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Natural Resources Committee
September 17, 2010

[LR465]

The Committee on Natural Resources met at 1:30 p.m. on Friday, September 17, 2010, in the Blair City Council Chambers, Blair, Nebraska, for the purpose of conducting a public hearing on LR465. Senators present: Chris Langemeier, Chairperson; Deb Fischer; Ken Haar; Scott Lautenbaugh; John Nelson; Scott Price; and Kent Rogert. Senators absent: Tom Carlson; Tanya Cook; Annette Dubas, Vice Chairperson; Beau McCoy; and Ken Schilz. []

SENATOR LANGEMEIER: First of all, welcome to the Natural Resources Committee Hearing. I'd like to start off I'd like to thank the city of Blair and the City Administrator, Rodney Storm, for the use of this wonderful facility. Hopefully you can all hear us in the back. I can kind of hear the echo so it must be working. So we appreciate them letting us use their facility. We would also like to thank OPPD for the opportunity to look at their facility this morning. I'd like to start off by introducing the committee members around us. As for most of you that see us in the Legislature we take a little more relaxed approach to interim studies as we try and travel the state and get more information. But starting out we have a number of senators that aren't on the Natural Resources Committee that are joining us and we appreciate their interest in the subject matter. We first start off with Senator Lautenbaugh who represents north Omaha all the way up to Blair. And then we have Senator Scott Price as the Gretna area. And then we have John Nelson which kind of center of Omaha. And then we have Senator Ken Haar who lives at Malcolm and represents north Lincoln, southern Saunders County and is a member of the Natural Resources Committee. Again my name is Chris Langemeier, I'm the Chairman of the committee. We have Senator Fischer from Valentine, Nebraska, that has a big chunk of western and northern portion of the state. We're going to have Senator Kent Rogert, who is in the crowd, he's going to introduce his LR465 in a moment will be joining us that represents South Sioux City from here north. And then we have Senator Council that should be joining us as we get going here in a minute. At this time we'd ask that you turn your cell phones to vibrate or silent so those that are

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going to testify we don't interrupt them as they start into their testifying framework. We have two people I'd like to introduce in the crowd. We have Carla Felix who is here with the Nebraska Department of DEQ. And we have Ginger Willson who is the new director of the Nebraska Energy Office is with us. We'd like to welcome them to the crowd. At this time if we...in an interim study, we don't take testimony for or against, we just take testimony. So if you are going to come up and testify before us, we ask that you get one of these green sheets that are found over there on the table and fill it out. That helps us keep an accurate record of the day's events. We ask that you put them in the little basket and give it to my staff. And at this time I'm going to introduce my staff. We have Laurie Lage who is the legal counsel for the Natural Resources Committee, so if anybody has dealt with our committee, you've probably talked to her once or twice. And we have Barb Koehlmoos is the committee clerk for the Natural Resources Committee. And then we have Mandy, and Mandy is new to my office and I'm going to...Mizerski. I don't know that...she's never corrected me, so I don't know if I say that right or wrong. []

MANDY MIZERSKI: You're fine. [LR465]

SENATOR LANGEMEIER: But she just smiles, so I must be somewhat close. She is the administrative assistant in my office. If you are here in the crowd and you want to be on the record of having an opinion as far as LR465, there's also these sheets that's kind of a grid-like, that's on that table as well. We ask that you sign in and put on there whether you support or oppose the idea and then you will become part of the official record if you don't care to come up and testify. In interim studies, again, are a little different than in a regular hearing. We have four invited guests that we're going to ask to speak and then once those four are done, then we'll proceed to take and just open testimony from anybody that would like to testify. In the Natural Resources Committee we do use the lights for those testifiers. You'll see you get five minutes, you'll see the green light go on. You'll get a yellow light will be your one-minute warning and then the red light will come on and we ask you to conclude, so, and then open yourself up for questions from the committee. So with that, if there's any questions, seeing none we'll

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get this hearing underway and our first invited testifier is John Green who is the chairman of the OPPD board and welcome to the Natural Resources hearing. Oh, excuse me; we're going to back up one moment. []

JOHN GREEN: Rogert, hold on. []

SENATOR LANGEMEIER: I got to let Rogert open. []

JOHN GREEN: Where is Rogert? There he is. []

SENATOR LANGEMEIER: He didn't come running right up. First of all, let Senator Rogert open on LR465 and welcome to the hearing. []

SENATOR ROBERT: Thank you, Chairman Langemeier. Members and others of the Natural Resources Committee, today I introduce to you LR465 which is asking to examine the implication of a second nuclear facility at Fort Calhoun. I grew up pretty close to here and I've always been a big fan of the dome down the highway over here that we drive by quite often. And as I've gone through the Legislature the last few years visiting with folks, and watching the power situation, the energy situation across the country, it's become evident that there may be a huge benefit for a second plant built right over next to the one that's there. We are constantly faced with a dependency on foreign resources for our energy. We are being challenged to lower our carbon output on a large basis and build sustainable generation for the increasing energy needs across the country. This is, in no means, meant to trump wind energy which we did a great job of instilling last year, but more as a complement to wind energy that Senator Langemeier and Senator Haar instituted last year. There are a lot of benefits and the folks behind me will tell you about them. I'll be fairly brief because I think they have a lot to talk to you about. But the investment into the community will be in the hundreds of millions if not billions of dollars to build the plant. Could be creating around 2,500-plus jobs just for the construction and that would be a vast investment into the Washington

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County community, the Omaha community, and all the way up through District 16 and District 18 for Senator Lautenbaugh. To sustain and run the plant after it's built would be probably another 500 to 700 very well-paying jobs around the clock. I know that the impact on the economy the plant has had the last 40 years has been very positive and it has helped make Blair what it is today which is a very vibrant community. And we're kind of in a unique situation where the administration today is offering to guarantee loans for the building of these plants. And they put a lot of money into investing into these. There's currently some plants being built in the south that will come online in a few years. We may not have the need for the energy here now, but that's not to say the country doesn't need the energy and we could generate it for them since we have the opportunity to build right where we're at. So, with that I'm going to go ahead and I'll answer any questions you may have, and then I'll turn it over to the folks from the...the invited guests. [LR465]

SENATOR LANGEMEIER: Very good. Are there any questions for Senator Rogert? Senator, I do have one question. [LR465]

SENATOR ROGERT: Yeah. [LR465]

SENATOR LANGEMEIER: As we look to the future energy demands of Nebraska and the country, hopefully the economy starts to turn around and we start to see that come up, public power which we all...is dear and near to our hearts as Nebraskans, and I think across the country it's been a good model; however, in their charter at Least Cost Energy Production, the addition of a new facility would you entertain the idea and it's been thrown out and I'm not suggesting it, but today...but there's been some discussion out there to look at allowing public power to add to their charter export. [LR465]

SENATOR ROGERT: Yeah, and I think that would be a definite possibility into the whole solution for what to do with the power we generate and that would be to export it and probably to partner with institutes that may not be public in the building of the facility

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so that they could take part in the acceptance of the power. [LR465]

SENATOR LANGEMEIER: Okay. Because Nebraska does receive a real benefit from the power we do sell out on the grid... [LR465]

SENATOR ROBERT: Certainly do. [LR465]

SENATOR LANGEMEIER: ...outside of Nebraska. It really helps our rates. [LR465]

SENATOR ROBERT: We certainly do. And I want to make a...put out a thank you to NPPD. This summer I was able to go visit their facility in Doniphan and see the power grid and better understand how we send power north, south, east or west and that is a big part of what we're doing here today too. [LR465]

SENATOR LANGEMEIER: Very good. Are there any other questions? Seeing none, thank you very much. Maybe by the conclusion we'll have more. Come on up. [LR465]

JOHN GREEN: Now? [LR465]

SENATOR LANGEMEIER: Now is your opportunity. Now... [LR465]

JOHN GREEN: I was worried. [LR465]

SENATOR LANGEMEIER: Mr. John Green is the chairman of OPPD's board and one other thing I did not announce is for us to keep an accurate record, please state and spell your name before you start. We'd appreciate it. [LR465]

JOHN GREEN: My name is John Green, G-r-e-e-n. I always tell everyone that I'm so happy that we named the Green Power Programs after me. I'm the chairman of the board of OPPD at this time and have been an elected representative with OPPD since

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1987. Senator Price, of course, knows me as the city attorney for Gretna in his district and I deal with him all the time on that. We're here because OPPD operates the Fort Calhoun Nuclear Power Station just down the river and down the street and have been since 1973. My first dealing with the plant was before the plant was even built as summer help at OPPD in the late '60s and early '70s. My job was to go up there once a week and clean up the temporary weather station up there and go back and sit in a chair and do statistics for the Atomic Energy Commission for the rest of the summer. It was a great job and made me appreciate the people at OPPD and the institution itself and as a Nebraska native and historian, the wisdom of George Norris and his approach to public power in the state. Nuclear power has been a large part of our diversified energy mix since its inception. This plant, that operates so well, is 30 percent of our total output. And that includes time off for maintenance which we do on a periodic basis. We've a lot of confidence in our plant and we have a lot of confidence in the future of nuclear power. That plant is...if you don't know, is the smallest active commercial reactor plant in the country. And one of the things we're doing over the next two years to show how much support we have for the plant itself is we're going to...we're spending about a half a billion dollars improving the plant, extending the life of the plant and adding to the output of the plant by about 75 megawatts. The plant license was originally to expire in 2008 and we originally went to the Nuclear Regulatory Commission to get the plant license extended another five years to 2013. And then once that was approved, we went back to them again giving them our plans on improvements at the plant; replacing the steam generators, and basically gutting the plant and putting the whole new plant on the inside and extending the life of that plant to 2033. That plant has been there since 1973 and has safely provided nuclear power and electricity to the people of the Omaha Public Power District since that time. Not only do we have great confidence in the plant itself and the industry overall, we have great confidence in our people. Because our people who work there are unique in that every one of them knows that their job not only is reflected in what their work is, their work affects everyone else in the plant, the existence of the plant, and the existence of every other plant in the country. So that the workers at the nuclear power plant are a unique

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breed unto themselves and are very loyal group to one another, too, because they know that the person who works next to them has work that is every bit as important to the future of nuclear power as their own is. Our president and CEO, Gary Gates, will speak after me and he will cover the worldwide nuclear renaissance and be able to explain that to you as the president of the Nuclear Energy Institute, as well as the president of OPPD and he's also a board member of the Institute of Nuclear Power Operators and also the world nuclear operation what we call WANO which is all of the worldwide nuclear power units. So he will be the perfect witness for you following me to come up here and explain what's going on at this time and what the future will bring. Yes, that plant, when it was originally set aside was set aside for at least three more units and the space is there. The second unit was cancelled in '75, '76, right along in there, and at the time that that was the decision that was appropriate. When I first got out of law school, I worked on that case on behalf of Westinghouse and reviewed everything and knew all the board members at that time and knew the decision that was made and that decision at that time was appropriate for the future of the utility. But the industry has changed; the times have changed; the people have changed; equipment has improved; it may be time when our energy needs support it to look at that option. And at this time I'd like to introduce to you Gary Gates. [LR465]

SENATOR LANGEMEIER: Are there any questions for Mr. Green before he leaves?
[LR465]

JOHN GREEN: Oh, do you have any questions for me? Senator Nelson. [LR465]

SENATOR LANGEMEIER: Senator Nelson. [LR465]

SENATOR NELSON: Yes. Your 30 percent of input, was that for OPPD or the state of Nebraska? [LR465]

JOHN GREEN: That's OPPD. [LR465]

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SENATOR NELSON: OPPD; 30 percent, okay. [LR465]

JOHN GREEN: Yeah. [LR465]

SENATOR NELSON: And you said there was a second unit planned, if I understood you? [LR465]

JOHN GREEN: Originally a second unit was planned and cancelled. [LR465]

SENATOR NELSON: Same size? [LR465]

JOHN GREEN: About the same size. It would have been a sister plant. It would have been about the same size and the same configuration. [LR465]

SENATOR NELSON: In this location or elsewhere? [LR465]

JOHN GREEN: It would have been to the south of the existing plant, on the same site. [LR465]

SENATOR NELSON: Okay. Thank you. [LR465]

SENATOR LANGEMEIER: Are there any other questions? [LR465]

JOHN GREEN: Any other questions? I want to get you to Gates; Gates knows everything. [LR465]

SENATOR LANGEMEIER: Seeing none, we'll let you run. [LR465]

JOHN GREEN: Okay. [LR465]

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SENATOR LANGEMEIER: Our next testifier is Mr. Gary Gates who is president and CEO of OPPD. Welcome to the hearing. [LR465]

GARY GATES: (Exhibit 1) Thank you, Senator, and thanks for this opportunity. Thank you for all your service. My name is Gary Gates, G-a-t-e-s. During the difficult economy that we faced, nuclear power plants continued to provide an important part of the economic providing of energy. And our industry is thriving around the world and is thriving in the United States. Nuclear energy industry is putting in place assets that will deliver carbon-free electricity into the future and generate earnings and it's also a hedge against future environmental issues that may come up. And it's a real hedge against the volatility of natural gas prices into the next century. Progress toward building new reactors continues at a very measured pace. We predicted over several years that this will happen and right now we have four to eight new reactors in service in the United States between 2016 and 2020. This new wave of reactors, the first new ones coming online in 2016 will be the two Vogtle units in Georgia, will operate under their initial license until 2056. Assuming they get license renewal, they'll operate until 2076. And the current thought is to renew licenses for 40 years, an additional 40 years, which would place them in operation until 2096. The NRC is currently also actively reviewing 13 license applications for up to 22 reactors in the United States and site preparation is ongoing. I mentioned the Vogtle units by Southern Company in Georgia and SCANA, South Carolina is building V.C. Summer in South Carolina. I should point out that both of these plants have significant public power participation. MEAG in Atlanta is a large public power company is participating in the Vogtle site and Santee Cooper is participating in the V.C. Summer site in high percentages. So that private-public partnership is an ongoing, working tool for us. It will provide high-quality, sustainable jobs and create economic growth. Nebraska is a good place for a new nuclear unit and OPPD is a utility that is comfortable with operating and building nuclear power plants. OPPD is a publicly owned utility. Both NPPD and OPPD are considered large public power districts so we would make good partners going forward if that would be part of

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the model. All of our energy sources are diversified between coal, nuclear, gas, wind, renewable. As a matter of fact, the largest increases in our generation over the next five to ten years will be in the wind energy area going forward. We did recently do a feasibility study in April of 2008 to find what would be the best location for a new nuclear facility in Nebraska. That study included territories as far away as Wisconsin. The site which you saw this morning was the one selected as the most compatible with building a new nuclear station, a second unit at Fort Calhoun. The site you were on this morning consists of 380 acres on the west bank of the Missouri and we have a perpetual easement for 30 acres on the east side for an area that we could control should we need to. As John said earlier, the site was originally built or sited for four units. We had purchased that second unit, had major components coming for it and had done a lot of preconstruction work for the new site. Additionally within our industry, the new licensing process for new nuclear units has been streamlined a great deal. The combined operating and construction licenses provides assurance to utilities, our group utilities, that they'll be able to operate the plant once they start to construct it. And that's viewed as a very positive area going forward. Again, confirming Senator Rogert's predictions, it would employ 1,400 to 1,800 people during construction; employ 400 to 700 people long-term at the facility; would produce approximately \$430 million annually in sales of goods and services in the local community; and provides annual state and local tax revenue of more than \$20 million; also federal tax payments of around \$75 million. It would stimulate the U.S. supply chain which is critical to the industry going forward and would generate electricity far into the future. The industry's expansion also means an expansion into diverse industries that support nuclear facilities including manufacturing of components needed to build and maintain these plants; design and fabrication of fuel; and the educational programs that are needed to prepare workers for this industry in the future. Nuclear energy does mean good jobs and good pay. The nuclear energy industry has already spurred the creation of some 15,000 jobs in our country and the future resurgence which we predict will continue that chain. The industry and NRC can point to a decade of sustained reliability of the U.S. nuclear fleet. A 90 percent average capacity factor, high productivity, and consistent excellent safety performance has

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demonstrated the results of the NRC's oversight process. That's important, because without the performance of the current operating fleet which is 104 plants in the United States, building new ones would not be as appealing, but the fleet continues to run extremely well and we continue to maintain that high average capacity factor. In fact, the nuclear industry has done so much to improve the efficiency of our plants that the increase in generating output for nuclear power plants over the past 20 years is the equivalent of adding 28 1,000-megawatt power plants to the grid. That's an impressive figure. But nothing, nothing is more important to the future of nuclear energy than the safe, reliable operation of our existing fleet. It is our industry's highest priority. It is my highest priority as the CEO of a utility that operates a nuclear power plant. The safety and performance of our 104 plants is very high and it's demonstrated consistently by the oversight process of the NRC. The NRC put in a new process, risk-based inspection and regulation in 2000 and this system is working extremely well to monitor our performance. When more NRC attention is needed at individual plants, the oversight process enables the agency to refine its approach and focus on that in all of our best good. I would be very comfortable operating a new nuclear facility in the future. It's a good answer for us should the economics and desire be there and perhaps one we should choose down the road when the time is right. But many, many decisions need to go into that. Our integrated resource plan does not call for a new base load until 2030 based on capacity increases. That could change depending on if we wanted to replace some of our carbon generating sources with noncarbon generating sources. So there's really two factors there, increased load and what we want to do in the future with carbon. Even in 2030, that would require starting construction around 2021 or 2022 and start to make decisions in a relatively new term on what technology we may want to build. The technology choices for us would be an advanced pressurized water reactor such as the one some of you saw this morning in operation down at Fort Calhoun; boiling water reactors and, indeed, small reactors as well, which is an increasingly interesting field for us. They range in size from 45 megawatts to 145 to 150 megawatts. They provide an incremental load so we don't need to put on a large 1400-megawatt unit at once. And we're monitoring their licensing and design very closely. It is my

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feeling we will need partners to go forward in a new nuclear facility because of the size and the cost and as I said before, that works well. The real determining factor will be the price of natural gas going forward; that's one to watch. In summary, the current fleet is operating very safe and very effectively. The new build to the reactor would be to add capacity or to cover any capability that we would want to replace from our older units. And the economics of this would be the deciding factor. One of the big part will be the natural gas price going forward. The rate of new build will be factored by that, but not the decision to build. There will be a future to build these units, but the rate will be determined by that. I'd really like to thank all of you for your service in the Legislature and your time and interest in this important (inaudible). Thank you. [LR465]

SENATOR LANGEMEIER: Very good. Are there any questions for Mr. Gates? Senator Haar. [LR465]

SENATOR HAAR: Thank you very much, also for the tour today. I appreciate that. With wind, one of the problems we face, of course, with our massive wind resource in Nebraska is transmission, getting that energy somewhere else to sell it outside the state of Nebraska because we already have excess capacity. How do you see the development of transmission fitting into the decision whether or not to build a new nuclear plant? [LR465]

GARY GATES: The correlation between transmission and new base load plant, whether it's coal or nuclear or gas, they're very closely tied. Transmission is required in both cases. Because of the nature of wind, it will need a backup from time to time from another power plant. Those power plants will need to have a very rapid response which is another advantage of a nuclear power plant. It can change power rapidly if it needs to. But they will be tied on the transmission grid completely. The one difference would be a nuclear power plant would have a lot of generation in one source so the transmission could be a little closer defined to an existing transmission system. But both would require transmission. [LR465]

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SENATOR HAAR: Um-hum. In today's market and so on, we saw this morning, I think, what, this plant was built for \$177 million, something like that, and now they said to add at least one zero to it in today's market. How long...and that was built in five years, if I remember. How long would it take today to...from decision to going online? [LR465]

GARY GATES: A decision to online is around eight years. The building time, because of the skill of craft we have in Nebraska and around the country, the build time is about the same as it was, actual construction time. It's actually going down from what we've learned from building plants around the world. Right now in Korea it's about a four-year construction time. We have the craft and skill here with our workers in the United States to easily match that. I've got complete confidence in our work force. But the actual time is design and licensing and that will shrink. Because of the...I mentioned that new construction operating process, you will license a type of reactor. When we built the first wave of reactors, and I was around at that time, so I'm the ancient mariner right now, but we built them custom; every utility built what they wanted. When NPPD built Cooper it was different size, different specifications than when we built Fort Calhoun. The new reactors will be standardized. So once that license, that design is approved, and for example, we went in for a Fort Calhoun 2, and picked one of those already approved processes, it would shorten the time quite a bit. [LR465]

SENATOR LANGEMEIER: Questions? Senator Nelson. [LR465]

SENATOR NELSON: Thank you. The material here refers to \$8 billion of federal loan guarantees under the administration will fund the construction of the two nuclear reactors down in Georgia. Are you...you kind of operate on a national board yourself. Are you familiar with that down there? [LR465]

GARY GATES: Yes, I am. [LR465]

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SENATOR NELSON: Were they already underway or is this going to be the startup with these guarantees? [LR465]

GARY GATES: This is the first loan guarantee that was announced; the President announced it last February and it's a real watershed event moving forward, but it's the first use of the loan guarantees. Vogtle 3 and 4 are the furthest along in construction. The excavation of the site is complete; the pilings are in; the backfill of the bedding that you need has been completed. They'll start pouring concrete probably within six months. And they have reached a tentative agreement on the loan guarantees of \$8 billion for those two facilities. [LR465]

SENATOR NELSON: What's the total cost these days of just one nuclear reactor? [LR465]

GARY GATES: One nuclear reactor is around \$6 billion. [LR465]

SENATOR NELSON: Six billion? [LR465]

GARY GATES: Um-hum. That's a good estimate. When you get into contract negotiations there's different numbers, but that's a good one to use as a rule. [LR465]

SENATOR NELSON: And those are private down there in Georgia? Are they private? [LR465]

GARY GATES: Yes, but they're partnered with MEAG which is a very large public power company and they're going to...probably involved in 30 to 40 percent of that unit. [LR465]

SENATOR NELSON: Okay. Thank you. [LR465]

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GARY GATES: Um-hum. [LR465]

SENATOR LANGEMEIER: Senator Price. [LR465]

SENATOR PRICE: Thank you, Senator Langemeier. My question is, on our tour this morning we were told that they keep the plant running right at about 100 percent; I mean the cost is the same at 100 than at 80 percent. By bringing on multiple generation plants in the United States, what is that...what do you anticipate that's going to do to the market pool because if all of them are working at 80 percent or 100 percent, there's more energy out there, is that going to drive down the market or, I mean, how do you see that affecting the market with all that extra energy out there? [LR465]

GARY GATES: If we overbuild, it will affect the market. The economics, though, will typically dictate that we will not overbuild as an industry, because it wouldn't make sense for us to add a unit. That's why we aren't...you know, we're looking ahead in our integrated resource plan for when we would add a new unit to avoid that kind of overbuild so that we'd have extra energy that we just couldn't use. But as you...part of the real interesting challenges of...that our board faces and we face as a utility, any utility faces, is we add chunks of generation. It's usually a big number when we add it, so we typically try and pick a time, a sweet spot when we're a little undergenerated, we can add that, use part of it right away and then we allow a load to grow into it. So I don't believe with the design of the grids the way they are that we'll overbuild to a degree that will destroy markets. [LR465]

SENATOR LANGEMEIER: Senator Lautenbaugh. [LR465]

SENATOR LAUTENBAUGH: Thank you, Mr. Chairman. Thank you for coming today as well. Where do you see our energy demand going? And I apologize if you answered that on the tour previously, but... [LR465]

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GARY GATES: Nope. [LR465]

SENATOR LAUTENBAUGH: ...is it going down or up? [LR465]

GARY GATES: Going up for us. We anticipate...we're planning about a 1.4 to 1.8 percent load growth. This summer we set an all-time peak for our utility and capacity in the summer. Because I think of the great economy in Nebraska, we're insulated, as I'm sure you've all read, and you're a big part of it by running the state the way you do. We just haven't been impacted, so we continue to see load growth and growth of the economy. [LR465]

SENATOR LAUTENBAUGH: Are there other places that have seen the opposite? [LR465]

GARY GATES: Some places have seen electricity demand decrease. There are predictions that in some places the level that it was at in 2007 won't be reached again until around 2015. We don't see that. [LR465]

SENATOR LAUTENBAUGH: Over the long term, though, over the run of the economic cycles, if you will, is demand always expected to go up? [LR465]

GARY GATES: For the product of electricity it is. There's a couple of major things coming on the horizon that will affect that. The electric car is a big one. The Chevy Volt is about the equivalent of a house in its load when you plug it in, assuming we all remember to plug them in at night. (laughter) So that's a big factor that we're planning for now and I think most utilities are; what are we going to do with that. So there will be a shift from one energy sector to the electricity sector. The other is just a...it's a little bit anecdotal, but they said last year that about 30 percent of the Christmas presents under a tree, they're plugged in, need a battery, or need to be charged. So we continue to see the consumption of electricity increasing. Although I think as a measured pace with the

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efficiency measures that all utilities are working on, it will be at a measured pace and not at a controllable pace. But we don't see it decreasing because of those issues.

[LR465]

SENATOR LAUTENBAUGH: Thank you. [LR465]

SENATOR LANGEMEIER: Senator Haar. [LR465]

SENATOR HAAR: So if you had your druthers and we all agreed that we ought to have another nuclear plant, would you start on that today, or are you saying that we need to see what's happening to these other factors before? [LR465]

GARY GATES: If the economy...if our load needed it and the economics were there and we needed a source of generation and a nuclear plant was the best to do it, I'm comfortable recommending to our board today, if those conditions and that hypothesis was true. [LR465]

SENATOR HAAR: But are they there today? [LR465]

GARY GATES: No. No, they're not there today. [LR465]

SENATOR HAAR: Do you have any idea when that point might be? [LR465]

GARY GATES: We're predicting a new base load in 2030 for our service area which would mean the decision process would be in the late part of this decade. [LR465]

SENATOR HAAR: Thank you. [LR465]

SENATOR LANGEMEIER: Any other questions? Senator Nelson. [LR465]

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SENATOR NELSON: One more, thank you, Mr. Chairman. You said a lot depends on the price of natural gas. Could you expand on that a little bit; that's a competitor of yours, is it? [LR465]

GARY GATES: Actually we use a lot of natural gas. [LR465]

SENATOR NELSON: You use a lot of it. And that's the economic factor then your use of natural gas. [LR465]

GARY GATES: Our use of natural gas, the competitive of the generation that's used around the country by natural gas, combustion turbines, which are just really large jet engines, use a lot of natural gas for generation of electricity. It's around \$4--million BTU right now, which is a unit that we would use to describe natural gas. And that is a historical low point for this point. Primarily driven by the increase in shale gas and the process for getting shale gas, that's the reason there is a bounty on the market right now. And so that shale gas is driving the price down. And that will continue, we think, for the foreseeable future which would mean for us five or six years for sure it's going to be in those price ranges. [LR465]

SENATOR LANGEMEIER: Senator Haar. [LR465]

SENATOR HAAR: One other question I have for you. As we've looked at...in my office, at sort of the heritage energy sources like coal and gas and so on; what we've seen is consistent policy and incentives from the federal government in particular. Has that been true of the nuclear industry or are there things that need to be in place to allow that to happen? [LR465]

GARY GATES: I think if we implement the issues that are already there for the Energy Policy Act in 2005, that will drive the performance we need. And those specifically are, there's about a \$250 million allowance for first-of-a-kind engineering; which would mean

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if you do a new process, you get that kind of money to do it with. The loan guarantees are a huge part of that. That was also part of that. And the third was for the first six to eight plants, there would be some initial startup money would be given to operate those plants. [LR465]

SENATOR HAAR: Okay, thanks. [LR465]

GARY GATES: Um-hum. [LR465]

SENATOR LANGEMEIER: Are there any other questions? Seeing none, thank you very much. [LR465]

GARY GATES: Thank you very much. [LR465]

SENATOR LANGEMEIER: We appreciate your testimony. Our next invited testifier is Mr. Adrian Heymer, executive director of the strategic programs for the Nuclear Energy Institute. Welcome to Nebraska. Welcome back, I guess, you've been here before. [LR465]

ADRIAN HEYMER: (Exhibit 2) Thank you, Mr. Chairman. My name is Adrian Heymer, H-e-y-m-e-r. As you said, I am the executive director of strategic programs at the Nuclear Energy Institute in Washington, D.C. I emphasize the D.C. in view of what's happening in the next couple of days (chuckle). It's good to be back in the land of the Big Red. I worked for NPPD for a number of years, so thank you for inviting me. What I'm going to do today is really just paint you a little bit more of a detailed picture and building on what Mr. Gates said, who is also chairman of the Nuclear Energy Institute in Washington, D.C.; giving you, sort of a thumbnail sketch, a few more details on the global and the status of the industry in the United States and how we got to where we are; touch on some of the challenges and touch on the outlook of where things might be come 2030. But first of all, the Nuclear Energy Institute, what is it, who is it? We are the

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policy association for the nuclear industry in Washington, D.C., representing some 370 U.S. and international companies in the nation's capital on nuclear energy matters. All companies that own and operate commercial nuclear facilities are members of NEI along with nuclear designers such as GE, Babcock and Wilcox, Mitsubishi, Westinghouse and others; architect engineers, construction companies, consultants, unions, uranium mining companies and nuclear fuel manufacturers, the universities and law firms. We have three main functions: one is interacting with the federal agencies, predominantly the Nuclear Regulatory Commission in Washington, D.C., another agency such as the Department of Energy, Department of Homeland Security; interacting with the House and Senate and the administration; and when requested to do so by our members, we support them in their interactions at the state and local level. And in the age of social media, Twitter and Facebook, we have a very strong communications and media group and publications group. So that's fundamentally who we are. Today in the world there are some 441 nuclear power plants operating in 30 countries that last year generated some 2.5 trillion kilowatt hours of electricity which represents about 15 percent of the world's electricity demand. Ninety percent of those plants are what we call light-water reactor technologies. And that's the technology that was pioneered and developed in the United States and we still, I believe, have the leadership as regards that technology. Sixty plants around the construction worldwide, including one in eastern Tennessee, the Tennessee Valley Authority Watts Bar Unit 2 which is scheduled for completion in 2012. It's an 1,146 megawatt light-water reactor and it will be fully commercially operable in 2013. And there's 140-odd reactors in advanced stage of licensing, planning and preconstruction which we believe will be operational by about 2025 and that includes the two units that Mr. Gates referenced, the plant Vogtle in Georgia and the V.C. Summer Station in South Carolina; over half of those 140 projects are in Russia and China. If you look at the handout that I gave you, on slide 2, it draws out the industry's performance that Mr. Gates spoke about. And as you can see from that, it hasn't always been as stellar as it has been over the last decade. And it was quite clear in the late '80s that unless we did something about that performance, we were probably going to be shutting these plants down sooner rather

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than as predicted at the 40-year point. And so we move forward and we started several initiatives to focus on safety, operations, training, sharing of best practices, and information. And as we began to do that, we began to move up the performance curve and then we began to ask ourselves, perhaps we shouldn't shut these plants down early; perhaps we should try and operate them for longer. And so we started interactions with the Nuclear Regulatory Commission to see what we would have to do to justify operations going out beyond 40 years to 60 years. And today our 59 plants have had their licenses extended to allow operation out to 60 years. Another 20 are under review; and 19 reactors' applications are in preparation. And as time progressed, we got smarter; we learned more about these facilities; computers replaced the slide rule and analytical capabilities improved and we recognize that even though we increased our safety margin and our operational margin by focusing more on safety, we, in fact, had more safety margin than we actually realized. And so we were able to justify power uprates. And to date, just over 5,700 megawatts of power uprates across the nation have been implemented and we estimate another 3,500 will be implemented in the next four to five years. Not only has operational performance improved, but also plant safety performance. And on the third page of the handout you will see a chart there that shows back in the '80s we were having 70 to 90 significant events as defined by the Nuclear Regulatory Commission on an annual basis. By 2008 that was down to 2 and I'm pleased to say last year there were no significant events in the industry as defined by the Nuclear Regulatory Commission. But it's just not only in plant performance, it's also in personnel and safety is in...personnel safety that we've also improved. And in fact, as you look at the handout 4, you can see, which is a bar chart of the Occupational Safety and Health Administration's Lost Time at Work Index, you see that working at a nuclear power plant is safer...far safer than working at the average utility. And, in fact, if we had it drawn on here, you'll see that the accident rate, Lost Time at Work Accident Rate for Office Workers is twice that of a nuclear plant worker. So I think that's a very good indication of the emphasis that we place on safety and need to continue to place on safety. Because what we found out in the late '80s and going into the '90s is that by focusing on safety and continuing to...really in trying to

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enhance safety, to prod and poke and ask questions of ourselves, we actually improved that performance and we increased our operational margin. Now unfortunately today you cannot have a discussion about major infrastructure without talking about security following those tragic events of nine years ago. And since that tragic day just over nine years ago, this industry spent over \$2 billion in security upgrades. We've increased the number and strength of the security barriers. We've improved the detection systems. We've improved and increased our security guards by over 60 percent and we've increased the caliber of the weapons that we have to protect these facilities. We are the only commercial industry in this country and, as far as I'm aware, in the world that conducts force-on-force exercises with a very active insider threat capability. Fundamentally we tell who the guys who are playing the bad guys all the information about the plant and we exercise that on a regular basis. Following 9/11 we performed aircraft impact assessments, as did the NRC on an independent basis using Sandia National Labs. And the conclusions that we came to, and they came to independently, was that should such an event have occurred public health and safety should be assured. And finally, we've established communication protocol with federal and state authorities including the Department of Defense and NORAD so that should a threat be identified we can take the necessary measures to provide increased protection to our nuclear facilities. That has been exercised and it has been tested in real time as several pilots of light aircraft can testify. Going forward, industry priorities, and Mr. Gates spoke about these, our prime, and I emphasize again, our prime priority out there today is maintaining and continue to improve the safety and operational performance of the current fleet. There is no doubt, unless we do that, we will be consigned to a page in the history books. The four to eight plants online by 2020 is what our target has been for a number of years now. And that's a measured pace. We believe we don't want to boom and lose the bubble like we did in the '70s, but we really want to have a measured pace; get these first four to eight plants right, bring them in on schedule and within the budget estimate. And if you do that and start to do that by the time you get to the middle part of this decade, people will begin to see that, yes, there are benefits and we'll move into the construction phase of the next wave of plants. So what we're looking at is four to eight

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online with others under construction by 2020 and it's growing from there. And that dovetails very nicely with some of the discussions that we've had with numerous utilities around the country, some nuclear and some nonnuclear about nuclear energy and what their needs are and when do they think they need this type of power. We also need to move forward and figure out how we're going to deal with the used fuel management program and get more energy out of the fuel that we have today through advanced fuel cycles. And finally as Mr. Gates spoke about, we want to move forward and develop and deploy small modular reactors. On small modular reactors, I'll just pause for a minute and add to what Mr. Gates said. There are some between 70 and 90 different small modular reactor designs depending upon what database you're looking at any point in time around the world. There are a variety of technologies: water cold, gas cold and liquid metal cold. And although there are some potential and really good benefits to transmission and distribution, financing, and they can be built in modules so the quality and the speed of construction can be improved, there is no doubt about it that we still need a lot more design detail and information before we can start making an informed decision. So although there's a lot of froth in the communications and media about small reactors, we're probably a good two years away from being able to make some informed decisions. Handout number 6 is a map of the United States showing where these new projects have been deployed and as you can see, they are predominantly in the southeast part of the country. That is where there has been rapid growth in the market as continuing to grow the population down there. The state of Georgia, for example, estimates its population is going to grow between 150,000 and 200,000 people a year going forward. They're getting between 20,000 and 40,000 new customers a year in some districts. So there is the growth down there. And there isn't, necessarily, the alternative energy options that you have in other parts of the country. So that's where the growth tends to be. You'll see that there's more stars on the map than there actually 13, that's because there's a number of projects in the pipeline, although there are 13 under review at the NRC, applications and review at the NRC, there's about another ten in the pipeline that are waiting to go forward. Some of the challenges that we face, Mr. Gates spoke about the financing of new reactors. Another

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one is water for the current fleet and for the future fleet and I would just like to recognize that leadership that this state has taken in the water issue and taken that to Washington and the stance that has been taken in front of the Supreme Court that resulted in a pause and hopefully what will come out of that is a more rational, more pragmatic role coming out of the Environmental Protection Agency. And I just think that it was an astounding piece of leadership to recognize that step forward and take the lead. So because I think that's going to give a much more rational decision which will benefit the American public in the long term. So thank you. The other area is work force and Mr. Gates spoke about the technical capabilities of our work force. But as you can see, there's a lot of people in our industry that look like me; they don't sound like me; (laughter) but they look like me. And some 25,000 will be eligible for retirement in the next four to five years or round about 38 to 40 percent of the work force. If you then add the fact that there are new projects coming along that need staffing levels that to man them and construct them and we need manufacturing to support that. Just in our industry alone, excluding the manufacturing industry, we're probably going to need somewhere in the region of 50,000 new workers in the next decade. And our biggest concern is in the area of skilled craft if you take the number of retirees and the need for expansion. And although four to five years ago, I'm glad to say this is a success story, that when Wendy came home and told her mother that she wanted to be a welder, she didn't get a very good response. Today it's a little bit different. We have moved forward; we recognize the problem four to five years ago. We have established partnerships with community colleges; one here in the state of Nebraska in Southeast Community College, to work on and define standardized curriculum so that if an electrical or I&C technician comes out of a community college in Illinois, those qualifications are recognized elsewhere in the country and we know what school set that that person has. That helps us; it also helps the student coming out of that college. And I think that the strength of the recognition of what we have to offer as regards to the work force was reflected in recently in south Chicago where Exelon Company set up a career fair on the evening of a football game hoping to sort of snag a few students. And they got about 20 to 30 students interested, but they also got about 3,000 other people who weren't

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students. Now you can't come away from a discussion on nuclear without talking about used fuel management. And as you can see from slide 8, although we used to call it spent nuclear fuel, we don't actually use very much of the uranium; less than 5 percent of the uranium is actually used in the fuel rod, even though it has basically served its time. And what I've tried to do on slide number 9 is to give you a diagram that depicts what the industry's approach is going forward in the light of the administration's decision to terminate Yucca Mountain and form a Blue Ribbon Commission on the America's nuclear future. What we believe we need to do is to move the fuel from the sites to a location which would be a centralized interim storage location. And interim might be a...you know, you need to qualify that in nuclear speak. Interim means probably 60 to 100 years. We then also need to move forward in parallel and develop advanced recycling processes and advanced reactors so that we can take the fuel that is being recycled along with some of the waste products and use them in fuel for advanced reactors to generate electricity and in doing so reduce the toxicity, the volume, and the heat load of the waste product that comes out. But at the end of the day, we're still going to need a geologic repository going forward. That's where we see things are. This diagram on page 9 really depicts probably what is going to evolve over the next 100 years or so. So that is a long time; we have time and...but the good thing about it is we recognize that we want to use that energy more effectively and more efficiently than it is today and that we can actually protect the fuel and the public and get a greater benefit out of it. So I think that's the plan that we're pushing, but we don't know what the Blue Ribbon Commission is going to come up with as regard to the recommendation and their sitting and I believe their report is due out in 2012. So finally, what is the outlook? I think if you fast-forward and do a back to the future and say 2030 where we will be, electricity will be even more essential than it is today for the reasons Mr. Gates outlined. Most of the existing plants will be operating. And last year we started the discussions with the Nuclear Regulatory Commission on taking this to 80 years. Not everyone is going to go to 80 years of operation, but I think you're going to see most of the existing plants operating, still operating in 2030, and a number, but not all, beginning to apply to extend their licenses out to 80 years. And finally, if you look at the Environmental

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Protection Agency's analysis of the various climate change bills out there or the Energy Information Administration's analysis of climate change or any third party study that's going on, you will see that you can't really achieve the goals the nation has set itself as it regards climate change without nuclear. And so what we believe is feasible and it's probably likely going to happen is that you're going to see something like 45 new plants operating and others under construction. But that assumes a few things. One, that we get the first four to eight right and that there's no major breakthrough as regards electricity distribution. With that I'd like to take your questions. Thank you for being patient. [LR465]

SENATOR LANGEMEIER: Very good. Are there any questions? Yes, Senator Haar. [LR465]

SENATOR HAAR: Yes, thank you. I'm curious about the small modular reactors because I would suspect no matter how you do a reactor, as long as you're talking about fissile material like uranium, there's going to be security involved. So would you foresee these small reactors being around with heavy security we have now, for example, at Fort Calhoun? [LR465]

ADRIAN HEYMER: You're going to have to protect the small modular reactor. And I think part of the challenges we're going to have is that how do you actually locate and how do you design those reactors so that perhaps you can go forward and still have the same level of security and protection without, necessarily, the same number of guards and guns and so forth. So I think you've got to be really smart in the way...how you do things. And that's why I think it's going to take some time for us to think back through in a measured way and look at all the angles before we're actually ready to say yes, let's move forward in this area. [LR465]

SENATOR HAAR: Interesting. [LR465]

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SENATOR LANGEMEIER: Are there any other questions? Senator Fischer. [LR465]

SENATOR FISCHER: Thank you, Chairman Langemeier. Thank you for being here today; I appreciate the work of your institute. I serve on the Energy Supply Task Force with NCSL and have worked closely with your group on that. When we look at the 104 plants that we have operating in this country now, where do they store their spent rods, on-site? [LR465]

ADRIAN HEYMER: It is stored on-site. Initially it's stored in a fuel pool and then when they've cooled down sufficiently they're transferred into what we call dry cast storage which is a large concrete metal container and it's stored on-site. [LR465]

SENATOR FISCHER: The plants worldwide, where do they store theirs? [LR465]

ADRIAN HEYMER: Predominantly in fuel pools. In some countries they do move them to a centralized facility to be reprocessed to recycle the fuel. [LR465]

SENATOR FISCHER: Would you say the United States is behind other countries in that process? [LR465]

ADRIAN HEYMER: As regards recycling, it's interesting, we stopped in the 1970s because we...for two reasons. One, because we recognized that the recycled fuel would be more expensive than the fuel we can get from the ore. And secondly, we believe that if we stopped, there were concerns about proliferation and everybody else would stop. What in fact happened is that we stopped and everybody, not everyone, but a couple of people continued. The good news, though, is they haven't gotten much further than where we were in 1977. And so, and I think when you look at what we have in this country as regards the universities and the national labs and the experience and the depth of academia that we have there, I think we're capable of taking it to the next level. I know quite a few countries out there that are waiting to say, well, let's take a look at

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this. And I think it's going to be very important because what you see now with those 140 in the planning stage that I spoke about, and in fact, there's another about 300 that are actually under active consideration in about 60 countries, is that we're going to have to come up with a fuel lease and take-back option to deal with the concerns about proliferation and to do that I think we're going to have to move to some advanced reprocessing. And it's a smart thing to do to get more energy out of the fuel. [LR465]

SENATOR FISCHER: Okay. Thank you. [LR465]

SENATOR LANGEMEIER: Senator Lautenbaugh. [LR465]

SENATOR LAUTENBAUGH: Thank you, Mr. Chairman. Thank you for coming today, sir. How long was Yucca Mountain in the works before it...we ceased efforts towards that? [LR465]

ADRIAN HEYMER: Well, 27 years. [LR465]

SENATOR LAUTENBAUGH: So do we have anything on the drawing board within the next decade that's going to replace Yucca Mountain? [LR465]

ADRIAN HEYMER: No, and I think, you know, if you look at what's going...if you look at what's going forward, it's still okay and it's safe to store these...the fuel at the stations until we establish a central interim storage facility. There are several locations that have shown an interest in hosting a central storage facility mainly because they see a potential (inaudible) going forward in this regards. Well, okay, where would you build the advanced reactor that follows on from that should one come along? And that's no by means a certain thing. But I mean, there's...you can actually start looking down the road and see benefits as regards the community. And so there is interest, but I think your...first of all, you've got to get the results of the Blue Ribbon Commission. Then you got to make sure that Yucca Mountain in fact is terminated. Then you got to look at,

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okay, this is the facility; then you got to go through the licensing process. So even if it does take 20 years, but we can still get there and we still have time to get there. But I agree with you, it's probably taking a little bit longer than people realized, but we're not alone in the world in that regard. [LR465]

SENATOR LAUTENBAUGH: Thank you. [LR465]

SENATOR LANGEMEIER: Very good. Are there any other questions? Seeing none, thank you very much for your testimony. [LR465]

ADRIAN HEYMER: Thank you. [LR465]

SENATOR LANGEMEIER: We appreciate it. And our last scheduled speaker before we go to open testimony is Alan Dostal with Nebraska Public Power, Incorporate for the nuclear business management for NPPD. [LR465]

ALAN DOSTAL: (Exhibit 3) That is correct and good afternoon, Chairman Langemeier and the rest of the committee and other represented state senators. I am Alan Dostal, that's D-o-s-t-a-l. And I am the corporate nuclear business manager at Nebraska Public Power District. I'm here today to testify and to provide the committee information about the benefits and challenges of nuclear power and how nuclear power is different from other traditional energy sources. I'd like to share just a brief story. In 1971, I was a young student at the University of Nebraska in Lincoln. I was part of a construction management department, had the opportunity to take a field trip to the new nuclear plant they were building down by Brownville, Nebraska. And that was a fateful day for me because I saw the beginnings of new nuclear plant construction in Nebraska. I remember a lot of mud, concrete structures coming out of the ground, and the reactor vessel that had already been delivered on a skid laying there horizontally later to be installed. It was an interesting day for me that little did I know later that I'd come to work in the field 31 years for NPPD; 22 of those years in the nuclear program at NPPD. So, a

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tremendous opportunity provided by that initiative. I have a set of slides I'd like to review on slide 2 some quick facts for Cooper Nuclear Station. The generating capacity is about 800 megawatts. Today we're at 800 percent power; we are in our 308th day of continuous operation. We have 177 days before our next refueling outage that will take place on March 13, 2011. The original construction cost gives the time perspective \$313 million and the plant is located 3 miles south of Brownville, Nebraska. We have about 750 people engaged in the operation of the facility. The construction permit was issued on June 4, 1968, and the plant began commercial operation on July 1, 1974. It is a boiling water reactor of GE design and the percentage of NPPD's generation production is about 30 percent, which I understand is almost identical to that of OPPD. On the next slide I have a little schematic of a boiling water reactor, which is again the GE design. And fundamentally the heat source to make the steam is a controlled nuclear reaction. And the condenser term and generator that you can see in the schematic are really common to coal-fired designs. So the real difference is the source of the heat which is the nuclear chain reaction. Moving to slide 4, why is nuclear different? Well, the principle focus is nuclear safety. The health and safety of the public is always most critical in our day-to-day decision making and plant operations. And what is different is when you extinguish the fire in a coal plant or a gas-fired plant the heat dissipates and goes away. That is not true at a nuclear plant. When you shut the reactor down, you have a tremendous amount of what's called decay heat or residual heat after the control rods are inserted. That takes days and months and years for it to completely go away. And you have to be prepared to deal with that residual heat and that's what this plant safety system and other functional systems are there for. It's a heavily regulated industry. The Nuclear Regulatory Commission has at all times two full-time inspectors on-site. Today at Cooper we have as many as nine additional inspectors because we're preparing to move spent fuel to dry-fuel storage. We also have an industrial organization called the Institute of Nuclear Power Operations; they are particularly helpful in the areas of training, training reaccreditation, and promoting best practices throughout the industry. Power control in a nuclear facility is also different. Instead of extinguishing a fire, we're starting a fire; you control power with the control rods by

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withdrawing the rods from the core. And we also use water recirculation to increase power in the core. Another significant difference is the amount of training that's required. All of the technical trainings and operator training programs at Cooper Nuclear Station, as well as all other licensed nuclear facilities, are accredited, again, by the Institute of Nuclear Power Operations. They have incredibly high standards. All of the operators that touch the control panels are licensed by the Nuclear Regulatory Commission. It takes a real astute, smart, and dedicated individual to get and hold a license. So we have a lot of dedication in those people that actually work the control panels at these plants. Security, post 9/11, the investments made by the commercial nuclear industry have been very, very large. Effectively, the design basis threats for the nuclear power plants are being addressed by all the utilities and, again, inspected by the NRC to meet those high standards. Moving on, just to give you a sense of scale of the relatively small size of a nuclear plant, we have 548 bundles in our reactor controlled by 137 control blades and we use fuel pellets that make up fuel assemblies. And just to give you a sense of size of a fuel pellet, an individual pellet is about the size of a Kraft miniature marshmallow. So they're relatively small, but they are combined in these fuel assemblies. We replace about one-fourth of the fuel assemblies every 18 months during our refueling cycles. We're making a move to go to 24-month fuel cycles because we know we can add additional fuel to the core to reduce the number of refueling outages. Moving on, again to give you some sense of the relatively small footprint of these facilities, I have a cutaway, this is an original GE drawing, I guess it would be a watercolor drawing from the period, that shows a cutaway of the reactor vessel in the reactor building. And to give you a sense of size, there's kind of a doughnut shaped device at the bottom called our torus which is our energy suppression pool and in the very small cutaway part there is an individual in a white lab coat standing on a catwalk. If he's 5 foot 10 inches, that would give you some sense of how actually relatively small the facility is. That doughnut or torus is about 100 feet in diameter. So again, a relatively small footprint. The next page is a picture, on slide 7, is a picture of our staff at work refueling the reactor at Cooper Nuclear Station. We have a special refueling platform that we actually set down on the water above the reactor where we can conduct

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surveillances and inspections and at the very center of the picture you can see a telescoping mast that actually goes down into the reactor and grasps onto the individual fuel assemblies and move them in and out of the fuel pool. We have a significant project in progress. We're working to renew the license for Cooper Nuclear Station for an additional 20 years. The original license expires on January 18, 2014. We submitted the license application to the NRC in September of 2008, so we've been working on this for quite some time and we've completed the public hearings and provided all the technical analysis which is the basis for continued operation in the future. We have received excellent local support from the local communities. The NRC has shared with us they have not seen the level and quality of local support that we've seen in Nebraska...that they have seen in Nebraska at other facilities. So we enjoy tremendous local support for which we are very grateful. The license application approval we expect to receive that in the fourth quarter of 2010. The most recent date from the NRC tells us that on November 29, we'll get that official notification. The estimated cost of adding 20 years to the life of the plant is about \$21.2 million for the license extension application. Another project that we are in the earlier stages of is to look at the potential for increasing the power output of Cooper from an additional 120 to 146 megawatts of output. This requires a significant amount of analysis of plant safety systems and other equipment. Some equipment may have to be replaced. We will have to study all of that before we do that. We'll also have to review the cooling water discharge temperatures and also analyze the transmission capacity. With any energy source you have to understand how you're going to physically move that energy. The current plan would be to...if we move forward with this would be to do the power upgrade in either 2016 or 2018 and a power upgrade of this nature would provide a relatively low-cost addition to base load capacity without CO2 impact. In summary, Nebraska utilities have adequate generation resources for the foreseeable future. NPPD does not anticipate the need for new base load generation until 2020. License renewal for Fort Calhoun and Cooper Nuclear Station will provide nuclear power generation for Nebraska well into the future. And as we talked about earlier, there is a potential for new generation technologies in the nuclear arena that might include small modular reactors. And we also recognize that if

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we do proceed on a new campaign to build a reactor, we'll want to do it in partnership with others like OPPD to share the cost, share the risks, and to share the energy from the new units. In summary, NPPD supports nuclear power and is proud to have Cooper Nuclear Station as part of our energy mix. I think it's absolutely critical to maintain an energy mix in your energy generation portfolio. For me to be part of an organization that provides safe and clean energy for Nebraska at an affordable price is something I'm very proud of personally and what we do every day is to do everything we can to maintain this as a safe and clean operation. So with that I'd take any questions. [LR465]

SENATOR LANGEMEIER: Very good. Are there any questions? Senator Haar. [LR465]

SENATOR HAAR: I think we heard from OPPD that there's not an immediate need for new base load. So do you see anything...I'm a little confused as to why we're talking about this today. Are there things the Legislature...I mean, we had a study being done, but I mean, is this something that should be talked...are there things that have to happen now in the Legislature to make your discussions possible or...? [LR465]

ALAN DOSTAL: Well, there are a couple things, I think, in play today and these are long-term propositions, the amount of planning that needs to take place well in advance of any efforts even to file a license application and then to go through that process and then do the physical construction. So I think there's value in knowing where you are at with regard to options for generation. That's why we do our integrated resource plans. So I think it's always good to be current on what is available for future generation options. [LR465]

SENATOR HAAR: Do you foresee or are there certain factors for you to go ahead with your planning or actually a decision to go ahead with the new nuclear reactor, whatever, are there things the Legislature has to give permission to in that? [LR465]

ALAN DOSTAL: As I understand it, I think all the tools are in place for utilities in

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Nebraska to move forward with these types of projects unless there are some variations in either contractual arrangements that we don't anticipate today. We may need some assistance, but I'm not aware of any today. [LR465]

SENATOR HAAR: Okay. So, well, in fact you are looking at planning, I mean, that's what I hear as well. [LR465]

ALAN DOSTAL: Yes. [LR465]

SENATOR HAAR: Okay. Thank you. [LR465]

SENATOR LANGEMEIER: Are there any other questions? Senator Nelson. [LR465]

SENATOR NELSON: I'm not an engineer. Are you an engineer or are you a business manager? [LR465]

ALAN DOSTAL: Well, I'm some of...a little of both. My degree from UNL is in construction management which is a degree offered from the College of Engineering and Technology and then I have an MBA. [LR465]

SENATOR NELSON: This question will horrify the engineers, but when we talk about generating capacity of 800 megawatts and a potential to increase that by an additional 120 to 146, is that because we're not operating at that capacity right now by regulatory requirement that...I mean, you can modify some of these things, but this plant right here, I mean, down at Fort Calhoun has the capacity right now to increase its output more than it's doing right now and Copper as well? [LR465]

ALAN DOSTAL: That is correct. And part of the reason for that, and I think Gary Gates and possibly Adrian Heymer mentioned that these plants were designed by slide rules. They were also designed by people that were very, very conservative in their

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calculations. After 30 to 40 years of operation, we've learned a lot about these plants. And the analytical models today tell us that there is a lot of safety margin that was believed from the early days, but it's been proven in fact by operation, so that provides those opportunities for extending the power upgrade of the plants. [LR465]

SENATOR NELSON: Okay. Well, thank you. Thank you, Mr. Chairman. [LR465]

SENATOR LANGEMEIER: Are there any other questions? Seeing none, thank you very much for your testimony. [LR465]

ALAN DOSTAL: Thank you. [LR465]

SENATOR LANGEMEIER: This concludes the portion of kind of the background information into the future of nuclear. Now we'll open it up for discussion both pros and cons for LR465. Come on up. Come on up. We will use the lights for the testimony, yes. Thank you very much and welcome to the hearing. [LR465]

FRANCES MENDENHALL: Glad to be here. Thanks for the opportunity to address this group. I am Frances Mendenhall, Frances with an "e" and I live at 3715 Hamilton in Omaha. [LR465]

SENATOR LANGEMEIER: Ms. Mendenhall, I need you to spell it all for me, for our records. [LR465]

FRANCES MENDENHALL: Last name M-e-n-d-e-n-h-a-l-l. [LR465]

SENATOR LANGEMEIER: Thank you. [LR465]

FRANCES MENDENHALL: I know you said not to state yourself as an opponent, but I am so we'll just get that out of the way. I think if I were to start with the summary of my

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position is that I don't think George Norris would approve of constructing a public power system designed to export any power, you know, beyond a reasonable amount for...you know, just having enough on hand. But I'm sure he wouldn't approve of adding nuclear power in order to do it. Being that it is a dirty, still, and dangerous, still, technology. I live downstream and I...and the water I drink some of it, maybe all of it, comes from the Missouri River. So let me flesh that out with some points here and I'll try to do my best to stay under the five minutes, although the proponents have not had to honor that limit. Nuclear power is not a carbon neutral technology; at least not according to somebody I respect a lot and I think a lot of you people know of Emory Levins who's an extremely knowledgeable, thorough and careful engineer on the matter of energy. I could go into detail about why he supports that argument, but the most memorable one for me, and again I'm under a five-minute limit, is the long period of time that it takes to build a nuclear power plant during which every single piece of it draws and creates a carbon load on the atmosphere. It's big, as everybody in this room knows. And it's all done by fossil fuels. Secondly, nuclear power, I'm glad it's less risk than it used to be. But it is still huge. Ask yourself why in all of the 30-some years that we've had nuclear power we've never been able to get the private sector to insure it. Never happened. I don't see it...that it's ever is going to happen. They won't cover it. And you'll never hear any stories, any worries about terrorists targeting a wind farm in order to produce a dirty nuclear polluted explosion. That won't happen either. So I'm making the case that if we've got money to invest; if we want to expand our grid and maybe George Norris would approve of that, we should do it with wind and we should absolutely not do it with nuclear. Third point, nuclear power is not a great job engine as wind is and you ought to take a look at the American Wind Energy Web site for the background on that. I don't have time to develop it. But wind technology is the logical and best job engine for the state of Nebraska and not just the rural parts, but inner city kids who need jobs in factories making wind turbines would benefit from the development of wind technology. We have to think of blue collar workers and we have to think of the people who most need the jobs in a tight economy. I submit to you it's not highly educated, highly certified and regulated by the NRC-type folks, it's the blue collar folks. I guess I would

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summarize by saying that Omaha Public Power District already exports energy at the rate of about 10 percent. And so why should OPPD's customers incur an increased nuclear risk and expense so that other states can reap the benefits? I'll answer questions if I can. [LR465]

SENATOR LANGEMEIER: Very good. I'm glad you did state, we do want to hear your opinion be it pros or cons, we just don't take them in any particular order. Are there any... [LR465]

FRANCES MENDENHALL: Well, you might give the cons more than five minutes. [LR465]

SENATOR LANGEMEIER: Are there any questions? [LR465]

FRANCES MENDENHALL: Like you might bring Emory Levins here to tell you about it. [LR465]

SENATOR LANGEMEIER: It's an open hearing. Are...Senator Nelson. [LR465]

SENATOR NELSON: Thank you, Mr. Chairman. You're obviously very conversant with wind power, would we ever be in a position where we could generate enough wind power to meet our needs here in Nebraska? [LR465]

FRANCES MENDENHALL: Of course. It just needs federal support; it needs a way to store it. Nebraska and many other states in the Midwest have been called the Saudi Arabia of wind energy. [LR465]

SENATOR NELSON: How many windmill fields would it take do you think, or what size? [LR465]

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FRANCES MENDENHALL: Well, it's a matter of taking the total number of wattage needed and dividing by the number of wind turbines and I'm sure it's in the tens of thousands, but I don't know the numbers. It's not rocket science to figure that out. [LR465]

SENATOR NELSON: All right. Thank you very much. [LR465]

SENATOR LANGEMEIER: Senator Lautenbaugh. [LR465]

SENATOR LAUTENBAUGH: Thank you, Mr. Chairman. Do you understand there is some technology that allows us to store energy generated from wind power now? [LR465]

FRANCES MENDENHALL: Yeah. I don't think they're mature, but thanks for bringing that up. I mean, go on. [LR465]

SENATOR LAUTENBAUGH: I don't know. I heard that that was sort of the holy grail and we don't have that yet which is why on the still days we would have problems. [LR465]

FRANCES MENDENHALL: Oh, no, not necessarily. There's ways to store all kinds of energy and one that comes to mind, I mean you kind of caught me flatfooted but one that comes to mind is putting compressed air underground the same...using old oil, you know, oil wells, put the compressed energy underground and then draw on it when you need it. We're all looking for a better battery. Mr. Gates has suggested using wind to pump water uphill and then letting it come back downhill. There's a lot of ideas being developed and some of them, you know, could be used if money were no object as it seems to be with nuclear power. [LR465]

SENATOR LAUTENBAUGH: I don't know if I'd agree with that assumption, but I guess

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what I'm getting at is...so we don't have the battery technology yet and we do have still days. How would you prefer that we produce energy on those days? [LR465]

FRANCES MENDENHALL: I would prefer that we would use energy that we had stored on those days. Well, of course, there's always conservation. But, you know, I know, everybody knows that when push comes to shove on a real hot day, somebody will...a person who wants to not run the air conditioner will. I know that. But so I'm not discounting your question, but I just think there's ways around it. [LR465]

SENATOR LAUTENBAUGH: We're going to have to deal with the specifics of those probably if we will ever pursue those, but...do you believe wind turbines and whatnot, the construction of those does not have a carbon footprint so that's a phenomenon limited to nuclear plants? [LR465]

FRANCES MENDENHALL: No, I don't think it has a zero carbon footprint. I just think that it has a payback way faster than a nuclear plant. I mean in the order of months. You can put up a wind turbine quickly and you can move them...you can site it and you can put it up fast, way more so than nuclear power plants. And that's a real plus if you want flexibility. And every engineer I've ever talked to at OPPD wants flexibility in the grid. [LR465]

SENATOR LAUTENBAUGH: Okay. Thank you. [LR465]

SENATOR LANGEMEIER: Are there any other questions? Senator Haar. [LR465]

SENATOR HAAR: Well, I'm a...I'm on record as believing in global warming and climate change. [LR465]

FRANCES MENDENHALL: Good for you. (laughter) [LR465]

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SENATOR HAAR: One of the first people to talk about that is...name is Doctor James Hansen and you probably know the name too, with NASA and he wrote a letter to President Obama when Obama was first in office and his approach and it gives me a lot to think about is that we're going to need a really a wide mix of energy sources. But here's his sequence; he says the first and the easiest is energy efficiency that we have to work hard on that. [LR465]

FRANCES MENDENHALL: Absolutely. [LR465]

SENATOR HAAR: Number two is renewable energy. Three is the smart grid. Four is fourth generation nuclear and fifth is carbon sequestration. And so while I really truly believe that we have a long way to go and we need to work at that to develop wind in this state because it's such a great resource of ours that we have to keep looking at all these options as we go into the future. [LR465]

FRANCES MENDENHALL: Well, that may be; but you're talking about spending Nebraska taxpayers' money and it has a cost. We could be... [LR465]

SENATOR HAAR: You bet. [LR465]

FRANCES MENDENHALL: ...doing something that's more cost effective. You know, nuclear power, as I understand it, still hasn't figured out how to use even, you know, 90 percent of the energy in those pellets, or at least in a cost-effective way. So do we have any business even considering it when it's...when we're so far away from removing the danger of those so-called spent fuel rods? They're the hottest substance on the planet; they're the most dangerous material you can imagine. You can't touch them when they're right out of the reaction without dying. And, you know, they cool off, they get better in about...you know, they don't get anything like safe for tens of thousands of years. So, I mean, it's by James Hansen's criteria way down on the list. I don't think it's appropriate for us to talk about it in Nebraska. We've already got two nuclear plants.

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We're not underbuilt in the state of Nebraska for nukes. [LR465]

SENATOR HAAR: I think what I'm hearing today and I appreciate your testimony and I don't necessarily disagree, but I think what I'm hearing today is we're not talking about ordering the parts today for new nuclear plants, but it's something that we're going to have to think about. [LR465]

FRANCES MENDENHALL: Isn't 30 percent enough for you? For heaven sakes, the rest of the world is doing 10. I mean that's the piece of the pie that we get our electricity from nuclear. Why do we need more? [LR465]

SENATOR HAAR: Yeah. Well, I guess we'll have to wait and see. [LR465]

SENATOR LANGEMEIER: Are there any other questions? [LR465]

FRANCES MENDENHALL: I appreciate your question. I'm not trying to be nasty. [LR465]

SENATOR HAAR: Sure. [LR465]

SENATOR LANGEMEIER: Seeing no other questions, thank you very much for your testimony. We appreciate it very much. [LR465]

FRANCES MENDENHALL: Okay. Thank you. [LR465]

SENATOR LANGEMEIER: Further individuals who would like to testify either for or against? Come on up. Don't hesitate. Yes, please. Watch the cords. Good afternoon. [LR465]

BOB ENGLES: (Exhibit 4) Good afternoon. Can you hear me all right? [LR465]

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SENATOR LANGEMEIER: Yeah, sure. [LR465]

BOB ENGLER: My name is Bob Engler, E-n-g-l-e-r and I'm the mayor of Auburn, Nebraska, which is the county seat of Nemaha County, where the Nebraska Public Power District owns and operates Cooper Nuclear Station. I believe I represent the vast majority of residents of Nemaha County in stating that we strongly support the concept of exploring the feasibility of a third nuclear power plant for our state. As our friends in the Fort Calhoun area know, the economic benefits of hosting a nuclear power plant are enormous. The 800, I know Mr. Dostal used 750, but I know there's another 50 there somewhere. The 800 Nebraska Public Power District employees who work at Cooper Nuclear Station are the backbone of our communities in southeast Nebraska. These highly educated, highly skilled and competitively paid employees serve on school boards and city councils; they are our Boy Scout leaders and PTO officers; they serve as volunteer firefighters and donate their time for our school system. On a broader basis, it appears that the two major electric utilities in Nebraska have no immediate need for additional electric generation capacity. While that is true today, surely the BP oil leak fiasco will spur the U.S. Congress to finally enact a national energy policy that will focus on renewal, green energy solutions featuring wind, solar, battery and nonfossil-based electric production. With the given obstacles and limitations of major reliance on wind and solar, it is obvious that nuclear power electric generation will become a clear choice for cutting the oil tethered lifeline we have become addicted to. When that time comes in a few years or a few decades or whenever, I hope the state of Nebraska will be poised to become a major player in the electric solution to our energy needs. Thank you. [LR465]

SENATOR LANGEMEIER: Very good. Are there any questions for Mr. Engler? Senator Haar. [LR465]

SENATOR HAAR: Yes. Thank you. I wish it were true that the BP oil leak would spur

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Congress to do something. [LR465]

BOB ENGLER: Boy, if that doesn't do it, I don't know what will. [LR465]

SENATOR HAAR: Yeah, I don't either, but. What do you mean when you say a national energy policy? Because I've been thinking about that a lot too. [LR465]

BOB ENGLER: You know, I'm very thankful we have the coal reserves we do; I'm very thankful we have the natural gas reserves that we do that are competitively priced, but anything, I guess, that I feel is fossil based is a short-term solution to our energy needs. We've got to come up with something that will give us a more comprehensive approach to dealing with our energy needs. And I think it was Mr. Dostal who pointed out that I think you're going to see, you know, in 20 or 30 years, I think you're going to see the vast majority of the cars powered by some form of electricity. And I think it's going to take some federal mandates to do that. And that's what I'd like to see, a national energy policy formed that will give us sustainable power in the future and not just two or three or five or ten years at time. [LR465]

SENATOR HAAR: And by the way, the whole thing of electric cars, in California now they're talking about using...charging electric cars at night as a way to store electricity generated in excess. [LR465]

BOB ENGLER: Wow, that's amazing. [LR465]

SENATOR HAAR: Yeah. So, thank you. [LR465]

SENATOR LANGEMEIER: Are there any questions for Mayor Engler? Seeing none, thank you very much for making the...for your testimony. [LR465]

BOB ENGLER: Thank you very much. [LR465]

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SENATOR LANGEMEIER: Further testimony in regards to LR465. Don't be shy, come on up. Good afternoon and welcome to the committee. [LR465]

ALAN VOVOLKA: Hi, thank you. My name is Alan Vovolka, A-l-a-n V-o-v-o-l-k-a, and I live in Omaha. And my basic perspective on the issue comes from a concern about efficiency. Efficiency has been addressed a couple of times by previous speakers. Generation one reactors are like about 1 percent of the energy that's actually in the uranium gets used. Second generation do a little bit better. Although no one has used...the first time I've heard anyone say anything about generation four was from Senator Haar which I believe is not available at this time. But even generation three is unlikely to get more than 10 percent of the energy that's in the uranium out into a usable form. And I know it's going to be hard to get anybody who is not a nerd emotional about efficiency, but that strikes me as entirely pathetic. In addition to that low, tiny fraction of the energy that will come out of the uranium, we're talking about exporting over lines that are going to lose an additional, significant fraction of the energy by moving it somewhere far away from where it is being generated. On the green form I checked myself off as neutral on this issue because I think Fort Calhoun is a good place to put a nuclear reactor. But I believe, as Senator Haar mentioned, that we should strive to get a generation four nuclear reactor there--one that will be able to come on and off line quickly, that's important. And that might be able to address the waste issue, because the waste issue, as we heard previously, is very significant. We have good security at existing facilities to store and protect this potential source of a terrorist disaster. But we don't have those facilities for transporting it, even to an interim site. In my opinion, one of the things that we should be trying to do with radioactive waste that we've got stored on sites is use it on-site for further generation. The technology for that cannot currently be purchased off the shelf and installed. But I believe it will be developed. And that's the kind of nuclear plant I would like to see put at Fort Calhoun. Questions? [LR465]

SENATOR LANGEMEIER: Are there any questions? Senator Fischer. [LR465]

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SENATOR FISCHER: Thank you, Chairman Langemeier. Thank you for coming up today. I've heard that any of the new plants that are in planning or even beginning in construction are the fourth generation. Is that your understanding? [LR465]

ALAN VOVOLKA: That's not mine, but I could be wrong. Does somebody know that? We have people here. [LR465]

SENATOR FISCHER: Well, that's okay. You know, we look into all this information later too. [LR465]

ALAN VOVOLKA: Oh, I think that would be an important thing to focus on. [LR465]

SENATOR FISCHER: But if that would be the case, then you feel that the technology has advanced far enough that perhaps our public power entities here in the state should be looking at expanding their nuclear portfolio? [LR465]

ALAN VOVOLKA: I would say we should try to use the spent fuel that we have stored on-site to fuel further generation and get some of that energy out simultaneously decreasing the length of time that that will be extremely toxic waste. [LR465]

SENATOR FISCHER: I think with the advances we've seen, probably not in my lifetime, but in the future I believe that would be a strong possibility. Would you concur with that statement? [LR465]

ALAN VOVOLKA: Well, I'm not typically an optimist, but I want to hold out the possibility... [LR465]

SENATOR FISCHER: But I'm looking at a room full of nerds. (laughter) [LR465]

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ALAN VOVOLKA: ...that there will be hope. [LR465]

SENATOR FISCHER: Thank you very much. [LR465]

ALAN VOVOLKA: Thank you. [LR465]

SENATOR LANGEMEIER: (Exhibit 5) Very good. Are there any other questions? Seeing none, thank you very much for your testimony. Further testifiers on LR465? No one else? Seeing no other testifiers; I have...before we get to Senator Rogert's opportunity to close, I do have a letter to submit for the record from Ken Winston with the Nebraska Sierra Club, has submitted an electronic letter for the record. Senator Rogert, you'll be recognized to close, if you'd like to close on LR465. [LR465]

SENATOR ROBERT: Well, I just want to thank the folks that came to testify today in all aspects. And I think this is a future possibility, I always have and that's why I introduced this. I think it's a great thing. These large interactions that we have to take on we have to start thinking about way early. If it is an eight-year construction process, it's three or four or five years of discussions beforehand and I think that's what we're doing today. So, thanks for your attention. [LR465]

SENATOR LANGEMEIER: With that, that concludes the LR465 hearing and we'd like to thank everyone for your participation and sharing your thoughts and have a safe trip back to your destination. Thank you. [LR465]