim Crawford. 15 16 If you're willing to replace 17 parts, there's no intrinsic life limit to a condensing unit. Every part of a condensing 18 19 unit is replaceable, the same as an automobile. I mean, as long as the thing 20 21 doesn't rust out, you can just keep on 22 replacing the compressors, motors, fans,
1 coils, cabinet panels, anything. 2 MR. BROOKMAN: Okay. Thank you. Additional comments on standards 3 4 impacts on shipments? 5 MR. ROSENQUIST: This slide is 6 just a couple of items from the framework 7 document they were looking for input on. The first is that impact of standards on 8 9 shipments. That's a very important aspect of 10 doing the standard case shipments forecast, 11 and so as part of the preliminary 12 manufacturer impact analysis, there will be 13 requests made to manufacturers on what they believe the impact of standards would be on 14 15 shipments. And of course, DOE will also 16 17 accept any input from any other stakeholders that want to chime in on that subject. 18 The other item is the effect of 19 20 market pull programs at affecting change in 21 the market and promoting more efficient central air conditioners and heat pumps and 22

Page 361

how that may play in a situation where you
 have new standards.

3 Harvey Sachs. MR. BROOKMAN: 4 MR. SACHS: Harvey Sachs. 5 One difference of this standard relative to the 2006 transition is that it 6 7 will take place after the refrigerant transition to 410A or other alternatives. 8 As 9 I understand it, these require a very 10 different class of refrigerant lubricants, 11 and consequently it would seem to me the 12 department would want to pay attention to the 13 feasibility of doing component replacements rather than system replacements when you're 14 15 trying to move from an R-22 system that may well have been capped to the expansion device 16 to a 410A system that is using different 17 lubricant, using different refrigerant and 18 19 quite likely using different controls. 20 I don't have the answer, but I 21 think it's a study area that's very germane 22 given the concerns that have been brought up

		Ea
1	about the replacements following 2006.	
2	MR. BROOKMAN: Thank you.	
3	Kyle.	
4	MR. GILLEY: Just one echo of	
5	concern, to address a concern in one of	
6	Harvey's statements. That was that we would	
7	fully transition to 410A, and that would be	
8	different from the last go-around. That's	
9	not necessarily the case, given the	
10	uncertainties around climate change	
11	legislation and potential regulation. We	
12	could definitely be going through another	
13	refrigerant change at the same time this new	
14	rulemaking is effective.	
15	MR. BROOKMAN: Thank you, Kyle.	
16	MR. SACHS: Thank you.	
17	MR. BROOKMAN: Any comments on	
18	market pull programs?	
19	MR. SACHS: We support them.	
20	(Laughter.)	
21	MR. GILLEY: Well, and a passing	
22	through on them is Robert just gave you some	

Page 364 1 numbers as what's happened to the industry 2 since 13 SEER. In effect, those same pool 3 programs were in place during that transition. 4 5 MR. BROOKMAN: Okay. 6 MR. ROSENQUIST: Okay. I'll now 7 talk about the national impact analysis, and the purpose of this is to determine the 8 9 national energy savings and the national 10 consumer economic benefits or burdens from 11 the energy efficiency standards are going to 12 be analyzed. 13 The method is developed from looking at annual time series of annual 14 15 energy consumption for the stock of appliances that are in the market and also 16 17 looking at the annual time series of the associated operating costs and increased 18 19 equipment cost of that stock. 20 What the model does then that we 21 use is it accumulates all of those values, and then it takes the difference between a 22

base case and a standards case to come up 1 2 with the impact from the standards case. 3 The model that we developed for 4 the NIA utilizes the shipments model that I 5 talked about earlier. Again, that shipments 6 model provides us with a shipments forecast, 7 and again, from those forecasts we build up a stock or inventory of units which we track by 8 9 vintage. 10 Another aspect of it is that we 11 utilize many inputs from the LCC and payback 12 period analysis, specifically the per unit 13 total installed cost increase due to a particular efficiency standard as well as the 14 15 per unit operating cost savings and per unit annual energy savings. 16 17 We take those per unit values and then aggregate the up to national values in 18 19 the NIA analysis. 20 We report energy savings in terms 21 of quads or quadrillion BTUs or ten to the 15th BTUs, and while in the LCC analysis 22

things are done at the site, that is, where 1 2 the unit is being used, at the particular household or building, for this analysis we 3 4 do things at the source or at the primary, which takes into account the transmission and 5 6 distribution of the electricity, as well as 7 the efficiency of the power plants. National net present value is 8 9 determined in dollars, and again, it's an 10 annual time series of the effect, and what we 11 do is we use discount rates or discount 12 factors to get those annual time series of 13 money back down to a present value. This flow diagram gives you a 14 15 conceptual idea of what we do when we

16 calculate the national energy savings. We 17 start with the shipments analysis, which

18 provides us with base case and shipments

19 case, shipments projections.

In the case of the base case,
those shipments projections are used to build
up, again, a stock or inventory of air

conditioning and heat pump units that are
 serving the nation, and we calculate the
 associated annual energy consumption of that
 stock for every year from the assumed
 effective date of the standard all the way
 out to 2046.

7 We do the exact same thing on the standards case side, and then we assimilate 8 9 both the base case and the standards case 10 energy consumption, apply our site to source 11 conversion factors to convert the site energy 12 consumption into source energy consumption, 13 and the difference between the two is the national energy savings due to the standard. 14 15 This flow diagram gives you, again, a conceptual framework of what we do 16 when we calculate the national net present 17 value, and again, starting with the shipments 18 19 analysis, we use it to provide us with both 20 base case and standards case forecasts of 21 shipments.

22

In the case of the base case, we

use that, again, to build up the stock of
 units, and we calculate the associated
 electricity cost, the associated repair and
 maintenance cost, and also the equipment cost
 associated with that stock.

6 We do the exact same thing on the standards case side. We then accumulate the 7 energy electricity cost and maintenance costs 8 9 associated with that stock for both the base 10 case and standards case and take the 11 difference between the two, and that gives us 12 our operating cost savings to the nation from 13 the standard.

We do the same thing with the equipment cost, and so the difference between the standards case and the base case is the increase in equipment cost to the nation of the particular standard that we're looking at. We apply discount rates, of

course, to get this back down to a present
value, and we take the difference between the

1 If the operating cost savings are two. 2 higher than the equipment cost increases, 3 we've got a net present value which is a net 4 benefit to the nation. If it's ten other way 5 around where the installed costs are greater 6 than the operating cost savings, then we have 7 a net burden to the nation from the standard. This next slide talks about a very 8

9 important input to the analysis, which is the 10 shipment weighted efficiency data, and the 11 reason why it's important is because many of 12 the inputs to the analysis coming from the 13 life cycle costs and payback period analysis 14 are dependent upon efficiency.

So in the case of determining national energy savings, we rely on the LCC to give us the per unit annual energy savings, and again, that's dependent upon the efficiency of the product.

20 The same thing with the 21 determination of NPV, which is based upon the 22 per unit installed cost and the per unit

operating cost savings. Again, both of those
 are dependent upon efficiency.

3 In the past we've gotten 4 historical trends of efficiency from AHRI, 5 and these trends, these historical trends, 6 are used to forecast what happens in the base 7 case, that is, the case without standards, to figure out how the various per unit energy 8 9 consumptions and per unit costs change in the 10 future, again, with efficiency.

And you can see this figure here shows you the historical data for unitary air conditioners as a whole and heat pumps as a whole. We're hoping to get this type of data at the product class level and also hoping to get it at some level of regional disaggregation.

And this next slide talks about the impacts of standards on efficiency, particularly the impacts of standards on the distribution of product efficiencies, also called the market share efficiency data, and

again, we use this historical market share efficiency data to tell us how a particular standard will impact product efficiency distributions in the year the standard takes effect.

6 So what you see here are two 7 figures, which correspond to two types of scenarios that DOE has used in the past. 8 The 9 first on the left is the roll-up scenario, 10 and what you see there with the blue bars is 11 the current distribution of products according to the number of models available. 12 13 And under a roll-up scenario, what happens is that that 13 SEER product rolls up 14 15 to the standard that I'm hypothetically considering here, a 14 SEER. So you see that 16 17 big bump-up as indicated by the yellowishgreen bar. 18 19 Under the roll-up though, none of 20 the products after 14 SEER are affected. In the shift scenario what happens is you 21 22 basically shift your current distribution,

reorient it, if you will, to around the new 1 2 minimum efficiency standard. In this case we're looking at a hypothetical of 14 SEER. 3 4 So you're retaining the same 5 efficiency distribution. Now, you may ask 6 what's so important about this. Well, the 7 resulting shipment energy efficiency that you get from these two scenarios has a definite 8 9 impact on what you estimate in terms of the 10 national energy savings and the impacts of the consumer economics from that standard. 11 12 And then after we've developed the 13 impact in the year that standards become effective, then we forecast that out into the 14 15 future basically with the same efficiency trend that we use for the base case. 16 17 MR. BROOKMAN: Robert. The data I've seen 18 MR. WILKINS: 19 from the standards in the early 1990s was the 20 first case happened immediately in that you 21 had the -- what did you call it? -- the roll-22 up phenomenon to take place, but then after a

Page 373 1 year or two it tended to spread back out 2 again, if I recall, Karim. 3 And I suspect though that it's 4 actually the roll-up case because we were in 5 an increasing mode anyway, and after a year 6 or two of being under the 10 SEER, it started 7 moving on up following its natural market and technology shift patterns. 8 9 MR. BROOKMAN: Thank you. 10 MR. WILKINS: For what it's worth. 11 MR. BROOKMAN: Thank you. 12 Yes, Steve Rosenstock. 13 MR. ROSENSTOCK: Steve Rosenstock, EEI. 14 And I mentioned this last time 15 because as I recall there was the pipeline 16 effect of the ones that met the previous 17 standard. Back then it was like eight SEER 18 19 and then it was bumped up to ten SEER. Even 20 after 1992, there were still eight SEERs 21 being sold on the market for X months or X years after the standard took effect. 22 So

that also had an impact on any sort of
 national energy savings.

3 It has happened twice, you know. 4 Ten SEERs were sold after January of 2006. 5 It did happen. That's a fact. So, again, this time I think there should be some sort 6 7 of modeling to the effect that I'll just say 8 pipeline effect or time lag effect for the 9 units that met the previous standard being 10 sold after the standards become effective. 11 MR. BROOKMAN: Harvey. MR. SACHS: 12 I'd just like to take 13 a slightly different perspective on these excellent, illustrative graphics. 14 The left-15 hand diagram roll-up would probably be called by some people the co-modification model of 16 the market's transition. The one on the 17 right is what I consider to be one of the 18 19 principal goals of the voluntary programs, to maintain the pull for the higher efficiency 20 products, the differentiated products. 21 22 Now, I'm not sure exactly how that

1 folds into your analysis, Greg, but it is 2 something I will probably be using in our community to illustrate one of the goals. 3 4 MR. BROOKMAN: Okay. Thank you. 5 Additional comments on these two Yes, please. 6 scenarios? 7 MR. BURT: Lane Burt, NRDC. I would just also like to point 8 9 out that the time frame when this standard is 10 going to take into effect is going to be a 11 good deal different than previous standards, 12 and you have a lot of pressures that are 13 going to -- we talked about the pressures that forced the roll-up scenario. 14 There's 15 also going to be some corresponding pressures that will force it toward the shift scenario 16 in terms of primary legislation and increased 17 market pull programs. 18 19 MR. BROOKMAN: Thank you. 20 Yes, please, and your name for the 21 record. 22 MR. BERGT: Yes. Carl Bergt.

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1 Question: how the standards 2 impact or shipment analysis that may take into account room air conditioners and 3 4 replacement air conditioners. What I don't 5 see is when you do your national energy 6 savings document, what's the negative impact 7 of that. It's like you've totally discounted that impact, the negative impact, that those 8 9 would have because you only look at what was 10 shipped, not actually what the impact is on 11 energy. 12 MR. ROSENQUIST: Yeah. I mean, 13 first of all, let me talk about the possible equipment switch to room air conditioners. 14 15 If that actually does happen, if we get inputs from stakeholders who say that will 16 happen, then that will be modeled and the 17 energy consumption associated with those room 18 air conditioners will be taken into account. 19 20 So that will be a drag, in other words, on the national energy savings that 21 22 you would get from a prospective standard.

1	MR. BROOKMAN: Tom.
2	MR. ROBERTS: Yes, just to
3	clarify, I think we heard that very clearly,
4	that room air sales are up the two million,
5	that central systems were town two millions.
6	You're saying that needs to be submitted in
7	writing?
8	MR. ROSENQUIST: Well, of course,
9	we're going to have to look at the data
10	ourselves, as well, right? And since it's
11	now part of the official record, it's going
12	to be part of the public transcript. It
13	becomes an official comment.
14	But anything you could do to
15	clarify that particular comment further would
16	be greatly appreciated.
17	MR. BROOKMAN: Okay. Thank you.
18	So additional comments on these
19	two scenarios? And I want to refer also to
20	the next slide.
21	Jim.
22	MR. CRAWFORD: In the discussion

associated with, oh, 79, I guess it was, and 1 2 some of those earlier charts, Greq was describing a level of disaggregation of data 3 4 that I don't think he's going to get because 5 I think I got my product class, my efficiency It didn't say my capacity, but you 6 level. 7 can't go very far without that by geography. That level of data may or may not 8 9 exist in the industry, but once that data is 10 available, it tells altogether too much to 11 competitors about what's happening in the 12 market, and that's a level of disaggregation 13 that you're just not going to get. I don't think I could. 14 15 MR. BROOKMAN: Karim. 16 Karim Amrane, AHRI. MR. AMRANE: 17 Again, as I said, subject to approval from the members, this is something 18 19 that we might or might not, you know, 20 proceed. I mean, I think we will have to 21 discuss it amongst ourselves and see whether 22 it's something that we can.

1 MR. ROSENQUIST: I mean, if you 2 can't provide us with actual data, then maybe 3 some guidance as to maybe if we do things 4 regionally, for example, how things may shift 5 between different regions of the country. 6 MR. BROOKMAN: So scan through. Greq, do you want to just set up 10-1, 10-2 7 and 10-3? 8 9 MR. ROSENQUIST: Yeah, yeah. Item 10 10-1 talks about, again, our request for 11 historical shipment weight efficiency data by 12 product class and by some level of regional 13 disaggregation, and also if there's any market share data out there as well, it can 14 15 even be provided at an aggregate level for That better than all product classes. 16 nothing would be greatly appreciated. 17 Item 10-2 talks about comments 18 19 that we would like to have on, you know, the 20 use of these different scenarios to --21 MR. BROOKMAN: We have had comment 22 on those already.

Page 380 1 MR. ROSENQUIST: Okay, and 2 finally, just any general comments you might 3 have on the NIA analysis approach. 4 MR. BROOKMAN: So are there 5 additional comments on the NIA analysis, the 6 approach therein? 7 (No response.) 8 MR. BROOKMAN: Okay. I don't see 9 any. 10 Wes handed me a note about 15, 20 11 minutes ago suggesting that maybe on this 12 occasion since people are starting to leave 13 and it's 4:20 in the afternoon, that we might be able to skip the Notice of Proposed 14 15 Rulemaking analyses today. Do you want to talk about that? 16 17 MR. ANDERSON: This is Wes 18 Anderson, DOE. 19 If everybody is in agreement with 20 this, sine the ANOPR is in 18 months and the 21 NOPR is in 2010, that we skip a detailed discussion on that and table that for the 22

Page 381 1 ANOPR presentation. If someone has some 2 comments on the different subject matters, if they'd turn to Slide 83, page 42, and if you 3 4 haven't spoken yet on those and you want to 5 speak on those particular issues, we can take 6 that time now to do that. 7 First, let me ask: are we in 8 agreement with that? 9 MR. BROOKMAN: Since there's so 10 much time looking ahead before we get to the 11 NOPR analyses and there will be other 12 workshops. 13 There's one exception. MR. SACHS: Harvey Sachs. 14 MR. BROOKMAN: 15 MR. SACHS: Environmental impact analysis, do you want comments on issues like 16 17 that? I'm sure we're going to go through the whole number. 18 19 MR. ANDERSON: Yeah, instead of 20 going through, if you want to make comments 21 on the particular bullet items or the 22 chevrons on the page, I would say go ahead

and make your point now, if everybody's in 1 2 agreement with trying to end this early without going into detail with the NOPR. 3 4 I don't want to force upon the 5 public that we're trying to skip over your 6 issues. 7 MR. BROOKMAN: Yes, Talbot. 8 MR. GEE: Another suggestion, that 9 manufacturer impact analysis just be adjusted 10 to channel impact analysis. 11 MR. BROOKMAN: Okay. Yeah, there 12 was suggested that it become market impact 13 analysis to reflect the entire distribution chain. 14 15 Please, Lane. 16 MR. BURT: Lane Burt. 17 To speak about the environmental impact analysis and specifically the 18 monetization of CO2 question, there really 19 20 needs to be considered in terms of the 21 financial side in the life cycle costs and 22 net present value. We've commented on this

before, but we see that by the time this ruling takes effect, there's going to be a price on carbon, and refusing to set a price on carbon and put it into the analysis is effectively speculating a zero cost, which is going to be very incorrect.

7 MR. GILLEY: I would just ask for 8 support from our friends from NRDC that, 9 again, this makes the case that there needs to be some balance in this rulemaking to what 10 11 we do from a refrigerant standpoint. Ιf 12 you're asking for that on CO2, there needs to 13 be some consideration given in the process of this rulemaking to the impact climate change 14 15 is going to have on the refrigerants we use. 16 MR. BROOKMAN: So that was Kyle 17 speaking, and now here to Harvey. We look forward to 18 MR. SACHS: 19 those conversations. I think our record is 20 pretty clear in terms of T-WEE (phonetic) and 21 concepts like this. We very much look forward to that. 22

Page 384 1 MR. BROOKMAN: Don Brundage. 2 MR. BRUNDAGE: Just make a comment that while it is likely there would be 3 4 factors like this included, you're changing 5 parts of analysis and not others, and the 6 Annual Energy Outlook makes assumptions of no 7 changes in regulation after the date that it is issued. 8 9 So making those sorts of changes 10 unless it's just separately in an 11 environmental impact, you need to be careful 12 that you're not inconsistent in the way 13 you're -- if you did just an environmental impact, it's one thing, but to put it in the 14 15 depths of a study, you're running into inconsistencies because the other things in 16 17 the forecast are not done that way. 18 MR. BROOKMAN: Okay. Thank you. 19 Tom. 20 MR. ROBERTS: And one quick thing 21 will be the carbon equivalent monetization of 22 the increased cost of the carbon footprint of

the higher efficiency units on the credit 1 2 side. 3 MR. BROOKMAN: Thank you. 4 Steve. 5 MR. ROSENSTOCK: A couple of 6 things since we're skipping ahead. Twenty-7 six states have RPS mandates. Four states have RPS goals. That's probably going to 8 increase over time. So that should be 9 10 accounted for in this analysis. 11 Number two, there's another slide 12 since we're --13 MR. BROOKMAN: Yes. MR. ROSENSTOCK: -- going ahead to 14 15 utility impact analysis. It says method, energy savings translated to a reduction in 16 17 the electrical demand faced by the utility systems over time. If EERs try to go down, 18 19 no way to do that. I'm sorry. That's a 20 totally incorrect modeling, totally incorrect 21 analysis. Again, based on if EERs stay flat 22

1 or go down. 2 MR. BROOKMAN: Okay. 3 MR. ROSENSTOCK: You can't do 4 that. I'm sorry. 5 MR. BROOKMAN: Okay. Thanks, 6 thanks. 7 So, yeah. I appreciate those of you taking advantage of this opportunity to 8 9 talk about issues that matter to you, and 10 let's make sure everybody gets a chance to do 11 that. So any other comments that are 12 presently in the slides incorporated in the 13 NOPR section? 14 Wes. 15 MR. ANDERSON: I just want to make 16 clear that even though we did not cover this -- this is Wes Anderson, DOE -- that we did 17 not cover this, you can still submit your 18 19 comments to the questions that are in the 20 framework documents. 21 MR. BROOKMAN: Their detailed 22 comments.

Page 387 1 MR. ANDERSON: Their very detailed 2 comments. We want as much detail as 3 possible. 4 Thank you. 5 MR. BROOKMAN: Okay. So the last 6 item on the agenda, we still want to provide 7 an opportunity for anybody to raise an additional issue, perhaps something you 8 9 didn't cover today. Anything else left over 10 that needs to be stated at the end of the day 11 here today? 12 Steve Rosenstock. 13 MR. ROSENSTOCK: Again, Steve Rosenstock. 14 15 Again, I apologize. I was out of the meeting. Any change on the due date for 16 17 comments? July 31st? MR. ANDERSON: This is Wes 18 19 Anderson, DOE. 20 To reiterate Ron's, let's go to 21 the last page. Everyone has the handouts. MR. BROOKMAN: And since some of 22

you are heading for the door, let me note 1 2 also that past after the packet is the evaluation form. Please take a minute to 3 fill it out. 4 The department reads them 5 carefully. 6 MR. ANDERSON: We have 7 instructions on how to submit comments. Ι talked about those earlier. And the date has 8 9 changed to July 31st, 2008, for deadline on 10 comments. 11 MR. BROOKMAN: Ron Lewis also 12 requested if it's possible to send them in 13 not all on July 31st, that would be a good thing. A whole rath of comments come in, and 14 15 so they can start being read as soon as they show up at DOE. 16 Yes, Karim. 17 MR. AMRANE: Karim Amrane, HRI. 18 19 I guess I have a guestion about 20 process here. I mean, what's going to happen 21 between now and the ANOPR? What, a year, 22 15 months more time lag?

1	MR. ANDERSON: Yeah.
2	MR. AMRANE: Is there any plan
3	from DOE to interact with stakeholders to see
4	where you are? I don't know. I mean, I
5	think we need to.
6	MR. ANDERSON: Right now we're
7	going to rely on the comment period, and if
8	we do have questions or you have questions
9	for us, please submit those as well on the
10	process. We will address the comments at
11	this point, and there will be some
12	interaction.
13	MR. CHRISTOPHER: Mike Christopher
14	with Navigant Consulting.
15	Karim, there is at least the
16	preliminary manufacturer impact interviews.
17	So that's an opportunity to work face to face
18	with manufacturers, and we do make an effort
19	to ask.
20	MR. AMRANE: Karim Amrane again.
21	I think I'm find with that, but I
22	think in addition to that, I think I would

Page 390 1 like to suggest that maybe we do halfway 2 through have maybe like a form conference I don't know. Something we did in the 3 call. 4 past on the commercial side where DOE will 5 update us on what we have done. 6 I think it would be very helpful 7 to everybody. Thanks for that 8 MR. BROOKMAN: 9 process note. Thank you. 10 Wes. 11 MR. ANDERSON: This is Wes. 12 I want to hold off on committing 13 right now. We'll get back to you on that. If you want to submit that as a comment, but 14 15 we'd like to keep all of our communications open to the public, not just to the 16 manufacturers and that kind of thing. 17 So that's one of the reasons why we're hesitant 18 to talk. 19 20 MR. AMRANE: I was not suggesting 21 just for the manufacturers. I was suggesting 22 for the entire group.

Page 391 1 MR. BROOKMAN: Thank you. Okay. 2 Yes, Don. 3 MR. BRUNDAGE: One of the areas 4 that's so glaring in that there's uncertainty 5 in what DOE can and can't do is regional It's hard to even make comments 6 standards. 7 at this point on regional standards. I've made a number of questions to 8 9 DOE which I presume will get answered when 10 the ANOPR is issued on what the limitations 11 are on regional standards, but it would 12 appear to me that unless we're going to not 13 really address whether there's going to be regional standards until the ANOPR set of 14 15 hearings starts, at some point after some of these short-term legal questions on what DOE 16 feels it can and can't do, I think you need 17 to have a whole other meeting just on 18 19 regional standards so that we can hash those 20 out because that has not been adequately 21 addressed today because there's so much 22 uncertainty on what DOE thinks it can and

1 can't do.

2	It's just very speculative, and
3	it's hard to even comment on the merits of it
4	at this point.
5	MR. BROOKMAN: And what would you
6	suggest the form for that would be?
7	MR. BRUNDAGE: to have a day
8	meeting like this after some of the legal
9	questions on what DOE feels its flexibility
10	is and what it can and can't do, and we can
11	discuss some basic issues like which states
12	ought to be hot, humid, which ones ought to
13	be hot, dry, and which ones ought to be in
14	the everybody else.
15	I mean there are just a lot of
16	issues related to this, and it hasn't been
17	addressed adequately, and without some
18	answers from the DOE and some interaction, I
19	don't see how it can be.
20	MR. BROOKMAN: Jim Crawford.
21	MR. CRAWFORD: A follow-on to
22	Don's point. I would certainly add there

whether or not that type of classification 1 2 that he just iterated is even the right classification at all for regions. 3 It was 4 mentioned earlier that heat in degree-days or 5 cooling degree-days may be the more appropriate measurement. 6 And I think that we have 7 8 articulated during the day numerous areas 9 where there is not a common understanding, 10 much less a common viewpoint, on central 11 issues in this entire analytical process. 12 In my opening remarks, I suggested 13 that we consider periodic workshops, open workshops to everybody here and everybody 14 that should have been here, so that we can 15 begin to nail these things down. 16 17 And in the area of establishing regional regions, the very first thing is 18 what's the criteria, and we have not had 19 20 that. this framework document is written to 21 elicit from us a data dump, and with the 22 implication that the DOE and the contractors

1	will then go off and do their analysis, and
2	then they'll throw it over the wall.
3	And that's simply not the way to
4	get the kind of results that I think you want
5	and we want.
б	MR. BROOKMAN: Robert.
7	MR. WILKINS: Yeah, in a lot of
8	ways I'd like to reiterate that. I think
9	that's a great point. I think we had very
10	open discussion today, which will prove quite
11	fruitful. We had great exchanges, resolved
12	some things, I think, and I think the idea of
13	continuing to having open workshops is a
14	great idea. We can build on the cooperation
15	that we've had here today and move forward
16	together.
17	MR. BROOKMAN: Kyle.
18	MR. GILLEY: I would defer to my
19	friends from the distributor and contracting
20	community, but even before you start having
21	discussions about appropriate regions and
22	things of that nature, I think you ought to

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address the enforcement issue. 1 Tt's 2 meaningless unless there can be some enforcement in regional standards. 3 It's 4 almost you need an entire workshop just to 5 talk about enforcement because if you can't develop an enforcement mechanism, it's a 6 7 meaningless exercise. And in all due respect to my 8 friends from California, we're starting to 9 10 see that in that market now where CDC has 11 been very active in a number of fronts 12 resulting in, you know, meaningful benefit to 13 well intentioned benefits from the rules. Unfortunately they've ignored 14 enforcement and now it is starting to 15 manipulate the marketplace in California. 16 You don't want to do that on a regional basis 17 with this rulemaking. 18 19 MR. BROOKMAN: Paul. 20 MR. DOPPEL: I'd again like to 21 thank DOE for the good discussion today and having this meeting. Probably the most 22

1 disappointing thing today was not having any 2 more idea about what the regional standard is 3 going to be based on, and just to augment 4 also what Mr. Crawford was saying, that you 5 know, that could be very important to how 6 products are designed in the future, and 7 right now we don't know if DOE is going to establish what those regional standards are 8 9 or what they mean, if you're going to do that 10 in the dark, if you're going to invite more 11 comments from industry. 12 So we'd like to encourage, as was 13 suggested, having, you know, maybe another meeting, a collaborative type meeting to help 14 orchestrate some sort of definition about 15 16 what the regions are and what the impacts of those are going to be. 17 18 MR. BROOKMAN: Okay. Yes. 19 MR. McCRUDDEN: To Kyle's point, 20 you know, on a workshop or something on 21 enforcement, you know, the language that you 22 ended up getting from Congress says that not
Page 397 later than 90 days after the date of the 1 issuance of the final rule that establishes 2 3 regional standards, the Secretary shall 4 initiate a rulemaking and develop and 5 implement and effective enforcement plan. 6 I mean, that's the cart before the 7 How do we know it's going to work if horse. we don't know what's going to work? 8 9 So I think that's a very 10 appropriate workshop to host at some point in 11 the near future. MR. BROOKMAN: So Talbot and then 12 13 I'll go to Tom. So I think the department welcomes 14 15 now in these final comments your thoughts on process issues and other issues if you'd 16 17 queue up for them to consider looking ahead. And I would just say 18 MR. GEE: 19 that HUD has spent the entire summer of the 20 energy bill debate trying to figure out a 21 potentially workable way in any type of 22 regional stance, and frankly, we were stumped

to do so because of the enforcement issues
primarily.

3 So I'm not trying to sound like 4 we're punting here, but I don't think you'll 5 see from us a proposal for how these regions would be established because we couldn't 6 7 figure that out a year ago. So I'm not sure why we'd be able to figure that out now. 8 9 So the strong proponents of a 10 regionalization format already have ideas of 11 how they might want to draw these lines and 12 enforce them. Then let's perhaps see those 13 and debate those in these discussions. MR. BROOKMAN: 14 Tom. 15 MR. ROBERTS: Tom Roberts. The only thing we know is we know 16 17 the grain of the regional standard is state sizes, right? So starting with that, then to 18 19 really do this right we'd have to do all the 20 work we're talking about doing today state by 21 state, 50 studies like this; then mix them and match them in a huge matrix the size of 22

the state of Philadelphia or Pennsylvania --1 2 sorry -- and then we'd have some answers. But that doesn't seem realistic to 3 4 even study what this possible implication of 5 regionality could because the climate has yet 6 to choose to align itself over state lines. 7 So if we could punch through that and see what is it beneath regional standards 8 9 that people are looking for, like better 10 functioning systems in hot, dry, better 11 functioning systems in warm, humid, and other 12 possibly EER considerations, then maybe we 13 could make real progress. MR. BROOKMAN: 14 Harvey. 15 MR. SACHS: To some extent I bear some blame for articulating this question, 16 and I'm happy to circulate through Brenda a 17 manuscript that several of us worked on that 18 19 really does have a strawman, a point at which 20 we can begin the discussion. 21 There will be some conversation on this at the ASHRAE meeting at Salt Lake City 22

on Tuesday morning. You're certainly invited
to that as well.

I would offer that strawman not as 3 the answer, but as one place to start from, 4 5 and I would join with Jim and with others in 6 the suggestion that we do need to have some collaborative effort. We do need to have 7 some talk. We can't do this stuff in the 8 9 dark and expect it to be accepted. We have 10 precedent for that in the furnaces 11 electricity workshop that Gammel organized a 12 number of years ago, and even though we'll be 13 out gunned and out personed and everything else by industry, we still believe that 14 15 having this kind of iterative, collaborative work is likely to be beneficial to the 16 17 process.

And finally, with respect to the issue of whether the regulatory mechanism ought to come first or last, I think the law is fairly clear. We may as well just work within in that and see if the savings are

Page 401 worth pursuing by developing a regulatory 1 2 mechanism, and that's something which we can do together with some simulations and some 3 4 discussion and move from that to the 5 questions that are much harder because they involve people and laws and regulations. 6 7 Thank you. 8 MR. BROOKMAN: Thank you. 9 Final comments? This last 10 discussion I think has been very useful from 11 the department's perspective. 12 Lance. 13 MR. DELAURA: Just a quick I agree with the notion that we 14 comment. 15 really need to tie up the ends on the I heard what Harvey just said, and 16 regions. 17 that makes a lot of sense to me, but at some point, it would make sense to have all of 18 19 these players involved in the discussion that speaks specifically to those regions. 20 Is it 21 a state? Is it five states joined together? 22 Is it the West, the East, you know, wherever

it might be?

1

2	The two elements, I mean, it's one
3	of the key elements, and it's sort of the
4	chicken and the egg. Which one comes first?
5	You do the technical analysis, and then you
6	get to this or do you get to this and then do
7	the technical analysis?
8	That isn't so important, but I
9	think what is important is that everyone at
10	this table and in this room has a chance to
11	give input on what those regions, if there
12	are to be regions, what they look like and
13	what the rationale is and why, and if there's
14	one region, two, three, whatever it ends up
15	being the base case plus two, everyone buys
16	into that or at least everyone gets a chance
17	to express their thoughts and feelings and
18	that they can walk away and go back to their
19	respective companies and say this is it and
20	here's why. Here's the rationale for it.
21	MR. BROOKMAN: Talbot.
22	MR. GEE: Is there an opportunity

Page 403 1 to use the two-plus year old increase of 13 2 SEER to try to see maybe if that was 3 justified and if so where as maybe the 4 starting point? Because, frankly, I think 5 that's a big question mark, too. So before you're thinking about if 6 7 the number was even higher, maybe use what data might already be there based on 13 and 8 9 see maybe if there were place where it was 10 justified that could even open the discussion about raising it in those areas. 11 12 PARTICIPANT: It is aggregated 13 national into winners and losers. MR. BROOKMAN: Jim. 14 MR. CRAWFORD: Jim Crawford. 15 16 Just to reiterate a point I made earlier, and that is that the whole issue of 17 18 metrics has to be resolved pretty quickly. 19 What metrics does DOE feel that they're 20 authorized to use in this process, and we start there because until we know that, a lot 21 22 of what we've talked about today may be

totally academic.

1

2	MR. BROOKMAN: Okay. Thank you.
3	So then from my perspective, I
4	just thank all of you for what I thought was
5	a very productive exchange today, and I'll
6	turn it back to Wes for closing remarks.
7	MR. ANDERSON: Wes Anderson, DOE.
8	I would like to thank you guys for
9	coming out, ladies and gentlemen for coming
10	out and expressing your opinion. Contrary to
11	popular belief, this is not a data dump. We
12	really want your specific, detailed responses
13	to our questions. We will take that. We do
14	listen; we will listen, and so I want to
15	enforce that request. Please, please, please
16	get your comments in as soon as possible, as
17	early as possible to help us so we can help
18	you.
19	Thank you.
20	MR. BROOKMAN: Save travel to
21	everyone.
22	(Applause.)

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1	MR. BROOKMAN: Please turn in your		
2	evaluation forms. That helps us.		
3	(Whereupon, at 4:40 p.m., the		
4	meeting in the above-entitled matter was		
5	concluded.)		
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