

## Energize Eastside Community Q & A Session Summary

---

5/30/14

### Community Q & A Session

Monday, April 21, 2014

Scheduled event time: 6:00 to 9:00 p.m.

Actual event time: 6:00 to 10:20 p.m.

Renton Technical College, 3000 NE Fourth St., Renton, WA

### Session Purpose and Overview

During the March 26 and 27 Sub-Area Committee workshops, meeting attendees indicated a strong desire for a question and answer session with PSE. Question and answer time during the workshops was limited due to the activities scheduled and advertised for the workshops.

In order to be responsive to these requests and to provide answers to the community's questions, Puget Sound Energy hosted a public question and answer session on April 21, 2014 in Renton. The meeting included brief introductory remarks, an overview of the session ground rules, and time for Q & A with a panel including a representative from PSE and national experts.

### Q & A Session Moderator and Panelists

#### Moderator

**Susan Hayman** is a certified professional facilitator and public participation practitioner for EnviroIssues. She has invested over 25 years in successfully enabling others to bring their passions, interests, and expertise to the table to develop solutions to challenging issues in environmental cleanup and natural resource policy and management.

#### Panelists

**Andy Wappler** is vice president of corporate affairs for Puget Sound Energy. Andy leads the company's communications, community affairs, energy efficiency, and products and services teams. He is also the chairman and president of the Puget Sound Energy Foundation.

**Mark Williamson** served as executive vice president and chief strategic officer for Madison Gas & Electric Company in Madison, Wisconsin and was responsible for electric transmission engineering and operations, including the operations of underground and overhead transmission lines. Mark also served as vice president of major projects for American Transmission Company based in Pewaukee, Wisconsin. Mark currently serves as a consultant advising utility companies across North America on transmission project development and construction.

**Lowell Rogers** is a Washington State licensed professional engineer and senior project manager at POWER Engineers. Lowell is responsible for managing and designing both underground and overhead transmission line projects. He has experience in the siting, permitting, design, procurement, and

construction of high-voltage transmission lines working for utilities and developers throughout the United States.

**Drew Thatcher** is a board-certified health physicist with more than 20 years of experience providing a wide range of radiofrequency consulting services including on-site radiofrequency exposure evaluations, predictive modeling reports, and public testimony. Drew is a Clinical Associate Professor at Vanderbilt University, and a consultant at the American Conference of Industrial Hygienists.

## Community Q & A Session Summary

### Welcome, introductions and overview

Andy Wappler welcomed attendees to the Q & A session, introduced the moderator Susan Hayman, and provided a brief overview of the project.

Susan Hayman introduced the panelists and provided an overview of the Q & A process, noting that attendees were welcome to sign up to ask a verbal question or submit a written question to the panel. In addition, questions that were submitted in advance online were posed to the panel by the moderator.

### Questions and answers

**Note:** The below notes are a summary of the questions and answers during the Q & A session and are not intended to be a verbatim transcript. When appropriate, responses by multiple panelists were combined into a single response. Reproduction below of statements, viewpoints and opinions offered by attendees is provided to maintain full disclosure and transparency. Their inclusion indicates neither concurrence nor disagreement by PSE with such statements, viewpoints and opinions.

*Q: Why can't there be a discourse with Seattle City Light about using their utility corridor?*

A: We spoke with Phil West, the Customer Service and Energy Delivery Officer at Seattle City Light. He said that SCL has the same situation – growth – and that it can't accommodate additional infrastructure. SCL doesn't have the available capacity because its transmission towers weren't built to add on more lines. SCL needs that corridor for the current infrastructure that serves its customers today and will serve its customers in the future.

*Q: Why wouldn't you build where you already have transmission lines?*

A: Using the existing corridor is one of the options available to us. We could rebuild Segments M, J, and C at a higher voltage.

*Q: I live by Segment H and belong to a homeowners association. I am concerned that those lines will devalue our property. I know \$25 million a mile for undergrounding sounds like a lot of money, but I think if you added up all the lost property values that the overhead lines would cause, it will make up for it. My question is, can you speak to the usage of Segment H, with regard to the railroad tracks – what is allowed in the right-of-way and what is not allowed?*

A: There is some debate going on with regard to the railroad easement. As a public utility, PSE has the option to acquire easement rights if they don't already have the rights. Easement rights will be settled parcel by parcel. If Segment H is chosen, the railroad easement rights would be carefully examined.

*Q: How will you ultimately choose a route?*

A: In the end, we have a legal responsibility to provide power to our customers. Our preference is to have a community-recommended route, but because of our obligation to meet reliability requirements, we will have to make a decision to get this built and to provide power to everyone. If the Community Advisory Group can't reach a consensus, PSE will make a decision on how to get this project done on schedule, to keep everyone's lights on.

*Q: I am personally concerned about the health effects of EMF. Another thing I'm concerned about is that you're asking the Community Advisory group to evaluate route segments on these relative merits and yet we haven't received all of the information. My question is: when will we receive the number of residences along the routes and the EMF report?*

A: Right now we are working hard to put together the set of information that has been requested for the upcoming workshops. Where we are in the public process right now, we are still at least a year away from the permitting process where we are legally required to have public input. When that happens, we will have a lot more information.

*Q: My understanding is that the lines are currently 115 kV and going to increase to 230 kV and that it will double the EMF output. When are you going to have the EMF report?*

A: As to EMF levels, right now if you are living near a 115 kV line and the power doubles to 230 kV, the EMF would actually decrease by half if the current stays the same. We're looking to double circuit some of the line, which allows for reverse phasing. If you alternate double circuits from left to right, you get some phase cancellation, which produces about 30 percent of the EMF that was originally present. If you've got a double circuited line, at some point over time the magnetic fields will increase back to a point of being equal to what they are now. But, at least initially, by doubling the voltage you've actually decreased the EMF considerably. PSE will look for ways to keep the magnetic fields low whenever practical. The EMF report is in its final draft and will be finalized soon – in a matter of weeks.

*Q: The EPA recommends exposure should be 0.5. Has anyone looked into what the EMF levels of these lines will be?*

A: We are not aware of any recommended EMF exposure levels from EPA. There is no Washington State or federal standard for EMF exposure. There is an international recommended exposure limit, but even with the least EMF-reducing configuration available, and with full load, these lines cannot reach EMF levels even close to the recommended exposure limits. EMF measurements can also fluctuate. When we're all sleeping – we turn the heat off, we turn the lights off, and that causes the EMF to be vastly lower. Right now we are working from very preliminary design assumptions. We haven't selected structure types yet, but we have made some assumptions that include reverse phasing and taller configurations that would reduce exposure to EMF.

*Q: Can you submit more than one question to the website? I would like to have a list of all the questions and answers submitted.*

A: We don't have a limit on how many questions can be submitted. We are trying to provide the materials to the Community Advisory Group and to the public. We are working to answer all the questions we receive to the best ability that we can, but there is a high volume of questions.

*Q: When will PSE divest from fossil fuel resources?*

A: PSE doesn't know the answer, but it doesn't change the need for the Eastside and the distribution of resources. Regardless of the generation source, PSE is required to deliver power to its customers.

*Q: Why don't we take the money we're investing in coal and put it to other uses?*

A: Over the last 10 years PSE has invested \$2 billion in alternative energy such as solar and wind. We've rebuilt our hydroelectric plants and we know green energy is important to our customers. The more green energy we use, the longer this project can power the community. There just simply isn't another option to meet our need for this project, which is about distribution, not generation.

*Q: I live near Segment H, formerly the BNSF line. With the environmental impact studies, once a route is deemed the route, does PSE have the authority to say, "This is what it is"? Or will Segment H have environmental impact studies done? Once the route is selected, is that it?*

A: Once a preferred route is chosen, we will go to all the local municipalities to get permits. All those things, like an environmental impact study, could make an impact on the process. We will make our choice, then work through the permits process to evaluate what in the end has the ability to be constructed. No, we don't have the ultimate ability to say "it goes here."

*Q: If the Community Advisory Group isn't able to come up with a preferred route, what is the process that will bring PSE to the final decision?*

A: PSE will take the community's input and select an option that meets our obligation to keep our customers' lights on. We will also consider cost, constructability, maintainability and permitability of the route options.

*Q: How extensively has PSE studied energy efficiency solutions to help deal with the Eastside's growing need?*

A: PSE has an energy efficiency plan that is much more extensive than many of the utilities around the country. We use it as a tool to help keep the load levels low. PSE hired E3, a nationally-recognized firm that does studies around the country, to take a look at this project. Their report is available [online](#) on the project website. E3 found that there isn't enough opportunity to do conservation or other non-wire alternatives in a cost-effective way that would be able to meet the energy needs of the Eastside.

*Q: How does PSE plan to avoid the eagles that are nesting in the corridors and how many acres of habitat are going to be destroyed by this project?*

A: This is something that would be evaluated during environmental review when we reach that stage of the project. We do not yet know where the project will go. We also do not know how close the eagles are and we don't know how many trees will have to be removed because the line hasn't been designed. It's impossible for us to address that at this time. The state and wildlife agencies will handle that issue. We won't be able to study the environmental impacts from the project until the design and routing is done.

*Q: I worked for Seattle City Light. Perhaps the representative you spoke with at Seattle City Light is incorrect; those Seattle City Light lines you say aren't available have been used by Bonneville Power Administration for 20 years and it specifically states that they're not serving customers. Has Seattle City Light filed an open tariff?*

A: Seattle City Light has been clear with PSE that these lines are not available to PSE. I have no idea if Seattle City Light filed an open tariff. What Seattle City Light is using them for is not something we're aware of. We have talked to Seattle City Light many times and told them that this question would come up a lot.

*Q: You have said that PSE hasn't been able to get any documentation from Seattle City Light about using their utility corridor – I think they need to come forth and give their reasons.*

A: We have asked Seattle City Light to put their response to our request in writing and have yet to receive it.

*Q: What will PSE do to compensate property owners for use of easements, both long-term and short-term?*

A: Some of the easements have been in place a long time. The company plans to review them parcel by parcel. If the existing corridor is chosen, PSE plans to sit down and have a specific conversation with each property owner about what this project means for their property. Compensation is different than mitigation. We're consistently working with property owners regarding landscaping and other strategies to mitigate impacts.

*Q: Can you flip this public involvement process: get the research and studies and bring that information back to us so that we can make an informed recommendation?*

A: There are two criticisms in a process like this. One is, "Don't bring the project to us fully baked, because that means you've already made the decision." But if we come to you without all the available information, we're providing a half-baked plan. We are trying to find a balance between those two extremes. If you add up the total length of all the segment options, it is about 40 miles of lines that we would have to research. It would be expensive to conduct these studies on segments that wouldn't eventually get built, and that's your money as customers being spent. We have to try to find a balance.

*Q: There's got to be a middle road to have valid data. If the communities can't come up with a preferred route, what will happen when the project gets to the municipalities?*

A: We'll file permit applications with the municipalities, not the state, and an environmental impact statement will be prepared. When we're building a project in a community, we work with the local governments where the project is. That will happen in the early part of next year. At the end of this year, we will come to a route decision. In early 2015, we'll have more details on the particular route that was chosen.

*Q: What if the Community Advisory Group does not recommend a route?*

A: A community-preferred route would be great; it helps us a lot. We still have the obligation to keep peoples' lights on and we still have to move forward. We can't say to the public, "Sorry, the electricity is out." We would prefer to take a community-recommended route to the permitting process, but ultimately we will make the decision.

*Q: Since PSE has three years to work on this plan, why don't we have three years as well so that we can hire independent experts and gather their advice?*

A: None of what we're doing tonight is required by law—at this point, we are ahead of the permitting process, which has not started. Later on, during the permitting process, public outreach is required. We're trying to go beyond that because we're building this project in our own communities. I've [Wappler speaking] lived here since 1969 and I've watched this area grow. I know that this is not the area it was when I was growing up. What this project is about is very simple – how many of us here have worked and lived here since 1960? The job you work at was likely introduced after 1960. The house you live in was probably built after 1960. It's really about growth, and more growth is ahead.

*Q: I've read articles that describe greater EMF cancellation in underground lines than overhead and greater EMF on vertical poles with spacing. Is that true?*

A: You are correct: underground lines have lower EMF than overhead lines. If you are standing right over where it's buried, the EMF is higher, but soil does a lot of dissipation. EMF levels drop off dramatically as distance from the line increases, so there would not be a lot of exposure.

*Q: What is the diameter of the base of a 120-foot pole that would support seven cable lines?*

A: The diameter of the base has to do with the height of the pole. The taller the pole is, the stronger the base has to be. We are looking at a variety of pole heights. The base diameter is going to be in the range of 30 inches for the lighter-weight structures to 5 feet to 6 feet in diameter for structures on heavy angles. Lines pulling in the same direction need to be stronger to resist load. The vast majority of the poles would be the more slender profile, but that is the range we are looking at.

*Q: Would the power poles need tie-downs on hillsides? What about in areas close to the earthquake fault?*

No, the ties are what you see mostly on wood structures, and we would not utilize that approach. In this region, we don't look at earthquake loads as much as snow, wind, and ice loads. For earthquake loads, the amount of force depends on the weight of the structure. For transmission lines, the size of the pole dictates wind loads. We've never seen earthquake loads dictate design over wind or ice loads, even in California near the San Andreas Fault. It's not that we are not concerned about earthquakes; it's just that they don't dictate the design because wind and ice have the potential to exert stronger forces on the poles than earthquakes and therefore are leading factors when designing a transmission line. We design to the highest load demand, which is wind and ice.

*Q: How close can power lines be to working railroad lines? Can a railroad corridor with electric lines installed be reverted back to a working railroad in the future?*

A: In Portland, there are power lines right above the rail line. It can be done; it just depends on the width of the right-of-way. Any former rail bed needs to be capable of being a rail bed again. There are instances in Portland where they've built lines over the rail bed with no issues. The poles have to be off to the sides, they can't be on the track, but it works.

*Q: What cities have underground 230 kV lines and what is the average cost per mile?*

A: A few examples are San Diego Gas and Electric, Pacific Gas and Electric, and Portland General Electric. As far as the cost per mile, they're aligned with what we've given you. The cost estimates are based on previous experience, that is how we developed the information we have for this project, and range is about \$20 to \$28 million per mile.

*Q: Can you give us an example of a similar project that can justify the \$20 to \$28 million per mile estimate?*

A: Refer to the Jefferson-Martin 230 kV project for PG&E. It's an eight-year-old-project. As for POWER Engineers, we've done somewhere in the range of a half-dozen projects in last few years. Prices include construction costs, labor, material, and current quotes by manufacturers for equipment. All the information that has been used to develop cost estimates is current. Every project goes through different terrain, different circumstances, and therefore gets configured differently. These cost estimates are accurate for this project.

*Q: When estimating the cost of undergrounding transmission lines, what time frame do you consider? Is the life cycle of the line taken into consideration?*

A: The estimate provided is just the initial installation cost using 2014 numbers.

*Q: Is there a law that causes you not to underground?*

A: There is not a law that says you can't build underground. We do have a tariff approved by the Washington Utilities and Transportation Commission that says the preferred alternative is aboveground. If a community asks for underground wires, the requesting party must pay for it. The theory behind this regulation is that all customers share in the cost for overhead lines that benefit everyone. Because undergrounding benefits are primarily about aesthetics, the requesting community should pay, because an aesthetic benefit doesn't help all customers. If we were to underground the entire system, and all customers had to pay for it, it would cost maybe \$20 billion dollars. This would roughly double most people's electric bills. That's why the regulation is the way it is.

*Q: What are tree removal requirements for underground vs. aboveground lines? Specifically, would all trees over 15 feet require removal with aboveground lines?*

A: Yes, PSE's policy for overhead lines is anything over 15 feet in an easement is removed. That is dictated for safety reasons, because we don't want trees making contact with conductors. For underground facilities, anything larger than a shrub isn't allowed to grow over the top of an underground facility because the roots will damage and break up the underground structure. There will be a swath 15- to 25-foot-wide without significant vegetation, only small shrubs. Trees would not be allowed to grow there.

*Q: How much per mile would it cost to put wires in Lake Washington, and what serious consideration has been given to this option?*

A: The reason why the existing submarine cables are used is because they're serving an island. It's not feasible to serve an island any other way. We anticipate cost numbers to be in the neighborhood of the underground numbers that have been provided. It is feasible to put line underwater but the line would need to enter the water and get out of it somehow. We would need to build a line connecting to the shoreline on each end. The same regulatory framework applies as with the underground tariff in terms of cost sharing.

*Q: Has PSE evaluated the risk of construction and maintenance of transmission infrastructure over pipelines that transport jet fuel under pressure?*

A: We've designed lines in gas corridors. PSE owns natural gas pipelines and knows how to operate those lines as well as how to build facilities in those corridors. PSE has been asked to share those corridors and can approach it with the point of view as an owner concerned with protecting the pipeline. We don't see any problem building in the same corridor as a pipeline. We have evaluated the risk as far as it is feasible to construct the line, and we feel that it is. We have built 230 kV transmission lines next to the Olympic pipeline in Skagit County. The project manager for that project is the same project manager on this project. We have direct experience with that pipeline at the same voltage. We have an understanding of the concerns of a pipeline operator, because we are a pipeline operator.

*Q: Are PSE and the Olympic Pipeline operators working together to limit danger to people?*

A: Olympic Pipeline representatives have attended previous meetings PSE has hosted with the community. They've highlighted a couple of concerns we've had, such as wheel loads from equipment on the pipeline. As we develop different alternatives for design and construction practices, we will develop a very concise and detailed construction approach that will maintain the safety and integrity of the pipeline.

*Q: Which segments share the right-of-way with the Olympic pipeline?*

A: Segments M, J, E, and C currently share right-of-way with the pipeline. They have shared the location since the 60s or 70s, depending on the easement you're talking about, so that's 40 to 50 years of co-location in that corridor.

*Q: Will any extra power generated stay here to serve Eastside communities or will it be sold to Canada or other municipalities?*

A: If you lived in this region a long time ago, the common wisdom was that we have a lot of extra energy in the northwest, so let's sell it to California. That was 3 million people ago. Now we are the 17th largest state in country. PSE serves 1.1 million customers, which is three times as many customers as we did in 1969. We need all the energy we can get in Washington to serve the people in Washington. Yes, energy gets traded back and forth, but over the course of the year it is a net zero. When power is sold, it is good for the customers because it reduces your rates. We have seven times as many people dependent on this power line as when it was built five decades ago. We are projecting much more growth, and the energy is going to stay here where we need it.

*Q: If Segment L is chosen, will you also upgrade Segment M from 115 kV to 230 kV?*

A: No, the reason we need to upgrade to 230 kV is so that we don't have to do this again in five or six years. Other solutions only buy us five to six years. This solution takes us into the 2030's, possibly farther depending on other factors. If Segment L is picked, the existing 115 kV line on Segment M is still needed to serve those neighborhoods, but we don't need two 230 kV lines.

*Q: What percentage of the future power needs, which the new 230 kV line is intended to serve, is north of I-90?*

A: I don't think we looked at relative growth north of I-90 or south of I-90 because the system acts as an integrated facility. From Renton to Sammamish, it's an integrated system. I've seen growth projections from the Puget Sound Regional Council showing robust growth throughout the Eastside corridor. From an electrical study point of view, it doesn't make a lot of difference where the growth is because it's an integrated system and you need to make it work for the whole area. Renton is already the second-largest Eastside city after Bellevue, and Newcastle is expected to be double its original size in another ten years.

*Q: About power generation – where is the additional power coming from? Is there a proposal to increase power generation?*

A: The issue is not that we don't have enough power. The problem is delivering it to the fastest growing places and the most users. The fastest growing area in Washington is the Eastside.

*Q: If Segment L is selected it would be all new infrastructure. If you have to remove trees that are over 15 feet high, that's every tree within that corridor. Will you have to remove every tree within 50 or 100 feet on either side of the tower?*

A: The corridor width is about 40 to 100 feet. Yes, the entire right-of-way would need to be cleared.

*Q: For those of us who live along Lake Lanes, every single tree would need to be removed and nothing over 15 feet could be replanted? Those trees are our sound barrier to I-405. How do you make that right for the hundreds of people who live along that route?*

A: We will work to do as much mitigation as we can. About 75 percent of Segment L has 115 kV lines along it today.

*Q: If you place the transmission lines along Segment L, won't they have to be on the west side of the corridor? In many cases, front doors are only 50 feet away from the corridor. By that logic, your 6-foot*

*poles are going right into roadways or banks that are completely filled. It seems you will have to put them on the western side, and that will have a huge impact on the shoreline and hillsides, especially if you have to clear all the vegetation on each side. How is King County going to have a world-class trail with that kind of tree clearance?*

A: As for putting lines on either side of the railroad bed, it could be done – Portland did it. But really, there's no alternative here that is easy. Each segment option will require detailed siting of structures to avoid gas lines, to maintain the line of easements, to avoid or minimize impacts. We won't put structures in the middle of roads. We need to finesse the line through all of these corridors, but we believe they're all feasible. The analysis has been done at a high level, but not structure by structure. We will look at it in 3D, we will look at what is underground, but we haven't gotten to that phase of design yet.

*Q: They have had to remove power lines near rail beds in other areas. For example, Seattle City Light removed the lines by Northgate Mall for the Sound Transit light rail.*

A: Seattle City Light is working to build a new 230 kV line on the Sound Transit light rail corridor, so they're removing the old lines and replacing them. Electric lines can run along rail corridors, you just have to locate the poles carefully.

*Q: Has a high-level constructability analysis been done?*

A: Yes, we have done high-level 3-dimensional analyses.

*Q: What is this doing to King County's plans for a trail?*

A: We would have to work that out in permitting. King County's trail plans aren't firm at this point so it's a bit of a challenge.

*Q: Would poles be located along the rail lines or in the same positions as the current set of poles along the road by houses?*

A: The current plan on the table is to place the poles in the rail corridor easement area. No decision has been made on what to do with the existing poles on Lake Washington Boulevard. We could also have considered the feasibility of building on Lake Washington Boulevard. Doing that upsets a whole different set of people. The current proposal is to put them in the corridor shared with the railroad.

*Q: Who owns the rights to the existing Newcastle route?*

A: The Newcastle route is on an existing corridor. Existing easements cover that route where the 115 kV lines are. If that route is chosen, we would discuss it, parcel by parcel with, landowners ahead of time. I don't think the timing has been determined, but PSE does have easement rights.

*Q: Your March 2013 report to Western Electric Coordinating Council (WECC) shows that using the existing route has been planned all along. Why has PSE moved up the timing to include the rail corridor?*

A: PSE has been putting the existing corridor in comprehensive plans since the 1990's as a potential way to upgrade the system. PSE felt compelled not to come to people with an inflexible plan that couldn't respond to community needs. The goal is to find a legitimate corridor and we're open-minded about where that will be. We want to provide options and discuss tradeoffs. The options here all provide electrical reliability; we need to make that connection between Redmond and Renton. At a regional level, it's most important to make that connection, and less important what exact route it takes.

*Q: The reports from PSE to WEC and Columbia Grid are stating PSE's intent is to use the existing corridor. Why are you now all of a sudden looking at a totally different route?*

A: People who write those reports are looking at the system from a theoretical standpoint and to maximize power flows; they are not looking at solutions to provide power for the local community or at the impact on the neighborhoods.

*Q: The BPA line lease expires in 2018 – are you renewing that lease or is this intended to replace that?*

A: We need those lines in the future. But we need this connection here to connect the south and north end. Eastside growth is much more intense and the energy is needed.

*Q: To be clear, are you going to renew that lease in 2018?*

A: There are restrictions on what we can say publicly regarding our contracts with BPA, but I can't see the need changing.

*Q: I am with the technical committee of my neighborhood's community association, here to help organize and make sense of all of these moving parts. I pulled 45,000 documents from the UTC about PSE that are available to the public to view. One of the key documents is the 2011-2013 Integrated Resource Plan. How much energy is it going to take? There are so many different technologies available. Puget Sound lost 700 MW of power through energy savings. Bonneville has made 200 MW of extra power to go to Canada. Just with building codes alone, 67 MW of power savings lost during peak winter loads. I heard that Bellevue building codes are driving the vast majority of it, requiring a lot of electric heat. Do you have comments with regard to building code?*

A: It's a difference in energy efficiency. Washington building codes aren't the best in the country, but we have made improvements in energy efficiency. The building codes and the market are progressing and people are becoming more efficient. We are required by law (Initiative 937) to use renewable resources and undertake all cost-effective energy conservation—we need to keep finding energy efficiency incentives and let customers know about them – but we can't mandate people to build or use energy-efficient products past what the code requires. We can offer those programs, but we can't force people to do or use them.

*Q: If you could find enough power through energy efficiency and conservation, everything would be solved and you could push the project off cost-effectively. If more people and large businesses replaced their incandescent light bulbs with LEDs, we could save that energy and not need to build these lines.*

A: We can't compel people to change their light bulbs.

*Q: What is PSE's definition of community?*

A: The people in this room, the people who will be affected by this project.

*Q: On the Community Advisory Group there are 17 other organizations, why are only 9 representing residential communities?*

A: There are also members on the advisory committee to represent the interests of the school districts, affordable housing and social services, environmental groups, businesses, and tribes. We convened the advisory group members in order to represent the wide range of interests for this project. There's also the Sub-Area Committee made up additional neighborhood representatives to provide additional input to the advisory committee.

*Q: Ultimately, the Community Advisory Group will make the decision. The analysis and work hasn't been done to give the community an intelligent basis for the Community Advisory Group to make a decision. What are you going to do?*

A: The Community Advisory Group will be making a recommendation; they won't be deciding the route. We want their input, but ultimately PSE will have to make the decision because we have the responsibility. We're nearly a year away from filing a permit, so this project isn't finished and no final decisions have been made. I am comfortable about the decisions we've made so far. We're making our best efforts to continue to be responsive to data requests.

*Q: I'm concerned about the liquefaction in Lake Lanes. We built our house eight years ago and they required about 30 metal pilings. If there's an earthquake, it would be really bad. How would you construct lines there?*

A: The approach we would take would be to do a geotechnical study and to design based on what is needed. We don't design to fail; we design the poles to be safe, meet current code and to stay up for a very long time to serve the community.

*Q: It seems like investing this kind of money for energy efficiency would create a lot of jobs, and for \$300 million you could provide a lot of incentive. If PSE can't keep the lights on we have the right to establish a King County Utility Commission. If that's a threat, telling us that you need to keep the lights on, it's not a very good one.*

A: No, it's not a threat, it's just what our job is, to keep the energy available to our customers who need it.

*Q: Can you put a 6-foot-wide foundation to a 120-foot pole in the 40-foot easement that is also shared by two 3-foot pipelines next to my house and guarantee that it won't fall on my house?*

A: Yes.

*Q: It seems like submerging the wires in Lake Washington would solve a lot of problems; there's no digging, no concrete, no vegetation to remove, and it would be earthquake resistant. What about putting wires in the lake?*

A: While it would solve a lot of the problems for some communities, it would create a different set of issues with other communities, including fishermen and tribes. We don't live in a society with any slam-dunk, easy decisions on these kinds of issues. The suggestion is technically feasible, but would have the same cost of undergrounding.

*Q: In Japan, South Korea, and all over Asia they underground their wires. Precast concrete is very cheap. Why can't PSE put it underground in the US?*

A: We've never said we can't put the line underground. It is the costs and who bears those costs that have been discussed. The line can be undergrounded, but the people who request it have to pay for it. You can't put a precast concrete box underground to house a high-voltage transmission facility; it needs to be poured in place. It is very expensive.

*Q: Can you show us the breakdown of why it costs so much to underground?*

A: When it comes to the cost of undergrounding transmission lines, there's so much more to it than many people realize. You have to account for traffic control, mitigation, conductors, splices, splice boxes, and you have to hire engineers and technical field workers who are experts on building underground facilities that are scarce and in high demand. For example, it takes one of these skilled workers about 24 hours to do a single splice.

*Q: Why does the adjacent community have to pay for the extra cost of undergrounding the transmission lines?*

A: In terms of the regulation, all customers pay for basic upgrades to the system. All customers pay for the projects because all customers benefit. Undergrounding is specific to neighborhoods and communities and that doesn't benefit the entire customer base, which is why the adjacent property owners have to pay the difference.

*Q: I don't understand why we would consider this infrastructure in the railroad corridor that's just getting a chance to revert to the way it was 100 years ago. You've heard about the trails and vegetation. It's about Kenneydale as a community, and there are significant adverse impacts to go up Segment L. Why would you consider changing that?*

A: I understand where you are coming from; I [Wappler speaking] worked for Boeing 20 years ago in Renton and one of the best things to do was walk to Coulon Park. But as we look at this project to bring upgraded transmission lines, there aren't a lot of options. In order to do more, we looked at what was available, and one of the routes we looked at was this railroad route.

*Q: Can you guarantee that the power stays in this area? That's not really true. The ColumbiaGrid study treaty obligation is due to a Bonneville failure. If this project is strictly for serving the load, you can always add a third bank without building a 230 kV line. This is reinforcing the Bonneville obligation. What is PSE's benefit?*

A: The system works as an integrated whole. Bonneville and PSE are interconnected and the whole system carries some of everybody's power – that happens everywhere. Power flows under different contingencies: under a failure or in an emergency some load would go through this line. The other side of the coin is if PSE loses system element under contingency, Bonneville picks it up. It all works together. And this is why we have reliability in this country. That is redundancy and is designed to work that way. We all want reliable power. We don't want a west coast black out. It's reliability. Now, that's not the primary purpose of this project but it does contribute to regional reliability. There were 50,000 residents when this line was built; there will be half a million. How would power get over the Cascades to Western Washington if the rule was that we couldn't go through communities? There was a large blackout on the east coast and one on the west coast. Projects are needed for reliability. We actually studied the things that you're talking about for a third transformer bank at Talbot or Sammamish in the needs assessment and in the solutions report, both of which are available online. The options of adding a transformer bank at Talbot or Sammamish or adding a new line from the east have been thoroughly reviewed – if you read the reports you'll see that the best option is a new transformer in the middle of the load. The regional benefit is more modest. Bonneville and Seattle will pay for a small portion of this project because they will benefit from the nominal regional reliability benefits, but those regional benefits are very limited. We are very limited in many other solutions.

*Q: It is a better solution to rebuild the Sno-King line. You are trying to delay the Sno-King line. Those steel towers need to be replaced. They are old. The 2014 treaty needs to be renegotiated. It hasn't addressed the change in flows. It doesn't apply as the terms haven't been negotiated yet. I've read that there is no growth in Bellevue area and that it is actually flat lining.*

A: This line is load serving. It would be nuts to build this project for regional reasons. This project is about the local Eastside growth that is growing exponentially. These plans are concerned with local growth. This community is growing beyond the existing infrastructure and that information has been included in the needs assessment.

*Q: The graph that shows the customer demand compared with current system capacity—it's a pretty scary graph, going into the future. Can't we conserve our way out of this, or make use of alternative energy sources? Our family has solar panels on our house that meet 2/3 of our electric power.*

A: You mentioned solar panels meet 2/3 of your needs. But unfortunately, they don't meet any of your needs during the peak times, on cold winter nights and early mornings.

*Q: Will PSE compensate us for any drop in property values?*

A: No, we do not compensate for perceived loss of property value. This is how our society treats these types of projects. If our society did compensate for perceived loss of property value, questions become raised like who gets compensated, and for how much, and how close to the line do you have to be to get compensated? We don't do that for any type of infrastructure project.

*Q: Is PSE open to using condemnation?*

A: Utility providers do have the power to condemn if needed for the public good, but that's not our preference. Our preference would be to come to an agreement to purchase an easement. When purchasing easement rights, it's PSE's policy to talk to each individual homeowner and try to come to an agreeable price.

*Q: I have a question about the right-of-way: what else can or will you put on the final right-of-way? For example, would you put in higher voltage lines later? Is this it, or will there be surprises in the future?*

A: In coming up with this solution, we discussed making small interim steps, an upgrade to a transformer here or there, small integral changes, etc. Why we're not doing that is because we need a long-term solution. We want a long-lasting solution. We want to have a solution to meet the community needs, i.e., "measure twice, cut once."

*Q: Looking 20-30 years into the future, wouldn't it make sense to build bigger poles?*

A: Unfortunately, we cannot predict that far into the future. We don't know what the technology will be, but do know what the growth patterns will be.

*Q: On comparing the EMF of household appliances with that of power lines—what studies have been done on the accumulation of EMF and its health effects?*

A: There are magnetic fields in everything we do in our life. We have been studying the health effects of EMF for about 45 years. What we're talking about is a force. EMF is pure energy that gets converted to a current in the body, and that current has to be strong enough to have an effect. We were worried about childhood leukemia. I've reviewed many studies to date and they found no linkages between EMF and cancer. The World Health Organization said that there are no adverse health effects, and they don't make that statement lightly. The studies have been done with levels that are literally thousands of times higher than what we are exposed to.

*Q: Does PSE need to go through each city for permitting?*

A: There are a variety of different types of permits, and yes, we go through each city.

*Q: Could you put the transmission lines farther away, to the east? I realize that you have to bring it over this way somehow but why aren't there other options to having it here?*

A: If it were possible to locate the lines farther away, that is what we would do. But we have to locate these lines where the need is, where the people are.

*Q: What about the existing right-of-ways – what studies have been done and what other options are being explored (Seattle City Light right-of-way, higher voltage, etc.)?*

A: One option we are looking at is using the existing rights of-way– that's what building on the existing corridor is all about. We would have to rebuild the infrastructure, as it's not possible to hang more wires

on the existing wooden poles. We have asked Seattle City Light if we could use their corridor for this project and they said no, because they need that corridor to serve their current and future customers.

*Q: What about power sale agreements to British Columbia (BC)?*

A: The reality is that utilities trade power as a region all the time. It's good for customers and helps with reliability. It's also good because it helps pay for these lines we all use. BC doesn't have as many people; they aren't seeing as much growth.

*Q: What challenges do you see along Segment I, near Factoria Boulevard?*

A: The challenge there would just be putting it on the side of the road and building during peak traffic hours, but as far as an overall challenge, it's no more difficult than anywhere else.

*Q: Where can I read about in-depth analysis of future power use from the substations on either end of the proposed routes?*

A: All of the reports completed to date are on the project website. They will include an EMF report in the future. PSE has a periodic review that talks about distribution level changes that have to be made.

*Q: WSDOT is expanding the highway along parts of Segment L. What is the minimum safe distance from transmission lines for vehicle traffic?*

A: The clearance distance for if you lose control and pull off onto the shoulder, also called a recovery area, varies from state to state, interstate to interstate. I don't know the number for that particular stretch of highway, but I'm sure there is a minimum. We won't know until we get into the specifics if that route is chosen.

*Q: Between Segments L and M – which segment is preferred, and why?*

A: We don't have a preference either way. All 16 segments work. What we have a preference for is to connect the Eastside with reliable power.

*Q: If Segment M is chosen, would the existing lines come down?*

A: If the existing corridor is chosen, those two sets of wooden H-frame structures would go away and the new structures would replace them.

*Q: Could a substation be located in Bellevue?*

A: We looked at that consideration in the solutions report. In order to build a substation, you would need to construct another 230 kV line to feed the substation, which is the project PSE is proposing. The real solution is to put more transformation capacity where the demand is.

*Q: Can you provide the full breakdown of the estimates for the cost of undergrounding?*

A: POWER Engineers, who provided the cost estimate, uses a proprietary estimating tool that they don't share with their clients. The cost can be broken down by larger items such as road work, equipment, etc., but the estimating program itself can't be released.

*Q: Can you spread the cost of undergrounding over time to all ratepayers?*

A: There isn't a broader benefit to all customers for undergrounding the wires, just an aesthetic benefit to the local community. The delta, the difference in cost between constructing underground and aboveground lines, is what is paid for by the local community or neighborhood that requests it. We have customers who struggle every month to pay their bills, and part of PSE's job is to make energy costs reasonable.

*Q: Mortgage companies won't finance properties if there are poles that can fall on a house. How will PSE address this?*

A: PSE designs poles to stay up. PSE isn't going anywhere. If there's a problem, PSE will be there. PSE is heavily regulated and they're going to fix the problem.

*Q: Will you publish the questions and answers from tonight on your website? What about from the Sub-Area Committee workshops?*

A: The questions and answers from tonight will be available in a summary. We are doing our best to respond to as many questions as we can and make them available to the Community Advisory Group.

*Q: I've read studies from Europe that claim the energy conservation from undergrounding transmission lines can be as much as 30%. When you have lines going through the air, isn't there some energy loss?*

A: The underground lines have to be uprated due to energy loss from heat. The soil is an insulator and the lines lose energy through heat. It's actually less efficient to underground, and lines that are undergrounded have to be uprated to a higher voltage to get the same amount of power as a lower voltage overhead line.

*Q: Our community has expressed that we're concerned about EMF and undergrounding the lines seems to be a solution – wouldn't undergrounding the lines protect people from EMF?*

A: The effects of EMF on human beings have been studied since the 1970s and we have a tremendous amount of knowledge. Many studies have been done over the last 45 years and regardless, we haven't seen any adverse health effects.

*Q: Although I don't live on Mercer Island, I benefit from I-90 being widened. The same situation exists here with undergrounding. Why does the local community have to pay the difference in cost to underground the line even though it benefits the whole region?*

A: The tariff with the Washington Utilities and Transportation Commission protects all of our customers from having to spend more than is necessary. The reason that the tariff is written that way is that the transmission line upgrade benefits all of customers, but undergrounding only benefits a few. When a project costs more, we don't make less money, but customers have to pay more. These regulations are in place to protect customers.

*Q: On the life of an underground line – what is the relative differentiation and value compared to overhead lines?*

A: In general, underground lines don't last as long as overhead lines; an overhead line will last 50 years or more. If you take the present value of that, it's still a lot cheaper to construct the line overhead versus underground. Looking at the cost over the lifecycle of the lines doesn't change that.

*Q: Why do we need multiple utility companies?*

A: Different utilities service different territories. That's the system we have today. Even if we have one big Western Washington utility company, it wouldn't change the fact that we have a lot of growth in this region.

*Q: If the lines were undergrounded through all 18 miles, how much would my bill increase?*

A: We're estimating for aboveground transmission lines a project cost of \$150-\$300 million. We estimate about a 1%-2% increase for everyone's bill. If the lines were undergrounded for this specific project

(about 18 miles), very high level, back-pocket estimates could be maybe a 7% - 8% increase for everyone's bill.

If all of our existing transmission lines were undergrounded, it would quickly have a very significant impact to rates. For example, the average PSE customer's bill is about \$100 per month now, and to underground all existing transmission lines in the system it could be more than a two-fold increase – something in the range of \$240 per month for an average residential customer.

*Meeting adjourned at 10:20 p.m.*