

Natural Resources Committee March 14, 2019

HUGHES: [00:00:01] OK. Welcome everyone. According to my phone, it is 1:30, so we will open the Natural Resources Committee hearing. Welcome to Natural Resources Committee. I am Senator Dan Hughes. I am from the Venango, Nebraska, and I represent the 44th Legislative District. I serve as Chair of this committee. The committee will take up the bills in the order posted. Our hearing today is your public part of the legislative process. This is your opportunity to express your position on the proposed legislation before us today. The committee members might come and go during the hearing. This is just part of the process as we have bills to introduce in other committees. I ask that you abide by the following procedures to better facilitate today's proceedings. Please silence or turn off your cell phones. The introducers will make initial statements followed by proponents, opponents, and neutral testimony. Closing remarks are reserved for the introducing senator only. If you are planning to testify, please-- please pick up a green sign-in sheet that is on the table in the back of the room. Please fill out the green sign-in sheet before you testify. Please print, and it is important to complete the form in its entirety. It is-- when it is your turn to testify, give the sign-in sheet to the page or the committee clerk. This will help us make a more accurate public record. If you do not wish to testify today, but would like to record your name as being present at the hearing, there is a separate white sheet at the back tables you can sign in for that purpose. This will be part of the official record of the hearing. If you have handouts, please make sure you have 12 copies and give them to the page when you come up to testify. They will be distributed to the committee members. When you come up to testify, please speak clearly into the microphone. Tell us your name, please spell your first and last name to ensure that we get an accurate public record. How many people are wishing to testify on both bills today? Can I have a show of hands. OK. We-- yeah, we will do five minutes. You don't have to take it all. We will be using the light system for all testifiers today. You will have up to five minutes to make your initial remarks to the committee. When you see the yellow light come on, that means you have one minute remaining. And the red

light indicates your time has ended. Questions from the committee may follow. No displays of support or opposition to a bill, vocal or otherwise, is allowed in the public hearing. The committee members with us today will introduce themselves starting on my left. Senator Moser.

MOSER: [00:02:38] Mike Moser from District 22, that includes most in Platte County, most of Stanton County, and the good part of Colfax County. [LAUGHTER]

HALLORAN: [00:02:54] Good afternoon. Steve Halloran, District 33, Adams County, southern and western Hall County.

QUICK: [00:02:58] Dan Quick, District 35, Grand Island.

GEIST: [00:03:02] Suzanne Geist, District 25, the east side of Lincoln and Lancaster County.

HUGHES: [00:03:06] And on my right.

GRAGERT: [00:03:08] Tim Gragert, District 40, it's up northeast Nebraska: Cedar, Dixon, Knox, Holt, Boyd, and Rock Counties.

ALBRECHT: [00:03:14] Joni Albrecht, District 17, Wayne, Thurston, and Dakota Counties in northeast Nebraska.

BOSTELMAN: [00:03:20] Bruce Bostelman, District 23, Saunders, Butler, and majority of Colfax County.

HUGHES: [00:03:28] That would be the bad part of Colfax County?

MOSER: [00:03:30] Only the good.

HUGHES: [00:03:34] To my left is committee legal counsel, Laurie Lage. And to my far right is our committee clerk, Mandy Mizerski. Our page for today is Noah Boger; he is a freshman at UNL with a double major in political science and French. So with that, we will open it up today and we have an appointment, Mr. Frank Reida, who wishes to be reappointed to the Nebraska Power Review Board. Welcome, Mr. Reida, and just give us a little background on yourself and what you do with the Nebraska Power Review Board.

FRANK REIDA: [00:04:04] Thank you, Chairman Hughes, and members of the Natural Resources Committee. My name is Frank, spelled F-r-a-n-k, Reida, spelled R-e-i-d-a, and I am here for reappointment as the attorney member of the Nebraska Power Review Board, it would be my second term. My understanding is that each of you has in your packet my resumé which was attached to the application. So I'm just going to hit the high points of that, which would be relevant to this particular position. I have an undergraduate degree in mechanical engineering from the University of Nebraska; a master's degree in Business Administration, and the juris doctor both from Creighton University. My professional experience, I started off as a mechanical engineer with Nebraska Public Power District. I was in their power houses for ten years, and then the plant that I was in they mothballed, so I went back to school. Went to law school for three years. I practice with the Baird Holm Law Firm for 15 years in Omaha. I left as a partner to be vice president and general counsel of Energy Systems Company. And when they reorganized and were purchased by an outside investor, I then, for about two to three years, I commissioned large-scale data processing facilities under NDA, so I can't tell who they are, but they're the large search engine company. I currently am what's known as an MEP plans examiner for the city of Omaha. And what that means is that when large commercial or industrial buildings or facilities are either being modified or built

new, I work with the architects and engineers to ensure that the MEPs is a-- the mechanical, the electrical, and the plumbing codes are in compliance. As far as other experience, I've been a registered professional engineer since 1982. I've practiced law for almost 30 years. I've been on the-- this would be my second term of the Power Review Board and I'm currently the chairman. As far as the board, for what I see as a current challenge in the electric industry is very-- to maintain resilience with the integration of the renewables, with the current traditional generating assets; so that's a big deal for the utilities. And my goal has always been to maintain for ratepayers reliable electric service at reasonable rates. Do you have any questions? I'd be happy to answer them.

HUGHES: [00:06:50] OK. Thank you, Mr. Reida.

FRANK REIDA: [00:06:52] Reida.

HUGHES: [00:06:53] Thank you very much. Are there questions?

FRANK REIDA: [00:06:55] Yes, Senator.

HUGHES: [00:06:57] Senator Geist.

GEIST: [00:06:59] Thank you, Chairman. Would you just fill us in on the process of your meeting; how regularly you meet, how many of their-- of their attendees there are, kind of--

FRANK REIDA: [00:07:12] Attendees as far as members?

GEIST: [00:07:13] Yes.

FRANK REIDA: [00:07:13] There's five members; we meet once a month.

GEIST: [00:07:16] OK.

FRANK REIDA: [00:07:17] And they're open public meetings, we meet-- currently we're meeting at the Liquor Control Room which is at the State Office Building.

GEIST: [00:07:26] OK. Here in Lincoln?

FRANK REIDA: [00:07:26] Here in Lincoln.

GEIST: [00:07:29] OK. Thank you.

FRANK REIDA: [00:07:29] You're very welcome. Thank you,

HUGHES: [00:07:29] Senator Albrecht.

ALBRECHT: [00:07:32] Thank you, Chairman Hughes. Thank you for being here. And can you just talk about some of the agenda items. Do you talk a lot about wind energy in your particular--

FRANK REIDA: [00:07:42] We-- we talk about wind energy when it is-- when it's an issue that may be-- be before us, if someone is, you know, we don't get a lot of wind projects anymore, because for the most part those are-- they don't come before us as far as needing approval. They do come before us as far as they have to give notice that, in fact, they're being built, but now we don't approve those projects anymore, if that's what you're asking.

ALBRECHT: [00:08:07] I'm not asking if you approve them, but do you-- do you visit about wind energy a lot in the monthly meetings that you hold?

FRANK REIDA: [00:08:15] We occasionally do, especially there's a number of our members go to their-- there's an annual wind conference and so things that happen at those conferences we [INAUDIBLE] talk about.

ALBRECHT: [00:08:28] And do you have folks throughout the state? Do they contact you to-- to ask questions about how to take care of and handle certain situations with wind energy?

FRANK REIDA: [00:08:39] No, I've never been contacted.

ALBRECHT: [00:08:40] You've never-- you never had anybody ask you.

FRANK REIDA: [00:08:41] No. I would-- I would say that probably that would go through the ED and our general counsel, but no I've never had anyone--

ALBRECHT: [00:08:50] So what are some of the topics that you do visit about in your meetings, let's say in the last two or three meetings, what's on the agenda that's a hot topic?

FRANK REIDA: [00:09:00] Some of our utility may be wanting to add another transmission line or distribution line. We had a presentation from NPPD the last meeting, as a matter of fact, where they were speaking about the new-- this is at Sheldon Power Station where they're converting to-- there's-- there's a co-generation that's going to take place where they're going to take methane, which is CH₃, and actually burn that without oxygen and burn the carbon off and then this company is buying the carbon and then the hydrogen is going to be burned in Sheldon Station. So the-- it will

be a process where basically there will be little or no CO2 emitted. It'll be a very efficient process.

The byproducts of the combustion of hydrogen basically water. So you'll have nitrogen, it comes with its own natural combustion air. But as far as CO2 generation being very, very minimal because you burn hydrogen.

ALBRECHT: [00:10:09] Any other items that are on the top of the list?

FRANK REIDA: [00:10:13] Though I-- one of them was SPP. SPP gives us an annual presentation that tells what the state of SPP is, how we integrate and fit into that. And those particular ones that do speak about the amount of wind energy that is currently within the SPP footprint and how that's being handled as far as-- I'm sure you're probably aware with SPP, they dispatch the generating units for the Nebraska utilities, the generators, and then there's a-- a day-ahead market with the purchase back, so.

ALBRECHT: [00:10:52] Do you feel that there's going to be much more wind coming to Nebraska, wind energy?

FRANK REIDA: [00:10:58] I believe so. I believe so.

ALBRECHT: [00:11:00] And how do you feel about that?

FRANK REIDA: [00:11:03] I think that it's an asset that Nebraska has, it should be utilized. It needs to be integrated into the mix so that you still have reliable energy that's at a reasonable cost.

ALBRECHT: [00:11:20] Thank you.

HUGHES: [00:11:21] Senator Moser.

MOSER: [00:11:24] Kind of a companion question to Senator Albrecht, is the Power Review Board a unique thing to Nebraska because we have public power?

FRANK REIDA: [00:11:34] I believe that's-- that's true. I think when public power was originally brought into play, that they needed to have some entity that would coordinate between, like for instance, one of the things we do is we generate the boundary lines. If there were any disagreements between utilities that come to us and we actually--

MOSER: [00:11:54] You make sure they play well with each other?

FRANK REIDA: [00:11:56] Exactly. Exactly. Because we are-- we're actually quasi judicial. So we can actually-- we sit as district court if we have litigants that come in that-- that if there's a dispute. Simply, we're a board, but we also have judicial capabilities.

MOSER: [00:12:14] How do you pick winners and losers in those kind of battles?

FRANK REIDA: [00:12:19] Well, we are not activists, we follow the law. And so in those particular situations, we look at what the statutes, some of the case law is, and we make our decisions based upon the law and judicial precedent.

MOSER: [00:12:35] And what's best for the citizens in Nebraska?

FRANK REIDA: [00:12:38] Well, the overall net is to have something that is in the best interests of the ratepayers in Nebraska, which is what our statutes are designed around.

MOSER: [00:12:48] So have you had any real contentious issues come up in recent memory that--

FRANK REIDA: [00:12:58] Nothing of real contention. I guess it was one--

MOSER: [00:13:01] How do you stay interested if nothing's happening?

FRANK REIDA: [00:13:03] Well, there's-- [LAUGHTER] there's one-- there's-- there's-- it's always interesting to me. There was one case where there's an annexation. This was back a number of years ago, and it did go on appeal. One of the issues on the annexation did go on appeal to the Nebraska Supreme Court. And on that one issue, there was many issues in this case, but one of them dealt with the valuation of a circuit in a switchyard. And so, not a switchyard, but actually substation.

MOSER: [00:13:38] Was there a discussion of who is going to serve that area, was that the basis of the disagreement?

FRANK REIDA: [00:13:46] This particular issue, the basis was, if I recall correctly, is that you had a substation that had three circuits in it. And one of those circuits was going to be, because of the annexation, was going to no longer be used or needed. And so one of the parties wanted to have the entire substation move to a totally new location. And in that particular case, when we looked at that issue, we view that as being betterment because there was no evidence that that had ever been originally centered. And to recenter after that, that was something we viewed as betterment. The Supreme Court viewed it differently, and so on remand what we did is we took that one circuit and we viewed it as a stranded asset and we paid-- our [INAUDIBLE] was to pay the depreciated value of that stranded asset. And that was not appealed.

MOSER: [00:14:47] Well, it sounds like you can give a reasonable answer to a silly question. So you passed that test.

FRANK REIDA: [00:14:53] And it's always interesting. There's always something that-- one of the things that the utilities, when I was back at NPPD, decision making was relatively easy for utilities because if looked at, you know, basically coal was very abundant and natural gas was not. And now utilities have incredible decision to make. And a lot of these decisions have 30-year impact. So it's something the utilities are really facing some issues where they will have to use some strong analysis.

MOSER: [00:15:35] So if-- if a utility was considering closing a power plant or building a new power plant, is that a typical question they would have to bring to you?

FRANK REIDA: [00:15:46] If they were going to be building something other than renewable energy, yes.

MOSER: [00:15:53] Or closing something?

FRANK REIDA: [00:15:57] I'd have to ask general counsel. I'm not sure that we would be involved with the closing. That's-- you know, each utility has its own board of directors and so they-- they are their own rate making body and I believe on a closing, [INAUDIBLE] I've never been involved in a closing. Like for instance, when OPPD closed Fort Calhoun, there was never an issue that was brought to us.

MOSER: [00:16:21] OK, well thank you very much.

FRANK REIDA: [00:16:24] You're welcome.

HUGHES: [00:16:24] Any additional questions? Seeing none, thank you, Mr. Reida.

FRANK REIDA: [00:16:28] Thank you very much.

HUGHES: [00:16:28] Is there anyone wishing to speak in-- as a proponent to the reappointment of Mr. Reida to the Power Review Board? Welcome.

CHRIS DIBBERN: [00:16:37] Good afternoon, Senators. My name is Chris Dibbern, C-h-r-i-s D-i-b-b-e-r-n. And I'm speaking in favor of this confirmation. Frank Reida has-- has attended all of the hearings, that I'm aware of, that he can make, meetings. He asks thoughtful and direct questions. He educates himself on the industry. We're lucky to have him serve on the board. He's skilled in engineering and law and business. And I think you should know that he is a great ambassador for the Power Review Board and for Nebraska. And my practice is in front of the Power Review Board and we've had-- they've handled like MEAN's charter or disputes between the power industry, SPP matters if they are relevant to Nebraska. Arbitration sometimes passes through the Power Review Board if we use an arbitration panel. And citizens can bring questions of discrimination to the Power Review Board. So they do a great job for public power. I think it is unique for our state, and Frank is a terrific board member.

HUGHES: [00:17:49] OK, Thank you. Are there questions? Senator Moser.

MOSER: [00:17:52] Discrimination, you mean between power districts?

CHRIS DIBBERN: [00:17:55] No, actually a customer could say that maybe a line is-- that-- that-- the rate is discriminatory, they can actually bring that.

MOSER: [00:18:02] But it's not in the social sense we're not talking about discrimination.

CHRIS DIBBERN: [00:18:06] No. No.

MOSER: [00:18:06] You're talking about whether they're favoring-- favoring one power user over another.

CHRIS DIBBERN: [00:18:11] Correct. If the rate is discriminatory. Yeah.

MOSER: [00:18:14] Okay. Thank you.

CHRIS DIBBERN: [00:18:16] Thank you.

HUGHES: [00:18:17] Thank you for your testimony. Any additional proponents? Seeing none, anyone wishing to speak in opposition to the appointment-- reappointment of Frank Reida? Seeing none, anyone wish to speak in the neutral capacity of Mr. Reida's reappointment? Seeing none, that will close our hearing on Mr. Reida. Thank you, Mr. Reida, for your willingness to serve the state of Nebraska. With that we will open up our hearing on LB285. Senator McCollister, good to see you back in Natural Resources.

McCOLLISTER: [00:18:52] Well, after eight- and ten-hour meetings in Revenue, I miss this committee.

HUGHES: [00:18:58] This is the fun committee.

McCOLLISTER: [00:18:59] Indeed. Good afternoon, Chairman Hughes and members of the committee, I'm John, J-o-h-n, McCollister, M-c-C-o-l-l-i-s-t-e-r, and I represent the 20th Legislative District in Omaha. Today I'm offering LB285 to appropriate \$200,000 to the Nebraska Power Review Board to engage a consultant to identify opportunities to save Nebraska electric ratepayers. And I'll repeat that, save Nebraska electric ratepayers, our constituents, potentially tens or hundreds of millions of dollars. These savings would occur through a strategic private investments in renewable energy facilities, most likely solar energy generation facilities and battery storage facilities. If these private investments are located correctly, they can improve the reliability and capacity of our publicly-owned transmission and subtransmission systems. This can prevent the need for investments in those systems by our public utilities, the cost of which ultimately would pass through to ratepayers. Enhancing our transmission and subtransmission systems is important for reliability purposes, but it's also important for capacity purposes. Some places on the transmission grid lack the capacity to receive significant electric service that is necessary or beneficial to them for economic development or other reasons. Our utilities are judicious in their expenditure of public ratepayer dollars. We are, as legislatures-- legislators appreciate that. At the same time, this means they cannot serve the wish of every community that is growth minded and looking for major economic development opportunities to expand its economy and its tax base. LB285 is a good way for utilities and ratepayers that they can have the best of both worlds. LB285 would identify the strategic locations on the electric grid for public/private partnerships to benefit the utilities and the ratepayers and their communities without significant public investment. Private companies would take the risk and make the investment of the generation and storage facilities which would result in improved reliability and capacity on the electric grid. This would improve economic development opportunities, mostly for rural communities, and help us in the truest form of tax relief growing the base. These private investments also provide distributed sources of

generation in storage. This help-- these help further diversify the generation portfolio in the state and guard against significant weather events or unforeseen circumstances that could negatively affect the electric supply. There'll be others to follow me and answer the technical-- technical and engineering questions of how this would work. Thank you, Mr. Chairman.

HUGHES: [00:22:20] Thank you, Senator McCollister. Are there questions? Seeing none, you'll stay for closing?

McCOLLISTER: [00:22:28] Yes. Thank you.

HUGHES: [00:22:29] Very good. OK. We'll open it up to proponents to LB285. Welcome.

TIM POLZ: [00:22:47] Thank you. Ladies and gentlemen of the committee, my name is Tim Polz, that's T-i-m P-o-l-z, and I'm the senior vice president of development for SunVest Solar Incorporated. Over the past decade, I've had the opportunity and pleasure to work here in the great state of Nebraska to develop many wind and solar energy projects that are now operating and delivering renewable energy to Nebraska ratepayers. I'm here today to speak in support of LB285 because I believe that there's tremendous value to the state of Nebraska and Nebraska ratepayers in understanding the true value of distributed solar resources. Properly sited, distributed energy and battery storage projects have proven benefits well beyond the value of the energy that they deliver to the grid. These benefits include capacity value, transmission, and distribution infrastructure cost deferment, increase system reliability, and load shifting capabilities. Distributed solar projects coupled with battery storage technology are well suited to deliver these benefits. Unlike the large utility scale wind and solar projects that you see throughout the state of Nebraska, these projects are much smaller, solar is highly scalable so you can site them closer to the load in more heavily populated areas where sometimes the system may benefit from their presence. Although their

smaller size does increase the cost of the energy that they can supply, this incremental cost is often exceeded by the additional benefits that they provide. The key is to first determine the locations where these benefits are maximized. A comprehensive study of the utilities grids with proper scope conducted by a reputable third party, like the-- like proposed in LB285, would serve to identify locations where DG and storage were-- distributed generation and storage resources could deliver the best value. While others that may provide testimony today can talk in more detail on the technical capabilities and benefits of distributed solar and storage technology, I'd like to take a few minutes to describe some of the capabilities from a high level. First, with regard to capacity benefits, DG, solar, and storage projects can serve as capacity resources that would otherwise need to be purchased or provided by generation resources within a utility's own generation portfolio. Single axis tracking solar technology coincides with peak demand a fair amount of the time. In fact, in most transmission systems such as Midwest ISO and PJM single axis tracking solar is accredited a capacity value that's typically greater than 70 percent of its nameplate capacity. With regard to transmission and distribution costs deferment, strategically placed distributed solar, or really any distributed energy resources, as well as battery storage technology can offset the need for costly system upgrades and replacement of equipment. By placing these systems in the right spot where you might otherwise have to build out another conductor or replace transformer, you can put off or even eliminate the need for those-- for those investments in the grid itself. With regard to load shifting and system reliability, distributed solar, coupled with battery storage, has the added benefit of being able to smooth a utilities load profile. You can take energy that would otherwise be put on the grid during light load times and stored for peak demand times. In addition to the technical benefits of distributed solar and battery storage technology, there's tremendous untapped economic development potential with these projects as well. Like utility scale wind and solar projects, distributed solar and storage projects would contribute significant dollars to host communities through the tax base, through personal property tax, and nameplate capacity tax. Unlike the utility scale projects where these benefits are concentrated in certain areas, DG projects are more widely

distributed and therefore the benefits are more widely distributed. These are all reasons why we need LB285. The study LB285 would generate would be a precise scope of which a broad coalition of stakeholders, and I see my-- my time's up, may I finish my-- my statement?

HUGHES: [00:27:51] Sure, yep.

TIM POLZ: [00:27:51] --would develop and would identify opportunities for private investment and public/private partnerships with Nebraska utilities and communities that would result in many benefits that I've just identified. LB285 would provide a road map for private companies, such as ours, looking to invest and pay property taxes in the state of Nebraska, and utilities that are looking to avoid ratepayer expense and support economic development to partner to achieve these objectives and realize these benefits for Nebraskans. Without LB285, the process remains random and one off and opportunities are lost. Thank you. And I'm now happy to answer any questions you might have.

HUGHES: [00:28:32] Thank you, Mr. Polz. Are there questions? Senator Geist.

GEIST: [00:28:36] Yes, Chairman; and thank you for your testimony. I wonder if you would inform me, I don't know if the rest of the committee already knows, but what are the advancements in storage that-- that would prompt this study?

TIM POLZ: [00:28:53] I'm not so sure that advancements in storage would prompt this study. Certainly the cost of battery storage technology has come down dramatically over the past few years. But you've seen other utilities in other transmission systems throughout the country utilize battery storage as a way to stabilize the grid. You can instantaneously dispatch energy from a battery storage project unlike typical generation where there is some lag time, you know, to build up

and start transmitting energy onto the grid. With battery technology, you can essentially instantaneously put power onto the grid when it's most needed.

GEIST: [00:29:36] And is that storage always ready, always full? I'm just thinking of a battery and you have to keep recharging it.

TIM POLZ: [00:29:47] Certainly.

GEIST: [00:29:48] So.

TIM POLZ: [00:29:48] Yeah. So-- so, you know, others that may testify later can probably talk in more detail as to the technical capabilities. But to answer your question, certainly batteries have to be charged and they can be sized and designed to be able to dispatch power for a certain duration of time, for a certain amount of energy. After they've exhausted that, they do need to be recharged, and that's typically done in this sort of configuration by pulling power that would otherwise be put on the grid from solar project and putting into a battery. But you don't have to charge it with a solar project either, you can charge it with power from the grid as well.

GEIST: [00:30:28] Thank you.

HUGHES: [00:30:29] Additional questions? I guess I do have one; in your testimony you said something about the solar, I think, the single axis solar panels should produce as much as 70 percent of nameplate, did I get that right?

TIM POLZ: [00:30:47] No, so I was talking about capacity value. And one of the requirements of any utility is to demonstrate that at any given time it has the ability to meet peak demand. And to do

that, they have to demonstrate that they either have generation resources on hand to meet that demand or that they've purchased capacity from the market. So my statement was that a single access tracking solar is a tribute to a capacity value that's in other RTOs throughout the country that's equal to about 70 percent of their nameplate capacity. So for instance, if you have 100 megawatt solar project, you could claim 70 megawatts as capacity credit for that facility.

HUGHES: [00:31:35] OK. Thank you. Just a little curious about the battery technology, you know, just a-- a average single family home, how big of a battery would it be? I mean, you know, size of a doghouse or size of six-car garage?

TIM POLZ: [00:31:55] Yeah.

HUGHES: [00:31:56] What kind of-- what would the-- what's the cost of something like that today?

TIM POLZ: [00:32:02] Again, I'll let one of my colleagues speak to the cost of the solar-- or of the storage technology as they're more well suited to-- to do so. However, with regard to the size, both solar and storage technology is-- is highly scalable. So you can deploy a few solar panels or a very small battery system that could be, you know, 5 kilowatts or less, something that will be situated at someone's home. And a system like that, you know, the battery component of that would be very small, would be about the size of a fuse box in most cases. You can scale that up substantially to a utility-scale battery system. And, you know, a container that would be equivalent to about a megawatt worth of battery storage technology would be about the size of a 40-foot Conex container.

HUGHES: [00:32:56] Okay. Thank you. Any additional questions? Seeing none, thank you for your testimony, Mr. Polz.

TIM POLZ: [00:33:03] Thank you very much.

HUGHES: [00:33:03] Next proponent. Welcome.

WAYNE WILLIAMS: [00:33:16] Thank you, Mr. Chairman, committee members. My name is Wayne Williams. It's W-a-y-n-e, Williams, W-i-l-l-i-a-m-s. And I-- actually I'm president of Interconnection Systems and we're a solar EPC contractor located in Central City, Nebraska. And I've been in the power industry for about 30 years and done-- my training comes mostly in large enterprise projects, a thousand megawatt projects, things like that that I've got in my portfolio from anywhere from gas, coal, electric, solar, wind. And I get probably close to 3,000 megawatts total, [INAUDIBLE] here. We worked as the manager for NPPD as a-- they wanted a project manager there. I left there in 2005. Started my own company. Today, I want to come in and talk about the support for LB285 and then the reason behind it out there. One of the things we might be asking ourselves the question is why-- why would we think that we need more generation in Nebraska and we've got-- we have plenty generation. We have about as much generation here as we've got water. And we-- we don't really need generation at the current time out here, but I want to talk to two reasons on why that I do believe that the LB285 would actually help us understand where we're headed in the future. There's the technologies that are moving toward us very quickly right now that are going to dictate that we have to do something very quickly here. And it has to do with the EVs. Now if you do any kind of research at all and you start getting up and you're looking at some of these EV markets that are there and you look at the investment that's gone into it, and that's kind of the way that I look at it and see that just to see just where we're-- we're headed with this, you can see that you've got like GM that is investing \$14 billion in the EV market out there. You've got Tesla, that we know we've seen the billions that they've invested in there. Volkswagen is going to invest 40 billion by 2030 in EV market out there. Chrysler, another 15 billion out there. Toyota,

another 15 billion. And when you look at this, these guys are investing an awful lot of money out there in a market they believe is going to be hitting very largely. Now, if that's the case, then what does that mean for us and for the people that are out here in, we'll say in Nebraska. Now, if you go out to California, I've been out there recently, and you see that everybody's got EVs out there. Florida same thing, they've got a EVs out there. It's coming and it will be coming here to Nebraska. The question is, are we going to be ready for it on the generation side. Not today again, we don't have a generation problem, and today, we honestly don't even have the distribution or transmission problem. I mean, we're satisfying the needs; we're building the R-Line in the southwest out here. We're taking care of it. And hats off to the districts and public power here as to the way that they've taken care of us during this time. But what's getting ready to happen to us now is this-- the technology that is moving toward us. You saw what the Internet did. You saw the-- the infrastructure that had to be created after the Internet was there; cell towers, same thing. The cell phones that came out, you had a huge infrastructure that had to be built after that. Well right now, you've got-- everybody, pretty much everybody, came here in a fossil fuel car and you got here. And the question is that how did that fossil fuel get to where you picked it up at? There's an infrastructure that's built for it. And the infrastructure that is currently out there right now is it's roads and you've got pipelines, and you've got trains, and that's how we move fossil fuel around. Well, you're getting ready to take a very large energy sector and you're getting ready to move it off of our roads and trains and pipelines and you're getting ready to squeeze it off over on these little lines that we've got that we call our distribution or transmission. Now, it's not here yet, but there's a good chance that it's going to be a very quickly. They're saying that by 2025, one in three vehicles coming off line out there is going to be a EV out there. Now, I bought an EV and I've got one that I plug in out there and it takes about 40 amps for about 240 volts for eight hours in order for me to charge that EV. Now if you go to any one of these district managers out here or system operators out there and you ask them what would it look like if we came to you and that you say you've got 25,000 meters out there in your district out there, if we came out we're going to add 40 amps to 10

percent of your meters. Well, the math goes very quickly and you can start adding it up and it's-- that's a significant load. Well that's just 10 percent. What about 20? What about 30? I guess what I'm saying is that eventually you're going to be in a situation where those loads are going to come very quickly, And when they come, we're not going to have the distribution. Generation is not a problem. But the way to solve this problem is to have it so that you've got true distributed generation with the batteries that we were talking about earlier and have it so that you have dispatched generation when you need it. So your solar and your wind can actually charge the batteries and your batteries can distribute back into point of use. And point of use is very key for it. One quick thing before my light goes out here. The tax advantages on this; when you've got your tax-- the ITC that's out there, you've got a 30 percent tax credit. You have to understand that that's a-- that some of these guys that we're putting these systems for, right in here in Nebraska, they're getting checks back for like a half a million dollars. Now this money is going directly into the local economies. And this is not a very big system. This is a one megawatt system out there and they're taking-- and they're put a million or a half million dollars of tax money that was headed out and was headed off to Washington, D.C. So my time's up there.

HUGHES: [00:38:42] OK. Thank you, Mr. Williams. Are there questions? Seeing none, thank you for your testimony. Next proponent. Welcome.

BRETT CULLEN: [00:39:00] Thanks for having me, Mr. Chairman. Members of the committee, my name is Brett Cullen. That's spelled B-r-e-t-t, last name Cullen, C-u-l-l-e-n. I'm a director of business development with Engie Storage. As the nation's number one distributed energy storage provider, we have developed and integrated, installed, and operate over 160 energy storage projects. We work with utilities to provide grid services, for distribution level infrastructure, solar and wind developers to provide dispatchable clean power, and with commercial industrial customers, excuse me, to reduce energy spend. We have been in business since 2009, and are headquartered in Santa

Clara, California. Engie Storage is a subsidiary of Engie, which is the world's largest independent power producer, as well as one of the world's largest natural gas infrastructure and customer energy solutions companies. We are listed on the Paris and Brussels Stock Exchanges. So I'm here to talk today about the benefits of energy storage. So couple of those questions you can-- you can try and direct those to me. So thank you for inviting me to speak about these benefits as contemplated in LB285. We applaud Nebraska's effort to be a leader in the transition to twenty-first century grid by assessing its distribution infrastructure for opportunities to harden the grid by coupling with additional renewable generation and energy storage projects. LB285 is an important piece of legislation that can provide Nebraskan ratepayers clarity with regard to identifying areas in need of infrastructure upgrades that may be best met with economically viable distributed solar and energy storage projects. Furthermore, such visits-- excuse me, such visibility is critically important to companies such as Engie to provide businesses incentives to invest in the state by providing information that would otherwise be inaccessible to the private sector or to Nebraska ratepayers. Typically, energy companies begin developing new projects with very limited information about whether or not the location of the project is beneficial to the utility or to ratepayers. This study, if commissioned by the Nebraska Power Review Board, may incentivize development in locations best suited for new infrastructure development where it is necessary. So I'd like to spend a few minutes discussing the actual benefits of energy storage as these benefits are quite distinct from traditional energy generation. So the first one that I'll talk about is peak shaving and shifting capabilities. And so there's a few facets to that. One is that grid planners, including the public power districts, plan infrastructure upgrades around the single highest demand event of the year and then include some reserve for margin. Many billions of dollars across the U.S. are spent to service very few peak demand hours. Energy storage can help shave or shift some of this peak demand, in effect, serving as a load resource. Engie Storage has dozens or even over a hundred installations across the U.S. utilizing this particular application as a grid service as we speak. It can also provide us as a supply side resources by managing intermittent generation, by curve shaping in real time providing

physically managed generation profile equivalent to dispatchable thermal generation. Another benefit is related to frequency and voltage regulation. Energy storage systems can provide balancing services to the grid when there is excess generation or insufficient load on a sub-second level. And studies, such as those produced by the National Renewable Energy Laboratory or CAISO, the Independent System Operator in California, have shown that these system provides faster, more consistent responses to grid operator signals than traditional generation classes. Destabilization services are especially critical for high-power, quality-demanding customers, most notably data centers. Similarly, energy storage is an inverter based system in which, in tandem with software, can respond to real time signals that generate or absorb active or reactive power. This helps manage the thermal profile of a distribution circuit that can help extend its useful life. And that brings me to the last one which is investment deferral. We're working with a number of electric utilities across the U.S. to defer significant infrastructure upgrades, most notably transformers, but-- or conduit upgrades by managing peak power flows at distribution substations. We've seen instances where these utilities are able to defer for five years or indefinitely defer major millions of dollars in investments. One application had a deferral of \$2.2 million by managing one distribution substation. Thank you very much. And I'm happy to answer any questions you may have.

HUGHES: [00:44:01] Thank you, Mr. Cullen. Are there questions? Back to the questions I asked Mr. Polz, what-- what does a battery system that would run a single family dwelling; how big and how much would that cost?

BRETT CULLEN: [00:44:17] So, so to be clear, Engie Storage doesn't do residential applications. However, energy storage systems are quite modular and scalable. So Tesla is one of the primary residential power pack providers. They--

HUGHES: [00:44:32] Give me a best guess.

BRETT CULLEN: [00:44:33] They-- they would probably charge somewhere in the range of \$8,000 to \$10,000 for a system that would be appropriate for an average home.

HUGHES: [00:44:41] How big would the battery box be?

BRETT CULLEN: [00:44:45] A fuse box size. So you can-- you would typically mounted on a wall, you know, typically on the outside of a house.

HUGHES: [00:44:53] OK. Any additional questions? Senator Geist.

GEIST: [00:44:57] Yes, thank you. And how long would that--

BRETT CULLEN: [00:44:59] Thank you.

GEIST: [00:45:01] -- last? How-- how many hours storage would be in something of that size?

BRETT CULLEN: [00:45:06] And so, um, so that I'm less certain about. I think, yeah, I'm just speculating, but it would probably be like eight to ten hours, but I'm not-- I'm not sure about that.

GEIST: [00:45:20] OK.

HUGHES: [00:45:23] OK. Any additional questions? Seeing none, thank you, Mr. Cullen.

BRETT CULLEN: [00:45:27] Thank you.

HUGHES: [00:45:29] Next proponent. Welcome.

DAVID LEVY: [00:45:37] Thank you. Chairman Hughes, members of the committee. David Levy, D-a-v-i-d L-e-v-y, Baird Holm Law Firm here on behalf of SunVest Solar in support of LB285. The page is passing around to you an article on distributed generation that really comes from the point of view of a utility and talks about the pros and cons and challenges and opportunities that come with distributed generation. And this is sort of distributed generation day in the Natural Resources Committee. LB285, of course, as you've heard is about distributed generation, as well as transmission economic development and property tax relief. LB509 also touches on this topic. And it is certainly kind of the wave of the future. And so it is a long article, but I hope you'll have a chance to read it. I think you-- you may hear from opponents of this bill that say that we don't need to do this because the utilities already do this and this is already covered. And so I want to try and address that ahead of time and say that what's different here is that this study would be comprehensive. It would involve all of the utilities in the state; it would involve the Southwest Power Pool. It would involve companies such as SunVest and Engie, those from whom you've heard. It would involve others active in this industry who would meet to develop the scope of this study. This study would be conducted-- it would be administered through the Power Review Board, but not conducted probably by the Power Review Board. They would hire an expert consultant to do that. The results of this study then also would be available publicly to those who want to come and invest in Nebraska, who would have this information and who could make investment decisions based on this information. This study, if this bill were to pass, and this study were completed-- to be completed, it doesn't require the utilities to buy any energy or to enter into any contracts or to do anything of the sort. But rather, it provides an opportunity for companies and utilities and communities to come together and work towards solutions that, as you've heard, can save ratepayer money on transmission and sub-transmission upgrades and investments, create distributed generation, resiliency, and opportunity, bring private investment, which is property tax relief, and

help economic development for communities that tend to be rural communities who might be at the end of the line and kind of are out of capacity they go chase big economic development projects and go to their utility and say we'd like you to upgrade the line and the utility says it's a fairly small load or we have other constraints, we have other places to spend money or we're trying to keep rates low. Whatever the case might be, and that community is kind of stuck. So this is a way to identify opportunities for public-private partnerships to serve those needs and to offset the need for public investment. We're certainly here talking today about solar energy and storage, but really these investments don't have to be renewable energy. Our utilities today take diesel generators on trailers and do exactly the same thing at peak times during the summer or winter; park them where they can connect to a substation, or something like that, to offset a situation and sort of a temporary manner. So solar and storage certainly make the most sense in this regard and that is what we're largely talking about today. But-- but I want it to be clear that this bill isn't necessarily or only about renewable energy. It really is about this opportunity to save ratepayer dollars, to augment the transmission and sub-transmission grid in different ways and find and identify opportunities for private investment in the state in this regard. Really, that's all I have. Chairman Hughes, you were kind enough to give us five minutes, so I'll-- I'll give some of that back, but I'm happy to answer any questions that the committee may have.

HUGHES: [00:49:37] Thank you, Mr. Levy. Are there questions? Seeing none, thank you very much.

DAVID LEVY: [00:49:42] Thank you.

HUGHES: [00:49:44] Next proponent. Welcome.

SEAN FLOWERDAY: [00:49:52] Thank you. Thank you, Chairman Hughes, and the rest the

members of the Natural Resources Committee. My name is Sean Flowerday. Sean is spelled the right way, S-e-a-n; Flowerday is spelled F-l-o-w-e-r-d-a-y. I come to you today both as a Lancaster County Commissioner, I represent District 1, the district that we're in right now; and as a proponent for renewable energy in general, and also just-- just energy-- smart energy infrastructure and getting ahead of smart energy infrastructure for our communities. When I ran for county board here in this last election cycle, I knocked on over 14,000 doors and time and again when I talked with my constituents they're concerned about our energy future. They're concerned about making sure that we are well equipped to have-- to have solar energy, to have renewable energy, to have wind power, and to have the economic benefits that come from that. Solar right now employs more than twice the number of people that coal employs here-- here in our country. This is the direction the energy is moving. And Nebraska is blessed to have, here in southeast Nebraska, we have as many days of sunshine as Orlando, Florida, does in a year. We are equipped to have real solar growth here; we're equipped to have real opportunities for EVs, for electric vehicles. This is what our constituents want, certainly is what my constituents want, and I'm a big believer in this. This is our-- our energy-- our energy infrastructure right now is meeting our needs, but we need to be thinking about the needs that are going to be coming in the next 10 years, the next 15 years, the next 20 years. So with that, I'll thank you for letting me speak and tried to keep my testimony short and sweet.

HUGHES: [00:51:47] Thank you, Mr. Flowerday. Are there questions? Senator Bostelman.

BOSTELMAN: [00:51:51] Thank you, Chairman Hughes, and thank you, Commissioner Flowerday. Are you speaking for the Lancaster County Commissioners?

SEAN FLOWERDAY: [00:51:56] No, I'm not. I'm just-- I'm just here representing my constituents and as an advocate for renewable energy.

BOSTELMAN: [00:52:03] And are you also aware LES has got a solar configuration they put out? They had a lot of support when they-- when they-- question or survey customers, and they wanted it put in, and when it was actually built, nobody wanted to fund it, no one wanted to help. So, I guess with that, a little bit, I'm kind of curious as to how your response is different than what I think LES has seen over the last few years when they actually did put in a large solar array. People did say they were going to help to fund it, they'd buy into it, but actually they did not. So I'm kind of curious to your response

SEAN FLOWERDAY: [00:52:43] I can't speak to the individual results of the LES survey. I don't have it from me. I do remember when they initially built the project there was quite a bit of public support for it. And studies have shown that over 90 percent of Americans support solar energy. It-- solar it's-- it's well understood that solar energy is supported by the American public, it's supported by Nebraskans. It's where we're going.

BOSTELMAN: [00:53:06] Could you provide me that study?

SEAN FLOWERDAY: [00:53:07] Happy to.

BOSTELMAN: [00:53:07] Thank you.

HUGHES: [00:53:10] Additional questions? Seeing none, thank you, Mr. Flowerday.

SEAN FLOWERDAY: [00:53:15] Thank you very much.

HUGHES: [00:53:22] Welcome.

DAVID HOLTZCLAW: [00:53:24] Thank you. My name is David Holtzclaw, D-a-v-i-d, last name is Holtzclaw, H-o-l-t-z-c-l-a-w. I'm actually-- I hadn't planned on speaking for this bill, I'm actually here from the next bill. But since no one is answering your question, Senator Hughes, I thought I might. I'm a mechanical-- licensed mechanical engineer. I do a lot of work in the residential and commercial sectors. About half our work is energy efficiency, building forensics, building science, and other half has been renewable. That's been a growing sector. We do a lot of, like, net zero type homes and buildings. We've done work in Caribbean's, little ski lodges in Colorado, those type of places that want to be off-- be able to go off grid in case of a hurricane or disaster or whatever the case may be. So your questions regarding residential battery. A residential battery system is usually in the 7 to 10 kilowatt hour size. As was pre-mentioned, they're-- they're about the size of a panel in terms of height. They're usually 34 to 36 inches wide and 6 to 8 inches deep. They need to be installed on a load bearing wall because they're very heavy, batteries are very heavy. I don't know if that's quite-- point has been made and that would provide a typical residence, your standard 2,500 square foot house with 8 to 12 hours of power under normal operations. If they go into like emergency mode and don't open a refrigerator, that could last them two to three days. They can be up scaled. So when I do like a net zero-type house that's going to be totally off the grid. We would usually design a 12 to 15 kilowatt solar array and the battery size would be up to about 20 kilowatt hours. And that could last them a week or more of just totally off grid without any sun or generator or any other backup.

HUGHES: [00:55:21] OK.

DAVID HOLTZCLAW: [00:55:21] At the commercial size, as the first person mentioned, and you're talking about a megawatt power battery, that is about the size of, I think, of a shipping container or a semi. That's about the same size; again, it's very heavy. You put them in a field, you have to space them because of heat load and fire and electrical code issues, so it does take up a lot of

ground space. One thing that has been mentioned is the issue of resiliency. Three-quarters of our state right now is either flooded or under blizzard, that's really what this study is about. So where do we put these battery-- these battery centers so that when poop happens, the state and individual properties can keep-- can keep the lights on.

HUGHES: [00:56:06] OK. Are there questions for Mr. Holtzclaw? Holtzclaw?

DAVID HOLTZCLAW: [00:56:09] Holtzclaw. Like coleslaw.

HUGHES: [00:56:11] OK. Very good. Thank you. Senator Geist.

GEIST: [00:56:14] Thank you. Just a short question. What-- when large batteries the size of the back of a semi are set in place, are-- silly question, but are they covered? Is that in indoor storage or outdoors?

DAVID HOLTZCLAW: [00:56:29] Outdoors. They're not covered. They're-- they're fully contained. I think of a-- a-- the biggest-- I think of a sealed battery you'd have for a motor boat or a golf cart, that-- so they can be, again, to withstand weather, anything and everything's enclosed by code.

GEIST: [00:56:45] OK. So like floods, water can come up around them.

DAVID HOLTZCLAW: [00:56:49] They're-- they're-- they're very well regulated, yes.

GEIST: [00:56:51] OK. Thank you.

HUGHES: [00:56:52] Senator Gragert.

GRAGERT: [00:56:54] Thank you, Senator Hughes-- Chairman Hughes. What's the lifespan on one of these batteries? How often are you going to be changing it?

DAVID HOLTZCLAW: [00:57:01] That is changing so rapidly right now, I could give you an answer today and would probably change tomorrow. So typically, coming off the manufacturer-- so for-- so if they're residential, they're rated for 10 years from the manufacturer. That's-- that's your Tesla's, your-- a couple of German manufacturers, they're off the shelf rated for 10 years from manufacturer warranty. I can't really tell you how long they'll last, because I haven't been in a market that long. So we really just really don't know. On the commercial side, assuming they're maintained and taken care of, you're looking at more of a 15 to 20 year period, again depends on where you're putting it.

GRAGERT: [00:57:37] And that cost was \$8,000 again, it would be right on the \$8,000--

DAVID HOLTZCLAW: [00:57:42] For a residential system, no, I'm sorry, I forgot to mention that. That's more like 3 grand and that's dropping. By tomorrow it will be a little cheaper.

GRAGERT: [00:57:48] Thank you.

DAVID HOLTZCLAW: [00:57:52] It's insane.

HUGHES: [00:57:52] Senator Geist.

GEIST: [00:57:52] All right. One more question, what do you do with these once they're expired?

DAVID HOLTZCLAW: [00:57:58] They would be disposed. So it depends on what type of battery it is. Again, most of these is-- is a lithium ion based battery system. So there's-- there's little to no mercury and things like that. There are-- you'd basically be following the same protocol you would for your AA, C-type batteries that there are, you know, you want to dispose of them properly. Landfills, probably not the ideal choice, but we're putting much worse stuff in landfills as it is, so I don't know if it would amount to much.

GEIST: [00:58:26] So what about the large-- the large one?

DAVID HOLTZCLAW: [00:58:28] That-- that's-- that's, again, a little different. And top of the head, I'm not sure what the regulations are for disposing of those. Again, they haven't been around that long for us to figure out.

GEIST: [00:58:42] Ok. Thank you.

HUGHES: [00:58:44] OK. Very good. Any additional questions? Seeing none, thank you for the information. Next proponent. Welcome.

CHARLES RADATZ: [00:58:58] This is my visual aid. More about that later. My name is Charlie Radatz, last name is spelled R-a-d-a-t-z, first name, formally Charles, very seldom use that. I live a 2504 Plain Street, Falls City, Nebraska. My email address is like my last name with the C in front of it at Sentco.net; and my phone number is area 402-801-0738. That is a cell phone number, prefer not to use my residential number because my wife is disabled and handicapped. Senator McCollister and members of the Natural Resources Committee, I'm here today as a member of the board of directors of Falls City Economic Development and Growth Enterprise to speak in support

of LB285. The \$200,000 study of transmission and distribution that it authorizes may well be one of the best investments of taxpayers' money you will ever be asked to approve. While one of the intended benefits of the study is to encourage the development of renewable energy production and distribution, the benefits to our community and many others may be far greater. When Nebraska became a public power state, the intent was to return to ratepayers the profits a private company might otherwise earn and to encourage extension of electrical service to the rural reaches of a state that a private company would not find profitable to serve. A noble set of objectives, but a lot has changed since Nebraska became a public power state. The focus at the outset was on power production because of the capital requirements to build a power plant to serve many thousands of people. Even today, when most people think about electrical power, they think about the power plants or the switch they flip to get light, heat, or some other convenience. But the real power delivered by electricity is in what lies in between, the transmission line that transport power to where it's needed. Power is available for purchase from many sources, many different-- at many different prices, of getting it where it's needed for economic development is dependent on having a robust transmission system capable of getting it where and when it is needed. Public utilities have a responsibility to provide all communities in their service territory an equal opportunity to grow and prosper and should never be involved in picking winners and losers. While Falls City has sufficient electrical power production capacity to serve its present ratepayers, it chooses instead to purchase lower priced power from other utilities that is delivered to us by Omaha Public Power District. There are four serious flaws with the system. First, the transmission line is not a loop, like the extension cord I brought up here, it's endless, and allowing for a feed from more than one direction, one end or the other. But more like a one-way dead-end street or dead-end road. It stops. We are in the southeast corner of the state about as far removed from generation as you can get and still be in Nebraska. The transmission line capacity that serves us is nearly tapped by the Falls City utility and OPPD retail customers between a substation at Humboldt, Nebraska and our community. OPPD is unwilling to fully finance an upgrade of the substation and transmission line provide capacity for

growth. And when recently asked to provide engineering and a construction timeline to meet the needs of a prospective steel production plant that easily would have cash flowed the upgrade, their projected completion date was very easily eclipsed by a Missouri utility. And that's where the industry located. Falls City is ideally located geographically. The routes of two class-one railroads, Burlington Northern and Union Pacific. We're 100 miles each from Omaha and Kansas City and 90 miles each from Lincoln and Topeka. And we reliably are 25 minutes from the Interstate Transportation Highway System. We are within a one- to two-day delivery time for row crop agricultural inputs and outputs, and delivery of industrial inputs required by large producers in the surrounding major cities. The future of our community may well depend on what can be learned from the study of electrical transmission. Thank you.

HUGHES: [01:04:48] Thank you, Mr. Radatz. Are there questions? I guess I do have one. So, being in Falls City, can't-- I mean you're-- you're currently sourcing your electricity from someone other than OPPD. Where is that? Where is the contract?

CHARLES RADATZ: [01:05:07] The purchases are made from two sources. OPPD is one of the larger providers; and we own a share of the plant at Nebraska City, small share. And we also purchase power from the Western Area Power Authority.

HUGHES: [01:05:25] So where is that?

CHARLES RADATZ: [01:05:27] It's way down the transmission line from where I sit. I think it's in Wyoming.

HUGHES: [01:05:33] OK. So if indeed the opportunities that you foresee for Falls City are being stunted because of lack of generation, can you not put in your own--

CHARLES RADATZ: [01:05:51] It's not for lack of generation, it's a lack-- for a lack of transmission capacity to get it from the sources we can purchase it from to where we are is the problem. That line that we have there is insufficient to carry more than a small amount of extra capacity compared to what is presently being used.

HUGHES: [01:06:17] But couldn't-- couldn't Falls City build their own generating?

CHARLES RADATZ: [01:06:21] Falls City already has built its own generating. In fact, Falls City has built considerable-- as recently and notice the \$11 million that I know of a nine-megawatt generator. That generator plus the other generators that are part of the power plant facility are able to supply the present community's load during peak times. And we do that when we lose transmission line from OPPD due to weather emergencies. But we don't have enough extra capacity, and just having made such a large investment, our ratepayers are not capable of continuing to put this kind of investment into the system. It's got to have a return.

HUGHES: [01:07:16] So who is your OPPD board member who represents Falls City on OPPD?

CHARLES RADATZ: [01:07:23] To me that's part of the problem. Part of the problem is--

HUGHES: [01:07:27] OK, fair enough.

CHARLES RADATZ: [01:07:27] Omaha Public Power District board has membership that basically is centered in Omaha. We have one Sarpy County representative on that board. So 13 county district, there is no represented-- representation from Richardson County, no representation from Pawnee County, no representation from Nemaha County, and there's no representation from

Johnson County, and there's no representation either from Otoe County.

HUGHES: [01:08:05] Ok. Thank you. Senator Gragert.

GRAGERT: [01:08:06] Thank you, Senator Hughes. I have a quick just question then, just clear this up for me. So, you're asking for transmission lines to be upgraded-- infrastructure to be upgraded so you can go buy energy from Wyoming and maybe cut out in NPPD altogether or buy-- where you buy your energy?

CHARLES RADATZ: [01:08:27] No, I we don't intend to cut out Omaha Public Power District. We own part of their system. Why would we do that?

GRAGERT: [01:08:33] Yeah. Why-- why are you buying from Wyoming?

CHARLES RADATZ: [01:08:35] We get a better rate from them because we do-- we have that ownership interest.

GRAGERT: [01:08:38] Why would you be buying from Wyoming?

CHARLES RADATZ: [01:08:40] Because it's cheaper-- hydroelectric power is cheaper than that produced by any other form of generation, except perhaps nuclear.

GRAGERT: [01:08:50] Hydro.

CHARLES RADATZ: [01:08:51] That's correct.

GRAGERT: [01:08:51] OK. Thank you.

HUGHES: [01:08:54] Any additional questions? Seeing none, thank you, Mr. Radatz.

CHARLES RADATZ: [01:08:58] Thank you.

HUGHES: [01:09:00] Next proponent? Welcome.

MICHAEL J. O'HARA: [01:09:10] Chairman Hughes, members of the Natural Resources Committee. Hello, I'm Michael J. O'Hara. Michael M-i-c-h-a-e-l, middle initial J, last name, O-apostrophe, capital H-a-r-a. I'm a registered lobbyist representing Sierra Club, Nebraska Chapter. I'm a both lawyer and an economist, as well as a retired business professor previously at the University of Nebraska at Omaha. Additionally, I am a former member of the Nebraska Power Review Board, and a former member of the Omaha Public Power District's Board of Directors. Senator McCollister, thank you for introducing LB285. The Sierra Club supports efforts to facilitate Nebraska's transition from carbon-based energy generation alternative fuels. There are genuine uncertainties with respect to that transition and its impact on the electric infrastructure both transmission and distribution. For example, the size, type, timing of load associated with electric vehicles will require a thoughtful analysis both by the utilities, by the Power Review Board, and by this Legislature; for example, Senator Vargas' LB678 on the VW settlement. Nebraska has a strong preference for local control. That preference is respected and encouraged by LB285. That freedom to act locally will add to the complexity of the transition issues with which further justifies the LB285 study. I will suggest an amendment. I suggest you not use the General Fund as called for on page 1, line 3. The PRB is a self-funded agency, so I suggest you instead order the PRB, typo, to do the study based on the PRB's assessment, charge the members the Nebraska Public Power industry. While this committee will coordinate a working group, the PRB's conduct study that's appropriate,

that the PRB assessment cover these costs. The E- cause is justified. The history teaches that technological change sweeps through the market faster and wider than originally was forecasted. And by necessity, the electric industry must engage in very long planning horizons. Lastly, I would like to volunteer as a representative for the-- of an environmental interest as called for on page 3, line 5 to serve on the working group this committee will coordinate. Having heard testimony before, I thought of an additional item. Last year, you had an intensely contentious issue on getting information out of the utilities. This is the type of-- it would really facilitate the utilities maintaining proprietary information if it went through a study and then came out, as opposed to individual firms that wanted to do this type of development going after the individual utility and saying give me that information. If you have any questions, I'd be glad to answer them.

HUGHES: [01:12:17] Thank you, Mr. O'Hara. Senator--

ALBRECHT: [01:12:18] Albrecht.

HUGHES: [01:12:21] Yes.

ALBRECHT: [01:12:23] Thank you.

HUGHES: [01:12:25] Albrecht. Sorry, sorry.

ALBRECHT: [01:12:25] Thank you, Chairman Hughes. PBR, so the Power Review Board is a self-funded agency. What type of a-- what will they get--

MICHAEL J. O'HARA: [01:12:31] Yes, they assess the utilities.

ALBRECHT: [01:12:33] I know, but where do they get-- if they're self-funded, how-- where do they get their money from?

MICHAEL J. O'HARA: [01:12:38] The-- they have an assessment that's applied based on revenue to every utility in the state.

ALBRECHT: [01:12:44] So every utility in the state has to pay into this Power Review Board. Do you know how much money is in their budget?

MICHAEL J. O'HARA: [01:12:52] The annual budget-- some-- Mr. Reida could answer better. When I was there, it was around \$300,000. They used to have a cash fund, but you've had so many budget shortfalls, all cash funds had been emptied. Otherwise, you would've been able to fund this right out of the cash fund from retained earnings.

ALBRECHT: [01:13:12] And I guess this question will probably be more for Senator McCollister, but so do you suppose just those who have been proponents today are the ones that have asked for this review?

MICHAEL J. O'HARA: [01:13:28] No, it's-- it's a need. And I assume the opponents will be-- we, because we have such a strong preference for local control, don't bug me from the state. I want to do my own business. But as you heard from Falls City, you have so many interrelationships that you sometimes can't do something yourself. Which is why we have a Power Review Board. You might remember from last year, the Board of Dentistry in North Carolina was convicted for anti-trust violations. The Nebraska electric utilities engaged in similar anti-trust violations in the early 60s which is why we created the Power Review Board.

ALBRECHT: [01:14:13] But yet I also remember there was not really any reviewing of any wind.
But now you want reviewing of solar.

MICHAEL J. O'HARA: [01:14:22] There is no-- the Legislature has exempted all privately developed to renewable.

ALBRECHT: [01:14:28] But not solar.

MICHAEL J. O'HARA: [01:14:30] That's renewable.

ALBRECHT: [01:14:32] Then why do we need to do the study? Wouldn't you still have to go back to--

MICHAEL J. O'HARA: [01:14:34] The study, as to-- as was noted, we have generation now. We're going to change our generation structure. Barron's has already instructed its customers-- its subscribers that buy bonds, there'll be no coal plant in the United States by 2050. We are going to transition, and when we make that transition where and how you place distributed energy is going to be far more complex than placing 600 megawatts at a time. And Power Review Board, they review any new large facility, and the only thing they do that you withdraw from is if you're approved and then back out, because now we're assuming the supply contains something. But if you decide to close something like Omaha closing Fort Calhoun because of flood damage, that's not within the Power Review Board purview, because it's a local control question.

ALBRECHT: [01:15:34] Thank you.

HUGHES: [01:15:37] OK. Any additional questions? Seeing none, thank you, Mr. O'Hara.

MICHAEL J. O'HARA: [01:15:45] Thank you.

HUGHES: [01:15:47] Next proponent. Any additional proponents to LB285? OK, then we'll begin with opponents of LB285. Welcome.

SHELLEY SAHLING-ZART: [01:16:04] Good afternoon, Senator Hughes. Chairman Hughes, members of the Natural Resources Committee, for the record, my name is Shelley Sahling-Zart, that's S-h-e-l-l-e-y, last name is Sahling-Zart, S as in Sam, a-h-l-i-n-g, hyphen, Z-a-r-t. I am here today testifying in opposition to LB285 on behalf of the Nebraska Power Association. The NPA represents all of Nebraska's publicly owned electric utility systems including municipalities, public power districts, rural public power districts, rural public power and irrigation districts, and cooperatives. Wow, I'm going to try to get through my notes here, I've made a lot of notes. But basically our premise is LB285 is unnecessary. You've got public power utilities across the country that do this kind of planning all the time. As I said at an interim hearing in November, our industry is changing. That's not lost on us. We realize that we are evolving from where we started out with distributed generation in the very early days and we evolved to very large centralized power plants and now we are evolving somewhat back to more distributed generation. Not lost on us. We do that kind of planning and we look at these kinds of things all the time. Give you one example, 20 years ago, Lincoln Electric System was looking at our combustion turbine in southwest Lincoln. We came up with-- our engineers came up with a nice storage project that added the efficiency-- to the efficiency of that with no added fuel input. It significantly increased the efficiency. We got folks thinking about those kinds of things and thinking about the things you heard about here all the time. We do transmission studies. The Southwest Power Pool does transmission studies. Lincoln Electric System, Nebraska Public Power District, Omaha Public Power District, and the Municipal Energy Agency of Nebraska all joined SPP in 2009. We-- they have a very strong stakeholder process.

We're engaged in many of those studies. You can go out on their Web site and see many of their transmission studies. They do 10-year, 20-year studies. You can spend \$200,000 on this, but you're going to get a study that's probably not going to last very long. SPP does an annual study, and as soon as they're done they start doing the next annual, and they're doing a 10 year. And it's evolving all the time because new projects come online. New transmission lines get built. New generation projects come on online, so it's very dynamic and it's changing all the time. So you spend \$200,000 on a study, might give you a few months shelf life, you might get a couple of years out of it. It's really unknown. You'll have to do it again. But you also don't need to do it at all because you have utilities and you have a regional organization that are doing that. In terms of some of the new distributed technologies, OPPD, NPPD, LES all members of the Electric Power Research Institute who is always looking at those kinds of technologies and ways to shift some of your loads and alleviate some of those investments. We are here. We are a public power. We aren't here to make a profit. We're here to keep our rates as low as possible and our liability as high as possible. So we're always looking for those kinds of efficiencies. We work with developers all the time to look at different kinds of projects. We've got a 5-megawatt solar project just outside of town that was referenced. That was built by developer. We have a power purchase agreement to buy the output. There are lots of opportunities out there and we're happy to continue talking with developers. But this is an evolving kind of thing that we're going to continue to look at. You've heard a lot about distributed generation. This bill doesn't just talk about smaller projects, it also talks about larger scale ones. So if you talk about a larger scale project, might tell you where there are-- where there isn't any congestion or where there might be some transmission opportunities. It's not going to tell you where you've got developable land. It's not going to tell you where you got a willing landowner to work with. There's a lot of things that it's not going to tell you. And even when you get those projects, a lot of those projects are still going to have to go through the planning process with SPP. What else did I want to try and get in quick? I think in the long run, most of it is, you know, like I said, the industry is evolving. We need policies from the Legislature that allow us to stay agile,

that'll allow us to be flexible enough to make those decisions on those-- on that local basis. We are about local control. Because the decision and the solution that we have here in Lincoln, Nebraska, isn't going to necessarily be the solution for Kimball, Nebraska, or for Grand Island, Nebraska, or for any other community. So those decisions largely get made locally. You asked some questions about our survey. If I can, I'll-- I'll answer that real quick. We did do a survey, I don't remember how many years ago it was, did a survey of our customers about their willingness to pay a little bit more for renewable energy. This has been five, six years ago. And the survey indicated about 50 percent of our customers were willing to pay about \$3 more for renewable energy. We started a SunShares program where customers could do just that, pay an additional \$3 on their electric bill. We didn't have very many show up. Today we have roughly about 779 customers out of about a hundred-- a little over 131,000 that have done that. We also have a virtual net metering program. We've got a few people, about 290 folks, who have bought panels in that program. With that, I'd take any questions.

HUGHES: [01:21:46] OK. Thank you, Ms. Zart. Senator Albrecht.

ALBRECHT: [01:21:49] Thank you, Chairman Hughes. Thank you for being here and sharing with us your side of the story. But do you currently provide to the Power Review Board those reports that they're asking to have taken care of in this bill?

SHELLEY SAHLING-ZART: [01:22:08] Yeah.

ALBRECHT: [01:22:08] From Southwest Power Pool or from your--

SHELLEY SAHLING-ZART: [01:22:10] Yes on-- yes on--

ALBRECHT: [01:22:11] --organizations that you represent?

SHELLEY SAHLING-ZART: [01:22:12] Yes-- yes on some and no on some. First of all, the Power Review Board also has a representative on the SPP regional states committee. So they are interacting with SPP on a fairly regular basis. They would have access to those studies. There are some studies, long-range power supply plan studies that are required by statute. We are required as an industry to prepare those and present those to the Power Review Board. In addition, we do an annual load and capability report that we provide to the Power Review Board on an annual basis. Happy to get you copies of those. That's more of a shorter term what-- doesn't get that-- that's more to the generation than transmission. We also do integrated resource plans, all of us. We file those, and those take a look at a number of things. Matter of fact, some of the sensitivities we ran in our integrated resources plan included things like an increased saturation of electric vehicles and the lower costs of solar and the higher level of accreditation for solar, so we run those sensitivities in the studies that we do.

ALBRECHT: [01:23:13] OK. And I'm not familiar with the Power Review Board. Do they have a commission that they-- that answers to the Power Review Board or?

SHELLEY SAHLING-ZART: [01:23:22] No, the Power Review Board is a five-member board. And it's-- as-- as mentioned earlier, quasi-judicial body, but it's basically our regulator. They regulate service areas, they regulate the approval of new generation and transmission with some exceptions to that such as privately developed wind and a few other things. But there is by statute, years ago, this body, the Legislature required that a representative organization of the public power industry prepare these reports and provide them to the Power Review Board. That organization is the Nebraska Power Association which was established in 1980. Our organization that's run through our offices at LES, but we have a number of committees, we have a joint planning subcommittee

which has representatives from several of the utilities across the state. And that committee generates the report and submits that. Does that answer your question?

ALBRECHT: [01:24:18] Yes, you did. Thank you. So if Tesla were to-- they are-- they're here and they have stations already throughout our state. So if there was something else that came to the state of Nebraska and wanted some figures, they're still going to have to come to you folks and work out some numbers, correct, on whether they can or can't use certain kind of energy?

SHELLEY SAHLING-ZART: [01:24:41] Sure. And-- and if you're looking at the transmission system, one of the other things I didn't mention that I'm a little concerned about with LB285, when you talk about coming out of this with a published report, I don't know exactly what that's going to look like, but if you're talking about transmission congestion and some things, I have some concern that it's going to come out with some transmission maps and some other stuff which we don't share that stuff anymore. That's stuff it's critical infrastructure. Ten years ago, we were sharing maps with everybody. We're really trying to move away from that and protect more of that, because unfortunately the electric utility infrastructure has become a target for terrorism and other criminal activity. So I have a little concern about what might actually get published in a report like this. But the short answer is, you know, we've got developers that come in. I would much rather work with an individual developer and sign a nondisclosure agreement to work through some of that than I would have this be a public report.

ALBRECHT: [01:25:38] Thank you.

HUGHES: [01:25:39] OK. Additional questions? Senator Bostelman.

BOSTELMAN: [01:25:43] Thank you, Chairman Hughes. I just want to kind of follow up a little

bit, I think, on what Senator Albrecht was talking about. And I think a previous testifier talked about last session we had the bill on proprietary information. Do you see this potentially as an end around of some of that information that-- that is proprietary to the industry?

SHELLEY SAHLING-ZART: [01:26:04] Not exactly, because with the law, to the extent you have a consultant requesting some of that, we're probably going to have some pretty serious discussions about how much of that we would be able to share if it gets into some of the proprietary commercial. Like our-- our-- our--

BOSTELMAN: [01:26:21] But do you still--

SHELLEY SAHLING-ZART: [01:26:21] -- up to the minute generation information, we're not going to provide.

BOSTELMAN: [01:26:25] But do you think this would compel you to do that?

SHELLEY SAHLING-ZART: [01:26:31] No, I think the public records act is going to preempt that.

BOSTELMAN: [01:26:35] OK. One other question I want to go back to, I think, Senator Albrecht asked before, I just want to make sure I understand, and it was brought up by previous testifier, the PRB is funded by whom exactly?

SHELLEY SAHLING-ZART: [01:26:48] The Power Review Board is funded by the public power industry. So their budget is, I believe Tim told me a second ago, about \$650,000. So what they do is they get a report from all of us about our gross revenues and there's a formula about it's

distributed proportionately and we all get assessments based on how big or small we are and we pay those to the Power Review Board. So the budget is paid by us.

BOSTELMAN: [01:27:15] And the private utilities in the state don't pay into that?

SHELLEY SAHLING-ZART: [01:27:18] There are no private electric utilities in the state.

BOSTELMAN: [01:27:20] Well, there's private generators in the state. Noble Energy is private.

SHELLEY SAHLING-ZART: [01:27:24] It would be correct that it's the public power entities and they--

BOSTELMAN: [01:27:28] And they don't pay into it, right?

SHELLEY SAHLING-ZART: [01:27:29] Correct.

BOSTELMAN: [01:27:32] Another question, one last question I have for you on dispatching. As a testifier previously said, my understanding, what I-- where I got that the battery, if it's at a substation-- whatever-- whatever quick or dispatch or meet the need then say baseload generation, would you agree with that?

SHELLEY SAHLING-ZART: [01:27:49] Lawyer, not an engineer. No, I have no idea.

BOSTELMAN: [01:27:55] OK, thanks.

SHELLEY SAHLING-ZART: [01:27:56] I can get that answer for you.

HUGHES: [01:27:58] Any other questions? I do have one. So if-- if Mr. Radatz from Falls City was within the jurisdiction of LES, whom you work for, what would be his-- I mean, why is he unhappy with the way he's being treated by OPPD? I mean, is there-- is there a remedy that you can share with us, that path that he needs to pursue, or can you expand on that situation?

SHELLEY SAHLING-ZART: [01:28:27] Without-- without knowing some of the specific details, not really. I mean from what I know of OPPD, they would be happy to sit down and have a discussion, as would we. You know, sometimes you don't always get the answer you want. But I can't imagine that any of the public power entities aren't open to having a dialogue.

HUGHES: [01:28:46] OK. Thank you.

SHELLEY SAHLING-ZART: [01:28:48] You bet.

HUGHES: [01:28:49] No other question? OK. Thank you, Ms. Zart.

SHELLEY SAHLING-ZART: [01:28:52] You bet.

HUGHES: [01:28:52] Appreciate it. Next opponent? No more opponents. Anybody in the neutral capacity? Welcome.

TIM TEXEL: [01:29:01] Thank you. Chairman Hughes, members of the committee, my name is Tim Texel, first name is T-i-m, last name is T-e-x-e-l. I'm the executive director and general counsel for the Nebraska Power Review Board. As I can try and address some of the questions you've had about the board if you need them after my short testimony. I probably won't take up my

whole five minute. But I wanted to just make some procedural comments about how we would handle this study if it were enacted. We are neutral on the bill. We've done at least one study similar to this at least in operation. So my board knows about the bill. We don't take any stance on the policy side. We will implement it if you want it. And that's my mandate. The-- as you're aware, I believe the Power Review Board is the agency with primary jurisdiction over electric suppliers in the state of Nebraska. Wanted to make a couple comments about the study. LB285 has some similarities in procedure and cost to a study done in 2014 which was under LB1115. That was in my fiscal note. I think I would follow that same and my board would likely follow that same process to implement this study. The purpose of that study, [LB]1115 study was to review the state regional and national transmission infrastructure and policy and future needs for transmission infrastructure and policy to serve Nebraska electric consumers, utilities, and generation facilities in Nebraska seeking to export electricity outside the state. That's quite a mouthful, but that's what we studied in the previous one. It was largely kind of focused on how the regulatory environment here might impede renewables and if that created a negative environment to invest in those facilities. So we had a private facility-- or a private contractor. In that case, it was the Brattle Group that won the RFP, the request for proposals and conducted the study. They are-- at least the-- they're in many cities, but they're out of Boston. The principle that dealt with me on that study, that was a \$200,000 funding also for that study. And so it had a working group similar to this, and I would plan to follow that model and I would recommend to my board. I think when I spoke with them it seemed like that's the direction we go. We create the working group. We certainly have-- follow the template in the bill with all the members that are outlined in there. They would come up with a scope of work and then we would issue the RFP and my board would need to have interviews with those and then we would go from there. We can address the scope of work. It seemed like in the bill it was more transmission constraint focus. What I'm hearing today is a little more solar and storage focused. And we can take care of that with the scope of work, working with Senator McCollister and the other members of the work study-- study group. So with that I just want to kind of outline

how we would approach this if it were to be enacted. I would note that the compensation to the consultant would not be \$200,000, because we have to have per diems for my board members. In that case we had a small travel budget in case the committee would like-- whoever the consultant is to come back and present that report to all of you. And so they want that to be outside of their revenue and a small amount held back so that we could pay their travel to come here and do this, things like that. So my guess is the cap that I would place or my-- my board to place on the study would probably be \$180,000, something like that; \$175,000, maybe a \$180,000, that will be available to actually pay the contractor in this, because of the other incidental expenses we'd have to hold back to pay. So I just want nobody to be surprised by that if we had to do that. I want to put a cap on it because contractors can sometimes tend to say, oh, there's a \$200,000 study; their RFP is going to come in as close to \$200,00 as they think they can to undercut someone else. So, Senator Albrecht, I did want address your one question about our budget. It's \$668,000 for the current fiscal year. A large part of that goes to our consultant engineer, transmission engineer, highly specialized, that is our contractor that helps with the Southwest Power Pool and he serves on the cost allocation working group at the SPP. And he is the consultant for my board member who is on the regional state committee, which is all the regulators in the SPP footprint; have one regulatory member from each agency in the footprint that sits on that group. It's very influential and important to the SPP. And so that's a very expensive contract with that transmission engineer. So that's-- that-- our budget went up quite a bit when that was created and my board has travel associated with that, too. So, with that, I was going to address one further question was raised earlier if I could. But I have a red light on.

HUGHES: [01:34:22] Thank you, Mr. Texel. Are there questions? Senator Albrecht.

ALBRECHT: [01:34:26] Thank you, Chairman Hughes. The study that you did in 2014, was that also funded through the Legislature?

TIM TEXEL: [01:34:32] Yes. It was a General Funded, not through the utilities, through our cash fund. We're a cash funded agency, so as was described earlier, we collect how much money was gross revenue from the utilities and we prorate it by each of their revenue. So each of them pays a portion. You know, the OPPD, NPPD, LES pay the lion's share, a huge amount. We have some small very tiny utilities that are villages that might pay us \$20.

ALBRECHT: [01:35:01] So you didn't ask directly for us to have a bill in 2014?

TIM TEXEL: [01:35:07] That was-- well Senator Al Davis asked for that bill. We didn't have any part-- it was like this, we didn't play a role in requesting it. We were the implementation body. We weren't involved in the policy behind it.

ALBRECHT: [01:35:18] OK, so, you said that your board funded it, not the State Legislature?

TIM TEXEL: [01:35:24] No, it was General Funded.

ALBRECHT: [01:35:25] It was through state funds-- through--

TIM TEXEL: [01:35:25] General Funds, through the State Legislature and not through our cash funded. We're a cash funded agency, so we collect from the public power utilities in Nebraska. We don't get any funds from the private developers or anything like that.

ALBRECHT: [01:35:40] And this study that you talk about, did you come before Natural Resources and explain what that study found?

TIM TEXEL: [01:35:48] We had-- the Brattle Group was the contractor and they did a presentation--

ALBRECHT: [01:35:53] To this group?

TIM TEXEL: [01:35:53] To the committee and-- and they did the report. And so, that's-- that's the group that did the work.

ALBRECHT: [01:36:01] Can we see that report? Can we--

TIM TEXEL: [01:36:03] Sure, we can get a copy of that report they did. Like I said, it wasn't the same focus as this. It was dealing more with the regulatory environment and things like that that would help renewables. And that was kind of the one of the basis for the changes to one of the regulatory oversight for renewables in the state.

ALBRECHT: [01:36:21] And with this bill, who do you think would kind of decide what they're looking for in the report. Because I believe sometimes reports are as good as the information fed to them that they would like to see put out. So who-- who would be a part of that?

TIM TEXEL: [01:36:37] Well, there's a working group that would create the scope of work within conjunction with the board and that calls for senators from the committee being on it if they want to. And it looked like much like the last time, the configuration, and last time we had the Sierra Club, we offered them-- we offered the senators-- any senators that wanted to be on it from the committee. You know, we're not tell any senators--

ALBRECHT: [01:37:01] Are the power companies?

TIM TEXEL: [01:37:02] And we had the utilities from Nebraska utilities, we had private developers that are wind developers. I went to the American Wind Energy Association, I think they changed their name now, the Renewable Coalition, or something like that. But all those entities, we-- a broad array of private developers, public power entities, Sierra Club, environmental groups. I don't remember if we had international brother-- international-- IBEW, International Brotherhood of Electrical Workers. So we tried to get a broad array of interested stakeholders onto there. And certainly we'd take what's in the bill and try and make sure each of those that are outlined are--

ALBRECHT: [01:37:40] OK.

TIM TEXEL: [01:37:40] --had an opportunity to participate.

ALBRECHT: [01:37:41] If we were not to do this, what would happen to the solar energy folks? Would they just still have to just go back to the power companies and work with them?

TIM TEXEL: [01:37:53] What would happened to the solar folks?

ALBRECHT: [01:37:55] Well, they're the ones, obviously, requesting this, the solar energy people that want to come and do business with the state of Nebraska. What would they do if we didn't have this report?

TIM TEXEL: [01:38:08] I guess you'd have to ask them. I mean, this-- this report sounds like they wanted--

ALBRECHT: [01:38:13] Asking you, because your- you've been through this and you're-- if you're

going to do this, what will-- what will benefit that particular entity? But if you don't do that, what will they have to do today? Same thing? Go to the power companies and find out whether the--

TIM TEXEL: [01:38:29] Oh, the information that they're saying this would get?

ALBRECHT: [01:38:30] Um-hum.

TIM TEXEL: [01:38:31] OK. I assume that they would have to try and, yes, request it from the utilities, request it from the Southwest Power Pool, that type information. Some of that they'd have to take from all the different companies about the storage facilities and that. But, yes, most of-- like what the Power Review Board does, we have to go to the utilities. And that's one of our roles is we kind of operate-- instead the local level, like they do, we make them look at it from the 30,000 foot level where they all look statewide, instead of in OPPD's area, you know, in Dawson County Public Power District's area, and we look at it from the statewide level, so it's helpful in that regard. In some of the studies we do, although it's through the NPA, there are designated representative group. I assume the solar people, if they needed this information about constraints and about how to set up this system better to facilitate renewables would have to work with the utilities and try and essentially put this together themselves, try to get that information from the utilities. I'm sure it would be easier if we were trying to get the information from the utilities, but that's what I assume they would try to do.

ALBRECHT: [01:39:43] Thank you.

HUGHES: [01:39:43] OK. Additional questions? Senator Moser.

MOSER: [01:39:46] So, is there any distillation of this earlier report to show that it was

worthwhile? I mean, is it another report that sits on a shelf someplace?

TIM TEXEL: [01:40:01] Well, that's always in the eye of the beholder. But I think that-- in that case, that study was at least part of the impetus. I won't speak for Senator McCollister on that bill. But in that bill-- or that study led to, I think, the change to seven-- Chapter 70-1014.02 which drastically changed how we approve renewables in this state. So it went from having a rather lengthy statute that was often hard to understand for the private developers and hard to meet. And it changed that so that now it's a certification process where it does not go before my board. And you heard Mr. Reida earlier, my board chairman, talked about they really don't see those renewables anymore because they go through me and it's a certification process where they have to certify they are renewable, they have to certify they're going to work with our Game and Parks Commission to make sure they protect threatened and endangered species and implement mitigation measures, so they-- they do those. They no longer have a formal approval with a hearing as long as they put in what they have to that certification. Then I send back a letter and authenticated it. So it made a pretty big change based on that study. So I think in that case, if you're looking for if was it worthwhile? Depends on where you stand on renewables. But it did make a significant change in the law based on that study-- or at least largely based on that study.

MOSER: [01:41:27] So that kind of opened the door for a lot of solar and wind energy to be developed in the state? Because up to that point we didn't have as much in Nebraska?

TIM TEXEL: [01:41:39] It's certainly-- we had one application that never went to the final stage under the previous version of that bill. We've had probably two dozen under the new version of statute. So it certainly did make it-- it made it far less onerous to go through the process without a hearing and with the certification. You know, whether that's good or bad is-- is up to the person looking at it. But it certainly did open that up. We've had many more applications under the new

process to build renewables. Before they tended to want to go under the federal-- FERC, it's called, the Federal Energy Regulatory Commission, and they can build renewables and then we're preempted, but it's limited to 80 megawatts. Most of the facilities today want to build larger than that to take advantage of the economies of scale. And they-- that-- remove that difficulty for the private renewable developers and now they can build a 300 megawatt, for example, renewable facility and they go through the certification process and they aren't limited by that 80 megawatts.

MOSER: [01:42:40] OK. Thank you.

HUGHES: [01:42:43] OK. Any additional questions? What was the other question you wanted to address before your time was up? Do you remember?

TIM TEXEL: [01:42:49] I think Senator Bostelman had asked if there is any private entities that contribute to our funding? And I just wanted to clarify that no, it's-- I think I already mentioned, but the Power Review Board gets entirely cash funded from our public power entities. There's specific list in statute that says who we collect from, and it's all the public power entities in Nebraska. So we don't have the ability to collect from any of the private developers in the state.

HUGHES: [01:43:16] Senator Bostelman.

BOSTELMAN: [01:43:17] Thank you, Senator. Hughes. Thank you for being here, Director Texel. Do you-- as it's been mentioned through previous testifiers, we're going to go completely renewable in X amount of years. No more coal, no more whatever. Do you see a potential challenge for the state since you no longer-- PRB no longer has any review authority on that type of generation, only deals with public power. We've completely eliminated that review, do you see a challenge potentially down the road if we don't look-- come back and look at generation as a whole in the

state rather than just a partial?

TIM TEXEL: [01:43:57] Well I think-- you want-- you want a broad array of generation, just like when you invest in a mutual fund, the whole point is to not put all your eggs in one basket. Until they come up with large-scale affordable storage facilities, that's what-- you're going to need to backup wind and solar with something that can rapidly respond like natural gas. So, at least at this point, I don't see those facilities going away. If the policy is we want to move more towards entirely renewables, I'm not an engineer, my understanding right now is you'd need considerably more storage ability, something to make it, you know, when the wind's not blowing, the sun's not shining, you have to have the ability to have that power there. So you have to have something to replace the coal, and particularly the peaking units like a gas, or in some cases, diesel. And right now we still need those.

BOSTELMAN: [01:45:01] I appreciate that and I don't disagree. I think it's a little interesting how we've removed-- renewables have removed themselves out of the PRB, but now they want the PRB to be actively involved back again on this. It's not a question, it's just a comment that now-- now they want the PRB to come in and start looking at things, where before they've said no, hands off, don't touch us, because we're not public power. So, I think that's-- I think that's a little interesting with this bill.

TIM TEXEL: [01:45:28] I would just clarify, we've removed, from the approval process, the board privately developed electric generation facilities. If our public power entities were to put one in, we would still have oversight over that, unless they went under the federal process under 80 megawatts. So there's a lot of caveats to that, but we haven't completely removed renewables, but from the private side, it's just a certification process.

BOSTELMAN: [01:45:51] Right, and no longer do we need-- we look at generation need, generation capacity on the renewable side of this, if I'm right, just on the public power side, correct?

TIM TEXEL: [01:46:00] Not for the private ones for renewable. We don't-- we don't review it as a sort of certificate of need with the public convenience and necessity and the other factors we do for public power.

BOSTELMAN: [01:46:09] Okay. Thank you.

HUGHES: [01:46:11] Additional questions? So I guess I need to get clear in my mind that the public power entities are paying an assessment for the Power Review Board.

TIM TEXEL: [01:46:21] Correct.

HUGHES: [01:46:21] So the private developed wind farms, even though they are marketing through NPPD, OPPD, that power is not assessed?

TIM TEXEL: [01:46:32] We don't assess them based on their revenue. No.

HUGHES: [01:46:35] OK.

TIM TEXEL: [01:46:37] We only assess our public power entities in Nebraska.

HUGHES: [01:46:42] Even though you have somewhat jurisdiction over them, the privates.

TIM TEXEL: [01:46:49] Well the Legislature could, yes, say that we could collect from the

privates or something and change that system. But the system long ago was created-- when my agency was created in 1963 and it was funded by the public power entities, there was a briefly a mechanism with the previous version of Section 70-1014.02 where we collected money for-- to do the work on those reviews and the hearing so that it wasn't funded by our public entities because that was considered a little unfair to have our public entities paying for somebody else's hearing costs and we would collect a set amount and then if that ran out, sort of like a retainer, we collect more. But since that went away, so did the need to collect any money. So that was the only time we ever collected, and we only did it once from one utility that, like I said, that never went to the final stage of approval under that previous bill, but--

HUGHES: [01:47:47] OK. Thank you. Any additional questions? Seeing none, thank you, Mr. Textel.

TIM TEXEL: [01:47:50] Thank you.

HUGHES: [01:47:51] Anyone else wishing to testify in the neutral capacity? We do have two letters in opposition: one from Kim Christensen and one from Randy Lindstrom. Kim Christensen that-- Nebraska Rural Electric Association and Mr. Lindstrom from Nebraska Public Power District. Senator McCollister.

McCOLLISTER: [01:48:12] Thank you, Chairman Hughes, members the committee. It's been a good hearing. I'm grateful for all the testifiers, particularly Mr. O'Hara from the Sierra Club. I value his testimony. And Mr. Texel for the background on the Brattle report that came about in 2014. And Senator Hughes and I will recall seeing that report. It's still available and it was a very valuable report, talked about energy demand and what we are likely to see and gave us a long range plan that we did utilize for LB824 that we adopted in 2015 which enabled the development of renewable

energy, at least leveled the playing field. And what that basically did was remove the-- the eminent domain laws so an energy company, that being a utility, couldn't come in and claim a facility that the-- the renewable energy company developed. And it also talked about stranded assets and you'd have to say LB824, which has brought in about \$2 billion worth of new development in the state, is one of the bright stars, or bright things have occurred in Nebraska to help economic development. Just-- there was some discussion about the approval process with renewable energy. And it goes through 71 various approvals for both federal and state. So the Power Review Board doesn't have approval authority right now, but you have to go through Game and Parks, you have to go through the State Energy Office, EPA, Game and Parks. So it-- there's a pretty lengthy approval process, 71 approvals that need to be-- need to be obtained. Well, if the Brattle report in 2014 was-- was such a good and valuable resources, why not do this again? I think the-- the energy market has changed and will continue to change. A study would have good value. This committee would have the ability to establish the scope of that study. And if there is questions that the committee had, we could build that into the-- into of the study. Confidentiality: one of the testifiers mentioned there'd be some issue with that. I don't believe that's the case, because they generally aggregate all the information and hold all that proprietary information from the utilities in confidence. So it's-- I don't think that would be as much of an issue as you might have heard. This study would have great value not only to the Legislature, but I think the environmental community, it would have great value to the State Energy Office, would have a value to the Power Review Board. So that's a very modest expenditure for what value that we would get. Finally, Mr. O'Hare indicated that times are changing, and indeed that's so. Electric vehicles and everything else is going to change the demand structure, demand curves for electricity, and we need to be able to deal with it. And besides, I ask you this, what's the downside? Two hundred thousand dollars is nothing, you know, in a state budget of over \$4.5 billion. So I think it's a good investment. And I would ask you to move the bill forward.

HUGHES: [01:51:53] Thank you Senator McCollister. Are there questions? Seeing none, very

good.

McCOLLISTER: [01:51:58] Thank you.

HUGHES: [01:51:58] That will close our hearing on LB285. And we will move on to our next bill of LB509. Senator McCollister, welcome back to the Natural Resources Committee.

McCOLLISTER: [01:52:24] Feels like home.

HUGHES: [01:52:39] Whenever you're ready.

McCOLLISTER: [01:52:41] Yes, sir. Good afternoon, Chairman Hughes and members of the committee. I'm John, J-o-h-n, McCollister M-c-C-o-l-l-i-s-t-e-r, and I represent the 20th Legislative District in Omaha. Today I'm introducing LB509. I served on the Natural Resources Committee during my first term in the Legislature. During that time, net metering bills were introduced, but none were advanced. I hope to change that this year. LB509, as amended, by AM624 will allow for up to 100 kilowatt net metering projects which is an increase from the current limit of 25 kilowatts and address some of the concerns expressed by electric utilities regarding net metering. Several changes contained in AM624 are as follows: more closely align the credits provided to the customer generator with the utilities avoided costs through a variable energy charge. The variable energy charge would be set by each utility and must be listed on the utilities rate schedule. Allows for a minimum monthly charge for net metering customers covering the greater of customer distribution services or customer demand related services. This charge will aid the utilities in their cost recovery efforts related to providing the service. Sets a customer generator requirements for electricity be based on the average monthly usage and kilowatt hours for the previous year. This sets an accurate baseline for usage which should be fair to the utility and the customer generator. And strikes

language in current statute that prohibits a utility from performing additional safety or performance tests that's found in Section 2, subsection (6) of the AM624. I've been told that the removal of this language is important for the safety of the utility system. Those are the main changes under AM624. I believe that with these changes we have the hope of making progress on net metering at long last. To ensure that the record is complete, I offer the following as history on this subject. Net metering is a utility resources usage and payment scheme in which a customer who generates their own power is compensated monetarily. Net metering originated with electric companies as a way to encourage consumers to invest in renewable energy sources such as solar and wind. Perhaps the state of Kansas offers our state a path to follow with regard to net metering. In Kansas states-- in Kansas, the state's three large electric utilities are required to offer net metering and provide interested customers with a bi-directional meter at no cost to the customer on a first come first serve basis until the rated generating capacity of the all net metered meter system equals 1 percent of the utilities peak demand during the previous year. Electronic cooperatives and municipal electronic providers are not mandated, I'll repeat, are not mandated to offer net metering by statute, but many have elected under their boards and membership to enact some form of net metering, allowed but not required. If the committee believes this bill should be limited in scope to the three largest electric utilities similar to Kansas, I would support such an action. I would also welcome an invitation to initiate an interim study if the committee sees value on that. Utility customers will increasingly demand the electric providers provide net metering capabilities. Therefore, it's incumbent for this body to make net metering available and easier to access. Thank you. I'd be happy to answer any questions.

HUGHES: [01:56:56] Thank you, Senator McCollister. Are there questions? I guess I do have one. Do you-- and I'm-- I'm sure we have heard this before, but the net metering is that settled at the end of each month, or is it cumulative and settled at the end of the year?

McCOLLISTER: [01:57:15] I think various utilities have different ways of doing it.

HUGHES: [01:57:19] OK. I may save that for later, but I would--

McCOLLISTER: [01:57:22] Well, we do have some utility testifying.

HUGHES: [01:57:25] Yeah.

McCOLLISTER: [01:57:27] It would be the testifier to ask.

HUGHES: [01:57:29] OK. Senator Moser.

MOSER: [01:57:31] So did you think up this bill or did somebody bring this to you?

McCOLLISTER: [01:57:36] Well, as I mentioned, I've been on the Natural Resources Committee and we-- we would hear net metering bills virtually every year. And-- and so I'm interested in the topic. And three or four other senators were going to introduce-- I saved you from that-- net metering bills, and so given my background--

MOSER: [01:57:57] We'd much rather talk to you than three or four other ones.

McCOLLISTER: [01:57:59] Thank you. Well, I'm happy to hear that. But, you know, given that fact and in my experience on the Natural Resources Committee, they-- they stood down and we developed this one bill. I had-- you know, given that experience, you know, some of the net metering bills that we had that involve small installations, small rural utilities had a lot of trouble with that. So, I thought the focus of this bill should be the three large utilities. So I-- and I in

essence worked with OPPD on a-- on a draft of this bill and thought that that would be the first place to start on a net metering scheme. And if you're successful with that, we'll start to move down into the smaller utilities, because as I said in my testimony, this is-- this is a topic that's going to continue to come up.

MOSER: [01:58:54] Thank you very much.

HUGHES: [01:58:55] Senator Gragert.

GRAGERT: [01:58:57] Thank you, Senator Hughes. Just a quick question, then following up on OPPD, you worked with them, and did you work with any of the rural electrical?

McCOLLISTER: [01:59:07] Well,--

GRAGERT: [01:59:07] REAs, I guess.

McCOLLISTER: [01:59:10] I certainly have had contact with them regarding the bill. And they-- they were greatly relieved that I was going to try to not put them in the crosshairs, so to speak. So, I-- I think, you know, working with the three big utilities, we can set up a scheme that we can work from. And as those boards continue to get interest from their subscribers or maybe even solar developers, you know, maybe they can come in and participate as well.

GRAGERT: [01:59:39] One follow-up question if I may, I see in your revision-- the amendment here, it went from 125 kilowatt down to 100. What-- what are the average-- like, if this is for the consumer to generate his own energy or his-- or his or her own energy, what is their-- what is their average kilowatt usage per year?

McCOLLISTER: [02:00:04] Well, an individual customer like you-- residential homes, this would be too small for them to look. I think-- think of UNMC, you know, they put in a number of solar panels and they would-- would qualify under that OPPD system. So I think-- I think those are the kinds of installations that they typically target.

GRAGERT: [02:00:28] OK. Thank you.

HUGHES: [02:00:31] Additional questions? So, you wrote out the small rural electrics, is that-- so what percentage of the customer base is left that is strictly-- the distribution is NPPD, OPPD and LES.

McCOLLISTER: [02:00:50] Yes.

HUGHES: [02:00:53] I mean, is that--

McCOLLISTER: [02:00:54] That's-- that's my focus initially. And if the rural utilities would come to me and say we really feel left out, we-- we could sure change this bill. Perhaps this bill won't move this year, and we will consider it maybe an interim study is in our future here. If they would come to us and say, this is the way we'd like to be included, I'd be amenable to change the bill.

HUGHES: [02:01:22] OK. Thank you Senator McCollister. Any additional questions? Seeing none, you'll stay for closing?

McCOLLISTER: [02:01:28] Yes.

HUGHES: [02:01:30] OK. Very good. OK. With that, the first proponent to LB509. Welcome.

SCOTT WILLIAMS: [02:01:41] Good afternoon. My name is Dr. Scott Williams, S-c-o-t-t W-i-l-l-i-a-m-s, it's spelled like it sounds. I live a 1139 South 93rd Avenue in Omaha, Nebraska. And I'm proud to be represented by Senator McCollister in LD20. I'd like to clarify that I'm not a medical doctor, rather I earned my doctoral degree in engineering from Iowa State University. I have worked as a professor of energy technology in the past. I hope to be helpful and instructive in fostering understanding of the technical nature of net metering. I join you here today to testify as a proponent of LB509 regarding the net metering provisions here in Nebraska. I consider myself an advocate for clean renewable local power in our communities. I would offer my experience and expertise and I encourage you to support LB509. Nebraska is blessed with abundant solar and wind resources. Indeed, one of them is dynamically on display outside today through the rest of the week. Clean renewable local power, such as solar energy, can help strengthen public power and support our local communities. Alongside my twin brother, Eric, I've installed solar panels in a variety of locations, including small, off-grid installations at an Omaha neighborhood public park, the shed of a neighborhood community garden, and also grid connected and net metered solar array on the roof of his house. That residential array is three kilowatts, which averaged through the course of the year, generates about 90 percent of the electrical energy that their home needs. Needless to say, that has substantially lowered their monthly electric bills. Net metering from the public power district is essential to facilitate practical, technical, and economic implementation of that solar distributed system. Net metering serves as a type of virtual battery for distributed generation. When power is used, the meter spins up; and when power is generated in excess of the customer's use, it is pushed out onto the grid powering the demands of neighboring ratepayers and the meter spins down. When in reality, it was old fashioned meters that would actually spin. Modern meters are electronic and the data is recorded digitally. At the end of the month, kilowatt hours, the energy used, that are sent out to the grid, are subtracted from the energy drawn from the grid, and the ratepayer is billed for

the net energy on that meter. Hence, net metering. I'll be happy to clarify with questions if I can. This is mutually beneficial to the owner who invested in distributed generation and the neighbors who benefit from the excess generation, as well as grid operators who in terms of stability and security for the grid transmission and distribution. Currently, that virtual battery is substantially more economical than physical batteries, although this is changing rapidly and that was described during the hearing in the last bill. When local physical battery storage becomes cheaper than the cost of connecting to the grid, distributed energy benefits could become much more localized exclusively to the owner on their side of the meter. Residential distributed energy installations are typically of a size that is covered by current net metering legislation, the 25 kilowatt cap. However, an important group of clean energy installations are underserved in rural applications served by REAs distributed energy systems would often be above that current 25 kilowatt level. No doubt others here today with more direct experience building rural solar power systems can provide more details. LB509 is an opportunity for this committee and for the Unicameral to take a measured and moderate step to support rural distributed clean and local power. Nebraska is also blessed with another valuable resource, the dedicated individuals who work tirelessly to build coalitions striving to improve the legislative environment and maximize the opportunities to take advantage of clean energy in our state. Thank you to Senator McCollister for his continued work on this essential issue as he described bringing forward the net metering bill to this committee in which he previously served in preference to the other four types of bills that would have been brought by other senators. Thank you as well to independent small business owners like Graham Christiansen of GC ReVOLT for working to bring online solar energy systems across our state. By the way, while Graham is probably too modest to mention it himself, Mr. Christensen was, this week, identified on a nationwide list of 50 people giving hope for the future as a result of his work developing clean renewable and distributed generation. In order for public power to continue to meet the needs and support the demands of ratepayers, it is essential that Nebraska have modernized net metering provisions. LB509 seeks to implement these updates and I encourage you to support the bill. I'll

gladly answer any questions or provide any other expertise regarding solar energy installations and systems or net metering. Thank you, Senator Hughes and the senators of the committee, for your time today and for your dedication to support clean local power here in Nebraska.

HUGHES: [02:06:52] Thank you, Dr. Williams. Are there questions? Senator Moser.

MOSER: [02:06:54] When you're talking about a 3 kilowatt system that some family member installed, you're talking about instantaneous power right? You're not talking about power over time.

SCOTT WILLIAMS: [02:07:05] Yeah, that's exactly right. There's a real important distinction with power and energy. Kilowatts is the power demand at any given instant. Whereas, kilowatt hours are the energy. It's the power integrated over time, kilowatt hours. And so that's the accumulation of used energy. So energy generation or use is measured in power, kilowatts, a 3-kilowatt solar array, a 30-kilowatt solar array. But through the course of a month or a year, the energy would be in kilowatt hours.

MOSER: [02:07:39] So your demand can't exceed your instantaneous output or otherwise you've got problems.

SCOTT WILLIAMS: [02:07:47] No, that-- that-- that's--- that's exactly the point of net metering is that if you, for example, if your home were to demand 4 kilowatts of power, if you had an electric dryer, an electric range, you were charging your electric vehicle, the TV was on, if you were demanding four kilowatts of power, which is a pretty substantial demand in a residence, and a solar energy system was providing less than four kilowatts of power, the grid would provide the match to make sure and continuously meet the needs of demanded power.

MOSER: [02:08:18] And so, OK, then where I'm going with this, I guess, is the 25 kilowatt limit to net metering now is instantaneous though, it's not over time. You're just talking about the maximum that you can put into the grid or the maximum.

SCOTT WILLIAMS: [02:08:36] Yeah, that's right. The 25 kilowatt limit that was written in the net metering legislation that's been passed here in the Unicameral refers to power of the system, nameplate capacity of the solar energy system.

MOSER: [02:08:49] And 25 kilowatts is a lot of power.

SCOTT WILLIAMS: [02:08:51] Relative to residential-- relative to residential customers, 25 kilowatts would be very substantial. It would be almost impossible for any house to need anywhere near that much power. That would be three to five houses probably. But as I mentioned, relative to other ratepayer owners of other public power districts, for example, rural or agricultural applications, it would be quite easy to exceed the 25 kilowatt power usage due to, for example, grain drying or refrigeration for agricultural products, center pivot irrigation if it's powered electrically could up the demand for electricity to well beyond 25 kilowatts. And so, the current cap and the current implementation of net metering by public power districts throughout the state means that there are rural customers who may well choose to make investments in clean distributed energy, but are unable to do so and bring that online in a net metered application.

MOSER: [02:09:53] Do you anticipate that people would have more-- or build more capacity than they need to sell it back to the utility?

SCOTT WILLIAMS: [02:10:04] The way that net metering works from a financial perspective is the meter spins up when you use power, it spins down when you produce more than you were

using. And so in theory, if you were to use, let's say, a thousand kilowatt hours of energy and produce only 900, you would be liable for the last hundred kilowatt hours of energy if-- if the opposite situation was true, if you were to use 500 kilowatt hours and to produce a thousand, the way that different districts implement it differently, but for example, OPPD, where I live, implements a cost offsetting of the generation that you produced. So while a kilowatt hour to a residential customer is about 10 cents per kilowatt hour, the cost offset that would apply to any excess generation that metered at the end of the month would be closer to 3.5 cents a kilowatt hour. So economically it would be a fairly poor economic and technical decision to build--

MOSER: [02:11:08] To try to get into the power [INAUDIBLE]--

SCOTT WILLIAMS: [02:11:11] That's right, to try and build more than you need. And in reality, because demand changes through the day and through the year and solar energy availability changes through the day and through the year, it's usually advised to build a nameplate capacity that is something like 90 percent that would meet something like 90 percent of your yearly averaged energy demand, as I described on my brother's house.

MOSER: [02:11:36] So, who do you think would be a typical provider of-- or user of this larger capacity?

SCOTT WILLIAMS: [02:11:45] I beg your pardon.

MOSER: [02:11:47] Well, who are we benefiting by increasing from 25 kilowatts to what is it going to, 125?

SCOTT WILLIAMS: [02:11:53] I think the amended-- a hundred? Yeah.

MOSER: [02:11:57] A hundred? OK.

SCOTT WILLIAMS: [02:11:57] So there are certainly-- there's certainly a large class of rural customers who would use more than 25 kilowatts of power. And if they so choose to invest in clean local distributed generation, would be able to bring online more than 25 kilowatts, say 50 kilowatts of local distributed generation on their side of the meter. So that would be one of the classes. Small commercial organizations may fall into this category, although depending on the public power district that we're talking about, the different classes of ratepayers: residential, commercial, and industrial are treated differently. So small commercial may fall into this, but larger commercial or industrial are usually under different rate writers for different [INAUDIBLE].

MOSER: [02:12:42] So these larger capacity energy producers are probably generating three phase power?

SCOTT WILLIAMS: [02:12:48] That is possible. There-- we--

MOSER: [02:12:56] Because most of the farm, you know, the irrigation motors, those are all three phase; grain dryers are all three phase.

SCOTT WILLIAMS: [02:13:03] It depends on the type of-- the type of energy and power systems that have been installed on the distributor generation equipment. In a residential application, almost never, no residences have three phase power provided to their homes. We always use single split phase. But you're right, in rural applications or larger power demand applications where three phases common, there is certainly equipment that can be attached to solar or distributed wind generation that would provide three phase power to meet the demands on the customer side of the

meter for, as you say, grain dryers or center pivot because of the technical nature of three phase power. So that is possible.

MOSER: [02:13:42] Okay. Thank you.

SCOTT WILLIAMS: [02:13:43] Yes.

HUGHES: [02:13:43] Senator Gragert.

GRAGERT: [02:13:45] Thank you, Senator Hughes. So the individuals that are going to-- that can afford to put these, you know, solar power and individual solar power, wind, whatever, does that-- is that going to cost everybody else that's on that-- on that system? Is there any potential for affecting the cost either up or down with the rest of the people on the system?

SCOTT WILLIAMS: [02:14:09] So, the first consideration is the upfront capital expense of the generation equipment and the other ancillary transformer equipment to-- to bring the system online. And that is entirely the responsibility of the ratepayer--

GRAGERT: [02:14:25] Right.

SCOTT WILLIAMS: [02:14:25] --to-- to build the system. Whether there are opportunities for financial incentives, which in some cases there are, that would also be to the ratepayer. But the capital cost certainly not. It is true that as someone brings generation online, they would lower their usage, right, their net metered usage. So in that example where someone used a thousand kilowatt hours and produced 900, their usage cost portion of their bill would be lowered from the thousand that they used to be buying to 100.

GRAGERT: [02:15:02] I understand all that.

SCOTT WILLIAMS: [02:15:02] Right.

GRAGERT: [02:15:03] I want to know the-- the other people on the line. Like I may have a system, you don't have a system, is it going to end up costing you more money because of what I'm putting into that system?

SCOTT WILLIAMS: [02:15:14] So that-- that is what I'm-- that is what I'm describing. In-- in-- in aggregate-- in aggregate all of the people who pay all of the bills represent the revenue of a public power district and the revenue must cover all of the expenses. So in-- in one interpretation, the-- if you generate your own power, you do not buy as much-- you do not pay as much of a usage portion of your bill. Your bill may be lowered, that may represent lower revenue to a power district. So if this-- this is the intention of the language of this bill. I believe that this includes a small fee for cost recovery for-- for that-- for that exact purpose. Because if you lower the usage, then your-- and your bill is lowered, that represents lower revenue to a district. And the district still has costs that must be covered. And that's what cost recovery is about. And that's why the-- the language here includes an accommodation for public power districts to recover costs as part of-- as part of a fee.

GRAGERT: [02:16:23] So in other words, it could raise the rates of other people on the line. Because you're-- you're kind of just using your own. I mean that individual be generating his own, so the cost-- the infrastructure still has to be there, right? And I guess that brings up another question, how many people come online will the infrastructure have to be up-- you know, upgrade.

SCOTT WILLIAMS: [02:16:46] So to the first part of that question, it depends on how you

evaluate the expenses to the public power district. If a public power district is largely purchasing power and you use less than their purchase requirements would be lowered and it would be unlikely that others would have to make up the cost of you not having used as much power. Whereas, fixed investments in the past that still need to continue to be covered, right, financial liabilities from the past that need to be covered would represent a necessity of cost recovery, and that's what that language is intended to make sure is that the costs are still covered so that if someone begins to use less that the cost recovery from the public power district's perspective is still met. If I might, that does create the-- the unusual situation, and even in my opinion, a problematic one where the interests of the ratepayer and the interests of the public power district may begin to be misaligned. If it is in the financial interest of a ratepayer to be generating their own energy, and it-- and that is viewed as detrimental to the public power district, those interests begin to diverge and that can create-- that-- that has the potential to cause conflict. The-- the-- the worst outcome of that type of divergent interests is that we would-- we would-- we would see policies that would work to-- to oppose local clean renewable distributed generation and that would work to oppose what would otherwise be in the individual interest of a ratepayer as well as the collective interest of having clean local distributed generation. And that would be an unfavorable outcome both for the individual and for all of the members of the power district and the state at large.

GRAGERT: [02:18:54] Thank you.

SCOTT WILLIAMS: [02:18:55] Thank you.

HUGHES: [02:18:55] Additional questions? Seeing none, thank you, Dr. Williams.

SCOTT WILLIAMS: [02:18:59] You have my contact information. If there's anything else that I can provide beneficially, I'd be happy to do so.

HUGHES: [02:19:03] Very good.

SCOTT WILLIAMS: [02:19:04] Thank you.

HUGHES: [02:19:05] Next proponent. Welcome.

SETH VOYLES: [02:19:16] Good afternoon, Chairman Hughes, members of the Natural Resources Committee, my name is Seth Voyles, S-e-t-h V as in Victor-o-y-l-e-s and I'm the manager of Federal Legislative and Regulatory Affairs and a registered lobbyist for the Omaha Public Power District. And I'm here today to testify in support of AM624 to LB509 in support holding the bill over for an interim study review. We thank Senator McCollister for listening to our comments and we'll continue to work with him and other stakeholders to address questions related with the amendment. OPPD's mission is to provide affordable, reliable, and environmentally sensitive energy services to our customer-owners. We demonstrate this commitment through a diverse fuel mix that includes low sulfur coal, wind, landfill gas, natural gas, fuel oil, and hydroelectric sources. In 2017, OPPD exceeded its 2018 goal of having 30 percent of retail sales from renewables when it reached 33.5 percent. OPPD is committed to offering customers ongoing choices for their energy solutions, including distributed energy resources. A couple of elements are important. One, create a framework for customers to meet their renewable energy or sustainability goals. One example of this is our community solar program and other offerings, some partnerships for all customers of all sizes. And two, maintain flexibility to operate our business in our service areas. As customer choices and preference-- preferences continue to evolve, we remain committed to operating a safe and reliable electrical system, at the same time we strive to allocate costs to those who receive benefits and provide credits where due for the value of services received. Each utility has different components to their business. Nebraska Public Power Utilities have different

customer types, sources of generation, and models of business in terms of wholesale or retail, just to name a few. The variety of perspectives informs our outlook on LB509 and AM624. While we support new solutions to changing energy needs, must also be thoughtful as to how it impacts all of our customers. Some customers may not be willing to pay for costs related to distributed generation and net metering. Today I will highlight a couple of major areas. But first, I want to clarify an issue that has been raised. The avoided cost of variable energy in AM624 was not intended to modify the 1-to-1 arrangement of the original net metering language which currently allows net metering customers to offset their variable portion of the utility bill with their local generation. This amendment addresses net metering customers as net producers, meaning they produce more electricity than their monthly load. Their excess generation will be compensated at the value of that generation. The analogy here would be that utility would buy the excess generation much like we buy from the Southwest Power Pool's integrated marketplace. For clarity, this keeps the original 1-to-1 language intact. AM24[sic] aims to moderate but not fix the shifting of costs from net metering customers to all other customers by allowing utilities to charge a minimum monthly fee that covers either customer and distribution services or customer and demand related services, whichever is greater. The language allows local rate-making authorities to maintain that control while reducing the level of subsidization by non-participants. The amendment also alleviates distributed generation challenges that come from the fluctuating levels of power created by net metering customers. The language gives utilities the ability and flexibility to modify the customer's generation size down to the customer's expected average monthly usage. With this authority, utilities can maintain the ability to prioritize safe and reliable operations of their local electric system. AM624 makes LB509 more equitable to the majority of utility customers who have not elected to participate in net metering, as well as creates a structure that maintains the autonomy of local rate-making authorities. OPPD supports the inclusion of the amendment, supports holding the bill over for interim study review. Thank you for your time. I'm happy to try to answer any of the questions you may have. A lot of the technical questions I'm happy that Dr. Williams was here to go first.

HUGHES: [02:23:13] Thank you, Mr. Voyles. Any questions? Senator Bostelman.

BOSTELMAN: [02:23:18] Thank you, Senator Hughes. Thank you, Mr. Voyles, for being here. My understanding is-- is if OPPD wanted to, you could do this on your own, we don't need this in statute.

SETH VOYLES: [02:23:26] That's right. Senator McCollister asked us to help in helping with the language, so [INAUDIBLE].

BOSTELMAN: [02:23:30] So if OPPD wanted to do a hundred-- a hundred kilowatt net metering, you can do it?

SETH VOYLES: [02:23:35] Yes, we could.

BOSTELMAN: [02:23:36] OK. Thank you.

HUGHES: [02:23:38] Any other questions?

SETH VOYLES: [02:23:39] If I can answer one more too.

HUGHES: [02:23:40] Yes.

SETH VOYLES: [02:23:40] He had a question about if it's trued up month to month or yearly.

HUGHES: [02:23:44] Right.

SETH VOYLES: [02:23:44] So it goes month a month and you true up at the end of the year for net metering customers, at least for OPPD.

HUGHES: [02:23:49] OK. Thank you. Senator Gragert.

GRAGERT: [02:23:52] Thank you, Senator. Is that the same cost or explain to me the cost that he's selling back at whole-- he or she selling back at wholesale and you buy it at retail; or how does that work when you're-- when are you going to sell that power back, what you don't use or sell it to you [INAUDIBLE]?

SETH VOYLES: [02:24:10] So-- so if they're generating more than their actual load? I'm not our rates guy, so I'll get that answer for you. But what this bill does here is that it would give the ability to-- and the utility could, so it's a "may" in there and not a "shall," they could modify the size of that system to what is down to the monthly usage. There's a provision in there that says you do a baseline of your monthly average over the last year, and then the utility can modify it down to their-- so it's just for the-- for the-- what they're using so that we can get away from that part of it.

GRAGERT: [02:24:44] Thank you.

HUGHES: [02:24:45] Any other questions? Seeing none, thank you, Mr. Voyles.

SETH VOYLES: [02:24:48] Thank you very much.

HUGHES: [02:24:49] Next proponent. Welcome.

KENNETH WINSTON: [02:25:05] Good afternoon, Chairman Hughes and members of the Natural Resources Committee. I apologize, I have a cold and my voice is not the best, so, but I'll try to croak my way through my testimony this afternoon. My name is Kenneth Winston, K-e-n-n-e-t-h W-i-n-s-t-o-n, I'm appearing on behalf of the Nebraska Interfaith Power and Light, testifying in support of the green bill. I wasn't sure I had seen AM624, but I did not know that it was going to be introduced today and our board has not taken a position on LB-- on AM624. I will run through the first couple of paragraphs because they're the main part of my testimony. Net metering was authorized by the passage of LB436 in 2009. At that time, there was discussion about the capacity and it was decided to stay with the 25 kilowatt capacity and see how things worked. And after 10 years, we think it's time to increase the capacity to 100 kilowatts. And as was discussed earlier, that would be beneficial primarily to business operators and-- and people on farms who have large energy usage. Current law requires the generation capacity to offset the customer generators' use and LB509 doesn't change that. Matter of fact, it has some modifications to that, but-- but basically it doesn't change that offset provision. It would allow an increase in capacity to allow farm and business operations to offset their use and make their operations more profitable. In the LB509, it makes sense for both the business' bottom line and for the environment. We understand there's been some good faith efforts to reconcile various differences to net metering. However, we-- we are concerned about the provision that talks about set net-- set-- separate net metering rates because that's contrary to best practices. We recommend amendments that would limit this-- the use of a set net-- I'm having trouble talking today, separate net metering rates for facilities larger than 25 kilowatts. And then we're also very concerned and would oppose any efforts to impose additional charges on net metering. I've also heard some people suggesting the Legislature doesn't have the authority to prescribe standards for public power, and that is inaccurate. You guys are their bosses. They're a-- they're a political subdivision-- they're political subdivisions of the state and you get to write laws that tell them what to do. They do lots of good stuff, but you're the-- the buck stops with you folks. Further suggestions that net metering is dangerous and additional costs need to be

imposed to protect the public are misleading, they're unsubstantiated, and there's been millions of cases of successful net metering projects across the country. Finally, I guess I'd like to talk a little bit about the last page. Renewable energy can provide many benefits. It emits no greenhouse gases or other harm-- harmful pollutants like mercury, which is a dangerous neurotoxin, which is particularly harmful to developing fetuses and small children. Renewable energy also uses no water, unlike fossil fuel generation. Net metering provides a method for individual homeowners and businesses to both reduce their greenhouse gas emissions and reduce their electric bills. Renewable energy is also very popular. I heard earlier Mr. Flowerday talk about recent polls. There are several recent polls that show that renewable energy is very popular among the people in the state of Nebraska. We'd encourage the committee to advance LB509 with amendments that protect customer generation from additional charges by utilities. We would strongly oppose any amendment that would impose any unnecessary charges on homeowners and business people. There's one other thing, I guess I was-- there's some questions about what is the impact of net metering on the bottom line? The utility-- and Mr. Williams sort of responded to it, but basically it's-- it's mostly just reducing the person's use. And if a person had a super energy efficient home, it would have the same-- same impact. I mean, if a person who had lots of natural lighting, for example, and super energy efficient walls and that allowed them to reduce their energy usage, that would have the same kind of impact on the utility because it would reduce their-- their monthly expenditure for utilities. So that-- that's the primary impact of net metering. I guess the final thing, if I can just throw in one more thing, net metering is having a-- there's very little net metering being used statewide. If you look at the most recent reported net metering in the state, in 2018 there was 6.76 megawatts of net metering statewide, in comparison to 8,800 megawatts of electricity who is generated-- net-- net-- generated, I'm sorry, my voice is terrible, was generated net-- statewide, which is like one hundredth of a percentage. So it's a very small percentage of electricity that's generated through net metering. I'd be glad to answer questions.

HUGHES: [02:30:41] Thank you, Mr. Winston. Are there questions? Seeing none, give your voice a rest.

KENNETH WINSTON: [02:30:46] Thank you, Chairman Hughes.

HUGHES: [02:30:49] Next proponent. Welcome.

DAVID HOLTZCLAW: [02:31:13] Thank you. My name is David Holtzclaw, D-a-v-i-d, last name Holtzclaw, H-o-l-t-z-c-l-a-w, I live at 5005 Chicago Street in Omaha, 68132. Thank you for allowing me to speak today, and thank you, Senator McCollister, for sponsoring LB509. I am an Nebraska licensed engineer who works in the energy efficiency and renewable energy sector. Our renewable energy portfolio consist of roughly one-half utility scale solar projects. These are feasibility studies, energy modeling, lifecycle cost analysis, all the fun work, and about half on these-- what would we refer as a small scale installation in design. So this is typically under 12 kilowatt systems. However, we have been provide a lot of bids and financial lifecycle cost analysis to a number of projects in Nebraska that go up to 100 kilowatts. Example of some of these larger projects, these 25 to 100 kilowatt projects are mostly in rural communities from small scale agricultural businesses, farms with either irrigation systems, refrigeration systems, electric farming equipment, any other electrical needs. We have also served a number of commercial clients in more your urban areas that are interested in installing what we refer to often as initial solar. These are small scale solar PV systems that are, by design, only offset a small portion of their consumption demand costs, but also helps them to meet local or corporate sustainability goals. So a quiz came up, question, I forget who asked this earlier, who is this going to benefit? Example, these two businesses we've worked with is Chipotle, which is a Colorado-based business, and the California-based Trader Joe's grocery store chains, both local-- they're both local stores. Trader Joe's, for example, has a has a 3 to 5 percent carbon footprint, but decreased per year per store. And they

leave it up to individual store to figure out how to do that. So increasing net metering for those type of businesses, not large businesses, kind of your small to medium businesses would help them. However, as the need of a small scale agriculture business nor the medium to small business-- business-- business-size businesses can take advantage of the current Nebraska net metering law as they are almost always-- always over 25 kilowatts. Furthermore, these systems would fall under-- often depending on utility rate structures that require standby charges and other charges that are really more designed toward the 500 Meg-- kilowatt in larger systems, such as water treatment plants and industrial facilities. By increasing the net metering to 100 kilowatts, these-- these projects would be able-- would not have these unnecessary distribution and standby penalties, thus making these projects more feasible-- economically feasible. We are in support of the original [LB]509 and we ask the committee to advance only Section 2, paragraph 7 on page 6 which simply raises the rate of capacity from 25 to 100 kilowatt nameplate capacity. We've been at 25 kilowatts max for about 10 years. This increase is both timely and needed particularly for our agricultural installations and businesses. Although we support most of the rest of the original [LB]509, at this time we feel like that needs-- it needs to be rewritten for clarifications and simplifications before advancing from this committee. Furthermore, we strongly oppose the amendment supported by OPPD. This amendment does several negative things. Number one, it decreases the 1-to-1 customer generation credits for distributed generation for total customer duration per bearing-- per billing period despite what you previously stated by the OPPD representative, and also decreases the-- what the utilities avoided cost to a variable costs and there's no protection against existing distributed systems, consumption, additional fees, monthly minimum charges, and other unnecessary requirements. This amendment, in our view, was poorly written complete tilted to the utility and harms currents and existing net metering laws. The draft of the initial LB509, as previously stated by Senator McCollister, by a lot of stakeholders went through a lot of talk and discussion, everybody came together. So it still needs some work, whereas the amendments did none of that. Thank you for your time and we'll answer any of your questions.

HUGHES: [02:36:12] Thank you, Mr. Holtzclaw. Questions? Seeing none, very good, thank you.
Next proponent. Welcome.

DAVID LEVY: [02:36:31] Thank you. Good afternoon, again, Chairman Hughes and members of the committee. David Levy, D-a-v-i-d L-e-v-y; Baird Holm Law Firm, appearing before you on behalf of the Northeast Nebraska Public Power District in support of LB509 and AM624. Northeast Nebraska Public Power District very much shares OPPD's concerns about the potential for cost shifting if the net metering limit is expanded as proposed in this bill. Those things need to be addressed. That said, Northeast also recognizes that LB509 could do more to promote other forms of smaller scale community solar development. One example of that would be allowing customers to aggregate their net metering limits or net metering shares together. So for example, the homeowners in a subdivision might choose to aggregate each of their net metering opportunities together and do a community solar project within their subdivision to serve those homes in the subdivision. The idea there is not to generate or energy to sell back to the utility or force back on the utility, but rather another option to generate electricity in a distributed local choice kind of a way for those people if they wanted to do that. So again, Northeast supports [LB]509 with the amendments and would like to participate and looking at other ways to use net metering as a vehicle to create opportunities or recognize opportunities for other types of options for local energy development and solar energy development, renewable energy development. With that I'm happy to answer any questions.

HUGHES: [02:38:16] Thank you, Mr. Levy. Are there any questions? Seeing none, thank you for your testimony.

DAVID LEVY: [02:38:22] Thank you.

HUGHES: [02:38:23] Next proponent. Welcome.

CHUCK MONICO: [02:38:38] Good afternoon, Chairman Hughes, members of the Natural Resources Committee. My name is Chuck Monico, C-h-u-c-k, last name, M-o-n-i-c-o. And I'm president of CM's A Cut Above in Omaha; we're a mid-sized landscape design, build, maintenance company. Over the last few years, my company, which can be pretty energy intensive, as you can imagine, have been trying to become more efficient both environmentally and economically. We've changed our entire fleet of mowers over to propane mowers and now we're looking at changing our entire fleet of mowers and hand-held equipment to battery operated. And we've gone so far as to purchase a couple of trucks this year which will have solar panels on the trucks to recharge the batteries on the road on to-- while we're going to the next location. Powering our business with solar fits into our business goals and clearly makes the most business sense for us. And we are considering installing solar panels at our location at about 75 kilowatts, which, obviously, currently falls above the current 25 kilowatt law that is in place. There's no policy to address that, hence we're in support of LB509 as originally written without amendment. We don't want any more than our 75 kilowatts, but we would like what it takes to go ahead and power our business. And I guess a couple of things that have come up before, maybe go and give you an idea of scale, like Trader Joe's and Chipotle, as a footprint was mentioned, our operation is approximately 60 yards by about 33 yards, it is, you know, smaller than a football field. It's not a large operation by any means. It is a small business footprint. It takes about 75 kilowatts to go ahead and operate. Our conversation with OPPD, they brought about eight people to a meeting with us. I didn't know if we were going to reopen Fort Calhoun, what the situation was, but we had eight people show up at our office and to talk about the mechanics and the engineering and the metering. And when we came to the conversation on net metering, up to 25 kilowatts, is very simple and easy to understand. And then after that was about a 45 minute conversation on what may or may not happen as you exceed 25

kilowatts. At the end of that conversation there was no clarity-- and this is not a strike on OPPD, I don't mean to present it that way, at the end of that conversation though, they said, we don't write the law. And there is no law for anything about 25 kilowatts. So, as presented, it is possible you could go ahead and spend the money on the infrastructure for the solar. And it is possible that as if something happened with your solar and you cannot go ahead and supply your building that there would be penalties to be put in place and then we would go ahead and raise your monthly minimum to the point where it wouldn't be worth making the initial investment at all. So with that, again, we're in support of LB509, without amendment. Happy to answer any questions that I can.

HUGHES: [02:41:50] Thank you, Mr. Monico. Are there questions? Seeing none, thank you for your testimony. Additional proponents? Welcome.

MICHAEL J. O'HARA: [02:42:09] Thank you, Chairman Hughes and members of Natural Resources Committee. Hello, I'm Michael O'Hara, M-i-c-h-a-e-l, O'Hara, O-apostrophe, capital H-a-r-a. I'm a registered lobbyist representing the Sierra Club, Nebraska Chapter and you've heard the rest. Senator McCollister, thank you for introducing LB509. I'll deviate from my comments because of the amendment, AM624, which we would like to support as well. The reason we-- I haven't read the amendment and yet I'll support it, I was taught negotiations by Senator Landis, and one of the things you're taught is you have to trust the person at the table. This issue has been around a long time. First time I encountered net metering was in 1979 and I was a legislative aide to Senator Maurice Kremer, who was Chair of this committee. You're going to see a lot of it, It's going to come back, and it's in politics, you get a half a loaf, or just a heel. I think we're in the half loaf, heel range on this bill. Dialing it back to the three largest utilities: LES, OPPD, and NPPD makes good sense. There are over 150 utilities. They are physically very diverse. But more importantly, the employee base for the three largest includes enough engineering talent to handle the complexity this type of thing will create. A visual example, when I was in OPPD, one of the transmission managers

was thinking I wasn't quite grasping what was going on and he goes, OK, what I want you to visualize is an art mobile, one of those things and hang in the air and move around. And he goes, and some of the bars are steel beams and some of them are rubber bands. And at the end, some of them are baseballs, some are bowling balls, and some are ping balls, Now hit it with a baseball bat. That's transmission and distribution system. It's complex. So the smaller utilities with fewer engineers will not necessarily be able to handle it. NPPD, OPPD and LES, given their footprints, will have enough rural customers that we will get experience working with real customers and be able to pass that along through the MPA to the smaller utilities. Cost: there is nothing more complex than cost. The switch from avoided to variable, variable cost is a lot easier to calculate and generally it's smoother as a number. Avoided costs tends to be more instantaneous, much more erratic. People who are selling it to you want to sell it at avoided because it tends to be a higher number. Doing a cost study is extremely difficult. Again, going to the three largest utilities, you have more skill at staff available to work on it. LES, when they were trying to resist ADM when they put in that co-generation plant, partly my suggestion, did a cost study. Over the 365 days, they had 365 rates of cost. They weren't one per day. Some rates were one day, 15 minutes. Other rates, year round. And that partly goes to the cost-- a lot of the cost recovery is done by OPPD in your hookup charge because of the variability of demand. And that is one of the reasons OPPD has been getting so much pushback from their customers on rates is they've been shifting from a variable cost rate to a fixed cost rate because of that uncertainty. But they have the ability to handle that complexity. If you have any questions, glad to answer them. The Sierra Club would support AM624. Hope you advance it.

HUGHES: [02:46:07] Thank you, Mr. O'Hara. Are there any questions? Seeing none, thank you for your testimony.

MICHAEL J. O'HARA: [02:46:13] Thank you very much.

HUGHES: [02:46:14] Next proponent? We will move to opponents of LB509.

BOSTELMAN: [02:46:23] Good afternoon.

JOHN HANSEN: [02:46:39] Good afternoon, members of the Natural Resources Committee, Vice Chairman Bostelman. 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 for better or worse, I was instrumental in the development of the current state policy. We worked for a number of years with this committee and members of the committee and-- and finally the REAs and we came together on what is now the current state law. So, as I look at [LB]509 in its original version, it would be a struggle for us to say that we support that. We support the need to raise the caps from 25 kW to a larger number. But when we put in the amendment, AM624, then we're gone. We cannot support that. That represents a substantial step backwards. And we do not support the effort to isolate out the three large utilities from all of the rest of the utilities in the state and the REAs. That, I think, is a mistake. So, I would tell you that as somebody who gets the phone calls from folks who are out in rural Nebraska and trying to work with their REAs, we're still not all on the same page of how we implement the law that was passed 10 years ago. We are still not carrying that out in a-- in a coherent and uniform kind of way. We still have different districts trying to do different things, some of which are appropriate, some of which are not. And so I think what we need is a bunch of the stakeholders to be at the same table and have an honest negotiation and discussion between the owners of the public power system and their public power system. And I think we need to have a variety of stakeholders, urban and rural, and that hasn't happened. I think that that's what's needed. And I thank Senator McCollister for his efforts. But this is not baked. It needs to go back in the oven. And if you look at where the solar, the smaller solar, and still some of the small wind, mostly larger-- mostly solar at this point, is going, it is in rural Nebraska and it is the farmers and ranchers that I represent. And these are folks

that have, like in a lot of us, we have grain legs and grain bin setups. We have livestock setups. We have some very fancy shops these days. We're doing a lot more of our own work. And so there's also, I think, a logic as we're putting items on the table that there is a logic for a lot of those kinds of farming operations to be able to put in and aggregate their three meters or four meters that they have on that one farm location, not 40 pivots, but one farm location and say, all right, instead of trying to replace that with three or four smaller less efficient solar systems to aggregate them into one. And so at that point if you do that then you get over the 25 kW. So that was, as I surveyed the solar distributors and dealers and folks who do the install work, that was a common sense thing. But I would respectfully and somewhat regretfully request the committee to hold this bill and let-- let the negotiations and the discussion between stakeholders begin. Thank you. I'll be glad to answer any questions.

BOSTELMAN: [02:51:02] Thank you, Mr. Hansen. Are there any questions from the committee? Seeing none, thank you, Mr. Hansen, for your testimony.

JOHN HANSEN: [02:51:08] Thank you very much.

BOSTELMAN: [02:51:10] Next opponent please. Good afternoon.

SHELLEY SAHLING-ZART: [02:51:26] Good afternoon, Vice Chairman Bostelman and members of the Natural Resources Committee. For the record my name is Shelley Sahling-Zart, S-h-e-l-l-e-y S-a-h-l-i-n-g, hyphen, Z-a-r-t. Again, I am vice president and general counsel for Lincoln Electric System here in Lincoln. I am appearing today on behalf of LES, NMPP Energy, and the League of Nebraskan Municipalities in opposition to LB509. And a few things; at this point, I think you have heard a recommendation for LB509, AM, I believe it's 624, you've had one suggestion to just increase from 25 kW to 100. You've heard one suggestion to narrow it to the largest three

utilities, and you've heard about an interim study. I think we can get around the interim study. I think we can wrap our head around that. On behalf of those three, I'm a-- I'm testifying in opposition to the others. So let's-- let's narrow this down. So what we're really talking about with net metering is we have a customer generator, and that customer generator, Rooftop Solar, let's say, and one of the things that they do is, let's say this is our little community here, we got our generator and the one thing they need to do is they need to connect to the utility. They need a distribution system. You need a distribution system at your home to receive your power. The net metering customer is more reliant on that distribution system than you are because they need that connection to sell their power back. Right? That's how net metering works. They want to get paid for anything they generate in excess and they want credit for whatever they're generating. So this little distribution connection more important to them. Here's the big thing in LB509 that causes me great concern. There's a provision in the bill about the customer charge. This we have fixed charges for this little distribution connection to all customers. All of you on your bill have a fixed customer charge, some people call it different. Ours is called a customer and facilities charge. We charge that to everybody. Same cost to serve all those meters. This bill, LB509, wants you pay that much. Takes it down to about 20 percent. So the rest of you, all of you, are paying this much. So that's a cost shift. So for a few customers that might not be a big deal. You put a lot of these on the system and all of a sudden we're sharing a lot more costs among the non-net metered customers. So what do we do? In 2009-- not-- in 2009 we adopted net metering policy and we all got together and we said, you know what, there is a cost shift. This is a subsidization program, but we are willing, as utilities, and everybody else, to support that to a certain level. That level was 25 kW for an individual system and 1 percent of our peak demand capacity for an aggregate on the system. And we said, that's the lowest common denominator across the state that everybody can wrap their head around. Then anybody that wants to exceed that and be more generous, pay more, allow bigger systems, everybody's got the ability to do that today. Lincoln Electric System, I will tell you today we have net metering up to 25 kW. We have a renewable generation rate for customers that want to

put in between 25 and 100 kW. It's not an offset like net metering, you're not offsetting load, but we do have-- we have upfront capacity payments and we do have a program to purchase the energy generated off that. No law that told us we had to do that. We voluntarily put that program into place. OPPD can do that; NPPD, other utilities can choose to do that. And it goes back to the local control issue we talked about on the last bill which is letting the communities and the individual utilities decide what kind of risk they can afford to take. A hundred kW, not going to be a big issue for Lincoln Electric System. A hundred kW is going to be a big issue for a smaller rural system. So as part of an interim study, what I would encourage you to look at is look at things like how these policies impact the different sizes of systems; how the-- the cost shift impacts the non-net meter customers, because at the end of the day it's a little regressive. Most people that put these systems in have money to put them in. We have a lot of customers who either don't have property that is situated correctly for it or they don't own their property. So they don't have the opportunities to participate in some of this. So what kind of cost are we shifting? What's an appropriate level for that? And my light is just about out. But the report I handed out, I don't know a lot about it, just came out today. It's a brand new report that talks about the state of net metering in states across the country. I've glanced through it enough to know, and through my own research, know that there's a few states that have completely rolled back their net metering policies because they've become expensive in their states, and there are some states who have changed their approach. Some rather than paying a retail rate, they're looking at-- or avoided costs, they're looking at a value of solar rate. There's a lot of different ways you can do it. It is evolving, much like we talked about in the last bill. And so I think an interim study at this point is more appropriate to sit down and take a look at all those new policies. I'd be happy to answer any questions.

HUGHES: [02:56:46] OK. Thank you, Ms. Zart. Are there any questions? Senator Moser.

MOSER: [02:56:51] There's no prohibition against an electric customer generating power for their

own use?

SHELLEY SAHLING-ZART: [02:57:00] Correct.

MOSER: [02:57:00] And not feeding it back into the system.

SHELLEY SAHLING-ZART: [02:57:02] Correct. They could be so totally disconnected off the grid.

MOSER: [02:57:04] So if they want to be off the grid, so to speak, and be, you know, green if it's at their expense, there's no prohibition against that.

SHELLEY SAHLING-ZART: [02:57:13] Correct.

MOSER: [02:57:14] And if they had times when they needed power, they could buy power from the utility. I mean, you know, I don't know, be almost like reverse uninterruptable power.

SHELLEY SAHLING-ZART: [02:57:27] They would not be able to do that without that distribution connection.

MOSER: [02:57:33] Well, you mean to switch back and forth between the two.

SHELLEY SAHLING-ZART: [02:57:36] Yes, you have to-- you have to be connected to the utility to be able to do that. And that's why I'm saying there's a fixed cost associated with that.

Whether you are fully generating for yourself or whether you're just using us occasionally for just your battery, if you will, and we're using it when either you're-- the sun's not shining or your system

is in need of repair or something, as long as you are connected to us and needing us for standby or backup, there is a cost. We still incur a cost associated with that distribution connection and we would expect the customer to pay that.

MOSER: [02:58:09] Well, you're going to charge them that minimum to have that available all the time is what you're saying.

SHELLEY SAHLING-ZART: [02:58:13] Correct. Yes. Yes.

MOSER: [02:58:14] OK. And-- but-- it seems to me like one of the negatives is feeding back into the system more power than some of these smaller utilities want. You know, they are-- they only want to keep this to one percent of their total in some of these customers could feed back way more power than what-- what they can handle?

SHELLEY SAHLING-ZART: [02:58:38] Well, part of it is under the statute, you buy back-- or you offset at a full retail rate. So, but if you're generating at your house, what you are really offsetting for me is my wholesale power. But under the statute, I'm-- I'm crediting you at a full retail rate.

MOSER: [02:58:58] Yeah, I don't know if this is something you're familiar with, but in Columbus, ADM has some of their own power generation and then they use some of their excess heat for some of their other processes and things. Do you know how those financial agreement [INAUDIBLE]?

SHELLEY SAHLING-ZART: [02:59:12] Yeah, a whole different kind of thing. That's a co-- that's likely a co-generation--

MOSER: [02:59:15] Co-generation. Yeah.

SHELLEY SAHLING-ZART: [02:59:17] --operation and a whole different agreement and arrangement for that. Which, by the way, I would like to correct that LES did work with ADM years ago. We don't have 300-and-some rates. I just wanted to make sure that was clear.

MOSER: [02:59:30] But you could enter into a co-generation agreement with somebody?

SHELLEY SAHLING-ZART: [02:59:33] Yes, we have some in Lincoln.

MOSER: [02:59:34] Without this bill.

SHELLEY SAHLING-ZART: [02:59:35] Um-hum.

MOSER: [02:59:36] This bill just says how you're going to credit them and puts more specifics into it than you'd like to see.

SHELLEY SAHLING-ZART: [02:59:44] Yes. And there are-- there are regulations under PURPA, the Public Utility Regulatory Policies Act, that govern the co-gen applications. Like I said, it's way different animal than what we're talking about here.

MOSER: [02:59:56] OK. Thank you.

HUGHES: [02:59:58] Any additional questions? Seeing none, thank you for your testimony.

SHELLEY SAHLING-ZART: [03:00:03] You bet.

HUGHES: [03:00:03] Next opponent. Welcome.

LEROY MOSTEK: [03:00:12] Thank you. My name is Leroy Mostek, L-e-r-o-y M-o-s-t-e-k.

Thank you, Senator Hughes, for allowing me, the committee, to speak here in opposition to [LB]509. I represent NREA, the Nebraska Rural Electric Association, the board, the employees, and the customers of Cuming County Public Power. The increasing you've already heard from the 25 to the 100 kW net metering was basically-- what 25 kW covers almost everything used by many of our customers today. It's well beyond what most homeowners and small farmers would do. Large farmers are going to be somewhat close to that, but the 100 kW is well beyond this most customers' needs in our areas. The-- where we're worried is the belief is of ours is that the legislation is being pushed more by those renewable installers and the vendors that-- than less actually that our customers themselves are coming to us with this. The oversize systems do not value the customers or the utility, simply cost more for installations and for the customers install them. As an elected official, I'm-- my due diligence is to look out for the customers of Cuming County Public Power. This duty-- this duty requires me to, whether the cost shifts are sort of unintended or cross-subsidization between the groups. Net metering for small scale does have some cost shifts, but the-- the dollar amounts are few and affordable. When you look at the increase to 100 kW, it's putting more of these systems in place. It is a great potential to shift costs to our customers. The worst part of it all is that usually not poor people are investing in these large utility renewables, but it might be the poor person who unwillingly will have to pay for these-- through these costs shifts. I want to thank you for the opportunity to oppose this bill. And I will entertain any questions if you got any.

HUGHES: [03:02:49] Thank you, Mr. Mostek. Are there any questions? Seeing none, thank you for your testimony.

LEROY MOSTEK: [03:02:55] Thank you.

HUGHES: [03:02:56] Next opponent. Welcome.

CURTIS KAYTON: [03:03:13] Good afternoon, Chairman Hughes, members of the committee, I'm Curtis Kayton, first name, C-u-r-t-i-s, last name, Kayton, K-a-y-t-o-n, I'm the general manager of Southwest Public Power District located in Palisade, and I'm testifying in opposition to the green bill. In the handout I have made here, I am-- my main objection with the net metering law, the current law that we have, with the-- how it credits the customers' value of the kilowatt hour that they are generating. It's not --it's not meant to be mean to the customer that wants to generate their own electricity. But it does specifically speak to the cost shift that they are credited with, the 1-for-1 offset. If they are allowed credit for a retail value of a-- of a kilowatt hour, as opposed to a cost-based kilowatt hour, an avoided cost-based kilowatt hour, then the utility spreads the rest of those costs to the other ratepayers. There is no other way to look at that. That is a cost shift, it is a subsidy that net metering customers get from the non-net metering customers of the system. And it's just that simple. These last few pages in the handout that I have, I did an analysis on my own bill, my own electric bill. This box up in the top on the front page that is-- that was my electric bill in 2018. How many kilowatt hours I used? Shelley referred to as a customer facilities charge, I'm referring to that as a minimum, that is an annual-- that's an annual basis. OK. Our minimums on our residential class are \$22 a month. Twenty-two times 12 is \$264. OK? That's our fixed cost. Our real cost-- real fixed charge should be up around 40. OK? But so we can remain affordable for all. OK? We keep it at \$22 and we build the rest of that fixed cost recovery into the kilowatt hour charge. OK? So again, take you back to if you credit back a retail kilowatt hour to that customer generator, that fixed cost recovery is spread to the other non-net metering customers. It's that simple. This box below, I did some more calculating. And if I did install 5 kW, if I had to meet my needs for electricity like the law says, I would be allowed-- and properly sized, I would be allowed to install a 5 kW solar array

on my roof. With the credits involved here, this handout indicates that by offsetting the kilowatt hours that that-- that that solar array could generate, and I'm just giving it a 20 percent capacity factor, 8,760 hours a year times 20 percent on 5 kW is 8,760 kilowatt hours credit. Because that number is less than my annual total, that would be credited at the full retail rate. So if you avoided at the full retail rate, that is a-- that's a direct subsidy of \$685.91 that the customer would see. Now I'm trying to stay out of the engineering and stay out of the physics, definitely staying out of my power supplier and the SPP impacts of that. There's more hair splitting that goes on there, that's admittedly. But for simple illustration, that's how it looks. Shelley also made mention of, if you turn to the back page, OK, I compared a 25 kW system and 100 kW system. Shelley made mention that in a muni, such as LES, they would have bigger wire, bigger infrastructure, stiff enough system, perhaps they could allow a homeowner to connect a 25 kW system. There shows the cost shifts. And just for the imaginary of it to connect a customer with 100 kW, there's a-- there's a higher minimum that we would have that we would charge for that, I'm guessing, we have no rate for it and it's not likely we would ever do it, but-- and with our small rural system, I can't think of anywhere we could put 100 kW behind a residential service, but it's clearly going beyond meeting their need for electricity. OK? And you can see the cost shift that is-- you could completely wipe out your electric bill and the utility could stand to write me a check. I would get a subsidy of nearly \$5,400 from the rest of the ratepayers that do not have net metering. As long as-- as long as net metering allows a 1-to-1 cost-- a 1-to-1 credit for their kilowatt hours that they generate, I will always oppose a modification to Nebraska's net metering law. That's all I have. And I would answer any questions.

HUGHES: [03:08:39] Thank you, Mr. Kayton. Are there questions? Seeing none, thank you for your testimony.

CURTIS KAYTON: [03:08:45] Thank you.

HUGHES: [03:08:46] Next opponent. Welcome.

JON DIXON: [03:08:57] Welcome. Thank you. My name is Jon Dixon, J-o-n D-i-x-o-n. I own Dixon Power Systems, which is a solar design and installation company here in Lincoln. I've been doing it for 19 years in the state, so I've been around in those early days with Senator Preister on the net metering and stuff that John Hansen was talking about. I'm opposed to both LB509 and the amendment, [AM]625. So the current net metering bill that we have in place, the intent was to simplify interconnection policy with the utility and establish a rate structure. Also to establish the safety requirements and to allow the net metering customer to receive the same similar benefit that a energy efficiency customer receives. In other words, if you replace your heating and air system with a geothermal heat pump which uses much less electricity, you have spent a large amount of money up front to save money over the next 25 years. Solar works the same way. You have a large upfront investment and you're going to save some money over time. Every customer that I work with is-- they want the numbers, they're looking at payback, they're doing all of that. But at the end of the day, the reason they move forward with a renewable energy system is because they have some other deep-seated, moral, environmental issue. They're very interested in the environment; they're interested in reducing their carbon footprint. They're interested in showing and teaching the next generation that there are other options, other ways that we can be doing things. These are the people that I have done projects with. And this is what is always takes that little bit extra. On a residential level, payback numbers are not what you would expect to see as you might see in a commercial. Commercial with LES it is-- with their incentive payment that they do and the depreciation and the federal tax credit, you can get some pretty good paybacks. But most of the customers are-- this is just something that they want to do as a statement. There are some things in this-- both of these two, [LB]509 and [AM]625 that I don't like--language. This variable energy, the thing about separating out the big utilities from the small utilities, small utility someone said, don't have the ability to

calculate this variable thing. When I go to a utility and I say, I have a customer that wants to [INAUDIBLE] renewable energy on your-- on your grid. They have documents. They have their interconnection application fee that we have to fill out. It's just paperwork that says here's what I am installing: this solar panel, this inverter, it is UL listed to physically interconnect, it will disconnect from the utility during an outage, meets all the requirements of the safety. We fill out that paperwork and away we go. Every utility that I've worked with, whether they're large or small, all have those avoided cost schedules. They all have their rate schedules. So I don't see that the small utilities are any disadvantaged. There are things in the current bill that different utilities interpret differently. Where I might say it says you can't charge insurance, but they still do. Where I might say it says you can't require any application fees, and they say they do. Those are things that I'd love to see cleared up, someone to designate. But the other language in these bills where they are adding costs, they want to add more cost to the rural energy customer. Obviously, I'm against that. The other thing in the AM I thought was very interesting in the original bill it says that the utility has to provide metering that allows that meter to be easily read by the customer for billing purposes. In [AM]625 they struck that out, so you no longer have the ability to read your meter easily, it appears. They also removed the additional equipment expense. So in other words, if you meet all the safety requirements as spelled out in the current net metering law we have, you would not be required to add additional equipment or safety. In the AM[6]25, they subtracted-- all that language was removed as well. The current law will not allow you to over generate, as people who have been concerned about. The current law says the intent of the current net metering laws for you to offset or be a net generator reduced your usage to zero. And that's all it says. It says you're not intended to become a generator. So the example that-- that other gentleman showed, I didn't see all of it, but he kept talking annual. We don't have annual net metering in Nebraska; we have monthly net metering. That means this month you tally up; if you over-generated, they buy it up at this avoided cost which is 40 percent of retail. And then you start fresh the next month. This true up that was mentioned earlier, all that is is if by some chance the utility of the net metering customer owed money at the

end of the year, they would just have to write them a check for that so that you start the new year at zero. Thank you. Sorry I went over my time. If you have any questions.

HUGHES: [03:14:49] Good enough. Thank you, Mr. Dixon. Are there any questions? Seeing none, thank you for your testimony.

JON DIXON: [03:14:54] Thank you.

HUGHES: [03:14:56] Next opponent. Welcome.

KRISTEN GOTTSCHALK: [03:15:06] Thank you, Senator Hughes and members of the Natural Resources Committee. My name is Kristin Gottschalk, K-r-i-s-t-e-n G-o-t-t-s-c-h-a-l-k. I'm the government relations director and registered lobbyist for 33 rural electric providers in the state. We serve more than 270,000 meters, over 96,000 miles of distribution line. And one thing that I would like to mention in order to be able to do that over such a large area, you do have to have the skills to understand your distribution system, your rates, and the engineering of your system. And our systems are very well equipped to do that. So I wanted to point that out based on previous testimony. More members of ours would have been here today, but you know that many of them are battling a blizzard in the western part of the state and extreme flooding up in the northeast part of our state. They're striving to keep the lights on. They do whatever they can to be responsive to their customers, and that's what they're doing today. So the handout that you have before you was testimony for Chad Waldow, general manager of Stanton County Public Power District, could not be here today. One, I don't think he could get here today; and two, he's dealing with-- with issues up in his district. I do want to thank, even though I'm up here to testify in opposition, I do want to thank Senator McCollister, because there are concepts within his bill proposal that do recognize the need of a utility to be fair to all of their customers and not benefit one customer over another. And

that ability to-- to draft a specific rate or make sure that your fixed costs are appropriately in place so that you collect those and you don't overburden other customers which can and does take place with net metering. So much has already been said, my testimony-- I was-- as I was listening, I struck a whole bunch of things out. Shelley Sahling and Dr. Scott provided you a very excellent definition of what net metering is, so you put their two explanations together and you have a good-- a good understanding. And Mr. Dixon provided a good explanation of what we did when we drafted net metering. And as I mentioned, the rural electric providers have always strived to be responsive to their customers. And even before the net metering law was passed in 2009, a vast majority of our member systems did draft net metering policies that are very similar to the statute you have in place; although they did set back with a 10 kW limit versus a 25 kW limit. And as we heard from Dr. Scott and when we envisioned the original bill, we looked at monthly residential as being the primary use of this meet or offset your energy use. And at that time the 10 kW level was more than sufficient. And in fact, 25 kW for most industrial applications still is sufficient. Like I said, I didn't want to repeat testimony, but I did want to touch on one issue. And we keep hearing about the higher needs for agricultural applications for net metering. And we heard grain drying and center pivot irrigation and I want you to consider that as those things come online, they are different than a month-to-month bill. They-- the-- an irrigator irrigates about three months out of the year. So they're a high energy user for three months out of the year. Nine months out of the year, little to no energy use. If you interconnect them with net metering and they are able to generate for 12 months, there's nine months there, there's nothing to offset and should that actually be considered net metering during that time period. I'm not saying that they shouldn't have access to the-- the net metering process, but I think we have to look at those types of systems differently. With that, you know, we do appreciate the committee holding or even killing this bill for a start over simply because the complexity of this issue doesn't lend itself to amendments on the floor. If you're a proponent of net metering, it's a very simple thing to explain. If you are an electric utility and you try to explain the complexity of rates and engineering and the loads of circuits and the size of the

equipment that needs to be in place to accommodate you, it becomes much greater. And so there are greater education needs. And I think we need to take our time to do that. Broader input, we do agree with a better understanding of what net metering means to both the customer and the utilities is important. So with that I'll complete my testimony.

HUGHES: [03:19:49] Thank you, Ms. Gottschalk. Are there any questions? Seeing none, thank you for your testimony.

KRISTEN GOTTSCHALK: [03:19:57] Thank you.

HUGHES: [03:19:57] Next opponent. Welcome.

MICHAEL SHONKA: [03:20:09] Yes. Thank you. Good afternoon. My name is Michael Shonka, it's M-i-c-h-a-e-l, Shonka, S-h-o-n-k-a; I'm from Omaha, Nebraska. My company is called Solar Heat and Electric. I started my business over 30 years ago, and I actually helped on the original bill along with Jon and Kristen. I was honored to come and speak right after her because what she says is so good and so spot on in many ways. I wanted to compliment that, as I do public power in Nebraska, because I think it's one of our great unsung heroes in our state. I put in solar systems in 19 districts in Nebraska. And I haven't had any problems myself, but I've heard rumors of-- or actually, I've heard people complaining about new fees that have been coming up, requests for insurance, documentation, and things like that, which weren't in the original bill and should not be allowed. So I guess I've done OK on kind of a gentlemen's agreement. The highlights of the original bill were very streamlined and direct in their nature and it captured the spirit of the intent. Since then, net metering has come under attack by electric companies across the United States. And I'm hoping Nebraska doesn't become one of those. The current version of [LB]509 obfuscates the spirit of this intent and overly burdensome caveats. I think it's a well-known axiom in economics that if

you keep the rules simple, you reduce your gamesmanship. [LB]509 doesn't do that. It introduces elements to allow that to happen and I think it's going to not serve us well in the future. We're ultimately looking for the policy in a wrong direction though. We're concerned about the low end of the system, the 25 kW or the 100 kW. Meanwhile, we're being parsed up by large companies from out of the-- from out of Nebraska that are coming in with mega solar farms. Now, they're going to suck up our capacity. So when I come to a small town, like my hometown of Atkinson, Nebraska, and it has now a little solar system next to it, which is totally wonderful for a town of 1,500, but what if that capacity isn't there anymore because there's a megafarm that's 10 miles out that's taking all of that. Now, they say, oh yeah, we "wheel" the power out of the state. Well right. Technically that's what happens, but we all know that the power just goes to the nearest transformer station and it basically gets distributed around that area. So what we're considering here is 25 to 100 kW. Yeah, we need to do that. I don't need to add to that pile of issues. What I want to try to impart upon you is that Nebraska is one of the greatest states to take advantage and leverage net metering to leverage private investment to come forward and put in their dollars to make this public good even better. And we're worried about the wrong end of the scale. So that's my message. Let's go forward. Let's make this an interim resolution. Let's study this problem. Obviously, we have the need for a lot more conversation here, but my point is very simple. Iowa next door is the number one portfolio for renewable energy [INAUDIBLE] in the country. We have better wind and solar resources, we have less population, we can easily exceed that standard, very easily. I've been in this for 30 years now. I think we're at the precipice of a great opportunity in the state. I'd hate to see that slip by because we're looking at the wrong end of the scale. Any questions?

HUGHES: [03:24:01] Thank you, Mr. Shonka. Any questions? Seeing none, thank you for your testimony.

MICHAEL SHONKA: [03:24:09] Thank you.

HUGHES: [03:24:09] Next opponent. Welcome.

ROBERT BEST: [03:24:40] Thank you. I'll wait till the handout is out. [INAUDIBLE]

HUGHES: [03:24:43] Clock is running.

ROBERT BEST: [03:24:44] Pardon?

HUGHES: [03:24:44] The clock is running.

ROBERT BEST: [03:24:48] I wanted to do a PowerPoint and because it's easier to follow. My name is Robert Best, R-o-b-e-r-t B-e-s-t. On Monday, February 11, I sent an e-mail to each of you explaining the process I went through trying to get this issue resolved which has led me here. Ten years ago, LB435 net metering was passed. To qualify for net metering, your system had to be 25 kilowatts or less. A few power distribution districts found a loophole in the law, are using it for advantage. The law does not specify AC or DC. AC, alternating current, is used to power your lights, appliances, heat and cool your home. DC, direct current, is used to power a portable devices and even start your car. You cannot mix the two. A solar system connected to the grid consists of solar panels, which produce DC, then you have the DC the AC converter, which is the heart of the system. You have DC going in, you have AC coming out. There will always be energy lost through the conversion. Then you have a power meter, which you have AC in and AC out. Then you have the distribution transformer, AC in, AC out to the power grid. DC will not pass through the transformer. This is a snapshot of my solar system on a partly cloudy day. The vertical grid shows that output power in kilowatt AC. The horizontal grid shows the time of day. When the clouds go over the sun, there is a drop in output power. This is my system on a sunny day. I'm putting out

approximately 20 kilowatts AC. So my current system, I have 25 kilowatts DC going into the inverter and I have approximately 20.5 kilowatts AC coming out. Currently-- or a one, two, and half of an array three are hooked up. If I would hook up the remaining panels, I'd have approximately 30 kilowatt DC going into the inverter, 24.8 kilowatts coming out of the inverter. And on the line graph, this is what it would look like. Let's go one step farther and add even more panels to where we'd have approximately 50 kilowatt of DC going into the inverter. Inverters can be locked down to prevent output from going above a predetermined level. We'll lock it down to 24.8 kilowatts AC. You will reach 24.8 kilowatts earlier in the day and sustain it longer by adding the additional panels. The sum of the solar panels, DC watts, is what my public power district uses to determine net metering, knowing that every system will be well below 25 kilowatts AC, more like 20 to 21 kilowatts AC going onto the power grid. You can never reach 25 kilowatts AC and still retain net metering. I am welcome to add more solar panels to my system, even though I am only outputting approximately 20 kilowatts AC to the power grid. But I will no longer qualify for a net metering. By losing net metering, all of my energy that's going onto the grid is purchased at avoided cost, which is less than their wholesale cost, plus they add administrative fees. So it's a win-win for my public power district. They receive more energy and more money earlier and I have not reached 25 kilowatts. Nebraska Public Power District, which is in more counties in Nebraska than any other district, uses AC values. They are the largest supplier of energy to my public power district. The majority of power districts that surround my district uses AC values, including in the largest district that is within my district's area. If I lived two miles north, I would be in a different district and I would be allowed to hook up the remaining panels and still retain net metering. So, I come to you asking to eliminate the loophole by removing the double standards and specify 25 kilowatts AC. AC is what is on the power grid. On LB509, I do have a couple of concerns. If the rating value for net metering was raised to 100 kilowatts, we still need to specify AC. If we don't, my power district would be able to claim I'm over 25 kilowatts and they would be allowed to control my solar system output power and reduce it more than what it already is. I'm out of time. Can I--

HUGHES: [03:29:54] Go ahead and finish, you're almost done.

ROBERT BEST: [03:29:55] Also, LB509, if a solar system is greater than 5 kilowatts, which currently it's set at 25 kilowatts, then the public power district would be allowed to charge more to the solar customer than to the non-solar customer to be connected to the power grid. Let's discriminate [INAUDIBLE] against the solar customer, especially when the power district has zero investment in the solar system. Let's encourage the green energy instead of discouraging that by controlling output levels and adding an additional charges.

HUGHES: [03:30:32] Thank you, Mr. Best.

ROBERT BEST: [03:30:33] Open for questions.

HUGHES: [03:30:34] Are there any questions? Senator Moser.

MOSER: [03:30:38] So you're just an individual here to testify?

ROBERT BEST: [03:30:42] Yes.

ROBERT BEST: [03:30:42] You don't install these?

ROBERT BEST: [03:30:44] No. No-- no, the pictures, my home.

MOSER: [03:30:47] That's your own installation. Okay, thank you very much.

ROBERT BEST: [03:30:51] Thank you.

MOSER: [03:30:52] Very informative, I'd say. Thank you.

ROBERT BEST: [03:30:54] Well, I talked to another senator prior to this, and he had asked what's the difference between AC and DC, and I thought, well, I'd better try to make it somewhat informative, so.

MOSER: [03:31:10] One is wavy and one is steady state.

ROBERT BEST: [03:31:13] Well, yeah. But, you know, it's most of the power companies are using AC rating, and a few of them are using DC rating. So I cannot hook up my own system under the power company.

MOSER: [03:31:32] Well, thank you very much.

ROBERT BEST: [03:31:33] Thank you.

HUGHES: [03:31:35] Thank you for your testimony. Any additional opponents? Seeing none, anyone wishing to testify in the neutral capacity? Welcome.

GRAHAM CHRISTENSEN: [03:31:59] Thank you. Chairman Hughes, members of the Natural Resources Committee, thanks for hearing this conversation today. I will confess, I came in in a supporting role during the course.

HUGHES: [03:32:10] Could you spell your name please?

GRAHAM CHRISTENSEN: [03:32:11] Excuse me. Graham Christensen, G-r-a-h-a-m C-h-r-i-s-t-e-n-s-e-n. And while I came in in a supporting role with the intent, certainly the amendment clearly changes things. I've been a part of conversations on this for-- for over two years now. Went into-- just a little history, went into this session in the offseason trying to work with, particularly, the Nebraska Rural Electric Association and the legislative chair there to come to a place where we had honor the utility concerns we heard in the hearing two years ago. This amendment, it does not represent any of the conversations that we've had. And it would effectively, I think, threaten to kill off solar the way it's written, if that was the intention or not. I don't-- I don't know that. But I have to testify in neutral because by principle I have agreed with the NREA that we would work through this process with a good process, one which honored each other so that we can meet our concerns. And so even if we aren't quite there today, this conversation has to happen. You heard one of my potential customers talk about being in that size range. I'm dealing with this all the time. We're being prohibited from being able to-- to develop over 25 kilowatts of solar. And when we talk to the utilities, we're not getting guidance except for that over 25 kilowatt we lose our 1-to-1 retail offset in favor of avoided costs that is not economical. As a farmer, just thinking-- coming from this independent culture, what is behind my meters-- behind my meter. Let me do this behind my meter. However the utility has legitimate concerns. There is a cost of service for doing some of these things, and albeit minimal, it should be respected in conversations as we get to larger projects. But we can't have a prohibitive rate that's unfair either. We need to settle on a rate class that makes sense. It will be a little bit different per utility potentially. So I came with a big long testimony written up, and obviously, you know, this-- this significantly changes my mentality on this. But what I do want to say is that I know in good faith that the Rural Electric Association, which will never get everybody on board in their shop, has been working that way to try to come up with a solution over time. I think within even the OPPD district, there are good faith conversations going on between board and staff that are going to be able to come find a solution. If those solutions were

already there at the-- at the utility level, we wouldn't have to be having this conversation, but this keeps getting kicked down the road and we're not getting any clarity when we go back to the utility and ask what we do now that we've had these conversations. So we just want clarity in this 25 to 100 kilowatt gray area. And if we have to stop this debate this year and because of this amendment that came out and start from scratch, I'm in favor of that. If we can bring stakeholders together from all the utilities, from the development community, from other key stakeholders that have been working on this for over 20 years, I would support a process like that too. But we need to have a process with integrity and that's not just going to kill off an emerging business, you know, for no good reason without anybody being at the table and we need to do it in a way that protects the cost for -- the costs that can come to the utility and preserves the integrity on the grid. These things are doable. We have some of the smartest people within the utility shops that can help that. And we have some pretty smart people on our side of the ship too that are trying to help give people those rights behind their meters. And so with that I come in a neutral testimony in hopes that we can progress in the upcoming months a conversation that is an honest conversation. Thank you. And I'll take questions if anybody has them.

HUGHES: [03:36:09] Thank you, Mr. Christensen. Are there any questions? Seeing none, thank you for your testimony.

GRAHAM CHRISTENSEN: [03:36:14] Thank you.

HUGHES: [03:36:18] Additional neutral? Welcome.

ERIC MOYER: [03:36:28] Thank you. My name is Eric Moyer. That's E-r-i-c M-o-y-e-r. I want to begin by saying thank you everyone here on the committee for holding this hearing and for giving me the opportunity to speak today as well. I find myself very conflicted about LB509 as the director

of sales and marketing for SWT Energy. We are commercial and residential solar installer based here in Lincoln, Nebraska, and we do business throughout the state. We've worked with a number of rural electrics, as well as OPPD and LES and those experiences have been overwhelmingly positive throughout the years and we've been very happy to have them as a collaborator and partner in navigating the process of interconnecting customers statewide. We have three resources in this state in abundance. We have wind. We have some of the best wind energy-- potential wind energy in the nation. We have the sun; we're the 13th or the 14th best state for solar development, yet we lag very, very far behind. We're one of the four worst states in the nation for development. And then we have water. We have the Ogallala Aquifer and we have the Platte River, thankfully. What we do not have in this state is any coal mines. We do not have coal miners anywhere in this state. And other than a railroad based in Omaha, Nebraska, nobody is really benefiting in this state from our current power structure. The day is coming in which I think, and I think many of you would probably agree, that we're going to be paying a penalty for the amount of coal that we burn. I think it would be very important for us to take the steps necessary to increase net metering, but not in a way that is detrimental to those customers that may wish to sign on. And that is why we're in support of LB509 as it's written. But I mean obviously with the amendment that makes it challenging or somehow eats into or adds cost to individuals that take that step and make that personal investment for the good of everyone in the community, and, of course, themselves, producing their own consumption. But one thing that we do need to understand very clear eyed and not have any confusion about is that when it comes to net metering we are talking about the net consumption at that meter. We are not talking about this individual producing a significant excess of energy and somehow creating a cottage industry. Nobody is going to get rich doing that. The cost of the electricity that is paid to that net metering customer for that excess energy generated is very rarely, if ever, full retail value. The energy then that goes into the grid is sold at full retail value. So there is a return on investment for buying that energy from customers. I won't go into a lot of detail about it, but I can provide a study that was done by the Brookings Institution found that net

metering, and I'm quoting: net metering frequently benefits all ratepayers when all costs and benefits are accounted for. I mean, that is something that we need to very seriously consider and study and how that will happen here in the state of Nebraska and if that will be the case here. I don't doubt that a lot of study has been done already, but I think we need to look at it broader and much deeper than we have till now. And the full range of benefits as well as cost in net metering, I mean, they're going to have a colossal impact on the future of this state. I mean, I think it's very important that for the safety and security and the financial future of this state we take the right steps necessary now and we don't do anything that's going to hamstring this industry or the potential for net metering to proliferate outstate or within these large municipal areas. You know, net metering, in most cases, it provides a net benefit. Net benefit is to the utility, as well as to the ratepayers. In a 2014 study commissioned by the Nevada Public Utility Commission, they were essentially trying to prove that net metering was deferring costs on other ratepayers. And what they actually discovered is that it provided a \$36 million benefit to all Nevada energy customers. A study that was conducted in 2014, commissioned by the Mississippi Public Services Commission, concluded the benefits of implementing net metering for solar PV in Mississippi outweighed the cost in all but one scenario statewide. So with that I'd like to conclude my time and open it up to any questions you might have for me.

HUGHES: [03:41:16] OK. Thank you, Mr. Moyer. Are there any questions? Seeing none, thank you for your testimony.

ERIC MOYER: [03:41:22] Thank you.

HUGHES: [03:41:26] Additional neutral testimony on LB509? Welcome.

EDISON McDONALD: [03:41:38] Hi. My name is Edison McDonald, E-d-i-s-o-n M-c-D-o-n-a-l-

d, and I'm appearing today on behalf of myself. This has been an interesting process. I went and helped to draft the original version of this bill. And throughout this process, we've really worked with a wide variety of stakeholders. I think that, you know, we've tried to go and pull something together that we could actually get to really try and move net metering forward. Over the last decade, I think something that's really important to keep in mind is the context of this: 2009 we passed the law, 2010 we had 137,461 kilowatt hours on line net metered. 2018, now we're at 4,087,743 kilowatt hours that are net metered; moving from 45 projects to 541 different projects where this is developed. I've worked in this arena in a variety of areas. I've worked with the private developer. I've worked with the state. And I think one of the things that's getting lost in this conversation is people are talking about an LR because everybody likes to push towards a study is I would reference you back to LR455 that I actually worked on for Senator Haar. And in that LR, we really dug significantly into most of the issues of net metering. Unfortunately, that was before, I think, most of the folks on this committee were here. But I'd really suggest that you reference that. It has a lot of the same sort of conversations. It has a lot of great research and references to really go and dig into this issue. So as we've been going and advancing through this issue, I think it's important to keep in mind, you know, that there are a variety of interests. But I think one of the interests that really hasn't been talked about nearly enough are all of those folks who have gone and said we're going to go and develop projects; we're going to go and enter into this. And a mistake in the original bill and in the amendment, both, is that neither of these should be affecting them in the fact--after the fact, the way that they're written now I'm afraid that it could affect people who have already signed up, gotten a project developed with one understanding, and we don't want to go back on kind of the understanding the word and the economic investment that they went and put in. You know, I think unfortunately with this amendment I don't see this bill going forward in addressing nearly enough of the different sides' needs. I think the original version, you know, maybe that there's still some hope that that could be a way forward, but I would really encourage this committee, I think, going in developing net metering as an economic tool. I think it's absolutely

vital for the future of our state. We have a tremendous resources. We've brought a lot of new business to this state. And I would hope that you would really work to go and force together all the stakeholders to make sure that everyone is on the same page and that we find a direction where we can go move forward, keeping in mind the balanced interests. Thank you. Questions?

HUGHES: [03:45:19] Thank you, Mr. McDonald. Are there any questions? Senator Moser.

MOSER: [03:45:23] So the objection, primary exemption-- objection to the amendment is that it does away with the retail offset and it only gives you credit for what it costs them to generate energy or some lower number.

EDISON McDONALD: [03:45:40] I mean, basically it's-- I mean the way that it would be set up, to my understanding, would significantly limit the ability to develop pretty much any new projects under a net metering law. And it could also--

MOSER: [03:45:57] Why would it stop all projects?

EDISON McDONALD: [03:46:00] Just because in terms of the increased cost, I think that that would really limit the potential for development.

MOSER: [03:46:07] The-- well, or the lack of the larger reimbursement rate for the generation that you are making.

EDISON McDONALD: [03:46:13] Well, I mean, you know, you're talking about a reimbursement rate and you hear the utilities talking about, well,-- this is larger. I just I don't see how that could ever happen. Ultimately, those prices are so low and you go and look at net metering rates from

Nebraska to other states, ours are still significantly lower than in other states. So, I think, you know, I don't understand that that part of the argument how that justification could come about.

MOSER: [03:46:45] So what's the one thing that you don't like about the amendment, what's the major objection?

EDISON McDONALD: [03:46:52] I mean--

MOSER: [03:46:52] Because I can see some guys out here shaking their heads while I'm talking, so rather than me paraphrase to you what I think the problem is.

EDISON McDONALD: [03:46:58] Yeah, no, no, no.

MOSER: [03:47:00] You tell me what your problem is.

EDISON McDONALD: [03:47:00] I think really, let's see, which one, sorry, I was testifying on another bill earlier. Here we go. No, that's the wrong amendment. It's been a long day of amendments for me.

MOSER: [03:47:17] It's been a long day for us, too.

EDISON McDONALD: [03:47:18] Yeah, I'm sure. That Section C establishing and issuing a minimum monthly charge and then also going and having it set upon, basically, the discretion of the utility. I don't think that that really creates enough protections for anyone.

MOSER: [03:47:41] For developers.

EDISON McDONALD: [03:47:42] Yeah. Well, for developers and for the project owners. I don't think that it allows any sort of serious stability. One of the things, especially when I was in Senator Haar's office and going through the LR455 study, was the misunderstandings that have been talked about. Some of the things that were brought to us especially, we're talking about a requirement for a million dollar insurance requirement, which, you know, I worked for an insurance company. They, you know, when I talked with insurers,, they thought that that was outrageous. And there's no reason for that. And ultimately, the law requires that [INAUDIBLE].

MOSER: [03:48:23] Well thank you. I appreciate that. I'm just trying to understand where people are coming from.

HUGHES: [03:48:28] Any additional questions? Senator [INAUDIBLE]. I'm sorry, Senator Gragert.

GRAGERT: [03:48:35] Thank you, Senator Hughes. Thank you, Senator Hughes. What about-- what about the idea, you know, we've heard from a gentleman here that he needed 75 kilowatt, he can't do it because we-- we-- right now the way it is, it's 25, that's it. What about going from 25 to 100 and you can do your study-- individual study and see what you need, 75, that's what you need to operate, but don't have any sell back. Or don't even-- or if-- if you did have some sell back, just enough to cover your, if you want to go to this minimal charge, you know, to cover that, that way the power company makes out their minimum charge, you know, their little bit, and put the producer, I'll say the customer, he's generating his own energy, he or she is generate his own-- their energy to offset, you know, not have to pay, I mean is it going to be--

EDISON McDONALD: [03:49:30] Can you clarify that a little on that?

GRAGERT: [03:49:32] I don't know if I can or not.

EDISON McDONALD: [03:49:32] I'm confused on what you're trying to get at.

GRAGERT: [03:49:36] But is it worth then to put up or go to solar power for your-- for your-- for you-- to generate your own energy and stay off the-- stay off the grid?

EDISON McDONALD: [03:49:46] Yeah. So, I'm not super familiar with--

GRAGERT: [03:49:49] OK.

EDISON McDONALD: [03:49:50] --projects that are off the grid, you know. And I think that this conversation will rapidly change. As I said, you know, even in 2014, or I'm sorry, 2016, we, like, the numbers that we're seeing now, I just asked the energy office to share those reports as we were working on this bill, and the numbers that we see now in net metering are not numbers that we really ever expected to see.

GRAGERT: [03:50:18] Thanks.

HUGHES: [03:50:19] OK. Senator Albrecht.

ALBRECHT: [03:50:20] Thank you, Chairman Hughes. And who do you work for?

EDISON McDONALD: [03:50:24] A complex answer. So, I've-- I've worked for GC ReVOLT Development. I've also worked for Senator Haar, and worked for-- and I'm also on the board of a

couple environmental non-profits. But today, I'm just representing myself.

ALBRECHT: [03:50:41] OK. I just-- I thought you said you wrote this bill. Did you work with him to write this bill?

EDISON McDONALD: [03:50:46] Yeah. Yeah. I just went and put together a first draft and then it's been passed around by a whole bunch of other people.

ALBRECHT: [03:50:53] OK. Thank you.

HUGHES: [03:50:55] Any additional questions? Seeing none, thank you, Mr. McDonald.

EDISON McDONALD: [03:50:59] Thanks.

HUGHES: [03:50:59] Any additional neutral testimony? Seeing none, Senator McCollister. We do have letters of proponents from Mary Ruth Stegman, Tim Fickenscher, and Mary Allen. Opponents from Neal Niedfeldt, Southern Public Power District; Mark Kirby, Butler Public Power District; Bruce Vitosh, Norris Public Power; Robert Beatty, KBR Rural Public Power District; Larry Umberger, Midwest Electric Cooperative Corporation; Ryan Borges, Wheat Belt Public Power; Mark Kirby, Butler Public Power District; Richard Ray, Burt County Public Power District; Darin Bloomquist, Nebraska Electric Generation and Transmission Cooperative, Inc.; Phil Burke, Polk County Rural Electric Power District; Robert Byrnes; David Custer, Twin Valley Public Power District; Mike Lammers, Cedar-Knox Public Power District. And one neutral, Don Preister. Senator McCollister.

McCOLLISTER: [03:52:04] Chairman Hughes and members of the committee, thank you for your

kind attention. I'm probably keeping you here a little longer than your usual committee meetings, and I apologize for that. But I think this has been a good primer on-- on net metering. We've heard from large-- large utilities, and we've-- we've heard from a farmer who wants-- who has concern with DC-AC. So it's been a wide variety of proponents and opponents. And I've-- I'm grateful for that. As I said in my initial testimony, we-- this bill isn't ready for prime time. And we saw good evidence of that. And I'm not exactly sure where we go from here. Whether we do an interim study and try to-- try to develop something primarily designed for the smaller electric-- electric utilities or whether we continue to-- to work with the large integrated utilities in the state. So with that, I-- I would welcome any questions or later on perhaps some guidance from this committee and the members thereon.

HUGHES: [03:53:21] Thank you, Senator McCollister. Any questions? Seeing none, that will wrap up our hearings for today. Thanks everybody for coming.