NORTHWEST POWER AND CONSERVATION COUNCIL

SEVENTH DRAFT POWER PLAN

PUBLIC HEARING

TRANSCRIPT OF PROCEEDINGS

TAKEN ON
WEDNESDAY, DECEMBER 16, 2015
6:30 P.M.

EWEB BUILDING
500 EAST FOURTH AVENUE
EUGENE, OREGON

APPEARANCES

NORTHWEST POWER & CONSERVATION COUNCIL:

BILL BRADBURY, OREGON

HENRY LORENZEN, OREGON

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COUNCILMAN LORENZEN: Welcome everyone. I'll first read a formal opening statement. I should also say that this meeting is not -- this meeting is not being held out at the service center which I just visited. But welcome, you found the right place but I did not, but eventually I made it here.

I have to read --

AUDIENCE MEMBER: A little louder.

COUNCILMAN LORENZEN: Okay. I have to read an opening statement. This will be very exciting.

Welcome to the public hearing held by the Northwest Power Conservation Council on the Council's proposed Seventh Northwest Power Plan. The Northwest Power Act directs the Council to develop a regional conservation electric power plan,

to review that plan every five years. The Council is now engaged in its latest five year power plan review. As part of this effort, the Council releases the draft revised plan on October 20 for public review and comment.

Council will be accepting written comment on the Draft Power Plan until December 18th. Council will also hold public hearings, like this one, to receive oral comments on the Draft Plan at all four northwest states over the next six weeks. Well, this is not quite accurate because this is the last of the meetings.

If you would like to comment on the Draft Power Plan at this hearing, please sign in on a sheet provided for that purpose. You may also leave written comments with us this evening if you desire. Comments tonight will be recorded, placed on the Council's administrative record for the Power Plan review, most importantly considered carefully by the Council who makes its decision on the final Power Plan early in 2016. The same is true for all written comments submitted to the Council.

Those of you who testify this evening, your name will be called in the order you signed up. Please begin your testimony by stating your name and

organization clearly for the benefit of our court reporter. Feel free to summarize your testimony. Your full written statement will be included in the official record. In the likely event that we have more willing witnesses than available time, we might have to establish a time limit for each witness, but we hope that won't be necessary.

We will leave the official record open for a period of ten days following the hearing to enable witnesses to submit additional written information including any material that might be requested by Council members. All public comments submitted to the Council including the oral testimony at tonights hearing will be posted on the Council's website as soon as possible.

For more information on the proposed Seventh Power Plan including the text of the Draft Plan itself, please visit the Council's website at www.nwcouncil.org.

You may submit comments by using the "Provide Comment" link on the web page devoted to the Draft Seventh Power Plan. Thank you.

Okay. Well, thank you very much. And we've -- I'll call -- actually four people signed up.

MR. BRADBURY: Don't forget Tom.

COUNCILMAN LORENZEN: What am I supposed to do with Tom?

MR. ECKMAN: Kick him out.

COUNCILMAN LORENZEN: I'll make introductions here. Tom Eckman is Director of our power division. What's that?

MR. BRADBURY: He's going to show a --

COUNCILMAN LORENZEN: Oh. Got it. All right. Thank you. I'm a little harried tonight. Thank you very much. And then to my right is Bill Bradbury, the other Oregon Council member to the Power Planning Council. And so I believe -- probably my hunch is most of you have seen these presentations but it never hurts to have another review. And so with that, Tom, I'm sorry for slighting you, but go ahead and make your presentation, please.

MR. ECKMAN: All right. This is going to be relatively short so that we can get to your comments. This is to remind you and what the Power Plan's requirements are and a little bit about why we go through what we go through to present to you a regional power plan.

We have a charge under the Northwest Power

and Conversation Act of 1980 to ensure a reliable and economical regional power system over the next 20 years. That is a statutory requirement. That is our focus. It is not lots of other things that people might like us to look at, but that's our focus.

The plan basically guides the Bonneville Power Administration in its resource decision-making. When it needs the resources, it needs to follow a plan consistently. The Plan has three major elements. It has a forecast of future electricity demand. It has an identity -- it identifies a resource strategy that is both least risk and least cost to meet the region's future needs. And we update that Plan every five years. So this is the seventh update since we first did the Plan in 1983.

The key finding here, we have a stereo view of the world. On the left-hand side of this first chart is a resource stack that supplies -- that looks at the amount of energy on an annual basis that we would supply by varying resource types. That big green wedge in the bottom is energy efficiency. It supplies in most all futures all of the load grid that we need to meet in this region

for the next 20 years. On the right-hand side is the winter peak, hourly peak requirement.

That is also being met largely by energy efficiency and the next wedge up is demand response. This is the first time that that resource shows up in the Council's plan. It's again for peak energy, not for annual average use. So that's the dominant resource going forward between the two; energy efficiency and demand response. We meet most of the energy and peak capacity needs for this region for the next two decades.

This chart represents the result of that. So on the vertical axis is the amount of power consumed in this region on an annual average basis. It's about a little over 20,000 average annual megawatts. Going forward along the bottom axis is the years of the plan, starting in 2016 through 2035.

In the bottom, blue dark portion, is the amount of residual demand that we would have for electricity after we implement those two top wedges. The green wedge is the amount of conservation that we have in the plan. It total 4500 megawatts by the time we get to 20-year end period. And that red wedge is the amount of energy efficiency that's

going to be brought to us by federal standards that were adopted since 2010, between 2010 and the end of 2014.

Those are -- they -- basically those standards alone reduced regional oil growth about 1.1 percent to 0.8 percent. Independent of any action we have to take going forward, those things will occur. The green wedge is what the action plan is all about developing.

We tested a full range, 20 different scenarios. These just represent four of the scenarios we tested and they pretty much cover the range of experience that we see for energy efficiency. The first three lines up there are on top of one another. They are existing policy case where we develop energy efficiency going forward and retire the coal plants that are scheduled already for retirement in this region: Boardman, Centralia and the Valmy plant in Nevada.

The carbon cost risk case is where we apply a carbon cost to the resources that we might build going forward or operate in as existing of somewhere between zero dollars and $110 a metric ton. The answer turns out in terms of net load after efficiency to be the same answer. Right on

top of the first one.

In the third one we have low gas prices. So we restricted the analysis to futures that the average natural gas price would be below $3.00 a million metric tons, about $2.85 for the next 20 years. And in that case, we also built the same amount of energy efficiency and the net load was the same. The high line, the highest line in that chart is the lower conservation case where we said we'll only build conservation up to the price of market power. In that case we have no load growth through 2025 or 2030.

So for the first 15 years we have no load growth. There's a little uptick at the end as we don't develop enough conservation to continue to meet load growth in its entirety through the 20-year period, but we do for the first 15. That last scenario, by the way, cost $14 billion more than the other ones, so it's not necessarily good outcome.

This is the carbon picture. We start at the very top of this chart. With the amount of carbon we will produce in 2035, if we averaged what we did between 2000 and 2012. About 55 million metric tons per year. The next line down, that's bar chart, that goes up to 45 million metric tons a

year, is if we don't retire the coal plants that are now scheduled for retirement.

If we don't retire Boardman, Centralia and the Valmy plant, we would go forward with a resource stacked. It would include the energy efficiency, some renewables, and we'd get down to 45 million metric tons from where we started at 55.

The next stack down takes those plants out of the portfolio that are now scheduled to leave. The resources at Boardman, Centralia and Valmy disappears and we go from 45 down to 34 million metric tons with their removals and the conservation we have in the portfolio. Still around 4500 megawatts.

If we take that portfolio and subject it just to a 35 percent RPS, that is no carbon taxes, no coal retirements beyond those announced. We just build 35 percent of the new fleet in the form of renewable, we reduce the carbon emissions by about five million metrics tons to 34. After that policy was tested, we looked at carbon pricing policies. And the next three bars are varying carbon pricing. The carbon cost risk, the mid-range carbon and the high-cost carbon, all three of those applied carbon prices.

In the carbon risk case, they average about $50 a metric ton. In the carbon -- social cost of carbon mid-range case, that gets up to about $60 a metric ton. And then the low case -- the social cost of carbon high case, that reaches an end point of about $180 a metric ton. And that's what we see in terms of carbon reduction when we price at those price points throughout the forecast period. We go down from -- go to 24 down to 18.

If we remove the remaining coal plants in the region, we get down to that bottom line of 12 million metric tons. So that takes care of Colstrip and Bridger and any other coal facility in the region and inefficient natural gas. That's the best we could do with current technology. It's an 80 percent reduction over the starting point.

The resource portfolio standards of 35 percent for RPS costs about $34 million increment, if we simply retire -- next one Chad -- retire all the coal plants and replacing them without building new resources other than replacing those coal plants, it's about a $20 billion recommital cost. So there are different policies to reduce carbon. Some are clearly more economically attractive than others.

Resource strategy -- two slides and we're done and it'll be your turn to talk. The energy efficiency development called for in the Plan is 1400 average megawatts by 2021. 4500 by 2035. We expect -- we wanted to increase the use of demand response in this region to meet peak winter needs when we have low water and cold temperatures.

We want to develop renewable resources, particularly those renewable resources that bring with them base load capacity that can be dispatched to meet winter peak needs. The current resources we have available, the solar, PV and utility scale, and the wind, both in the Gorge and Montana don't provide adequate winter peaking needs. And so they're not very attractive and not very good fits with what the problem is in the region which is winter capacity.

On the resource strategy site front, site natural gas. We use more of natural gas from existing plants. That's the basic reason -- or the basic resource we use to offset the known coal retirements. Going forward, there's a very little probability of needing new gas plants in this region as a whole if we -- we use the existing natural gas more.

If we have individual utilities with the circumstances that can't reach the marketplace very well because of transmission limitations or epic, extraordinary conditions where they need to integrate lots of additional renewables, there may be a need for natural gas development in those backyards.

Finally, with respect to regional resource use, there's -- the region is treated as a whole in our market model. If we divide it into public power invest in utility power, the picture isn't the same as the region. And if we don't share across those boundaries, we end up developing additional resources beyond our -- that we wouldn't need be -- to be developed if we were to share those resources across public and private power.

Finally, Chad, we need to expand these resource alternatives, as I said earlier, particularly renewables and energy efficiency. Renewable with less infrequent production. So looking at geothermal wave energy and other non-fossil fuel, non-carbon emitting generation. So Henry.

COUNCILMAN LORENZEN: Thank you, Tom.

One of the findings of the modeling which

was -- I found quite interesting is that under the existing conditions, the existing generating mix that -- which also includes the closure of Boardman, Centralia, and Valmy, in almost all circumstances, the present system meets the emission requirements established by the Clean Power Act.

Now -- which I found quite interesting. And that is on the region-wide basis. Each state comes in a little differently. Montana has a particular problem because of the coal plant that's located in Montana. But from a regional standpoint, a four-state standpoint collectively, the generating mix that now exists with the -- as I said, with the exception of the closure of Boardman, Centralia and Valmy, which is -- which is scheduled, it does, in fact, meet the requirements of the Act.

First person to give testimony will be Sandra Bishop. Seems to be a very formal setting here with the dais and --

MS. BISHOP: So I get to be the tester of the mic for a little bit.

COUNCILMAN LORENZEN: Absolutely.

MS. BISHOP: Thank you for allowing me to address the Council tonight in this last public hearing on the Seventh Power Plan. I have to

deviate a little bit from my remarks and say that I was at the hearings in 1980, I just realized.

My name is Sandra Bishop. Address is 392 East Third Avenue, Suite 201, Eugene, Oregon. I was born and grew up in the borthwest. I've traveled a little bit but I've always returned. For ten years between 1997 and 2006, I served as an elected utility commissioner here EWEB, Eugene Water and Electric Board.

Currently, I'm an individual member of the Coalition made up of -- the Northwest Energy Coalition, which is made up mostly of larger groups. But in 1980, I was making my way as a free-lance journalist or trying to. No one would buy the articles about the Power Plan. So it's interesting. I'm glad to be here tonight.

I'd like to go on record tonight with what I agree with and what I think is missing in the Seventh Plan. I appreciate and support the increased use of energy efficiency to meet all new power demand through 2025 at least. Increased use of energy efficiency is money saving as well as energy saving. The 4,500 average megawatts of new energy savings over 20 years should be considered a minimum goal of the Plan.

There should be no need for construction of new natural gas plants, at least over the next ten years or more in the region. And I think you've already addressed that. Upgraded and more sophisticated, or maybe just more transmission, and more efficient power markets can bring this into reality for specific utilities. I know the conundrum is that regionally not needing new gas plants has to be translated into how individual utilities can be in that same position of not needing those peaking gas plants.

Council seems to be saying in the Seventh Plan that cutting carbon emissions by up to 80 percent can be accomplished at moderate costs. That's very good. But the benefits aren't really called out much in the Plan. More carbon reduction can be realized by reducing the need for natural gas plants in any feasible way. More carbon reductions can be realized by shutting down coal plants.

And I just want to put in a little -- a little asterisk here. I find it very interesting that Montana is going to be saddled with the full force of the shut down of the coal plants there. Given that that's power going out regionally, it would be nice to find an equitable way to share that

-- that kind of burden with Montana.

Making sure that low income and other disadvantaged consumers get a share of any energy efficiency or other savings seems to be a value that the Council really holds fast to and I much appreciate that. One thing that is conspicuously absent is that there is not enough recognition of the efficacy of using demand response to help meet peak demand. Shifting wind consumer-used power can make a significant difference and can assure more reliability of the system and can avoid using more or any natural gas-fired power to meet peak demand.

Specifically, the Seventh Plan needs a target for demand response. A 700 to 1,000 megawatt target should be called out in the Seventh Plan. More emphasis and information and support for renewable power sources would also be great to be included in the Plan. Easily said.

The Plan needs more specificity in how renewable can contribute to meeting the power demand, especially the peaks. The Seventh Plan is too timid in respect to encouraging and assuring us that renewable power can be as cost effective as any new natural gas plants in many cases. The Plan is too timid in regard to renewables and other

technologies such as battery storage and solar.

The Council should encourage and lead the region toward more reliance on renewable sources of power by including more support in the Seventh Plan for new, clean, renewable sources that can help address peak power needs.

I really appreciate and thank you for all of your work. It's been a long -- a long road -- long road tour for you guys so thank you very much.

COUNCILMAN LORENZEN: Sandra, thank you for your comments.

Lon Otterby.

MR. OTTERBY: I rudely forgot the staff when I gave hard copies.

Thank you for being here on this last night. My name is Lon Otterby. I'm a small farmer from up on the Mohawk River near the county line with Lane County. But tonight I'm representing 3,000-plus members of the local Sierra Club in Coos, Douglas and Lane County. Something that's not in my written testimony but thanks to EWEB's little museum out here, tonight walking around looking before the meeting, I see out there a apartment cooker, which is about this size. Smaller than a miniature waffle maker that a family used to have to cook off.

And I thought what our expectations are today compared to what they were 70 years ago. And education's really not a part of this whole Plan and it might be a valuable asset to add in to educate people on lifestyle and use of power. I know we have -- with our chickens, for instance, we've stopped using candescent lights. We use the AFD lights now at a substantial savings and it achieved the same results.

Here in Lane County, most of my testimony here is -- you guys heard last night from our parent organization in Portland. But here we're very concerned about what we consider a loose goal of 35-35. Saving of 35 percent of CO2 gases by 2035. We think we might be more aggressive and set shorter term goals of ten percent in five years if I dare say so. And then review those every five years as we go along to see how we're doing, in order to adjust if those seem unrealistic. I know ten percent is high, but it's a -- particularly with the new Paris accords, it might be a reasonable expectation with people's mind on this now.

The other thing we want to commend you on is we're really, really happy to see the retirement of those coal plants. We do, however, hate to see

them replaced with natural gas plants. Another fossil fuel, CO2 generator, and we think we can do better on that. If we're going to over the long term, leave what we have and what we've enjoyed for our children and our grandchildren. Anyway, thank you. That's all I got to say.

COUNCILMAN LORENZEN: Thank you. Lon. I appreciate the comment.

Ray Neff.

MR. NEFF: Hi, my name is Ray Neff and I live at 1741 West 10th in Eugene. And I work with Oregonians for Renewable Energy Progress. On behalf of our 950 members, I'd like to thank the Commission for this opportunity to provide comment on the Seventh Power Plan, and staff for their efforts to work through complex issues of energy delivery in an evolving electric generation landscape.

OREP appreciates the fact that the Council has identified energy efficiency as a high priority to meet future energy demands. The energy we don't need to generate is the cheapest and cleanest of any resource. Likewise, demand response is another tool that will allow consumers and utilities to better manage the energy that we do generate, alleviating some of the winter peak load called out in the plan.

It should be pursued to capture the potential 700 megawatts of capacity and customer-focused solutions should be at the core of future policy.

Beyond that, the models used in the Plan are only as good as the data and assumptions going in. Most importantly, the models rely too heavily on historical data and weather patterns to determine future needs. The science is clear that long-term trends show a steadily warming planet. Here in the Pacific Northwest specifically, current data shows a strong trend where the coldest days of the year are warmer than historical patterns. As this trend continues, it will reduce our winter peak needs in the electricity system.

Indicators show that in a warming world we'll have more precipitation in the form of rain than snow in the northwest, which increases winter stream flow and hydroelectricity and reduces storage capacity for energy generation during the dry summer months. As summer temperatures and droughts increase, last summer was a good example of projected summers to come, having less water available from snow pack will require more summer energy from other sources than hydropower.

Indeed many regional utilities, including

Portland General Electric, are seeing a shift towards summertime peak system demand. Unlike winter peaking solar -- unlike winter peaking months, summer months are well matched to increased use of renewable energy, especially solar, to meet capacity needs throughout the northwest.

Wildfires and storms also have an impact on transmission capacity and highlight a need for distributed generation resource located near customer load to increase grid resiliency. Planning for future climate, not past climate, may negate one of the plan's main assumptions, i.e., that there is a predominant need to meet winter peak, with the least-cost option for that appearing to be natural gas.

Another inadequacy of the plan is that it is very heavily focused on providing least-cost resources over all others. Despite the charge to the Council to account for externalities, such as methane leakage and water usage in power generation, the Plan ignores these factors. In doing so, the least-cost resources identified in the near future are, in fact, not necessarily the most cost-effective over the long term, and does not necessarily provide the greatest resiliency.

In evaluating renewables and RPS targets, the Plan approach overstates the cost and integration impacts of renewable energy without considering any additional coal and natural gas plant retirements, beyond those already committed in Boardman and Centralia. This business-as-usual approach that ignores externalities isn't good enough in a warming world.

Finally, the plan relies on the existing policy landscape to guide energy investment decisions. Oregon's utilities are on target to meet efficiency and renewable energy standards as currently set out in Oregon statute. Yet, a November 2015 report form the Green Energy Institute at Lewis & Clark Law School, clearly states that these strategies are inadequate to meet Oregon's 2050 climate targets.

According to the Oregon Global Warming Commission, even if Pacific Power and PGE replaced all their coal-fired generation with natural gas-fired generation, complied with their renewable portfolio standards, and continued their energy efficiency programs, the utilities are not expected to meet the emission reduction goals defined in the 2015 report to the legislature.

Based on past, not future, climate expectations and searching for the lowest cost resources that don't include externalities, essentially business as usual is not stepping up to meet the challenge of our time and the right of future generations to inhabit a livable planet. We can and must do better than this.

We can build on the success of our 19th century hydropowered energy system to create a clean, resilient, affordable 21st century renewable energy-powered grid, that incorporates a broad mix of renewable resources while eliminating the greenhouse gas pollution from fossil-fueled energy generation.

The time is now to take definitive action to address climate change in all sectors of our society. You and I have the power to determine the kind of world our children and grandchildren will live in with the decisions we make here today.

Yes, the transition away from fossil fuels may be costly in the short term and require changes in how we all participate in energy choices. It is also fair that we shoulder the expense to transition to a low-carbon economy, just as our 19th century counterparts embarked to tap the bounty of our

region's many, mighty rivers.

Complimenting that existing clean resource with significant new wind, solar, and energy storage and other renewable energies will get us there. From the long view, we will all benefit both in the form of lower energy rates down the road and a healthier planet for all of us. Experience bears that out.

Thank you, again, for this opportunity to provide comment on the Seventh Power Plan for the Northwest.

COUNCILMAN LORENZEN: Ray, thank you for your comments.

Matt Michel.

MR. MICHEL: Good evening. My name is Matt Michel. I'm the General Manager at Lane Electric Co-op here in Eugene, Oregon. Just briefly, the comments I want to provide you first, thank the Council for having these public hearings to gather information a testimony.

My main comment is to address the natural gas forecasts that are contained in the Plan. They appear stale as far as when they were first created. And I think when it comes to addressing a plan for the region by a public agency, it taps into a larger

issue of the civic discourse to we have in our nation about public agencies and its best information not being monolithic or rigid in gathering best information available.

So specifically stating that analysis that was put together a few years past should be able to be updated to provide best forecast going forward. And again, I think that even beyond this Plan, it speaks to having a public agency add to the level of civic discourse being able to create that sense of trust in the general public. Otherwise, I basically underscore the comments that will be provided by the two associations that Lane Electric is a member of, the Public Power Council as well as PNGC Power, an association of co-ops. Those more detailed comments have the support of Lane Electric.

Thank you for your time.

COUNCILMAN LORENZEN: Thank you.

Normally we don't comment on testimony, but I want to let you know that our -- at the recent power planning Council meeting which was held this week actually, we approved the re-running of the models using updated projections for natural gas.

MR. MICHEL: Thank you.

COUNCILMAN LORENZEN: Kathy Ging.

MS. GING: My name is Kathy Ging, and I live at my Post Office Box 11245, Eugene, 97445. I am a licensed Oregon Realtor for 29 years, and I have a background in promoting renewable energy in Oregon. I've organized about 25 renewable energy projects since 1976, including the Oregon Energy Round-up at the State Fair, 2400 square feet, 1982, '83 and '84. And first ever Oregon Fair Visions for Humanity, a few weeks after President Carter's MEOW Speech in 1977.

Anyway, I'm an old hand at being a networker and promoter of renewable energy. And today I'm going to talk about some -- a few things and provide a written statement by Friday. I want to talk about consumer decisions I have made in which I made mistakes.

Here -- here's this box of LED lightbulbs which we've all been taught to try to use maybe to replace the CFLs. I very self-righteously went to the store and bought a whole box of these and started giving them out to my friends for Christmas presents. Well, I'm also involved in a national group called OccupyEMFHarm.org. And with this group, I've been on a conference call every week for about three years, so I've learned quite a bit about

people who we may called EMF or electromagnetic radiation refugees.

And this is an increasing number of people in our society who are subject to the vagaries of the electrical grid, as not only the power switch modes in our electronic instrumentations in our houses, but also in the solar inverters, in compact fluorescent lightbulbs and in LED lightbulbs.

So I called a friend of mine in California who is often on these conference calls and I bragged about buying all these LEDs and he said that he had been out buying them for the last three years. And he bought ten different bulbs and nine of them tested out pretty bad for dirty electricity. And he did find one, I think it was made by C-r-e-e, Cree. And then went back a year later and he tested some of those bulbs and they were also too much dirty electricity.

So what I want to say is that I think the BPA needs to rethink its whole strategy, not only in terms of saving energy, but also in affecting the health of people in our society. Three to six people have what's called advanced electromagnetic hypersensitivity. Another 30 percent have moderate sensitivity. I was also the principal founder of a

local group, Families for Safe Meters in which we kind of side tracked EWEB from doing what's called the wireless smart meter, radio mesh net with microwaves. And if you do some research on this, which I've done about 3,000 hours in the last four years, you'll find that the kind they use in California puts out between 7,000 and 190,000 beacon signals per day per meter.

That when you think this is going through people, which nine percent of our population now has medical implants, including Alzheimer's implants, ear implants, heart implants, and you'll know that this does sometimes affect -- wireless does affect these functioning of people and you realize that about 50 percent of the cars on the road should soon have WiFi, and with electric cars too, you'll find some people may stop having their hearts function because they're right next to a bunch of cars with WiFi. And this is not urban legend.

And so I'm coming here to tell you another consumer decision I made that was a mistake. My first CFL lightbulb, well, I bought it from an environmentally responsible, local green operation and who's owner I totally trusted and I had this lightbulb with a ballast, one of those really big

thick ones, right next to my head for a year and a half before I bought from Real Goods when they were located in Eugene.

For $150 I bought one of these little meters you can test EMF and microwaves with, et cetera. And it almost went off the charts. And here this one was -- thing was zapping my head for a year and a half. And so I removed that compact fluorescent and put in another one. And then I found out, you know, years and years later after using compact fluorescents that they do put out the dirty electricity also.

So another consumer decision that I made that I'd like to share with you is I bought a solar water heater. And, in fact, I was the one who initiated the renewable energy tax credit in the Oregon legislature in the late '80s when I was working toward a second master's degree at the U of O and -- in the public planning department. And this tax credit got passed the second time around.

This was after 85 percent of the solar business had gone bankrupt state and nationwide because of the short-sightedness of letting go of the solar tax credits, the 40 percent federal and 25 percent state tax credit. And so I was involved in

working to promote renewable energy in this way.

Finally, I bought a solar water heater. I qualified for the tax credit with my income. And then I found out for an extra 150 bucks, I could have got the kind of solar water heater installed and I would be independent of the electrical grid in case the electricity went down. And so that's one little mistake I made. But another mistake, I'm not saying that I made it, but we all are making it, if we don't recognize that solar water heating is still a major part of our energy future. And one thing I found is that fixing my solar water heater would cost 1800 bucks.

Well, I paid about $6,000 for it, and I used a program that EWEB doesn't have anymore, the zero interest loan program, and paid for that about $60 a month for five years. And then I found out that after the red tag, which had been guaranteed for five years, it ran out -- broke down in six years. And it would cost me 1800 bucks to get my solar water heater fixed.

Well, I found out through the years that I changed my ideas about a lot of things. So I think now the utilities should be promoting solar water heating, solar thermal as it's called, but we should

be allowing people to make the decision if they want to pay a little fee every month and have the utility maintain this for them.

I was able to get the fees down a little bit because of my background promoting solar energy strictly as a non-business person, by the way, but most people wouldn't have that kind of energy to try to get the bill reduced like that and they would just drop the solar water heater. So I'm just telling you based on consumer decisions that I felt were mistakes but that could be rectified by the utilities if they had better planning mechanism.

The next thing is I want to say is I want you to look at the next generation in energy efficiency by educating utilities in this technology that allows us to mitigate. And there is a system that I've provided, you know, to you in a handout, StetzerElectric.com. S-t-e-t-z-e-r, electric.com.

And there's a lot of history behind this guy, but basically, one of the studies that, you know, he's quoting on his website, the medical director for Switzerland's Paracelsus Clinic takes a stand on hazards of electromagnetic pollution. Electromagnetic load is a hidden factor in many illnesses. And this is something Magda Havas up in

Canada, who is probably the number one woman in North and South America who knows about this stuff. You can go to her website, MagdaHavas.org and also .com.

So I want to say to you, you need to go to the next generation of thinking about this. And how do I know some of this stuff, although I'm not a technical person? Well, I had a woman call me up from California who had spent $150,000 of her retirement money with her husband, and they have moved into a house with smart meter located 45 feet away from their bedroom. Within about a few months or so she was unable to even turn her electricity on in her living room.

And finally she decided she'd move to replace the photovoltaics. Well, they had to dismantel the photovoltaics because of the problems with the inverter. And you'll see from a guy named Dr. Sam Milham, Sam Milham, M-i-l-h-a-m, .com. He's a medical doctor. He's in his 80s now and he's written a little book called Dirty Electricity. He said that every one of the houses that he tested who had solar electricity on them in this country, have had the dirty electricity, and he recommends the Stetzer filter too.

So another thing I want to talk about is like other people have already said, I want you to leave the fossil fuels in the ground for future generations to take the leading edge on developing and promoting renewable energies like wind, solar, et cetera. According to the University of Oregon Solar Radiation Monitoring Lab, in 2008, solar radiation has increased in this part of the state ten to 15 percent, within ten to 15 years before 2008.

I just talked to Frank Vignola, Director of the center today, and he says he doesn't have any new data from that. But he suspects, like a lot of people do, that the solar energy will be increasing in our area. So at a time that the snow pack is in the decline, solar resources is increasing. We need to take advantage of that.

And so I want to say that the fact that the PNW still gets six to seven percent of its electric power from nuclear, like the Columbia Generating Station, this should be shut down. And we need to look closely at what pioneer utilities are doing in other parts of the U.S., experimenting with micro-grids.

And what Germany is doing with the feed-in

tariff, that has allowed what's called the democratization of the energy grid. And we should have required reading the now free PDF from Rocky Mountain Institute, SmallIsProfitable.org. 200-plus reasons why it benefits utilities to have distributed generation.

We need to educate ourselves about -- the public about this because, you know, when you have earthquakes possible and tsunamis, and now these huge fires and even these storms -- in Southern Oregon, 5,000 people were without power in just the last week. You know, I want to talk about something that most people don't talk about and that's the fact that the marijuana growers are increasingly causing disruptions of our electric grid.

Now, according to statistics, Jackson County, Southern Oregon, is the number one holder in Oregon, for instance, of medical marijuana cards, and Lane County is number two. And I can almost bet that most of those people are growing pot inside. And as a Realtor, I have seen many of the deleterious effects on people's house from people growing pot inside.

So I think that part of your strategy should be educating utilities, if these people are

going to be growing pot inside, to use the more -- there's like a $700 lightbulb, apparently, that came out. It combines light spectra and is more efficacious for these people that need to grow pot either for medical or for adult use.

And I'm almost done. I don't want neighborhood nukes. I don't want the suitcase nukes. I don't want the nukes that are the coolers buried in the ground. I don't want the nukes from Corvallis with the nuclear energy. No more nukes, please. That's -- we really need to make sure that we go forward towards the solar energy and distributed energy grid in order to deter that future.

And one thing you got to remember, in October, Tesla Power started to deliver the power walls. Now, the nice thing about these power walls is they cost about 7500 bucks and you might need four or five, you know, for a typical house. But they can match the pastel colors of your wall. So women are going to start falling in love with these. And there again, we'll have the early adopters who can afford this stuff.

And so I would like to recommend that you work with Tesla to put a gigawatt factory, and

they're going to open source that technology and give it to anybody in the world who wants it. I was hoping we could put one over at the Hynix Plant and maybe you could go ahead and still try to buy that Hynix Plant from whoever bought it and convince them that we should be doing this instead.

So that's the main things I wanted to say. Thanks for listening and I'll provide some written testimony in a couple of days. Thank you.

COUNCILMAN LORENZEN: Kathy, thank you very much. That concludes the list if people people who have signed up. Is there anyone else who would like to testify? And if there is, you're most welcome to do so.

This is a little different than last night when we ran over about 40 minutes. And so don't be shy, if you have something you want to say. I'm sure there's -- but -- so if not, we will be adjourned this evening. And thank you so much for coming and participating and listening to the testimony and providing testimony. Appreciate it very much.

(Whereupon, hearing concluded at 7:20 p.m.)

CERTIFICATE

I, Kimberly R. McLain, do hereby certify that I reported all proceedings adduced in the foregoing matter and that the foregoing transcript pages constitutes a full, true and accurate record of said proceedings to the best of my ability.

I further certify that I am neither related to counsel or any party to the proceedings nor have any interest in the outcome of the proceedings.

IN WITNESS HEREOF, I have hereunto set my hand this 24th day of December, 2015.

Kimberly R. McLain

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