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LR455 Special Committee
September 28, 2016

[LR455]

The Special Committee on Climate Change met at 9:00 a.m. on Friday, September 28, 2016, in Room 1525 of the State Capitol, Lincoln, Nebraska, for the purpose of conducting a public hearing on LR455. Senators present: Ken Haar, Chairman; Tyson Larson, Vice Chairman; and Heath Mello. Senators absent: John Kuehn; Patty Pansing Brooks; Ken Schilz; and John Stinner.

SENATOR HAAR: I think we'll get started. So my name is State Senator Ken Haar. I'm one of the cochairs of the LR455 Committee. Senator Larson will also be here in a few minutes. And this afternoon we'll also have Senator Heath Mello who is also a member of the LR455 Committee. I'd just like to give you a reminder, when you testify be sure you fill out a green sheet and give that to the person over here so we have exact records of who testified and who didn't. As with any hearing, there are a few glitches here and there and we had expected to start off with Scott Benson from LES on solar development, but we're in the process of getting the projector and the PowerPoint set up, so what... [LR455]

KEN WINSTON: Cliff said he could do it without a PowerPoint. [LR455]

SENATOR HAAR: Okay, good. So what we will do is we will start with Cliff Mesner from Central City who said he can get by without a PowerPoint. You're an amazing man these days, no PowerPoint. [LR455]

CLIFF MESNER: When Ken told me last time that there was going to be a projector set up I just had visions, so. [LR455]

SENATOR HAAR: (Laugh) Okay. Yeah, and then if you remember, again, to state your name and spell it for the record. And just a brief introductory comment that the LR455 Committee is charged with coming up with a framework for a climate action plan that will be presented to the Legislature next year. But in discussing what we were going to do during the summer we talked about the fact that climate change is going to bring us many challenges but also many opportunities. And so this morning we're talking about the opportunities and various models among solar development. In the afternoon we're going to talk about how to finance energy

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efficiency and renewable energy, especially with the new law that was passed, the PACE law. And so with that, we will get going. [LR455]

CLIFF MESNER: (Exhibit ___) For the record, my name is Cliff Mesner, M-e-s-n-e-r. I am an attorney, a real estate developer, and hopefully a solar developer in Central City, Nebraska. What I've handed you is really a table. When I was trying to figure out what I was supposed to do today, I decided it might be best to start with something that kind of lays out the various scenarios that we have with solar, because whatever the Legislature might do will have an effect in one area but maybe not in other areas because all of these things are funded differently, credits are available differently, and the impact of legislation hits each one of these differently. The first column that I'm showing you there is individually owned solar which is, in many ways, the easiest solar. The credits are active. That means that the owner gets to take it off against their income tax. If they're a business, they get accelerated depreciation. We've had great success with our businesses getting REAP grants on the individual solar basis. Businesses, we've gotten...we've been battling a thousand on getting REAP grants for those. They qualify for the NEO loans. And it's just done under the net metering program that is available through the state. The second column is our solar garden in Central City. And this is what's done with virtual net metering. And virtual net metering is I think becoming a real important issue. Fourteen states plus the District of Columbia have now passed virtual net metering and there are many reasons for that; the first one is frankly just economics. Department of Energy is saying that community solar will be half the cost of rooftop solar before long and, frankly, from our experience it's already there. And by doing virtual net metering, what that allows you to do is to take solar panels that would otherwise be on the roof, aggregate them in one location. And because you're hitting a larger economy of scale, you're making it cheaper. Your maintenance is cheaper because if anything goes wrong you don't have to get out a ladder and get up on the roof. Everything is down on the ground where you can get at it. The communities like virtual net metering because it allows them to do some zoning. They don't have to worry about rooftop solar appearing every place and people putting solar arrays in their backyards and then having issues with a neighbor complaining about shade trees or the kids playing ball and hitting the solar panels, etcetera, etcetera. It allows the communities to take them and put them in a different location where they're more isolated. The problem that we have right now is that that's strictly at the whim of the utility company. The city of Central City is a utility company, so they said let's do it. Let's move

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it all out to the industrial park. We did a project in Holdrege and Holdrege has its own utility department. They said let's put the solar panels right out next to our substation on top of the old landfill. So that's what we've done. But other communities that aren't their own systems--Aurora or York with NPPD or Bellevue and OPPD territory--they don't have that option because it's an option of the utility company whether or not they're going to allow that. So it's not universal right now across the state and there are some communities out there that would really like to have virtual net metering as an option. So one of the things I would like to see is some potential legislation that would talk about virtual net metering. But the problem with both individual solar and virtual net metering is that essentially you're going around the utility companies and you're asking the utility companies to provide you backup, to be the battery, to be there at night, but they're not getting anything out of the solar arrangement. And that will ultimately create a problem for us if we can't figure out a way to have the utility companies involved in that deal. The projects that NPPD is doing Venango and Scottbluff, and I believe that LES is going to be doing here in Lincoln, are an attempt to have kind of the best of both worlds. They're trying to use virtual net metering in a way that allows people an option to rooftop solar but still keeps the utility involved so that the utility is getting paid for what they're doing. NPPD I think has taken the position that they want to promote this, they want to make this work, but the economics have to make sense and it has to be fair to all the ratepayers. So they don't want the other ratepayers to subsidize solar. So what they're doing, and I think Tim Arlt will go over this, but basically what they're doing is they're setting up a model so people can buy into solar. If solar is more expensive, those people will pay more for it. If solar is less expensive, those people will get that benefit. I think those are good arrangements and they're good efforts by both NPPD and LES to find an alternative that works with virtual net metering and still helps the group out. If you were looking at doing something with virtual net metering, there might be some other ways that you could do it. You might do something with virtual net metering that says if the utility allows it you have to pay the utility 2 cents a kilowatt-hour, maybe set the panels to give them some reduction on demand, those sorts of things. Frankly, if we had done that in Central City, everybody still would have done the deal because there is enough savings there that there was room to cut the utility in and still make it a good deal for everybody and treat the utility fairly. So I think those are all doable if we can just figure out the model. One of the problems as you look at this table is the first two that I have listed--the solar garden and the individually owned--the credits are active. Once you get past that, the rest of them, we're dealing with passive credits. Now an active

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credit means that I can deduct it straight on my own tax return. But a passive credit means that it has to be offset against passive income or subchapter C corporation income. And that is a problem because our cities and our utilities don't have any passive income. They're nontaxable creatures. So then we end up having to create rather elaborate public-private partnerships to take advantage of those credits and that depreciation, and that is complicated and it's expensive. And the smaller the project, the harder it is to get that done. So what we're looking at right now, or really for NPPD at least, are test cases, sample projects, to try and get the thing worked through all the nasty details. But to really make that profitable, you have to pick it up to scale. There are a couple of other options I was going through. I'll trying and keep moving along here. One of them is the use of Low-Income Housing Tax Credits and solar credits. And the important thing to know there is that the solar in a LIHTC deal is free because you get a 30 percent federal credit plus a 90 percent housing credit. So the credits more than pay for the entire cost of the system. And what happens is you now get free energy which allows you to charge higher rents which means that you can have a bigger loan on the on the property. And that's important because in the past when those properties wouldn't support those loans, the state had to give us the money. So we're now replacing a couple hundred thousand dollars of state money by putting up solar and using the savings off the solar to pay bank debt and the state has money that's available to go someplace else. So it really does make a difference to the state whether or not we're using that solar there because it's saving you money in the housing side which right now we're desperately short of in the state anyway. Column five is talking about city-owned solar and this would be what we're trying to do in Central City and Gothenburg, what South Sioux has already started to do. And it's the same kind of a process that we have: You have passive credits so you have to put together a public-private partnership. These arrangements do qualify for REAP grants. But while we've been batting a thousand on REAP grants for individual and aggregated solar, we've struck out every time on doing it at the city level. We had some people from USDA that were out at our site in Central City a few weeks ago and they asked me to stop in the next time I was in D.C. and meet with them. I happened to be there week before last, so I stopped in and talked to the USDA people about it to see what their view on it was. They liked the projects, they qualify for the projects...for the REAP grants, they actually scored high enough that they were kind of next in line, but the problem was there just isn't enough money in that budget. And frankly, they got caught in a situation where they could either fund 30 small projects or 1 big project and they chose to fund the smaller projects. But if there is more money available, those things would

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qualify. We have received some money from the Environmental Trust for those two projects. If the Legislature was to do something, that's the area that I think is most important for them to do. If you're going to put money into solar, it needs to be at that community utility level. We don't need it for the individual businesses. Frankly, if you do the math, an individual business, it just makes sense to do it. If they need anything, it's just a number that's bigger than 25 kW on the net metering. But doing it at the city level or the utility level is where you could really make a difference and part of that is just because the utilities and the cities are trying to offset the wholesale cost instead of the retail cost. And then the last column, and I've not been involved in any of this but I just threw it in because the NPPD retail communities have a little bit different arrangement. And what they do they do with a buy-sell rider and NPPD has a way for them to participate in a system. And what these...what all these communities are trying to do is, frankly, just control their own costs just like any business does. They have large electric bills for wastewater treatment, for city street lights, for ballparks, city hall. And when you have a \$200,000 electric bill, if your electric rates double over a period of time, your electric bill doubles over a period of time and that creates a budget crisis. And a lot of these communities are just simply trying to lock in their rate for a 25-year period. That's what they're after. That's what I wanted to say today. I hope that kind of sets up for NPPD and LES to talk about the community solar programs that they've put in place which are really, I think, designed to provide people an avenue to community solar and not hurt the utility companies, which ultimately I think has to be our goal. I'm open to any questions. [LR455]

SENATOR HAAR: Okay. Yes, Senator Larson, who is also one of the cochairs of the committee, has just joined us. And I should have also introduced Ken Winston, who is my LA. Most of you who are doing solar know Ken quite well, and also Aaron Bos, who's the assistant for...I'm not sure of his exact title. [LR455]

SENATOR LARSON: Committee clerk... [LR455]

SENATOR HAAR: Committee clerk. [LR455]

SENATOR LARSON: ...for General Affairs and helping with this committee. [LR455]

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SENATOR HAAR: Good. Okay, thank you very much. I also should have probably said, you know, turn off your cell phones. I just remembered to do the same. So with your permission and with other people who are going to testify, our invited...we have some invited testifiers who will come up here first and then we will have a period where anyone else can testify. But we would like to share your contact information with other people so that if they have questions about what you presented, looking at the different models, they could get in contact with you. We've also been joined with some students from North High, a magnet school in Omaha, and welcome them. And I'm sure you're interested in listening, but also, if you have some testimony at the end, we would ask you to participate in the testimony portion as well. Okay, next will be Tim Hall from NPPD who can also talk without the PowerPoint which is being set up currently. So again, would you give your name and spell it for the (inaudible). [LR455]

TIMOTHY J. ARLT: Good morning. For the record, my name is Tim Arlt, T-i-m A-r-l-t. I am the general manager of our retail division for Nebraska Public Power District. NPPD retail serves 80 communities across the state. It's a full service retail agreement whereby we operate, maintain, bill, provide service, customer service, customer complaints, etcetera, for those communities. Those communities lease their distribution system to NPPD. In return for that, NPPD pays them a lease payment of 12 percent. So NPPD started their community solar program about 18 months ago when we met with our board in strategic session. Basically, we wanted to be the utility that said yes if one of our communities approached us and wanted to install some renewables. So we found a way to do that. As I've said, we do serve 80 communities across the state. One thing that was very important to us was that if the community of Scottsbluff wanted to put in a community solar project we didn't feel it was appropriate for the residents of Norfolk to pay for any of that project. Even though we do have a socialized rate, this would be something special that the community of Scottsbluff, in this example, wanted to do on their own. And we have found a way to make that happen. Due to the inability of public power to get some of the tax credits that Mr. Mesner talked about, it's vitally important for the public-private partnership to be done when we talk about community solar. They get access to those tax credits that Cliff mentioned, or Mr. Mesner mentioned, and they pass those savings down to us through the form of the PPA price that NPPD pays to the developer for the project. So again, that public-private relationship and partnership is key to our program. Mr. Mesner also talked about some of the advantages. We believe there's a lot of advantages to the community solar program in lieu of

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rooftop. One, our program will have a complete avoidance of the up-front capital cost by the end-use customer. Okay? So they will not have to make any investment in that. Obviously, we do believe there are some economies of scale with community solar, typically lower cost. Now that is arguable but we do see that in some of the PPA pricing that we're receiving compared to just a standard rooftop installation. It does, the community solar, does eliminate a number of challenges for the end-use customer, whether it's trees shading, whether it's covenants, whether it's rooftop orientation, whether it's taxes, insurance, electrical inspections. So there's a number of savings the end-use customer can achieve by going the community solar route. Obviously, one project can serve many consumers and it also opens it up to renters or those who do not own their house. They can participate in the program also. It does strengthen our relationship with our communities. It's important to NPPD to keep that relationship as strong as we can and we found a way to do that. As I mentioned before, we do pay those communities a 12 percent lease payment to operate and maintain their system. And the city leaders shared with us it's most important not to impact that lease payment. It's a revenue stream for their communities. So I'd like to talk briefly about some of the projects we do have going on. We do have...there is a lot of interest in solar around the state. First off is the Venango project. Mr. Mesner mentioned that. It's a 96 kW project. It is underway. We expect a commercial operation date the first of the year, 2017; as with the Scottsbluff project, that's 152 kW AC. We also look for that to be operational 1/1/17. We have the Kearney project. That's a 4.8-megawatt AC project. It's currently underway with a proposed operational date of July 1 of 2017. The Aurora project is a 480 kW AC project. This one is behind the meter serving their wastewater treatment facility. And there's also a Loup City project between 250 and 350 kW AC. We're still in discussions with the city on this on whether it will be behind the meter or a community solar project. Again, with these communities, it's their decision on where they want to place them. We share with them the pros and cons between community which opens it up to all end-use customers as opposed to behind the meter. So we're still in discussions with them. NPPD did conduct two focus group sessions for solar in 2016. It was done in April of 2016 in the communities of Scottsbluff and Kearney. We had a third-party independent provider do the focus group sessions. This was the MSR Group out of Omaha. Our objective there was to gain insight from the customers and shape our program based on some of the input we received from the customers, and that's exactly what we did with our community solar program. We have a number of rates that I've listed here that are in place today. Obviously, the net metering rate has been in place for quite a while. That's for

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anything 25 kW or less behind the meter. As Mr. Mesner mentioned before, for anything above 25 kW behind the meter, we do have our buy-sell rate. This is a rate where we purchase the energy from the project that's installed. It has both summer and winter rates, and depending on the renewable resource, it also has a rate variation there. Solar pays higher than wind because it is more advantageous from a cost perspective--solar is on during the heat of the day when we're seeing peak commands. NPPD did approve the community solar rate schedule in July of this year which defines the terms and conditions and the rate for the community solar projects that are going in place around the state. Along with that there are a series of agreements. I'm not sure that's important to this committee here. But we do have the PPA, the power purchase agreement, with the developer. We do have a generation interconnection agreement. That agreement is required for any size project. Even if it's a net metering less than 25 kW project, we have to have a generation interconnection agreement. The NPPD community solar agreement is an agreement we enter into with the city of, in this case, Venango, Scottsbluff, and Kearney which will dictate priority for solar shares. It also stipulates that any unsubscribed shares of the community solar project, the city will take on those shares. And finally, we will have an end-use customer solar service agreement identifying the terms and conditions that the end-use customer accepts when they enter into a community solar program. So that's what I have put together for you today. I certainly would take any questions that you may have in regards to the program NPPD has put in place. [LR455]

SENATOR HAAR: Yeah, one of the questions was the difference between behind the meter versus community solar. Could you just put that into terms that I can understand? [LR455]

TIMOTHY J. ARLT: Sure. Yeah. When we claim behind the meter, for the Aurora example, they have a wastewater treatment plant and there is a meter that NPPD installs to meter the demand in energy that that plant takes, okay, and it's sit right here. Behind the meter means the solar project goes in behind the meter. So it will, when it's operating, this meter will obviously show less consumption because this solar project is offsetting it now. We will meter the solar project also and determine what the full load demand was and then pay for all of the generation that that solar project produced per the buy-sell rate schedule. So we will pay them for every kWh it produced per that rate schedule that our board approves. [LR455]

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SENATOR HAAR: Okay, another question... [LR455]

TIMOTHY J. ARLT: Community solar, on the other hand, is in front of the meter. Okay? So it's not behind, offsetting any load at all. It's in a common place and it's just a generation resource putting energy on the distribution infrastructure. [LR455]

SENATOR HAAR: Okay, yes. Thank you. Over the last few years, and this is a good example you're showing, that various options are developing as solar develops. Do you also see that...I mean when we talk about wind, for example, it's generally large commercial installations, so we wouldn't see individual people participating so much. What about...though we're beginning to see, you know, methane generation and so on. Will we see the same kind of evolution of different options do you think for that as well? [LR455]

TIMOTHY J. ARLT: I believe we will. As Mr. Mesner mentioned, for us we're describing our Venango and Scottsbluff projects as pilot projects. This is our first foray for NPPD retail to be in the solar business, so we know we're going to learn a lot from going through this as the communities will learn. And as more and more developers come into the state and solar continues to drop in price, I believe it will. I think our programs will evolve to match what we're seeing being pushed into the state of Nebraska in the way of renewables. For retail, because we're municipally driven, it's all municipalities or villages, solar is a much better renewable avenue than a windfarm just because of the size that wind takes up. Solar is much more compact. They can put it in their communities where they own the land, etcetera. And there are service territory issues surrounding where the wind would be put up for a municipal as opposed to solar. So my opinion and perspective from the customers that I take care of at NPPD retail, solar is a much better avenue if they want to go down the renewable route. [LR455]

SENATOR HAAR: And then finally I have a question. As you talk with various communities, why are people looking at solar? [LR455]

TIMOTHY J. ARLT: The ones that we've visited with and the ones that have approached us, they have a portion of their government and their leaders and their constituents that want to be more environmentally sensitive; that's one avenue. Another avenue is it's important for some of them

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from an economic development perspective, they believe, and are positive that having a renewable portion can attract certain businesses into their communities. So we see it on two fronts. Right now, they recognize that solar is not as cheap as some of the other resources. It is a premium based on the other resources that are available today if you include all of the cost of the infrastructure and everything that goes along with it. And they're willing to pay a little more because of the environmental sensitivity they want or the renewable angle they want to play. So that's what they've shared with me personally. [LR455]

SENATOR HAAR: And certainly the cost of the fuel for solar is a hedge against, I'm sure.
(Laugh) [LR455]

TIMOTHY J. ARLT: Oh, absolutely. Absolutely. [LR455]

SENATOR HAAR: I looked on Google the other day at a map of the solar system, and actually the sun does always shine. We just have to figure out a way to capture that. Well, thank you very much. I appreciate it. [LR455]

TIMOTHY J. ARLT: All right. Thank you. [LR455]

SENATOR HAAR: Did you have any questions? [LR455]

SENATOR LARSON: I'm good. Thank you. [LR455]

SENATOR HAAR: Okay, great. Okay, we do have our PowerPoint in place now. So we're going to ask Scott Benson from LES to talk next. [LR455]

SCOTT BENSON: So Scott Benson, S-c-o-t-t B-e-n-s-o-n, manager of resource and transmission planning at Lincoln Electric System. And for all the folks in the room who have the luxury of looking at the back of my head, you might want to move to that side of the room if you can't make out the PowerPoint because everything I'm going to talk about, they're going to have nifty things to look at on the screen which is much better than looking at my back. [LR455]

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SENATOR HAAR: So we invite you to move over to the...if you can't see the screen, be sure to move so you can watch the PowerPoint. Okay. [LR455]

SCOTT BENSON: Okay, very good. So just a little bit of background on LES for those of you who are not familiar with our portfolio, we have interests in coal plants across three states: Wyoming, Nebraska, and Iowa. We get hydroelectric power from the Western Area Power Administration, or WAPA, which is mostly north of us. We have three landfill gas plants in and around Lincoln, one of which is combined cycle which means we take exhaust heat from some of the simple cycle gas combustion turbines and use that exhaust heat to create steam which we use to create even more electricity which is a higher efficiency. We have a 5-megawatt landfill gas project that generates electricity all year round with methane that's produced from the Lincoln landfill. We have a pretty extensive wind portfolio now that stretches across three states: Nebraska, Kansas, and Oklahoma. And finally, we've got a 5-megawatt solar project: our community solar project that just went on-line in June and we had the dedication a couple of weeks ago. Now if you take all of those and you judge them on a nameplate basis--and nameplate strictly means you walk up to a facility and it's what it's rated at its max output--you can see the inset there. LES's portfolio consists of one-third coal resources, one-third natural gas resources, and one-third renewable resources and that's primarily the hydro and the wind. And people typically see this and they say, well, you guys don't have a lot of solar. And that's true. At the utility scale, we don't. We just have the one 5-megawatt project and that's because, as some of the people have already pointed out today, the price just isn't quite there yet. It doesn't compete a lot with a lot of the other fossil resources, and on a renewable standpoint, it doesn't quite compete with wind at that scale. But we've actually been really active in the solar realm and most of it's been customer-focused programs and so that's what I'm going to go through today for you. So if you back up to 2013, this was the extent of LES's solar program portfolio and it's not even fair to call it a portfolio because it was one program and, beyond that, it was mandated by state statute. But we went a little bit beyond that. We had some incentives. So state statute said that you had to allow net metering up to 25 kW. Well, LES said we would go ahead and allow people to do net metering up to 100 kW. And then obviously under net metering inherently the way it works, for every bit of load that you're offsetting, with typically it's a solar system in this part of the country, you're basically earning yourself your retail rate. So for LES, for a frame of reference, that was about 10 cents in the summer and about 6 cents in the winter. And then state

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statute said that if a customer excess produced in a billing period, a month, then you had to pay your avoided cost. Well, for LES that was just over 2 cents in both the summer and the winter. Once again, we went above and beyond and we said, you know what, you're bringing renewables to our system so we'll pay you our renewable avoided cost, which was basically roughed loosely on an average of our renewables to that point which was mostly the wind contracts, the historic wind contracts. Then we said, beyond that, if you add solar to our system you're helping to push out our need for the next generating resources. You're extending that out into the future because you're eating away at some of the load. And so we'll pay you a one-time up-front capacity payment and that was based on a value of \$500 per kW at the time. We assumed maybe with solar we're getting 55 percent of the nameplate at our peak and so we paid you a one-time check at the time of installation for \$275 per kW. And you know what, we were really proud of this program at LES because we went pretty far beyond state statute. But we had a really passionate group of our customers, some of which I already saw in this room today, and they came in and they approached us and they said, you know what, we love that program, that's really great, but you've got to find a way to do more. There's a lot of people that want to pursue solar and you guys have to provide that opportunity. And it's easy to take that and say, well, you know what, we've got a great program; that's good enough. But we took it as a challenge and so we challenged ourselves internally. And we said would it be possible to provide more opportunities for those customers that to pursue solar without putting an undue burden on the rest of our customer base? So we said, okay, if we're going to figure that out, we've got to go through a few things. The first thing we've got to do is we've got to figure out what's the true benefits that that distributed solar brings to our system, because if you don't know all those benefits how can you tell the difference between fair market value and an incentive? And if we can figure out that fair market value, well, then we'll go ahead and go back and look at our net metering rate and see if there's anything we can do there. And if we get that far, we're going to figure out if there's a way for customers to pursue solar even if they don't have a suitable roof, because most people don't. So the first thing we had to do is we had to figure out what are the benefits that solar brings to our system. So in 2014 we undertook a value of solar study. A lot of people are doing these now. The first thing we did is we went out and read all the studies that we could find. We actually read a whole bunch of studies on all the studies, and a lot of different ways to do this. And we decided we're not going to copy any one person's methodology. We'd kind of like to come up with our own, because the important thing about doing a value of solar study, it should be your utility's

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value of solar, not someone else's. But it doesn't mean we reinvented the wheel. We actually borrowed from a lot of them. And so up on the screen, those are the benefits that we decided we were going to capture. There's the benefit of the energy, because if the customers produce it locally that's energy we don't have to produce. There was the value of the generating capacity and that I have already mentioned. If customers add solar in our system, they're pushing out the need for that next resource that we have to add. There's benefits in transmission capacity and losses, because if we produce the power locally we don't have to bring it in on the transmission system. And likewise, there's savings in distribution capacity and losses, because if a customer produces solar on their end of the feeder we don't have to pump it down that line to them. And then finally there's the environmental benefits. That's a tough one. A lot of studies don't even include that one just because it's kind of hard to come up with an actual finite value, but we thought it was important to put in there. And so what we did is we basically ran two cases. One was business as usual. We projected out over 20 years what it would cost to serve LES's power needs. That's pretty standard; everybody does that. And then we said what if we add 50 megawatts of distributed solar on our system? What would then would it cost to serve our power needs over 20 years? And the 50 megawatts wasn't just picked arbitrarily. That was engineered. That was exactly enough to take the next generating resource that we had planned at the time in 2030 and move it out to 2031. That would allow us to capture some of those generating capacity savings. And what we're really looking there is once we can figure out what the cost to serve our business as usual case would be over 20 years and what it would cost us to serve our needs with 50 megawatts of solar on the system, we're looking for that difference. You know, I've talked about the benefits that solar brings. So inherently the solar case should have a lower cost, net present value, than our business as usual case. And that amount of money, that difference, that's the amount that we can afford, fair market value, to pay all the solar customers which breaks the...basically takes the cost for the solar case and equates it to what our business as usual was going to be anyway. So all the nonparticipants, the customers that didn't put in solar, to them the impact is negligible. That's what you're looking for. So I used all these jokes yesterday but we'll them again because there's different people in the room. The lucky thing that people have is we actually have a full presentation that goes through this value of solar study. And I think in the slides that Senator Haar is planning to put out after this, we're going to include some summary of that. So you'll get a little bit of a taste of it. The first time I presented this was back in 2014. It was going to be an hour presentation to a lot of our customers. And so the night before I told my

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family after dinner I'm going to go upstairs and I want to practice because I want this to be good tomorrow. And my middle son who was about 11 at the time, he said, Dad, I want to listen to you practice. Can I come? And I said sure because no...I was excited, nobody ever wants to pay attention to me. So we go upstairs. I've got a paper copy of the presentation and I lay it down on the bed and I said hold on, I forgot my phone. And so I walk downstairs and on my way back up the stairs I passed my son going down the stairs and it's only been a few seconds. My house isn't very big. I told him, where you going? I'm ready to practice. And he looked at me and he said, no thanks, I saw your presentation. (Laughter) So you people in this room are very lucky that you're getting the short summary. But if anybody is interested, the full thing is on the LES Web site. You can see all the assumptions we ran, all the data we used. So here's kind of what it went through and if you go through the summary of the full presentation, it walks through the calculations for each individual category of benefits. But where we ended up is the column over on the right-hand side: \$37 per megawatt-hour of fixed price for the solar energy over 20 years. And that's the same as saying 3.7 cents per kilowatt-hour. And when we did that a lot of people right away wanted to compare that to our electric rates and we said, well, you can't really do that. This is a fixed price for 20 years. And as much as I'd love to say we're not going to have a rate increase for 20 years, that's probably not going to happen. Costs tend to go up. So we said, what if we put an escalator in that? So instead of being a flat rate we included a 2.2 percent escalator every year to kind of match inflation. That meant that value of solar studies showed the benefits went from 3.1 cents per kilowatt-hour in 2014 to 4.7 cents per kilowatt-hour in year 20. And we said if we do that, that 3.1 cents, that's something that you can compare to our rates today. And when we did that we found out our net metering was a heck of a deal for people. If you look at that, when people are offsetting their residential rate with their load, well, that was--we already went through--about 10 cents in the summer and about 6 cents in the winter. That's a lot more than 3.1 cents. And for the customers that excess produced in a month we were paying 4.7 cents per kilowatt-hour, that renewable of what it'd cost, which is where the value of solar rate would have said it should have been not until year 20. And then finally that 3.1 cents, that actually included the generating capacity benefit, the benefit of moving that next generating resource out into the future. That was already baked in. With our net metering rate, we were actually paying an up-front one-time payment of \$275 per kW installed. So net metering was a great deal to the point where a lot of people looked at it and said, well, I think we're done. We've proved net metering is good. And we said, well, you know what, the point of this wasn't to prove that our

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net metering rate was a good deal for people. The point was to see if we could make it better. So we said, okay, we're going to go back and we're going to look at our net metering rate and see what we can do now that we've got a frame of reference for what the value of this distributed solar is to our system. Well, obviously with net metering you can't mess around with the rate that somebody earns by offsetting their load. So the only thing you could really mess with is what's the rate we pay for somebody who over-generates in a month. And remember, that was that 4.7 cents, renewable of what it would cost. So we went back and we said, you know what we're going to do? We're going to pay the full retail rate. We'll pay the full residential retail rate for everything that you excess produce in a month but we're only going to do that until we hit 1 megawatt of distributed renewables, and that's usually mostly solar with our customers, on the system. And once we hit that, we probably don't need that good of an incentive anymore so it's going to ramp down and we'll pay half the residential retail rate and we'll do that until we hit 2 megawatts on the system. And after that, it's going to ramp down again. And we don't know where that's going to be because we don't know how long that's going to be. I got a good idea what it might be, though, and it might be an update of that value of solar study. You would pay the actual fair market value. And we added one more piece to this. We said, you know, if somebody signs up under tier one and they plan on getting the full residential retail rate and then the very next day we go over the 1-megawatt threshold, well, that's not really fair to them. So whatever rate you sign up for, we'll lock that in for ten years. Now after ten years, you go wherever the rate goes but at least you have some price certainty for ten years because you know what tier you signed up on. We also messed around with the structure a little bit. We said, you know, with net metering, we allow people up to 100 kW. We don't have anybody signed up anywhere near 100 kW. Heck, we didn't have anybody signed up near 25 kW and we wondered why that was. And we talked to people we found out it's because solar is kind of expensive. You to get up into that size and it's hard to do that for one person. So we said, well, we're going to take net metering, we're going to drop that back to 25 kW. We're going to match state statute and we're going to make a new rate, the renewable generation rate. And that's going to cover a range from 25 kW to 100 kW. And this rate has nothing to do with a customer's load. It's what they call a feed-in tariff. We basically pay for production and the idea was it allows people to partner with other customers if they'd like to. It's hard to partner on net metering because it's always tied to one person's load. With this, it's strictly a payment you get each month from LES representing all the energy you put out and it's easy to split up with people. It uses the same tiered incentive rate

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as net metering. So for the first megawatt on the system, we're going to pay the full residential retail rate and it will walk down from there. And you get the full capacity payment that net metering does also. A lot of people see this usually and they say, now, that doesn't make a whole lot of sense. You had a great net metering rate. You ran a value of solar study which showed it was very incentivized. And what did you guys do? You made the incentive greater. Well, there's a rationale behind that. That value of solar study and those tiered limits, the 1-megawatt and 2-megawatt limits, allowed us to go to the LES board and say, if we roll out this program, here's exactly what it's going to cost the rest of our customers, because we knew what benefits the net metering would bring and we knew it couldn't go past the 1-megawatt and 2-megawatt thresholds at the rates we had set. And the board said, you know what, we think that is a measured and reasonable expenditure to provide more opportunities for our customers to pursue solar. But even most important is it allows LES to generate internal expertise with what distributed solar is going to do to our system. We see it on the coast but we don't have firsthand experience here mostly because our rates are so low. There's not a big payback for it. We know that as distributed solar comes to our system we're going to see issues with reliability. We know it's going to expose flaws in our programs and processes to handle it and administer it. And we want to see those things early on, on our time line so as the price of solar continues to drop and you see it proliferate here, we've exposed some of those issues before and we've had a chance to figure them out. So here's kind of the impacts of that. This is a chart that shows our customer installed renewables, and almost all of this is solar, on an annual basis starting in 2009. And in 2014, that's the year we rolled out those new rates and you can see we kind of had a banner year; 2015 was our second best year ever. And that kind of made sense because we thought in '14 we probably moved a lot of people who were real close to doing solar and they saw the new rates and they took the plunge. In '15 we were probably dealing with a lot of people who hadn't thought about doing solar until they saw the new rates, so they had to start through the process with their solar installers and figure it out. And I think that turned out true because if you look at 2016 relative to what we've seen before, we're having a really good year--almost 160 kW right now that's in the pipeline. A lot of that's completed and if you add all that up, well, we're around 400 kW. So we're on a pretty good start to our 1 megawatt. We haven't seen anything big actually start construction under the renewable generation rate, but we have applications from customers and we know there are people working on it. So we're hoping to see some of those soon too. Kind of related to that, in 2014 we also installed our own solar installation, a 50 kW DC solar installation

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at our LES service center on 27th and Fairfield. This was important because as we get more and more customers that start to put in their own solar, we wanted to actually own and operate and maintain our own system so we could kind of feel what they feel. So this has been a good experience for us, kind of getting to see what our customers see when they put it on their home or their business. So we had done our value of solar. We went and checked out net metering. We made some revisions there. And the last thing was, can we provide an opportunity for people to pursue solar who don't have a suitable roof? So we ended up launching the LES SunShares Program. It's a voluntary opt-in program for as little as \$3 per month, allows people to pursue solar and support it even if they don't own a roof or their roof doesn't point in a suitable direction or, you know, they just don't have the up-front funds because, again, it is expensive to get into this. So when we started this process we ended up marketing it to all the customers. And really, in parallel, we issued a request for proposals for a bunch of different sizes of solar installations and the idea is we would kind of marry the two up. We'd look at what we got people to sign up. We'd kind of compare it to all of our solar sizes, and we would pick a solar project accordingly. Well, we ended up with just over 1,200 people pledging about \$6,000 a month--that's a lot of money--\$6,000 a month every month for what could be 20 years to support a solar project here in Lincoln. But it wasn't enough to get into what we thought were our highest rated proposals: the ones that provided the best per-unit pricing, the ones that had the most visibility, the ones that came from the most-experienced developers. And so we ended up picking a 5-megawatt project. That was quite a bit larger than what we had had from the customer side. We ended up actually, in the beginning of this, we did a customer survey to figure out how many customers might support this, a statistically valid survey done by a national firm. That survey said 50 percent of our customers would be willing to spend up to \$5 a month to see solar here in Lincoln. Well, we ended up a little bit less than 50 percent; we ended about 1 percent. We always knew it would be lower because the survey people had told us when you do a survey about people giving you money, what they tell you they're going to do and what you end up with will be quite different. But I tell you what, to those 1 percent, it's an important program and they're really proud of it. Once again, the value of solar study was key because we were able to go in to the LES board and perfectly quantify what this contract would cost us because I could tell them, you know what, here's what the value of solar says: doesn't cost us a dime. For every dollar we put in it, we're going to get that dollar back in benefits. In addition to that, the customers, those 1,200, they're going to cover this much. So that difference, that's what will be left for LES to cover. And once

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again, the LES board said, you know what, we think that's a measured and reasonable expenditure to provide more opportunities for our customers to pursue solar, but again, even more importantly, it allows LES to build internal expertise with utility-scale solar--projects larger than 1 megawatt. And we think that's important. This project has taught us how to handle the contracts, how to negotiate them, how to administer them afterwards. If the price of solar continues to drop, someday LES might want to include 50 megawatts or 100 megawatts of utility-scale solar in our overall generating portfolio. And if we do, this project and the experience we've built will have been fundamental to that effort. So this is what the project looks like. Up in the upper right you can see that's Interstate 80. Like I said, we just dedicated it a couple weeks ago, so we've been pretty interested with this. It's a tracking project. It's single-access tracking so it tracks the sun from east to west every day and we actually did...this project put LES and really the whole state on the map. This is a map put out by the Solar Energy Industries Association, anybody can go look it up on-line. And it shows all the solar projects in the U.S. that are 1 megawatt or larger, what we kind of call utility scale. And you can see the little yellow dot there that's above the United States; it's right under the word "Omaha." That's our project. This is from their May update. So yellow says it's under development. They put these out a few times a year. So when the next one comes up it should be red which will actually show it's in commercial operation. You can see there's a lot of solar in the country, but if you look through the Midwest where we're at, we're in rare company now with this project, so we're pretty proud of that. So we had our SunShares program. When we pushed out the SunShares program I was at almost all the customer marketing events and I heard a lot of things. I'd have people come up to me and say, you know what, we love your program. I am supporting your program. I'm enrolled, but I'll be honest with you. I wish I got some kind of benefit back, a little bit more benefit than just seeing us do the project. I had even more people come up to me and say I love that you're doing the program. I love the project, but I'm not going to sign up. Money is too tight. But if there was some kind of benefit to me, I'd be real interested. So we took that back internally and we worked on a new program and we just announced this in conjunction with the dedication. The LES board authorized us to pursue virtual net metering for that project. What that means is customers will be given the opportunity to purchase a portion of that facility's output up-front, a one-time payment. And in turn, what we would do for that is over the remaining life of the contract, initially that would be 20 years, we'll represent that portion of the output as an energy credit on their bill. And that's where the virtual net metering comes in. It

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looks just like, to our billing system, they have put their own solar on their home or their roof or their business. And something we're really excited about, all those people that gave us money for SunShares and supported that project, for a limited time we're going to allow them to take all the money they've given us to date and put that towards their initial enrollment in the Virtual Net Metering program if they would like to switch. And the program, we're finalizing the details now. We should be disclosing those and having public meetings on those in the fall. And we're hoping that in January of 2017 the first credits will show up on people's bills. So if you look now, this is what our portfolio looks like today. We have the net metering rate; that's incentivized, but it's a limited incentive, provides us experience. It's got a really good energy rate, the full retail rating for excess production, and it's got that capacity payment, which actually was increased to \$375 per kW if it's a northern-facing installation. Or if it's a western-facing installation which gets us more output at our peak, you get \$475 per kW. We have our renewable generation rate that runs from 25 kW to 100 kW with the same incentivized energy payment and capacity payment. And finally, we've got our community solar project that helped put LES and Nebraska on the map as far as utility-scale projects. We've got our LES SunShares program where people can support the project for as little as \$3 per month. And we've got our new Virtual Net Metering program so people can have a more vested interest with direct benefits shown on their bill. That's all I've got today in case there are any questions. [LR455]

SENATOR HAAR: Okay. Do you have any questions? Okay. I have a couple questions. You talked about the value of solar and you've looked into that. Did you develop your own modeling for that or is there some kind of national company that...when you talk...because, for example, when you talk about environmental value, does that include things like the health benefits? Or could you just give me a little bit of a...? What does that mean? [LR455]

SCOTT BENSON: Uh-huh. You bet. Yep, and that's all the stuff, if anybody is interested you can go look at the slides out on LES's Web site. [LR455]

SENATOR HAAR: Okay. [LR455]

SCOTT BENSON: It gives you the detail. But I'll give you a quick summary. We did the modeling internally. So we do all of our modeling, for the most part, internally and it's the same

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modeling we do when we set the LES power cost budget or when we're making projections out in the future to try to figure out where to go with our generating portfolio. We use a...it's a commercial software. It's the same software the Southwest Power Pool uses. We run on top of Southwest Power Pool models but we run that modeling internally. Now for the assumptions, like the environmental, we looked at what a lot of people had done before and we thought there were a few folks that had a pretty novel approach. They use the value of renewable energy credits or RECs. They said, you know what, there's already a mechanism out there that kind of puts a value on these environmental attributes and that's a REC. And so LES has always worked with a marketer because we sell the RECs from our wind projects, and so we worked that marketer to kind of do a projection for what those RECs for solar might be worth out over 20 years. And that's where that number came from. [LR455]

SENATOR HAAR: Okay. Good. Well, thank you very much again. And we'll have a sign-up sheet afterwards for people who would like to get on our e-mail list. And we'll assemble somehow a Web site so that you can download these PowerPoints and the presentation. [LR455]

SCOTT BENSON: All right, I've got to make my one plug and you know what's coming. You're already smirking. For all the people in the room behind me, if you're interested in value of solar, like I said, you can go to the LES Web site and you search "value of solar" and you'll find that one-hour presentation. And you can look at it a couple ways. One is you can actually just view the slides and that's what I'd recommend. The other is you can listen to me talk about it for an hour, and you don't want to subject yourself to that. But I have a request. If you get in there and you care enough to download the slides, hit the play button on the actual presentation, let it run for a few minutes and then you can stop it. And the reason is I want to get my number of hits up there because my kids love to go out on the LES Web site or YouTube. They go on YouTube all the time. LES has tons of videos out there of me talking about stuff and my kids will constantly go check and they say, Dad, nobody is watching your stuff. So if anybody is interested enough, please go out there and give me a hit. Thank you very much. [LR455]

SENATOR HAAR: Okay. Well, I have a staff and I will instruct them to (laughter) spend at least a day hitting that play button for you. [LR455]

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SCOTT BENSON: I have been doing this...I've been lucky enough to do similar presentations really all across most of the country this year, and every time I make that plea. And you'd be interested in how much it's really helping out. I told this yesterday. About a month ago, a couple months ago I went home to my kids and I was feeling my oats because my number was getting up there pretty high. I wasn't going viral, but for me it was pretty high. And so I showed it to them. I popped the laptop open. I said look at all the people that are reading Dad's stuff now. My youngest one looked at me as sincere as can be and said, yeah, but, Dad, how many of those are you? (Laughter) Thank you. [LR455]

SENATOR HAAR: Okay. Now were you going to show at all the time lapse, the one minute? [LR455]

SCOTT BENSON: We're going to try that. [LR455]

SENATOR HAAR: We're going to try that. [LR455]

SCOTT BENSON: So yesterday we tried to show a time-lapse video that takes the...construction of our project took three months, really, start to finish, when they started to turn ground out there. And we've got a video where we took a picture every hour for that three months and condensed it into just over a minute. So we're going to try and play it here today. [LR455]

SENATOR HAAR: Okay. [LR455]

SCOTT BENSON: Oh, it actually died. [LR455]

SENATOR HAAR: Okay, we'll do it later. [LR455]

SCOTT BENSON: We may have to do that later. [LR455]

SENATOR HAAR: Okay. Okay. Well, thank you very much. Graham Christensen, you're up next. Graham is the last of our invited testimony. And after that we would really like to have

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people come up and talk about their interest in solar, why they think it's important, and so on. Go ahead. Yes, please say your name and spell it. [LR455]

GRAHAM CHRISTENSEN: (Exhibit ___) Graham Christensen, G-r-a-h-a-m, Christensen, C-h-r-i-s-t-e-n-s-e-n. I am president currently of GC Resolve who is within its first couple of years of doing development. And thank you, Senator Haar, thank you, Senator Larsen, as well for being here today. And so across this, you know, in these early stages as we've been developing solar projects and we currently have developed our first four and the fifth one is in construction right now and there's several more in the queue. But we've come through...we've seen a lot of things on the road. And I guess I wanted to share some of those and offer up some ideas on potential barriers that we might be able to smooth over that would help more...help spur more business as we're moving forward. The number one thing that I wanted to highlight today was increasing the size of the net metering program. When we're on the road, a lot of times I'll go to a farm that's a little bit bigger than the average farm. As a matter of fact we're looking at...we're working on developing one right now that would use a more like a...it would have more like a 75- or 80-kilowatt usage. And of course, right now the net metering program doesn't cover that. So if we go over that 25 kilowatts, everything is bumped down to a lower rate. And so they're not able to apply and have the same kind of benefits as the 25 kilowatt and under folks are. And so I think making sure that moving forward we're not looking at discriminating against middle-sized and larger-sized businesses and farms that are out there, letting them make sure they have the ability to power their full systems. And so I mean I think that minimally the net metering program should be raised to 100 kilowatts. And then when you get over the 100 kilowatt stage, I think we should look at a program separately that would incentivize that. Cliff Mesner was up here earlier talking about the community projects being the...needing the most help for incentive. And I agree that that is...should be a primary focus, but I just don't want to forget about the larger size businesses that are trying to do the right thing as well that have a cheaper electric rate from the utility because they're bigger users. We should still be able to include them in the conversation and find a way that we can help these businesses--and in a lot of case this would be schools and places like that--to have a level playing field as we're moving forward. And then I think that also the net metering rate could use a little bit of work. I think the rate currently is...well, it's all over the place depending on what utility you go to and some of them are extremely low and it really doesn't provide a lot of a benefit for the folks that are producing just a

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little bit excess. And even if that's a tiered program based on size, we should be looking at trying to find I guess something that's a little bit more modern. I know that was a starting place. It's served well as a starting place but I think the net metering rate, something a little bit higher would be...a little bit more consistent would be appropriate to get the conversation going on. There's a statewide cap for how much solar that we can put in. And you know, I would hate to see some areas that could use more, that are maybe smaller users, get shut off because they cap applies when we develop enough kilowatts of energy. So I would suggest looking at lifting that cap on how much we can produce overall at this time as well. Something else that we have heard for years and years and years when we have been on the road...much...before the business was even started, I've heard this a lot running through the rural community and the farm community is, well, can you do my pivot irrigation? And so currently it's very hard to do the pivot irrigation system. If you try to bring in grant funding with the USDA for something like that, they don't score as high as just a whole farm application or a small rural business. So is there some kind of special rate, a higher net metering rate, a higher special net metering rate for pivot irrigation that we can do to help match up some of those peak hours that those things would be on? I know there's a lot of interest out there, but it's really hard to be able to sell on a business standpoint, you know, that you're going to have a decent return on investment the way the program is set up. So I think pivot irrigation deserves a special and a unique look at how we might be able to actually start teaming up more solar energy. The majority of utilities are not going to be able to do this in an economic fashion right now. We've had some issues with interconnection agreements, you know, just kind of being all over the place. In the interconnection agreements, some uniformity would be nice. And I think that's a discussion that can be opened up in what are the haves and the have-nots that need to be on there. But there's a lot of utilities in the area and so you're dealing with something a little bit different every time and opening up that conversation would probably be healthy. And definitely support the virtual net metering stuff that Mr. Mesner was talking about. I think we should explore how putting more weight or more cost on to fixed rates affects solar development as well. Last year OPPD recently changed their rate structure. It will take more of the money and put it under this fixed rate that everybody that has a meter must pay and lower the rate of electricity, making it harder to do business in the city of Omaha than in other areas of the state. We need to make sure, if we're allowing these kind of programs to go forth, that they're not going to hinder our goals and objectives that we're talking about right here to better our state and move our state over, especially if in the largest population

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center it's more prohibitive. It's not obviously completely prohibitive. But it is tougher to sell on an economic scale in Omaha now after this policy change than it is anywhere else. That needs to be explored. We need to talk about that and just make sure we're not hindering development moving forward when we need to become...we need to be on the front lines of this conversation here in Nebraska. And I also think there is some value as I know the utilities in Nebraska have concerns about how we integrate all this stuff in a way that we can make sure that we do it and still protect the mission of public power. I think there's some sense into starting to look at in the future--5, 10, 15, 20 years down the road--that our utilities are equipped to adapt to this changing energy climate. We need to make sure that you know they have plenty of opportunities moving forward, that there's an easy transition in place that will allow them to do more of these kind of projects. And you know there's some concern in the utility world. It's scary. There's big changes happening but we have to move rapidly and we have to be realistic about this and we need to get ahead of the conversation. So making sure that there is more of a defined role of the utility in the future I think is a very healthy conversation as well to have at this point. Just some other observations probably not pertaining as much to legislation as the last couple were, number one, we've done several REAP grants as well. We've had very good luck with them. The folks that we work with are stand up. They...if we don't understand something, they take the time to explain, you know, some of the long language that we're trying to read through. We've also had the ability in working with them I think to come up with pretty cool innovations that help make this process easier. They've been open to that. They've run it up the mill to the top and, for instance, a prescreening evaluation. So as a business, if I'm charging somebody for doing this, we have a pretty good idea if their score is going to rank high enough from the start. That way, I don't feel bad. We're not misleading the customer on the end who's putting in a little bit of money to do this grant for them. And of course, it protects the integrity of the of the USDA too. But point being is that they've been very open. But I just want to note for the record the process is extremely long and convoluted. There's...I don't know, there's always exceptions but there's not too many farmers out there that are going to spend the time to do these apps ever. We find on a smaller 5- to 10-kilowatt application, it almost becomes not worth the time for us as a business to help these folks be able to do something that they wouldn't normally get because it's such a long extensive process and is something...there's new stuff kind of coming our way. And it's because there's so much written in the federal guidelines, but there's so much stuff coming our way that each time it's different, that surprise, surprise, you know, with every application. We would like

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to see a little bit less red tape down the road. And you know, I plan on talking to the folks at USDA--we've already had some of these conversations--and trying to work that up the chain. But there's only so much information you need to know to know that this is a good applicant. And we need to honor that for sure, but it's extensive. And with the Nebraska Energy Office program--great program. Opposite of the USDA, the application process is not a cumbersome process. It's able...we're able to get kind of the information needed pretty quick. We have great feedback from the folks working at the Nebraska Energy Office who I believe are doing a great job as well on what they need from us to make these apps go, greatly appreciative of that. But I mean from start to finish of the Energy Office app with a not very long and burdensome process, I mean it's at best one month before we turn the sheets in and get going. And so that means, as from a business perspective, with a market that's changing all the time, new equipment moving all the time, and of course that is growing all the time, we're finding that we're having to change a lot of our orders from what we initially had done those with because these processes are so slow. And it would just be...it would be helpful if we could speed up everything so we don't lose two months out of the warm season when we should be putting these things in the ground. Finally, I just wanted to touch on some of the C-BED stuff looking at an overall climate perspective. There's two games in Nebraska: one is the export, our large market of wind energy; two though is local and sustainable and that would be more where C-BED fits in. I support both of them. We need to do both. We have a great opportunity in a public power state to take advantage of each opportunity and help power large parts of the country but including our home communities. And the issues that I've seen from development perspective in regards to this primarily are contractual barriers. And one of them is that we are not able to sell a lot of times the amount of energy that a community could use or would like to use because a rural electric association has a contractual agreement with a bigger utility that only says that they can do, you know, 10 percent of their peak load. In somewhere like Burt County Public Power District where our farm is, that means that that's about 2.5 megawatts. So not only is it restrictive on wind, it will be restrictive on solar as we're trying to do more innovative things as LES has. We need to look at...does that even...I'm not sure that even makes sense. I'm sure there is some size areas that it make sense, but we need to look at that so we can allow more communities to develop. And then just as when LES, NPPD, and OPPD buy a big windfarm and share it, why can't we develop community farms and allow the local communities, the local utilities, say, like Cuming County Public Power District, Burt County Public Power District, and Northeast Public Power District, why can't those three

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co-op in on a locally sourced project? They can't with the way current contracts are set up. And that doesn't seem parallel with the policy at the higher level. So I just think that's a C-BED conversation that could be opened up. And of course, moving forward, low cost in statute is something that I think we need, too, as we're analyzing what our costs of energy are. Scott did a great job of kind of highlighting this, Scott Benson. You've got to at all the costs and all the benefits and really weigh out what makes sense. And we need to project some of the future costs that we think could be coming down the road, too, and making good decisions that are long lasting. We just need to make sure I think in statute that it reflects we're taking into account all these costs and not just the simple price of energy because there's great benefits through property tax revenues in which we need to focus on because our schools, you know, we need that extra income right now. That's just one example of the benefits that we're not accounting for that are a big deal to Nebraska communities. And with that, that's all I wanted to bring to attention today. I appreciate the time and will take questions. [LR455]

SENATOR LARSON: Thanks, Mr. Christensen. Just a few questions: First of all, I appreciate and understand you working in agriculture. I think that's an important part and we kind of touched on that yesterday in Broken Bow about there's room for growth to help agricultural producers. One of the things that caught my eye at the beginning of your statement or your presentation was your...you want to raise the net metering. And I don't have a fully formed opinion on that, but you said some of the farms that you're working with, 25 kilowatts just aren't big enough. [LR455]

GRAHAM CHRISTENSEN: Uh-huh. [LR455]

SENATOR LARSON: What size, I mean, what size--as someone that grew up in agriculture and I know you did as well--what size of farm are you guys working with at this point that 25 kilowatts isn't enough? I mean are we...because we're talking center pivots or whether that's a dairy farm or whatnot. And if it's more row crop production, are these...how many quarters are we talking about, 4-, 8-, 10-quarter farms? Like what are your clients looking...like how big are these clients, because obviously they probably have a little more scale. The bigger they are, they have a little bit more ability to scale. So what size are these farms that you...that you're working with? [LR455]

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GRAHAM CHRISTENSEN: Here's two examples that I'm going to give. One currently that we hope to be able to develop here before the weather turns too cold is a row crop farm, no livestock, in Craig, Nebraska. They don't...they're not too far down the road from our farm. And Kevin Anderson (phonetic) is the farmer out there and they have a very large shop that they base the majority of their business out of, but they also have a huge grain elevator and drying facility that take up a lot of juice. And about...with the 25-kilowatt cap...and he was interested in doing the full size, but with the 25-kilowatt cap, that would cover not quite a third of what his energy uses were. He was hoping to be able to hit that threshold. And then I guess maybe an even better example would be a conversation that I have had in the past, several of them, with Feller Feedlots in Cuming County. They have five meters on their place and all of them are going to require larger usage than the 25 kilowatt if we are really trying to meet their full needs. And so when I looked at their feedlot I just said, well, right now with the laws that we have, this meter that you're using less on but is all ag is going to be your best bet. These other meters, they also have this higher...or lower electricity rate, the special deal. We're not going to be able to even come close to the size and it's just not going to be as much of a bang for the buck. And that's the other reason why I said like when you get to certain sizes you might even need to scale up to compete with the electric cost, low electric cost that the utilities are doing to make this more economic. I mean that's something that just should at least be talked about. But these folks out here, these large farms and ranches, they have a need and we just don't have a lot of way to meet it. And you know, of course, I'm not going to sell anything if I don't believe in the return on investment is going to be a true benefit to them. [LR455]

SENATOR LARSON: I guess my point is like what you're saying is it is the larger farming organizations that are trying to be not only environmentally but economically responsible but also have the size and capability to scale up. [LR455]

GRAHAM CHRISTENSEN: Absolutely. [LR455]

SENATOR LARSON: It is the larger farms that... [LR455]

GRAHAM CHRISTENSEN: Yeah. [LR455]

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SENATOR LARSON: ...are moving forward and, you know, innovating and growing to make sure we're producing and sustaining (inaudible). [LR455]

GRAHAM CHRISTENSEN: Absolutely. Picture this conversation: Cuming County, all these existing feedlots in place, they have always getting a bad rap on environmental issues, whether earned or not. And think about what you could do by providing clean electricity, saving these folks money, but then also providing then an additional level of shading on these feedlots for the cattle. You're looking at some great benefits for folks like this that are our large players in the state and they're interested right now and they want to know how they can play in this. And right now it's tough. [LR455]

SENATOR LARSON: Like I said, I really appreciate you highlighting that because I do think, as I've always said in the Legislature, it's highly important that agriculture continues to grow and innovate because in agriculture specifically if our producers are not growing and innovating, we will continue to fall behind in agriculture. And the fact that you're out there working and helping our, you know, big and small producers. But it's the big producers that are leading the way in these developments and I think that's awesome and hopefully the Legislature can continue to work on giving these larger...all producers but making sure these larger producers have those abilities, because we've always seen when they lead it creates the ability for the smaller guys to come through. [LR455]

GRAHAM CHRISTENSEN: Absolutely. [LR455]

SENATOR LARSON: So there is a...the larger guys obviously have an important role to play in agriculture. You did mention and I guess I'm not completely familiar with this so if you'd want to educate me real quick. There's a cap on solar production in the state--and excuse my ignorance on that--so how much like the public power companies will buy or just how much we can produce in general? [LR455]

GRAHAM CHRISTENSEN: I would maybe revert that, the specifics of that question to Ken Winston. I think he might have in his mind better what that could be. But there is a cap on the total amount that we can develop overall. And theoretically, if we hit that cap, it could be shut

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off. We might not be able to continue development. And as the trend lines are up and up, there's a lot of interest right now. I think we better explore that and just make sure that if there's a public power district, for example, across the state who is ahead of the game that they're not going to be shut down unexpectedly in the middle of some projects. I want to make sure that as that conversation is happening consistent reliability does not become an issue in any of this. But I don't think we're anywhere close to that and I don't think eliminating or raising that cap would allow that. [LR455]

SENATOR LARSON: I appreciate that. And I also, like I said, I appreciated you offering...the concept of raising net metering may be in stages for four pivots or agriculture first and then seeing how that works because I think, as I said, our agricultural producers are facing a number of different issues, whether that's with the property tax problems or other things, and they need to find ways to create margins and become more efficient. And so there might be other solutions out here to lower the overall bill and make sure that things are happening in the right way. So I appreciate you bringing those things up. [LR455]

GRAHAM CHRISTENSEN: Yeah. Thank you. And I look at renewable energy as another crop that our rural areas and our ag industry... [LR455]

SENATOR LARSON: A drought-proof cash crop, how's that? [LR455]

GRAHAM CHRISTENSEN: Um-hum. It's a new crop for us. And we've got to find ways to tighten the belts right now, as I think most everybody here knows, and this is one way that we can alleviate pressures, so. [LR455]

SENATOR LARSON: I appreciate that. I agree. [LR455]

SENATOR HAAR: Okay. A couple things: Graham, in 15 seconds or less, tell people what net metering is. We've talked a lot about that but some people may not know what that is. [LR455]

GRAHAM CHRISTENSEN: Basically you have a one-for-one offset. If your house is taking in energy from the solar panel, you use it, you eliminate that cost of electricity. Let's say you go on

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vacation and you're not around the house, you're not using the electricity. So your solar panels just produce a little bit extra and it goes back on to the grid. The utility, would pay you in a credit on to your next bill what that excess amount you paid. The net metering rate, however, is usually a third or less. LES has an exceptional rate. But the net metering rate is usually a third or less of what the wholesale cost is. So it's a significant difference from the one to one where you're using the energy to if you actually have to net meter and sell it back. And especially when we hit that 25-kilowatt level, if we exceed that, it looks like most of what we would sell would be back at the net metering rate and that is really tough, especially in some places. It's a complete barrier in a lot of places in the state when we exceed 25 with that net metering rate. [LR455]

SENATOR HAAR: Good, okay, 20 seconds. Thank you very much. Good job. (Laugh) I've known Graham for a long time. And I'm going to have Ken Winston talk for just a minute about the caps that Senator Larson asked about. [LR455]

KEN WINSTON: Well, I'm not exactly sure what you're referring to, but there is a 1 percent net metering cap and it's per utility. So it's not necessarily a statewide cap. [LR455]

GRAHAM CHRISTENSEN: That's the one I was referring to. And that's...thinking about it at home in the Burt County area, where we're doing a lot of development, you know, I can see how we can hit that at some point. Let's raise that cap or eliminate it. [LR455]

SENATOR HAAR: Okay. And then, Graham, I was going to ask you, as you're working with people, why do people want to go to solar? [LR455]

GRAHAM CHRISTENSEN: In Nebraska, I feel that a lot of what we do is driven by economics and the economics are good. If you apply the incentives in place with the decreased cost of solar, we're there. It makes sense. If you're going to have a business going into the future, right now, especially at that 25 kilowatt and less size or if you're going to hand the farm down to the kid, your interest should be in doing this because it makes business sense. But a lot of the folks I'm talking to also are trying to lead in example for the next generation. I mean when we...if we're able to get an interview at the local paper, that's what they say is we want to make sure that we're setting an example. We want to be leadership for our next generation. We want to do our little

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part. So our young people will know that we tried and be able to stand on our shoulders and move forward in a productive way. So those are those are the two primary reasons that I see. And they're both real reasons. [LR455]

SENATOR HAAR: Okay, great. Well, thank you very much for testifying. [LR455]

GRAHAM CHRISTENSEN: Yep. Thank you. [LR455]

SENATOR HAAR: And one thing I forgot to mention earlier is that our page for today--thank you very much--is Brenda Gallardo. Right? Okay. Yeah, thank you so much for being here to give us coffee and so on. Who would like to...we've got an hour and a half before noon. Who'd like to testify? And then we'll make a decision whether to use the light system or not. Could I just have a show of hands? Okay, one, two, three, four, five, six, seven, eight. Okay. And I hope we'll hear from a student or two from North High because you're going to be alive when the maximum climate change consequences kick in. So we probably don't need to use...yeah, so we'll say five minutes. Yeah, that's good. Good idea. Okay, five minutes, we'll use the light system and... [LR455]

SENATOR LARSON: Five minutes and then questions. [LR455]

SENATOR HAAR: ...yeah, and then questions. So thank you for coming. So if you give us your name and say it and spell it. [LR455]

CYNTHIA TIEDEMAN: Okay. I'm Cynthia Tiedeman, T-i-e-d-e-m-a-n, from 7562 Drexel Street in Ralston, Nebraska. About four years ago my husband and I took some of our retirement savings to purchase solar panels for our house. And you've been asking why. Well, as a nurse, I knew the health consequences of fossil fuel pollution. And as a school nurse, even sometimes at North High School, I wanted our kids to have clean air to breathe and I wanted them to have a future with a healthy Mother Earth. So that was our personal decision to buy the solar panels. And although it wasn't a financial investment, that's what Ken asked me to talk about. And we estimate that will we'll recover our investment in 13 or 14 more years. That would be based on our OPPD bills and that's including the recent increase they've been doing on the flat rate.

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So...and that's not even factoring in that the last couple of years it's...those panels have been powering our electric car. So in a way they have...they are a financial investment in the real long run. On our computer we can monitor production of each panel. In a recent monthly report our panels had produced a total of 924 kilowatts for that month. That was a carbon offset of 1,408 pounds, and we have an 8.1-kilowatt system. So if we could have it on a larger scale it would really be good. [LR455]

SENATOR HAAR: Uh-huh. So what do you see as...because we're also about climate change and I'm particularly interested in the health effects. What are the costs of burning, just in terms health, of burning fossil fuels? [LR455]

CYNTHIA TIEDEMAN: I don't have a number but it's... [LR455]

SENATOR HAAR: No, numbers aren't important. [LR455]

CYNTHIA TIEDEMAN: It is very significant. Four of the top five causes of morbidity, mortality in the United States are from pollution. They contribute a lot to respiratory, cardiovascular, and I especially saw the respiratory with it. We had a high rate of asthma in the Omaha area. [LR455]

SENATOR HAAR: Uh-huh. Okay. So you see it as not only a financial investment but an investment in the future of the planet. [LR455]

CYNTHIA TIEDEMAN: Yes. In fact, ours, I don't think we did it at all for financial...in fact, we were willing to have it be...it was a poor investment financially, but the reason we did it was more for a moral reason. [LR455]

SENATOR HAAR: Uh-huh. But it's nice to see the finances work too. [LR455]

CYNTHIA TIEDEMAN: Yes, yes. [LR455]

SENATOR HAAR: Did you have any questions? [LR455]

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SENATOR LARSON: Thank you for coming. [LR455]

CYNTHIA TIEDEMAN: Thank you. [LR455]

SENATOR HAAR: Thank you for coming. Okay, next. [LR455]

JOHN ATKEISON: (Exhibit ___) Good morning. Name is John Atkeison, J-o-h-n A-t-k-e-i-s-o-n, represent EnergyLinc here in Lincoln. I just wanted to...excuse me, having my fall allergy attacks here. I just want to address a couple of things. One, I think that the Legislature has great support from the populace in considering facilitating more renewable energy. I think there's a series of polls that demonstrate that. And particularly the last rural poll from UNL shows that over 60 percent of residents want a climate action plan and I think that that's a pretty clear mandate to work practically on it. The other thing I'd like to mention is that, of course, the main reason for this is to address that climate change caused by global warming kicked off by the greenhouse gas pollution mainly from burning fossil fuels. And in that regard I think that we all know that soon, and I really mean all, just about everybody but the fossil fuel guys, will say, yeah, sooner or later we've got to go to clean, renewable energy. That's just the way that the world is headed. I would urge that you consider a sense of urgency. The content of the atmosphere has now permanently passed, irretrievably in our lifetimes, passed 400 parts per million. We touched that in previous years, but now we're past it. That's the floor anymore of CO2 carbon dioxide in the atmosphere, which means that we'll continue to trap excess heat in the system which...and that is in fact what powers all these climate changes. In the handout that I gave you, "The Grazer's Guide to Global Warming" which is a titled that because it's little nuggets of information and on-line sources that you can see for yourself and evaluate for yourself. There are a couple things of note. Of course we always want to remember the basic reference piece for Nebraska, the UNL report "Understanding Climate Change: Implications for Nebraska." And there's a reference in the upper right-hand corner to that link. What's more is that as part of that process, this team of climate scientists at UNL made a startling...put a startling statement in the executive summary. And it said that in...under the low or high emissions scenarios, by mid century the heat and drought of the summer of 2012 will be typical, doesn't mean every year, but it means that that's going to be, quote unquote, normal. I don't like to use the word "normal" because that implies it's going to stay that way. And of course, what

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happens after that is up to us because it's directly tied to the amount of greenhouse gases that we allow to be polluting the atmosphere. So how we come out of that is up to us. It's up to what we do. And the scientists tell us all the time that they can't predict because we don't know what those pesky humans are going to do. But they can give us a range of possibilities and they have done so. We should use it and use it rapidly because, as we saw in 2012, the effects are beginning. They're not going away. And it's very stressful on agriculture. Obviously, crops don't act the same way under the extreme heat and the extreme drought, and it threatens a good part of our state in urban areas as well. And I won't go on and on. But I'd also like to point out the work of the Six Americas project that is just above the cartoon. And for those of you don't have the benefit of seeing the cartoon, it's a couple of dinosaurs perched on a mountain top with water all around. And you see Noah's Ark headed toward the horizon and the one dinosaur says to the other, oh crap, was that today? So don't be the dinosaur. Don't be the dinosaur, act now. And the paragraph above points to the Six Americas opinion work at Yale and George Mason University where they point out that there's really very few people that are flat-out deniers anymore, even though some of them make it on TV. Thank you. [LR455]

SENATOR HAAR: Okay. Thank you. Any questions? So, John, you and I probably won't be alive at mid century. (Laugh) Why do you care? [LR455]

JOHN ATKEISON: Well, I have grandchildren. I know that my daughter will also be around to watch what develops and affects her kids. And I think it behooves all of us, each of us to imagine some of the worst consequences coming down the pike and seeing, looking into the eyes of those young people then, who are young then, and be prepared to answer the question: What did you do; why did you leave this for us? We have a responsibility to future generations that used to be taken for granted, I think, by most people. This operates on a long time scale, 30-year time scales, to see climates change. But these same climate models that have proved to be pretty accurate in the hands of the experts, not only projecting things by mid century but even a little earlier, and it looks like we're not going to just flip a switch and come into climate chaos. It's going to be a slow process. We'll have more summers like 2012. It will become more and more common. So we're starting to see the results now and we will see many more of the results and consequences in our lifetime. [LR455]

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SENATOR HAAR: Good. Thank you very much. [LR455]

JOHN ATKEISON: Uh-huh. [LR455]

SENATOR HAAR: Appreciate it. Next? Good morning, John. [LR455]

JOHN HANSEN: Senator Haar, Senator Larson, good morning. For the record my name is John Hansen, J-o-h-n, Hansen, H-a-n-s-e-n. I am the president of Nebraska Farmers Union and I'm also the cochair of the Nebraska Wind and Solar Conference, so I hate to pass up an opportunity to help hawk our Wind and Solar Conference a bit. We have added solar to that mix of topics about three years ago because of the growing interest and financial viability of solar projects. And really, in the last three years, both...wearing both of those hats, there's just been a tremendous growth in the level of interest for solar. And it is one of those things where, you know, whether you are...and I kind of break solar down into really four different categories to kind of help me think about solar. First of all, utility-scale solar, and we're seeing our first utility-scale solar project. We'll be offering a tour of that Sunday afternoon on November 6th here in Lincoln at the Cornhusker Hotel; the 7th and 8th is the conference. And so we're going to have a tour of that very impressive site Sunday afternoon for folks. We're also going to have updates on where we're at relative to solar development in the state. But as we think about utility...and some of the things are similar but they are different considerations between utility, between community solar, and I put farm and small business together as kind of a class, and then there's individual homeowner. And so the...we've had some really exciting things go forward and you've heard from NPPD and LES and Cliff Mesner and also Graham Christensen already, and all these folks are out in the field doing it. But just in my own farm organization of my seven board of directors, I've got four of our board of directors, of which Graham is one, are in the business of installing and doing solar developments. I've got a whole host of other members that are also in the solar business and they're working with individuals but also larger businesses, farms. And the 25 kW cap is one that comes up a lot and also kind of the lack of uniformity across the system. So what works in one particular utility service area might be different than in another district. And so the lack of uniformity, it provides a bit of a challenge as far as folks knowing what they're doing and how do you go about it. And it's already a very complex process. I think there needs to be some streamlining done. You shouldn't ought to have to hire a consultant, really, to

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help you do the paperwork to figure out how to do an installation. Another issue is the ability to be able to look at a single owner combine the total load behind meters. And so in my own farming interests, for example, I count five different meters that we have. And so if you look at the meter-by-meter difference it's one thing, but if you can combine those meters into one installation it becomes much more economically feasible. I use electric for my home pivot, for example. We use...we have different meters for different sets of grain bins. We've got, you know, one complex on one meter, another one on the other. We've got two different sets of household meters. All of these things, when you look at it from my perspective, when you're paying the bills it makes sense to be able to unify those different loads behind one owner and so that it would be more cost-effective. So we have made tremendous progress. We've come a long ways. But I continue to feel, based on my experience and when watching others and as we look at all this, we've really just scratched the surface. And so we need to get, from a policy standpoint, in my opinion, past...we need to go from tolerating wind and solar and renewables to looking for creative ways to incent them, because these really are both new cash crops that help stabilize farm income, create new jobs in communities that badly need them, provide new tax base, and there's just a lot of benefits that go with these that are consistent with the best interests of our future. And with that, I'll end my remarks. Again, I encourage folks to participate in our Wind and Solar Conference. We make a real effort to try to cover a wide range of topics but we also do it in a very cost-effective kind of way. Thank you very much. [LR455]

SENATOR HAAR: Okay. So farming the sun. [LR455]

JOHN HANSEN: Farming the sun. Farming the sun is good. [LR455]

SENATOR HAAR: Did you have questions? Okay. Okay. A couple questions: Since you've thought about this a lot and if you could look into your crystal ball--and I understand you have one of those in your desk--what will the farm of the future look like in terms of energy use and where will it come from? [LR455]

JOHN HANSEN: Well, the impact of technology and the use of technology in all things has substantially changed the way we farm. We have, you know, we have guidance systems on our tractors. We have all kinds of technology in our combines. We, you know, we're so much more

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sophisticated in a lot of ways than we've ever been. But it seems to me, as I look on down the road, we're going to be increasingly looking at ways to harvest the natural resources that we already own and control, and so wind and solar both come into those equations. So I see more decentralized electrical generation and servicing. And you know, so I'm always interested, being an advocate and defender of public power, how can we try to cover that and work the interests of utilities into being able to get more of the power that they need and have it also work for the customers across the state. So as you get further west, for example, we have better sun resources, we have more solar potential than we do in the east side. The benefit of solar, of course, is the Platte River flyway where wind is not an option there but solar certainly is. So I think we'll be doing a lot of the same kinds of things that we're doing now. We're just going to be doing them with a lot more technology and differently. [LR455]

SENATOR HAAR: You had a question? [LR455]

SENATOR LARSON: Yeah. And this is on point to a certain extent. We talked about getting the electricity to the agricultural producers that they need, and obviously wind and solar can be part of that. Has the Farmers Union come out with any position on the R-line specifically and its need to ensure that northeast and north-central Nebraska agricultural producers have the energy they need to irrigate, essentially? [LR455]

JOHN HANSEN: Well, we have policy that covers transmission line development and the rights of landowners generally. We also have a policy that very much supports the need for an appropriate infrastructure and, really, energy transportation system. We support highways, we support roads, we support transmission because these are all the things that we depend on, on how they travel. So we have been a part of the R plan planning. We were...we formed the public power utilities and we were a part of that group called the Nebraska Transmission Advocacy Group, NTAG. And so were involved in working with our public power partners as we were exploring the options relative to Nebraska's first opportunity to be able to participate in the Southwest Power Pool financed and guided transmission build-out. And so we certainly looked at all the reports relative to where the congestion was. And, you know, we're...when you look at all these things, you go back to reliability, redundancy, risk management, and we also were able to incorporate renewable energy development as a part of that for the same money. And so, from

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the original route, by working together in Nebraska in I thought a very collaborative kind of way, looking at the different interests, the route that Southwest Power Pool ended up agreeing to was modified... [LR455]

SENATOR LARSON: Uh-huh. [LR455]

JOHN HANSEN: ...to accommodate those needs. I was one of the folks who helped present to the Southwest Power Pool on the part of NTAG. So we've been involved from the very beginning. And you know, this project is needed to meet the irrigation needs in my home area. We've got a congestion issue up in the Neligh area especially. And as it goes... [LR455]

SENATOR LARSON: I'm aware. Yes. (Laugh) [LR455]

JOHN HANSEN: ...goes west, as you know. And so this project we think is necessary. [LR455]

SENATOR LARSON: So Farmers Union is supportive of the R-line. [LR455]

JOHN HANSEN: Yes, we are supportive. [LR455]

SENATOR LARSON: And I guess that's kind of my...I just wanted...first of all, I wanted to know where you guys were. I think that's important because there are congestion issues and there are also...I mean that's why the R-line is being built, congestion issues as well as reliability and other things that being Southwest Power Pool is necessary. You know, an ancillary benefit to the R-line, since we're here on solar and wind, is the route that the R-line is taking will allow opportunities for rural economic development, rural economic growth for these types of technologies moving forward. And that was part of the decision taken. But the true essence of the R-line is to ensure that the power from Gerald Gentleman Station can get up and relieve congestion in northeast, north-central Nebraska, but the ancillary benefits can also be huge for the state of Nebraska in rural economic development, is my personal view. And that kind of...from your answer, that's kind of the same feeling that you have... [LR455]

JOHN HANSEN: Yes, and... [LR455]

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SENATOR LARSON: ...and your organization. [LR455]

JOHN HANSEN: Yes. And that was the basis of our involvement. And as we track these ancillary benefits, we would point out that renewable energy, including ethanol, solar...or wind second and then solar are the three biggest sources of new capital investment into rural communities. It's the biggest source of additional farm income, the biggest source of new good-paying jobs. And all of this comes into rural communities who are desperately trying to maintain population and economic viability. [LR455]

SENATOR LARSON: And like I said, I think there's been a misconception in parts of the R-line that the R-line is being clearly built for renewables. Now, obviously, I support these developments of renewables because they offer a lot to rural economic development and a lot of agriculture, but I think you've also highlighted and we've heard from NPPD the true essence of the R-line is to relieve congestion and make sure we have a reliable power source to continue on to the Southwest Power Pool. And as we work to move forward, we can have that rural economic development. There will be massive ancillary effects. But I think too many people are trying to say that the R-line is being purely built for wind or solely these renewables, but in reality it's being built for an entirely different reason and we need to use that opportunity to capture the economic development that can be offered by the renewables. [LR455]

JOHN HANSEN: Yes. And that's...I mean there's no question that the Southwest Power Pool made the proposal in the first place. This is...this was their answer to them looking in Nebraska's infrastructure transmission needs. And so the basis for their decision making is just that, in terms of congestion, reliability, redundancy, all of those things. And so looking at our system, it would have been, in our view, a mistake not to have taken advantage of that opportunity for infrastructure to enhance its benefits in a way that brings the most economic benefit to Nebraska. [LR455]

SENATOR LARSON: I appreciate that. Thank you, Mr. Hansen. [LR455]

JOHN HANSEN: You bet. [LR455]

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SENATOR HAAR: Great commercial. (Laughter) Okay, one final question: I'd like to get you to give me a date when you think my vision might happen. So on your farm...do you irrigate, by the way? [LR455]

JOHN HANSEN: Yes. [LR455]

SENATOR HAAR: Okay. So you drive out to your irrigation system in your electric-powered pickup, which has been charged by your solar panels, to your irrigation system which is underground irrigation controlled by GPS, so different parts of the field get a different amount of water. It will be powered by solar with a battery there to give backup. How many years in the future do you think that? [LR455]

JOHN HANSEN: Well, depending on how long we have \$3 corn. (Laughter) In my crystal ball, everything runs through \$3 corn or the price of corn certainly. The technology that I think is available and can be available will be available, and its implementation, as in all cases, really comes down to what is the economic viability and the financial ability to be able to buy and use those in a cost-effective kind of way. So it makes...it really does make a world of difference whether or not you're buying additional technology to produce corn below the cost of production or above the cost of production. So I don't know. I, you know, I have been so wrong so long that I ought to get out of the business of predicting and get a new crystal ball. But I think that certainly when you look at how much things have changed in the last 10 years, I don't think 10 to 15 years is an unreasonable time frame for a lot of what you've discussed. [LR455]

SENATOR HAAR: Okay. Well, new crystal balls are available at Amazon and you don't even have to pay sales tax on it, so. [LR455]

JOHN HANSEN: And we're against not paying sales tax. If we buy it in Nebraska,... [LR455]

SENATOR HAAR: (Laugh) So am I. So am I. [LR455]

JOHN HANSEN: ...we ought to pay sales tax on it. [LR455]

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SENATOR HAAR: I hope that in that time frame we will be paying state sales tax on Amazon purchases. But okay, well, thank you very much for your testimony. [LR455]

JOHN HANSEN: And thank you. And I was doing the math as you were talking about whether or not you're going to be around to see the worst of the environmental impacts of climate change, and based on my family history I've got about a fifty-fifty chance of seeing it. [LR455]

SENATOR HAAR: (Laugh) See you there. Okay. Next, please. [LR455]

CRAIG MOODY: Morning. [LR455]

SENATOR HAAR: Good morning. [LR455]

CRAIG MOODY: My name is Craig Moody, C-r-a-i-g M-o-o-d-y. I'm here sort of wearing two hats today: One is as the...one of the co-owners of a sustainability consulting in Omaha, we work with a lot of really large institutions on how to be more energy efficient; and also as a candidate for the OPPD board. So I kind of want to talk from both of those vantage points if I could. First, you know, Verdis Group has been around for seven years and we've been really, really fortunate to be able to work with and partner with some of the largest employers in the state, the short list being Omaha Public Schools, Nebraska Medical Center, Methodist Health, UNO, UNK, and the list goes on. So we get sort of a front-row view into what these folks are doing from an energy efficiency and clean energy standpoint and the motivations for doing so. So I think it's noteworthy that many of them, not all of them but many of them, are setting carbon neutrality goals. That has happened at a rate that we did not expect in this state. We thought it would happen much slower and we've been extraordinarily pleased with how quickly those carbon neutrality goals have been set. And for the most part, you know, the question then becomes how do they achieve those goals. And one of the things that I don't want to lose sight of today--and I think we'll talk more about this, this afternoon--is the need for organizations to pursue energy efficiency and conservation first. You should not be sizing your solar array based on an extraordinarily inefficient campus or building. You're going to end up doing something that is not worth the investment. And so pursuing energy efficiency and creating mechanisms to do that is extraordinarily important. Thereafter, it really turns into, for them, you know, they're looking at

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our utilities to provide cleaner energy sources as well and so seeing that migration happen is also important. And they're starting to look more and more frequently at on-site generation. So Henry Doorly Zoo, as an example, is working on what is going to be one of their first solar arrays. Fortunately, they have a grant from the Nebraska Environmental Trust, which has been extraordinarily helpful to them and really got them over the hump. Those are the big three things that they can do, and then really what's left in order to achieve carbon neutrality for them is to purchase offsets, and that's not something that they want to be doing. So they're going to do everything that they can to do the first three things on that list. But it is happening and I think these organizations are motivated, not only by the economic impact, which is very present and real for them, but it's also they're looking to be leaders in our communities, no doubt about it. That comes up time and time again. If you look at what the Med Center has done alone, it is really impressive how far they've gone and what they've done and the motivations by which they're doing it. And I'll be honest and tell you that they're probably just getting started as well, which is great news. I want to echo what Mr. Atkeison said earlier, a climate action plan for the state is something that's sorely needed. I think it's widely supported. And I really hope that we do make some progress in getting in that direction. We're one of the states that's really kind of falling behind on that front, so I do want to echo that sentiment. And then sort of switching hats just a little bit, you know, I was really impressed with what LES has been doing over the years. They've been not only pursuing what I consider to be sort of really progressive and smart programs that are very public focused. They are helping their customers do things that I think their customers have really wanting...have wanted to been doing for quite a long time. But what I was most impressed with today in those comments was that, you know, they foresee the future. They see a pretty dramatic shift in the utility industry coming, and I tend to agree with them. It's coming whether these utilities want it to come or not. And what they're doing is rolling out some of these programs with the intention of sort of testing them to say, okay, let's do this on our own, let's move forward, let's try some new things, let's learn about what's coming so that we can then be better prepared for what is inevitable. And that, to me, that's really smart business. That's thinking around the corner, that's looking out 5 to 10 if not 15 years and thinking about what's next. And for me, what I also hope that these utilities continue to do is not only think about what can clean energy provide from a capacity standpoint but what's next. What are the implications of that? There was a mention...he mentioned about, you know, there are concerns about reliability, so we need to take a good, hard look at the grid to make sure that the grid can handle

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this, because that is a very real and present concern. The grid was not constructed to have very decentralized, intermittent power put on it that is not controlled. The grid was created to be fed from centralized generation from a few power plants and that's about it. So we need to make sure that the grid is ready to handle all this as well. And the last thing that I would say, in looking sort of down the road, is I think battery technology is the next big thing that will complement wind and solar, that will completely change the market. And when battery technology is in a place where it can provide, economically speaking and from an efficiency standpoint, a reliable power source that replaces, you know, the dirtiest of fuels, coal in particular, then we're at a watershed moment where everything happens and it happens quickly. When that will be, I don't know. I couldn't tell you. But I think that's going to be really kind of one of the big things that's going to happen out there in the future. It's not all bad news for OPPD. They're going to be at 30 percent renewable here fairly quickly and I'm hopeful that they're integrated resource planning process that they're going to enter into here in the next couple months, which will inform what their long-term capacity looks like, will be good, but time will tell on what that looks like. [LR455]

SENATOR HAAR: Okay. [LR455]

CRAIG MOODY: Thanks for your time. I'd love some questions. [LR455]

SENATOR HAAR: Any questions? Yeah, if you could sort of do a bullet-pointed list, what would you see as a responsibility of the Legislature in this whole thing, because one of the things we will be doing as a committee is at least suggesting some steps that the Legislature could take to make this happen. Do you have any thoughts on that? [LR455]

CRAIG MOODY: Yeah. You know, one of the things that I didn't mention but I think is really important to keep an eye on...and I don't know what the Legislature's role is in this, honestly. We've had a couple conversations about this, is, you know, we've talked a lot today about the economic implications and the opportunities related to solar, but a big part of that equation is what the cost per kilowatt-hour that people are paying and what...and, more importantly, what their total monthly costs are. And with OPPD's recent rate restructuring, it completely disincentivizes a lot of the things I think people can and should be doing. So price signals are really, really important for people and not everybody is going to be in a position where they're

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able to make the altruistic decision to say I want to be a leader, I want to move forward on this. We need to really be sure that the pricing signals that we're setting are the right signals so as to encourage energy efficiency, to encourage clean energy. And we need to look not only at the cost per kilowatt-hour. We get really caught up in that. But what we forget to pay attention to is what's the total cost per month and/or what's the energy burden that individuals have. Because part...the other...one of the negative ramifications of that restructuring was also the horrible implications that it has on low-energy users, which are often low-income people. Their energy burden, what the percentage of their income that they pay on a monthly basis for energy is unbelievably high and it's making it more difficult for some of those people. So I don't know what the role of the Legislature is on that front. I'd like to think that, you know, in OPPD's case, if you elect the right board members you can make better decisions on that pricing. I don't know that I would advocate for statewide policy that gets into the detail of that necessarily. When I think about what the State Legislature can do, it's about removing barriers that might exist for people to start adopting some of these things. Net metering is probably on the top of the list, as we've talked about today. [LR455]

SENATOR HAAR: Okay. Thank you so much. [LR455]

CRAIG MOODY: Uh-huh. [LR455]

SENATOR HAAR: Appreciate it. [LR455]

CRAIG MOODY: Thanks for the time. [LR455]

SENATOR HAAR: Next? And again, I would hope that among the students from North High School today with us, you find somebody to come up here and testify. Thank you. [LR455]

JAMES CAVANAUGH: We would hope so. My name is James Cavanaugh. I'm an attorney and registered lobbyist for the Nebraska Chapter of Sierra Club. Want to thank you for hosting this important forum. We're happy to support this initiative. Nothing will have more impact on the future of Nebraska, the nation, and the world than what we do about climate change and so we commend your forward-looking approach to this overarching challenge that faces us all. And just

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want to note that from an historical point of view, people looking back at this event and your initiative I think will applaud the foresight that you display in bringing this continually to the forefront as the most important issue that faces us going forward. We are happy to be a helpful partner in speeding particularly public power in Nebraska's transition to solar, wind, and other sources of renewable energy as soon as possible. With allies like the Farmers Union and Nebraska Community United and others, we are going to be here in every legislative session supporting legislation that moves that ball forward. We think that in the last session of the Legislature and to a great extent due to Senator Haar's initiatives, we made significant progress and there's more progress to be made. When you asked the previous testifier about some bullet points about things that maybe the Legislature should entertain going forward, all you have to do is look at the initiatives that were proposed last year for a good start, particularly looking at how the state invests its resources in the stock market and looking at divesting from nonrenewable sources of energy and investing in renewable sources of energy. The future of economic development in the United States is going to be predicated on the transition from that economy to this economy. There are limitless opportunities for technological advancements and jobs in that transition. It will take place. It's a matter of how quickly. I come down here probably 100 days a year from Omaha, and in that 50-odd mile drive I count the number of windmill blades I see going from east to west. I have never, in the last 100 days, counted fewer than six, and that's just in an hour's drive. Those are manufactured somewhere east of Nebraska and installed somewhere west of Nebraska. There are no jobs in Nebraska other than possibly in gas stations that have anything to do with that transaction, and there need to be. We need to move into the serious manufacture of these transitional tools that will bring us from the economy of the past to the economy of the twenty-first century. Some of the initiatives that you have proposed, Senator Haar, will help us to make that transition and we hope that in the future we're able to work with others to bring those to fruition. There are many opportunities here. We have a robust public power sector that should be responsive to the needs of the people and the people going forward are going to demand that we have an aggressive approach to climate change and nothing is going to occupy the next generation more than how we respond to the climate change that's currently underway. So thanks again for hosting this forum. We look forward to the results and the recommendations that you'll make to the next session of the Legislature. And be happy to answer any questions you might have. [LR455]

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SENATOR HAAR: Any questions? Okay. Well, thank you very much for your testimony today.
[LR455]

JAMES CAVANAUGH: Thank you. [LR455]

DUANE HOVORKA: Good morning. I'm Duane Hovorka, D-u-a-n-e H-o-v-o-r-k-a, executive director of the Nebraska Wildlife Federation, and pleased to be here to thank you for the leadership that you've shown, the leadership that this committee has shown on the need for the state to really grapple with climate change and begin to form a state plan to figure out what we can do to change the forecast for the future but also what we need to be doing in order to adapt to the changes that are coming. So we appreciate the focus on solar energy. We see solar as part of a suite of technologies with wind, with energy efficiency, which are becoming increasingly affordable ways of providing energy for our state. And several things: I'd encourage you to think more broadly about solar energy as not just photovoltaic. And we've seen a lot of...heard a lot about that and it's a great technology. There's also concentrated solar, which is a utility-scale way that gives you some short-term storage benefits for the energy. There are passive solar building designs which can radically reduce the energy that we use in our buildings by providing the heat, capturing the heat of the sun in the winter and providing light year-round. There's also solar hot water which is a very developed technology and an affordable one. So when you combine the existing technologies and the different kinds of solar technology with some of the energy storage mechanisms, we certainly can see what the future should be like for Nebraska. And we, as you've heard others say, are in a hurry to get there because we can see both the societal benefits but also the economic benefits. Scott Benson mentioned the value of solar calculation. That's different for each utility. It's really critical because the formula that's used and the assumptions and the numbers that go in there can come up with very different results. And that's an important calculation for each utility to do, but almost all of those also leave out some of the many benefits of solar energy and other renewable energies. One is the investment in the community. When you're putting a 4- or 5-megawatt solar facility, when you're investing in windfarms, all of those bring construction jobs to the community. They also bring production jobs in the future to the community. The other thing we do when we either save energy or produce it locally is we keep more dollars in our state. Nebraskans spend hundreds of millions of dollars that go out of our state to buy coal, oil, and natural gas from other states. That's money we can keep here in our

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own communities, in our own economies creating jobs. So those are some important benefits that we don't see reflected often in those value of solar benefits, and with good reason. Those aren't utility responsibilities necessarily. But when we've seen coal prices, delivered cost of coal in Nebraska basically triple since the year 2000, you know, that's moving in the wrong direction. And fortunately, renewable energy sources are moving in the right direction in terms of becoming more and more affordable. There's also even more broader benefits from some of these technologies. Nebraskans have the impacts of some hundreds of millions of dollars in health impacts from sulfur dioxide, nitrous oxides, mercury, particulates. The health impacts from the pollution from our coal-fired power plants are costing our economy. And the more that we can drive our economy towards clean energy solutions and start shutting off the sources of those pollutants and reducing the pollutant, the more we can save in health costs within our economy here. And I think if you talk certainly about climate change, I mean the undeniable costs that are coming from the transitions that we'll have to make, the adaptations, the pressure on water resources, the pressure on agriculture, I mean it's kind of mind-numbing to think about. And that, I hope, makes it clear the urgency that this is...this cannot be a slow transition. It has to be a planned transition. It has to be as smooth a transition as we can make. And we think it's going to be a transition that will create jobs, that will create savings for all Nebraskans, but there needs to be urgency in how fast we're moving forward on this. When we see...look at...finally, when we look at public power, we want to see public power as a system delivering benefits 10 years, 20 years, 30 years from now and we think that can happen. Our utilities will have to continue to evolve, to adjust, and to innovate the kinds of things that they've been doing. The speed of change is rapid and they're going to need to do this in a very dynamic energy economy that we have. We think one of the opportunities for our utilities is in electrifying the transportation sector, and we think over the next generation or so moving most of our electricity...moving most of our transportation sector off of liquid fuels and on to electric makes a whole lot of sense environmentally and makes a lot of sense when we look at the clean energy ways that we can generate electricity. And so we think there is a future for public power in this state and we're glad, we're delighted to be working with a number of other farm, faith, conservation, civic, business organizations around the state in order to move our state towards the clean energy future that we see. So thank you for your time and your focus, and be glad to try to answer any easy questions. [LR455]

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SENATOR HAAR: (Laugh) There are no easy answers. (Laughter) And do you have any questions? Okay. Thank you very much for coming today. [LR455]

DUANE HOVORKA: Thank you. [LR455]

SENATOR HAAR: Now in November...or, I'm sorry, in October, and what's the date on that, we're going to have a public hearing to talk about where the focus will be a climate action plan. [LR455]

KEN WINSTON: 21st. [LR455]

SENATOR HAAR: The 21st of October, and we hope you'll be back for that discussion. [LR455]

MICHAEL SHONKA: Morning. [LR455]

SENATOR HAAR: Morning. [LR455]

MICHAEL SHONKA: My thanks to the committee for holding this forum. Appreciate it very much. My name is Michael Shonka, M-i-c-h-a-e-l, Shonka, S-h-o-n-k-a. I'm sitting on behalf of the Nebraskans for Solar. My position has been heard before by this committee, but I wanted to reiterate because I think there's a model that can benefit all of us if we take this viewpoint. Nebraska has a unique position in that we're a public power state. Nebraska is the largest state...the only state with public power and we could become one of the largest states with renewable energy by leveraging the approach that has been taken with public power in the past. Public power is underutilized. It's underappreciated. It is the shining star of our economy in the state because it's the underpinnings of everything that makes our functions capable. We need these models, we need new models, we need something that will help leverage that entity among government, among industry, and education to fulfill the opportunities that we have with renewable energy. And the reason I say this is that right now in Nebraska we import billions of dollars a year, we export billions of dollars a year to pay for our energy consumption. If we proceed using the methodologies of other states, chiefly the PPA, we're going to be taking the

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exact wrong approach because we're going to simply substitute coal and natural gas for exporting our dollars from renewables. We'll have 20-year contracts to export our money. We don't solve the economic issues, which hasn't been approached in this committee hearing as of yet. But envision this model. Envision a triangle and at the top of it is going to be government, public power, and nonprofits, like the League of Municipalities, for example. The bottom part of it is industry, contractors, laborers, manufacturers of our state that can take advantage of these opportunities. And at the other corner is education because we got to build a future for our young people. We got to have a vision for them to want to stay in our state and to want to contribute, especially in our small communities. The capital cost of putting in solar systems can be extremely streamlined. We could have uniform contracts. Some of this could be done through the League. I know Tim Arlt and Scott Benson have presented some models here today that I think are very appropriate. We need to take those in, in the next step. We've had developers speaking earlier, like Cliff Mesner. Wayne Williams is in the audience. Graham is new to solar, is getting a good start. John Hansen has been discussing different types of approaches himself. One of the things we need on these--to unite our developers and our contractors together and be able to provide the funding mechanisms for the communities, because a lot of these small town communities are going through all the same thing at different times. They're going through this learning curve of trying to understand solar. It's just not going to work well for our state if this continues in this fashion. So we've had a lot of firsts in the state already. We had the first center-pivot system has been installed about three years ago and that's proved to be able 15 percent above its projections. We've had the first community solar system in a small town and the first one in a large community. We need to continue this progress. One of the things I do want to say, too, is anecdotal--it's been echoed here by Craig earlier--is that the future is here now. With this battery technology around the corner, within three to five years California will lead the way in applying battery technology on commercial and residential systems. This means that we could potentially unplug from the grid. It's very simple. A lot of people are unplugging their home cable and their home phone numbers. With battery systems, solar, maybe a small natural gas generator, your use and need for the grid may be marginalized. I don't want to see that happen in Nebraska. It's too important a structure for our state. So I welcome any questions that you might have. [LR455]

SENATOR HAAR: Questions? Okay. No. Thank you very much. [LR455]

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MICHAEL SHONKA: You're welcome. [LR455]

SENATOR HAAR: Appreciate your comments. Next? Come on up. [LR455]

GABRIEL RUNYON: I'm Gabriel Runyon, G-a-b-r-i-e-l R-u-n-y-o-n. I am a junior at Omaha North High School. And I think it is important that we address...or that climate change is addressed even in our state for our futures, for the futures of me and my classmates and all the younger generations. Over the summer we had a reading assignment for one of our classes where we read a book about societal collapse. And one of the points that was brought up about why societies collapse is how climate change affected them and their response to that climate change. In most of the ancient societies it was due to natural climate change, going through the heating and cooling periods, but today we are obviously contributing to that climate change. So we don't want to lead our society into a collapse like a lot of the older societies did, and I think one of the best ways of doing that is by addressing climate change. I recently read a National Geographic about climate change and one of the issues they brought up in the magazine was that scientists have estimated that by 2100 the Earth's max limit that it can heat up to before having extreme environmental impacts is heating up by another 3, I think 3.4 degrees Fahrenheit. But it also showed statistics showing if every country in the world followed their climate change pledges, the temperature would raise about 5 degrees by 2100. If we go on the current system that we're going now, I believe it is somewhere around 6 or 7 degrees by 2100. And if we do nothing, it's about 10 to 11 degrees. So there's going to be environmental impacts, major environmental impacts anyway, even if we all follow the pledges, all the countries follow their pledges. But I think what we need to do is we need to address the issue as fast as possible, so switching from nonrenewable to renewable energy sources, to clean energy to help stem that, to help stem the climate change and the release of the greenhouse gases. If...I think Nebraska especially could set the example for the rest of the country on what we need to do to address this. If we can switch to a majority of our power being produced by natural resources, whether it's wind or solar, I'm sure it would also convince other states to do the same. And especially if people like me continue to speak up about it because like saying like, hey, this is our future that is going to be affected; we don't want you leaving behind a world that is not livable. And so, yeah. Any questions? [LR455]

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SENATOR HAAR: Great. So in a sentence or two, what's your message to elected officials?
[LR455]

GABRIEL RUNYON: I think my message would be support renewable energy, support anything that can help stem the flow of...or stem climate change and make an effort to make sure these advancements or these projects get put into place. [LR455]

SENATOR HAAR: Great. Great. Well, I want to appreciate...to say thank you for coming to talk and... [LR455]

KEN WINSTON: Ask him to fill out the (inaudible). [LR455]

SENATOR HAAR: Yeah, be sure you fill out a form but...and then please continue to speak out because elected officials and those making these decisions do react to what the people are saying. Appreciate it. Thank you. [LR455]

GABRIEL RUNYON: Thank you. [LR455]

SENATOR HAAR: Good job. Anybody else from North? Is there anyone else that would like to testify then today? [LR455]

KEN WINSTON: And I think Scott Benson wanted to show his video. [LR455]

SENATOR HAAR: Yeah. Well, Scott, is your video going to work? You want to try it? [LR455]

SCOTT BENSON: (Inaudible) laptop without the guy that was here (inaudible). [LR455]

SENATOR HAAR: (Laugh) Say that again? [LR455]

SCOTT BENSON: It's not my laptop so we need the guy that was here before to actually log into it. [LR455]

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SENATOR HAAR: Oh, okay. So we'll have to wait for that treat for another time. Well, again, I want to thank every...did you want to make any closing remarks and then I have a couple. [LR455]

SENATOR LARSON: Yeah. Well, real quick, I just again thank you for all coming. We had a great session in Broken Bow yesterday. We did the solar in the afternoon and PACE in the morning. And obviously we come back this afternoon at 1:30. Is that right? [LR455]

SENATOR HAAR: Uh-huh. Uh-huh. [LR455]

SENATOR LARSON: And I think as LR455 moves forward and we continue on, there's opportunities for everyone. And we all have a hearing in October, late October, to discuss not only a climate action plan but all ways to reduce Nebraska's carbon footprint, and I think that's very important as we move forward to continue to look at ways that every industry can work towards that and I think the committee will continue to be open to all those things and definitely hear those as we move forward and make our recommendations, and I think wind and solar are definitely part of that. And I'm particularly interested in the rural economic development portions of this, obviously, coming from the district that I do. And I was happy to hear from a number of testifiers today about how these things can influence ag. Specifically, I'd like to thank Mr. Christensen and Mr. Hansen for testifying about the importance of this and moving forward in ag. And look forward to the rest of this and I'm sure the committee will have a number of recommendations and we'll work. And I just appreciate everybody coming out. [LR455]

SENATOR HAAR: Yeah, thank you. Last year in March there was a man from Yale University, Tony Leiserowitz is probably a pretty good way to pronounce his name, and he gave a lecture at the Heuermann Lecture Series that happens at the School of Natural Resources. And his theme was "Climate Change in the American Mind." And here's his five truths about climate change in ten words: It's real, it's us, it's bad, scientists agree, and there's hope. And I would just like to say that hearing all the things that are going on with renewable energy gives me hope and I'm just going to keep saying faster, faster, faster. But I appreciate all the efforts that are going on. And thank you for coming. Come back this afternoon. We're going to talk about how to finance renewable energy and energy efficiency. Thank you. [LR455]

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BREAK

SENATOR HAAR: Okay, I think we're going to get started so turn off your cell phones. If a cell phone goes off we're going to take it. You'll have to go up to the Governor's Office and pick it up. (Laugh) And welcome to LR455 Committee hearing. To my right is Senator Tyson Larson, who's the cochair of the LR455 Committee. On my far left is Senator Heath Mello, who's also on the committee. Sitting next to me is Ken Winston, who's my legislative assistant. And at the box over here, controlling the lights, is Aaron Bos, and he's the committee clerk for Senator Larson. So a couple reminders again: Please fill out the sheet when you testify. We've invited some testimony and we're going to start with that. And of course, at the end of the invited testimony there will be the opportunity for other people to come up and talk. This morning we talked about solar and there were various examples of solar across the state and how public power and other people are approaching solar. This afternoon the concentration is on financing. And even though the LR455 Committee, our charge is to provide a framework for a climate action plan to the next Legislature, and we see various challenges in...a lot of challenges in climate change, there are also a lot of opportunities, and that's what we're talking about this afternoon is the opportunities and financing those opportunities. So we're going to lead this off with Senator Mello. [LR455]

SENATOR MELLO: Good afternoon, Chairman Haar, Chairman Larson, members of the LR455 Committee. My name is Heath Mello, H-e-a-t-h M-e-l-l-o, and I represent the 5th Legislative District in south Omaha. I appreciate the committee's invitation to discuss LB1012 from this past legislative session. LB1012 is a bill that adopted the Property Assessed Clean Energy Act. In 2010 I brought LB1098 which similarly would have brought PACE to Nebraska. Various issues with residential mortgage priority status and potential financiers unfortunately sidelined LB1098 roughly six years ago. Last fall, however, the Federal Housing Administration announced they had reached an agreement with the banking industry, and I decided to bring back the concept of PACE this past legislative session. LB1012 was introduced on January 15, 2016, and was enabling legislation for municipalities to create, by ordinance, a special district known as a clean energy assessment district. The purpose of the district is to encourage, accommodate, and provide a means for property owners to finance energy improvements, such as energy efficiency, retrofitting, and the installation of renewable energy systems in both residential and commercial properties. LB1012 received strong support at the hearing before the Urban Affairs Committee,

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and it passed unanimously on Final Reading by the full Legislature on April 7, 2016. It was signed by Governor Ricketts on April 13, 2016. LB1012, now law, allows municipalities to arrange financing for residential and commercial property owners to make those energy improvements to their existing property. Owners would have to opt into this program, and the loan, including interest rates and administrative fees, would be repaid through the property owner's property tax bill over a length of time, up to 20 years. Eligible improvements include installations or modifications designed to reduce energy consumption, such as energy efficient windows and doors, upgraded HVAC systems, weather-stripping, energy efficient fixtures, roofing, and much more. As enacted, the language in LB1012 restricts updates to an improvement that is designed to either reduce energy consumption or generate renewable energy. While energy efficient improvements can significantly decrease a property's energy use and, therefore, the owner's utility bills, they often require, as we know, high up-front costs for installation. This has been the most significant hurdle for many families and business owners across Nebraska. Property assessed clean energy or PACE, as the concept is known, helps eliminate this barrier by allowing property owners to pay for these installments through their property tax bill over a number of years. But because the property taxes transfer with the property when it's sold, the costs associated with the energy efficiency and renewable energy improvements are repaid over time by the actual person benefiting from the improvement--the property owner--which is considerably different than our traditional dollar and loan savings (sic-- Dollar and Energy Savings Loans) program at the Nebraska Energy Office. Across the country, PACE enabling legislation has been passed in 32 states plus the District of Columbia, and there are currently 2,059 municipalities with active PACE programs. LB1012 is good for homeowners and commercial property owners by reducing their energy consumption and reducing their energy bills but, more importantly, an issue that's important to this committee, it also helps reduce greenhouse gas emissions. Additionally, PACE has the potential to create new jobs across Nebraska by increasing the demand on our building and trades industries. A University of California at Berkeley study shows that if PACE were implemented widely across the country, it could infuse roughly \$280 billion into our national economy via bond financing. This same study showed serious environmental benefits that result from legislation, such as LB1012 that we passed this year. I brought with me today for the committee a couple handouts: first, a handout as a background and history of the efforts to bring PACE to Nebraska; the second is a summary and section-by-section review of the slip law copy of LB1012. Also included is a step-by-step guide

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of how PACE works, a map of the states that have authorized PACE around the country, and common questions about PACE financing. The second handout is a copy of a presentation given by the legal counsel of the Urban Affairs Committee, Trevor Fitzgerald, at a recent League of Municipalities conference. Mr. Fitzgerald has made himself available to the committee today if there are any questions anyone may have of him and of his presentation. For those in the audience interested in the handouts that I provided the committee, I've posted links to the documents on my legislative Web site via NebraskaLegislature.gov. There are a few others obviously today that are going to testify, including representatives from a few of the PACE financing companies, a representative from the Missouri Clean Energy District, and others who will discuss the importance of energy financing and the environmental impacts on communities across Nebraska. As I close, I would be remiss not to especially thank Senator Ken Haar for prioritizing LB1012 this past session and his commitment to energy and environmental issues over the year in which we were both pleased to be able to see the final bill, LB1012, pass before we left the Legislature this year. With that, I would be happy to take any questions the committee may have. [LR455]

SENATOR HAAR: Yes, go ahead. [LR455]

SENATOR LARSON: Thanks, Senator Mello. And yesterday we talked. We were sad that you couldn't join us in Broken Bow, but we talked a lot about PACE being focused purely on municipalities. [LR455]

SENATOR MELLO: Uh-huh. [LR455]

SENATOR LARSON: And I think specifically in Broken Bow and in rural Nebraska, this is something that we see as a possibility to be used in the industry of agriculture, whether that's, you know, our farmers and ranchers being able to do things to innovate not only their productions or put it on center pivots or anything of that nature. Can you explain why it was only focused on municipalities? And is this something that...you know, what challenges did you have if you tried to do it with the counties or something like that, because that's what it would take? It would take counties. And then also kind of can two counties go together, because obviously

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there's economies of scale on certain things like that? So could there be counties go together to create something like this? [LR455]

SENATOR MELLO: A great question, Chairman Larson. And really, the original policy of PACE was created by municipalities, so that's still the focal point across the country, is utilizing PACE within geographic boundaries that can be controlled by a political subdivision. It was actually a conversation that we had during this past year with LB1012 that there is an interest I think with a number of our rural colleagues of wanting to see in the future, at least, how LB1012 starts to play out with different municipalities and seeing what can be done in regards to counties being able to essentially join with the municipality and/or cities and counties joining together through one form or another, interlocal agreement if that was the case, to be able to expand this financing mechanism to people who live outside of city boundaries. It's something that really I think the challenge that Senator Haar and myself had this year of getting the bill to the level it needed to be at for it to be able to be considered by the full Legislature and passed and signed into law. I think it was just a matter of we weren't able to flesh out all of the details of what it would take to change the model to allow counties to do it, too, and/or allow cities and counties to just sign interlocal agreements to do it. I think it's obviously a very worthwhile proposal to consider in the future next year or years beyond if that's the case, because I think the reality is at the end of the day the issue really is a financing mechanism that we know it's just, for most property owners, it's just a burden for them to be able...too high of a burden for them to be able to jump over and finance through traditional bank loans. And so in production agriculture, obviously looking at ways to utilize energy efficient pumps, looking at ways to integrate solar energy or solar generation, obviously, with any kind of production ag facility, that obviously is a significant opportunity across the state. And finding a way to allow the framework that we develop now to be expanded sometime in the future can only, I think, benefit public power, can benefit rural residents and production agriculture in the future as well. [LR455]

SENATOR LARSON: And, like I say, I think that's something that hopefully this committee...I know Senator Haar and I have talked about it a lot. I think this is...that's one of the things that this committee, we hope, in the end kind of comes up with, because this is something that when you look at production agriculture or even animal ag...I know we had a testifier this morning that's working with feedlots to work to build some renewable energy projects that, you know,

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could be...that would have been a possibility to be financed with PACE. That if the counties were able to do it, whether or not they had that interlocal agreement,.... [LR455]

SENATOR MELLO: Uh-huh. Uh-huh. Yeah. [LR455]

SENATOR LARSON: ...or the counties can create interlocal agreements or whatever else, I just think that's something that rural Nebraska and agriculture has a significant opportunity to go off of. We have a lot of it in rural Nebraska. [LR455]

SENATOR MELLO: I think there's an...I think that's the opportunity. I mean I think the concept as we passed into law this year was modeled after what we know happens nationwide, but that doesn't mean that you can't obviously be much more innovative in a state like Nebraska that's...that has a significant vast rural population outside of city limits and ensuring that they have the same ability to utilize this financing on their...and it was...really wasn't even so much what these discussions during the session were about, production agriculture or animal agriculture. It was more in the sense that, look, I've got an older home out on a farmstead or, you know, that to some extent we don't qualify but we could definitely use energy efficient windows or put a geothermal heat pump, you know, at the farm. And we'd love to be able to utilize and pay for it over 20 years instead of taking out a traditional bank loan, likely at a higher interest rate, that if they for, whatever reason, sold the farm or sold the homestead, that whoever the property owner in the future would take that over. And so I think the general concept and model, Senator Larson, is something that's applicable across the spectrum. It's just going to be a matter of being able to really dig in maybe next year or next biennium and really try to find a way to expand it even more, because I think the opportunities really do exist. [LR455]

SENATOR LARSON: And production ag essentially has the opportunity to scale. You know, you talk about cities can offer that economy of scale. [LR455]

SENATOR MELLO: Uh-huh. [LR455]

SENATOR LARSON: I think production ag specifically in the state of Nebraska can scale extremely fast and we're talking very expensive systems. So it could, I think, you know,

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agriculture could almost be the driver versus the municipalities. Once, you know, farmers and ranchers are always looking at ways, especially with \$3 corn, to cut costs and spread those costs out over time. I don't see why we can't expand it and move and maybe that actually, agriculture, becomes our leader in the PACE program versus the cities. [LR455]

SENATOR HAAR: Okay. Well, Senator Mello, good legislation takes a long time. (Laugh) Thank you for all the time you've put into this because I think it's one of those great opportunities. And to follow through on that, for example, when I told my one son about this, who lives in Lincoln, he said, we've got a furnace that's going to need replacement. When is PACE going to be in place so I can buy that high-energy efficiency furnace? And that's kind of the question that I hope citizens will get excited about is saying when can we use this, when are we going to see this? What has to happen and when are people in Lincoln, Omaha, Broken Bow going to see this? [LR455]

SENATOR MELLO: That is a great question, Senator Haar. And since the passage of the bill over the summer and over the interim myself and my staff have had a number of meetings with different representatives within the city of Lincoln, within the city of Omaha, members from, I would say, the PACE financing community, multiple different financiers to talk through some of the mechanisms and some of the process a little bit in light of Nebraska being a smaller population state in comparison to where we see a lot of the PACE bills that have been passed before of what options are available to try to build up to scale, so to speak, the number of properties that PACE financiers could build up a loan pool to be able to ensure that the interest rates are low enough for people across the cities and across the state, for that matter, to be able to utilize. So I know there has been...there's been some pretty...I would say the city of Lincoln, my understanding, is probably moving at a much quicker pace right now than the city of Omaha is in regards to really having those interactions between their executive and their legislative branches in regards to PACE implementation. I know to some extent, at least in my home city in Omaha, that a number of members of the city council are interested and engaged on the issue. And I know the mayor's office as well has expressed interest and wanting to explore the issue. I think the challenge just is trying to work through a city ordinance policy knowing that it works for your city. Sometimes a one-size-fits-all won't work, just for what happens in Omaha may not work for Broken Bow or may not work for an O'Neill or a Scottsbluff. And I think people, I

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think the League of Municipalities no doubt is keeping a mindful eye of seeing what's going to occur in Omaha and Lincoln first to see how they're able to set up their programs, how they're financing works, the administrative fees associated with that, and then kind of see what can be done to model that program or even expand those programs to incorporate cities across the state and then I think what Senator Larson's question was in regards to people obviously are interested in seeing what can be done to expand the program to people who live outside of city limits in respects to property owners. And I think, you know, I think we're going to wait and see. Hopefully, by the time you and I at least leave the Legislature in early January of 2017, the hope would be is that either the city of Omaha or the city of Lincoln at least be at the stage of having an ordinance drafted to be able to solicit public feedback and see where they're at. Obviously, I think I would like to have seen it been drafted immediately and moved forward, but I think the challenge just is, as most people engaged in this policy know and understand, there's so many different stakeholders involved, from not just residential property owners but you're dealing also with your construction and building trades industry who are going to be doing these retrofits and installing these renewable energy systems, as well as developers, at least in Omaha and Lincoln area, developers who are building new buildings and are retrofitting buildings who want to see this as a financing mechanism and they've got their own unique concerns in regards to ensuring that the program works accordingly for their needs. And then to some extent always it's a new model, it's a new concept. So anytime we do something new in Nebraska, it's going to take a little bit of time for one city to be that pioneer, be at the vanguard of the implementation process. And I think we're going to see, like I said, Omaha and Lincoln right now. Lincoln is probably right now a little bit ahead, I would say, in regards to wanting to see some movement. But like I say, hopefully we'll see an ordinance drafted by either one of the cities before you and I leave the Legislature at the end of the year. [LR455]

SENATOR HAAR: We're leaving? (Laughter) Another question then, for example, could a person buy that new furnace? One of my understandings is that there can be a very quick turnaround time. If somebody's furnace goes out in the winter and the PACE program is in place, that replacement could happen pretty rapidly. So could a homeowner then next summer decide to put in solar panels on their roof? [LR455]

SENATOR MELLO: Uh-huh. [LR455]

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SENATOR HAAR: I mean it's not a one-time use or... [LR455]

SENATOR MELLO: It's not a one-time use and you're done kind of model. The difference though is, to some extent, there are some...we've crafted the bill to make sure there are some limitations that you can't own a \$50,000 home and put a \$300,000 upgrade to the home. I mean I think there's some very common-sense, very common-sense restrictions we put on the bill in regards to the amount of...financial amount of upgrades and improvements that can be done to the property. But, yes, if it's one year it's energy efficient windows and the next year it's a choice to put in solar panels or you decide to put in a geothermal heat pump instead, that...you're able to do that financing. It's just a matter of it becomes another...it becomes a separate lien on the property because it's a separate loan on the property. So you're still paying that off over a period of time. It's just another lien that's placed on the property. [LR455]

SENATOR HAAR: And when all is said is done, there's no cost to the taxpayer, right? This is simply a mechanism for repaying a loan that won't cost the taxpayers anything. [LR455]

SENATOR MELLO: That, in the purest sense, yes. Of course, having city, you know, having city governments... [LR455]

SENATOR HAAR: Sure. [LR455]

SENATOR MELLO: ...create a program, it's going to require some city staff time in regards to being able to develop a program. But depending about how they choose to develop that program depends on whether or not the city wants to have city staff be the drivers of it. The opportunities that we talked about during this legislative session is that cities could choose to kind of shift the program to a third party organization if they believed that the third party vendor or third party group could manage the program on behalf of the city and, thus, the administrative fees and the administrative fees that would be generated from the program could be shifted to a third party group, so that different cities, different states have multiple options to utilize. But the biggest caveat is the city is not...the city is simply providing the mechanism to be able to do the upgrades and be able to collect the revenue and be able to place the lien on the property to ensure that the loan is paid back over that 20-year period. [LR455]

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SENATOR HAAR: Uh-huh. We also heard that the default rate is very, very low on these projects. [LR455]

SENATOR MELLO: And I know that some of the great testifiers that you invited today across the spectrum can probably speak a little bit more in detail in regards to the back end, so to speak, of the financing. But that is what separates PACE financing from a traditional home improvement loan that you would normally go get or home equity loan, if that's the case, is that you're going to see lower interest rates going through this period because it's done over a 20-year period to pay off the loan. And the biggest caveat though is not just I think the interest rates. It really is...cuts to the core of the improvements to the property stick to the person who owns the property, where right now we just don't have a financing mechanism, prior to LB1012, where if you own an historic home in central Lincoln or if I owned one in south Omaha, an historic home, that if we wanted to do an upgrade to the property we would have to take out a traditional home equity loan or pay cash for it. And we, as the property owner, have to pay all of the costs regardless if we may only live there for five to ten years. And that's the unique component about PACE, is it really shifts the...really shifts the payment process to the property owner, knowing that people do move, do buy and sell properties sometimes on a regular basis. And if that's the case, the energy improvements are being paid for by the current property owner, not someone who ended up having to shell out \$20,000 for new windows and a new furnace and only live in that property for two years before they ended up selling it, because they won't see that benefit of the reduced energy bills due to the reduced energy consumption. [LR455]

SENATOR HAAR: Uh-huh. Good. Okay. Then you will sit up front... [LR455]

SENATOR MELLO: Uh-huh. [LR455]

SENATOR HAAR: ...and ask questions and perhaps answer some more. [LR455]

SENATOR MELLO: Thank you. [LR455]

SENATOR HAAR: Thank you very much. Next we're going to hear from Michael Yaki, who's with one of the large PACE providers. The name of the company is Renovate America. And he

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couldn't be here today but we're...we have telephone technology, so we're going to hear from him via telephone. [LR455]

KEN WINSTON: Where does he connect? [LR455]

SENATOR HAAR: He should be calling. [LR455]

KEN WINSTON: Yeah, but I mean how... [LR455]

MICHAEL YAKI: Hello. [LR455]

KEN WINSTON: Someone say hello. [LR455]

SENATOR HAAR: Hello. Hello. This is Senator Haar and we're here on the LR455 hearing and would like to hear from you. [LR455]

MICHAEL YAKI: Thank you very much, Senator. Thank you very much. My name is Michael Yaki. I'm the senior counsel for market expansion and policy for Renovate America, the nation's largest PACE provider for residential PACE in the country, and I want to thank you for inviting me to this hearing today to testify on this very important subject. I have a PowerPoint that I'll be referring to. I know some of the panel may have it, but first I wanted to thank Senator Mello and Senator Haar for their great work this past session in pushing through a property assessed clean energy bill in Nebraska. It was one of the few states in the country that passed a PACE bill and the only state in the country that passed a bill that had both residential and commercial as part of its program. And again, thank you for your leadership and it was my privilege to be able to work with both of you to get this through. Property assessed clean energy, as you know, is a form energy efficiency financing. And part of the question that sometimes I get from people outside is, why would we go to Nebraska? Why does Nebraska need PACE? And the simple fact is that pretty much everyone in the country needs PACE, but in Nebraska specifically, as elsewhere in the country, one in six homeowners each year is going to be faced with needing to upgrade or replace a system that affects energy consumption or water consumption in their home. And in doing so, consumers historically are faced with a situation where they lack some information on

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what is energy efficient, the scarcity about high energy...high efficiency options from the local market that have financing, the hassle factor of trying to even figure it out. And quite frankly, you know, the head space that you need when you're just going about the daily part of your life and something breaks and you got to deal with. But when you think about that, where there's 681,000 eligible homes in Nebraska, that's over 100,000 moments every year where someone could make an energy efficient decision that could reduce and that could produce energy saving, emission reduction, creating jobs, and improving buildings and property value. So when you think about that, there are a lot of different ways that PACE can impact a discussion on climate change. Very briefly, the bill, LB1012, created the ability of municipalities to originate programs to allow for financing of energy efficient improvement and water (inaudible) improvements to their homes. They do it through authorizing a special assessment, a form of tax on their property to repay the financing. It's 100 percent voluntary. Local programs can create a PACE (inaudible) join another district, and I'll talk about that in a little bit. Qualified property owners receive it and then they pay it through a line item on their property tax bill. The reason that PACE is so important is let's take, for example, it's December 29, you...let's say that Senator Haar is throwing his annual big shindig for getting ready...he's getting ready to celebrate Nebraska being in the Orange Bowl this year. And then the day before the Orange Bowl, it's 40 degrees outside and his heater goes out. Well, the senator is going to sit there and go, well, I got to get my heater fixed, this is important because of the Orange Bowl and my guests aren't going to want to freeze when they could, you know? So what do you do? Well, what PACE enables us to do is to say in the decision that the senator is making, whether it's simply replace the old system, pay for it with cash, find a credit card, call his bank, to a HELOC, PACE comes in, in a much simpler faster way and says, well, Senator, if you wanted to look at an energy efficient decision we have that option for you and it's called PACE. It's brought to you by your local government. It's going to be paid back through your property tax and you get 100 percent financing for it, and we can install it for you frequently...we will install it for you before the Orange Bowl begins and your house will be all nice and warm and everyone can have a good time. That's what PACE can do and it does it by using...working with local contractors, so there's a great local economic development impact from this. It does it in a way that is seamless. It does it in a way that can underwrite very quickly and yet do it in a way that provides an unmatched suite of consumer protections that other forms of financing do not have. If you look at this one slide, I'm looking at slide 7, for every \$100,000 of financing that are invested in communities, you create \$181,000 in energy bill

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savings. You get \$173,000 economic impact, about 1 new job is created, and you're reducing about 174 tons of CO2. Nationally, we often talk about...people talk about, well, how is commercial doing (inaudible) versus residential? I'd just like to point out without trying to brag too much, although kind of I am, in the commercial PACE context nationwide, in about the 20-odd states in which commercial PACE is active, there are about 700-800 projects that have been funded to the tune of \$280 million, which is significant. But if you look at the residential PACE nationwide, it's about, instead of \$280 million, it's funded about \$2.2 billion in projects of over 104,000 homes and created about 22,000 jobs. In Nebraska, we, if we were to come in here and if the structure were aligned in the right way, we see easily within five years doing close to \$250 million in funded projects, doing it through about 3,000 or 4,000 homeowners, creating about 1,200 jobs. It's something that has a lot of appeal I think. Benefits to property owners include protecting access to credit, because if you get this kind of financing you can keep your home equity line and your credit card available for other types of things. Maybe you decide to go fly to the Orange Bowl instead. It increases affordability because you have longer payment times, there's no up-front cash, it can lower your utility bill, it can increase your property value. We have a study that shows that PACE-improved homes recover 100 percent of all the costs of financing, and that's not just the improvement but the actual cost of financing, in their property value and it improves the housing stock. And you can see how the efficiency pays off over time. It's important to note that when people think about residential and commercial PACE that residential is a much more different...it's a much different creature. It works with individual, it works through local contractors. You have to have consumer protections in there to ensure that that transaction is done in a way that protects that homeowner. And PACE has many more protections than other sorts of financing people could use for home improvement. And there's a chart up that I have that compares the protections that our program, which is called HERO for Home Energy Renovation Opportunity, has. Its financing is only for a specific purpose, unlike other types of financing. It's a fixed rate and fully amortizing; frequently a HELOC is variable or adjustable. And certainly we all know how credit cards change on a dime. We have a pricing review mechanism that is (inaudible) we have an algorithm within our platform that enables us to know if someone is being overcharged (inaudible). In addition to enhanced disclosures, we also call every property owner who is going to be doing a PACE assessment and before they put their name on the dotted line or on a virtual...or on a screen, we go through them line by line, 100 percent confirmation of terms via a recorded phone call so that we...everyone has a record of

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what exactly was explained to them and what was told. I give a three-day right to cancel. Funding is only provided upon completion of the project, certification by the homeowner that it's in good working order. And we have a lot of contractor requirements in terms of standards of practice that they must abide by. (Inaudible) for things that go on that all the other states don't have. And the beauty of this is that, as the statute provides, this is all done with private capital. There's no public taxpayer funds at risk. There's no public guarantees. There are no full faith and credit issuances. This is 100 percent leveraged private capital that we bring to the table. It's like your own private singular plan. The groups such as Moody's, a very sober analytical group on Wall Street, has said it's rare to find a public policy that is a win-win; that PACE is a rare policy gem in the policy universe in which everyone wins. And by winning, we encourage homeowners and (inaudible) homeowners transitioning to energy efficiency. We create positive benefits for climate change as a result. We create jobs in the community. And we are very pleased and I am very pleased to have gotten to know so many Nebraskans over the past eight months. Since I first came here in early February and I made about a dozen trips since then, we are very active and working in with the chambers and the local governments of Lincoln and Omaha in talking about this. And we would love to be invited to come and help bring a program to Nebraska. And again, Thank you, Senator Haar, for the invitation, and thank you, Senators Mello and Haar, for your leadership in bringing PACE to Nebraska. It is a wonderful opportunity and we were privileged to be a part of it. [LR455]

SENATOR HAAR: Okay, do you have any questions? My only comment...I'm pretty boring and I don't have parties before Cornhusker games. (Laugh) But thank you very much. And as you know, we're trying to create interest here in Nebraska to get this program going. I think a lot of citizens are going to look at this and the big question is going to be when does their locality get going on the program? So thank you so much. [LR455]

MICHAEL YAKI: Thank you very much. [LR455]

SENATOR HAAR: Okay, next we're going to have a...listen on the phone to David Pickerill from Missouri Clean Energy District. And here's an example of where one community could not support a PACE program but multiple communities coming together to form a PACE program,

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which would be really important for rural Nebraska, such as Broken Bow where we were yesterday. So do we have him on the phone? [LR455]

_____ : He should be calling right now. [LR455]

SENATOR HAAR: Excuse me? [LR455]

_____ : He should be calling right now. [LR455]

SENATOR HAAR: Okay. Goodness. Kind of reminds me of the days when I'd lie in front of the radio and listen to the Lone Ranger. You've got to sharpen your listening skills. Hello? [LR455]

DAVID PICKERILL: Hello, this is David Pickerill from the Missouri Clean Energy District. [LR455]

SENATOR HAAR: Yes, David, this is Senator Ken Haar. [LR455]

DAVID PICKERILL: Hi. [LR455]

SENATOR HAAR: And we're here in the LR455 Committee hearing and we'd like to hear about the Missouri Clean Energy District. [LR455]

DAVID PICKERILL: Okay, I'd be happy to talk to you about that. As I said before, my name is David Pickerill. I'm the executive director of the Missouri Clean Energy District, which I sometimes refer to in this presentation as simply the district. In the spring of 2010, my colleague John Harris and I caught wind of the PACE Act being considered by the Missouri General Assembly. Both John and I had background in municipal finance. We're both from small towns and we both have family history in community banks, and that will be reflected here in what I'm going to say as I go along. The PACE Act as it was finally adopted authorized the establishment of what the act called clean energy development boards by municipalities. This would be very much comparable to your clean energy assessment districts. The act stated that a single municipality could establish such a clean energy development board or several municipalities

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could join together to create one. These clean energy development boards would be political subdivisions of the state and authorized to borrow and lend funds for the purpose of energy conservation and renewable energy projects. The Missouri Clean Energy District is one of these so-called clean energy development boards. It's authorized by the act to levy (inaudible) special assessment, although we do not have any general taxes for it. Also, the legislature did not appropriate any public funds for our use in establishing and running PACE programs. And that's sort of, I think, the key thing here that the act didn't specify having (inaudible) organize what its rules might be. It did allow the state department of natural resources the ability to write rules, which so far they have declined to do. So it left it pretty much up to my colleague and I how we wanted to create this clean energy development board or Missouri Clean Energy District. We actually considered establishing a separate one for each of the regional councils of government. We thought that would help maintain a local flavor so that we wouldn't have the rural communities dominating the urban ones or vice versa. But in general, the executive directors of these regional councils liked the idea but they also realized that for them to get (inaudible) would require staffing that they just simply didn't have to spare. So at that point we really moved on to the concept of going statewide. In designing this specific details of the PACE program, we had several goals in mind--one was to make PACE available for communities of all sizes. We particularly wanted to avoid having someone set up a PACE district which served only St. Louis and Kansas City, taking away the most profitable projects and making it difficult to make PACE available in the rural communities. This is where our separate backgrounds come into play. We also wanted to make sure that the local banks did have an opportunity to participate in the PACE program, even though for the most part the nature of PACE lending is not actually suitable for most banks because of its long-term, fixed-rate nature. But nonetheless, some of the...especially for projects that have a payback in five to seven years, banks are much interested in that type of lending. We also wanted to have a large geographic area. Some (inaudible), well, in I think in 2012, a tornado tore through Joplin, Missouri, and did massive damage. If there had been a single PACE district for Joplin there would have been a lot of default. By having a widespread geographic area we can at least diversify that risk and that's an important credit consideration when you're seeking funding. And finally, we wanted to...I thought by having a lot of communities involved in this program would help in political support. Businesses stay where energy is relatively inexpensive. And so it's not an issue that bothers our legislature. So there are...they passed the act but I'm not sure I'd ever want to have it reopened (inaudible) and I don't

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know if they would be aware of where they might come down. We also wanted to see if a district would be governed in a manner that supported the points I just made. But the one I personally felt, that we had to have a fairly small board. If we're going to have representation on the board from the various parts of the state, it's kind of hard to get five people--and it is a five-member board--to get those five people to attend meetings. And the...it's important to have as close to 100 percent participation as we can get. If you go much beyond seven directors, it becomes very difficult to get that kind of a participation. We wanted to have the directors elected by the members of the municipality to establish and retain complete independence from any one municipality. The...we use an election procedure where each municipality is listed for a nomination, for an open director's seat, but then it's referred to a nominating committee who's composed of one sitting board member and four members of the membership committee who review the credentials of the various applicants and select two or three to place on the ballot. Their selection is based on again the location, geographic location of the nominee, their technical areas of expertise or interest, and actually any other considerations they want to add in. But again, we don't want a board that's run either by St. Louis and Kansas City or by strictly the rural communities, because in our state, and I'll bet this is true in Nebraska, there is kind of a...there's a little bit of a war (inaudible) between the major metropolitan areas and the smaller communities. So that's how we come up with our board. Once we got that done--and the board was created in January of 2011--our next job was to find a law firm to help us develop all the legal documents to go into (inaudible) permit, things like loan and bond documents, (inaudible), investment contracts, etcetera. My colleague and I focused our efforts for the first three years just lining up municipalities. We didn't want to start offering PACE funding until we had a sufficient number of municipal members to assure a good volume of loans once we did start taking applications. All this time we were sticking exclusively to commercial, agricultural, and governmental projects, while also not for profit. We didn't want to get involved in residential PACE at that time because of the issues with Fannie Mae and Freddie Mac. In January of last year, the governor's office asked us to get on the stick and start offering residential PACE. We knew from working some years back with a company called Renovate America that's located in California that technology is an essential part of having a successful residential PACE program. If somebody's furnace goes out in February, they want to get it fixed right now. They don't want to wait for three weeks while a loan application is being processed. They're more likely just to pull out a credit card and pay for it right now. So we knew from our prior work with Renovate

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America that they had the technology. We like them and felt they had a very high degree of integrity. So I contacted their CEO, told them that we were ready to start talking to them about residential PACE. That process began in February of last year and it culminated two weeks ago on September 15 when we actually started taking residential PACE applications. Between September 15 and the close of business yesterday, we've had about \$740,000 in applications approved and that...those are only those are only in Jackson County, Missouri, Jackson County being where Kansas City itself is located. We have not opened it in any other areas of the state yet. We wanted to start there and spread out. The...I did look through the Nebraska act and there are some things about it that I probably didn't really like that much. And this is based strictly on my own opinion, so this is not coming down from a great wise man. I particularly am fond the idea of having statewide, in your case, clean energy assessment board. I like the idea of separation between the municipalities and the board of the district itself. But no matter how you do it, it can be worked without any problem. If the...the one suggestion I would make is that the...in the event you decide to reopen (inaudible), and this could be done administratively, for especially residential PACE, it's important that there be a consumer protection. If you have a lot of different clean energy assessment districts doing their own program, there's a risk that there won't be uniform standards. So I would suggest that some state agency establish mandatory consumer protection policies for each and every clean energy assessment district in the state just to protect against some guy who just got a brand new pickup truck and thought he's going to be an expert in solar installation. That's something we are doing. The PACENation, which is kind of a nationwide not-for-profit entity that has been promoting PACE, has established protection policies that they consider to be valid. And most states are beginning...most programs actually are beginning to adopt the...we're talking here in our state...we're using it. Personally there's a question in our state of whether we want to have our PACE Act amended to include it. I'm opposed to that. I think it's better in a rule making process rather than a legislative process. But again, that's just my personal opinion. That is my best attempt to answer the questions you had, but if you or any of your colleagues have questions they'd like to ask me I'd be more than happy to answer to them. [LR455]

SENATOR HAAR: Okay. Thank you, David. Do you know of any other similar districts to what you're doing that involves multiple communities? [LR455]

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DAVID PICKERILL: Well, yes. Actually in our state there are two other PACE districts, one of them is called Set the PACE St. Louis and it is strictly the city of St. Louis. It does not go outside to St. Louis County. It is just strictly within the city of St. Louis. And it has been off to a very slow start. Another one which really just came along and copied everything we did including all of our legal documents, it's called Show Me PACE. But they're...they've copied on everything, right down the road. As soon as we sign up a municipality, they go in behind us and get them...get that city council to join their district. So it's the exact same thing. There's another person who...we're not sure what his motive is but he seems to be wanting to set up the brand PACE district for the state of Missouri. He even got the state to register his company. His name is Missouri PACE Financing Authority, LLC, which sounds pretty impressive. And he filed Freedom of Information request (inaudible) for every document we've had since we began operation. So he, too, will be able to have all of our legal documents and research of how things get started. And he, presumably, is going to file and, in effect, duplicate our program. [LR455]

SENATOR HAAR: Okay. Do you know of any other states that are doing similar multicommunity projects like you're doing? [LR455]

DAVID PICKERILL: Yes, California is. There are several firms that are doing it. As I said, Renovate America is really the 2,000 pound gorilla in California. They've done something like \$1.4 billion worth of residential. . They...up until this year, they have not done any commercial projects. They've turned those over to another firm called Samas Capital. But there's also...the firm used to be called Renewable Funding, I think it's Renewed Financing (sic--Renew Financial), something like that, that's doing projects in California. There are several others like that. I can't come up with the name right off the top of my head. But there are multiple firms there. I believe that is the case in Florida. And my understanding of Florida is it does do things strictly by municipalities. I don't think they have a statewide program, nor does Arkansas. There are only a couple of communities in Arkansas that actually have PACE programs. [LR455]

SENATOR HAAR: Okay. Heath, do you have any questions? Okay. Well, one of the things we'll do, David, is share your contact information so as things move forward in Nebraska if people are looking to this kind of organization they will know who to contact. [LR455]

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DAVID PICKERILL: Okay. That'd be great. [LR455]

SENATOR HAAR: Thank you so much. [LR455]

DAVID PICKERILL: Thank you. The pleasure is mine speaking with you. [LR455]

SENATOR HAAR: Okay. Bye bye. [LR455]

DAVID PICKERILL: Good-bye. [LR455]

SENATOR HAAR: Okay, the next the person we've asked to talk is Chris Peterson from Sage PACE. [LR455]

CHRIS PETERSON: Senators, my name is Chris Peterson, C-h-r-i-s P-e-t-e-r-s-o-n, and I am here today with PACE Sage. PACE Sage is an aggregator or connector that brings together businesses, investors, owners of property that want to take advantage of PACE and connects them with a PACE lender. During the past legislative session, I was a registered lobbyist for PACE Sage. And at this point I'm actually doing business development here in Nebraska for PACE Sage helping to educate potential...or educate stakeholders about PACE, including developers, investors, specifically in commercial real estate, also attorneys who practice in the development arena and do work on behalf of municipalities, also meeting with bankers to educate them as to what PACE is and how it works and of course also with municipal officials. I do have a short PowerPoint which I've shared with you. I'll go over it very quickly. Most of this has already been covered in particular by Senator Mello, but just to quickly review. Again, PACE is an innovative way for property owners to pay for upgrades to existing buildings or for ground-up construction for the energy components of those projects. It's non-recoursed, fixed-rate financing for the useful life...the average useful life of those items that are being financed. So that could be upwards of 20 years. PACE can cover 100 percent of those energy efficiency related improvement costs up to 25 percent of the entire property's at-completion value. And it's repaid as a special tax assessment on the property, again, for the useful average life of those items that are included as part of the PACE financing package. PACE is not a replacement for conventional bank financing, but it is more often a replacement for a developer's equity which

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either could make a project reality that otherwise could not be financed if you couldn't put the capital together. Or if a project was already occurring, it could encourage or incent that project, those developers to make that project more energy efficient in order to qualify for PACE. In addition, it could free up an owner or developer's equity for use elsewhere, further benefiting the economy. PACE is modeled after other methods--specifically looks somewhat like TIF--that have been used over time to fund other public benefits such as roads and sidewalks. But PACE financing for commercial projects comes from private capital sources and there is not public financing involved in commercial PACE projects for the most part, none that we're really familiar with. The latest statistics I have, and Michael Yaki mentioned some of these, the numbers may be slightly different, but the latest numbers we have from PACENation would be that nationwide 790 commercial buildings have been upgraded with PACE financing with a combined total of about \$280 million in funding and those projects created 3,300 jobs, construction-related jobs while those projects were underway. The next slide has examples of items that might qualify. Senator Mello, through his vision with LB1012, really allowed that almost anything that relates to energy where you could demonstrate a greater energy efficiency would qualify under the program. And that's really what the whole public interest is about, is driving toward energy efficiency and hopefully then lowering energy costs or energy payments, utility payments and usage. Next slide, a map, and I believe Senator Mello may have shared a similar slide. The only difference might be in this version of a map that in Kansas the Community Investment Development Act may actually be accessible as a vehicle to use for PACE lending. And then the next slide kind of walks through where we're at Nebraska. Again, due to LB1012's passage, it was obviously a key first step, the next step being the creation of PACE districts by municipalities and/or after they begin to be formed for subsequent municipalities to join together with already existing structures of those districts. Then a...what would most typically be--and we just heard from Mr. Pickerill--a third-party administrator would be selected to manage the program. That certainly could be the city itself, although more likely to be another...potentially another government entity or a nonprofit as we've seen in Missouri. But even a for-profit entity potentially could end up as a third-party administrator. And then finally once all that structure is in place for the program then we'd go...we'd have the application process where we'd actually have projects that would flow to the third-party administrator for approval. So...and finally, a final slide, PACE is a win-win for all stakeholders and I would commend the committee for shining a light on PACE. Given the directive and the interest of this committee, it makes a lot of

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sense. This is something where the Legislature and Senator Mello with his leadership has been proactive taking steps that could and should lead to less energy use and...but there's just so many benefits from so many different potential stakeholders with respect to job creation, economic activity, and reducing costs, utility costs, for property owners. It's just a great...a great public policy step that the Legislature has taken here. I might, before I certainly entertain any questions, I might pick up on something that Senator Larson had raised when Senator Mello was testifying earlier, and that's with respect to expanding PACE beyond municipal boundaries. And it's something that as I've had conversations with developers, they've certainly asked about that. Sometimes obviously a commercial development might grow up just outside a city limit and the city, for whatever reason, may not be too quick to annex that property. And from PACE Sage's perspective, we certainly look out across the state and would like to be able to engage with agricultural interests that may be able to benefit from the program. So we'd be very interested in having conversations with the committee or with specific senators about that kind of tweak to the bill. But all in all, we're very pleased with how all the stakeholders came together this session to build a really good act. I would also mention further along those lines, Senator Larson, in the commercial PACE world, the lenders are willing to look back on a project that's already been completed and finance those energy improvements if they qualify under the law. And so from that perspective, if there were to be a change in the law, really most anything done in 2016 could be eligible if something were done next year or to make that...to broaden the law. So they are willing to look back up to two years. And that's kind of exciting when you're out there talking to owners and investors in property who are in the middle of projects right now and trying to think about how this might benefit them and how they might be able to utilize it. So with that, I'd be happy to answer a few questions. I did keep my testimony short this afternoon and appreciate your time. [LR455]

SENATOR HAAR: Any questions? [LR455]

SENATOR MELLO: Thank you, Chairman Haar, and thank you, Chris. I know you've been busy post-session in regards to the engagement regarding LB1012. Is there anything you think that we should know about in regards to just maybe some of the potential concerns or misunderstandings about the bill in regards to any of the meetings you've been engaging in, in regards to people in the commercial world in comparison to the residential world? Because I think, as we discussed

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the bill itself mostly during the legislative session in committee, on the floor, the idea itself really was driven more by the residential end. And commercial obviously has a pretty significant impact obviously with new development, existing redevelopment. Anything you could share with us that may be something that the Legislature needs to be mindful of moving forward, whether tweaks to the law or generally just implementation challenges or issues that we need to be mindful of? [LR455]

CHRIS PETERSON: Because PACE is new to Nebraska and so almost no one we've spoken to has dealt with PACE or heard of PACE before, it really is a building block kind of conversation where you have to walk people through what it is, what it means, how it works. And you can really see the light bulb come on in those conversations, whether you're talking to developers or even bankers, attorneys, and of course municipal officials. Once you walk through it, everyone gets it. They understand how it works, what the purpose is. But it's still new. And so we're plowing new ground here in terms of public policy and structure and framework. So I think it takes a little bit of time and there is certainly value in our larger municipalities, Omaha and Lincoln, who have larger staffs, for them to go first on something like this. Based on our conversations, I'd say it's certainly possible a smaller municipality could jump and try to do something sooner if there is a project that they want to help with PACE. But more likely, Omaha or Lincoln will go first with an ordinance. I think we've probably seen a little bit of a timing issue in terms of when the law became effective in July. Of course our local governments are dealing with budget issues at the end of the summer and that's their primary focus. And so we'd be hopeful that over the next few months that we start to see more traction in terms of working on an ordinance as the city staff in particular become more knowledgeable. I know that they've...Omaha and Lincoln have both been doing work on this and getting themselves more comfortable with how this is done elsewhere. And so I think that...I think you've shared some of that already, Senator, so I echo what you've said. Beyond that and the tweak in terms of broadening the program geographically, I don't...I guess the only other thing I would offer is on the consumer protection issue. On the commercial side we haven't heard any consumer protection concern and I think the reason is because with the kinds of projects you're looking at on the commercial side you have--and I don't mean this pejoratively--but you have sophisticated developers, sophisticated lenders, people who use financing instruments on a regular basis, sometimes for large-scale projects. And so this is just another piece of the puzzle for them. And

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so we haven't heard any consumer protection issues really at all on the commercial side. We've heard...and this would not even be in half of the discussions we've had, just in a couple of discussions, when people have asked us questions about residential we've heard a couple consumer protection questions. And of course PACE Sage doesn't engage in the residential side and so we've encouraged them to follow up on those issues elsewhere because we just don't have experience on the residential side. But to be fair, in my conversations with Renovate America, and you've heard from Michael Yaki earlier, they take the consumer protection very seriously from what they've shared and they've worked very hard to build into their program consumer protections. And so they seem...they sound like a very good actor in that regard...and because of the protections that they work to build in the sort of residential PACE lender that you'd want to have in your market. But consumer protection is certainly something that we should, as a state, as state policymakers, something you should look at. But I would not suggest that it has to be a tweak legislatively to deal with that. I think Mr. Pickerill may have suggested it may be something that in the rule...the administration, the rules of the third-party administrator on the program, that they can address and address without a legislative fix. [LR455]

SENATOR MELLO: Okay. Thank you. [LR455]

SENATOR HAAR: Senator Larson. [LR455]

SENATOR LARSON: Thank you. What are the...we've heard a lot about like municipalities might...like smaller ones might need to get together or interlocal agreements to create enough, if you want to say, critical mass. What is the point, like how much needs to be funded or what's the potential to be funded to essentially create one of these? Like what are the investors looking for because, I mean, that's what we...they say, you know, there might not be enough projects in Broken Bow or in O'Neill? Like what do...what's the number? What are investors looking for or how does that come in? Do you get what I'm asking? [LR455]

CHRIS PETERSON: Sure, sure. I can answer your question on the commercial side. On the residential side I can't tell you that one furnace is enough. But on the commercial side what we would say and what the market typically would say would make sense is a project of \$250,000 in terms of the energy efficiencies, the PACE loan of \$250,000 or greater. And a new construction

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commercial project, perhaps 15 percent of that would be energy-related items. And so on a \$5 million commercial project, perhaps \$750,000 of that would be energy-related items. So to get down to the \$250,000 level, I guess that would be about a \$1.7 million project. So that would kind of be from a lender standpoint where they would be most willing to start looking at a project. There are instances where you go below that \$250,000 figure: If there were going to be some economies of scale, if you thought somebody was going to have multiple projects where your paperwork was going to almost be duplicative on multiple projects, then a lender might be willing to look below that \$250,000 threshold maybe to as low as \$150,000. I think that's part of what you've asked. The other piece is municipalities coming together, especially smaller municipalities. In what...what I believe the law allows is that if Lincoln or Omaha or Kearney passed an ordinance and established a PACE district and contracted with a third-party administrator, then a Broken Bow or a Beatrice or whatever other municipality could pass an ordinance or possibly even a resolution and use an interlocal agreement to opt in to that same district mechanism or structure and, therefore, end up using that same third-party administrator. And so that's why it's really important that the first domino or the first few dominoes fall here. And it may be the case where Omaha and Lincoln end up having their own structures and their own third-party administrators. Maybe they'll end up having the same. And it may be the case that there is a different structure and/or third-party administrator for more rural parts of the state. But it really is what everyone's comfort level is as this develops over time. But again, Senator Larson, I think that there is a lot of potential applications across the state, whether that be for a hotel project in a community or again an ag-related project if the law were to be broadened to allow for that outside of a municipal limit. [LR455]

SENATOR HAAR: Now something that I don't quite understand. Could, let's say, Lincoln or Omaha have more than one PACE provider operating in it at the same time or how do you usually find that happening? [LR455]

CHRIS PETERSON: And, Senator, by PACE provider, do you mean a lender? [LR455]

SENATOR HAAR: Right, yeah. Yeah. [LR455]

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CHRIS PETERSON: Well, I'm sure that PACE Sage would like to be the commercial lender of preference in Nebraska and will do a good job to connect...I should say to be the aggregator to the lenders. We will work on the commercial side with multiple lenders. There in the PACE market over the last eight or ten years, several lenders on the commercial side have blossomed in California. But we have been talking also to lenders elsewhere in the country, including to potential lenders even here in Nebraska. And so we would hope that there would be multiple lending options that as we talk to commercial interests that we could bring to them. But the interest rates are pretty consistent: 5.5-6 percent right now on a commercial PACE loan. And so there's not a whole lot of difference there, but we're certainly working hard to find ways to make sure that in terms of PACE Sage that we can be as competitive as possible and give as...and connect developers to as good of a product as possible terms of an interest rate. I do know that on the residential side, scale is really important for them. They will struggle if there's only a few hundred residential loans as they want a large number. And...but we're going to have an open marketplace. Multiple lenders can certainly show up here and there may be multiple folks like myself who are out on the commercial side trying to drum up interest and identify potential projects. And so I guess the bottom line best way to answer your question is we don't know for sure today, but it's an open marketplace and so anybody could start to facilitate in this way in the state or come to the state to do so. [LR455]

SENATOR HAAR: But again, it's up to the municipality at this point to make the decision whether to have one or many or whatever. [LR455]

CHRIS PETERSON: Yeah, the municipality certainly could structure that way. Yes. [LR455]

SENATOR HAAR: Yeah. Yeah. Okay. Well, thank you very much. Appreciate it. [LR455]

CHRIS PETERSON: Great. Thank you. [LR455]

SENATOR HAAR: Next we've asked Jeff Carpenter from the USDA to talk. And we've talked a lot about PACE so far but we're talking about multiple ways. We'll mention the Nebraska Energy Office and their loans in a little while. So we're talking about the many different ways of financing energy efficiency and renewable energy. [LR455]

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JEFF CARPENTER: Good afternoon, Senators. My name is Jeff Carpenter, J-e-f-f C-a-r-p-e-n-t-e-r. I am the energy coordinator for the state of Nebraska with USDA Rural Development and I'm here today to talk about our Rural Energy for America Program. I would like to thank you for this opportunity, first of all. It's nice to be able to come talk about what our agency has to offer in terms of energy financing. What I handed out to you I'm going to go off of a little condensed version. Based on that, I had to get this through national office for approval to come talk to you guys so they can make sure I wasn't lobbying. [LR455]

SENATOR HAAR: (Laugh) Okay. [LR455]

JEFF CARPENTER: The Rural Energy for America Program, or REAP, provides assistance to rural small businesses and agricultural producers to help offset the costs associated with installing renewable energy systems or making energy efficiency improvements. Under REAP there are two types of eligible applicants. An applicant can either qualify as an agricultural producer who receives 50 percent or more of their gross income directly from agricultural productions, or as a rural small business. To qualify as a rural small business, we utilize the SBA small business size tables based on their NAICS code. And to meet the rural part of the rural small business, applicants must be located in a community of 50,000 or less. There is no population limitation for agricultural producers. Eligible projects within REAP fall into two categories: energy efficiency improvements or renewable energy systems. To be eligible as an energy efficiency project, the proposed project must demonstrate energy savings having a reduction in kilowatt-hours or BTUs depending on the size of the...or depending on the type of the system, excuse me. Renewable energy systems are installed to either replace some or all of the current energy use of the rural small business or agricultural producer or they can generate power that will be sold to the grid and used by someone else. There are two forms of assistance through REAP: grant assistance or guaranteed loan assistance or a combination of the two. The agency is migrating away from grant assistance and is putting more...putting much more emphasis on the guaranteed loan program. And we're growing a portfolio of energy projects and will continue to emphasize the guaranteed loan assistance. REAP grants provide up to 25 percent in reimbursement to projects with the remaining 75 percent coming from matching funds either from the applicant's contribution or other financing such as from the Nebraska Energy Office or PACE. For a renewable energy systems, the minimum grant request is \$2,500 and the maximum

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grant request is \$500,000. For energy efficiency improvements, the minimum grant requested is \$1,500 and the maximum grant request is \$250,000. Eligible project costs include but are not limited to the purchase and installation of new or refurbished equipment, "postapplication" construction and facility improvements, retrofitting of equipment, professional service fees, and permits and license fees. And eligible project costs include but are not limited to residential energy projects; farm tillage equipment; used equipment; vehicles; "preapplication" construction and facility improvements; application preparation or grant-writer fees; lines of credit; lease payments; or payments to the applicant or business owner, beneficiary, or relative. Application deadlines are October 31 and April 30 for grant requests of \$20,000 or less and April 30 for grant requests of \$20,000 or more. These deadlines are subject to change based on the publication of a notice of solicitation of applications, or NOSA, in the Federal Register. REAP guaranteed loans guarantees up to 75 percent of an eligible project costs to the lender making the loan, again, with the applicant contributing the remaining 25 percent from matching funds. The minimum loan amount is \$5,000 and the maximum loan amount is \$25 million. USDA Rural Development will provide a percent of guarantee that depends on the loan amount. These guaranteed loans have maximum term limits of 7 years for working capital; 15 years for machinery and equipment or the useful life, whichever is less; and 30 years for real estate. The interest rate is negotiated between the lender and borrower and can be fixed or variable, and there is a one-time guarantee fee of 1 percent associated with the loan and an annual fee of .25 percent. Guaranteed loans compete on a monthly basis for the competition held in national office. The loan request must score a minimum of 50 points out of the possible 100 to compete. The applicant can also do a guaranteed loan and grant combination with the total assistance not exceeding 75 percent of the total eligible project costs. Since inception, the REAP grant and guaranteed loan programs have had a significant impact on energy efficiency improvements and renewable energy systems in rural America. From 2003 to 2015 almost 13,000 projects have been funded with grant investments of more than \$500 million, loan investments of almost \$540 million, and, most importantly, leveraged investments of \$3.5 billion for the total project investments of almost \$4.6 billion. Out of that, Nebraska has funded a little over 1,100 projects through the REAP program from 2003 to 2015. That equates to approximately \$17.4 million in grant funding, almost \$16.1 million in guaranteed loan funding, and a leveraged amount of over \$135 million for total project costs of almost \$169 million and enough energy generated or saved

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to power a little over 50,000 homes for a year. With that, I would open it up to any questions that you might have. [LR455]

SENATOR HAAR: Do you have any questions, Senator Mello? I have a couple questions. We heard particularly this morning that sometimes going through this process is so very complicated that people just say I don't have time or knowledge to do it. [LR455]

JEFF CARPENTER: It is a federal program so there are, you know, required forms that we have to have, according to regulation. The process was simplified somewhat from the old regulation when they came out with a new regulation in December of 2014. I think a big part of it is just familiarity with the process and the forms and how to fill them out. It can be a little overwhelming if it's the first time you've done it. If you're a grant writer and have submitted lots of them, you know what to do. It's pretty simple. We are always available to assist applicants with that as much as we can. We have a limited number of staff. I think right now we're at 47 in the state through our agency, so we're fairly small. Out of that, we have nine business program staff in five locations. So we try to meet with people as much as we can, but of course our time is limited with that. [LR455]

SENATOR HAAR: Uh-huh. Uh-huh. This may even be a stupid question, but is there any way that REAP and PACE could work together for somebody? [LR455]

JEFF CARPENTER: They can, yeah. PACE can be used as the matching funds portion of a REAP project. So with the grant we require 75 percent matching funds from the applicant, and for the guaranteed loan we require 25 percent. So PACE is definitely an option for that matching funds. [LR455]

SENATOR HAAR: So not a stupid question. [LR455]

JEFF CARPENTER: No, not at all. [LR455]

SENATOR HAAR: Again, just people need to know,... [LR455]

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JEFF CARPENTER: Correct, yes. [LR455]

SENATOR HAAR: ...combining these things together. [LR455]

JEFF CARPENTER: Yes. [LR455]

SENATOR HAAR: Okay. Well, again, we're going to put all this information somewhere and we will include a contact. [LR455]

JEFF CARPENTER: Perfect. [LR455]

SENATOR HAAR: So thank you very much appearing today. [LR455]

JEFF CARPENTER: Thank you. I appreciate the opportunity. [LR455]

SENATOR HAAR: You bet. I guess I would also say do you feel that this is being used enough in Nebraska or is there a lot of room for improvement? [LR455]

JEFF CARPENTER: We are oversubscribed on the grant side. The last couple years we have only been able to fund about 50 percent of the projects that we get applications for. The guaranteed loan side is heavily underutilized. Through the grant side, Congress, with the 2014 Farm Bill, allocates their...it's mandatory that they have to set aside \$50 million for their grant portion. That is then distributed across the states based on the formula that they use based on population and whatnot. On the guaranteed loan side, for the beginning or for fiscal year '16 we had a little over \$300 million available. The key between that is the guaranteed loan is not a one-for-one dollar match so it's a little easier to have more money in that. And that's why the agency is really trying to get away from the grant side of it if possible. We understand that it's a grant and you're always going to have a lot of applications for a grant. Good question. [LR455]

SENATOR HAAR: Again, well, thank you very much. [LR455]

JEFF CARPENTER: Thank you. [LR455]

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SENATOR HAAR: Okay, and now we are open for public testimony. We'll use the light system for five minutes but we'll be pretty liberal on that time. So if there's anyone who would like to come up. [LR455]

CRAIG MOODY: Good afternoon. Good to see you again. My name is Craig Moody, C-r-a-i-g M-o-o-d-y, and I will get one of these filled out for you. Just a couple quick things that I wanted to mention, the first is I'm excited that this hearing is happening today because we are familiar with three pretty large-scale developments in Omaha that want to use it. They're ready to go. They keep asking when is it going to be ready because this is something that they are anxious to use. And these are not...from a Sage perspective, these are not small clients. These would be big, big. So I'm anxious and hopeful that Omaha can be the first one and get out in front of Lincoln. (Laughter) I did like...one of the things that as I was listening to the gentleman from the Missouri Clean Energy District speak, one of the things that I found interesting was that they also created a mechanism by which municipalities, government agencies could borrow from that same pool to do their own energy efficiency upgrades. And I'll note that we're sitting in a room I think that's all incandescents. And I'm guessing this is not the only room like that in this building. So I think there's an opportunity in the future to look at ways that we can sort of help government agencies do some of the same upgrades. I don't know that this is necessarily...and I don't know that it's appropriate for me to ask you guys questions but I found it interesting that we've been sitting here for at least an hour and a half or so and our public utilities haven't come up at all. And I'm just kind of curious as to what a utility's role is in PACE financing, whether that's local, national, or otherwise. Obviously, they're going to be heavily impacted and so it is just kind of...it's curious to me that they're pretty notably absent, both in the conversation and in the room. And then to Senator Haar's point about this is not strictly about PACE, so one of the things that I will mention is that with some of the institutions that we do work with, they're not eligible for PACE--government agencies, public school districts, universities--but yet they still struggle with some of the same challenges and they often...one of the things that they gravitate to is performance contracting. And there are a variety of different opinions on whether or not performance contracting is really valuable, and I won't share my opinion on that today. But I do think it's important to think about what limitations exist for them as well. You know, the ones that we've really encouraged people to look at are typically green revolving funds, revolving loan funds that in the higher ed world are pretty common actually and one of the things that some of

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our public school districts, we've sort of encouraged them to take a look at. And they really strongly consider revolving loan funds. The first challenge is they need a bunch of money to get it started from which to borrow going forward. Their main concern has always been, how will this negatively...or could it negatively impact the funding formula? So if there's a way that the Legislature could ensure that that wouldn't happen, I think these school districts and OPS, as an example, not that they were the ones looking at it, but for sure has saved I think we were estimating \$7 (million) to \$8 million in the last five years on energy efficiency upgrades and other efforts, and I'd love to see them have a mechanism to continue to build that. And today they don't. It's just sort of an internal decision that they make and those internal decisions can sort of flutter away with the wind if the wrong people leave the institution. So especially on the public K-12 side, I think that's something that we're really mindful of is making sure that we've got a mechanism in place so that they can continue to do that. That's all I have for comments.

[LR455]

SENATOR LARSON: Thank you, Mr. Moody, for coming in and discussing your points on PACE. Senator Mello. [LR455]

SENATOR MELLO: Thank you, Chairman Larson, and thank you, Craig. I guess maybe to some extent to try to provide some perspective on your question, the history of LB1012, looking back at the legislative history, it's pretty noticeable that no public power utility came in support of the bill, testified on the bill in a supportive or opposition or in a neutral role,... [LR455]

CRAIG MOODY: Sure. [LR455]

SENATOR MELLO: ...I think, in part...it's not that we didn't try to engage them. I think to some extent, for whatever reason, it just...because it didn't directly...they didn't see it directly impacting their operations in a direct sense,... [LR455]

CRAIG MOODY: Uh-huh. Right. [LR455]

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SENATOR MELLO: ...even though I think we can all agree saving energy will have a direct impact in regards to their generation and/or if it's renewable energy focused has a generation. [LR455]

CRAIG MOODY: Yeah. [LR455]

SENATOR MELLO: I can't speak to why they didn't see either the benefit and/or the concern that maybe as a public utility state, 100 percent public power state, why they didn't see the need to engage on this issue knowing that public power has been at least very public saying how much they support energy efficiency and conservation. And this seems to be the one financing mechanism that can work across the spectrum. So to try to give you a little background,... [LR455]

CRAIG MOODY: Yep, thank you. [LR455]

SENATOR MELLO: ...it's unfortunate they didn't. It's not that we didn't try but for whatever reason they chose not to engage on this issue. [LR455]

CRAIG MOODY: Okay. Very good. Thank you. [LR455]

SENATOR LARSON: Thank you, Senator Mello. Thank you for coming and talking with us. [LR455]

CRAIG MOODY: Yes. [LR455]

SENATOR LARSON: Any further testifiers? [LR455]

SENATOR HAAR: Welcome. [LR455]

LASH CHAFFIN: Thank you. Thank you. Good afternoon. My name is Lash, L-a-s-h, Chaffin, C-h-a-f-f-i-n, and I am a staff member at the League of Nebraska Municipalities. And I also want to thank Senator Haar and Senator Mello for introducing and working through the drafting and

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ensuring that this bill got through the complex maze of the Nebraska Legislature. And I just wanted to tell everybody that the League will be active in promoting this. And last week, Trevor Fitzgerald, Urban Affairs Committee staff member, spoke at our conference. And then also we've talked about this in a couple--well, more than a couple--several subcommittee meetings within groups of cities. And there's...I think perhaps we've all, myself included, have underestimated the interest in this. And I think your questions of how fast will this proliferate across the state, I think we probably shouldn't be as pessimistic as perhaps I think a lot of people might be. In Nebraska we're very fortunate that your predecessors have given cities a very flexible method of working with each other. The Nebraska Interlocal Act is apparently far more flexible than Missouri's. And I think...and since we were talking to a phone, sometimes you bounce things around in your head instead of staring at a person. I was thinking earlier I came up with a dozen interlocals that were put together in less than a month, fairly sizable interlocals in Nebraska, and there's probably far more. And of those, ten of them were probably structured through our office but some of them just sort of organically grew. And never underestimate the ability of cities to talk to each other when you don't know they're talking to each other. And I think also some side conversations I had after Mr. Fitzgerald's session with some other cities tells me there is some organic interest in this. And if...anybody with a car will certainly attest to the fact that driving through Nebraska, adequate and desirable building stock is a...is at a woeful shortage. And a big part of that is weatherization type of updates, things like this. And any sort of funding mechanism, even at a small level, that can move some of this forward will be welcomed almost immediately. And you know, if the issue of scale becomes an issue I think that can be taken care of fairly quickly. I think if there's a small amount of organic interest, that could be spread and formalized rather quickly. And so I think if...particularly if there's some good third-party administrators that cities find a level of comfort in, I think this...it may not take off by December, but I assume within a couple years there will be a fairly large PACE...probably multiple...which I didn't quite understand till today but probably both at the commercial and residential level, my guess is there will be a sizable program in Nebraska and probably a growing program. Also, for what it's worth, the cities of Lincoln and Omaha I know for certain they're both...I've talked to both cities, they are discussing this. They have been extremely cooperative over time working with other cities and interlocals, even if it doesn't even benefit them. My experience has been that both...the staffs at both cities just bend over backwards historically. There's a couple...we've got a couple safety related equipment sharing programs that I assume Lincoln and Omaha have never

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benefited from, but they've both been key participants for dozens of years. I mean...both...so I think...I expect a high level of cooperation from them. And also, the League did testify and the League represents 125 municipally owned electric systems, and they are interested and active in this. And this is structured a little different than some programs that are run through a utility and...because it's...this is much more a program that historically it's based on home value and home equity and home real estate value, and that's a little different than straight out weatherization projects that might be run through a utility or something. Like I mean, it's a slightly different concept. And our electric utilities are aware of this but the bigger interest so far is really coming from the folks that are interested housing and the folks that are interested in urban development, those sort of things. And I guess...I vastly underestimated the interest and I think this could fly pretty quickly. And fortunately, I think the tools are there and the...I think it could move quickly. So any questions? [LR455]

SENATOR HAAR: Yes, Senator Larson. [LR455]

SENATOR LARSON: Yeah, you mentioned it and I guess I just personally don't know a lot about it. Obviously, right now it's only for municipalities. We covered that extensively. But you mentioned the interlocal agreement that's already in state statute. If we were to authorize it for counties, does that interlocal agreement...is that just, the way that we have it in statute now, only for cities...with cities, or does the interlocal agreement actually work with cities and counties as well so we won't even have to really work on a lot of those (inaudible)? You know what I'm saying? [LR455]

LASH CHAFFIN: It could easily work with cities and counties. [LR455]

SENATOR LARSON: As is right now? [LR455]

LASH CHAFFIN: The law could, yes. I mean you'd have to... [LR455]

SENATOR LARSON: There might be a small tweak but it's not a... [LR455]

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LASH CHAFFIN: Right, you have to draft your interlocal agreement correctly. But I mean there's hundreds of interlocal agreements between cities and counties now. [LR455]

SENATOR LARSON: So we don't...like with police departments... [LR455]

LASH CHAFFIN: Right. [LR455]

SENATOR LARSON: ...and things like that is the one that comes directly to my mind. [LR455]

LASH CHAFFIN: Right. I mean and there's even more simple ones like interlibrary loan,... [LR455]

SENATOR LARSON: Yeah, okay. [LR455]

LASH CHAFFIN: ...I mean things like that. [LR455]

SENATOR LARSON: So it wouldn't take a large statute change to create...like where we have to discuss interlocal agreements for PACE? [LR455]

LASH CHAFFIN: No. [LR455]

SENATOR LARSON: They've already...we've already pretty much done it. [LR455]

LASH CHAFFIN: Yes. [LR455]

SENATOR LARSON: It's just authorizing the county side of it. [LR455]

LASH CHAFFIN: Yes. [LR455]

SENATOR LARSON: And maybe a small tweak or something. [LR455]

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LASH CHAFFIN: Yeah, I think that would...yes. Yes. I think that's the appropriate conversation to have. Yes. [LR455]

SENATOR LARSON: Thank you. [LR455]

SENATOR HAAR: Great. Well, Lash, I've been working with you ever since I was on the Lincoln City Council. You had more gray hair then. (Laughter) [LR455]

LASH CHAFFIN: It's always disturbing when you see a picture of yourself when it wasn't it gray. Wow, who's that kid? [LR455]

SENATOR HAAR: You were good looking then but... (Laughter) [LR455]

LASH CHAFFIN: Thank you. [LR455]

SENATOR HAAR: Yeah. So... [LR455]

LASH CHAFFIN: Will you tell my wife that? [LR455]

SENATOR HAAR: Sure, I'll sign a note. So, for example, with my son now who's heard about this and says you got to...you know, I need to replace my furnace with a high...who should he call to get this moving and...? [LR455]

LASH CHAFFIN: Well, right away...and he's in Lincoln? [LR455]

SENATOR HAAR: Yeah. [LR455]

LASH CHAFFIN: Oh, sure, of course your son is. I think he should call Frank Uhlarik, the sustainability coordinator. I know they're internally bouncing this around trying to figure out how to make it work. [LR455]

SENATOR HAAR: Okay. [LR455]

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LASH CHAFFIN: I haven't been active in their discussions but I've...you know, they've told me and I've kind of caught wind of their discussions. [LR455]

SENATOR HAAR: Yeah, because this seems to be a no-brainer. It's almost too good to be true for citizens who are thinking of doing energy upgrades or whatever. So I think you're going to find a lot of interest. And to anybody who might be watching this or interested, call your city council. [LR455]

LASH CHAFFIN: My fear is that people make this too complicated because it does...I think it's a fairly simple process that really has a lot of potential benefit. [LR455]

SENATOR HAAR: Uh-huh. Uh-huh. And the other point, that I assume there would be a lot of transparency around this. I mean nobody is going to buy a property and then find out they have a PACE loan or something. All that will be right up-front and people... [LR455]

LASH CHAFFIN: I hadn't thought a lot about that, Senator, but I would assume, as the counties start to process these loans, they will show up on the appropriate deeds. [LR455]

SENATOR HAAR: Uh-huh. Good. [LR455]

LASH CHAFFIN: Good question. I have not thought a lot about that. [LR455]

SENATOR HAAR: Okay. It would also be good, I guess, on tax bills someday when that's a separate line item so that people are well aware. If their property tax, for example, should go up because of a PACE loan, it's not that property taxes are going up but that they've made the choice to...and that's really an important perception. [LR455]

LASH CHAFFIN: It is and I'm sure everybody at this table has had many confusing conversations with people over those sort of things. [LR455]

SENATOR HAAR: Sometimes about my own tax bill, so, yeah. Okay, yeah. [LR455]

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SENATOR MELLO: Thank you, Chairman Haar, and thank you, Lash. I just wanted to revisit a comment you mentioned and the previous testifier, Mr. Moody, asked the question in the sense of public power's engagement. And municipalities own a considerable number of electric generation facilities. Have you heard from any of those particular cities saying this is a new energy financing law that could help us, could help our smaller city out? I know, I mean, they operate different from an OPPD, an LES, or an NPPD. [LR455]

LASH CHAFFIN: They do. [LR455]

SENATOR MELLO: But to some extent I'm thinking of Grand Island as a great example of a pretty...the fifth largest city, if I'm not mistaken, outside of Bellevue, that they would be able to utilize PACE immediately on their public power as much as on the residential and commercial benefit that the individual property owner is getting. [LR455]

LASH CHAFFIN: I mean it's a good question and the answer is, kind of. A city is a little unique in that the departments are next-door to each other. So that the urban development department in Grand Island actually literally is next-door to the utility department, and so the conversations flow. So sometimes, you know, the electric utility doesn't need to say much because the urban development people might be saying something or the...someone else, the Finance Department. The weatherization with respect to Nebraska utilities is a little complex in that every...it's hard to cookie cutter...say every utility is the same,... [LR455]

SENATOR MELLO: Uh-huh. [LR455]

LASH CHAFFIN: ...because they're all...some are wholesale customers, some have their own generation. And also very important in Nebraska, because everything is established through a whole series of contractual relationships, is weatherization. The timing of electric use changes is more important than overall electric use changes. And weatherization is unique because it's a 24/7 timing as opposed to just the...so the...a kilowatt-hour not used in September is a much different animal than a kilowatt-hour not used in June. And interestingly, currently the Energy Office is doing some studying to try to quantify a little better the relationship between weatherization and typical...so some Nebraska utilities, weatherization may mean nothing, I

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mean it just...it may be...beyond the fact that their customers are interested in it. And then there are some utilities it might be a huge, huge benefit at certain times. And I think the sophistication, starting to understand where your energy use is, that's a fairly new science. And I think even the most sophisticated utilities are starting to kind of sort through the nature of a kilowatt-hour gained or lost, depending on your perspective any given day. And I think two years from now I think we'll know a lot better what the role of a public...quite frankly, I think public utilities just don't understand yet the nature of what weatherization means to them. For instance, like OPPD very aggressively, they've got a department that works on it. There's a guy, his name is Garry something. I mean he's buzzing around working with contractors and stuff all the time. Then, to be honest, I don't think Grand Island has anybody working on it. They might have other departments working on it, but I don't think anybody comes from the utility. So I think it varies a lot from...and that...it's interesting, the Energy Office, they're working on, for different reasons, but they're working on trying to determine some of that data right now and it's been interesting. They are using an Ohio contractor who's...they're not studying it for this purpose. They're studying it because they're trying to determine the energy code compliance in Nebraska and this becomes a side issue of that question, and a lot of people are interested in the...Milo Mumgaard, who was with the city of Lincoln at the time, kind of initiated some of the questions about this. So they're working on it now. But good question. [LR455]

SENATOR MELLO: And I guess I'd just leave you with more of a statement. The challenge, to some extent, at least with most energy conservation or energy efficient related programs from a public power perspective or the state of Nebraska perspective, are all means tested, which means those programs don't impact a supermajority of property owners across state because they're only limited to households with 200 percent of the federal poverty line or below, which cuts...which on any given day averages out of the total households across Nebraska, 200...you know, 150,000 households out of closer to 900,000. So I just ask that question in the sense of smaller cities where you may be able to see more innovative approaches in comparison to a large OPPD, a large NPPD that have kind of their own ways of doing business and that's the way they're going to do business, where a lot of programs in a Grand Island, in a Kearney, any other larger...in a Columbus maybe, this is a program that arguably is eligible to any property owner regardless of income, which is for the first time a real financing mechanism besides taking out a home mortgage loan or a home equity loan or the Dollar and (Energy) Savings Program loans that you

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can take through the Energy Office, which is about the equivalent of a home equity loan. So I guess I just throw that out there and not really as a retort. But it's just...it's something to be mindful of from a city perspective that almost everything is exclusively targeted to low-income residents and low-income households, where for a utility to notice that we now have the ability to change our generation and/or the amount of generation that's needed based upon potential energy savings to middle-income families who otherwise would never... [LR455]

LASH CHAFFIN: That's true. [LR455]

SENATOR MELLO: ...do upgrades to a home built in 1960. It's just...it's a new way of thinking that more times than not I'm coming to find out that's maybe why public power really didn't engage in the bill because either they did they didn't understand it or they just think to some extent they'll only focus on their area and let the cities maybe focus on encouraging... [LR455]

LASH CHAFFIN: I think there's probably some truth there. You know, you made an interesting point and I would not be surprised if a lot of the innovation took hold in smaller, somewhat more...there's some very sophisticated smaller cities and who are very committed to maintaining their place in the larger universe. And every year when you see the income, the average income lists that come out of the federal government, some of them are shocking. I mean just intuitively you know there are villages and cities left that are way above the average, like that can't be. One or two, in Senator Larson's district, one or two farmers can throw off the entire average income of an entire county and so...up or down, either way and it's very frustrating. And you're right, this is a much more flexible program that will have availability to somebody who can run with it. I think you're right. [LR455]

SENATOR HAAR: Okay. Well, thank you very much. [LR455]

LASH CHAFFIN: Thank you. [LR455]

SENATOR HAAR: We appreciate your time and hope you get a lot of requests for this. Welcome.

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DUANE HOVORKA: Good afternoon. My name is Duane Hovorka, D-u-a-n-e H-o-v-o-r-k-a. I'm executive director of the Nebraska Wildlife Federation and pleased to be here today. Thank you, Mr. Cochairs. We appreciate both of you being here, and, Senator Mello. We appreciate the committee's focus on climate change. That's why we're here, because we're already seeing the impacts of climate change on Nebraska's wildlife and wild places. And we look into the future, it's a pretty scary future when you look at the potential impacts that could be coming in terms of impacts on our rivers, on our wetlands, on our prairies, on our wildlife and wild places. So we really appreciate the focus on climate change and we appreciate the focus on the real-world things that we can do here in Nebraska. So talking about energy financing is really a key piece of how we move forward towards a clean energy economy. So we had a community meeting up in Norfolk not long ago and maybe some of the numbers up there might help give you a little bit of perspective. Norfolk is a town of about, I think, about 20,000-25,000. Madison County is about 35,000 population. There's about 15,000 dwellings in the county and about two-thirds of those are houses, about a third of them are apartments. About half of the houses built in Norfolk were built before 1970. So we have a lot of old housing stock there and elsewhere in Nebraska and that was long before we had really good energy codes, the kinds of things that would require...what we hopefully require today as a basic minimum when you build a house. So we've got a lot of work to do out there, a lot of old houses and also a lot of old apartments that really could use some upgrade. And if you looked at maybe a ten-year program that said we're going to take the half of the housing stock there that's in the worst shape and we're going to upgrade it, and you looked at maybe \$3,000 to \$4,000 per house, the numbers work out to about a \$15 (million) to \$20 million program over ten years. So that's \$1.5 million to \$2 million of investment in Norfolk and in Madison County per year. That's going to generate something like 15 to 20 jobs in the area for people that are doing the retrofits. So there's some real economic impact there. And for each of those years that you make that investment you may see \$300,000 or more in utility bill savings for the people who are in those homes. And that compounds every year as you add to that investment. So that's a lot of money that we're saving the people in those towns. That's a lot of money that stays in the community and doesn't have to go outside of town and outside of the state in order to bring in energy resources from the outside. So certainly we're here because of the wildlife, but there's a whole lot of economics that really work. PACE is I think one of the real...the bright spots. It's certainly got some great potential. As we look at the solution, it's one part of the solution. It can be a big piece. But you think about the third of

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people who are renting their apartments in that area and across the state. And if you've got a landlord who's not paying the utility bill, they may not have a lot of incentive to go borrow money in order to put the insulation in and upgrade the equipment. If you've got a renter who may be there a year or two years, they don't really have the incentive either. So I think we're going to have to find some other solutions to address some of the other pieces of it. We talked about the Rural Energy for America Program. That's one thing that's working in rural areas. And so I think that's another piece of the solution. We used to have a school weatherization loan fund program in the state and I'm not sure if it's even around anymore. But it was a great model where we loaned money to schools to upgrade to weatherize those schools and reduce the property tax load. And I think looking at how do we finance government buildings and if we can do that through PACE I think that's another benefit of using the program. So...and I think there is a role for utility financing and the utilities can get into this business whether the big utilities, if they don't want to do it, maybe some of the municipalities and the local utilities are willing to do it. But I think there's a place there for them to provide the financing because that then gives them the leverage to go in and make sure that the stuff, the work that's getting done, also provides benefits in terms of reducing the capacity needs for the utility. And so in addition to putting in insulation and windows, they can put in the gizmos on air conditioners that cycle them off when we're hitting peak loads. So I think there are some benefits there and hopefully some the utilities will take a bigger interest. But I think PACE can be a big win for the state and I really appreciate the legislation and we're certainly going to be out there trying to encourage municipalities to take advantage of this and to pick it up and run with it. So thanks for your time. I'd be glad to try to answer any questions. [LR455]

SENATOR HAAR: Well, my belief is if organizations such as yours can just help get the word out, we're going to feel a lot of pressure from the bottom. Again, this sounds almost too good to be true and I'm just reminded of when Jimmy Carter was talking about energy efficiencies, he put on a sweater and said turn down your thermostat. And we've talked so much here today about saving money, but the point is homes become much more comfortable as well. [LR455]

DUANE HOVORKA: Right. [LR455]

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SENATOR HAAR: We don't need to put on an extra sweater if we've done a good job of insulation and so on and so forth. [LR455]

DUANE HOVORKA: Sure, and we're willing to get out there and start telling folks about it and see if we can get some demand from underneath for the programs. [LR455]

SENATOR HAAR: Start the wheel squeaking, yes. [LR455]

DUANE HOVORKA: You bet. [LR455]

SENATOR HAAR: Do you have any questions, Tyson? Thank you very much. [LR455]

DUANE HOVORKA: Thanks. [LR455]

SENATOR HAAR: Appreciate your testimony. Okay, Jon, and if you'd just give those to Aaron, he will pass them out. [LR455]

JON TRAUDT: Good afternoon. My name is Jon Traudt, T-r-a-u-d-t, and I want to thank you for all your efforts to promote PACE financing. I think it's a very, very important thing. For Senator Mello, perhaps an employee of OPPD has let the truth slip out. One of their lower-level managers told me that if OPPD's income, their revenue, did not improve or if it went down, there would be layoffs. So that might explain some of their reticence in promoting energy efficiency. They've got big investments, they have bondholders, they've got obligations. So two things, if a municipality follows the PACE program, it's win-win-win. And if PACE gets going, I suspect OPPD and other utilities will see the light and jump in on bill repayment. It just makes sense and it helps them cut their costs so that they can their rates lower, okay? So to get started, I've been disappointed pretty much all my life (laughter) with OPPD and the utilities because they've often neglected to save...help save energy when it costs less than generating and transmitting it. The graph you see on the front page here shows that energy efficiency is a lower cost than perhaps wind. But energy efficiency isn't intermittent. It doesn't...I mean you've still got it when the wind is not blowing, when the sun is not shining. So that's where we need to put a lot of effort. Now the PACE program will do a lot of good but what you'll see in this evidence in your packet is that

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there's a lot of things that people could do at low cost and reap major benefits today, not have to wait for PACE. Okay? Now everybody that saves energy--I only suspected that up until this came out--it actually helps the utilities keep rates low whenever people save energy. OPPD invested a lot of money in Nebraska City too. They said it raised their cost \$50 million a year, and it spreads a lot of pollution. So that's not helpful to anybody. They could have...if we had a PACE program going like I dream it could be, they wouldn't have had to build that plant. The cost of saving energy across the country has averaged less than 5 cents a kilowatt-hour. That's saving electricity. Of course, the PACE programs would save electricity and gas and protect health. Now I've included some things that you may not have been aware of because some of the research is fairly recent, for instance, by university of...Harvard University School of Public Health and others. These fine particles that come from burning fuel is not only getting into your lungs, it's getting into your brain. It's affecting the immune system, the cardiovascular system, the respiratory system, and the central nervous system. That doesn't sound good. September 8, a report came out that the pollution's particles were getting into the brain. A lot of it is not going through the lungs, it's going through the olfactory bulb, which unless you've been a medical student you may not be familiar. But that's at the top of your sinus cavity and that's where...it's part of your sense of smell and it's a direct route for the particles to go into the brain. One other place that it goes may explain my problems with short-term memory. It goes into the hippocampus. And the doctors tell us that when you learn something it kind of goes round and round in the hippocampus. There's probably a more scientific way of saying that, but it goes there before it goes into the long-term memory. So that does not sound good. The...there's a big report on how coal affects your health. So in this PACE program, may I suggest that when you want somebody...want to help somebody save energy, make sure that you're not damaging their health. The EPA--and I know you know this--but the EPA actually did a national survey and asked what's more important to citizens: protecting health in their homes, schools, office; or saving energy? Two out of three don't want to weatherize if it's going to put them in danger. Sounds obvious, but if you were familiar with the reEnergize Program, which is a good example of how not to do something, they would not...it would tighten homes but they wouldn't provide any ventilation unless somebody had COPD or lung cancer or something. So why not...from my experience in Energy Star homes, you can make it tight...you can make your house as tight as a submarine and actually wind up having better air quality because then you bring...if you bring in the air through a good filter you're going to capture these particles, you're going to replenish

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oxygen, you're going to reduce carbon dioxide. And why is that important? Carbon dioxide doesn't seem harmful, but it reduces brain function. It reduces the ability to process information. It reduces a lot of mental processes and it might explain why when you're explaining something to your colleagues they don't always agree with you. You really just need to get more fresh air. Okay? And finally on the matter of somewhat urgent, you know, fuel is fairly cheap now because...well, there's a lot of reasons for that. But our actual reserves that you can get, that you can afford to get to, very limited. We might run out of coal that we can afford to get within 20 years. We might run out of oil, natural gas. I don't know exactly when but it's going to happen, and why not be ready for it? Right? Any questions? [LR455]

SENATOR HAAR: Any questions? [LR455]

SENATOR MELLO: Thank you, Jon. [LR455]

SENATOR HAAR: Jon, I want to thank you for being here today. But also, as you know, Heath and I won't be back next year in the Legislature... [LR455]

JON TRAUDT: Unfortunately. [LR455]

SENATOR HAAR: ...and I want to thank you for being one of my mentors in this whole process of working on renewable energy. And you even took me along to do an energy audit of a house in Lincoln some years ago. [LR455]

JON TRAUDT: Uh-huh. Right. Oh, one more suggestion. These don't cost very much but they tell you the carbon dioxide level is. And turns out that most homes, at least periodically, especially those without a ventilation system, often have elevated levels of this--in schools, in homes, in offices. And in fact, Harvard figures that high...elevated carbon dioxide costs the typical employer--I'm talking about office employees--costs them about \$4,000 on average each year. [LR455]

KEN WINSTON: So what's the level right now? [LR455]

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JON TRAUDT: Only 542. [LR455]

SENATOR HAAR: Is that good or bad? [LR455]

JON TRAUDT: Well, it could be better. If you were outside, it would be better. It would be 400. But when it gets up to a thousand, well, there's a chart actually on your that reports and... [LR455]

SENATOR HAAR: Okay, we'll look at that. [LR455]

JON TRAUDT: ...that indicates how much you lose in various cognitive functions when the carbon dioxide rises. So this is something that people can use now. [LR455]

SENATOR HAAR: Uh-huh. Okay. So I was thinking maybe this piece on ultra-fine particles affecting the brain and now talking about too much CO2 concentration might explain what's going on in Washington. [LR455]

JON TRAUDT: Yeah. (Laughter) Well, thank you very much. [LR455]

SENATOR HAAR: Thank you very much. We appreciate your being here and the information. And is there anyone else? Okay. Well, I want to thank everybody who's been here testifying, those who are...been watching the session. We didn't get into this specifically, but the Nebraska Energy Office also offers loans and Senator Williams yesterday said just talk to your bank. If you're interested in a loan for energy-related things, it might fit the Nebraska Energy Office and your bank will be familiar with that. Our next hearing is on November... [LR455]

KEN WINSTON: October 21. [LR455]

SENATOR HAAR: ...October 21, and at that time we're going to actually talk about what would you like to see in a climate action plan for Nebraska. [LR455]

SENATOR LARSON: And carbon footprints in the afternoon. [LR455]

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SENATOR HAAR: And the carbon footprints. So thank you very much. [LR455]