

North Shore Chelan Substation

Public Comments/Questions and Response

November 3, 2017



Frequent comments and questions

1. Why can't the PUD underground transmission lines?

There are many impacts, in addition to the significant construction costs associated with underground transmission, the PUD would need to address in order to operate and maintain transmission lines that meet demand and reliability standards. The PUD's current transmission system is entirely overhead (approximately 320 miles) and our crews are very familiar and trained to work with the design, operations and maintenance of overhead transmission systems. Installation of 0.6 miles of underground transmission would represent only about 0.2% of the system and would be impractical to operate and maintain long term because it would require a completely new set of policies, materials and training to manage the unique asset. The PUD's line extension policy does not allow underground above 34.5kV (transmission lines are high voltage). This policy would need to be amended to allow for underground transmission. In addition, the cost of underground transmission is in the range of \$4.3M - \$8M per mile, which doesn't compare favorably with the equivalent overhead costs which are \$1M - \$2M/mile. The installation of less than a mile of underground transmission would be a significant "one-off" or unique equipment cost and would require significant operational changes for the PUD to install, operate and maintain the lines safely. For more information, see the Board of Commissioners presentations from [May 1](#) and [May 15, 2017](#).

2. New developments are driving this need for additional capacity. Why is the substation being sited in an existing neighborhood when existing residents are not contributing to the increased demand for power?

The transmission lines and existing electric infrastructure were built well before much of the residential development in the area. Neighborhoods grew up around the transmission lines. Substations are built to serve electrical needs and do so by getting power from high voltage transmission lines. For cost and aesthetic reasons, substations are most effectively located near transmission lines, and close to where the electricity is needed (the load center). New development might only be a mile or half mile away, but in order to get power from a transmission line to the substation may result in view impacts. The cost of constructing new transmission lines to a substation located far from the transmission line are high.

Regarding demand for power and who creates that demand, it is the PUD's obligation to respond to and serve both existing and new demand. Virtually everyone in the area has contributed to the load growth driving today's need for the substation. Any new home or even increased power use in existing homes contributes to load growth.

The existing substations serving the north shore area (Wapato and Union Valley) were built in 1974 and 1980. All growth and development that has happened since that time in the north shore area has essentially been "borrowing" capacity from those two substations. Now that those substations are nearing capacity, a new substation is needed to serve both existing residences and new development in the north shore area located between the two substations. The new substation will serve both existing and new homes.

3. Substations should not be located in existing residential areas – new developments should have to include new infrastructure like a substation.

It is the PUD's responsibility to provide power, and we work closely with the City, County governments, developers and other agencies to be responsive to the growing power needs in our service area. To avoid constructing more power lines and stranding capacity, substations should be sited at or near the load center.

The PUD currently has 15 substations located in residential areas. In Chelan, the Focus Group and PUD Commissioners requested staff to evaluate areas outside of the load center. Staff presented this evaluation on [March 6, 2017](#). These options showed a significant impact from the construction of power lines to bring power to the load center. Due to these impacts, Commissioners requested staff to seek sites closer to the load center. We believe substations can coexist with residential areas. There are substations next to homes in Wenatchee, Cashmere and Leavenworth.

4. Why does the PUD only seek willing property sellers?

The PUD Commissioners, after three failed efforts to site the substation, directed staff to first look within the area near the load center to find willing property sellers where their property meets the site characteristics that favor siting a substation. Only as a last option would the PUD look to exercise eminent domain authority. There are substantial costs and delays associated with an eminent domain claim.

5. Overhead power lines (transmission and distribution) will negatively impact views.

The PUD heard very clearly the concerns of impacts due to both transmission and distribution overhead power lines. Because this was an important factor in siting this new station, PUD staff and the Focus Group incorporated those impacts into the selection and decision making. Sites that were close to the load center and close to existing transmission were given a higher priority, because a site with those characteristics requires less power lines to be constructed. See the [March 6](#) and [March 20, 2017](#) (sites outside the load center) as well as [May 1](#) and [May 15, 2017](#) (transmission) Board of Commissioner presentations where stations without those characteristics were evaluated. For the staff recommendation, staff counted the view impacts and recommended an alternative where all new distribution lines are undergrounded. The transmission line at Henderson would only be overheard for 0.1 mile, which is the shortest transmission line tap needed for any of the eighteen areas originally evaluated by staff and the community Focus Group.

6. Living near a substation and/or transmission or distribution lines, and its impacts on views, will negatively impact our property value.

The PUD has many substations situated in a variety of urban, rural and residential neighborhoods. The PUD seeks locations that meet operational, cost and aesthetic criteria. Through considering aesthetic concerns, the PUD seeks to minimize any potential impacts to property values.

7. Keeping costs down and rates low for all customer-owners is important. The PUD should not spend extra money to benefit only the customer-owners in this area.

The PUD is committed to creating the best value, for the most, for the longest period of time. We are very concerned that a decision to underground transmission or choose other higher cost alternatives would create expectations throughout the County, dramatically increase the PUD's costs and rates, and won't benefit the broader group of customer-owners.

Requests for further evaluation

1. Can you move the substation to a different location on the Henderson property?

The PUD has performed a cursory review of an alternative location on the Henderson property north of Henderson Road following the October 24, 2017 meeting. Results were that both costs and visual impacts increase due to the need to construct a transmission tap coming from the upper Wapato-Transmission line. Additionally, we looked at a site closer to the proposed Henderson Site 7 but realized that building a transmission loop to a location further away from the transmission line would also have significant visual impacts.

2. Please evaluate alternative transmission routes to the Hellyer site.

The PUD performed a cursory analysis of a back route for transmission to the Hellyer site based upon this request. The result is that the cost is was estimated to be \$170,000 more than the roadway route due to its

increased length. In addition, view impacts and the number of easements required increased when routing the transmission this direction.

3. Why wasn't Site 14 or the Boyd Loop Road/Winesap Road area pursued further? There was a willing seller, it was not far from the Hellyer site, and it was right under the Chelan-Wapato transmission line.

The Site 14 area is too far from where the power is needed. To avoid constructing more power lines and stranding capacity, substations should be sited at or near the load center. This was tested when staff presented three areas located away from the load center to the Focus Group and Board of Commissioners on March 6, 2017. These options showed a significant impact from the construction of power lines to bring power to the load center. Due to impacts the Board of Commissioners requested staff to seek sites closer to load center. For more information see the [March 6](#) and [March 20, 2017](#) presentations.

The cost and visual impacts of distribution with Site 14 is too high when compared with other alternatives. The Hellyer site is also less desirable from a distribution standpoint than the Henderson site, because the Henderson site is closer to where the power needs to be.

Development

1. The PUD should work closely with the City/County planners to ensure better policies for siting new infrastructure and preparing for increased demand.

PUD staff, at the direction of the Commissioners, has started to implement more in-depth discussion with the other planning agencies including the municipalities within our service territory and Chelan County.

2. Does Chelan County inform the PUD about new proposed subdivisions and developments? Does the PUD then contact developers to inform them about potential electrical constraints?

It is the PUD's responsibility to provide power, and we work closely with the Cities and the County as well as developers and other agencies to be responsive to the growing power needs in our service area. Generally, the PUD is invited to pre-application meetings for subdivisions and developments. PUD staff makes every effort to attend these meetings or contact the developer individually. The PUD wants to understand the scope of projects and communicate challenges or constraints early in the process.

3. When do developers have to pay for part or all of a new substation that will serve the increased demand from the development?

When developers apply for service, the PUD's engineers perform system studies to determine overall impacts to electrical capacity, reliability and power availability. Developers are typically assessed costs for on-site improvements and occasionally off-site system improvements. Although the PUD's line extension policy has provisions to require a substation, rarely is a substation required for a typical subdivision or housing development in Chelan County. All load growth, including large and small housing developments, individual residential homes, commercial and industrial businesses, and agriculture/irrigation contribute to the need for building substations, transmission and distribution lines.

Costs

1. The PUD is very financially stable and should be able to absorb the cost of undergrounding distribution and/or transmission lines without impacting ratepayers.

The \$4.3M –to \$8M dollar addition for undergrounding 0.6 mile of transmission line, as proposed for the Hellyer site, is cost prohibitive and not in line with the PUD's philosophy of the best, for the most, for the longest period of time for a financial decision of this magnitude to be considered. While the PUD is financially healthy, we do not believe this should lead to choosing alternatives that are not cost effective as part of any PUD operations. Staff has recommended that all distribution lines leaving the Henderson site be placed underground, which

eliminates the need to raise the transmission line, and saves costs by placing three of the four underground circuits in a common trench and working with future development to extend two circuits not immediately needed. These recommendations improve the aesthetics and cost considerations at the Henderson site significantly.

2. How can the PUD afford to build a new facility for staff but not to underground transmission lines to benefit customers?

The PUD has a [Strategic Plan](#) that includes three priorities: invest in assets and people, reduce debt and create a Public Power Benefit program. The three strategic priorities are built around the strategic focus of creating “the most value for the greatest number of people for the longest period of time.” As a result of the plan, the PUD is developing asset management plans for all of its assets. The PUD owns more than 100 buildings which represent about 16% of its total assets. The PUD has to have buildings to house its equipment and people. These facilities - whether at the dams to house equipment and people necessary for keeping our revenue generating projects operational - or facilities that house line crews, fiber crews, water/wastewater crews and their equipment - or facilities that house other members of the PUD team - are necessary and vital to ALL customer-owners regardless of their location in the county.

A [Strategic Facilities Plan](#) has been developed to identify the least cost/highest value path for managing facilities. A community group has been engaged in reviewing the facilities plan and has expressed support for the analysis. That plan concludes that investing in new buildings will be lesser cost and higher value for the District’s customer-owners over the next 50 years than retaining existing buildings. The plan represents the most cost-effective approach.

Choosing the Hellyer site costs approximately \$2 million more than the Henderson site before undergrounding costs are considered. Undergrounding of transmission at the Hellyer site adds an additional cost of \$4.3M to \$8M above the alternative. The fundamental difference between facilities and choosing the Hellyer site is the facilities plan is a cost-effective investment for PUD customer-owners and the Hellyer site and undergrounding are not.

3. How were the cost estimates for undergrounding transmission developed?

The initial underground transmission estimates referenced the source as work the PUD's consultant, HDR, completed. HDR is a large multi-national engineering and planning firm that has helped with numerous PUD transmission projects over the years. This information was presented at the [May 1](#) and [May 15, 2017](#) Board of Commissioners meetings.

The range in estimates that was provided in these presentations is to provide for the uncertainty that exists in the current state of design. No design work has been completed for either option and overhead estimates are based on typical costs the PUD has experienced in building overhead projects. It is the same case for the range in the estimates for underground, where the HDR report identified potential typical costs of \$4.3M per mile in an ideal installation. The accuracy of these estimates without a completed design can be heavily influenced by construction techniques chosen during design, unknown subsurface conditions (thick rock) and challenges of hilly terrain. The consultant specifically called out a potential x2 multiplier based on these factors. The engineering expertise of our consultant gives us confidence in the underground costs identified in the \$4.3M - \$8M range. The consultant did identify direct burial of underground as an installation technique utilized in some developing countries that saves cost, however that method would not provide the reliability this project seeks to achieve.

4. Instead of focusing on the lowest cost alternative, please use the best reasonable cost combined with the most reasonable site when evaluating sites and alternatives.

The District has focused on finding a site that best balances system considerations, aesthetics, land considerations, and the environment, rather than cost alone. These are the site selection criteria categories that the Focus Group used in evaluating potential areas for locating a substation.

Henderson and Hellyer Sites

- 1. In the Henderson Site alternative design presented on [October 24, 2017](#), would all of the electrical lines be put underground?**

The option presented any new distribution to be placed underground. The 0.1-mile transmission line tap would be overhead as well as the substation itself. All existing distribution in place today is proposed to stay above ground as a part of this project. If there is a desire to put existing overhead distribution underground, the PUD can work with those property owners through the [Facility Modification Policy](#).

- 2. In the Henderson Site alternative, where will the feeder route to circuit 3 and 4 tie-in transition from overhead to underground?**

Under the current proposal, the PUD will underground all new distribution circuits (feeders) from the Henderson substation.

- 3. In the Henderson Site alternative, why is the alternative option less expensive than the original Henderson option without underground distribution (\$8.2M versus \$8.5M)? If you underground the lines, why are there still 74 view impacts estimated?**

The distribution routes are different between the 8.5M and 8.2M options. The 8.2M option undergrounds all new distribution, but does not build out all four circuits as they are not all needed, so there is less distance and cost. Also, the 8.2M option benefits from putting up to three distribution circuits in one trench. The 8.5M option had two circuits going east, and two going west, so there was no option to combine three circuits in one trench.

The drop in view impacts from the 8.5M option of 94 to the 8.2M option of 74 was due to undergrounding distribution circuits. The 74 view impacts are due to the substation itself, and the transmission taps. Note that one home that has a view of both the substation and transmission taps counted as two view impacts. The majority of the 74 view impacts come as rear and side view impacts from the Chelan Hills neighborhood.

- 4. Hellyer has natural land barriers (substation mitigation options) but Henderson does not. If that is the case, how do the impacts on aesthetics play into the staff recommendation for Henderson?**

The Engineering and Operational Comparison slide in the [October 24, 2017](#) presentation evaluated the Hellyer and Henderson sites against each other in several categories. The Hellyer substation site scored better in reduced substation site view impacts, citing it had natural land barriers. The Hellyer substation site is open to the west. The Henderson site also has natural land barriers, but is open to the east and west with side and rear view impacts. Substation design variables, such as landscaping, fencing, set-backs or orientation, would be implemented to reduce view impacts at the Henderson substation site option. Ultimately, the staff recommendation is made on the basis of considering aesthetic, operational and cost considerations.

- 5. There are some neighbors who are not in favor of the Hellyer site. While the Hellyer site is better hidden, impacts from the transmission lines at Hellyer would be too great to locate the substation there.**

The PUD has paid particular attention to the potential impacts of a new transmission line to feed the Hellyer substation site. We will continue to reach out to potentially affected property owners as the currently proposed route or different transmission routing options are analyzed.

- 6. Staff recommends purchase of the Henderson site for three reasons (feasibility comparison; operational/engineering comparison; and aesthetics). But Slide 7 of the [October 24, 2017](#) presentation shows**

that there are more aesthetic impacts at Henderson than at Hellyer. Why would you cite “aesthetics” as an advantage of Henderson if has greater impact on aesthetics?

Staff recommends the Henderson site over the Hellyer site based on public input, Focus Group input, consultant analysis, and analysis by the PUD Engineering and Operations Group. The staff recommendation is based on considering cumulatively the aesthetic, cost and operational impacts of each site. When considering view impact numbers, Hellyer is lower in total view impacts over Henderson. But many of the Hellyer view impacts are due to a greater distance of above ground transmission, which is more difficult to remedy than substation view impacts. Henderson view impacts are largely due to substation view impacts that are more conducive to substation design variables that were identified in the presentation.

7. At the Henderson substation site, what will happen to the existing transmission lines as part of this construction and in the future? Will there be more lines or taller poles?

The construction necessary for the Henderson site is conceptually rendered in the drawings presented at the [October 24, 2017](#) meeting. At this point, no changes are expected to the existing transmission system other than the new transmission tap at the proposed Henderson site. It is not possible to guarantee that the current configuration will always exist into the future, as the system evolves and electric loads change.

Views, impacts and aesthetics

1. View corridors, aesthetics, visual impact and neighborhood protection are higher priorities than engineering efficiencies and proximity to the load center to most rate payers in the Lake Chelan Valley.

Although the PUD has not performed an in-depth survey of its customers to compare aesthetic values, electrical service availability, and system reliability. The PUD does recognize people in the Lake Chelan area put high value on lake views and general aesthetics. We also know that there is substantial interest in the PUD operating efficiently and maintaining high reliability. The PUD is committed to continuing to incorporate aesthetic values into our overall mission that provides sustainable, reliable utility services.

2. Lake views should be protected, and no lake views should be impacted by the selected site or proposed lines. Chelan has identified open space and the importance of views in its open space planning and the PUD projects should adhere to this.

The PUD has heard very clearly that customers value views of the lake, and are concerned about view impacts from the new substation. The Henderson site has the least impact on lake views of any site studied, and the staff recommendation proposes an alternative that undergrounds all new distribution lines to reduce impacts to lake views to the greatest extent possible. The PUD will continue to work with the County and local municipalities to integrate with their planning processes on future development and PUD infrastructure.

3. What mitigation measures are available to improve the aesthetics and impacts?

Design variables, such as lighting, landscaping, fencing or walls, sound buffers, heights and set-backs, and orientation of the equipment can all be used to improve aesthetics and mitigate for impacts.

4. Will the new substation produce noise?

The main noise heard from a substation comes from the transformer. A typical new substation transformer will produce approximately 65 dB of noise measured at two meters from the transformer. This is about how loud a newer standard residential outdoor air conditioning or heat pump units are. The sound level diminishes as you move farther away from the sound-producing source. The PUD will use the newest technologies, and work with neighbors to determine the best design variables to mitigate noise. Potential options include landscaping and noise walls.

5. Will the new substation have lights or create light pollution?

Some form of night-time lighting is required at the substation for security and emergency situations. There is some flexibility in the type of lighting the PUD can use and what it will look like. The PUD will work with

neighbors to help determine the best form of security lighting to use. Some examples include LEDs, lighting that is adjusted to only point downward, motion sensor lighting, and others. In addition, brighter lighting will be turned on and used occasionally during routine maintenance or emergencies so that crews can see equipment while they are working - that is short-term and infrequent.

6. Substations are an industrial facility and are not aesthetically pleasing in a residential area. The substation itself will also impact views.

The PUD has 15 substations located in residential areas. To avoid constructing more power lines and stranding electrical capacity, substations should be sited at or near the load center. This was tested when staff presented three areas located away from the load center to the Focus Group and Board of Commissioners on March 6, 2017. These options required significant impact due to construction of the power lines needed to bring power to the load center. When presented to the community, the PUD met with significant resistance due to the potential impact on views. There would be additional lines - transmission and distribution - in order to get power to where it was needed. PUD Commissioners requested staff to seek sites closer to the load center. The PUD has spent more than two years seeking a site that minimizes visual impacts. For more information see [March 6](#) and [March 20, 2017](#) Commission presentations.

The PUD works with neighbors on substation design variables such as landscaping, fencing, walls, orientation, lighting, etc. to help minimize the possible visual impacts of the substation as much as possible.

7. Will there be a loss of natural habitat or impacts to native plants and animals in the location where the substation may be built?

Substation development at either site would not have any greater impact on wildlife movement than the current level of habitat fragmentation created by orchards and residential development. Also, any impacts to wildlife or habitat as a result of substation development will be addressed by the permitting agencies during the permitting process.

8. How did the PUD calculate the number of property owners or parcel owners who are affected in their view estimates in the [October 24, 2017](#) presentation?

The view impacts assessment took into account existing homes, not vacant land parcels. Three categories of view impact were considered - transmission, distribution, and substation. A view impact was counted for each separate view impact by either transmission, distribution, or substation. If a home had a view impact by each of the three factors, it would count as three view impacts in the total view impact tally. The view impact analysis was done using County Parcel information and Google Earth, and was intended to be a comparative tool to understand view impacts of transmission, distribution, and the substation itself.

9. Will additional lines be added to the existing Chelan-Manson transmission line in the future?

No additional lines will be installed on existing transmission lines as a part of this project. There are also no plans existing to install additional lines or modify the existing transmission lines. That being said, the greater Chelan area will continue to grow. Additionally, our expectation of a reliable power system continues to increase. For those reasons, additional lines and improvements may be required at some point in the future.

Undergrounding

1. The PUD should evaluate and change its policy to underground all new distribution lines, including express feeders, instead of matching existing line types.

PUD staff has had discussions with the City of Chelan to explore this request, and will work with the PUD Commissioners to review its policies while balancing cost and operational issues. Currently, all new distribution lines located within developments and within the shoreline are placed underground. The greatest challenge is in areas already established or where there is a pre-existing overhead power system. In these areas, the PUD does

not have all rights and authority to complete this work and therefore must have collaboration with governing agencies, other utilities, private property owners and public property managers. Cost and operational concerns are often significant. The PUD's policy is not to underground transmission lines due to costs and operational considerations.

2. Existing overhead distribution lines should be put underground. Will the existing overhead distribution on Henderson Road be put underground?

In the scope of this project, all existing overhead distribution is proposed to stay as is. Property owners who wish to underground existing overhead distribution lines can do so through the PUD's [Facility Modification Policy](#). This policy requires the cost of undergrounding to be borne by the requester.

3. The residents in this area are willing to pay additional costs to underground the transmission lines. How much would it cost each ratepayer to underground the transmission? Could this be considered instead of determining underground transmission is not feasible?

One of the challenges with implementing a process to pay for the cost of undergrounding transmission is determining who would be included. Although some existing residents and property owners say they are willing to pay for the cost to underground transmission, it will be challenging for the PUD to increase rates for a particular group of people when they may or may not benefit from the aesthetic improvements gained. The estimated cost for 1,500 ratepayers over a 30-year period would be roughly a 25-45% rate increase just for undergrounding. This does not include the additional roughly \$2M associated with selecting the Hellyer site over the Henderson site. In addition, this approach would have the same "one-off" operations and maintenance impacts for the PUD, as it would include only 0.2% of the PUD's transmission system but require significant changes to operations, maintenance, policy and equipment.

4. Could the 0.1-mile transmission tap at the Henderson site be put underground?

The Henderson tap could be put underground. It is the PUD's general opinion that the two overhead to underground transition structures that would be required under the existing line would present greater aesthetic impacts than the proposed overhead construction. The transition structures are bigger, have greater surface area due to the cables, cable terminations and other hardware necessary to transition from overhead to underground (see photos in the [March 20, 2017](#) Board presentation). Even despite the short distance, the underground tap would also have the same financial and operational disadvantages as any underground transmission line.

Wildfires

1. How much does it cost to replace overhead (transmission or distribution) lines when they are burned in a fire? Would underground lines be a better option in wildfire-prone areas?

Chelan PUD's standard pole is a western red cedar. After decades of service these poles can catch fire and burn easily. To mitigate this risk, all transmission and many distribution poles are painted with fire retardant that lasts up to 10 years. We have found this to be very effective in brush fires. When flames are tall, this retardant is less effective. If damaged, restoring overhead lines is easier. Generally, all material can be re-used except the wood pole. A standard distribution wood pole costs \$600-\$800 each. Crews will install a new pole, then lift undamaged equipment back onto the pole.

Underground lines are not immune to fire damage. All underground lines must come to the surface at some point, and these connection points are vulnerable to fire and do sustain damage. Underground cable insulation is made of plastic and rubber which melt easily. When this occurs, all new underground cable must be installed. It is more difficult to access damaged underground transmission or distribution lines.

- 2. The devastating fires in California are now believed to have been started by power lines downed in a windstorm. We live in an area prone to wind and fire, and this is a threat to our safety and financial health. The PUD should reconsider its stance on undergrounding power lines to protect from fires starting.**

The staff proposal limits new above ground transmission and distribution lines to 0.1 mile. This option creates the least wildfire risk of any option studied. In addition, the PUD has a wildland fire program aimed at reducing this threat.

Process

- 1. Can we have more time to make this decision? Can the PUD extend the options to purchase the property, or purchase both properties?**

The PUD has been seeking properties for more than two years. The two options under evaluation are considered constructible sites. A time extension would further challenge our ability to maintain safe and reliable electric service for new and existing customers on the North Shore of Lake Chelan. The options on the two properties expire at the end of November.

- 2. Any action to purchase Henderson or to move forward at this location is premature because the PUD has inadequately compared the costs and environmental impacts of the two locations under consideration.**

This is the most extensive substation siting process the PUD has ever used for evaluating substation site options. Costs, environmental impacts, and other factors were considered as part of the site selection criteria to compare the original 18 areas identified by the Focus Group, as well as additional areas identified during this process. Narrowing, grouping, and evaluation of areas and eventually specific sites have led to two sites: Hellyer and Henderson. Costs, aesthetics and operational issues have been evaluated for both sites, and the Henderson site was selected by the staff to recommend to the Commissioners based on this evaluation. Once a site is approved for preliminary design, more detailed cost estimates will be developed and environmental impacts further assessed.

- 3. I did not receive proper notification about this project/public process/site selection. Who did the PUD inform as part of its outreach process?**

The PUD has been talking to the Chelan-Manson communities for more than two years. Widespread outreach has included direct mailing postcards, emails, frequent PUD website updates, radio, newspapers, online, and social media - including GoLakeChelan, KOZI and the Lake Chelan Mirror. The PUD has held or participated in more than twenty public meetings including community Focus Group meetings, community meetings, Commission meetings, and City Council meetings. The community focus group includes representatives from a variety of areas throughout the north shore, Manson and Chelan. The Chelan Hills area, specifically the Pinnacle Place neighborhood, was well represented on the community Focus Group. PUD staff has worked hard to give customers and property owners sufficient time to be informed and involved in the decision making process while balancing the importance of meeting milestones set forth by Commissioners. We have invited the public to join our email distribution list on numerous occasions so that everyone can be informed. A timeline of public engagement and related documents can be found on the project [website](#).

- 4. Why can't the substation be placed in a location where it can't be seen (outlying areas)?**

In September of 2016, the PUD had two sites under consideration with no purchase and sale agreement. One site was removed from consideration by the property owner shortly after that time. One site remained, Chelan Heights. The PUD heard from stakeholders that they wanted to know what it would look like to place the substation in an outlying area (outside the load center), where fewer people would be able to see it. The PUD sought willing property sellers in outlying areas.

Three sites were identified in this phase of the project, Chelan Heights (from previous phase), Uhrich, and Washington Federal. Through the engineering analysis, staff found there would be a tremendous amount of distribution lines needed to bring the electricity back to the load center. Most of those distribution lines would

be placed on the existing transmission lines as "express feeders" to get the power back to where it would be needed. It would not have been financially feasible to put this amount or type of distribution lines underground. Even with overhead distribution, the cost of these options were substantially higher than being near the load center. We heard from stakeholders that it was not acceptable to have more "wire in the air." As a result of the feasibility analysis on these three sites and the public input, the staff recommended and the Board of Commissioners agreed that staff should redirect their efforts to seek willing property sellers closer to the load center.

5. Why can't the PUD choose a site farther away from the load center? How did the two sites get chosen?

As presented at the [March 6](#) and [March 20, 2017](#) Board of Commissioners meetings, three options farther away from the load center were evaluated. The PUD found that the impacts related to building additional power lines to bring power back to the load center had a greater impact on aesthetics, costs and easements required than the substation itself. For this reason, staff recommended and the Board agreed to seek sites closer to the load center.

6. Have the Commissioners received comments that have not been published in the public comment record on the website?

The PUD makes every attempt to keep its [substation public comments](#) up to date. All comments received - positive and negative - will appear there. In addition, this document is intended to respond to comments and questions received.

7. Was the staff recommendation of the Henderson Site officially made to the Board of Commissioners at the October 24, 2017 community meeting?

Yes. The two property options expire on November 30, 2017. Commissioners will take some type of action during a November Board meeting. Commissioners plan to discuss this topic at the upcoming Board meeting on [Monday, November 6](#). The Board meeting discussion about the North Shore Chelan Substation will be held at the Confluence Technology Center at 5:30 p.m. (285 Technology Center Way).

8. In the future, please include representatives from every potentially impacted neighborhood early on in the site selection process.

The community Focus Group was intended to be a balanced representation of both the residential and business communities as well as public organizations throughout Chelan, Manson and the north shore area. A map showing the Focus Group representation can be found on our [website](#). PUD did publicly invite those interested in participating in the Focus Group to let us know. Many individuals did come forward.

Other

1. What are the health impacts associated with living near a substation or transmission lines?

Electromagnetic fields (EMF) are the invisible fields that surround all electrical equipment and power lines. Electromagnetic fields (EMF) are generated from alternating current flow, the magnitude of those electromagnetic fields intensifies with the amount of current that is flowing. Electric fields exist everywhere we live or work. Any electric line or appliance emits both electric and magnetic fields, which combine to create EMFs. All things electrical, from your toaster to high voltage power lines, are surrounded by EMFs. These fields drop off rapidly with distance from the source. The closer you are to the source and the higher the current flows, the intensity of those electromagnetic fields increases. There is a maximum of about 1200 amps with a substation. The panel in your house is about 200 amps. Higher voltage reduces the amount of current. The PUD uses a gauss meter to measure the EMF units in a particular location. Often times, what PUD staff has found is that the EMF measurement inside a home, near a microwave or hairdryer is much higher than what is found at the fence line outside a substation. More information can be found in our [Substation FAQ](#).

2. What will the PUD use the original site property required to be purchased with the Henderson property for? What value do the ratepayers gain from this purchase? How much does it add to the project cost?

The PUD General Manager and Commission President have made the commitment not to build a substation at that location. In addition, if the Henderson site is chosen for a substation, this additional parcel will be too close to the substation and would not be effective for building future infrastructure. Each substation generally serves a radius around it. The distance it extends is a function of population density, and another station between Union Valley and a station at Henderson would be too close together. Staff believes the property to be purchased with the Henderson site is marketable and can be sold. Therefore, we have not included this in the cost.

3. At the September Board meeting, PUD staff referenced a long-term strategic plan for transmission. What is that document? Is it posted on the PUD website?

The PUD has a five-year strategic plan adopted in 2015 that applies to all PUD functions. This is located on our [website](#). There are also annually updated 5-year business plans for each business unit, including Generation and Transmission. This is not on our website but is available upon request.

4. Does the PUD intend to compensate nearby landowners for the degradation of their views or the impacts of noise and light caused by the substation and/or power lines? For loss of property value?

The PUD will work with adjacent neighbors on lighting, landscaping, orientation and other aesthetic concerns. As with any other landowner that makes changes to private property, the PUD does not provide compensation for aesthetic impacts.

5. Are both sites in Chelan County or is one site in the City of Chelan?

Both sites are in Chelan County.

6. What kind of environmental analysis does the County/City require for a conditional use permit? Can you receive a conditional use permit before the design is finished?

An Environmental Checklist is required as part of the Conditional Use Permit (CUP) application. The PUD will submit a permit-level design as part of the CUP application, and then we progress design toward final design with input received during the CUP process.

7. Will the construction be done in-house or will it be bid?

It will be bid.

8. What if the PUD ends up in costly litigation that delays the project, similar to what happened on a transmission project in the Methow Valley?

The project in the Methow Valley was different than the North Shore Chelan Substation, and was impacted by litigation, schedule delays and increased costs because the project impacts were greater. More than two years has been spent in Chelan seeking the least impactful site in order to reduce the risk of unhappy landowners. In addition, eminent domain was exercised on both private and public property in the Methow project, which caused a long process to acquire the properties. This is one of the reasons the Chelan PUD seeks willing property sellers for infrastructure.

9. We did not hear about the new Henderson site until September 2017 and it will impact our property values as neighbors. We need more time to explore other siting options.

The PUD has been working with the community for over two years to site the substation. Representatives of the Chelan Hills Homeowners Association have been involved throughout this period. In March of 2017, PUD staff presented feasibility analysis on three sites in outlying areas. As a result of the analysis and public input, staff was directed to redirect efforts on willing property sellers closer to the load center. In addition, in May of 2017, PUD staff presented feasibility analysis on siting a substation in area 18 (The Lookout) at the request of stakeholders. The feasibility analysis demonstrated the visual impacts of bringing a transmission line from the

Chelan-Manson transmission line, over Chelan Hills, and into a site near The Lookout. Underground transmission was also deemed not feasible. For these reasons, staff was again directed to focus efforts on willing property sellers closer to the load center and above the Chelan-Manson transmission line.

During the next three months, staff worked with willing property sellers to obtain property options on at least two sites, so there would be a comparison for consideration. In September, when those property options were finalized, the PUD began reaching out to property owners and residents in the vicinity of the two sites.