Missouri Statewide DSM Potential Study

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REPORTED BY:

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TIGER COURT REPORTING, LLC

MS. DIETRICH: We do have a court reporter and she's going on the record, so if you could identify yourselves on the phone.

MR. McCORMICK: This is Jerry McCormick with Empire District.

MR. BRUBAKER: Maurice Brubaker with MIEC.

MR. LINTON: David Linton with Southwest Power Pool.

MR. EDWARDS: This is Troid, T-r-o-i-d, Edwards, Landis+Gyr.

MR. MARK: Good morning. This is Dan Mark from Ameren, Missouri, and there's several here with me: Steve Kidwell, Rick Voytas, and Dave Costenaro.

MS. DIETRICH: Other people on the phone?

MS. TATRO: This is Wendy Tatro with Ameren.

MS. DIETRICH: And did somebody else say something?

MS. NIGAIL: Paula Nigail from Walmart. I'm sitting in for Ken Baker.

MS. DIETRICH: Anyone else on the phone?

MR. SHOFF: This is Kyle Shoff with Ameren.

MS. DIETRICH: Could you spell your last name, please.

MR. SHOFF: S-h-o-f-f, as in Frank.

MS. DIETRICH: We have a microphone at the speakerphone and we have the court reporter as close as we can get her to the phone, so we're just making due today.

Anybody else on the phone?

MR. WELLEN: This is Bob Wellen with Ameren.

MS. DIETRICH: Anyone else?

(No response.)

MS. DIETRICH: Okay. Well, with us in the room we have Tom Franks and Fred Coito from KEMA. We have myself, Natelle Dietrich, and John Rogers from Staff. We have Mark Hughes, Commissioner Davis' advisor, and we just e-mailed the presentation to everyone, so you should have received that, and with that I'll turn it over to Tom Franks to get started.

MR. FRANKS: Two microphones. Do I need one?

(A discussion was held off the record.)

MR. FRANKS: Good morning. Tom Franks here from KEMA here to present draft results on our potential study for the state of Missouri. Sorry I brought this weather with me. It's what I'm used to in Vermont. I hope you get to enjoy it. I just regret I didn't bring my snow blower.

You're welcome to ask questions during the presentation and go through it, but please speak clearly and slowly, considering we're not all present and the technology may not live up to our expectations.

This is an overview of the agenda. We have an overview of the project, results summary, and then we'll go into the specific fuels, electricity, and natural gas, and an overview of what we did for the demand-response potential, for the appendices that I have not planned to do a line-by-line review, go over the -- what they contain, and if there's any specific questions, we'll open those files and look at the lines in question and address them to the best of our ability, and closing with the next steps.

MS. DIETRICH: If I may, this is Natelle Dietrich. I should mention that we also received a presentation from Ameren this morning, and so I have that whenever it's appropriate to present it.

MR. FRANKS: Thank you.

This is a repeat of some of the materials we provide at the project kickoff, just to sort of set a context of what we're doing and why we're here today, to develop -- our objective is to develop an estimate of technical, economic, and achievable potential for natural gas and electric savings in the state of Missouri.

Our methodology was basically two-prong. To do all of that in one package, we use KEMA's DSM Assyst model, primarily populated with secondary research, and we did what we could to collect Missouri data.

We scaled the secondary research with Missouri-specific data, and then our final deliverable is a detailed report, which a draft was circulated earlier this week.

And I'm sure this is old hat to many of you, but in case some of you newcomers -- it's just good to have a sense of what we're talking about. There are a couple levels of potential, what will be saved naturally if nobody takes any action, people just go out in the market and buy compact fluorescents or LED lights.

I was in a restaurant last night in

Jefferson City and noticed that all the lighting was provided by LED. I was quite excited.

The next ring out is a small report. I wish I could go from the outside. The greatest amount of savings that could be achieved is called technical potential. That means if you took every energy saving measure you could find, installed it wherever it would fit and wherever it was necessary and took out all of the less-efficient equipment, that's what you would save.

The next ring in is economic potential. That would be installing all the measures that are cost-effective; in other words, your lifetime revenue stream is greater than your lifetime cost stream.

The next one in is what's called many different things, but the short word I used is "achievable potential." There are many flavors of achievable, but it has to do with what you actually get in the marketplace. We are not perfect actors in a market, none of -- very few of us, at least. There may be some out there.

So we may not make choices or decisions that are in our best economic interest all the time, so even if you offer to give somebody something that will save them energy, you offer to give it to them

for free and you offer to install it for them, and all they have to do is say, Yes. A certain percentage won't.

And then there's a little piece that happens anyway, which is where I start. This is an overview of our model. It develops technical and economic and achievable potential. It's basically a two-step -- a three-step model.

You gather all the inputs. We set up a large number of input files, which I believe most of you on the phone have received as part of the ongoing interim memo communication. We then take those inputs and put them into the model and say, Tell us what the technical and economic potential is. It does that in one run.

We look at those and say, Hmm. What did we miss? What's wrong? And we go through it over and over again until we say, Yeah, this looks right. After that we take those results and give the model some more information: What do we expect to be happening in the world?

Up till that -- you know, at the end of economic potential the model doesn't care what the world is doing. It knows what things cost. To get to achievable potential, you have to involve humans,

which is behavior, and a little more challenging.

So here's a picture of the model, a schematic. Key inputs. Many of you have reviewed our inputs or contributed to the creation of them. Economic data; measure data, building data. I'm just going to run through this quickly. Stop me if you have questions, please. I won't see your hands probably.

THE COURT REPORTER: I may have to have you talk a little slower too.

MR. FRANKS: I'm sorry.

So the first thing we do is develop a base case: What is the energy usage in whatever area we're studying? Take a year. We worked with the PSC, who gave us direction on what -- many of the inputs, working with the stakeholder input.

We've already been over it -- this is a more verbose description of technical potential, or at least an accurate one. Here's a description of economic potential, and note the last line. We tend to work as incremental costs. That's important, what we really focus on, just indicative to me as what would be happening anyway, but what's there and what you have to add for input, because there's some carrying costs, having the light on, regardless of

its technology, so you assume your light -- whatever your light costs to have it on now is your base and what the light costs for the new efficient measure is your incremental costs.

And this microphone's not locked.

The economic potential is the technical potential for all measures and market sectors with a total cost rate -- it's just blank. Benefit cost ratio greater than one; total resource cost; description of achievable potential. And this is --

MS. DIETRICH: Your sleeve's blocking --

MR. FRANKS: So the people aren't seeing this from the computer? They're seeing it from the --

MS. DIETRICH: By the projector on the screen.

MR. FRANKS: Oh. Okay.

So anyway, this is where we look at programs that exist, look at what the study sponsor anticipates for a program, if they'd like to get out of those programs, and adjust and design some basic program information to put into the model.

For Missouri we took, basically, a sector basis rather than saying there'll be eight programs in the residential sector, because we didn't know what your program design was. It's not in our mandate to do such.

We said, Okay, in general, if you want to -- looking at the technical and economic savings, what would you want to get for programs to achieve various scenarios, which I'll get to in a moment. So this is a key -- I think this microphone is dropping out, so let me know.

MS. DIETRICH: Let's try -- let me grab that one.

MR. FRANKS: Then we won't get the phone.

MS. DIETRICH: I was going to put this one over here. The wire's in the screen now.

MR. FRANKS: Now I'd like to --

MS. DIETRICH: Dan, from Ameren, Dan Morris, if you have questions, go ahead and ask them, or anybody else at any time. You'll just have to speak up so that we can hear you on the phone.

MR. HUGHES: I have a question. Can I take it over here (indicated)?

MR. COITO: Uh-huh.

MS. TATRO: You have to speak up because we don't hear you on the phone.

MS. VOYTAS: All right. This is Rick Voytas with Ameren. Can you hear me?

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MS. DIETRICH: Yes.

MR. FRANKS: Yes, we can.

MS. VOYTAS: Okay. This is Rick Voytas from Ameren. Can you hear me?

MR. FRANKS: Yes, we can.

MS. DIETRICH: Can you hear us on the phone? I think we have some communication problems. Rick?

MS. VOYTAS: I'll try it again. This is Rick Voytas. We have some questions on the development of the base case. Would now be an appropriate time to ask those?

MR. FRANKS: Sure. We're -- go ahead.

MR. VOYTAS: All right. We don't understand how the base case was developed. I think at the beginning of the presentation it was implied that the Staff provided some base case data from the Missouri utility, but I guess, you know, I know Ameren Missouri provided some base case data.

I'm trying to figure out all -- if we used our forecast, if -- I really don't know at this point if you aggregated all the forecasts of the various utilities together or -- their own bottom-up type of -- and upgraded those forecasts. I'm trying to get an understanding of how the base case forecast

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was developed.

MR. FRANKS: You were breaking up a little bit, and maybe it's because someone else hasn't muted, but just as a courtesy, if you're not speaking, please mute your phone.

I think I understood your question to be: How do we develop our base case? As per our project proposal, we developed our base case primarily on secondary imports from the sources, such as the EIA and others.

We were not able to acquire a complete set of data for -- offhand. I can't think of any input to the model that we had the same input and the same units for every utility, so what we did was we took the information we had and looked at it to scale and calibrate.

MR. COSTENARO: Sir, we're having a very difficult time on the phone. Is there a way that you can lose a microphone and put the telephone closer to the speaker?

MR. FRANKS: I think --

MR. COSTENARO: We were trying to -- through the webcast, and there's a delay, so we have some communication problems.

MR. FRANKS: I think probably if you're

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not -- if you're not speaking --

MR. COITO: What if you tried not to use the mic and just talk right into the phone? Right here. Doesn't that thing pick up?

MS. DIETRICH: Yeah. I mean, this has its own microphone. If everybody on the other end can mute, because we're getting feedback from our presentation here and hearing it over the phone, too, so that might help.

MR. FRANKS: Okay.

MR. COITO: Sit down and talk into that and see if it works.

MR. COSTENARO: Natelle, we could hear you very well just then.

MS. DIETRICH: Okay.

MR. FRANKS: Okay. I've been trying to use the microphone for the conference room. It apparently is not working. How does this sound?

MR. COSTENARO: That sounds great.

MS. VOYTAS: Oh, that's superb. That's wonderful.

MR. FRANKS: We'll give up on third-order technology for now.

MR. COITO: Can everyone hear?

MS. TATRO: Yeah, that's much better.

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MR. FRANKS: All right. Thank you.

THE COURT REPORTER: And if I could just say, the people on the phone need to introduce themself each time because I cannot see who's speaking.

MR. FRANKS: Did you capture that?

MR. VOYTAS: Okay.

MR. FRANKS: All right. I'll start over. I heard your question. You asked how we developed a baseline. I won't go the long answer. The short answer is: We took secondary data, such as EIA sources, we took what we could acquire, which was not a complete set of utility data, reviewed it for -- to see how we could scale the secondary data or adjust it based on what we knew from -- was happening in the state of Missouri, and we presented that in one of our earlier memos for review and comment and that we -- there were several comments. We took direction from the PSC as to -- for all of the measure inputs as to which to adjust, based on comments.

MR. VOYTAS: Okay. Tom, this is Rick Voytas at Ameren again.

I appreciate that explanation, and I'm most familiar with Ameren Missouri but, you know, our sales forecast -- you know, if you use the ones that

I'm thinking about -- are complete forecasts, there's -- there's nothing, you know, incomplete about it, so for our portion of the Missouri ties, did you use the forecasts that we had provided or that we had -- not normally give Staff, or did you use EIA data to represent some of the Ameren Missouri service territory?

MR. FRANKS: Fred Coito is going to respond to that question.

MR. COITO: Let me -- let me -- let me try and address your question here. What we typically do is our forecast -- and I -- we need to confirm this with our staff -- we actually did it, but it's typically a -- what we call a "frozen efficiency forecast," you know, and this is mainly just to benchmark and show percents.

We do not, you know, try to use someone's, you know, forecast that's already got energy efficiency in it, already has, you know, naturally-occurring price response, energy efficiency in it, so our base case is typically a, you know, year-one base case that we then extend out based on, you know, essentially customer growth, you know, floor space growth, such that, you know, we kind of assume that, you know, without energy efficiency in

it, so we do our own separate projection for base case.

And let me also just say that, you know, with our methodology, it's not a crucial part of our methodology. It's not -- you know, we build our energy savings up from the actual technologies out there and, you know, we have -- kind of move along assuming that things are constant efficiency, and the model actually predicts kind of a naturally-occurring savings, you know, things people would do anyway, you know, somewhat like a price elasticity.

Then we also try to, you know -- and I don't like to use "predict," because they're really just scenarios or potentials, you know, what we try and build potentials on what would happen if you actually run programs, increase awareness, give people incentives, that type of thing. Does that help?

MR. VOYTAS: I'm a little bit -- I could just spend another minute on this. I think the base line is exceptionally important in this study. I think it's the crucial piece of this study, and that's why we're trying to understand it.

Now, we had started off with that target diagram of naturally-occurring energy efficiency, and

that was the smallest circle in the set of circles, but on Figure 522 in the draft report, there's a graph of the cumulative annual KWh for all the various forms of energy efficiency, and the naturally-occurring energy is huge. It's, like, in the 40 percent range. It's almost as much as the realistic achievable potential, so it's just a -- that target diagram really doesn't depict the magnitude, how serious that naturally-occurring energy efficiency is.

And the Ameren Missouri sales forecast that we're so familiar with has got naturally-occurring energy efficiency built into it. To the extent that you use that forecast, calibrate it to that forecast, I can see issues pertaining to double-counting of energy efficiency. That's why we're trying to get an understanding, and I'm not clear what that under-- I heard some theory, but I think that's something we're going to want to probe more. There is a concern that there may be a double-counting of energy efficiency.

MR. COITO: Okay. Yeah. We -- yeah, we did not use your forecast in that way but, you know, if you want to put that in writing, we can -- we can, you know, confirm that with our analysts, but we do not -- we do not -- like I say, we use a frozen efficiency forecast.

You know, our growth is based on, you know, new construction. You know, it's actually, you know, customers out, assuming that they're using pretty much kind of what they're using now, so we do not build into our baseline forecast the naturally-occurring.

We did not use your forecast, per se, of energy growth. We would, you know, if anything, use your forecast of customer growth, so that -- that's where we go with that.

And, you know, we want -- we also want to characterize our scenario as the one -- three-year payback scenario is the one that you say is, you know, just above naturally-occurring but, yeah, we can -- we can get through that, too, but we do not build -- you know, we do not build in declining use per customer into your baseline initially, and that's -- you know, like I say, if you want to put -- you know, put something down, we can address that and we can confirm that with our analysts, but -- and I'm pretty sure that's how -- you know, that's how we've done it in most of our studies.

MR. FRANKS: And just for the audience,

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please direct all questions and comments to the PSC directly.

MR. COITO: Yes.

MR. FRANKS: They're our client.

MR. VOYTAS: Thank you. We can move on. We'll do -- we'll do --

MR. COITO: No, you know, we want to make sure you understand what we did but, you know, I think it's a little difficult here in that -- in also that, you know, once you get down into the real details, you know, I need to confirm some of this with our analysts but, you know, I'm pretty sure that we do not build any -- you know, any efficiency or any, you know, declines and use per customer into our baseline.

MR. VOYTAS: Okay.

MR. FRANKS: Mr. Hughes, you had a question?

MR. HUGHES: Yeah. Let me apologize in advance. I beg the indulgence of the highly-skilled technical and engineering staff, but if we could go back to -- on page 9 of the PowerPoint --

MR. FRANKS: I will go back.

MR. HUGHES: -- the concentric diagram.

MR. FRANKS: Yes, sir.

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MR. HUGHES: We've got three other than naturally-occurring, we've got three categories of potential. The first is the technical potential, which is the hypothetical possible using all the technology that we're aware, and the second one, the economic potential we, again, use the term "technical potential," and my question is: Is the definition of "technical potential" and "economic potential" the same as "technical potential" and "technical potential"?

MR. FRANKS: The phrase -- the word "technical" is engaged with -- what, are you referring to a particular slide or page?

MR. COITO: Go to page 15, Tom. I think it's 15 that you're --

MR. HUGHES: I'm just working out of that draft report.

MR. FRANKS: Yeah.

MR. HUGHES: And it's in the summary.

MR. FRANKS: Effectively, economic technical potential and economic potential is the same. It's the economic share of technical potential.

MR. COITO: Economic potential is the part of technical potential that's cost-effective.

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MR. HUGHES: Under the further limitations described in economic potential?

MR. COITO: Yes.

MR. HUGHES: Such as we then bring in the cost --

MR. COITO: Yes.

MR. HUGHES: -- of these applications.

MR. COITO: Exactly right.

MR. HUGHES: Okay. Very good.

MR. COITO: Yeah, technical is even measures that don't pay, but some people might buy them anyway --

MR. HUGHES: Correct.

MR. COITO: -- but economic is what we think.

MR. HUGHES: But now we've integrated the economic constraints.

MR. COITO: Yes, and it passes the TRC test.

MR. HUGHES: Very good. Thank you.

MR. FRANKS: Are there any other questions from those on the phone at this point?

(No response.)

MR. FRANKS: We're up to the three A's of achievable potential. My shoulder is blocking some

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of your view.
There's availability, awareness, and adoption. Each of these general categories has various inputs that our model requires in order to run. Since the real world doesn't say, Here's an adoption rate, we need to generate those.
We generate those by looking at studies. In some potential studies we do perceive preference. We do telephone surveys. We didn't in this study, so we took what we could find from studies that were conducted in the state of Missouri. We looked at studies from other jurisdictions and developed inputs for these factors.
Now, this will come -- this issue is important when we get to the scenarios. We were directed by the PSC to match, or attempt to match, the outputs of the model that Ameren used, which were one-year and three-year payback scenarios.
MR. HUGHES: If I could beg your indulgence or another question.
MR. FRANKS: Certainly.
MR. HUGHES: While you're on the matter of scenarios, it was my understanding, and according to your report and what I sat through in the Commission hearings, that we now have the categories of the

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one-year payback, and I'm assuming that this -- what is your definition of "payback" in that model?
MR. FRANKS: Payback is that the costs are recovered in one year from the savings in one year.
MR. HUGHES: So netting out the energy savings of costs included over one year and three year?
MR. FRANKS: Or in a more complex model, because I know you're interested in the details, you might also include operation and maintenance costs.
MR. HUGHES: Correct, but the netting out the benefit covers the cost of the improvements?
MR. FRANKS: (Witness nodded.)
MR. HUGHES: And then you guys wanted to run a 75 percent incentive model, and you did.
MR. FRANKS: We did it.
MR. COITO: No, we were asked to run -- to consider a typical aggressive program that we do elsewhere.
MR. HUGHES: That showed that 75 percent. This is incentivized? Is that my understanding?
MR. FRANKS: It's 75 percent of the incremental cost is covered by the program, wherever that is.
MR. HUGHES: Okay. So would this be like

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a rebate program through utility or would this be the benefit gained from implementing the technology to cost savings, or a combination of both?
MR. FRANKS: That represents the incentive to the customer for installing -- on installation of -- the incremental costs.
MR. HUGHES: So if I understand this correctly, if I'm a customer of Jet Electra and I want to upgrade my water heater, and this would be based on a 75 percent incentive that I would receive from the utility or the government to make that improvement, and there's no consideration in the calculus of the cost savings in that determination?
MR. FRANKS: No, in terms of the cost savings to the customer.
MR. HUGHES: It's strictly incentive as opposed to --
MR. FRANKS: Yeah.
MR. HUGHES: -- energy --
MR. COITO: Exactly. Now, with the one -- one thing on the water heater, though, would be the rebate would probably be based on -- you know, the way we've run it would be -- what they call "replace on burnout," so if you wanted to replace it and it's still working really well, we didn't run that

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scenario.
We assumed it had come up on its turnover cycle, and the only rebate is on the cost of the high-efficiency -- the 75 percent rebate would only be on the difference between the high efficiency and the standard efficiency --
MR. HUGHES: Gotcha.
MR. COITO: -- so it's not going to be the whole water heater.
MR. HUGHES: Gotcha.
My question is whether this is an energy savings basis --
MR. COITO: No.
MR. HUGHES: -- or an external program incentive?
MR. COITO: It's external -- it's the expense of that 75 percent of the scenario.
MS. DIETRICH: Now that we can't use the microphones because of the feedback on the phone, you're going to have to talk louder because people on the web can't hear you now.
MR. FRANKS: So if you have a question, I guess you need to come up and -- towards the speaker.
MS. DIETRICH: No, they can't hear the two

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of you.
MR. FRANKS: Oh. They can't hear the two of us?
MS. DIETRICH: Right, because the webcast is also broadcasting for us, so we have kind of two issues. The people on the phone aren't necessarily also on the webcast or vice versa.
(A discussion was held off the record.)
MR. FRANKS: We are working with technical issues for a moment.
(A discussion was held off the record.)
MR. FRANKS: I think I have listened to web broadcasts from the PSC in the past and had also called in, and I found I had to turn off the audio on one of them.
MS. SUGGETT: It's the people that aren't on the phone but just on the broadcast that are having problems now.
MR. FRANKS: Okay. My apologies.
So I think with that, we'll move on. Here's the bottom line. We developed -- this is a ten-year cumulative potential, so the total savings over the ten years of up to 2020, and it's a summary. We show, you know, technical at 35 percent of the base energy use in 2020, absent any activity

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-- you know, just absent any activity.
Economic potential at 25 percent, and then the potentials for the three different scenarios, 7 percent for a three-year payback, 10 percent for a one-year payback, and 13 percent at 75 percent incentive design.
MR. VOYTAS: Excuse me. This is Rick Voytas at Ameren Missouri. May I interrupt at this point?
MR. FRANKS: Please.
MR. COITO: Yes.
MR. VOYTAS: One thing, we didn't send a presentation. We sent one graph. Would it be possible that the -- PowerPoint slide. Would it be possible to display that on the web right now? It goes exactly with this table right here, and then we've got a few questions to ask from that. Would it be possible to display that?
MR. FRANKS: Natelle has left. I don't know whether to speak to the mic or the phone.
MS. SUGGETT: She said it's loaded. We'll look for it.
MR. VOYTAS: Yeah, if we could show that, we just want to speak to that part a few moments.
MR. FRANKS: Are you seeing it over the

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web?
MR. VOYTAS: No.
MR. COSTENARO: There's a little bit of a delay. It might be coming up any second here.
MR. VOYTAS: All right. Now we see it. It just came up.
MR. COSTENARO: Yes.
MR. VOYTAS: So one of the things that we wanted to do with this -- I know we've gotten several KEMA drafts, the middle of December, January 6, and the current January 15th draft, and we didn't plot the middle of December, but the economic and potential numbers are -- apparently there were some errors in the commercial database, December 15, and I guess those were corrected, and now on the early January and this current version, we note that the technical and the economic potentials have stayed the same.
There was some verbiage in the draft report that this is a really conservative estimate, that behavioral modification, conservation-type measures were removed and that emergent technologies were removed.
Looking at the technical and economic potential, you know, I don't see any movement there,

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but it sounded like some measures were removed. Then we noted that in the last graph -- in the January 5th version, we had a one-year payback estimate of 6 percent. That's been decreased to 10 percent, I guess, four over six is a 67 percent increase in one-year potential, and then the three-year potential increased from 5 to 7, a 2 percent over 5, a 40 percent increase, and then for the first time -- we've never seen this here before -- there's an entirely new scenario based on a -- I don't know -- a 75 percent payment of incentives that achieved 13 percent, so this is all new information. It doesn't coincide with what we see in the report.
You know, when we look at the top 20 measures that are attached to this report, we still see the behavior modifications contributing a huge amount to the overall potential, but some of the things we're going to want to talk -- you know, we can go on with this but, you know, a very important point to note is the huge difference in -- I'm sorry -- the green line is the Ameren Missouri study, the study that we're most familiar with that we used as a reference point, but one clear, clear outlier is the economic potential, you know, the 25 percent versus 14 percent, the statewide number versus the

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Ameren Missouri number, that the statewide number is an 80 percent increase over the Missouri number.

And if you think about it, at the end of the day we end up with the same -- just call them RAP and MAP numbers. I know there's some differentials and definitions.

But if we end up at the same place there, the statewide study starts at a much higher economic potential. What that's saying is that the statewide study is very pessimistic on how customers will accept energy efficiency, much more so than the Ameren Missouri study.

As we get into this, there's a lot of things going on. You can look at that economic potential. You can do some benchmarking, and there's all kinds of issues with that, or you can go to the actual database itself and see the parameters, the estimates, the incremental costs and the savings that went into measures, and at some point today we'll raise -- we'll point to numerous examples where we've got benefit cost ratios of 30, 40, 200, and then we'll talk to the costs that underlie those, and we've got some real issues here that we're going to need to discuss at some point, say -- at least we'll key them up and we'll submit written questions to

pursue that.

But most of every question that we'll have from this point forward will be kind of based on this graph, so there's no need to keep it up, but this -- this will be the central point of questions from which we'll be speaking.

MR. FRANKS: Thank you.

MR. VOYTAS: Just at a high level -- I know we want to move on, but what was it, then, that changed between the January 5 version and the January 15 version to cause a 40 and 67 percent increase in achievable potential if several measures were removed from the database?

MR. FRANKS: Let me address the "removed" comment. There were no measures removed from the database between the runs. What we did not do is start out by incorporating programs that addressed explicitly emergent technologies and behavioral conservation in that.

The difference between the first run and -- which was delivered on January 5, the achievable high-level memo, and the results that are in the draft report, January 15, were based on revisions we made to the inputs to try and make our model do what Global Energy Partner's model was

designed to do, and Fred can speak to that directly.

MR. COITO: Well, let me just -- we need to check on this, you know, with our analysts, but I think a big -- a big change was that we tried to express things in gross savings.

I think -- I think initially we had presented net savings in our initial memo, but as we looked through, you know, your report, we didn't see any net or -- net-to-gross. It just talked about savings. So I think the big change there was to express, you know, the results in -- you know, in a comparable way as gross savings.

Now, I think in our report we show both, but the bottom -- you know, the results that are shown in the tables that Tom's presenting here today are gross savings, and like I say, we can -- we can -- we need to confirm -- I need to confirm that with our analysts, but my understanding is that's one of the biggest adjustments that was made is just the presentation.

MR. COSTENARO: Right, so that was a question.

MR. VOYTAS: Identify yourself.

MR. COSTENARO: All right. Dave Costenaro with Ameren again.

So your comment on the net-to-gross savings, I think that's definitely important until one of the things that comes out now is that our baseline had the naturally-occurring efficiency removed beforehand, and then what we present coming out of that, there is no distinction between net-to-gross because all of the savings and the study that GEP did for Ameren are net. The naturally-occurring efficiency is taken care of beforehand, and then what comes out is what the programs will accomplish themselves.

And so looking at your study, it seems that you have the net-to-gross thing taken care of after the fact, after the study is done, so the net savings in your study seem to be what we would compare to the savings in the Ameren study, and that being a potential range of 3.5 percent to 8.2 percent from Table 1.5.

And I wasn't sure 'cause Table 1.5 has different potential numbers than Table 1.1 that appears in the summary. Are we talking about, you know, 11 percent that occurs in Table 1.5 or are we talking about 13 percent that occurs in Table 1.1, for instance, for the 75 percent incremental achievable case?

MR. COITO: Are you going to answer that one, Tom?
MR. FRANKS: I'm not there yet.
MS. DIETRICH: Dave, can you repeat your question?
MR. COITO: Can you say it again? We didn't have the report open to those questions.
MR. COSTENARO: Yeah. Yeah. So Table 1.1, which I think is in the executive summary, it shows -- and I'll just talk about the 75 percent, the newly-added case.
MR. COITO: Okay.
MR. COSTENARO: It shows gigawatt hour savings in 2020 of 11,942 or a 12.9 percent reduction, and so that, I assume, is gross gigawatt hour savings. Then in Table 1.5 in the body of the report, that 11,942 changes to 10,185, but then the net number is 7,561, so I don't know which one is the right number to compare to the Ameren report, and it seems to me the 7,561 is the corresponding number, the program potential, you know, in the year 2020.
MR. FRANKS: We will need to check the --
MR. COITO: Yeah, clear there's -- clear there's inconsistency there but, you know, going from Table 1.5, I would say, yeah, that the -- that if you

want to compare -- I guess it would be the net, although, you know, based on reading how your study was put together, it was hard for us to understand how net and gross came together so, you know, to the extent we're comparing net against gross in our, you know -- well, we didn't do a comparison, but that's good to know.
MR. COSTENARO: Okay. Yeah. Thank you.
MR. COITO: Because it sounds like -- it looked like a lot of your penetration of programs was just kind of based on, you know, assumptions, so we weren't sure what they were -- you know, how that was working.
And the other thing we really don't understand is, you know, from your study, which makes it impossible for us to compare, is we don't know how much naturally-occurring is embedded in your forecast. That's just taken off the top, so it's not very transparent so, you know, we -- we tried to look at some of those numbers, you know, to some degree, but we found comparisons not to be very easy to do from the report. Thank you.
MR. COSTENARO: Yeah. No, I agree, it is difficult to compare the methodologies when they're all so layered and complex. Yeah, we -- our baseline

included interchanging and -- and with the stock turnover and new technologies coming online, so we kind of had all that included in the baseline.
MR. COITO: Yeah. Let me also just address one more thing on the -- on the difference between the economic potential. To some degree I think our economic potential includes quite a bit of light savings that are going to be picked up in standards.
We still showed it as economic potential for -- you know, for society, but when we get to our achievables we -- you know, we net -- you know, we netted out lighting with the understanding, you know -- I think we showed a couple years of a lighting program for things like CFLs, and then those dropped -- you know, and then they dropped off so, you know, that is one of the reasons the economic potentials will look different is because, you know, from what we can tell, yours excluded a lot of lighting that was going to go to standard, and ours did not.
MR. COSTENARO: So would there -- the naturally-occurring efficiency then, should that be backed out of all the potentials: The technical, economic and achievable potentials?

MR. COITO: No. Yeah, like I said -- yeah, we -- yeah, I mean, it could -- if you're trying to compare, I guess so. We just didn't -- you know, we do it that way but -- and you guys did so, yeah, there's a difference in methodology, so either you back it out or you add it back, depending on, you know, what perspective you're looking at.
MR. COSTENARO: Can you comment just a little bit on the kind of methodology of how the naturally-occurring efficiency was done. Did you estimate, like, in-stock turnover, like, the number of CFLs are going to be in -- come online in the marketplace naturally, and then there's another number of CFLs that the programs would be doing?
MR. COITO: Yes, exactly, and we -- and we use the same penetration curves, and the whole point being that, you know, without an incentive and without, maybe, increased awareness, you know, from the programs, there's still going to be a certain level of energy efficiency going on, you know, either from -- through government awareness, you know, initiatives, Energy Star, or through, you know, word of mouth.
You know, yeah, we show some level, and we use pretty much -- you know, we use the same

penetration curves, and then what we do is say, You know, we're increasing the cost effectiveness of a measure by giving an incentive and then -- you know, the model then picks up additional savings that would, you know, accrue to the program.

MR. COSTENARO: I see. Okay. Thank you.

MR. FRANKS: Any other questions?

MR. NOLAR: John Nolar, DNR.

Is this mic working, by the way? I just want to clarify -- I just want to clarify when -- when KEMA uses the word "naturally-occurring potential," does it incorporate potential -- I mean naturally-occurring efficiency -- sorry -- that that includes efficiency resulting from market-driven technology improvements and efficiency resulting from customers responding to the kind of government and other information that's not driven by the utility and also responding -- and also efficiency resulting from market-driven innovations? Are all those included in that term?

MR. COITO: It -- it picks up the market-driven. I think, you know, government initiatives, I -- we're not that -- we're not that exact. I mean, I think there's -- it's a gray area. We try -- we haven't really done the attributions to government

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initiates.

MR. NOLAR: If there are new DOE standards, that also is a part of the --

MR. COITO: Yep. We -- we -- we try -- we pick up standards -- you know, and I could check exactly what standards. Government lighting, the big lighting ones, we definitely pick those up.

We don't usually look at standards that aren't on the -- you know, on the books yet.

MR. NOLAR: So, like, if there's a standard that's been legislative but DOE has not yet developed a rule stating what the standard will be in response to the legislation, that would be one that you would --

MR. COITO: Yeah, it's a gray area. I mean, it's a big one we know about. I mean, it's going to be a major change, and it's on the radar. Like a couple years ago, they went from the SEER 10 to a SEER 13 air conditioner. As long as we know it's happening -- if it's -- if it's not official, we typically don't put it in, but if it's official, we see it coming, we'll put it in.

MR. NOLAR: Actually, I ask this question first of KEMA but, you know, both KEMA and Ameren were using the same term "naturally-occurring

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efficiency." I think it's interesting how Ameren uses this term as well to make sure we're all using the same terms in the same way. I don't know if Ameren --

MS. DIETRICH: Ameren, did you hear the question?

MR. COSTENARO: We couldn't hear that very well, no.

MR. NOLAR: Rick, this is John Nolar from DNR. Both Ameren and KEMA have been using the term "naturally-occurring potential," and what I did was ask KEMA to sort of explain what different categories that might be part of that term they were including into that term, and I was going to ask you the same question, because I wanted to know if we were all using the same term of "naturally-occurring efficiency" in the same way, and so how are you guys using the term?

MR. VOYTAS: John, the easiest way I can explain "naturally-occurring" is natural growth is equated to the natural growth ratio in the free ridership portion. These are both -- would do the energy efficient thing regardless of the utility program, so that's what we try to capture, and that's how I think of naturally-occurring energy efficiency.

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MR. NOLAR: All right. Rick, did you hear the discussion where I was asking about the several different categories?

MR. VOYTAS: No, John. We couldn't really catch any of that.

MR. NOLAR: Sorry. I might've been using a dead microphone.

So when you use the term "naturally-occurring efficiency," does that include the impact of, for example, federal plant standards?

MR. VOYTAS: No, John. That -- the effect of federal standards is built into our baseline, so we use a statistically-adjusted end-use forecasting model, so we've got things like the Energy and Dependance and Security Act of 2007 and the phase-out of incandescent bulbs through time. That's embedded in our forecast, so that's in our base forecast itself.

MR. NOLAR: So that's not part of -- so that would not be something you would include in that term. Okay.

MR. VOYTAS: Correct.

MR. NOLAR: And are you including technical innovations that occur as a result of market forces?

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MR. VOYTAS: Naturally-occurring?
MR. NOLAR: Yeah. Well, I guess that's what I'm asking. Is that part of what you mean by when you say "naturally-occurring?" Are you including changes in technology that are market-driven?
MR. COSTENARO: Well -- this is Dave Costenaro at Ameren.
Yes, we did include new technology and comment online as it became cost-effective throughout the time horizon considered in our study.
MR. NOLAR: Okay. Well, I was just -- I was just trying to clarify the term, you know. I hope -- I'm not sure, but I hope we're closer.
MR. COITO: Yeah. We don't -- we don't, you know -- I don't know for you, but we both don't include standards which is --
MR. NOLAR: Yes. All right.
MR. COITO: I think some of the technology and innovation -- you know, I mean, when you have a bottom-up, if you don't know what it is, that technology innovation, you can't build.
I mean, we've -- we've done other things but, you know, we don't show -- we really don't show that in any of our numbers because it's things --

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it's things like emerging technologies, like LEDs. We'd have to assume now -- LEDs are in the marketplace. We'd have to assume they're dropping in price a lot and, you know, I think per our -- you know, up-front, we're maybe looking at commercially-available technology in the study. So this study, if anything, is probably a little conservative on the technology side in that in a bottom-up model where you actually have to account for all the pieces, it's very difficult to pick up innovation unless you want to put, like, a generic increase in lighting in to pick up technology that you don't know about, so we don't have that in there.
You know, we fully expect that in five years there's going to be newer technologies coming on, and so we have to revisit these studies every, you know, number of years because the bottom-up -- the nature of a bottom-up model of any type, it does not pick up things like technology, innovation that you don't know about.
MR. HUGHES: Looking at this slide, under our technical potential, the savings is a percentage of base. I assume this is a -- is this in load or have remonitized (ph.) this?
MR. FRANKS: That's gigawatt ours in 2020.

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MR. HUGHES: So from this am I to understand that in our residential category, if we're discounting behaviors such as children who refuse to turn off the lights or televisions, our residences are 43 percent inefficient in terms of available technology?
MR. FRANKS: Yes, that's -- and it's not -- there's some -- the average home -- the energy use in an average home is fairly large compared to someone who really tries, and I've been a party to some cases where in the single homes, you know, with people with no costs barred have attempted to save energy and they have achieved -- they have achieved in excess of 50 percent.
MR. COITO: One other thing, though: In some cases people are out of step because they've got an old air conditioner. You know, this is -- this technical and economic assumes everything goes in now, whereas we know, like, in air conditioners, you know, if it's five years old, they're not going to maybe replace it for another five to ten, so there's some --
MR. HUGHES: I just wanted to make --
MR. COITO: Yeah, it's --
MR. HUGHES: -- sure that I was perceiving

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what --
MR. COITO: Yeah, some of them are less efficient.
MR. HUGHES: But I find that an incredible number.
MR. FRANKS: It's not uncommon.
MR. COITO: No.
MR. HUGHES: Okay.
MR. FRANKS: Are there any more questions -- on this slide?
MS. SUGGETT: Good qualifier there.
(No response.)
MR. FRANKS: This is a comparable slide for electric demand. The demand characteristics and the energy using characteristics of a particular sector may not be exactly the same, and it has to do with how much they draw in various time periods and how often they draw it, so that explains some difference in the percentages.
And as we note at the bottom, this excludes savings from demand-response programs, which are addressed separately.
This is a description of the benefit cost summary across the three scenarios. The definition of the scenarios comes a little bit later, but we've

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discussed them already. And these are all in present value.

This chart summarizes the same for natural gas energy only, and a benefit cost summary for natural gas.

MR. ROGERS: This is John Rogers. Tom, looking at the one-year payback and the 75 percent incentive, the costs in the 75 percent incentive are lower than the one-year payback costs and yet the --

MR. FRANKS: Are you on electric?

MR. ROGERS: Yes.

MR. FRANKS: Let me go back to that.

MR. ROGERS: And yet the net benefits in the 75 percent incentive are greater than the one-year payback.

MR. FRANKS: That's correct.

MR. ROGERS: Help me understand that.

MR. FRANKS: The 75 percent incentive, it's an allocation of the program dollars differently. In some cases the one-year payback required an immense amount of money for certain measures to get it down to there, or a larger amount of money, and therefore produced lower net benefit.

Also in the 75 percent payback scenario, our model develops -- developed a higher level of

savings for some measures based on that when we had the same awareness and other factors and availability, so it's a model output.

It makes sense that if you're trying to pay -- get everybody the same payback as opposed to offering a percentage of incremental. You can generate sometimes more interest in the market with a percentage of incremental on measures that are highly cost-effective but not get any incentive at all within a payback-limited scenario.

MR. HUGHES: If I can, in the same vein --

MR. FRANKS: Certainly.

MR. HUGHES: -- am I correct in my understanding that on the electric we show 4.3 billion in benefits under your 75 percent incentive? Would this be the result if we saw 3.225 billion in incentives; in other words, is this the cost to get that -- You follow me? -- with the 75 percent incentive sort of reversed?

MR. FRANKS: I've got to look at the numbers underlined there that are not on this chart, but I'm not sure -- I can't speak to that number.

MR. HUGHES: Okay. Okay.

MR. FRANKS: It's -- I think the -- the total program cost, the --

MR. HUGHES: Right.

MR. FRANKS: -- total cost, which would be incentives, and this includes participant costs, because the net benefit includes the participant costs, which is not part of the program costs. In other words, it includes incentives --

MR. HUGHES: Okay. So is that in the 75 or not? Here's my question: Can I take that net benefit, multiply by .75 --

MR. FRANKS: No.

MR. HUGHES: -- and determine the costs?

MR. FRANKS: No.

MR. HUGHES: Okay. All right.

Is there an appendix or something that claims to me why?

MR. FRANKS: 75 percent is an incentive of incremental costs at one point in time.

MR. HUGHES: Okay.

MR. FRANKS: Net benefits is a stream over time adjusted to be in present value.

MR. HUGHES: In dollars but --

MR. FRANKS: It's -- it's in term -- it is converted to dollars because you can't compare wants of dollars and have a meaningful --

MR. HUGHES: Okay. Very good.

MR. FRANKS: Or one hour.

MR. VOYTAS: This is Rick Voytas at Ameren Missouri. Could I interrupt for a second?

On the issue of costs, since we were just talking about costs, I just had a global comment. As we look through the draft report, we saw some of the program costs, we saw some line items for incentives for marketing for admin, but we really don't have an understanding how KEMA applied those costs, and so if the costs were developed on a percent-of-something basis, pro rata basis, we'd really like to know exactly how the specific program costs associated with these various measures were determined. We could not find a discussion for that particular thing.

Another area that we were struggling with is we really didn't see any useful cost matrix to compare this draft with other studies. I mean, we saw the total, you know, 1 billion, $2 billion over ten years to acquire some of the estimates but, you know, in terms of what the first costs in terms of dollar per KWh or the levelized costs, we didn't see any of that information. That would've been really helpful to give us a better understanding of, really, a better comfort level as to the reasonableness of some of these numbers.

And also we would've liked to have seen a little discussion on how KEMA approaches levelization of costs. Clearly, I mean, we're looking at a 2010 to 2020 time period, and we've got -- in terms of dollars per KWh, we've got a numerator of dollars and a denominator with KWh, and we'd like to know if you discount KWh similarly to how you discount dollars.

So those are some areas that, again, we'll gladly put this in a memo for KEMA to chew on after this date, but those are some issues that we just couldn't find that information in the report.

MR. COITO: And some of that will probably show up in the appendix. You know, some of that -- we actually, I think, have an Appendix H that hasn't been completed yet that would speak to some of that. Having more detailed questions might allow us to be more specific as we get into that appendix but, you know, that was not included in this -- in this draft.

MR. VOYTAS: All right.

MR. COSTENARO: This is Dave Costenaro from Ameren again.

Do you have any insight that you can give us about just general methodology of developing the costs, what is in the measure with a certain

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incremental cost then levied with, you know, 20 percent for admin costs and -- or 40 percent, or was that the type of methodology you used or a fixed cost added program build-up?

MR. COITO: Yeah, we -- yeah, let me just real quick -- one of the things we did, like, our marketing budgets, we bench-marked it to what a typical marketing budget would be for, you know, for a certain base load energy, you know, for a certain size of a service territory or, you know, in this case the state of Missouri, you know, what we've seen at typical marketing budgets, you know, to educate people. We looked at that, so we kind of benchmarked that off of -- off of base use.

MR. FRANKS: Somebody is speaking. Would you please mute if you're not speaking at the time.

Go ahead, Fred. I'm sorry.

MR. COITO: Okay. So -- you know, so we tried to -- you know, we looked at that, and we looked at -- yeah, and we looked at typical, you know, benchmarked typical administration costs to what we would -- you know, what we would see to support a, you know, certain size of savings so, yeah -- you know, to the extent we -- you know, we benchmarked off of what we have seen --

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MR. FRANKS: There is a woman laughing right now. Would you please mute your microphone.

(A discussion was held off the record.)

MS. DIETRICH: Somebody needs to put your microphone on mute or your phone on mute.

(A discussion was held off the record.)

MS. DIETRICH: Somebody about your little book right there, can you put your phone on mute?

MR. COITO: Maybe they have something good in there.

MS. SUGGETT: Dave Costenaro? Dave?

MR. COSTENARO: Yeah.

MS. SUGGETT: Can you guys put your phone on mute?

MR. COSTENARO: We have ours in Missouri on mute, yeah.

MS. SUGGETT: Okay. There's somebody that's not. It almost sounded like you. Thanks.

MR. COSTENARO: Wasn't me. Sounds like we have radio silence, so it's -- if you could continue.

MR. COITO: Yeah.

MR. COSTENARO: You were saying that you estimated --

MR. COITO: So -- so we tried to bench-- yeah, so we tried -- basically what we tried to do is

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benchmark our marketing costs to, you know, kind of what would be, you know, an average of a, you know, typical -- I wouldn't say typical, because they bounce around, but, you know, fairly typical for a certain size of the service territory baseload.

We then, you know, kind of -- you know, benchmarked admin budgets to -- to what we would, you know, typically seek to get, you know, based on -- on the size of a program which is, you know, based on typical KWh . Admin is actually one of the last pieces of the model, so basically, you know, marketing actually affects awareness and, you know, that kind of affects the size of the program, how much rebate you might have to give out.

Then, you know, once we see the size of a program, we -- we will attach an admin budget. I think, if anything, in Missouri, we actually -- given that there hasn't been as much history of programs, we probably start out with a little higher admin budgets per KWh in therms saved than we would maybe in areas like, you know, California or the east coast that have run programs for a while, because, you now, we understand that there's probably, you know, some learning curve on the program so, you know, yeah, we did try to benchmark these things.

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MR. COSTENARO: Okay. So it sounds like you applied a dollar amount that was kind of based on the size of the kilowatt hours of therm savings in the program.

MR. COITO: Yeah.

MR. COSTENARO: Okay. All right. Thanks for clarifying.

MR. FRANKS: I think this is where we are. This is the result -- some of the results from the Federal Energy Regulatory Commission model, just showed that four different scenarios and at several different time frames. We will address this in a little more detail later.

Move on to the technical and economic potential. We developed this from Missouri-specific input sources to the extent they were available, made them available to PSC and stakeholders in interim memos for review and comment.

The sample files were distributed in advance so the folks would know what the -- at least have a sense of what the big spreadsheets were when they got them. They included baseline data, building characterization data, measure data and economic data. These inputs are documented in the report appendices.

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Now we'll move on to electricity. This is the --

MS. DIETRICH: Please place your phones on mute.

MR. FRANKS: Especially if you're having a lot of fun.

We have base energy by sectors. This is a sector breakdown of the base, which is -- and demand. Shows that from what we -- you know, from our research, Missouri is residential-driven, a smaller industrial base and a moderate commercial.

And here's the summary, technical potential and economic potential for both energy and peak demand savings. These are all at 2020. This is the savings broken down by sector, so each sector's contribution in gigawatt hours and then shown as a percent of sector load, not of full state load.

Now, this is contribution by sector, which you'll note is different. It's 43 percent of the residential sector load can be saved in gigawatt hours, but that contributes 55 percent of the total state savings.

Demand savings by sector; demand savings as a percentage of sector load; contribution to total demand savings by sector, and the top 20 measures for

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economic potential. Not on this chart, but I think in a subsequent table, you will see some measures that have a TRC, total resource cost, test result of less than one. That was for measures across all sectors.

In some sectors a measure may have a positive TRC to the extent -- and contributably a large amount of savings, and those measures are incorporated in these high-level summary tables, so this is in the top 20 residential measures broken out by measure name and building type. There were four building types: Single --

MR. VOYTAS: This is Rick Voytas. Could I interject at this point?

MR. FRANKS: Sure.

MR. VOYTAS: Okay. So one of the concerns that we have, as I expressed earlier, is the really large discrepancy between economic potential between the Ameren Missouri study and the draft statewide study. I mean, it's almost a two-to-one differential, and I think if we did a GAP analysis, there's probably a few technologies that are in the statewide studies that are not in Ameren Missouri's.

One is the streetlights. Things on the utility side of the meter we did not include in the

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Ameren Missouri study, but at the end of the day that gap -- you know, those type of issues are few and far between. That gap is going to be huge.

I don't think it's due to -- and we look at this top 20 measure list. We see some TRCs, our benefit cost ratio, in the stratosphere, you know, 20, 30, things of that nature. So one of the things that we looked at was we just -- and this is hard to do when you have PDF files and you don't have all the data. It's very difficult to manipulate this.

We took a very unscientific sample of measures and we compared those to the measure TRC in our database that we scrubbed rather thoroughly, especially in preparation for our integrated resource plan filing, and the discrepancies are just huge. I mean, we're talking multiple, three to ten per measure.

And one measure I think everybody's familiar with, I'll just use as an example, is refrigerator recycling is a measure that both studies looked at. In the KEMA analysis, I think the benefit cost ratio is close to 30. On the 12/15 issuance it was 29.75 and the latest one is 26.42. This is at the measure level.

On the Ameren Missouri work the TRC is 4,

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so what is that? A difference of a multiple of seven? And when we try to understand what's going on in the KEMA database, an incremental measure cost of $25 is assigned to this. The Ameren Missouri database -- this is at the measure level, it's closer to 100. I mean, $25 doesn't even represent the incentive needed to acquire these.

Then there's the cost to recycle these, which is extensive, so I could give another 20 examples of these huge discrepancies. But it's things like this that I think are driving the economic potential because this contributes directly to the payback and things of that nature that contribute to this huge two-to-one discrepancy in economic potential.

MR. COITO: Can I say, first of all, I appreciate your difficulty looking into your report. We had a similar difficulty looking into your report. I don't think we could get your costs out of your report very easily, otherwise we would've probably done a little more sleuthing to see why some of these differences were available up-front.

I don't have any direct answers right now, but I also see quite -- you know, my understanding is you guys don't have CFLs in your

economic potential, but we can't tell exactly. But that's all -- if you look at some of our top ten measures, they show up pretty prominently here.

You start taking some of those out, and that bridges the gap quite a bit too. A TRC of 4 or a TRC of 24, there's still economic -- they would still show up in the count of economic potential, so I don't think that that comment was really relevant to what's in economic potential or not but, you know, I do believe we tried to probe into your report to understand where you guys were coming from.

We did not -- you know, if things would have been a little more transparent, I think we would've used more of your -- tried to understand more of the differences up-front.

We did not have that opportunity, so we appreciate, you know, that you're telling us this now but -- you know, and measure by measure, I am not sure about, exactly, some of these costs right now. We could -- we could look at them if you wanted to -- you know, given that you have all of our measured costs, if you want to highlight, you know, the ones that are different, we -- you know -- you know, we might be able to take a little bit of look at it. We don't have a lot of budget for that but, you know, on

the back end it's a little difficult. We tried to get -- we tried to get a lot of this data upfront, and I don't think we got all of it.

MR. FRANKS: I have a question. Dave?

MR. VOYTAS: Just one second. I appreciate that, and I've never been involved in a study with a time frame like this, you know, where I get a report two days before the meeting that's several hundred pages and review it. But I understand that but, please, I -- you know, Dave Costenaro and I are extremely familiar with the Ameren Missouri report.

I don't recall having getting any calls from the KEMA team on this. We would have loved to sit down and talked with you. Come to our place. We would've loved -- I don't recall ever having done that, and that offer was always open, and so to hear that at this late date, there certainly was no intention to be nontransparent.

We would've opened all of our files, books, and given you all the knowledge we have, but I don't recall that request ever happening --

MR. COITO: Okay.

MR. VOYTAS: -- but going forward, we can talk.

MR. O'DONNELL: This is Joe O'Donnell. May I speak?

MR. FRANKS: Would you hold off a moment, Mr. O'Donnell? I'd like to ask Mr. Voytas a question in relation to his last issue you raised.

MR. O'DONNELL: Mine's on the same issue.

MR. FRANKS: Well, let me -- yeah, please let me ask this question. We'll get right back to you.

In regard to the economic potential, you said the -- and specific example of second refrigerator recycle, you said the $25 was not enough to even acquire the refrigerator and indicated there were other costs. So if I understand what you said, when you're doing -- when your study did economic potential, you also included program costs in the costs of the measure. Is that correct?

MR. VOYTAS: That's not correct.

MR. FRANKS: So then how is -- okay. So then --

MR. VOYTAS: We looked at the incremental measure costs and we looked at the incremental measure savings, period; no net-to-gross, no program costs.

MR. FRANKS: So from a programmatic

incentive level, we see refrigerator recycling programs that pay $25 to the customer, the incentive, for the -- you know, to acquire the device. The other costs --

MR. VOYTAS: That is a fraction of the cost but, yeah, I've seen $25 incentives too.

MR. FRANKS: Okay. So it just sounds to me like you might be incorporating program costs into economic potential, and I was -- that's a different methodology.

MR. VOYTAS: No, we don't do that. We make a conscious effort to not do that, so pretty sure you won't find that.

MR. FRANKS: Okay. Thank you.

Mr. O'Donnell, sorry for interrupting. I just wanted to clarify that point.

MR. O'DONNELL: Sure. I have a question that's related to Rick's observation. I've seen measures with, you know, TRCs that are that high, and, you know, 30-plus, and sometimes -- I'd like to know how you're handling the issue of incentive payments when the customer does not have any out-of-pocket expense.

Typically the incentive payment is a transfer payment from the utility to the customer,

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and the assumption is that it doesn't affect the total cost. You know, it increases the utility costs but reduces the customer's net out-of-pocket expense.

A lot of times that cost is excluded in the calculation, but if it's excluded in the calculation where the customer does not have any direct out-of-pocket expense like you would see in the supply recycling program. Then you're going to see TRCs that are through the roof because you're excluding costs that should be in there, and I'd like to know how you're handling that issue.

MR. COITO: Yeah, we don't have an answer for that right now. That's a point we could take under consideration but, yeah, it's not a bad point.

MR. O'DONNELL: We use a software package that, you know, generally makes the assumption that incentive payments are transferred and don't come into the calculation. But if you throw that out, you know, typically with demand response programs where, you know, the customer's not spending any money considering, you know, payment to a loan or you have an appliance recycling program where the customer is not spending any money yet you get an incentive, you cannot exclude that cost because, you know, it's a program cost and it's not offsetting some customer's

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expense. Typically you'll see TRC 30, 40, 50 when you do that.

MR. VOYTAS: This is Rick Voytas at Ameren Missouri again.

And I know time is of the essence and we will put some of our concerns in writing and get them to you, but I just used refrigerator recycling to exemplify some of the issue, but clearly, you now, there's a number of LED measures that replace an incandescent bulb. We question whether the incandescent bulb is appropriate baseline.

After 2014, EISA will be -- the Energy Independence and Security Act -- will be the baseline, and we've got several examples there. Other things, we see windows that got a really large share of both electric and gas potential savings, TRCs are high. They don't even come close to passing our measure level screening. I'm not going to delay the point --

MR. COITO: Excuse me. Excuse me. No, no, let me just ask you about windows. We -- we -- we model the window as an incremental, so we're not saying go out and replace your window as a retrofit and pay the full cost of a window. Ours is more incremental from, if you're going to replace your

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window anyway, let's go to the more efficient one, so -- in fact, it shows up as a big chunk of economic potential because it's calculated as everything happens at once, but as achievable, you know, you're only going to get one -- you know, 1/40th of those each year because, you know, people aren't replacing their windows, you know, every year.

It's -- it's, you know, a 20- to 40-year cycle or some, you know, long-term renovation cycle so, you know, there are probably some approach issues why things are different, and that's -- you know, that's just something that we need to, you know -- you know, I mean, those are just differences that we have to understand.

You know, when you see the achievables, you're not going to see windows being, you know, one of the top measures.

MR. COSTENARO: I see. Yeah, I think for us we had a lot of costs associated with the windows and the same sort of issues with frequency of uptake, so I guess it was just --

MR. COITO: Yeah.

MR. COSTENARO: -- looking at these economic top 20. So you're saying that they don't appear as much in the achievable --

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MR. COITO: No.
MR. COSTENARO: -- in light of the economic potential?
MR. COITO: Right. And we -- you know, exactly. And some people will run an economic where you -- you know, you do a stock adjustment through that. Our model doesn't work that way, so we don't don't -- you know, we tend to have an instantaneous adoption of everything, and then it really -- the dynamics get into the achievable potentials so, you know, that might be just a -- you know, a difference of modeling, so it may be a little difference of definition in the economic potential. Hopefully that will help a little bit.
MR. COSTENARO: Gotcha.
MR. VOYTAS: I'm sorry. This is Rick Voytas.
On the residential top 20 list, the incorrect feedback, is that the old power-of-behavior-modification-like type of thing?
MR. COITO: Yes. Yeah, 2 percent savings for -- you know, I don't know what the exact cost is, you know, whatever Opower -- you know, 10 or $20 a year.
MR. VOYTAS: Okay. So that's a real

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measure in the analysis, and when I read on page 3 that we excluded a general modeling of emergent technologies and behavioral conservation approaches, what I thought that meant -- that's really not what it meant. There actually is behavior modification programs in this potential analysis.
MR. FRANKS: Yeah, just the Opower.
MR. COITO: Yeah, but it's not in the achievables? We'll look -- yeah.
MR. FRANKS: I think it is in the achievable by -- I mean, there's a -- we did not -- we, perhaps, should've been more precise and said that, you know, we were referring to the vast array of other behavioral conservation programs.
MR. COITO: We'll look at the language there and we'll make sure it's clear to the reader what's in and what's not.
MR. VOYTAS: Okay. And I don't have this data plan in front of me, but I believe -- I mean, most -- there's a lot of issues with Opower, but one is persistence. It's got a one-year effect. I thought I saw a ten-year life ascribes to this particular measure. Can you confirm or deny that at this eleventh hour?
MR. FRANKS: No.

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MR. COITO: No, but we can look at that one.
MR. VOYTAS: Okay. Enough said. Thank you.
MR. FRANKS: The same for commercial, top 20 economic potential measures. Comments noted previously with regard to residential.
The industrial top 20, and then one of the issues that came up was how much difference does the avoided cost make? And we tested the sensitivity of avoided costs at the economic potential level, and this chart displays the differences in gigawatt hours and megawatts.
Based on discussion with Staff, we proceeded to take just the database avoided cost scenario forward into the achievable potential. Determining the sensitivity to avoided costs was within acceptable range for the two scenarios we modeled, 20 percent below the database and 50 percent above.
A more detailed description of those scenarios, and now to achievable potential electricity.
MR. BRUBAKER: Could I ask a question at this point? This is Maurice Brubaker.

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MR. FRANKS: Certainly.
MR. BRUBAKER: I think there at Appendix C of the report, at what point in time was the -- were the avoided cost numbers developed?
MR. FRANKS: Avoided cost numbers were developed as part of the economic data collection and review database, and they were direct and accepted, and we took forward to avoid -- face avoided costs that were from direction of PSC.
MR. COITO: It was probably about October?
MR. FRANKS: Yeah, I think so.
MR. BRUBAKER: Okay. At what point in time were the avoided costs developed that are used here?
MR. FRANKS: Do you mean what time frame are they referenced? Do you mean what time frame are they referencing?
MR. COITO: No, when --
MR. BRUBAKER: No, I mean is it 2008 or 2009, or were they developed in late 2010?
MR. FRANKS: The PSC provided direction to us on the avoided costs our model should use in October or November of 2010.
MR. COITO: Yeah, we don't -- we don't

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have an answer for that one.

MR. BRUBAKER: I don't know who to ask. I suppose John or someone could answer that or maybe -- if I look at those numbers, they're roughly twice what the current projections are. I'm guessing they came out of the last round of IRPs, which were developed with prices.

MS. DIETRICH: That's correct, Maurice. They were from the IRPs.

MR. BRUBAKER: In any of the forward price curves I've seen lately and any of the utility avoided cost data I've seen lately is a lot more than 20 percent lower than what those numbers are, so I just want to understand what the frame of reference is.

MR. COITO: And you're looking by time of use period that we've got in there.

MR. BRUBAKER: Yeah.

MR. COITO: Yeah, I'm not sure.

MR. NOLAR: Hey, Maurice, this is John. I'm going off of memory now, but I think what you did was take the IRP avoided costs for Ameren and Kansas City Power & Light and weight by sales, retail sales.

This is Joseph -- hi. This is Joseph O'Donnell, KCP&L. May I make a comment, a question?

MR. FRANKS: Please.

MR. COITO: Certainly.

MR. O'DONNELL: We were provided with several tables showing KEMA's humpty, lofty summer-winter avoided energy costs several months ago, and when we kind of read in the description, it appeared that KEMA was using data from the -- half KCPL and Ameren and came up with some weighted average cost.

One, when I looked at it, there was some discrepancy in the number of hours that were allocated to number on peak, and seems we resolved that, but the energy prices near term are -- were three times what were commonly seen in the market, and I sent Natelle Dietrich comparative files showing historical actual three years of prices at SPP to KCPL interface and also a price forecast that's most recently came out of our minus modeling and, you know, we're seeing on peak summer prices approximately 35 percent of what KEMA was using.

You know, prices, quite frankly, in the open market on average are not at the 150, $120 level anymore on peak summer -- they're more like $45 -- so we had an issue with that, and I never got a response on how KEMA did -- you know, did KEMA look at that? Did they adjust their numbers or were they using data

from four years ago?

MR. FRANKS: I believe we responded by saying we took direction from the PSC.

MR. O'DONNELL: Okay. But I -- I e-mailed Natelle Dietrich tables showing the KEMA values for avoided energy and showing actual SPP historical prices for the last three years since the market went live, and these were based upon hourly actual clearing prices, and then we also showed the KCPL forecast, and there was a big discrepancy.

MR. FRANKS: We do not dispute that that happened.

MR. O'DONNELL: So essentially we feel that your near-term avoided energy costs are overstated greatly.

MR. FRANKS: Noted.

MR. O'DONNELL: And we can validate this by calling historical SPP clearance prices out from the market website.

MR. BRUBAKER: The same thing is true if you look at the MISO prices.

MS. DIETRICH: Who was that speaking, please?

MR. FRANKS: Who spoke to the MISO prices, please.

MR. BRUBAKER: Sorry. Maurice Brubaker again.

MR. FRANKS: Thank you.

Moving on to achievable potential --

MS. DIETRICH: Does she need a break?

MR. FRANKS: We should take a break. We will take a 15 minute break.

MS. DIETRICH: We'll take a 15-minute break to allow the court reporter some time.

THE COURT REPORTER: Thank you.

MS. DIETRICH: We'll start back up at five after 11:00.

(A recess was taken.)

MS. DIETRICH: Okay. We're going to go ahead and go back on the record.

While we were on break we were talking about how to proceed with the weather and people having to catch flights and that type of thing.

We're going to try to just keep going along and work through lunch and see how we do, hopefully ending up, probably, in a couple hours so that KEMA can get on the road to head to the airport.

MR. FRANKS: And you can always -- I'm sure that the PSC will want to set an end date for comments for your convenience.

MS. DIETRICH: The Commission has to provide feedback to KEMA by the 25th, and so I think we're going to have to have any kind of comments that you might have by the first thing Monday morning, so 8:00 a.m. Monday morning I need to have any comments that you might have that we need to incorporate in our feedback to KEMA and that I can share with KEMA, so anything you send me I will forward to KEMA.

MR. FRANKS: Proceeding with achievable potential for electricity --

MS. WHEELER: This is Janet Wheeler. I'm Commissioner Jarrett's advisor. I hate to interrupt, but I think my question would probably be best placed before you kick off a new topic.

MR. FRANKS: Please. Go ahead.

MS. WHEELER: I usually precede my questions and workshops with a disclaimer that I am not making a representation from the Commissioner, but in this case I am actually making representation on behalf of Commissioner Jarrett.

In particular, he read an article yesterday in The Wall Street Journal regarding the -- titled, "The new light bulbs lose a little shine," by Rebecca Smith, where the California Utilities Commission is rethinking its reliance on the CFL

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bulbs for use in energy efficiency, and in particular, the Staff of the state utility commission has said that utilities missed their overall energy savings target partly because of the difficult linking results from light bulbs, and his question is to have KEMA respond to that finding in the article, that energy savings from CFLs are difficult to predict and measure energy savings overall and then have any stakeholders respond.

MR. FRANKS: I think that in light of the time and -- it would be best if those responses were put in writing and -- from the stakeholders, and we'll look to the Commission to provide direction for us on how we should respond.

MS. WHEELER: And I understand. Obviously, the article was yesterday and not everybody's had an opportunity to read it, but Commissioner Jarrett is, in particular, interested in the specific question addressing the finding in the article that energy savings from CFLs are difficult to predict and measure energy savings and the ultimate conclusions that it was going to be distribution of energy efficiency technology as opposed to the actual energy savings that the California Commission may be using as a model moving

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forward in the future.

Thank you very much.

MS. DIETRICH: Janet, this is Natelle. Would it be okay if I get with you after a while to get the exact question and send it out to the --

MS. WHEELER: Yeah. I think if you read the article, the question is pretty -- the question is very clear from the article, because the California Commission is indicating that the compact fluorescent light bulb hasn't really delivered for a variety of different reasons.

One of them, not only the difficulty in measurement but that the life span of the bulb itself hasn't lived up to its expectation and that the Commission is reconsidering how they're going to pay utilities for these incentives in energy efficiency and whether it would be through a measurement tool or through some other method.

MS. DIETRICH: Okay.

MS. WHEELER: But, yes, I can get with you later. Thank you.

MR. FRANKS: And now the promised scenario description. For the one-year payback, database incentive levels are set such that all measures have a payback period for the customer of one year, except

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for those measures which inherently have a payback period of less than one year, they have no incentive.

The budgets for the program administration, marketing, et cetera, were set at moderately aggressive, not full out, and that is based on the kilowatt hours, you know, the savings that were generated by the model not -- you know, it wasn't a per kilowatt hour, you know, by measure.

Three-year payback is a similar approach. Incentive level brings everything down to a three-year payback if it gets less than -- if the measure has inherently less than a three-year payback, there was no incentive pay, and the program budgets were where we would describe as modest. They were pretty much business as usual for a jurisdiction where there is a, you know, moderate level of ongoing program.

And then the third scenario that we did on our own initiative was for comparison to do something that we're familiar with. We -- the payback scenario was not a -- we didn't have a simple toggle we could change on our model and say, Spit out one-year payback.

We had to adjust many of the inputs from our normal procedures to try and track or follow

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Amerun's, you know, to say -- saying that that was what a one-year payback would look like, but we didn't actually have -- you know, even if we had had all the inputs that Global Energy Partners had used, we might not have called them the same thing or used the same number of inputs broken out in the same way, so there was an inherent challenge in trying to make a model do something that it wasn't designed to do.

MR. COITO: Well, and, I mean, one thing to be clear, there's some measures that, you know, without any incentive, anyway, have paybacks less than one year or less than three years. For those types of measures, they get run through the model with zero incentive, and the only program effects would be from increasing customer awareness.

MR. FRANKS: And that's very minimal.

MR. VOYTAS: So one of the things I'd like to ask: On the KEMA report on page 1.2, you know, KEMA talks to the Senate Bill 376, and apparently you've read it and saw the term "all cost-effective energy savings" and so you took it upon yourself to interpret that and ascribe the KEMA norm or 75 percent incentive to that.

Can you talk just a little bit more about your reading of Senate Bill 376 and why you think

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this is equivalent to what might be meant by all cost-effective energy savings.

MR. FRANKS: That was based on our experience in other jurisdictions where programs have been -- when we've been asked to model various incentive levels.

You know, we typically will use a 50, 75, and 100 percent incentive level. As a policy initiative, 100 percent incremental incentive is not generally an option. 75 percent, on the other hand, is often seen as a -- I think I said a realistic -- a realistic target, therefore --

MR. COITO: Well, it's a realistic -- it's an aggressive target, but it's an aggressive target that we've seen elsewhere.

MR. FRANKS: So that was the rationale behind the determination of that.

MR. VOYTAS: Well, I'm still confused. I want to read from the report and, again, on page 1.2 in the middle of that page it says, These incentive levels correlate to average aggressive and theoretical maximum levels of program effort.

I don't think Senate Bill 376 rulemaking -- I know the definition of the term "maximum achievable potential" is in there, but

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"theoretical maximum achievable potential" isn't in there.

Is this theory or is this practice? I mean, the theory is if you get a college education you'll make a good salary. That's not always the practice. I'm struggling with this new term, this new definition and how it relates to the whole maximum achievable potential thing.

MR. FRANKS: We do not use the word "maximum achievable potential."

MR. COITO: Well, I mean -- well, in this context, at least.

We've used it where clients have asked us to use it, but we -- I don't think we have a "maximum achievable" definition in this study.

MR. FRANKS: The 100 percent incentive, I guess you could -- is meant to be a theoretical maximum level. That's a qualifier and not a technical term. I'd be glad to take the word "theoretical" out of the next draft.

MR. VOYTAS: That's fine. I know in the interest of time we should move on, so no more questions on this subject.

MR. FRANKS: Here's what the scenarios look like for energy savings, demand savings across

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all three scenarios; summary of the results in numerical format across all three scenarios.

MR. O'DONNELL: This is Joe O'Donnell. I have a question.

MR. FRANKS: Please.

MR. O'DONNELL: Can you provide a set of -- specifically the quote "probability of adoption curve" that shows the simple payback versus percentage probability of adoption?

I mean, we have worked with consultants where we developed similar curves to that. It's, you know, typically not a linear curve, you know. As you get down to a eight-year payback, the adoption could be 10 percent, and when you get to that three-year payback, you get typically 70, 80 percent, and when you get to that 1 percent, the incremental would go from a three-year to a one-year increase while you get more is not the same as going from a six-year to a three-year.

It would be nice to see that data. I mean, can that be provided on what was the underlying assumption for the change in adoption versus the change in simple payback? I mean, what assumption was used, you know?

MR. FRANKS: Joe, I think our model does

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not use -- I think what the closest analog that our model uses and our modeling uses are penetration curves, which are not shown based on payback levels, but they're based on incremental costs.

MR. COITO: Yeah, we -- I mean, it's not a straight-line curve. It's an S-shaped curve, basically, which shows that, you know, that, you know --

MR. FRANKS: Reference the page number, Frank.

MR. COITO: -- lower benefit cost ratios -- I'm just trying to see where the best place -- if you look at Appendix A in our report, it discusses some of these things.

MR. O'DONNELL: You're showing payback versus the change in adoption potential, you know, and that's -- that directly speaks to the probability of an adoption curve.

MR. COITO: Yeah, but it's not that -- our adoption curves are basically an S-shaped curve that basically -- I mean, we don't model with payback directly. Our model doesn't use that.

We're using those and we enable those as scenarios because that is what we were asked to model as scenarios. To get at that, though, we had to --

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you know, we had to back into what rebate levels would get a certain payback, and then that gives a certain benefit cost ratio that we actually used.

But, you know, essentially our adoption curves are -- if you look at -- you know, in a sense where paybacks are real, real high, changes in payback don't really affect things too much. As paybacks get into a certain range, things definitely move more as payback changes.

Then you get to where paybacks are real, real low, and in that case, you know, if they're one month or two months, you're not going to get a lot of change in there either, so there is a range where we're showing, you know, bigger changes in penetration relative to a change in payback, and it's basically, you know, an S-shaped curve, but these results are just -- go ahead.

MR. O'DONNELL: Are those curves accessible or can they be --

MR. FRANKS: We have not generated it.

MR. COITO: It's pretty buried in the model. I'm not sure. You can put that -- we can look at it, but we can't really promise you anything right off the top.

MR. O'DONNELL: What I see here, I would

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characterize all three of these one-year, three-year, and 75 percent as very aggressive incentive levels and, you know -- you know, one-year payback is a no-brainer to a --even a three-year is very attractive, and 75 percent of the total cost -- typically you're up around 70, 80 percent adoption already.

MR. COITO: Well, if you look at the Ameren study, I think they disagree with you. They're showing much lower -- much lower customer penetrations with their paybacks of one and three years.

MR. O'DONNELL: Well, yeah, we have a set of curves that would disagree with that.

MR. COITO: Okay.

MR. O'DONNELL: Three-year paybacks you get 65 percent, maybe, and when you get to one-year --

MR. FRANKS: Mr. O'Donnell, your point is noted. Please send us something. Send the PSC something for them to consider.

MR. COITO: No, we understand. I mean, that's -- no, that's -- I mean -- and we did not see it that way but, you know, that's -- you know, it's definitely the whole payback penetration issue is

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definitely a -- one of the more difficult pieces of a study to work through, much more difficult than calculating economic potential, so we appreciate that there's a wide range of penetration numbers out there.

MR. FRANKS: This breaks out the individual scenario of the 75 percent incentive by sector. It shows the net savings and the impact of free riders.

MR. COITO: Can we -- this graph is actually -- the labeling "free rider" should just -- it should be "naturally-occurring." That is not a correct depiction of what those numbers are. If you look at our other graph that aren't by sector, it's known as naturally-occurring. This should say "naturally-occurring" as well, just broken up by sector.

MR. FRANKS: The demand savings, same comment that Fred made. Detail on the 75 percent incentive scenario, and the real millions aren't -- I think the numbers have six more decimal places than they are.

MR. COITO: Yeah, the dollars aren't in the millions here, because you break the bank.

MR. FRANKS: So it's not $4 trillion

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million at the All Programs Net Benefits. Sorry for the labeling error.

One year payback, same issue of free riders; naturally-occurring, not free riders. Demand savings, and the numerical summary. Three-year payback scenario, and back to the electric benefit cost summary, a slide we've seen earlier with a little more context behind it now.

We'll move on to natural gas, unless there are some remaining questions on electric.

(No response.)

MR. FRANKS: This is a breakout of the sector contribution to the natural gas baseline load. This is a summary of the potential. It shows the baseline usage, the technical potential and the economic potential broken out by sector in millions of therms, then displayed as a percentage -- the savings as a percentage of sector load.

And then finally, the contribution by sector of the total potential for technical potential and economic potential. The residential top 20 measures for economic potential; the commercial top 20 measures.

Now, here's where you'll note on installation of energy management systems, the TRC is

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less than one. We have ten building types in our model for the commercial sector, so in some of those building types, the overall TRC for that measure in the commercial sector is .56; however, in some building types is over one and they contribute 984,000 decatherms to the potential.

This is now maybe a better example of a high efficiency brittle that only shows up in one sector, yeah, one of the building types.

MR. COITO: Where it's cost-effective.

MR. FRANKS: Where it's cost-effective, but since there's ten other -- nine other building types where it's not cost-effective, you get pretty low sector-based TRC.

Industrial top 20 measures; maintain boilers jumps right out at you, but it does --

MR. COITO: Yeah, the thing about maintain boilers, it's a high TRC, but typically when we bottle it, you know, that's an information-only program because you really -- once people figure it out, they should be doing it. We don't want to imply incentives on that type of measure because everyone who is already maintaining their boiler would come in looking for money.

MR. VOYTAS: Folks, this is Rick Voytas

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with Ameren Missouri. I'd like to just make a comment. This is no big deal, but there's a lot of silence on our part. We've been pretty vocal for most of the day, and I just wanted to state that with the limited time that we have, we put all of our energy on the electric energy efficiency side of the report, and although we looked at the natural gas things in the prior graph report, we have not put energy into that now, so although we're quiet, it doesn't mean we don't have questions.

It just means that we have not had time enough yet to review this in depth, so perhaps we can do that in the next few days and get the comments to you, but that's why there's very little comments on this side of the microphone. Thank you.

MR. FRANKS: Thank you. We'll look forward to -- or the PSC, I'm sure, will look forward to that.

MR. COITO: And, you know, the other thing, Rick, the more specific you can be with your questions or comments, you know, the better it will be.

If we -- you know, if we get to some blanket statement that we think your measure costs aren't right, there's not much we're going to be able

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to do with that. If you can be specific on things, it gives us just more -- you know, if we're going to make adjustments, it'll make it easier. It makes it real to us.

MR. FRANKS: As with the electric sector, we did two avoided cost scenarios aside from a database cost, and this shows the results using a database cost, avoided cost, a 20 percent lower avoided cost and a 50 percent higher avoided cost. We proceeded with just the database avoided cost into the achievable potential scenario; the same information in numerical format.

MR. COITO: I think, if anything, we showed gas had a little more variation in response to avoided cost than the electric did.

MR. FRANKS: And now the achievable potential for natural gas; the three scenarios stacked on top of each other, which has an incremental; a summary of the results, noticing at the bottom that the total scenario, total resource cost goes up as the investment goes up.

MR. McKINNIE: Adam McKinnie with the Missouri Commission Staff. Oh, I get to stand up by the microphone? I feel bad for everyone. My name's Adam McKinnie with the Missouri Commission Staff. Do

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you adjust your naturally-occurring energy efficiency with the result of the high, low, and middle gas prices?

MR. FRANKS: Um, no.

MR. COITO: Well, we would, but we didn't do an achievable analysis where we do that. It would -- naturally-occurring would change if we were to run it all the way through.

MR. McKINNIE: And why wasn't it run all the way through?

MR. COITO: I think they were close enough to where we decided, you know, given the time frame for the study, thrown out the database case. We just saw about a 40 percent difference or a bigger -- you know, a big difference in, you know, more sensitivity than would've merited running more achievables all the way through on the other scenarios.

MR. McKINNIE: Okay.

MR. FRANKS: Are people listening on the phone or the web hearing the static as well or the popping sound?

MR. O'DONNELL: Yes.

MR. COITO: Yeah, we don't know what's causing that.

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MR. O'DONNELL: This is Joe O'Donnell. I'm getting static on both the web and my phone, so it's coming from your end.

MR. FRANKS: I guess we'll have to live with it.

MS. DIETRICH: I'm not sure what it is.

MR. FRANKS: These are the results for the 75 percent incentive scenario and the natural gas sector, total savings, cumulative annual therms in millions, the detail.

This chart actually has all the labeling correct, and I'm aware that the next one, I think, does not for the next incentive, so here's the one-year payback. Yeah, this has the millions of dollars, and the therms is not -- you're not getting 1800 therms for a 20-year program.

MR. COITO: Millions of therms; right?

MR. FRANKS: It's millions of therms. Actually, it's 100,000 therms, not millions. I'm not sure how the numbers came out that way.

MR. COITO: We need to check our --

MR. FRANKS: Three-year scenario results. The scales are not the same as on the previous charts. This is a much finer grain with a peak at about 120,000,000 therms compared to a peak of

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300,000,000 therm.

The detail on the three-year, and then the benefit costs summary, as with the electric, are similar to the chart.

We're going to shift gears quite a bit now. All the other results, inputs, have been based on KEMA's DSM Assyst model. For the demand response we reviewed FERC national assessment of demand response potential as it applied to the state of Missouri.

We checked the values from the information -- the inputs we had gathered from our DSM Assyst model to see -- for the values that were in the FERC model, and in most cases they were accepted. In some cases we did make some revisions.

The FERC model is a bottom-up approach using four customer segments. It models five different demand response program types, and it uses four different demand response scenarios: Business as usual, expanded business as usual, achievable penetration, and full -- achievable participation and full participation.

Here's a tabular summary of the difference in assumptions that go into that model. Notice that full participation is mandatory for

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dynamic pricing for those customers that are eligible for it.

Here are the results summarized by -- at different years and by -- for the different scenarios, both in megawatts and as a percentage of reduction.

MR. HUGHES: I have a question.

MR. FRANKS: Yes, sir.

MR. HUGHES: Is dynamic pricing the same as time of day pricing?

MR. FRANKS: I'd have to look at the first definition.

MR. HUGHES: In your definition, you know, we have some voluntary --

MR. FRANKS: Sure. The definition is a FERC definition. I do not have it off the top of my head. It is in the report.

MR. COITO: I think it's real -- kind of like dynamic, kind of like a realtime pricing.

MR. HUGHES: So it's synonymous with time of day pricing or --

MR. COITO: Yeah, but more than just block pricing. I think it's actually day-to-day -- you know, day-ahead pricing, that type of thing not, you know -- you know, if you have a time and use rate

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you set up, it stays fixed for the whole --
MR. HUGHES: Okay. Got you.
MR. COITO: Versus this one, it's more day-ahead type pricing.
MR. FRANKS: I think that should be at about page 7.3 of the report, offer varying electricity prices on day-ahead or realtime basis.
MR. HUGHES: Very good. Thank you.
MR. FRANKS: I think I -- no, I didn't. Here's a benefit cut cost analysis summary of two different scenarios. One of the issues that often comes up with demand response is the cost as a barrier to entry, and the analysis for Missouri showed that largely these have positive benefit cost ratios, which is not necessarily enough for a customer to take action, but it's worth a policy consideration.
And successfully rush to essentially the last slide, I believe. There are several appendices attached to the report. Rather than going through them line-by-line, which would be a challenge, even if we had had more time, this basically -- this shows what's in each of those appendices, and I open it up if there's specific questions regarding any of the appendices.

We can try and find the page and go to them and discuss it, and I have those loaded, I believe. Here they are. So are there any --
MR. O'DONNELL: This is Joe O'Donnell. This is Joe O'Donnell. I have a question regarding the sliding to the model's results.
MR. FRANKS: Okay. Let me go back to that.
MR. O'DONNELL: It's a labeling question.
MR. FRANKS: Please begin.
MS. DIETRICH: Joe, can you speak up? We're having trouble hearing you.
MR. O'DONNELL: Sure. I'll do my best.
You show in the system peak column without DR, but then the whole table is labeled "megawatt reduction."
MR. COITO: That's correct. You got -- I think you're on the right track there. Just to save you time, those are just the reduction -- you're just shown the reduced peak numbers versus, you know, the difference between -- the differences we'd get in the reduction.
MR. O'DONNELL: Okay. So those are the peaks and it's not necessarily the megawatt reduction?

MR. FRANKS: Yes. There's a problem with that table.
MR. COITO: No. Yes, that's right. That's right. So, like, for business as usual at 2010, the business as usual megawatt reduction would be the 18102 minus the 17820.
MR. O'DONNELL: Okay. So it's labeled wrong.
MR. COITO: Yes, it's labeled wrong. We'll -- that's --
MR. O'DONNELL: All right. Thank you.
MR. FRANKS: Thank you, Joe.
MR. COITO: And the percent reductions are correct though, I believe.
MR. FRANKS: Yeah, the numbers don't work on that though.
MR. COITO: No.
MR. FRANKS: Are there any questions regarding a specific appendix?
MR. COSTENARO: This is Dave Costenaro from Ameren. We were looking through Appendix F, and I think that there was -- some of the tables of the different sectors were -- they didn't appear to have all the columns, so maybe when you're compiling them for the final, make sure not to cut off columns on

the right.
MR. COITO: Yeah.
MR. FRANKS: Thank you, Dave.
MR. COITO: Yeah, thank you. Those appendices were put together a little quick, and we'll check that, we'll make sure we get a page number on the last appendices.
MR. FRANKS: I'm not going to take silence as acceptance, but I appreciate that there will be much more review on all -- by all parties and that we will be getting comments.
MR. BICKFORD: I'll jump in.
MR. COITO: Oh, there we go.
MR. FRANKS: Oh, good.
MR. BICKFORD: This is Adam Bickford from DNR. You can stop anywhere.
MR. FRANKS: I just want to make people dizzy.
MR. BICKFORD: Yeah, can you go back to the definitions of one-year and three-year and 75 percent scenarios, please?
MR. COITO: Be page 42, I believe.
MR. BICKFORD: Okay. There we go.
Let's focus on the one-year payback situation. My understanding is that there were

measures that had a incentive, a payback value less than one-year, and they were left out of your calculation of savings; is that correct?

MR. COITO: No. My understanding -- my understanding is we -- and we can check on this, but my understanding is that what we did if it had less than a one-year payback, we were not given an incentive.

MR. BICKFORD: Okay.

MR. COITO: It would stay in the measure mix with the understanding that we could increase awareness and that the naturally-occurring penetration, you know, whatever the pay -- if it's .75 payback, it would show up.

MR. BICKFORD: Okay.

MR. COITO: So in some cases this is why, you know -- you know, there's not as big a program impact there because it's just education versus some other measure where you're given a 50 or 75 percent rebate, which, you know, some rebates in the one-year payback are pretty high 'cause you're getting a measure from a five-year or six-year payback down to one year.

Other measures, like, you get zero, but we left them all in. The ones that get zero just get

a boost from increased awareness because you're out there trying to market the programs and giving information about a lot of measures.

MR. BICKFORD: So you're saying that there's no cost associated with that.

MR. COITO: No rebate costs. General marketing but, yeah, you would not see that exactly. And also that measure wouldn't have much net savings, if you look at the net savings.

MR. BICKFORD: Okay. My question for Ameren, who also use these terms: Is that the same way that your modeling some of these measures?

MR. COSTENARO: This is Dave Costenaro. That is an issue that has a little nuance around it. Our RAP was generally tied to incentive levels that were associated with the three-year payback but that did not mean that they all were across the board, that was not the calculation method, you know, a three-year payback, this is it, go, that's the incentive level, but the same thing with MAP.

They were generally tied to measures that had paybacks at one year, so we had -- you know, this is a scatter plot all around the one-year payback in the -- some in terms of percent of incremental cost, some in terms of payback and that sort of thing.

So I think it's not an exact one-for-one. Does that help, Adam?

MR. BICKFORD: So -- so -- okay. Hence my question: You have two approaches using the same terms, but sounds like there are really different definitions.

MR. COSTENARO: Yeah, I think --

MR. BICKFORD: Is there going to be a way to reconcile those at all?

MR. FRANKS: I don't -- I can't imagine it offhand, and if there were, I would -- it would have been appropriate to have done that several months ago in terms of the project time line.

MR. COITO: What we will do is probably -- what we can -- we will do in our appendix is by measure. We'll put the percent incentive of incremental cost that we assume -- that we got for each one so you'll see, you know, in the one-year, three-year and 75 will all be 75, except some will be 0, because, like I say, some of the maintenance, O&M measures, we don't believe they're really -- those types of measures that you should provide incentives for, but we can present that as part of our appendix so you can at least see what -- how we backed into our incentives.

MR. BICKFORD: Great. Thank you.

This is Joseph O'Donnell. I have a related question.

MR. COITO: Yes.

MR. O'DONNELL: Regarding the definition of "one-year payback," I'm assuming you mean to the participant, and that means the net -- the customer bill savings plus the reduction in taxes divided by the growth -- I mean, rather, the net participant cost. Is that a correct definition?

MR. COITO: Yeah, I don't think -- we don't factor taxes in. It's -- it gets -- it -- our model just doesn't pick that up, but it would be, you know, minus the tax effects.

MR. O'DONNELL: But at the basic level this is the payback to the participant?

MR. FRANKS: Yes.

MR. COITO: Yes.

MR. O'DONNELL: Thank you.

MR. HUGHES: In a general presentation application and during our discussions on the one-year payback and the three-year payback as specified by the Commission and the KEMA norm of 75 percent, there's an indication that those are two different measures, and you indicated that there was significant adjustment to your modeling that had to be made to comply with the Commission's request; however, in the presentation of the data output they are side-by-side.

MR. COITO: Yeah.

MR. HUGHES: And I would caution you that very different metrics presented in an identical format could confuse those who simply look at the numbers that come out, that there are distinctions there, so I would hope in the final report -- and this is just a personal observation -- I'm not speaking for Commissioner Davis, but in the final report that you be aware of that potential for confusion and that those are very different matrix, and you can't look at a one-year and a 75 percent payback and draw a straight line between them on a slope.

MR. COITO: No. Yeah. Can I address that for a second, because I think Tom might have misspoke.

I don't think we did the model. What we had to do was we had to do some calculations to get at the rebate incentives, and that just took significant effort, so it wasn't like -- we ran the same model, same everything.

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The only thing that changed was in one case we had 75 percent of incremental measure cost for each measure; other case we had to do the calculations to actually figure out measure by measure what the incentive was based on, you know, to get -- to get to the paybacks.

MR. HUGHES: Right.

MR. COITO: So that's -- everything else is the same, so I think that's really -- it was just an additional step we had to go through to calculate those, and we had to just look at the model -- we had to pull a bunch of data out of the model to do that.

That's why probably -- it took awhile, so that's -- we call them significant, but in terms of running the model, everything stayed the same. It's just what the customer would've seen as an incentive.

MR. HUGHES: Okay.

MR. COITO: Like I say, we can show measure by measure what those incentives were.

MS. DIETRICH: Perhaps you can add some language to kind of explain that too.

MR. COITO: Yeah. Yeah.

MR. VOYTAS: This is Rick Voytas at Ameren. Just general, I'm not exactly certain of this, but just project management structure, Tom, I

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take it that you're the project manager for this statewide potential study.

MR. FRANKS: That's correct.

MR. VOYTAS: And not that you're not a worker bee, but who actually is it who's running the models, putting the inputs, doing that work? Is that a person or group of people?

MR. FRANKS: It's a group of analysts.

MR. VOYTAS: Okay. And are they -- with the budgets that you were given for this project, are they senior analysts or junior analysts --

MR. FRANKS: A mix.

MR. VOYTAS: -- or somewhere in between?

MR. COITO: We have a mix. Some are senior; some are a little more junior, you know. Most -- our key analysts that have worked on this have done other potential studies.

MR. VOYTAS: Okay. What's the process for internal review? I know we've talked about a lot of inconsistencies and errors and some mismatches of data, but when the analysts get done with their work, what is the review process within KEMA before it comes back to your client, before the draft product goes out the door and goes to the Missouri Public Service Commission?

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MR. COITO: We review it at several levels. The review is time-dependent, so the more time we have, the more review we get. There's lots of numbers in there. We -- we try to -- you know, first of all, we review the overall results, to start with.

Results in this study have been, I think, consistent with other studies we've seen at the big picture level. I think our gross savings shown, you know, about 1 percent per year savings for our 75 percent, which is our aggressive scenario. Lines up pretty well with, you know, what we've seen in some other states.

Some other states are going to 2 percent per year savings. We don't, you know, buy into that completely. You know, our net numbers, you know, look about, you know, a little -- you know, about -- I would say, you know, much less than one percent per year savings, so that's the first check.

You know, we -- we start getting back as far as we can into the weeds given how much time we have so, you know, the fact that probably -- you know, looking in our appendices, there was not senior review over every single number and, you know, we continue to review. In fact, that's why there

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was some updates between our, you know, economic potential change and our final report, 'cause we're -- you know, as time goes, we continue to review this.

This is a very tight deadline project so, you know, I would argue that probably the review is not as -- you know, if we'd have had more time, we'd have done more review.

MR. VOYTAS: All right. I appreciate that. Thank you.

MR. FRANKS: Are there any other comments?

MR. VOYTAS: this is Rick Voytas. Could I ask one more --

MR. FRANKS: Oh, sure.

MR. VOYTAS: This is a question -- it's not intend to be flippant or anything, but so everybody is busy. You know, Staff, consultants, the utilities. Everybody's busy, and there's such tight time lines associated with this study.

You know, the next time line is the 25th, and we've got an IRP filing going out our door which requires a lot of work, and everything's due just immediately and drop everything else and get this done.

We're struggling. This is important

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work, and it's going to guide some of the policies of this state going forward, I'm sure, but why is everything so -- why do we have to kill ourselves, perhaps skim some data and not give it the attention it deserves because there's not enough time? What is driving the very, very tight time schedule that we have here at the end of this project?

MS. DIETRICH: Rick, this is Natelle. Basically, the contract was set up for "X" number of days, and so the time line was derived from that. We have done a slight contract amendment extending it a little bit because, if you recall, we had some issues, maybe November, something like that, where we had a Commission decision item that we were not able to get in time to meet the deadline so we had to do a contract amendment, but basically we have the contract with a drop-dead date, so we're having to work back from that to meet that date.

MR. VOYTAS: But if we extended the drop-dead date but didn't require KEMA to do any more work, just the stakeholders had more time to review, what harm --

MS. DIETRICH: It's not between -- the contract's between the PSC and KEMA, but we have to go through the Office of Administration, so they're

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actually the ones that negotiate and administer the contract, and we're not allowed to extend a contract without being able to give them very good reasons as to -- there was something that happened like, you know, the computer failed and we had to wait for them to get the computer fixed. I mean, it has to be a pretty big thing in order to extend the contract.

We were able to do it once, but they've already told us that unless the sky is falling, it probably won't happen.

MR. VOYTAS: Well, Natelle, I appreciate that. Not having been a government employee, I don't appreciate all the bureaucratic things that you have to address, but I do know the issues of quality and schedule, and sometimes, like in this case, you can have one or the other, you know, but the study is important. That concerns me but, you know, we work within the constraints that we have, and if that's what it is, that's what it is, but at the end of the day that's a shame.

MS. DIETRICH: And the commissioners recognize that, too, and they've had discussions about, you know, they're just going to have to accept the limitations also, not only with time but with budget.

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MR. COITO: Yeah, and for us, you know, it's been a challenging project. We typically do not do these studies in 120 days but, you know, we -- we understood at the time that the Commission had a, you know, a time frame that they needed to work with, so we -- you know, we're doing our best, you know, given the time frame.

MR. NOLAR: This is John Nolar, DNR.

When Fred was answering the question about review, he mentioned that the results of the study could be compared to other studies that KEMA has done in other jurisdictions.

MR. COITO: And others, too, not just KEMA.

MR. NOLAR: And others as well, so I guess our feeling is, I know the time is limited, but to the extent that KEMA could provide, you know, those comparisons of studies done using comparable methodology by KEMA or by others in other jurisdictions, we certainly would appreciate seeing those results to help us get a more comprehensive view of the work that has been done.

MR. FRANKS: In response to that question and a previous question, I believe, by another -- someone on the telephone as to the level of -- to the

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review of the results, we did -- as I believe Mr. Voytas pointed out, we did discover an error. We corrected it, and we responded to it.

Part of that effort was to look at -- you know, show what we do, and this little table shows the very current KEMA study for a territory with a very -- you know, a long history of aggressive energy efficiency, and then, you know, we did a potential study for them, and it breaks out the potential, an achievable potential by -- sorry -- achievable -- no, an economic potential by sector.

We showed the results as they were -- as we first saw them before we discovered the error and we saw, you know, 30 percent for residential compared to 20 percent in light of Missouri's past program history, that did not seem at all out of line.

Commercial, industrial thought, Okay. That seemed reasonable, you know, at a high level to expect that in a jurisdiction where there is -- has been comparatively low energy efficiency program that you would have a higher potential.

And then we show -- to the right, V-2, the results when we revised the baseline, so that's the -- part of the review and also a partial answer to Mr. Nolar's question.

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MS. DIETRICH: Are there any other questions or comments from anyone?

MS. SUGGETT: I have a question real quick. The transcript, when will that be available? I know it will be filed with the case. Do you know when that might be available?

THE COURT REPORTER: How soon are you needing this?

MS. DIETRICH: Well, I was going to ask you about an expedited transcript. Would it be possible to get it Monday?

THE COURT REPORTER: Yeah.

MS. DIETRICH: We'll try to get it Monday so that we have it to help formulate our recommendations to the Commission.

MS. SUGGETT: Great. That was my question. Thank you.

MS. DIETRICH: Anything else from anyone?

(No response.)

MS. DIETRICH: I'd like to thank Tom and Fred for coming in and explaining this to us, and I'd also like to thank everyone for their participation. I appreciate your patience as we work through some issues with the weather and technology, but I think we've had some good discussions and we've had a lot

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of good questions and feedback.

Like I said earlier, if you could get me any comments, suggestions that you have by first thing Monday morning, 8:00 a.m. Monday morning, then I can pass those on to KEMA, and then also Staff can use that as guidance when we make a recommendation to the Commission on any changes that we need to see in the final report.

With that, thank you.

MR. FRANKS: Thank you all.

MR. COITO: Thank you.

(The meeting ended.)

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CERTIFICATE

I, Nancy L. Silva, RPR, a Certified Court Reporter, CCR No. 890, the officer before whom the foregoing hearing was taken, do hereby certify that the witness whose testimony appears in the foregoing hearing was duly sworn; that the testimony of said witness was taken by me to the best of my ability and thereafter reduced to typewriting under my direction; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this hearing was taken, and further, that I am not a relative or employee of any attorney or counsel employed by the parties thereto, nor financially or otherwise interested in the outcome of the action.

____

Nancy L. Silva, RPR, CCR

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