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Natural Resources Committee
February 21, 2018

[LB722 LB723]

The Committee on Natural Resources met at 1:30 p.m. on Wednesday, February 21, 2018, in Room 1525 of the State Capitol, Lincoln, Nebraska, for the purpose of conducting a public hearing on LB722 and LB723. Senators present: Dan Hughes, Chairperson; Bruce Bostelman, Vice Chairperson; Joni Albrecht; Suzanne Geist; Rick Kolowski; John McCollister; and Dan Quick. Senators absent: Lynne Walz.

SENATOR HUGHES: Welcome, everyone, to the Natural Resources Committee. I'm Senator Dan Hughes, I am from 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. That 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 would ask you to abide by the following procedures to better facilitate today's proceedings. Please silence or turn off your cell phones. Introducers will make initial statements, followed by proponents, opponents, and neutral testimony; the closing remarks are reserved for the introducing senator only. If you are planning to testify, please pick up a green sign-in sheet that is on the table at 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. When it is your turn to testify, give the green sign-in sheet to the committee clerk or to our page. 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's a separate white sheet on the tables that you can sign in for that purpose. This will be part of the official record. If you have handouts, please make sure you have 12 copies and give them to a page when you come up to testify and they will be distributed to the committee. When you come up to testify, please speak clearly into the microphone; tell us your name and please spell your first and last name to ensure we get an accurate record. We will be using the light system for all testifiers. How many testifiers do we have today on the bills...a show of hands? Okay. We will be using the light system. You will have 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 and you need to wrap up. 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 beginning on my left.

SENATOR KOLOWSKI: Rick Kolowski, District 31 in southwest Omaha.

SENATOR GEIST: Suzanne Geist, District 25 which is the east side of Lincoln and also includes the towns of Walton and Waverly.

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SENATOR QUICK: Dan Quick, District 35, Grand Island.

SENATOR HUGHES: And on my right.

SENATOR ALBRECHT: Joni Albrecht, northeast Nebraska, Thurston, Dakota, and Wayne Counties, District 17. Welcome.

SENATOR BOSTELMAN: Bruce Bostelman, District 23, Saunders, Butler, and Colfax Counties.

SENATOR HUGHES: To my left is committee legal counsel, Laurie Lage; and to my far right is committee clerk, Mandy Mizerski. Our page for the committee is Lee-Ann Sims from Lincoln; she is a junior at UNL studying political science and global studies. So with that we will begin. And we have LB722. Senator Wayne, welcome to the Natural Resources Committee.

SENATOR WAYNE: Thank you, Chairman Hughes, and members of the Natural Resources Committee. First, I want to acknowledge that this year there are a lot less testifiers against my bills, (laughter) so you're welcome, committee clerk, as you don't have 185,000 letters of opposition either. I say that to say that one of my things that I want to do with all that come before this committee and continue to just raise awareness around renewable energies. I think it is important as a state we continue to have these conversations. And looking specifically at LB722, I guess I need to say my name, it's Justin Wayne, J-u-s-t-i-n W-a-y-n-e and I represent Legislative District 13 which is north Omaha and northeast Douglas County. I introduced LB722 which would require certain public power districts to produce no less than 20 percent of the electrical generation from one or more renewable energy. Currently, wind and solar are the future of energy production. It is undeniable. And as we see the country move towards wind and solar, we know that Nebraska needs to be a part of that. Nearly 30 states have some kind of renewable energy production standards set in place for their utilities and Nebraska should follow suit. We should be investing in renewable energies, and yet I do not believe we are moving fast enough. Study after study, although my colleague, Senator Brewer, would disagree, with wind, we see study after study say that Nebraska has one of the best areas that should produce wind or for wind production in the country. We have endless, free, constantly replenishing source of energy being dumped across our state, must like water, that we should be taking more advantage of. It doesn't seem to be a real sense of urgency when we look at public utilities in this area. I know on NPPD's Web site they tout the 80 megawatts wind farm in Elkhorn Ridge and 60 in a wind farm in Ainsworth, but there are much larger farms across the country and I think we should be able to compete with those. In Indiana they have a 599 that comprises of 182 turbines. In Texas they have 342 turbines that can make roughly 735 megawatts. So there are just plenty of examples of bigger wind farms; although, we have some of the best wind places that we should have a

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discussion. So again, I talked to Senator Hughes, which was part of the reason why we scheduled this late. I didn't want anybody to be confused that this is not going to be a priority for me to push. And I talked to many people which is probably the reason we don't have 140 people testifying against it. But this is something that I think as a body we need to continue to look at; we need to continue to be aware of, and that's why I'll continue to introduce bills that are similar to this to make sure this body continues to have those conversations. And with that I'll answer any questions. [LB722]

SENATOR HUGHES: Thank you, Senator Wayne. Are there questions? Seeing none, you did a very good job, you answered all of our questions. [LB722]

SENATOR WAYNE: Thank you. [LB722]

SENATOR HUGHES: With that we will open it up to proponents of LB722. Welcome. [LB722]

JAMES CAVANAUGH: Mr. Chairman, members of Natural Resources Committee, my name is James P. Cavanaugh, I am counsel for the Nebraska Chapter of the Sierra Club, the oldest and largest environmental advocacy group in North America. I appear here today on behalf of the Sierra Club... [LB722]

SENATOR HUGHES: Excuse me, Mr. Cavanaugh, would you spell... [LB722]

JAMES CAVANAUGH: (Exhibit 1) Oh, I'm sorry, James, J-a-m-e-s, Cavanaugh, C-a-v-a-n-a-u-g-h. We appear here today in support of LB722 and we submitted some information in support of our position. I just point out one thing, I mean, this is happening, it's going to happen, it's a matter of how fast it happens. I happen to be a resident and ratepayer of the Omaha Public Power District and if I was going to do two things that in my opinion would improve this bill I would make it apply to all public utilities in Nebraska and I would make it 100 percent at a date certain, but this is a start down the trail that we need to go on and that we are on. I just point out on the back of the testimony that I've submitted to you, one salient fact about one of the many, many reasons that we should be doing this from a self-interest point of view and that is the Facebook data center being built in Sarpy County requires 100 percent renewable energy as a condition for locating in Nebraska. This project will create more than a hundred new full-time jobs, good paying permanent jobs, and the associated economic development that comes with them. More renewable energy projects will bring more good jobs to Nebraska. I think that that is a very saleable reason, the environmental concerns, of course, aside for pursuing this type of development. This is the future of energy in the United States and the world and we should pursue it as quickly as possible. I'd be happy to answer any questions you might have. [LB722]

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SENATOR HUGHES: Thank you, Mr. Cavanaugh. Are there questions? I guess I have one, the data that you pointed out that Facebook needs 100 percent renewable energy, so where does the energy come from after dark when the wind is not blowing? [LB722]

JAMES CAVANAUGH: Well, I think if you look at renewable energy, it's kind of like the old three-legged stool. It's not just wind and it's not just solar; there are bio-fuels and there are geothermal sources. And so what you do is you do kind of what we've done with the fossil fuel industry. What happens if there's a huge flood and our nuke plants are under water? Well, we've got coal to back that up. Or what happens if a tornado hits the coal plant? Well, we've got nukes to back that up. And what we're replacing that old energy generation system with are a number of new energy, renewable energy systems, all of which operate from different points on the energy generation scale so that if one of them, like solar, isn't available at night, then another one, like wind, might be. If that's not available, another one like geothermal might be; another one like bio-mass might be, and so you build up a redundancy in the system that...the utilities have done a good job with using fossil fuels, we're just saying, use the same mentality of redundancy, fail safe when you go to renewables. There are big advances being made. I don't know if you follow what Tesla is doing with battery storage. They will probably make this enormously easier in the next 10 to 20 years. We're way, way farther along than we were 10 years ago and that is going to speed up exponentially as we go forward. So once we have the ability to store big components of energy that we generate from any source, that's going to also, I think, really speed up what we're doing. And the transition from fossil fuel generation to renewable generation, it's happening; there's nothing we can do to stop it. We should do everything we can to speed it up. There's good jobs and good economic and good environmental reasons for doing all of that. [LB722]

SENATOR HUGHES: Okay, thank you. Any additional questions? Seeing none, thank you for your testimony. [LB722]

JAMES CAVANAUGH: Thank you. [LB722]

SENATOR HUGHES: (Exhibits 2, 3, 4, 5, 6) Next proponent? Seeing none; we have letters from Doris Goembel, Omaha; Diane Greenfield, Omaha; Don Zebolsky, Omaha; Vanessa Silke, Baird Holm Attorneys; Kenneth Winston, Nebraska Interfaith Power and Light. With that we will switch to opponents of LB722. Welcome. [LB722]

JOHN McCLURE: (Exhibit 7) Chairman Hughes, members of the committee, my name is John McClure, J-o-h-n M-c-C-l-u-r-e. I'm vice president of Nebraska Public Power District and I'm here today testifying in opposition of LB722. I do relish the opportunity to have some dialogue with the committee. I've provided a number of slides that I'm sure we can't cover in five minutes

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of my direct testimony, but hopefully will stimulate some other questions. Because I think there's a misperception here, and we heard it in the previous testimony, that we can, basically, supply all of our electricity needs with wind and solar and some other technologies. And quite honestly, that's a major challenge. So let me just hit some highlights real quickly. For NPPD, in 2017, the native load customers we serve in Nebraska, that is those customers who rely on us either as retail or wholesale customers for their power supply, receive 17 percent of their power from renewables, wind and solar. However, and one of the big issues of the day is climate. NPPD made a decision over a decade ago to make a long-term commitment to our nuclear plant. That plant emits no CO₂, no greenhouse gas emissions. As a consequence, in 2017, NPPD's customers received approximately two-thirds of their electricity from non-carbon emitting generation. That's pretty much unrivaled anywhere in the country, except maybe in the Pacific northwest where there's a lot of hydro. Some real key things here: you're legislators, you make laws. There are certain laws that you probably can't make--laws of physics and laws of supply and demand. And those are very important in this conversation. So the first slide that I've given you is something called a load duration curve and that's for the Southwest Power Pool. And while these numbers may fly at you, you can reference back to this and hopefully it's helpful. Today, there's 20,000 megawatts of minimum load in the Southwest Power Pool. There's a maximum of just over 50,000. If you took any electric utility in the country, they would have a similar load duration curve. The axis on the left side is the hours in the year; there's 8,716 hours in the year. So there are certain times that you never go below 20,000 megawatts of demand for electricity in the Southwest Power Pool. There are times it goes up to 51,000. You can see how that's distributed. Seventy percent of the time it's less than 30,000 megawatts. Today there's 87,000 megawatts of generation in the Southwest Power Pool. And we don't think mandating NPPD to add more generation to its resource mix is in the best interest of our customers. That does not save them money, it increases their cost. And we submitted in our fiscal note, we estimated with some conservative estimates a \$20 million to \$30 million impact by adding energy that at this time we don't need. And there's actually very many downsides when you get too much of any commodity into a supply and demand equation. The second slide I provided you is the accredited capacity. In the electric industry, electric utilities who are generators have to prove that at the peak time of the year they can provide a certain amount of electricity. And the Southwest Power Pool for the years 2017 projected through 2022, you see that's around 65,000 megawatts of accredited capacity. Again, peak demand only 51,000. Total nameplate 87,000. You see that on the next slide. And that's a breakdown of the types of generation that we have in the footprint. It's a pie chart; you can see it's dominated over 70 percent of it is coal and natural gas. Clearly, renewables are growing; that's an absolute fact. The big challenge is at what point do we have limitations, and we're facing those now on integration. What are the costs of that integration? Because it's not just building the generation, you also have to build transmission. The Southwest Power Pool has invested \$10 billion in transmission over the last decade, and that's paid for by electric consumers. The next slide shows the actual energy use in 2017. Again, this is an SPP slide. Wind is growing, no doubt about it. It's the largest amount of wind of any

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regional power entity in the country, 22 percent. And it will continue to grow, that's an absolute fact. Again, we can come back if you have questions. The last item I gave you was a snapshot I took at 8:30 this morning as to what was happening in SPP. There was about 36,000 megawatts of generation. And I took a snapshot of NPPD. We have a pie chart showing our mix. We were only getting four-tenths of a percent from wind. It's not because we don't have seven or eight wind farms out there that have hundreds of megawatts of capability, that's all that was generating. I see my red light is on. I'd be happy to attempt to answer any questions. [LB722]

SENATOR HUGHES: Thank you, Mr. McClure. Are there questions from the committee?
Senator Kolowski. [LB722]

SENATOR KOLOWSKI: Thank you, Mr. Chairman. Mr. McClure, what's the life span of a nuclear power plant? [LB722]

JOHN McCLURE: Original license for a nuclear plant was 40 years. A number of plants, including ours, have received a 20-year license renewal. We made significant investments to achieve that. And there are now plans pursuing an additional 20-year license renewal. And just as a footnote, in 2017, Cooper Nuclear Station produced more electricity than it had ever produced in 43 years of operation. So a real tribute to the condition of the facility and our people who work there. [LB722]

SENATOR KOLOWSKI: And how much nuclear waste does that produce in a year's time?
[LB722]

JOHN McCLURE: I don't know the quantity. There's both low-level waste that comes from certain operational practices and the fuel itself. We refuel on a two-year basis, 24-month cycle. We take about a third of the fuel out; it's called spent or used fuel there and put it in the fuel pool. We can follow up with you, Senator, and get the quantity of materials if you'd like that. [LB722]

SENATOR KOLOWSKI: But it's not without waste, there is that. [LB722]

JOHN McCLURE: Right, there is a by-product. But it's certainly concentrated. If you looked at other energy sources, it's one of the densest energy sources. I'm sure you've all see the little ceramic pellets that are replica of nuclear fuel and the equivalent of that little pellet to say a barrel of oil or how many other comparable sources. It's extremely concentrated. [LB722]

SENATOR KOLOWSKI: Thank you. [LB722]

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JOHN McCLURE: And very reliable. [LB722]

SENATOR HUGHES: Any other questions? Senator Bostelman. [LB722]

SENATOR BOSTELMAN: Thank you, Senator Hughes. Could you talk to me a little bit about stranded assets and does NPPD have any stranded assets right now? [LB722]

JOHN McCLURE: I would say we don't have any stranded assets at the moment. There was a very comprehensive study by the Department of Energy that was published in August talking about the transformation of the generation mix in this country. It's an issue that the Federal Energy Regulatory Commission is concerned about. The fact of the matter is, if you take this first slide I gave you, the load duration curve, and you turn it to the left, counter clockwise 90 degrees, historically, the way utilities would plan is all that area that is 20,000 all the time, 20,000 minimum, you would stack plants in there, you would build baseload nuclear, baseload natural gas, baseload coal, baseload hydro, and those would be dispatched first because you always needed them. And then you would build peaking plants--gas turbines, maybe some hydro, other things that would serve those limited hours when you needed additional power. What's happening now is we're turning that on its head. The way these markets work, is the lowest fuel cost is dispatched first. So wind is dispatched first and it's a zero fuel cost, it also has a \$24 a megawatt tax subsidy. So what that is doing it's causing plants that used to run all the time to not be needed when there's high winds and low load conditions. So for example, a plant of ours like Gentlemen Station, 1,365 megawatts, two unit coal plant, used to have a much higher capacity factor because it would be running all the time for our needs and for the market. Some of that is being displaced and we're taking actions so it does not become a stranded investment. But it is happening around the country. We're seeing nuclear plants, we're seeing coal plants, we're seeing even natural gas plants that can no longer compete in markets where energy prices are so low, and in many cases we have a huge excess of supply. [LB722]

SENATOR BOSTELMAN: Okay, thank you. Recently a question I'd have on...comment was from the testifier before, was specific with Facebook and having renewable energy resources available. How do you manage...does NPPD have biomass, geothermal, other type of resources they can utilize, reach out to help augment this (inaudible)? [LB722]

JOHN McCLURE: We have wind, we have hydro, we have solar. It would be very difficult for us to package that in a way where we're on any kind of a real-time basis you could reliably supply someone. They're just...they're too intermittent. That is an absolute fact. Now, on an annual basis could you say that someone received the equivalent of 100 percent of their energy from renewables? Yes. But on a real-time basis, and that's where utilities operate, we have to operate real time to keep the lights on; we're not there yet. Now, someone earlier mentioned storage.

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Storage could be transformational and will be, but even there we'll have to build extra generation to put it into storage if we're also going to be using renewables at the same time to serve current loads. So there's a lot of challenges going forward. And again, we have an excess, a huge excess of supply, why would we be mandated to add more? [LB722]

SENATOR BOSTELMAN: Final question I have for you. You gave a snapshot of today's generation that NPPD has and others. Could you speak to another time perhaps that you would see a similar thing that there would be a great need in the state for power that we would not be able to utilize renewable, where we would need baseload generation to provide electricity for the customers, for the state to keep the lights on, keep the heaters going, the furnaces? [LB722]

JOHN McCLURE: Well, the supply from renewables is highly variable and we can forecast certain things within maybe a day, but even those are off. I just checked before I came over here, while we were at .4 percent for wind at 8:30 this morning, we were up to 2.4 percent about 1:00. And yet there are times when we might be 30 percent wind on our generation, where there's high winds, low loads, we've backed down our coal unit. But clearly it's variable, and on average, and I think the thing you have to look at is a chart such as the energy mix that I...would be about the fourth chart, it shows that for the year for 2017, natural gas being about 19 percent and coal being 45 percent in the Southwest Power Pool, so you know, 65, almost two-thirds of the energy over the course of the year has to come from coal and natural gas today and other sources. So it's...you need everything out there and we need to be very thoughtful, and this is the committee of jurisdiction, you need to be very thoughtful about how this transition is managed. [LB722]

SENATOR BOSTELMAN: Thank you, Mr. McClure. [LB722]

SENATOR HUGHES: Any additional questions? Seeing none, thank you. [LB722]

JOHN McCLURE: Thank you. [LB722]

SENATOR HUGHES: Next opponent? Welcome. [LB722]

SHELLEY SAHLING-ZART: Good afternoon. Chairman Hughes, members of the Natural Resource Committee, for the record my name is Shelley, S-h-e-l-l-e-y, Sahling-Zart, S-a-h-l-i-n-g, hyphen, Z-a-r-t. I'm vice president and general counsel for Lincoln Electric System, the electric utility here in Lincoln. Today I'm here in opposition to LB722 on behalf of the Nebraska Power Association. The Nebraska Power Association represents all of the state's publicly owned electric utility systems including municipalities, public power districts, public power and irrigation districts, rural public districts, and cooperatives. We've been talking about generation

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portfolio standards for a long time in this body off and on. I think the first RPS bill was introduced, I think, by Senator Don Preister in 1997. So we've been doing this a long time. The Nebraska Power Association in all of those years has always been opposed to mandates. We're not opposed to renewable energy, we are opposed to mandates. Clearly, we're not opposed to renewable energy; you heard testimony from the Sierra Club that LES and OPPD and NPPD and others have put in a pretty good share of renewables over the years. The hallmark of how we've done that though is a hallmark of public power, it's about local control and it's about putting in what your customers are willing to absorb in terms of costs sometimes. And it's also looking at the fact...mandates are hard because if you look across the state, we have over 160 different systems, when you add up all the municipalities, all the different systems, some are vertically-owned utilities. What's that mean? It means they have generation resources, transmission, and distribution. Some of them are only distribution utilities. And you've got various things in between--NPPD. NPPD has a very strong wholesale focus. They're providing wholesale power for a lot of other whole systems in the state--municipalities, rural power districts. LES is a municipality. We're serving the Lincoln area. So because of those different structures, your needs for resources vary on when you need those resources and what type. I will tell you in Lincoln, one of the things that's been a long-term key to LES's ability to maintain rates among the lowest in the country over such a long period of time is diversity in our generation portfolio. That's diversity in terms of fuel type. Today, sitting here today on a nameplate capacity basis we're a third coal, a third natural gas, and a third renewals. That diversity has been very important over the years because we have seen periods where natural gas prices were very volatile where you wouldn't want to have a large share of your portfolio in natural gas and have to absorb that volatility. We also look at geographic diversity, which over time has meant different things. It used to mean physical security of those assets should a storm or something come through. Today it's means something very different. You've seen the SPP heat map, the pricing map that we refer to a lot. And you've seen how those prices vary from Nebraska, North Dakota, all the way down through the footprint. Well, having resources for LES, having renewable resources in Nebraska, Kansas, and Oklahoma, has allowed us to kind of spread the risk of that pricing over the footprint. We did a wind project down in Oklahoma a few years ago. There were members of this body that were very critical of that decision. But that decision saved \$52 million for our customers over the life of that contract, over the life of the power purchase agreement. That's \$52 million in terms of economic development that stayed in the pockets of Lincolniters and the businesses that do business here. So from our standpoint, that very much was an economic development decision. Economic development has lots of different faces to it. Yes, Facebook would like to...like renewable energy, and we're seeing lots of different technology companies in particular that would like to see 100 percent renewable. I think we need to be responsive and we need to figure out ways, as Omaha Public Power District has done, to meet those needs. We also have companies like a Nucor Steel or Kawasaki here or some of the manufacturers who want low rates and reliability. And we have to think about that as well. So we do our best...I see I'm just about out of time, but we do our best as utilities in this country to listen to our customers, to try

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to structure our portfolios in a manner that balances costs, that balances the environment, and balances the energy needs over time. And those are decisions we have to make that last us...you know, you asked...Senator Kolowski, you asked about the life of a nuclear plant. These decisions we make have to be long term; they have to have a long shelf life when we make those generation decisions. So these are not easy decisions to make, but I would encourage you to be very, very reluctant about adopting a statewide mandate. Mandates are just hard to apply to everybody without having some disparity treatment. I'd be happy to answer any questions. [LB722]

SENATOR HUGHES: Thank you. Are there any questions? Seeing none, thank you for your testimony. Next opponent. Welcome. [LB722]

JOHN HOKE: (Exhibit 8) Thank you. I'm John Hoke, J-o-h-n H-o-k-e. I'm here to testify on behalf of the Nebraska Rural Electric Association and Niobrara Valley Electric and our members. I'm going to make this briefer than I initially had. I wanted to talk a little bit about...just remind you that we are indeed nonprofit. And so our goal is not to squeeze more profit out of the bottom line, it's simply to make sure that our members and our customers get the lowest cost possible power that they can get and that's reliable, that's our goal. That's what set forth us to us by our board of directors. It's certainly, if we don't do that, we hear about it in every coffee shop in our area. I want to talk a little bit about our recent agreement with Nebraska Public Power District and how that came about. Because we as wholesale customers of NPPD were concerned with the possibility that NPPD might be forced to add generation or add generation they don't need, which as you heard earlier would increase power costs, we negotiated and received in that contract an agreement that would set a measurement metric cost metric on power cost. Not only did NPPD agree to that metric, but they committed to striving to get their power costs to the lowest quartile in the nation. We as their wholesale customers, we didn't ask for that, but they volunteered it as a goal. For the past five years we haven't had a rate increase and we've taken measured...they've taken measures to cut and contain their cost. And because of their efforts, our member customers and the vast majority of the 600,000 folks receiving power generated by NPPD have not seen a rate increase in five years. You heard about their renewable mix; I don't want to cover that, but I did want to point out that they do have enough power for many years into the future. Forcing them to add unneeded generation is only going to increase the cost of power to every wholesale and retail customer of NPPD. We often hear that renewable generation brings economic development to rural areas. Well, increasing the power cost to every business and individual in outstate Nebraska is going to indirectly affect all of those customers and have the exact opposite effect on rural Nebraska. It will make it much more difficult for us to bring entities into our service territories. This is a bad bill, one that would move the power cost of our all member customers higher, a direction NPPD and their wholesale customers have worked together to move in the opposite direction. And if you let public power employees do what we do best and allow us to decide when new power plants are needed, not those who want

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to sell new generation and force us to buy it. Keeping power costs low benefits everyone, and a required building of new generation only benefits a few. So when it comes to the power you receive, our focus is really on the citizens of Nebraska. One of the things that I want to address...it's kind of off script here a little bit and I wanted to save a little time for it, is that early on when renewables were being developed, some of the...the power systems a bit got pushed in early. And so we bought renewable plants that today are not as economic as we would have gotten had we waited another five, ten years. The plants that are coming on-line today are much less expensive than the plants that came on board 15 years ago. So I guess if we are slow to adopt, there's a reason we're slow to adopt. And I think it's been advantageous over the years to have a low-cost standard, and that's certainly what all of us strive for. And with that I'd be glad to answer any questions. [LB722]

SENATOR HUGHES: Thank you, Mr. Hoke. Are there any questions? I missed in your opening, you're representing NREA, but you're also what...? [LB722]

JOHN HOKE: Niobrara Valley Electric Membership Corporation. [LB722]

SENATOR HUGHES: Pardon. [LB722]

JOHN HOKE: Niobrara Valley Electric Membership Corporation. [LB722]

SENATOR HUGHES: Okay. So when you sell power to your customers, do you advertise it as renewable? Is that...does that have value to your customers? [LB722]

JOHN HOKE: We have an annual meeting every year because we're a co-op. And I always talk about renewables and we've looked at actually selling blocks of green energy. People seem to be satisfied with the mix. I've never had anybody come up and say, you know, I'd really be interested in 100 percent green energy. So we have a few small solar and wind units around, but they aren't as popular as I thought they might be. [LB722]

SENATOR HUGHES: So why, in your opinion, would you think Facebook wants to be 100 percent renewable energy? [LB722]

JOHN HOKE: It makes for good press, it really does. If I was...the press. I mean...you know, if you're 100 percent renewable that meets a criteria that the people who use Facebook would like to see. I mean, I understand that. We'd love to serve Facebook on our area, but... [LB722]

SENATOR HUGHES: So, not to put words in your mouth, but it's advertising. [LB722]

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JOHN HOKE: It's advertising. Absolutely. [LB722]

SENATOR HUGHES: Thank you. Any additional questions? Seeing none, thank you for your testimony. [LB722]

JOHN HOKE: Thank you. [LB722]

SENATOR HUGHES: Next opponent? Welcome, Mr. Kayton. [LB722]

CURTIS KAYTON: (Exhibit 9) Thank you. Chairman Hughes, members of the committee, I'm Curtis Kayton, general manager, Southwest Public Power District, located in Palisade, Nebraska. I'm representing our ratepayers that we serve in the southwest four counties in the state in opposition to the bill. For the record, my name is C-u-r-t-i-s, last name, Kayton, spelled K-a-y-t-o-n. About a year ago, we did a survey of our customers in our service territory. And I highlighted...I'm bringing this survey back again this year, I've highlighted this middle section, the deciding factor in whether or not they would choose to leave Southwest Public Power if they had the choice. The number one reasons were lower cost and reliability. I've included some slides that I've attached with this to point out a lot of the same items that John has talked about, both Johns have talked about, and I won't belabor those. But I would, just as a real-time example, I spend a lot of time on the SPP Web site as well, and the first slide here was a snapshot of the generation mix in the Southwest Power Pool on January 1, 10:40 in the morning. Winter loads were up about 39,000 megawatts and wind in the overall footprint served a little over 2 percent, solar didn't quite make the chart. So again, cost and reliability is very important to our customers. I believe that is a common trend amongst ratepayers across the state. These next slides: in showing the SPP's footprint and their heat chart, kind of gives a graphical display of where price...at what prices do in reaction to flows and generation, both transmission constraints and fluctuations in generation and utility-scale wind can be a part of this. The purple chart here, I will point out anything that's in a purple time when that five-minute period of pricing is displayed, those are negative prices. That's a large portion of the SPP footprint and I'm not here to say the wind...utility-scale wind is the sole culprit, but I can say with certainty it is some of the culprit if you have...you've heard we're long on generation as a footprint, if you're adding more supply and it's intermittent and not reliable, this results. The other slides are just depictions of difference snapshots that I've taken for your review. I don't want to belabor that a lot. I will just say that I would like to be considered as someone who is a trusted source, that as speaking for Nebraskans regarding electric issues, if wind and solar...utility-scale wind and solar worked as affordably or at the same low cost and the same reliability, the Nebraska public power utilities would be doing it, not being mandated to add more. And I'll just quit my testimony there. I'd answer any questions. [LB722]

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SENATOR HUGHES: Okay. Thank you, Mr. Kayton. Are there any questions? Senator Geist. [LB722]

SENATOR GEIST: Thank you, Chairman; and thank you, Curtis, for your testimony. I am curious with the current bill that we're looking at now, what does 20 percent renewable look like? How do you qualify that, quantify that? [LB722]

CURTIS KAYTON: Our power supplier, NPPD, self imposed a 10 percent mandate and, you know, that was the local decision made then. We're all living with that. If we're going to add more intermittent generation, add more supply to a saturated marketplace already and effectively amplify the effects of ramping our baseload plants that will keep the shafts spinning, keep the lights on, there can only be additional cost to pay for that because we can't totally shut them off, an added 20 percent. This might be a better example here, there's about 17,000 megawatts...megawatt for megawatt spinning in the Southwest Power Pool now. I believe there's about another eight or ten that are in construction that will be spinning a year from now or by the end of the year. Okay? There is a ton more in the queue. So, you know, 20 percent more on what is there, if all 17,000 megawatts are spinning, serving load, and winter loads are 25,000 megawatts, if we add too much more, the possibility could be there that 100 percent of the load could be served with renewable energy. Well, for what period of time would be the question. Is it five minutes? Is it an hour? Is it two days? So there's...adding more intermittent generation is effectively adding another power plant to serve one customer and it's very difficult to do that as reliable and as affordable than with the current system and planning decisions that we have made for a longer term. [LB722]

SENATOR GEIST: So to follow that up then, if this mandate were to take effect, it would then raise everyone's cost. [LB722]

CURTIS KAYTON: It would stand to raise electric costs; yes, I do believe that to be true. [LB722]

SENATOR GEIST: Okay. Thank you. [LB722]

CURTIS KAYTON: Yep. [LB722]

SENATOR HUGHES: Any additional questions? Senator Bostelman. [LB722]

SENATOR BOSTELMAN: Thank you, Chairman Hughes. I have a couple of questions. This...you don't have a legend on this on colors, so could you explain to me on this chart, you got

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purple, we got blue, we got orange and yellow. Do you know what each of those colors...
[LB722]

CURTIS KAYTON: The color gradients, lighter colors are more expensive. [LB722]

SENATOR BOSTELMAN: Okay. [LB722]

CURTIS KAYTON: If you turn to...this one is a good one, just point this one out, here the really colorful one. Blue down here, all the transmission is flowing, the load is running, the generation is meeting the need, the market is working just like it's supposed to. Then we have a large splotch of purple in this area. Those are negative prices from transmission constraints, additional wind that is backing power plants down and creating congestion, okay, all the combination of things going on. And then you have this real...this contour thing here where it takes about the...cuts the state of Nebraska in half and anything north of that for generation reasons, transmission reasons, the wholesale power cost of electricity is inflated. And I won't say these orange marks...let's say the orange marks are in the area of \$100 to \$120 a megawatt hour. Okay? Purple is somewhere less than zero, so negatively priced. Down here where the congestion is in the blue, those are \$6, \$8, \$10 price nodes. [LB722]

SENATOR BOSTELMAN: Okay. I want to make sure I understand something one...I guess it's not a question to follow up. You use the term "negative pricing." Is that generation...can you explain negative pricing to me a little bit as to what that is. [LB722]

CURTIS KAYTON: The negative price is where so much energy comes into the market, okay, that it can't all be used, okay. So effectively it's a function of oversupply. [LB722]

SENATOR BOSTELMAN: So what happens in that situation? I mean if you're a generator...if you're generating...if there...if I'm understanding right, SPP and the marketing side, low cost is what's purchased first... [LB722]

CURTIS KAYTON: Yes. [LB722]

SENATOR BOSTELMAN: ...and if you're above that, you don't. So how does that negative pricing affect, say, baseload plants, a coal plant, or a nuke plant, or a gas plant? [LB722]

CURTIS KAYTON: If you have...if all of the load is served and you still have generation for sale and the market is negative, you basically have to pay the market to take your generation.
[LB722]

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SENATOR BOSTELMAN: So what you're saying is you would lose the sale, plus you would have to pay because you're overgenerating. [LB722]

CURTIS KAYTON: Because you're overgenerating. [LB722]

SENATOR HUGHES: Okay, thank you. [LB722]

CURTIS KAYTON: That's my understanding. [LB722]

SENATOR HUGHES: Okay. Thank you. Senator McCollister. [LB722]

SENATOR McCOLLISTER: Yeah, thank you, Chairman Hughes. And thank you for your testimony. I wish I could have been here to hear it. Would you say it's fair to say that we're in a free market, a free competitive market for energy in the SPP? [LB722]

CURTIS KAYTON: I missed one part of your question. Could you please repeat, I'm sorry. [LB722]

SENATOR McCOLLISTER: Yeah, do we have a free competitive market? Is it a market system for energy cost in the SPP in Nebraska? [LB722]

CURTIS KAYTON: We do have a market system, yes. [LB722]

SENATOR McCOLLISTER: When a wind developer comes in, do they have a purchase power agreement so there would be a place to go with that energy? [LB722]

CURTIS KAYTON: That is the idea. There are requirements for that, yes. [LB722]

SENATOR McCOLLISTER: And lastly, would you say that the development of wind has had the effect of giving customers a break because the wholesale cost of energy really hasn't gone up since the development of wind; isn't that correct? [LB722]

CURTIS KAYTON: I would say there are...it picks winners and losers. I would even go so far to say that too much utility-scale wind in a footprint would manipulate a wholesale market from being a real true market because of its intermittent or non-dispatchable nature. [LB722]

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SENATOR McCOLLISTER: What's the percentage of energy developed from coal in the state right now? [LB722]

CURTIS KAYTON: Forties, as a state. [LB722]

SENATOR McCOLLISTER: As a state. And renewable, when you consider the entire state, would be what? Less than 10 percent? [LB722]

CURTIS KAYTON: Somewhere in there, yes. [LB722]

SENATOR McCOLLISTER: Okay, so coal is still a predominant source of energy in our state, correct? [LB722]

CURTIS KAYTON: That's correct. [LB722]

SENATOR McCOLLISTER: Thank you. [LB722]

SENATOR HUGHES: Any additional questions? Thank you, Mr. Kayton. [LB722]

CURTIS KAYTON: Thank you. [LB722]

SENATOR HUGHES: (Exhibits 10, 11, and 12) Additional opponents? We have letters in opposition from Thomas Rudloff, Elkhorn (Rural) Public Power (District); Mark Kirby, Butler Public Power (District); and Chet McWhorter, Cuming County Public Power (District). Oh, for neutral testimony? Anybody wishing to give neutral testimony on LB722? [LB722]

JOHN HANSEN: Mr. Chairman, members of the committee, good afternoon. For the record, my name is John Hansen, J-o-h-n, Hansen, H-a-n-s-e-n. I'm the president of Nebraska Farmers Union and also our lobbyist. Our organization was one of the partners that worked with Senators Priester and Amanda McGill to bring a renewable portfolio standard to the discussion going back in the 2001, 2002...3...4 area, and it was not because we thought that they were going to do it, it was...we thought that given our ownership and history of public power that we needed to have a conversation about what future generation ought to look like. That did start the conversation. And we initiated a conversations with our public power partners; they responded, we had meetings. And instead of just saying, no, they started saying, well, let's take a look at this. Let's take a look at it in terms of cost and in terms of what our owners want, all of those kind of things. And so in 2004, if memory serves me, we had about 74 megawatts of wind in Nebraska.

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And 60 of that was just because of the brand new project that NPPD had just built at Ainsworth, which was 60 megawatts. So we had just made a big jump and they made a big commitment. But Nebraska was at a competitive disadvantage because our public power state couldn't use the federal production tax credits which were a substantial incentive that ranged from about 1.7, 1.8, 1.9, up to about 2.2 or 3 now. But for a lot of projects, it almost cut the cost of a wind project in half. And when you used a private/public partnership, you could allow that additional cost to come down and be reflected because of the federal incentives; so it took away the cost disincentive for our public power state. So being both protective of our public power system, but also wanting to move renewable energy forward, we were certainly at the part of the...at the table with a whole bunch of other stakeholders, including public power, with the development of LB629 in 2007. And so to public power's credit, they have listened, they have responded, and in an appropriate market-based and cost-effective way we've gone from 74 megawatts to, depending on whether we figure out whether or not Kimball is up and in or whether it's not as it's going through retooling right now, and a couple of other smaller C-BED projects, we're somewhere around 1,331 or 1,321 megawatts. So we have come a long way, especially the last...the two or three years, we have a whole bunch of additional other projects in. And the other thing that we would say is that when we were having this conversation and thinking about using this tool to move things forward, as other states were, we were in a different position in our state because, unlike other states where you have private sector utilities, we had public power. So the importance of having people elected to office and being responsible and responsive to the public was an important difference that our state had. So once we remove the economic disincentives, then we had an altogether different outcome and a different experience to public power's credit. The other thing that has really changed this entire conversation, in my opinion, having tracked these issues for some time, is that with...joining the Southwest Power Pool and the development of the different kinds of marketing options, you don't have to go out and build it now. All you need to do is shop the market and buy it because the capacity is there. We already have excess capacity in the Southwest Power Pool, so if you want to buy renewables, it is a buyers market at this point. So to that extent, we don't think that this tool is necessary or appropriate at this point in time. And with that, I'd end my comments. [LB722]

SENATOR HUGHES: Are there any questions? Seeing none, thank you. [LB722]

JOHN HANSEN: Thank you. [LB722]

SENATOR HUGHES: Any additional neutral testimony? Seeing none, Senator Wayne, you're welcome to close. [LB722]

SENATOR WAYNE: I think...thank you, Chairman Hughes...I think the most interesting statement that was said, I wrote it down because it was so interesting, basically how this

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transition is managed and it's up to this committee and public power is how this transition is managed. This transition is going to happen. We are going to move...the biggest threat to public power is a battery. Once a battery arrives that is feasible, solar, wind becomes much more feasible and we will sit with abandoned...stranded assets of about \$1.3 billion in NPPD. OPPD has already realized that and started moving away. And, yes, it will cost the ratepayers some additional dollars, and OPPD has shut down their nuclear power plant which is just north of my district, and affect many people in my district, and are transitioning to coal plants in my district, moving some of them to natural gas, some of them will remain coal. It's going to happen in the next ten years. And either we can do it and think logically without emotion on what the best way to do it, or we can react. And when we react to things, it's often emotional, because it's being mandated to us to fix the problem, and then we deal with whoever doing...kind of what we're dealing with right now regarding our budget. Everybody is reacting so much that because of such a need to fix our property tax issue, we're not always thinking logical and big picture. I don't want that to happen where we're at right now. We have to remember that when we entered the SPP market, that changed everything about our public power. No longer is the coal plant just turning on these lights here. The fact of the matter is, as you heard, quietly if you listened to the testimony, that wind sometimes...two testifiers testified to that, will cause our coal plants to be reduced or...I will say sometimes almost shut down. This is already happening. We are losing money on these stranded assets. They're not completely stranded yet. But we have got to figure out a way to bring renewables in and to modernize our public utilities. The other fact of the matter is, is OPPD, last year, 30 percent of their renewable...their energy came from renewable. Their CEO believes by 2020 half of their renewable...half their energy supply will come from renewables. You'll say--how is that? Well, the actual agreement with SPP does not require NPPD or OPPD to actually have a baseload of 20,000. They could even contract that out. They don't have to have the actual equipment here. In this technology, because of the amount of excess energy in the SPP, we could literally shut down our plants and be able to buy it on the market. That is a reality. So what I'm saying is, this may not be, necessarily, the best avenue; but again, I'm going to continue to introduce bills around this topic because sooner or later, whether it's TESLA or somebody else produces a battery that will fundamentally change the market, that question about stranded assets becomes a reality. And our taxpayers, whether we like it or not, will have to pay that. So let's figure out how to get ahead of the game. Let's figure out how to get ahead of the curve, while right now we could bring everybody to the table, while right now there is no immediate threat because the battery probably won't happen for ten years, let's have those conversations and make sure we put a policy together that can incorporate the future, instead of just trying to stay where we are because we can't stay here. We can't stay where we are. The battery will change that. Who would have known 20 years ago I'd have a Fitbit tracking every step that I'm taking, and I can buy it for less than \$300. They can GPS me wherever I go; that my daughter can have that chat...little bitty phone that I can find out where she's at. Fifteen years ago that wasn't possible. And our laws are trying to catch up to those things. But our public power

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thing that we bank on in Nebraska, we have to have those conversations now before we become reactionary. So with that, I'll answer any questions. [LB722]

SENATOR HUGHES: Are there any questions for Senator Wayne? I guess I've got one, just curious what your intent...you know, drilling down a little bit farther, of not less than 20 percent of the electric generation from one or more renewable source of energy. So what time frame do you want that? Is that per day or per week or per month or per year? [LB722]

SENATOR WAYNE: I'm open to clarifying that with your legal counsel to find out how we can make that better. The point was, and the reason we... [LB722]

SENATOR HUGHES: What is your target? [LB722]

SENATOR WAYNE: Target is overall energy. I didn't look at a time frame. I was thinking overall. [LB722]

SENATOR HUGHES: Okay. [LB722]

SENATOR WAYNE: We can get down to the nitty-gritty at 7:00 a.m. versus the whole entire month. I don't know. It was a conversation starter. [LB722]

SENATOR HUGHES: Okay. Then I guess, you brought up batteries, so I know the technology is not here, but just thinking outside the box or what is your vision? What type of facility would it take to have enough battery capability to run the state of Nebraska? They would be spread all over, but... [LB722]

SENATOR WAYNE: They would be spread all over. [LB722]

SENATOR HUGHES: My vision, it would be pretty massive structures with pretty high investment. [LB722]

SENATOR WAYNE: There would be a massive structure and pretty high investment, but if we don't do that, we're going to continue to upgrade coal and upgrade something...we're going to spend money one way or another. [LB722]

SENATOR HUGHES: True. [LB722]

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SENATOR WAYNE: We have to figure out what that cost benefit analysis is that's best for Nebraska. But let's look at Facebook and even OPPD, I can go right now to OPPD and sign up for all-green renewable energy. It's going to cost me a little bit more; and I know wind is not going to blow everywhere all 100 percent of the time; and the sun is not going, obviously, to stay open...or out over 12 hours sometimes in the day. But you can still buy it because the market allows you to buy that. The market allows you that when wind stops in Nebraska, I can buy wind from Kansas. And you pool those renewables together and that's how OPPD is able to get Facebook 100 percent renewable. You pool all those markets together and say we want green energy, we know where that green energy is, and that's how we run it. So, yeah, it will happen. It will happen one day. We got to deal with it. [LB722]

SENATOR HUGHES: Are there any other questions? Seeing none, that will close our hearing on LB722. And we will move directly into LB723. Welcome back, Senator Wayne. [LB722]

SENATOR WAYNE: Good afternoon, Chairman Hughes and members of the Natural Resources Committee. Again, this is "Senator Wayne's Day" in Natural Resources. My name is Justin Wayne, J-u-s-t-i-n W-a-y-n-e and I represent the Legislative District number 13 which is north Omaha and northeast Douglas County. This is a bill that I am very passionate about when I look across the state...at least across the country. Over 47 states offer net metering options and Nebraska's 25 kilowatt cap is one of the lowest in the country. This is not something to be proud of and I believe we need to change it. I was asked earlier by another senator who brought me this bill, and it was actually last year I saw Senator Blood bring a bill similar to this and I thought it was a great bill and I think it's a conversation that we have to keep having. Increasing the cap to 100 kilowatts is a step in the right direction and completely in line with other states. One hundred kilowatts caps include Alabama, Georgia, Missouri, North Dakota, Oklahoma, and South Carolina. But when I look across the entire country, it shocks me that Virginia can do 500; North Carolina and Nevada and Indiana can do 1,000 kilowatt caps. I think what Nebraska and our public power we should be moving the net metering cap higher than what it currently is. And when I was drafting this bill, I thought...and I got a lot of phone calls, especially since last year, I built an interesting relationship with the energy folks, and Curt was actually one that I talked to quite a bit. And I understand the need, when we go down...what we call down the line...and there's a farmer or somebody down the line, the infrastructure costs that would happen. And so I've been toying with this idea and I'm telling the committee this that I am very amendable to maybe just applying this to the city of Omaha. Let's start it somewhere. Omaha has the infrastructure. We can do net metering there. It isn't all the way down the line to where it's just a one off and you have to rebuild the entire infrastructure, so I am open to that idea of let's start it and let's start moving in the right direction. I do think 100 is not enough, but I think it's a great start and I do think starting in Nebraska...I mean starting in Omaha where there's an infrastructure already there allows us to build this type of infrastructure and see how it works. So it would almost be like a pilot program that we can try in the area. I have not discussed this with

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OPPD, so if they're behind me and want to testify, they will be shocked about that. But I'm sure we can work it out in the next 30 days. So with that I'll answer any questions. [LB723]

SENATOR HUGHES: Thank you, Senator Wayne. Are there any questions? Seeing none, we'll open it up to proponents of LB723. Welcome, Mr. Cavanaugh. [LB723]

JAMES CAVANAUGH: (Exhibit 1) Senator Hughes, members of the Natural Resources Committee, thank you. My name is James Cavanaugh, J-a-m-e-s C-a-v-a-n-a-u-g-h. I'm a counsel for the Nebraska Chapter of the Sierra Club and I appear here today on their behalf in support of LB723. Providing you with a position paper on why we think LB723 has merit and some of these points that Senator Wayne touched on. But just two more in terms of the state of the market, two of our neighboring states--Colorado and Iowa, have significantly higher limits now--Colorado, 2 megawatts; and Iowa, 500 kilowatts. And I think that we need to take a look at what we do in this transition period that Mr. McClure referenced. There's no getting out of it. We're in this. But I can tell you from experience in government in Nebraska and public power, where I grew up, and I've worked for a public power entities; I've had relatives on public power boards. I'm all in with the concept of public power, I think it's one of the greatest concepts that Nebraska came up with; George Norris being the originator of. We have to be careful in transitioning from where we are to where we are going to go. And Senator Wayne was absolutely right, we're on this path whether we like it or not. At the same time that we're transitioning from the old fossil fuel energy generation model to the renewable energy generation model, we have to preserve our public power infrastructure. It's a valuable asset and it works better than anybody else's in the nation. We're all for that. But we have to move and we can't stay where we are and we can't go back. So when we take up initiatives like LB723 and LB722 that you just heard, you're just recognizing the inevitable. And I'll tell you, I know this is difficult for governmental entities. I grew up in a family that was dedicated to public service and my father taught me from an early age that there are two principles of government that you violate at your risk. And the first principle is--we've always done it this way. And the second principle is--we've never done it that way. What we're advocating violates both of those principles. We are moving from the way we've always done it to a way that we haven't done it before; but we have to do this. And so moving on LB723, even in the modified form that Senator Wayne mentioned in his testimony, is something that we must do. And we can either do it today or you'll do it next year, but you will do it. It's a matter of doing it in a thoughtful and common sense Nebraskan way that does what we need to do to get to a renewable energy generation economy and preserve our public power infrastructure. We can do both things, but we must do something. And we would urge you to take action on these two bills as this year's installment on what we need to do going forward to get to where we are going anyhow. I'd be happy to answer any questions you might have. [LB723]

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SENATOR HUGHES: Thank you, Mr. Cavanaugh. Are there any questions? Senator Kolowski. [LB723]

SENATOR KOLOWSKI: If you don't mind, Mr. Chairman, just a comment to piggyback on Jim's comments. About two summers ago, my wife and I had a vacation trip to...we took a ship and we were in northern Germany, and we were going to go to Berlin one day. So we're in the port, and as we go into the port area, it's just covered with wind turbines everywhere. Tremendous wind power in that area and we had a night...we had a 3-hour drive in a bus from the coast to Berlin. For the first 90 minutes we were never without viewing wind farms somewhere and solar beds that were laying in fields. And they had, we found out, they had so much surplus power in that northern state in Germany that they were selling to states all around them and pocketing the money of course and doing what they wanted to do with that. But I just thought about that within the terms of what you're talking about, to the next level, to the next level. They're not waiting for the sun to come up tomorrow, they're already doing all these things. [LB723]

JAMES CAVANAUGH: You know, if I could, that's absolutely right. I mean, you can go places and see what the future looks like, and it works. When you hear testimony from people that, oh, this is a problem, and this is a problem, and we can't do this, and we can't do that because there will be excess capacity or whatever. Well, I'm sorry, there are major economies that are friends of ours, like Germany, there are major economies that are neighbors of ours, like Iowa, who are already doing this. So when you hear those types of statements, think about this--we've always done it this way and we've never done it that way, because that's what you're hearing. Change is hard, but it is inevitable. [LB723]

SENATOR KOLOWSKI: Thank you. [LB723]

SENATOR HUGHES: Any additional questions? I guess I want to follow up a little bit on the challenges that we have of being a public power state and say we do jump our net metering to 100, 2,000, you know, that's a challenge for public power. If we were a private industry state, I think it would be much easier transition. But just curious, have you thought how that structure is or are you just let them build it and public power has to adjust or...I can see that being very disruptive to the state as a whole? [LB723]

JAMES CAVANAUGH: Yeah. Senator, that's a very good point, because I think that we have to be careful during this transition phase. Twenty years from now, that's not going to be a problem because we will have transitioned. And 20 years ago, it wasn't a problem because we hadn't begun this process. We're in a critical stage now. The Legislative Research Office just came out...I picked it up today, I haven't had a chance to read it, with a document on public power in

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Nebraska. And we need to carefully study where we're going to go. But all the information exists. And the examples of where it's happened already exist. So we don't need to spend five years studying it, maybe we need to walk down to Legislative Research Office and pick up that document and then see where their sources were because we can get there very quickly. I think...you know, what Senator Wayne said about let's take a little piece of this and cut it out and try it there, like a test market in the metropolitan Omaha area. Well, that makes some sense, I think. And we'll find that the problems that have been expressed in terms of excess capacity, etcetera, are going to occur. That's going to be part of the transition and you can't avoid. But they're going to go away after we get through this transition period and we're going to have an all renewable electric generation economy. So let's try to get there as smart and as quickly as we can, and I think that this is a good step towards...you're exactly right, we need to watch what we're doing a step at a time. And this is a reasonable step. This doesn't change the world, it's just a reasonable step forward. [LB723]

SENATOR HUGHES: Okay, thank you. Senator Bostelman. [LB723]

SENATOR BOSTELMAN: Thank you, Senator Hughes. And this is more of a comment than a question. I would ask that you please go out and read as to what's going on in Germany now. Germany is experiencing blackouts, total failures of the transmission and their electric rates are skyrocketing. They are going back to looking to put their nuclear plants back on-line because they have a huge problem with renewable energy with what's happening there. So I say that with the thing that I think it needs to be tempered with what you're saying that if you do it wrong and you do it too fast or too big, we're going to have significant problems because Germany right now is reeling from the things that are going on with renewable energy in Germany. And that's something that this state cannot go through. [LB723]

SENATOR HUGHES: Okay. Any other questions or comments? Thank you, Mr. Cavanaugh. [LB723]

JAMES CAVANAUGH: Thank you. [LB723]

SENATOR HUGHES: Next proponent to LB723? Welcome. [LB723]

DAVID LEVY: Good afternoon. Thank you. Good afternoon, Chairman Hughes, members of the committee, David Levy, D-a-v-i-d L-e-v-y, appearing before you today in support of LB723, as vice president and treasurer of the board of directors of Omaha By Design. Omaha by Design is an urban design and policy advocacy and education organization that is in about its 18th year of existence. One of Omaha by Design's major initiatives during its time was to work with the city of Omaha and stakeholders from around the Omaha metropolitan area to prepare an

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environmental element of the Omaha master plan. At the end of that process, the Omaha City Council adopted that environmental element as a component of the city of Omaha's master plan by a 7-0 vote. One of the things that that environmental element calls for is things like net metering, distributed generation, renewable energy; and not saying that that environmental element said adopt LB723, but the policies that underlie LB723 are consistent with the city of Omaha's environmental element and consistent with the principles and mission of Omaha by Design. So on that basis, I wanted to encourage you to consider this bill, to consider the policies behind this bill. I think this testimony is a little bit ironic perhaps in light of Senator Wayne's opening and the conversation about Omaha, perhaps, being a place where this could be looked at or tested or whatever the case might be. But I just wanted to make that point that the, again, the concepts underlying this bill, the opportunities for distributed generation, the opportunities for different types of renewable energy are here and this bill is important in that regard. I often appear before you, of course, on behalf of utility scale wind energy developers and I can tell you over the last two years, in addition to that work, I have had many, many conversations, done lots of work with a wide variety of entities who are interested in all kinds of solar applications: residential rooftops, open space within a sanitary improvement district, commercial applications, warehouse rooftops, etcetera. The diversity in applications of solar, especially, is exploding. And I think as a state, we miss out on an opportunity for economic development, for diversity, for property tax relief if we don't have policies that allow people to be creative and spend private money to do these things if they want to do. Net metering and increasing that limit is consistent with that and may be one of those things that would help open up that part of our economy that is here and there is certainly a demand for it in my experience. So with that I'd be happy to answer any questions. [LB723]

SENATOR HUGHES: Thank you, Mr. Levy. Are there any questions? I guess I've got...I know you're more of a wind guy, but how big of an array would you have to have of solar to generate 100 kilowatts? I mean is it the size of a football field? I don't know. [LB723]

DAVID LEVY: That's a good question. May try and do some math here. I know the rule of thumb is about 10 acres a megawatt. So 100 kilowatts would be an acre, something like that I believe, if I'm doing that math correctly. [LB723]

SENATOR HUGHES: Okay, so about the size of a football field is roughly. [LB723]

DAVID LEVY: Yeah. [LB723]

SENATOR HUGHES: So if we were to carve out Omaha, as Senator Wayne suggested, as a pilot project, you would have to have a warehouse that would be as big as a football field with a solar array to max out, or you'd have to put up wind towers. [LB723]

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DAVID LEVY: One of those two, yeah. I think...with that math and that geography, 100 kilowatts on the roof of your house probably doesn't work. [LB723]

SENATOR HUGHES: Right. [LB723]

DAVID LEVY: And so that's when I talk about the concept here in LB723 opens up other opportunities, especially for solar. But I suppose you could have the application of small wind turbines as well. [LB723]

SENATOR HUGHES: Yeah. And the 25 kilowatts that are available now are available to the homeowner if they wanted to cover their entire roof with solar panels. They probably wouldn't exceed this, but if we wanted to open it up, it would be more industrial and the space constraints to get enough generation to hit the 100 kilowatts would have to be pretty massive as solar array or a wind turbine. If somebody wanted to do that, we would probably have to increase that 100 kilowatts higher. What's a wind turbine generating now, I mean, how big are they? [LB723]

DAVID LEVY: A typical utility-scale wind turbine? [LB723]

SENATOR HUGHES: Yeah. [LB723]

DAVID LEVY: Oh, 2.5 to 3 megawatts. [LB723]

SENATOR HUGHES: So we would have to really think big. [LB723]

DAVID LEVY: Yeah. Yeah, and 100 kilowatts on the one hand, it may be too big; if you get bigger than 100 kilowatts, then you start to talk about, again with solar, community solar and things like that, which again, I think is part of the conversation that I would respectfully suggest as a committee and as a body we explore more. But you're right, 25 kilowatts is a rooftop at your house; 100 kilowatts is a change to allow some of these other applications that I was talking about and that I know there is a demand out there for. [LB723]

SENATOR HUGHES: Yeah. I was just thinking, you know, if we wanted to have large-scale wind towers in Omaha, I could probably get some votes from out west for it. [LB723]

DAVID LEVY: I bet you could. (Laughter) [LB723]

SENATOR HUGHES: Okay. Any other questions? Thank you, Mr. Levy. [LB723]

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DAVID LEVY: All right, thank you. [LB723]

SENATOR HUGHES: (Exhibits 2-7) Additional proponents? We have proponent letters from Doris Goebel, Omaha; Diane Greenfield, Omaha; Don Zebolsky, Omaha; Vanessa Silke, Baird Holm Attorneys; Kenneth Winston, Nebraska Interfaith Power and Light; and Steve Nelson, Nebraska Farm Bureau. So we will switch to opponents of LB723. Welcome back. [LB723]

SHELLEY SAHLING-ZART: Thank you. For the record, again, my name is Shelley Sahling-Zart, Shelley, S-h-e-l-l-e-y, Sahling-Zart, S-a-h-l-i-n-g hyphen Z-a-r-t; I'm vice president and general counsel at Lincoln Electric System and here today in opposition to LB723 on behalf of both Lincoln Electric System and the Nebraska Power Association. Again, the Nebraska Power Association is a voluntary association representing all of Nebraska's consumer-owned public utility systems, including municipalities, public power districts, public power and irrigation districts, rural public power districts, and cooperatives. You know the thing that struck me as I've listened to some of the testimony that I want to start with is that I sit on some of these and you would sit here sometimes and think the answers to some of these problems are simple, and they're not. And we're well aware of the challenges that we face and what our threats are moving forward. We have lots of people that sit around and plan about this and think about it and we talk with our peers in utility and we work on this stuff all the time. And just like renewable energy has come about over time. We've been working on net metering for a long time. We know that distributed generation is a big challenge. We're seeing an evolution where we're moving away in some respects from these centralized...large centralized power plants to more distributed generation. We know that and we are working to try and plan for that. But we also have these very long-term commitments that we're trying...that we're in this transition about. And you can't just shut those down. It would be no different than if you took your house...would you take a house that you're still paying 15 more years on your mortgage, would you just shutter that house and go buy another house and pay a second mortgage and pay on both of them. No one would ever do that. And we can't do that either, because at the end of the day we represent the entire population of Nebraska collectively, we're serving all 1.8 million people that live here and we're trying to balance all the interests. We're trying to balance the interest of reliability and low rates and those people that want more renewables, those people that want to generate renewables on their own. And trying to do all of that without having enough impact on those that are on low and fixed income, huge concern, in trying to balance all of those things. So we sit at the table and we try to think about these things and balance all of those competing interests. And at the end of the day, I think over time, we've done a pretty good job of that. Do we do it perfectly all the time? Probably not, but the important part is that we keep having the dialogue, we keep working with our customers on that local control basis, again, to try to do the best that we can. Some of the net metering statutes that you heard about across the country, they don't all apply to public power, because public power, again, is about local control and working on that individual community basis on what your customers want. So in Colorado, for example, the net metering

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statutes there, I don't believe, apply to all of the public power systems; it applies to the investor-owned utilities, private utilities, and maybe some of the large municipalities. We're opposed to increasing the cap. Why? Well, there's a few reasons. Now, I sit here at Lincoln Electric System and I will tell you we have net metering in Lincoln up to 25kW. We also have renewable generation rate for customers over 25kW, but up to 100kW. So you're sitting here going--well, why would LES be opposed to raising the cap? Well, a couple of reasons--because the way net metering statute is structured in Nebraska, we would have to, essentially, assess all of our fixed costs the same way to all those customers up to 100kW. But the reality is, our fixed costs to serve that customer, up to 100kW, are a lot greater than our fixed costs to serve that customer at 25kW, you know, the households as opposed to what I would call a larger business. Senator Hughes, to your question, if you drive by the LES service center at 27th and Fairfield Street, just north of Cornhusker Highway on 27th, if you look off to your left at our building, on our training center we have a 50kW solar array on the roof of that building, so you could double that, but it's a pretty good size. It's more of a commercial building size, not a residential size. I'm running out time, but you know what I really impress is that we think about these things really hard. Those fixed costs are important because as you raise the cost...when somebody puts in solar, puts in net metering, they get paid for the benefit of that. In Lincoln you're going to get paid the full residential rate up til we get 1 megawatt on our system and then we go to what we call tier 2 and you're going to get 50 percent. But that's a great benefit. Well, you get that benefit because everybody else that's not putting solar on their roof is paying that benefit; they're basically subsidizing that cost. And we're happy to do that up to a certain level, but we've tried to find that sweet spot between what benefits those that want to do distributed solar and not having too much of an impact on those nonparticipants and those folks that either can't afford or aren't interested in that and trying to levelize those costs. So when you go up to 100kW, it means somebody is going to get a lot more benefit, it also means that those nonparticipants are going to be paying a lot more of the cost. So I'm probably going to guess it's going to turn red here in just a second, so I'm going to stop there and be happy to answer any questions you might have. [LB723]

SENATOR HUGHES: Okay. Thank you, Ms. Sahling-Zart. Senator McCollister. [LB723]

SENATOR MCCOLLISTER: Yeah, thank you, Chairman Hughes. And I've heard the term smart grid. Is your distribution system capable of doing large scale net metering? [LB723]

SHELLEY SAHLING-ZART: It's less that than probably the billing system would probably, for a lot of utilities, require some. I can tell you that when we did our renewable generation rate, we had to make a lot of adjustments in our billing system to do that. So it's less about that. We don't have a smart grid in Lincoln, we have a...what I would call, a less smart grid, (laughter) we don't have AMI, Advance Metering Infrastructure, we have...it's automated, but it's more one way than it is two way. [LB723]

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SENATOR McCOLLISTER: Technology is moving in the direction, is it not? [LB723]

SHELLEY SAHLING-ZART: It is, but AMI is still incredibly expensive to do. And we've seen a lot of communities that move forward with that, probably pretty rapidly in deploying that, and we're still to the point where we've done a full-blown feasibility study on it, and we'll keep looking at it every couple of years and assessing the feasibility, but we kind of like to let others go and work out the problems and get it right before we spend our customers' money on it. [LB723]

SENATOR McCOLLISTER: In those communities and states that have adopted net metering to the extent we're talking about here, what's happened to the rates? [LB723]

SHELLEY SAHLING-ZART: Well, let's first start with we have net metering here. We have quite a few net metering customers right here in Lincoln and they're getting paid full retail rate. But again, in terms of the rate, it depends on how you're structuring in that state. So for us, you know, we're doing...we have the statewide cap in statute now that we're discussing up to 25. So in terms of rates, it's not having...you'd have to probably go system by system, but I would tell you on average probably not having a great impact because we sort of set that sweet spot where the nonparticipants are not overly subsidizing the benefit to those net metered customers. Right? So it would depend on...you'd have to go state by state and see how much subsidy they're providing and what they're paying for the net metering which varies across the board as well. Some are paying retail, some are not. [LB723]

SENATOR McCOLLISTER: Thank you for your testimony. [LB723]

SENATOR HUGHES: Okay. Any additional questions? Senator Geist. [LB723]

SENATOR GEIST: Thank you, Shelley. As you were talking, you were able to hit a little bit on the low and fixed income customer, which I think we all have an interest in and tell me if this is accurate that the currently, if I wanted to net meter at my house, I purchase that, and that's not inexpensive. [LB723]

SHELLEY SAHLING-ZART: Correct. [LB723]

SENATOR GEIST: Would you explain a little bit in more detail how that would work if I was able to purchase that, how long it would take before I would see a return on my investment and then what that would do to my less fortunate neighbors. [LB723]

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SHELLEY SAHLING-ZART: Okay, lawyer, but we'll do the best we can. [LB723]

SENATOR GEIST: Okay, you're not an economist. [LB723]

SHELLEY SAHLING-ZART: I'll listen for the groans behind me if I have the costs wrong because I haven't really looked into it for a while, but I believe the average cost to put it on your roof is...I know the costs have come down, so people groan if you want to, but I'm going to say maybe somewhere between...again, how big of an array you're putting on, but maybe \$15,000 to \$20,000. [LB723]

SENATOR GEIST: Okay. [LB723]

SHELLEY SAHLING-ZART: I can tell you that we have a former board member who put it on her house and I believe her payback...and she's got some months where she doesn't get an electric bill because she's a very low consumer and she's offsetting more than what she's generating so we're buying her excess and she's estimating a good 20-year payback. [LB723]

SENATOR GEIST: Okay. [LB723]

SHELLEY SAHLING-ZART: So there's a long payback. A lot of people do it. It isn't necessarily about the money for a lot of the people doing it; it's more the overall contribution and trying to help the utility lessen its dependence on fossil resources, that's true. But it would take a lot of people doing that. [LB723]

SENATOR GEIST: Okay. Right. And then so how many...I'm sorry, you're not...you might... [LB723]

SHELLEY SAHLING-ZART: I'll try. [LB723]

SENATOR GEIST: How many other people who are not doing that does it take to offset what you're paying me? [LB723]

SHELLEY SAHLING-ZART: Okay. So you're going to pay for whatever is on your roof. So nobody else is going to pay for that. [LB723]

SENATOR GEIST: Right. [LB723]

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SHELLEY SAHLING-ZART: That's your investment. So where other people come in to pay, is you're going to...whatever you use, we're going to bill you at the normal residential rate that everybody else pays. But if you're not consuming a lot and you're actually generating from your rooftop solar more than you're consuming in your house, we're going to buy that excess from you and we're going to buy it at the full residential rate. Okay? Now, about 73, 75 percent of our residential rate is fixed costs. So that's the cost for the meter and the distribution infrastructure and the things to provide your electric service. So you're going to offset your retail completely on that. Well that means you still have those fixed costs, it's still costing us to provide those fixed costs to your home, but that means that when we're paying you for all of that, it means somebody else is picking up those costs for you. [LB723]

SENATOR GEIST: Um-hum. [LB723]

SHELLEY SAHLING-ZART: So that's where those costs get spread, which is why what we've said is we would like you all to be careful in this legislation to make sure there's a cap in the legislation now that limits not only how big a single system can be, but how many of those in aggregate we have on the system so that you try to manage that sweet spot where you aren't overly burdening the nonparticipants in the net metering to pay those fixed costs for those people that have chosen to put solar on their roof and do net metering. Did that make sense? [LB723]

SENATOR GEIST: It did to me. Thank you. [LB723]

SENATOR HUGHES: Senator Kolowski. [LB723]

SENATOR KOLOWSKI: Shelley, on the Southwest Power Pool, what have been the major advantages being connected with that in our state and neighboring states that we're connected to? [LB723]

SHELLEY SAHLING-ZART: Well, the idea...there's several which I can get way into the weeds, but I'll try not to do that, but there are several. I mean, obviously being able to participate in a pool for resources for generation and transmission allows you to spread costs, it allows you to spread risk, and it allows us to probably look at those generation portfolios a little bit differently. Transmission is a huge one to the extent that transmission is built. It helps us kind of share the costs among other folks that benefit from that because once you generate electrons, they flow over the wires and everybody, ultimately, gets benefit of that. So it's helped us to spread a lot of those costs. And generation is the same way. As you know now, we're all selling our generation in and we're buying back out what we need. So it's really the economies of scale you get in pooling some of those resources. But, the big but on that is keep in mind is load-serving entities of the Southwest Power Pool we have an obligation to bring resources to the market or you don't

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have a pool of resources to rely on. So load-serving entities have to bring enough to serve their load, plus I think it's about a 12 percent reserve margin. That has to be accredited capacity. Unfortunately, wind, because it's not dispatchable, it doesn't have that high of accreditation, so you're never going to see SPP be 100 percent wind. [LB723]

SENATOR KOLOWSKI: Sure. [LB723]

SHELLEY SAHLING-ZART: You're going to have to have those baseload resources. But I don't know if that fully answers...I mean without me really diving in which I don't think you want me to do. [LB723]

SENATOR KOLOWSKI: What about the concern of security. If I'm a bad guy and I want to do damage, is it...do you have fail-safes across the board; thinking in terms of those kind of things that might happen to the power grid and what will go down. [LB723]

SHELLEY SAHLING-ZART: Yeah. I mean, there's lots of scenarios on that. And there are really serious efforts about resilience of the grid. A real serious discussion is going on now. Part of that is cyber; part of that is just the physical security. From a physical standpoint, let's be obvious about it, a lot of our infrastructure is open and exposed--generation facilities, transmission facilities, they're open and exposed. There's really only so much you're going to be able to do to physically safeguard those. So a lot of the focus is on resilience and how quickly you can respond if some of those facilities are taken out, whether you try to have mobile substations, which is...would be a huge undertaking, but some of those kind of things, how quickly you can...where you position different resources whether it's conductors and different things so that you can get resources back up quickly. And then from a cyber standpoint, we have a whole series of efforts. And actually when you get into the North American Electric Reliability Corporation, they have a lot of Critical Infrastructure Protection standards, CIP standards. We have all hired a great number of staff and spent a lot of time dealing with CIP Standards, and that's not just cyber, that's the physical stuff, that's making sure you've got all your safeguards in place to keep your bad actors out, keep your bad actors from infiltrating your systems. So I would tell you we spend an enormous amount of time and resources addressing the security of the grid and our generation resources. [LB723]

SENATOR KOLOWSKI: Thank you. [LB723]

SENATOR HUGHES: Senator McCollister. [LB723]

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SENATOR McCOLLISTER: Yeah, thank you, Chairman Hughes. Back in my MUD days, we had the issue of decontrolled natural gas. And I know the way MUD dealt with the problem. I would bet you that your company will deal with it the same way. When you send a bill to Senator Geist's house, it has state taxes, local taxes, and it has probably a commodity charge and a fixed charge. Is that correct? [LB723]

SHELLEY SAHLING-ZART: It has a fixed charge, not a commodity charge. But it does...we have a facility's charge and we have a customer charge and you have your energy component. [LB723]

SENATOR McCOLLISTER: So that's a commodity issue? The more power you use the more you'll pay? [LB723]

SHELLEY SAHLING-ZART: Yeah, it's per kilowatt hour basis, yes, based on your consumption. [LB723]

SENATOR McCOLLISTER: Okay. Is it safe to assume that with more renewable energy or net metering and anything else, that fixed charge that you levy to that customer every month is likely to go up because you are not getting nearly the volume from that customer on the commodity charge, I call it? The fixed costs are likely to increase to cover those fixed charges that you have to cover every month. [LB723]

SHELLEY SAHLING-ZART: Well, the fixed charges...it depends, I mean, a lot of the fixed charges are in, basically, the metering, the billing system, the distribution infrastructure, those things don't go away. So a good share of that will still be there. Some of the fixed costs on the transmission and the generation side...transmission I don't see those drastically changing; on the generation side they might. But that's part of ours is part of those fixed costs right now are wrapped up into very long-term resource commitments that we have. So in some respects, they would increase if we're talking about adding resources on top of commitments that we're still paying. [LB723]

SENATOR McCOLLISTER: Thank you. [LB723]

SENATOR HUGHES: Any additional questions? Seeing none, thank you for your testimony. [LB723]

SHELLEY SAHLING-ZART: Thank you. [LB723]

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SENATOR HUGHES: Next opponent? Welcome. [LB723]

JOE LANG: Chairman Hughes, members of the committee, my name is Joe Lang, J-o-e L-a-n-g; I'm the director of the regulatory compliance and regional transmission organization policy at Omaha Public Power District. We oppose LB723. We didn't initially intend to testify, but since we were being singled out, we thought it important to express our concerns with the bill. (Laughter) Our corporate mission is to provide affordable, reliable, and environmentally sensitive energy services to our customers. We apply very thoughtful approach to ensure that these three legs of the stool are balanced. In 2009, when net metering legislation was initially passed, we felt at that time that 25kW is really the upper bounds and why it was set at 25kW at that time. Quadrupling it to 100 kilowatts is very significant. We're concerned it would shift undue costs to smaller customers, smaller homes. A hundred kW for reference is load-wise would be about approximately the size of a Walgreens. So in essence what moving it to 100kW, you would allow entities with a load size of 100kW to, in essence, go through...use net metering billing structures to shift their costs to smaller customers. Our concern is shifting costs from larger profitable businesses to smaller loads that may struggle seems unwarranted to us. Earlier there was the discussion of what sort of renewable resources would apply to 100kW. Obviously, 100kW in solar it would be approximately a football field in size. And applying this strictly to Omaha, as was stated, would be a very difficult feat just from a practical matter. Applying it to wind facilities, didn't have time to look specifically, but believe there are height restrictions within the city limits that would limit one's ability to use wind facilities toward the 100kW. Our OPPD retail load, about approximately 33 percent of our retail sales is served with renewable energy. Today, we're currently working on final stages in development of a community solar program that will assist towards these types of concerns. We feel that we're approaching renewable generation in a thoughtful, responsible manner; concerned with increasing net metering to 100kW unduly shifts costs to smaller customers. Any questions I could answer? [LB723]

SENATOR HUGHES: Thank you, Mr. Lang. And I apologize if you felt singled out. (Laughter) We were having some fun today. Any questions for Mr. Lang? Seeing none, thank you for your testimony. [LB723]

JOE LANG: Thank you. [LB723]

SENATOR HUGHES: Additional opponents? Welcome. [LB723]

JERRY ENNS: (Exhibit 8) Thank you. Good afternoon, Senator Hughes and members of the Natural Resources Committee. Thanks for allowing me to testify today in opposition of LB723. My name is Jerry Enns, spelled J-e-r-r-y, last name, Enns, E-n-n-s, and I'm testifying on behalf

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of the Norris Public Power District and the Nebraska Rural Electric Association. I'd like to present today two different perspectives involving net metering--one as engineering manager for the Norris Public Power District and one as a rural electric utility customer. From the viewpoint of engineering manager, I believe there are some circumstances where these distributed generation sources present technical and safety challenges for a rural electric system. Rural utility systems are not as robust as systems in which high population densities exist. And I think that was acknowledged today in some of the earlier speakers. The rural distribution systems are made up of many miles of line with few customers served. In fact, in rural Nebraska, we average three customers per mile of line. During the shoulder months, these are months that, you know, our load levels are low, those are months where we don't have irrigation, grain drying, heating or cooling, those levels are lower line (inaudible). These rural distribution systems are designed using breakers and fuses to isolate electrical faults and protect equipment from damage due to fault currents above a specific value. The breaker settings that we use are set slightly above the maximum load currents that exist on those feeders throughout the year. These breakers and fuses do not change based upon generation produced by customer-generators due to their intermittent nature of solar and wind systems. Due to the electric generation of distributed generational resources, many high impedance faults will be difficult to detect. A high impedance fault is a fault in which electrical current is limited due to the nature of the fault. For instance, a conductor lands on a automobile or a tractor after an accident, the current does not have a good fault path, so that current then works its way through the vehicle, through the tires on the tractor or vehicle. And the current alone may have caused the utility breaker or fuse to open to de-energize the circuit, but because of the high impedance nature of that tractor or vehicle tires, that protective device does not interrupt that current (inaudible). The additional distributed generation on the line is also feeding this fault. So in some cases, trying to determine whether that fault is something that needs to be cleared or not is going to make it difficult for our systems to actually detect. I'm going to try a PowerPoint by hand here to maybe help you out a little bit. When we leave a substation, we have breakers or fuses and we set that at a certain current level that during the year as that load goes up and down, you know, we don't want that load current to exceed that, or otherwise the breaker will open or the fuse will blow and de-energize the circuit. So what happens, throughout the year, this current goes up and down, the load on that circuit goes up and down. As we add these large distributed generation resources, well that brings that down and we can't, you know, pull our current level down or fuse size down to here because then when the distributed generation resources aren't operating, we will exceed that current level and de-energize the circuit. So what happens is these high impedance faults are ones where maybe the current level is not high enough to exceed that upper breaker or current level. So we can have a live line laying on a tractor or a vehicle that was involved in an accident that we will not be able to detect because we have all this distributed generation now feeding into that fault. And so that's the challenge that we have as a rural utility system. And I, you know, with a stiff type of a system like you would see in a large city that wouldn't be as much of a consequence because those 100kW units wouldn't be very small compared to what the load on the circuit is. But in a

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rural system, which is most of Nebraska, that is not true. My second point of view here is as a customer of a public power district. Many states have acknowledged that the unfairness of net metering and the subsidy that other electric customers provide and they have now started to respond accordingly and numerous states that I read about in our trade magazines. We as taxpayers, we provide to the people that buy a distribute-generation system we provide a 30 percent tax credit; we provide USDA grants; and we as taxpayers provide low-interest loan money so that somebody can buy distributed-generation system. And many electric utility customers have difficulty paying their own electric bill, but they're the ones that are forced to pay for the ones that can. And so, to me, that's very unfair and that's due to the net metering system, I think, that was adopted under LB436 back in 2009. We at Norris currently have 60 distributed-generation customers totaling 600kW; about 10kW per installation, so we think the 100kW is just not where we should be going with a net metering type of a system. And I see my time is up. If you have any questions, I'd be glad to answer those. [LB723]

SENATOR HUGHES: Thank you, Mr. Enns. Are there any questions? Seeing none, thank you...very good explanation on why that's a challenge. Thank you for your testimony. [LB723]

JERRY ENNS: Okay. For the first time, PowerPoint by hand. (Laughter) [LB723]

SENATOR HUGHES: (Exhibits 9-16) Additional opponents? Seeing none, we have letters in opposition from Keith Harvey, North Central Public Power (District); Chet McWhorter, Cuming County Public Power (District); Ryan Borges, Wheat Belt Public Power (District); Robert Beatty, KBR Rural Public Power (District); Thomas Rudloff, Elkhorn (Rural) Public Power (District); Chad Waldow, Stanton County Public Power (District); Mark Kirby, Butler Public Power (District); and Cole Brodine, Dawson Public Power District. Is there anyone wishing to offer testimony in the neutral position? Seeing none, Senator Wayne, you're welcome to close. [LB723]

SENATOR WAYNE: I'm just here to answer any questions. [LB723]

SENATOR HUGHES: I like your idea of giving Omaha the opportunity, (laughter) I see the young man left, so he won't feel bad anymore. [LB723]

TOM _____: I'm here. (Laughter) [LB723]

SENATOR WAYNE: That's why I keep looking over at him. [LB723]

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Natural Resources Committee
February 21, 2018

SENATOR HUGHES: I said the young man left. (Laughter) Sorry, sorry, I couldn't pass it up, Tom. But I think it does have some merit. We will have to have a private discussion to explore that. I think there's an opportunity there for us. [LB723]

SENATOR WAYNE: Okay. I appreciate that. [LB723]

SENATOR HUGHES: Any additional questions from the committee? Seeing none, that will close our hearing on LB723. Thank you everybody for coming. [LB723]