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Tillamook People's Utility District

Tillamook to Oceanside Transmission Line Route Recommendation

Prepared by:
Engineering Department

November 21, 2016

Final

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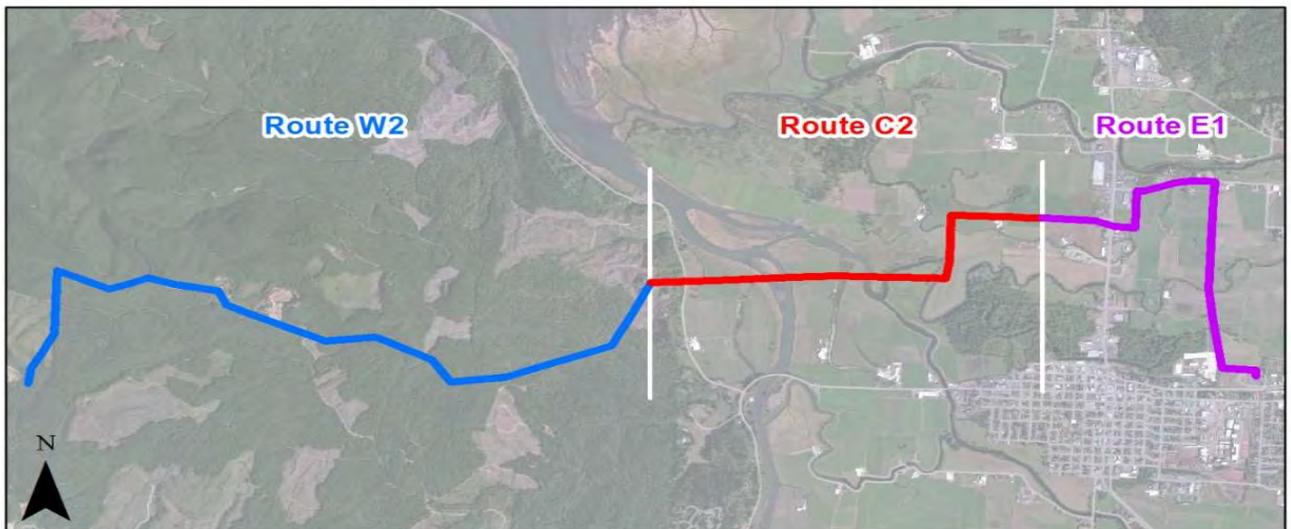
Introduction and Recommendation

The Tillamook People’s Utility District staff was tasked with developing a recommendation for the proposed Tillamook to Oceanside Transmission Line Project. The project will improve reliability, allow crews to perform operations and maintenance without lengthy outages, and add needed capacity to the central Tillamook valley. This document provides an overview of the process that District staff used in developing its recommendation for routes E1, C2, and W2 for the proposed Tillamook to Oceanside transmission line, shown in Figure 1 below. This recommendation is based on input from multiple stakeholders and various other sources of information including:

- Comments received through individual meetings held over the past few months between District staff and 24 of the potentially-affected 37 landowners;
- Feedback from public workshops and meetings;
- Recommendations from the Citizen Advisory Group (CAG);
- Results from the Decision Table process, which included input from four landowners, six public members, and seven District staff;
- Meetings with state and local regulatory and permitting agencies; and,
- Professional judgment of District staff.

Please note, minor adjustments to the recommended route segments may be necessary during the permitting and engineering design phases of the project.

Figure 1 - District Staff Recommended Transmission Line Route



Several methods were used to determine which route might be the least impactful. When an obvious route could not be clearly identified, a Decision Table tool was employed, which quantified data for each route that could be used for comparisons. Potentially affected landowners and the public were invited to complete the Decision Table using a voting-type process. However, few participants completed the Decision Table, so in making its recommendation, District staff relied heavily on previous

discussions with potentially-affected landowners and the Route Evaluation Criteria developed during the CAG process, which is summarized below and the full version is included in Appendix A. The predominate criteria from the CAG process used in developing the District Staff recommended route included:

- Maximize co-location within existing linear corridors
 - Highway/road/railroad rights-of-way and utility corridors
- Maximize use of existing rights-of-way and pole locations
 - Reduce the number of poles by placing more than one set of wires on a pole, provided that two circuits do not serve the same geographical area
- Minimize the number of landowners and properties affected in order of importance
 - Residential
 - Commercial
 - Farm/Agriculture
- Minimize Space requirements
 - Impacts to property and development
- Minimize need for access roads
 - Increases environmental impacts
 - Increases space requirements
 - Increases costs

Below is a brief synopsis of the process that District staff used in determining the recommended routes.

Citizens Advisory Group

The process for selecting a transmission line route started with the route identified in the CAG process, Route 3A. In addition, the CAG recommended that the District explore a route further north in the Central region, see Appendix A for notes from the final CAG meeting. The resulting routes were presented at a May 25, 2016 public workshop and are shown in Figure 2 below.

Figure 2 – CAG Proposed Route 3A with Northern Route 1D

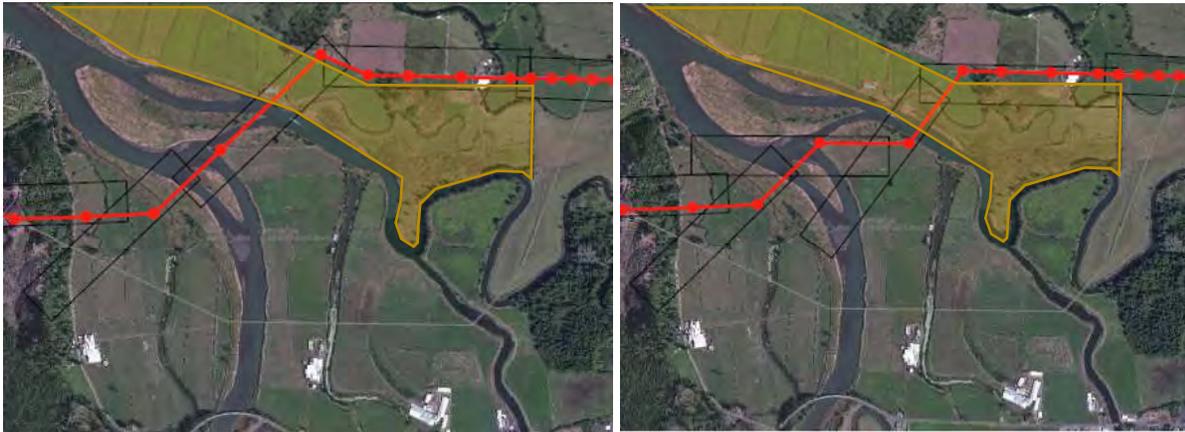


The new Roby's Furniture store on Highway 101, has come to fruition since the CAG recommendation in the fall of 2015, which required staff to look for an alternative location for the transmission line to cross Highway 101 at Goodspeed Road. Discussions with landowners and the public during the May 25, 2016 public workshop and feedback after, indicated that the transmission line should be rerouted from the middle of farmland, where possible, and the District should explore crossing the Tillamook County Southern Flow Corridor (SFC) tidal wetlands further north.

Regulatory Agencies

The District staff met with Tillamook County and the Oregon Watershed Enhancement Board (OWEB) on August 9, 2016 to explore potential routes located within the SFC project area. Two potential routes were identified that crossed the SFC project without placing poles within the area that would be returning to the natural tidal action, the yellow shaded area in Figure 3 below. These two potential routes required approximately 1,200 to 1,500 foot wire spans and thus, required preliminary engineering calculations to determine if these spans would be technically feasible. The preliminary engineering calculations determined that the route would be technically feasible, pending a soils investigation, requiring special conductors to keep the pole heights in the 125 feet to 150 feet range. Figure 3 shows the potential routes that were explored with Tillamook County and OWEB in the August 9, 2016 meeting.

Figure 3 – Northern Route SFC Crossing



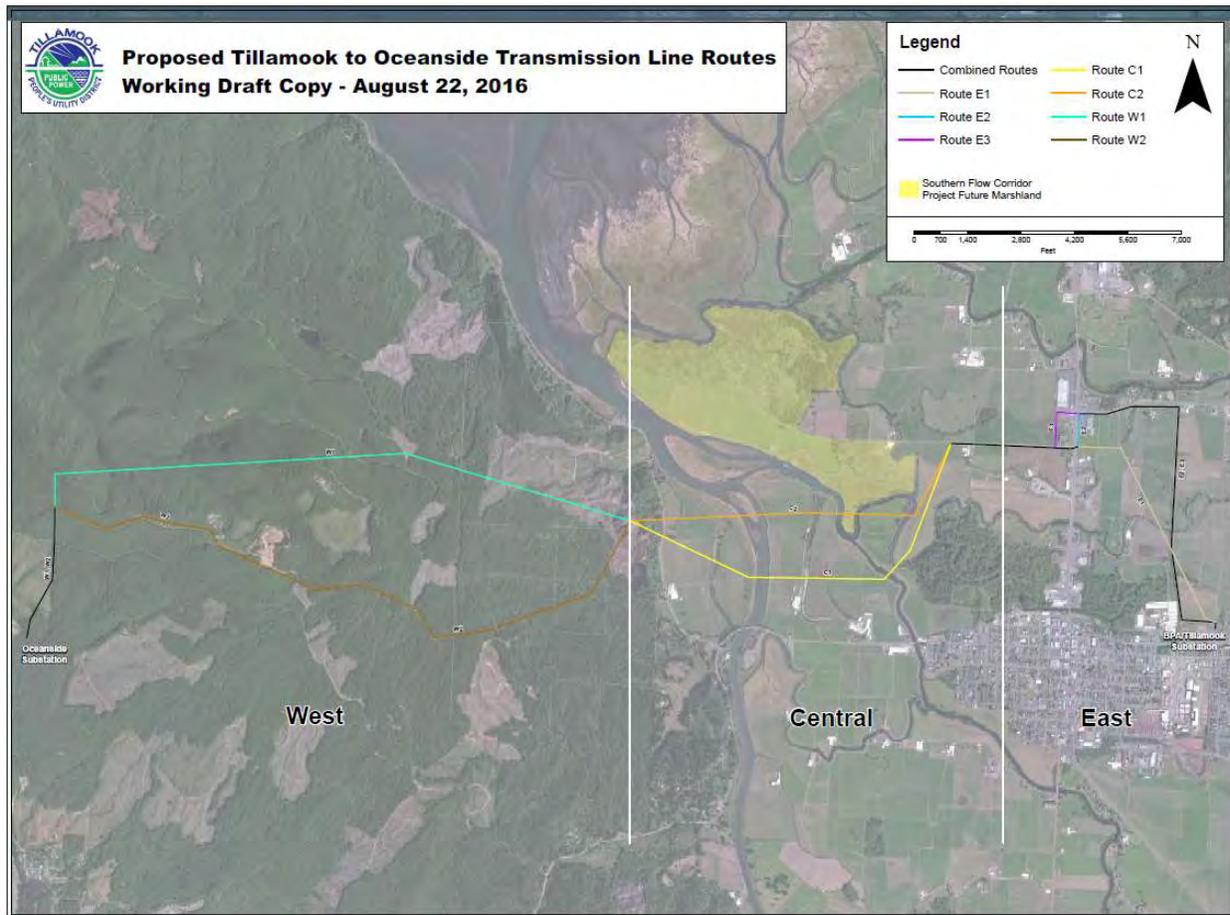
OWEB reviewed the data and information provided by the District at the August 9, 2016 meeting. In a letter from OWEB dated August 18, 2016, OWEB informed the District that these two routes could not be approved as they were inconsistent with the purpose of the conservation easement and federal notice. Appendix B includes two letters from OWEB to the District with a more detailed explanation. The District approached Tillamook County in a follow-up meeting on September 20, 2016 and again explained the advantages of the line crossing further north. However, as explained in the August 18, 2016 letter from OWEB, a line crossing in the middle of the SFC project area would not be approved based on the terms of the easement agreement.

Revised Transmission Routes

District staff re-aligned portions of the route based on the comments from landowners, regulatory agencies, and public workshops. A route east of Highway 101 was added that followed the existing railroad tracks from BPA's Tillamook substation north to Wilson River Loop Road, then followed Wilson River Loop Road west to Highway 101. Two alternate paths were then explored; Route E2 traveled south from Wilson River Loop Road down Highway 101 to Goodspeed Road. The second Route E3, crossed Highway 101 at Wilson River Loop Road to behind Denny's and Fred Meyer and turned south behind Debbie D's to Goodspeed Road.

Both routes relocated the line off the middle of farm land, co-located with public right-of-way (Port of Tillamook Bay railroad and Wilson River Loop Road), and co-located with existing power lines along Wilson River Loop Road. The tradeoff is an additional seven residential houses and six or 11, depending on the route, commercial buildings that would be within 100 feet of the transmission center line compared with the original route (shown as E1 in Figure 4 below), which had one residential house and four commercial buildings. The additional buildings are located along Wilson River Loop Road and Highway 101, and existing power lines are present where the potential transmission line would be located. The Central and West routes remained unchanged. Figure 4 shows the route modifications.

Figure 4 – Proposed Re-alignment of Transmission Line Routes



Landowner Meetings

With the route adjustments as shown in Figure 4 above, District staff met individually with landowners to solicit input and comments. District staff met with 24 of the potential 37 landowners beginning in August through November 2016. Several new alignments were suggested by landowners for the sections of transmission line on their property. Based on comments and discussions during the landowner meetings, final potential route segments were identified. With each adjustment, some landowners became potentially more impacted than others. Figure 5 shows the final proposed transmission line routes.

For the East section, Route E1 that had cut through the middle of farm land from the Tillamook Substation to Highway 101 and Goodspeed Road, was removed from the potential routes. The landowner suggested that a route along the railroad tracks and Wilson River Loop Road was more palatable and would have far less impact on existing farming practices. The landowner further suggested a route to the east of the commercial shopping center at the corner of Highway 101 and Wilson River Loop Road would be preferred, rather than crossing through the middle of the property. This became the new E1 route.

Further adjustments were made pertaining to where route E1 crossed Highway 101. The original route crossed between Roby's and the Hathaway's property. The landowner for Roby's preferred that the line be as far from the property as possible, but if it were to be

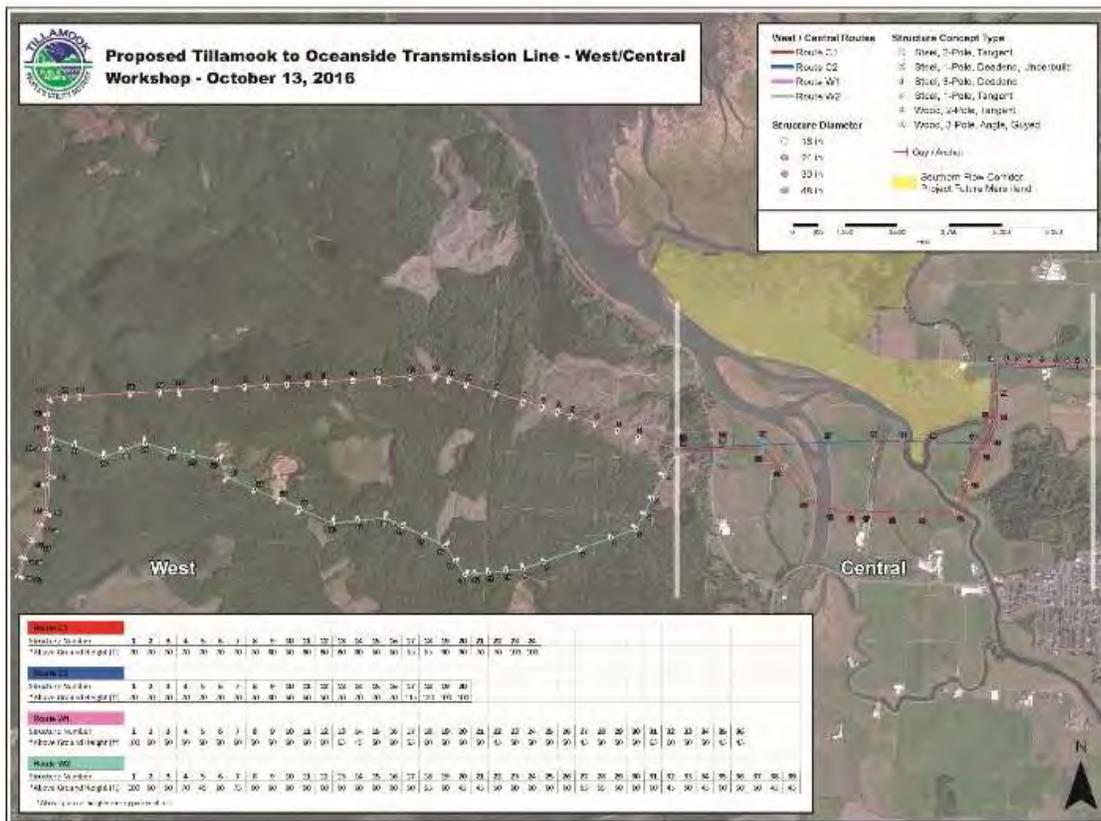
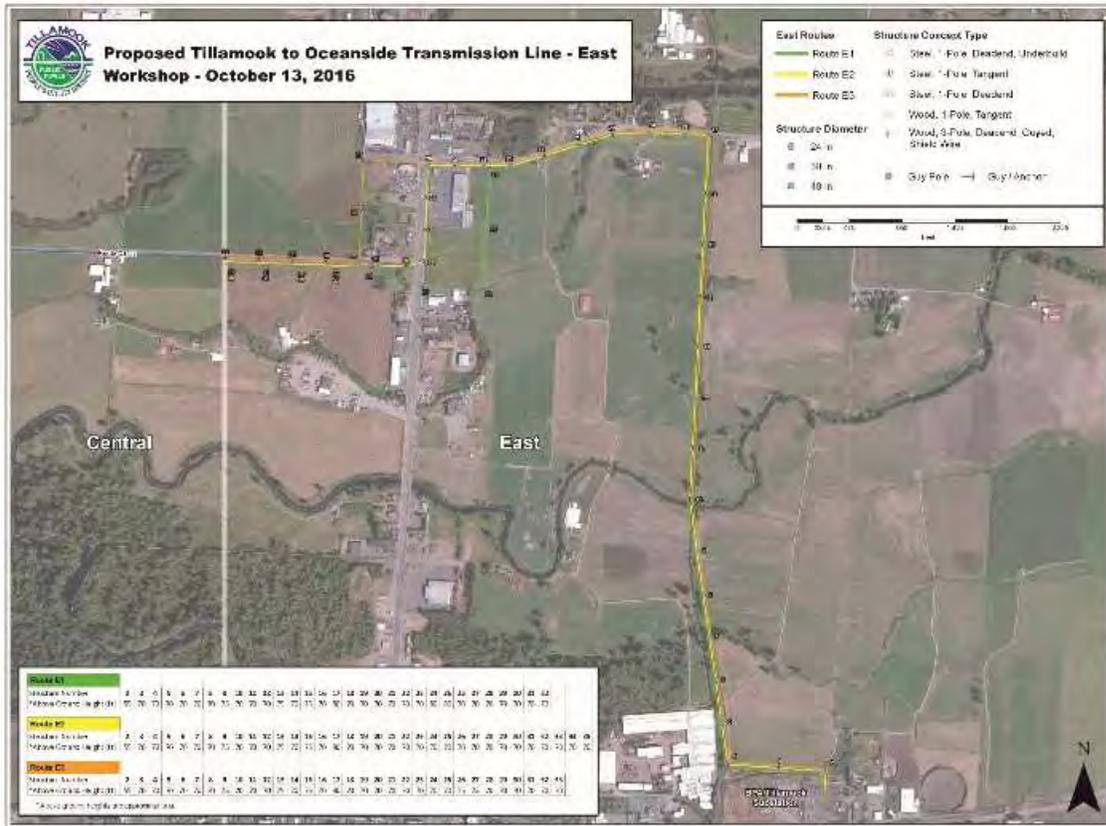
located near the Roby's property, there was a preference for the line to pass to the south side of the property rather than to the north side, sharing an existing easement with the City of Tillamook.

District staff met with the owner of the New Age Car Wash located adjacent to Roby's property to the south. The landowner had a strong preference for the line not to be located between the Car Wash and Roby's and preferred route E3.

Routes E2 and E3 remain the same, down Highway 101 and along the west side of the commercial properties, respectively.

In general, the comments received from the landowners were to stay as far from their property as possible. No real conclusion could be determined, given each adjustment favored one landowner at the expense of another. Given this lack of consensus, District staff developed the Decision Table, with a goal of showing data in an objective venue and poll stakeholders on the potential routes to see if one was more popular than another.

Figure 5 – Final Proposed Transmission Line Routes



Decision Table

The District conducted three public meetings, which occurred on October 13, October 17, and October 25, 2016. During the October 13 meeting, District staff presented information concerning the purpose and need of the transmission line project, project history, current route segments under consideration, and introduced the Decision Table tool and associated data. A copy of the presentation is included in Appendix C. The District’s October 17 meeting was dedicated to providing potentially-affected landowners the opportunity to complete the Decision Table with the collective results being shared at the conclusion of the meeting. Similarly, the October 25 meeting provided an opportunity for members of the public to complete the Decision Table. Following that, District staff completed the Decision Table.

It is important to note that the results of the Decision Table do not necessarily represent a consensus of the groups. Sensitivity analysis was performed where the weights from the landowner and public were interchanged, which resulted in a change in the outcome. Also, multiple comments made during the meeting with landowners and during the workshops did not concur with the landowner results.

Provided below are the results from the Decision Table process. Figure 6 shows the results from the landowners where four landowners completed and submitted a Decision Table. The route selection by the landowners can be summarized as follows:

- **East**, route segment E3 was ranked low in comparison to segments E1 and E2, which were basically ranked equally;
- **Central**, route segment C2 was ranked higher than segment C1; and
- **West**, route segment W1 was ranked higher than W2.

Figure 6 – Results of Landowners (4 participants)

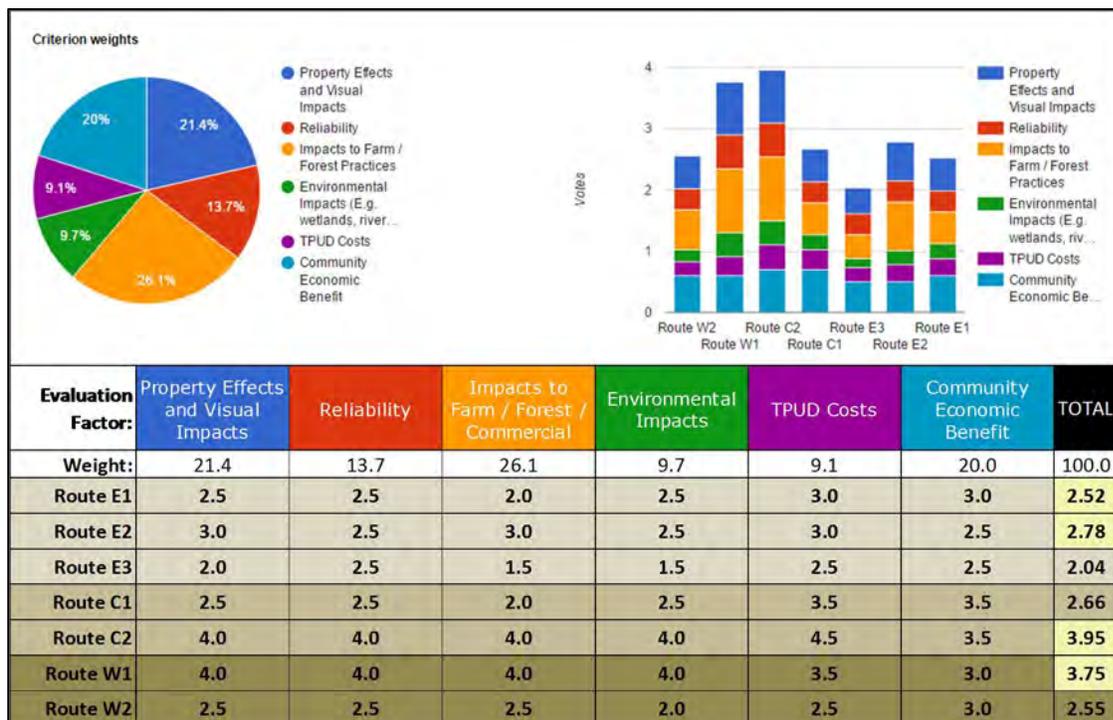
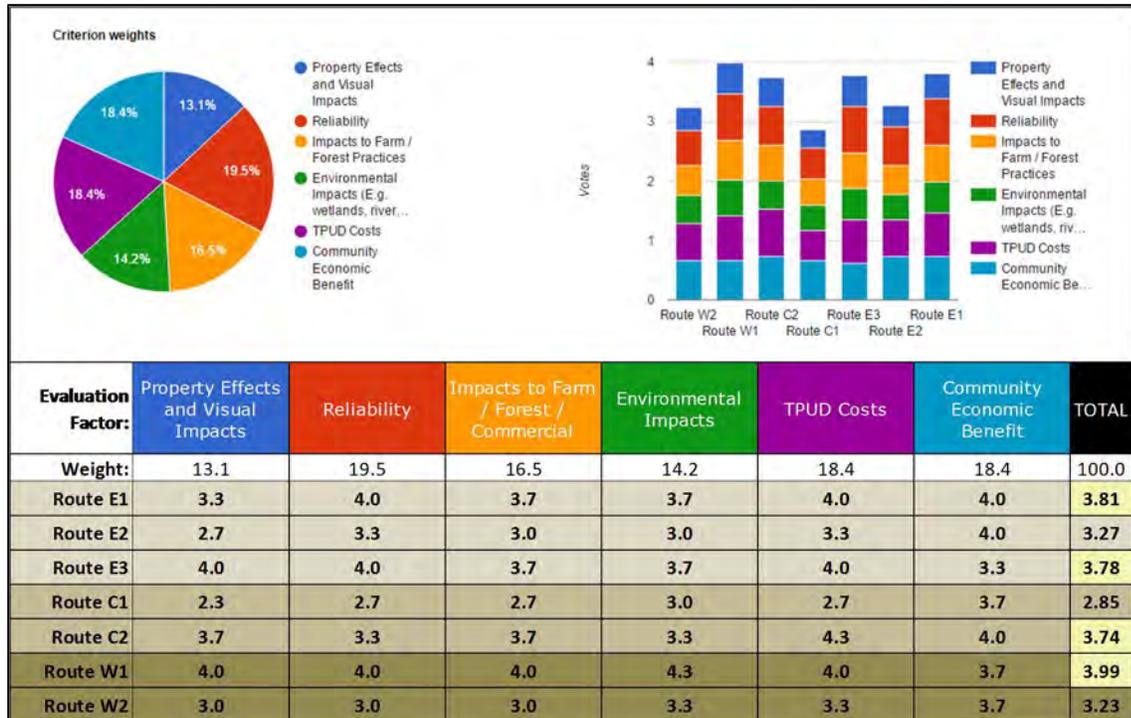


Figure 7 shows the results from the public where six participants of the public completed and submitted a Decision Table. The route selection by the members of the public can be summarized as follows:

- **East**, route segment E2 was ranked low in comparison to segments E1 and E3, which were basically ranked equally;
- **Central**, route segment C2 was ranked higher than segment C1; and
- **West**, route segment W1 was ranked higher than W2.

Figure 7 – Results of Public (6 participants)



For comparison, Figure 8 displays the results of combining the landowners' Decision Tables with the Decision Tables from the members of the public. When combined, the results are as follows:

- **East**, route segment E2 was ranked lower in comparison to segments E1 and E3. However, all three routes were basically ranked equally;
- **Central**, route segment C2 was ranked higher than segment C1; and
- **West**, route segment W1 was ranked higher than W2.

Figure 8 – Results of Combined Landowners and Public (10 participants)

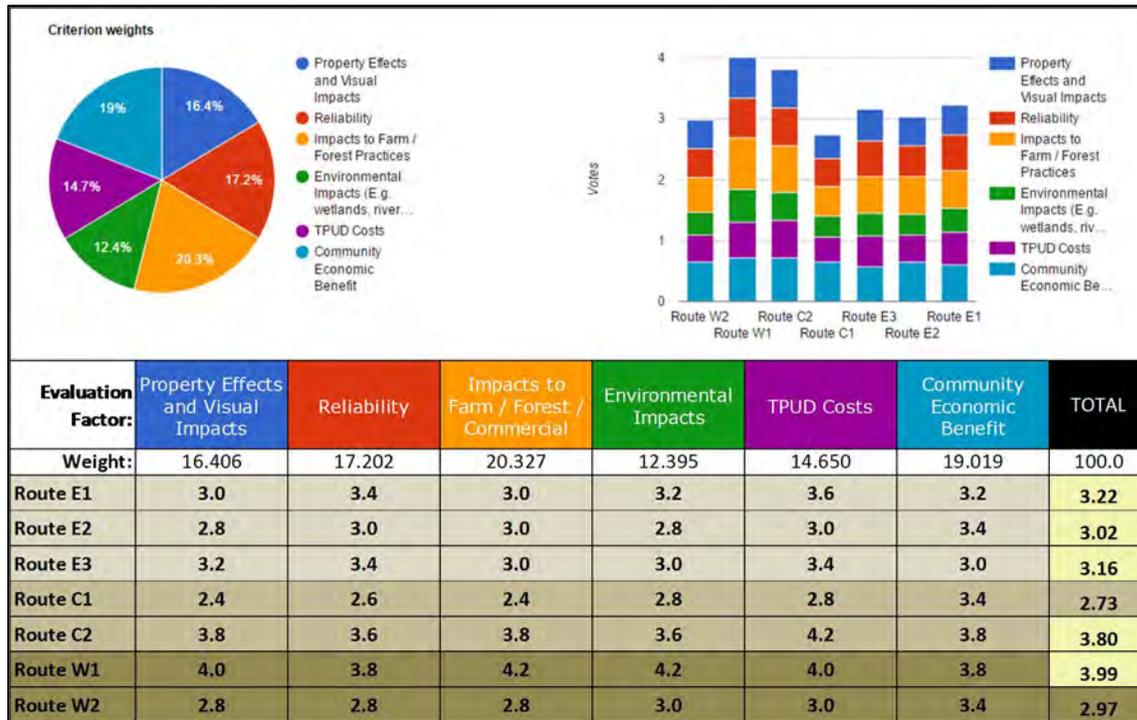
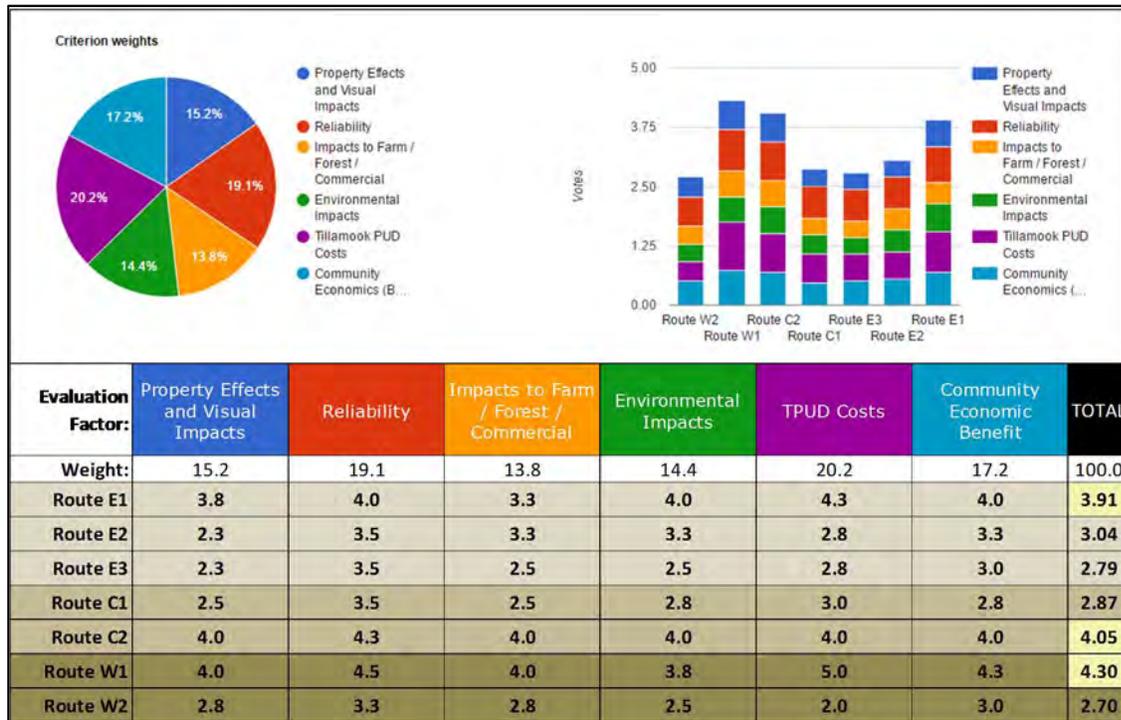


Figure 9 shows the results of the Decision Table filled out by District staff and the results are as follows:

- **East**, route segment E1 was ranked higher than segment E2 and E3;
- **Central**, route segment C2 was ranked higher than segment C1; and
- **West**, route segment W1 was ranked higher than W2.

Figure 9 – Results of TPUD Staff (7 participants)



Sensitivity analysis was performed where inputs were changed to see how the outcome might change. In general, if the results don't change then one could say that the results are firm. If the results change, then this would be an indication that the results are extremely close and a consensus among participants is unlikely. Figure 10 shows the results for the landowners, the public, the owner weights with public vote, the public weights with the landowners vote, and the combination of landowner and public results. The East routes change based on the inputs, and thus reflect the lack of a consensus among participants. The Central and West routes results are the same regardless of the changes in the inputs.

Figure 10 – Sensitivity Analysis

Evaluators:	1) Owners	Rank	2) Public	Rank	3) Owner Weight Public Vote	Rank	4) Public Weight Owner Vote	Rank	6) Owners and Public Combined	Rank
n	4		6		4/6		6/4		10	
Route E1	2.52	2	3.81	1	3.74	2	2.60	2	3.22	1
Route E2	2.78	1	3.27	3	3.20	3	2.74	1	3.02	2
Route E3	2.04	3	3.78	2	3.75	1	2.13	3	3.16	3
Route C1	2.66	2	2.85	2	2.83	2	2.78	2	2.73	2
Route C2	3.95	1	3.74	1	3.72	1	4.00	1	3.80	1
Route W1	3.75	1	3.99	1	3.97	1	3.72	1	3.99	1
Route W2	2.55	2	3.23	2	3.20	2	2.52	2	2.97	2

District Staff had hoped that more potentially-affected landowners and members of the public would have participated in the Decision Table process facilitated at the October 17 and October 25 meetings. We note that several landowners were in attendance, but opted not to fill out a Decision Table. Given the low participation, the results of the Decision Table were only used as a reference point in the District staff's recommendation.

Conclusion

The results from the Decision Table were inconclusive as indicated from the sensitivity analysis. Because of this, District staff's recommendation is based on the comments received through individual meetings between District staff and potentially-affected landowners, District staff's professional judgment, meetings with regulatory agencies, and the results of the CAG process, with some consideration for the results of the Decision Table process.

District staff's recommendation for route segment E1 was based on the following:

1. Several landowners who didn't directly participate in the Decision Table process indicated having a transmission line going down Highway 101 was the worst route of the three potential eastern routes
2. Encompassed fewer buildings within 100 feet of the center of the transmission line
3. Has a lower estimated construction cost
4. Would have less disruption to commercial business during construction
5. Reflects the favorable ranking from Decision Table, albeit routes E1 and E2 were ranked the same by the landowners

District staff's recommendation for route segment C2 was based on the following:

1. Has the fewest transmission structures
2. Is the shorter route
3. Has a lower estimated cost of construction
4. Would occupy less acreage of farm land, even when considering that route C2 has a short section co-located with an existing road and distribution power line
5. Consistent with the Decision Table results from the landowners, members of the public, and District staff

District staff's recommendation for route segment W2 was based on the following:

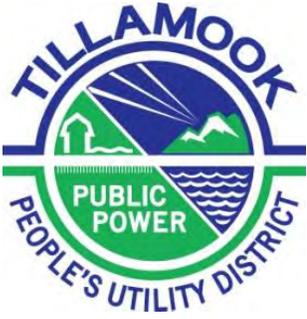
1. The two (sole) property owners in this region, Stimson and Green Crow report that route segment W2 appears to have less of an impact on forestry practices
2. Is co-located with existing roads, thereby fewer roads will need to be constructed
3. Co-locating with existing road is one of the criteria used for the Tillamook County Conditional Use permitting process

Please be advised that District staff recommends route segment W2 notwithstanding the results of the Decision Table process, which ranks segment W1 higher. Route W2 is also the more costly of the two routes given that W2 is 0.25 miles longer and has more structures. Stimson did express that they would like to see more information on route W1 to better analyze which route would be least impactful to logging practices.

Please note, minor adjustments to the recommended route segments may be necessary during the permitting and engineering design phases of the project.

Appendices

***Appendix A – CAG Meeting Notes June 23, 2016 and
Route Evaluation Criteria***



Tillamook to Oceanside Transmission Line Project

Route Evaluation Proposed Criteria

Must Have:

Criteria that **must** be met for a successful project

Maximize:

Opportunities that we would like to **happen as often** as possible (frequency) or to the **greatest extent** (magnitude) to reduce impacts

Avoid or Minimize:

Impacts that we want to **avoid** from happening, **happen as little** as possible (frequency) or reduce to the **least extent** (magnitude)

Must Have: Criteria that **must** be met for a successful project

- Meets project purpose – start at Wilson River substation and end at proposed Oceanside substation
- Is siteable – meets local, state and federal requirements
- Can be obtained – easements and permits
- Is buildable – ability to accomplish required construction activities
- Operate and maintain in all but the most severe conditions

Maximize: Opportunities that we would like to **happen as often** as possible (frequency) or to the **greatest extent** (magnitude) to reduce impacts

- Co-location within existing linear corridors
- Use of existing rights-of-way and pole locations
- Constructability and accessibility for maintenance during poor weather conditions
- Distance from existing structures, residences, etc.
- Ability to obtain desired rights-of-way width
- Length of straight sections
- Design elements to reduce impacts
- Cost effectiveness

Avoid or Minimize: Impacts that we want to **avoid** from happening, **happen as little** as possible (frequency) or reduce to the **least extent** (magnitude)

- Number of landowners and properties affected
- Visual impacts
- Conflicts with existing land uses, structures, congestion
- Environmental issues
- Effects on existing vegetation
- Special structures
- Space requirements
- Angle poles
- Co-location of circuits serving same geographic area
- Need for access roads





June 23, 2015

MEMORANDUM

TO: Tillamook to Oceanside Transmission Line (TOTL) Siting Process Citizen Advisory Group (CAG)

FROM: Debra Nudelman and Annie Kilburg, Kearns & West

SUBJECT: Tillamook to Oceanside Transmission Line (TOTL) Siting Process Citizen Advisory Group (CAG) Meeting – June 23, 2015 Meeting Summary and Action Items

Thank you for your participation and effort at the Tillamook to Oceanside Transmission Line (TOTL) Siting Process Citizen Advisory Group (CAG) meeting held at the Tillamook PUD, Carl Rawe Meeting Room, located, at 1115 Pacific Avenue in Tillamook, OR on Tuesday, June 23 2015, from 6:00 – 8:30 PM. This memo includes a meeting summary, agreed-upon action items and information on the upcoming Tillamook PUD Board meeting.

Upcoming Meeting Dates	Who	Location
Wednesday, August 12, 2015; 6:00 PM	Tillamook PUD Board/TOTL CAG	Tillamook PUD, Carl Rawe Meeting Room, located, at 1115 Pacific Avenue in Tillamook, OR

Action Items	Who	When
1. <u>Information Follow-Up</u> <ul style="list-style-type: none"> • Develop and distribute draft meeting summary for CAG review and comment; final meeting summary posted to the website • Contact absent CAG member for their recommendation on route option • Develop FAQs to post on the website and distribute 	K&W K&W Project Team	By week of 7/20 By week of 7/20 By 7/31
2. <u>CAG Preferred Proposed Route Recommendation(s)</u> <ul style="list-style-type: none"> • Add route options 1a, 1b and 3a to 6/23 TOTL CAG Overview map • Create final TOTL CAG maps, including the above three options, in two versions as follows: <ul style="list-style-type: none"> - Full Preferred Routes (Options 1, 1a, 1b, 2, 3 and 3a) from BPA Substation to Oceanside 	Project Team	By 8/12 mtg.

- Zoomed in version of Preferred Routes from the BPA Substation to the forest, west of Bayocean Road		
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List of Attendees

Member	Representing	Affiliation
Tim Carpenter	Citizen-at-Large	Fire Chief for the Netarts Oceanside District
Tom Connaughton	Business	Tillamook Revitalization Association
Dick Crossley	Landowner	Tillamook Country Smoker
Rudy Fenk	Agriculture	Tillamook County Soil and Water Conservation District, Chair
David Gienger	Agriculture	Dairy Owner
Connie Green	NGO	Tillamook Bay Community College, President
Paul Levesque	Tillamook County	Tillamook County
Ken Phillips	Tillamook PUD	Tillamook PUD, President
Judson Randall	Citizen-at-Large	Oceanside Neighborhood Association, President
Joe Rocha	Business	Tillamook County Creamery Association
Guy Sievert	Citizen-at-Large	Neskowin, Oregon
Jon Wehage	Landowner	Stimson Lumber Company
Paul Wyntergreen	City of Tillamook	City of Tillamook

Please note that and Rita Hogan (Landowner) was absent from this meeting.

Audience/Interested Parties:

Doris and David Mast, Roy and Claire Peterson, Eric Peterson, Robert Peterson, Dana and Don Aufdermauer, Katie and Jordan Wolfe, Terry Blanc, Tina Sieler, Kurt and Wendy Mizee, Bart and Terri Mizee, Sandy and Bill Howard, Gus Meyer, Mike and Letha Blair, Brett and Kristi Sherer and Doug and Patti Olson.

Tillamook PUD Project Team:

Ray Sieler (Tillamook PUD), Bob White (Tillamook PUD), Barbara Johnson (Tillamook PUD) and Paul Seilo (CH2M HILL).

Kearns & West Facilitation Team: Deb Nudelman and Annie Kilburg.

MEETING NOTES:

Welcome, Introductions, Agenda and Updates

Deb welcomed the group, asked the CAG members for a round of introductions, walked through the proposed agenda, the meeting materials and their significance to the meeting topics.

Deb thanked the CAG members for their participation in this process, including dedicating their time, listening to each other's perspectives and working in a collaborative manner. This process has demanded them to stand in each other's shoes as well as to consider the community's viewpoint. She thanked them for taking on this task and continually working towards finding common ground with each other and the public.

Deb outlined the agenda topics for this meeting including: to discuss the action item requests from the CAG members to the Project Team based on the past meeting, to discuss the June 9 Open House, to review and discuss the three preferred proposed routes/segments, striving for a final consensus recommendation to the Tillamook PUD Board and to discuss the approach going forward with the CAG recommendation(s). We will discuss what it means to move forward with a recommendation and discuss next steps. She thanked the CAG members who attended the June 9 Open House as it provided an important opportunity to be a part of the public conversation prior to making their recommendation.

Deb asked for other updates from CAG members and there were none.

June 9 TOTL Open House

Deb asked for a show of hands from the audience and CAG members who attended the June 9 TOTL Open House and the majority of individuals present raised their hands. She stated that there was good attendance at the open house and that she observed a wide range of perspectives, spirited conversation and active listening. She mentioned that there were a lot of new faces and attributed that to the letters that were sent to potentially affected landowners. Deb said that there were a couple of topics that were brought up by several people at the open house including: the purpose and need of the transmission line and how the CAG members got from 38 route/segment options to these three preferred proposed routes. However, she noted that the purpose and need were not brought up as frequently at this open house as they were at the March 10 Open House. The public asked the CAG members how they landed on these options and the property owners offered their perspectives on how to avoid impacts.

Deb pointed out a difference from the March 10 TOTL Open House and that people were not adding back in route options. Conversations between attendees went towards how to stay away from landowners as much as possible as well as how to stay as far north as possible.

Bob White, Tillamook PUD, said that he learned new information regarding land uses on several properties and heard some requests for micro-adjustments to minimize impacts to landowners between Hwy 101 and Bayocean Road.

Deb pointed out that all of the public comments submitted at the June 9 Open House were transcribed and compiled into one document. (Note: See *TOTL Open House Public Comment Compilation, Comment Cards and Materials - 06-09-15*). She then requested that the CAG members who attended share their observations.

The CAG members then shared the following observations and summarized what they heard as follows:

- That it was a positive meeting and there was a lot of constructive conversation.
- There was an overall appreciation for so many individuals showing up, staying positive and focusing on a group of helpful questions.
- They appreciated the passion and insight shared.
- There is concern that the purpose and need are still not understood by the public and they encouraged the Tillamook PUD to take a different approach to explain this issue to address citizens' concerns.

One of the CAG members responded to the purpose and need issue. He said that he had previously brought this topic up as an area of concern two meetings ago and did not think that there was a sufficient amount of information available to support the purpose and need. He was then directed to a two-page document explaining the purpose and need, which was distributed at the March 10 Open House. After reviewing the paper, he thought it did a good job in explaining this issue; however, he suggested that the Tillamook PUD distribute the paper more widely. (Note: Please see *TOTL Purpose and Need* [here](#)). Another CAG member mentioned that the Headlight Herald published an article that included a good explanation of this issue. Deb explained that she will continue to help the Tillamook PUD explain when and why a transmission line is needed and the challenges that they face in siting the TOTL.

One CAG member reminded the group that the process that they have participated in is not to determine that there is a justified purpose and need of the TOTL, only where it might be located. Deb said that she will assist the Tillamook PUD in sharing that this group helped with how to site the TOTL, not whether or not the purpose and need justify the TOTL.

One CAG member said that a lot of citizens tell him that we do not need power in the Netarts/Oceanside area; however, we are seeing an increase in energy use in the Netarts area and we have to figure out how to meet this need.

Deb said that the Tillamook PUD will continue to reference the TOTL Purpose and Need document and will develop additional materials, such as FAQs (frequently asked questions) on the same issue.

Opportunity for Public Input

Deb asked the audience for public input and requested that the comments be relevant to the June 9 Open House, this meeting's agenda topics or anything else that might be relevant to the final CAG meeting.

Jordan Wolfe introduced himself and said that he is affiliated with the Peterson Farm. He said that he sees a lack of transparency from the Tillamook PUD that comes across to the public as purposeful. He mentioned some of the impacts of this potential transmission line including tree cutting and that power outages are more of a rarity as energy usage is down 10%. He said that the TOTL will affect three major dairies. He mentioned that the need for energy is down and that transmission line siting is not a progressive nor efficient technology. The Tillamook PUD needs to be more forward thinking with their technology and consider alternatives. The citizens in Tillamook understand that Oceanside is a place to get away, not to live. The need to put energy out there seems

to be a waste with a 33% residential rate. Jordan then referenced a letter that Eric Peterson wrote addressing his perspective on the TOTL. (Note: Please see *June 23 Letter – Eric Peterson* [here](#)).

Brett Sherer introduced himself and said that he is an engineer at Bonneville Power Administration. He said that there is a big debate on whether or not there is a need for the TOTL. He said that he wants to see statistical background information on why we need the TOTL, not a narrative. He thinks that would be very helpful in understanding this topic. He questioned whether or not there are brownouts and that the Tillamook PUD should publicize this information. He said that there is hesitation to support the TOTL because he does not see it as a real problem. He mentioned that he thinks the CAG has narrowed their options to the most viable routes/segments; however, the statistics to support the TOTL are not available anywhere.

Kurt Mizee introduced himself as representing Tilla Bay Farms and that his property is on Fenk Road. The proposed route/segment of the TOTL crosses a 97 year-old family farm. He said that Statewide Planning Goals 3 and 11 address this issue and indicate that all utility lines should be on existing public or private ROWs (right-of-way). He asked how this group got so far away from using existing ROWs, which is not an acceptable option. He said that at the June 9 Open House; all three preferred proposed routes go through one piece of property. We were not noticed soon enough that this line had potential of going through our property. We have farmed this ground for almost 100 years. Why take high value farmland out of production? The Tillamook PUD should consider undergrounding this line. He referenced OAR 660-025-0000(11). (Note: Please see *Oregon's Statewide Planning Goals & Guidelines, GOAL 11: PUBLIC FACILITIES AND SERVICES* [here](#)).

Bart Mizee introduced himself as the third generation of Tilla Bay Farms. He said that he is interested to know whether the Tillamook PUD has received a warm welcome from any landowners that were noticed that the preferred proposed route/segment options might cross their property. We are forced to consider how our family, employees and cattle will continue their farming if this line is built. How can their farm continue to operate and what assurances are there that any future problems will be addressed? He mentioned that he is particularly concerned about stray voltage with their animals. He has no interest in pursuing litigation in the future and wants to know how the Tillamook PUD will work with his family to make sure that issues are addressed and resolved.

Sandy Howard introduced herself and said that they own Sandy's Nursery on Goodspeed Road. She said that all three preferred proposed route/segment options come by them. She mentioned that they are not for or against the TOTL, as they are not sure how it will affect them yet. She said that she has lived in Tillamook for 36 years and has seen a lot of floods in these areas. She said that she is trying to figure out how power and deep flooding go together. If a line falls down, do people get electrocuted? How about the employees with the Tillamook PUD? They have experienced a five-day power outage due to storms and are wondering how this would affect a line in this area.

Deb thanked the audience members for their input and said that she will work with the Tillamook PUD to address the questions and concerns voiced today.

CAG Discussion and Recommendation for TOTL Preferred Proposed Route(s)

Deb transitioned the group to discuss the TOTL preferred proposed routes. She reminded the CAG members that if the TOTL was a straight forward question/answer process, that had no impacts and did not cross farmland, they would not be here. The Tillamook PUD decided on this multi-party process for citizens and landowners to collaboratively work together and recommend a preferred proposed route(s). This final meeting is about optimizing what rises to the top, minimizing impacts

and maximizing benefits. She reminded the CAG that the Tillamook PUD will continue to address landowner concerns to minimize impacts.

Deb said that after we hear the action item report-outs, we will walk through the pros and cons of each of the three remaining preferred proposed routes. We will address questions and determine if one route rises to the top. Is the recommendation fair, balanced and supportable? And, can it be ratified? We are looking for a fair and balanced outcome so that when you leave the room and explain your recommendation, people can understand why this group landed on a specific recommendation. Whatever recommendation that comes out of this group has to go back to the Tillamook PUD Board.

Deb explained that the earliest date the Tillamook PUD Board can hold a special meeting, in coordination with our schedule, is Wednesday, August 12, 2015, at 6:00 pm. This is when Kearns & West along with CAG members will present the recommendations to the Tillamook PUD Board and this meeting will be open to the public.

Ken Phillips, Tillamook PUD, said that the Tillamook PUD Board will consider landowner concerns and permitting and political issues of the preferred proposed route recommendation. He stated that he thinks the Tillamook PUD is a transparent agency, that everyone on the Tillamook PUD Board has integrity and that we have worked very hard to hear the community's perspective on this issue.

Deb thanked Ken for his comments and asked the CAG members to consider volunteering to present their recommendation(s) to the Tillamook PUD Board on August 12. She mentioned that letters will go out to landowners and there will be time allotted for public input during the meeting.

June 9 TOTL Open House Additional Segments

Deb introduced Paul Seilo, CH2M HILL, to walk through two additional segments that were suggested at the June 9 Open House. Paul Seilo used the Google Earth tool to show the two options added to the three preferred proposed routes/segments as follows:

- Option 1a, an adjustment to preferred proposed route Option One
- Option 3a, an adjustment to preferred proposed route Option Three

Preferred Proposed Routes Cost

Bob White referenced the TriAxis report produced at the request of the CAG members, to provide a better idea of what the cost of the TOTL might be. He explained that the cost estimates are determined by the general locations and by foundation types: those that are on the Tillamook valley floor, versus those that are in the Forest Corridor and direct embedded structures versus structures using foundations. Direct embedded structures are less costly than structures with foundations. Where the valley floor soils are wetter they likely will require foundations. In the forest areas the use of direct embedded two or three pole H-frame structures. The report includes information about various types of structures and generalized costing information on a per mile basis. The approximate cost associated with direct embedded structures is \$523,000 to \$564,000 per mile. The approximate cost associated with foundation structures is \$888,000 to \$992,000 per mile. These are only construction costs and do not include acquisition costs. (Note: Please see *115-kV Structure Concepts and Associated Order-of-Magnitude Construction Cost Estimates* [here](#)).

One CAG member mentioned that no matter which route is recommended from the remaining three options, there will be a problem with the soils. Bob agreed; however, he said that the more north you go, the more wet the soil gets.

Deb asked whether the soil types are different with options one, two or three. Bob said that they will have to perform geotechnical assessments before they know that.

Paul Levesque, Tillamook County, said that the Southern Corridor Project creates 528 acres of new estuary. If the CAG chooses option one, the structures will be sitting in a location where they will be inundated in water twice a day due to the tide. He continued that he received a call from Oregon Department Fish and Wildlife (ODFW) and they are aware of these three preferred proposed routes. He said that they are concerned that a portion of these routes goes through the restoration area. Paul pointed out that options two and three go through a narrow corridor that does not go through the restoration area.

One CAG member responded that he has heard concerns about the TOTL going through the restoration project. He further suggested to the CAG members that they consider the route down 1st Street. He added that the route should stay close in and as short as possible. Deb asked the other CAG members whether or not they would consider the 1st Street route option again.

Discussion of Preferred Proposed Routes

Deb transitioned the group to discuss the pros and cons of the route/segment options that are currently on the table using the following proposed criteria:

- Technically Feasible
- Regulatory/Permitting
- Legal Possibility
- Policy/Politics
- Minimize Impacts
- Maximize

Option 1 and 1a

The CAG members participated in a discussion and made the following comments regarding options 1 and 1a:

- There are significant challenges for constructability.
- The structures along this route would be more difficult to get to for maintenance due to flooding.
- There are significant concerns about the ability to obtain the necessary permits and permissions to site a line here.

One CAG member suggested continuing west on Goodspeed Road and push the line further to the north to reduce the impacts to landowners on the farmland in this area. Paul Levesque reminded the group that all of this ground will essentially become subject to tidal influence. Bob told the group that due to the much longer water crossing, the structures associated with the crossings would have to be very tall and have substantial foundations.

Paul Seilo said that the permitting through this area would have to go through the Army Corp of Engineers (the Corp) and the wetland impacts would have to be considered. Of the options that are

left on the table, options 1 and 1a cross the most amount of wetland and cross the rivers at the widest point. The Corp will want us to cross where the rivers are narrower. We will have to present them with the other options that we considered and why we choose the option with the most tidal influence that crosses rivers at the widest point. Option 1 and 1a cross where rivers are 800 feet wide. Options 3 and 3a are closer to 300 feet wide.

Deb then showed the group route N1, which was previously taken off the table for consideration due to some of these issues. If we put N1 back on the table, it is very similar to routes 1 and 1a.

One CAG member asked the group why they would choose a route that we know will be flooded with tide water twice a day. Another CAG member asked Bob whether or not the Tillamook PUD can build transmission structures here. Bob said that even though it can be done, he does not know whether these routes can be sited. He also said that it will be very expensive to build structures in this area and maintain them.

One CAG member said that out of cost, permitting and legal issues, that this route will be fairly difficult to permit and incredibly costly. It seems that these options should be taken off the table due to these considerations alone.

Another CAG member asked the group to consider where impacts should be maximized, minimized and to discuss the legal piece. We should not recommend a route that is not legally allowed. He also posed the question where the cost piece fits in with the impacts consideration. How much should we consider cost while considering a recommendation?

Option 2

Deb asked the CAG members to discuss options 2, 3 and 3a. Bob said that he was told by an affected landowner at the June 9 Open House, that they would prefer options 3 and 3a to option 2 because options 3 and 3a maximize the use of existing ROW.

Option 3 and 3a

Other CAG members said that options 3 and 3a are good compromises. They avoid some landowner impacts, while staying in dryer soil.

Option 1b

One CAG member suggested an additional segment be added north of route option 1. He said that if we are going to go north, why not go further in order to completely avoid landowners. The CAG members and the Project Team agreed to call this segment option 1b. One CAG member said that even though we would avoid some landowners with this new segment, it may affect additional landowners along Goodspeed and Bayocean Roads that we do not currently know about. We do not know that this could be permitted.

Deb reminded the CAG members that if they cannot avoid landowners, they should aim to minimize impacts. We do not want to leave one set of challenges to create a new set of challenges.

Ken Phillips said that he has tried to put himself in the shoes of every potentially affected landowner on this project. He shared that the Tillamook PUD cannot underground the entire TOTL nor does

he believe the Tillamook PUD Board of Directors would endorse route 1b from a costs and benefit standpoint. He suggested a route further south of 1, 1a and 1b.

All Route/Segment Options Discussion

One CAG member said that most of the routes, if not all, are technically feasible. That the cost is somewhere in the ballpark of \$8,000,000 for the total project and that navigating the politics of this line is what the CAG has focused on. We are trying to help the Tillamook PUD by making a recommendation while representing the community. We need some answers on the regulatory and legal pieces to move the process forward at this point.

Paul Seilo said that option 1, 1a and 1b would definitely be harder to permit because there is a higher value of wetlands around those options and we will have to provide the Corp with an alternatives analysis with the other proposed routes that they considered. He said that the Corp will not favor 1, 1a or 1b and that he thinks options 3 and 3a are better alternatives due to the smallest quantity of high value wetlands and the water body crossings are less impactful.

One CAG member asked where the legal piece fits in and another CAG member responded that transmission lines on farmlands is an allowed use. Paul Seilo agreed and said that you are not splitting parcels; it is an easement on the land. The underlying landowner still remains the same.

One CAG member asked what the estimated cost difference would be between the three options and Bob said that the costs will go up with the routes that have longer river crossings.

One CAG member said that there will be mitigation no matter which route we choose to recommend.

One CAG member asked about improvements to land in exchange for lines coming across farmland. He specifically asked whether the Tillamook PUD would build roads to access the poles on the farmland and/or if they would provide more modern farm equipment to accommodate the land use. Bob said that they will avoid building separate serviceable roads on the valley floor and want to make use of existing roads. We may consider improving roads if necessary for construction activities after talking to landowners about what works best. He also said that he could not address the purchase of more modern equipment; historically the PUD has not done this. The Tillamook PUD will have future conversations with landowners on how to minimize impacts.

Paul Wyntergreen said that the CAG has put a lot of work into this process and based on what he has heard, he thinks that option 3a is the most likely option. He requested that the CAG members all comment on this option as their recommendation.

One audience member, Eric Peterson, asked if he could make a comment. Deb asked the CAG members if this was okay and they all agreed that Eric could proceed. He said that he has been talking to David Gienger and knows that there is a certain amount of sediment on his land that has helped gain elevation and develop more stable ground. Paul Levesque responded that even if bringing in sediment can help increase the elevation of the land, this area will still be subject to tidal inundation due to the restoration project. It could take years or decades for elevation to become sufficient enough to support transmission line structures. Another CAG member said that something of that nature could take a few years or it could take fifty years, depending on weather and other environmental factor.

Deb reminded the group that they should be considering a recommendation through multiple lenses and referenced the proposed criteria list.

Route Recommendation Decision

Deb said that based on Paul Wyntergreen's earlier proposal that she was going to go around the table and ask each CAG member to offer their perspective on whether or not they could support option 3a. The CAG members commented as follows:

- One CAG member did not support option 3a and instead supports option 1b in an effort to avoid landowners.
- Two CAG members abstained from providing their opinion due to conflicts with other positions they hold.
- The remaining members in attendance said that they could support option 3a as their recommendation to the Tillamook PUD, with continued efforts to address landowner impacts and concerns along this route.

Deb thanked everyone for their willingness to provide impromptu feedback and congratulated them on arriving on a recommendation to present to the Tillamook PUD Board. She said that the Tillamook PUD Board will be informed that the CAG could support option 3a, with continued landowner impact efforts. She said that the recommendation will also encourage the Tillamook PUD Board to look at northern routes and even though it does not seem possible, that the CAG wants them to think about option 1b to avoid landowner impacts. One CAG member asked that the Tillamook PUD Board also look at the 1st Street option and Tom Connaughton said he could support Front Street as long as it was 100% underground.

Ken Phillips thanked the CAG and audience members for their due diligence and hard work in this process. He said that he knows this is not a perfect situation; however, he hopes that everyone is able to make it to the Tillamook PUD Board meeting in August.

Deb asked for volunteers to speak at the Tillamook PUD Board presentation. Judson Randall, Dick Crossley and Paul Levesque offered to present on the CAG's recommendation and perspective.

Approach Going Forward, Next Step Tasks and Final Summary

Deb transitioned the group to the next steps and requested that each CAG member provide a closing remark, an observation or something that they want to share. The CAG members responded as follows:

- A few CAG members said that they hope their recommendation is something that can move forward and that the community can live with.
- Several CAG members said that this was an interesting, rewarding and educational process.
- Several CAG members appreciated the opportunity to sit at the table and have a voice in this process.
- Several CAG members were glad to make positive connections with new individuals in their community.
- Several CAG members commented on the remarkability of the design of this process and where they got in a short six months.

Deb thanked the CAG members for their hard work; this process was a huge task to take on. She hopes that they leave this room proud of their work and the progress they made.

Deb thanked the audience members for their public input, the CAG members for their attendance and making it to the finish line in this process. This has been a lot of hard work and the CAG has contributed a great deal of time to get to where they are today. She reminded the group that the Tillamook PUD Special Board Meeting is on Wednesday, August 12, 2015 at 6:00 pm at the Tillamook PUD, Carl Rawe Meeting Room, located at 1115 Pacific Avenue in Tillamook, OR. The draft meeting summary from today will be sent to the CAG for review, and after it is finalized, it will be posted to the Tillamook PUD website.

Deb thanked everyone for their participation and efforts; the meeting was adjourned at 8:37 pm.

Appendix B – OWEB Letters



Oregon

Kate Brown, Governor

Oregon Watershed Enhancement Board

775 Summer Street NE, Suite 360

Salem, OR 97301-1290

(503) 986-0178

FAX (503) 986-0199

www.oregon.gov/OWEB

August 18, 2016

KC Fagen
Engineering Manager
Tillamook PUD
PO Box 433
Tillamook, OR 97141

[sent via email]



Dear KC:

I appreciated meeting with you and others on August 9, 2016 to discuss Tillamook PUD's process of site selection for its Tillamook-Oceanside Transmission Line project. Our conversation was helpful in understanding the PUD's need for additional information from the Oregon Watershed Enhancement Board (OWEB) regarding its interest in Tillamook County's Southern Flow Corridor (SFC) property.

The purpose of this letter is to confirm OWEB's interest in the SFC property and provide additional comments on the PUD's route alternatives.

As we discussed when we met, OWEB holds a conservation easement on the SFC property. The purpose of the easement is to protect the conservation values of the SFC property over time and ensure that the property is restored to tidal wetlands. The SFC property is also the subject of a federal notice, signed by OWEB and Tillamook County. The federal notice requires use of the property for tidal wetland restoration.

Consistent with the purpose of the conservation easement and federal notice, OWEB cannot approve the construction or placement of any transmission line infrastructure or appurtenance on the SFC property.

Further, OWEB cannot allow any transmission line to aerially traverse the SFC property, without infrastructure on the surface of the property, if such line would hinder wetland vegetation growth, or otherwise impact the conservation values of the property such as causing adverse impacts to animals that use or fly over the SFC property.

Tillamook Bay supports approximately 25 percent of the northern- and central-coast wintering waterfowl population in Oregon. Recent literature¹ on North American avian mortalities due to transmission lines indicates that waterfowl are among birds most vulnerable to transmission line collisions, with transmission lines estimated to kill many birds per year.

¹ Rioux, S., J.-P. L. Savard, and A. A. Gerick. 2013. Avian mortalities due to transmission line collisions: a review of current estimates and field methods with an emphasis on applications to the Canadian electric network. *Avian Conservation and Ecology* 8(2): 7.

Transmission lines with long spans, such as Routes 1E and 1F depicted in the materials you provided to me via email on August 12, 2016, are particularly hazardous to waterfowl and other birds. Risks to migrating birds would be further increased by the routes' generally east-west orientation and the tall structures that are proposed, together with Tillamook Bay's frequent low-visibility conditions. Accordingly, OWEB cannot approve Routes 1E or 1F.

As indicated in my letter to Bob White dated October 30, 2015, OWEB is willing to consider Route 1D, because the route entails a relatively short span across the SFC property and would not require any infrastructure or appurtenances on the property. OWEB's consideration of this route would be in consultation with the U.S. Fish and Wildlife Service, the agency that required the federal notice described above. Any OWEB approval of this route would require the PUD to take all reasonable steps to minimize impacts to the conservation values of the SFC property, including but not necessarily limited to making the line visible to birds in the vicinity of the SFC property and monitoring and managing the line over time to minimize bird collisions. Further, OWEB would require its involvement in reviewing and approving the utility easement that would be granted to the PUD by Tillamook County to allow the transmission line to pass over the property. OWEB would also require the PUD to comply with any requirements of the U.S. Fish and Wildlife Service, and would not issue any approval to the PUD without the Service's concurrence.

I hope this information helps in Tillamook PUD's further assessment of alternatives for siting the Tillamook-Oceanside Transmission Line.

Sincerely,



Miriam Hulst
Acquisitions Coordinator

- c. Terry Blanc, Tillamook PUD
Barbara Johnson, Tillamook PUD
Rachel Hagerty, Tillamook County
Heather Hollis, U.S. Fish and Wildlife Service



Oregon

Kate Brown, Governor

Oregon Watershed Enhancement Board

775 Summer St NE Ste 360

Salem, OR 97301-1290

(503) 986-0178

FAX: (503) 986-0199

www.oregon.gov/OWEB

October 30, 2015

Bob White
Power Services Manager
Tillamook PUD
PO Box 433
Tillamook, OR 97141

REC'D OPERATIONS DEPT.

NOV 04 2015

T.P.U.D.



Dear Bob:

Thank you for informing the Oregon Watershed Enhancement Board (OWEB) of the Tillamook People's Utility District's plans to construct a power line in the vicinity of Tillamook County's Southern Flow Corridor Project, which is depicted on the attached map, Map 1, prepared by the County's project contractor, Northwest Hydraulic Consultants.

OWEB's mission is to help protect and restore healthy watersheds and natural habitats that support thriving communities and strong economies. OWEB makes land acquisition grants to local partners, such as Tillamook County, to purchase ecologically significant lands from willing sellers for the benefit of watersheds and habitat for native fish and wildlife. OWEB provided funds for the County's purchase of the property depicted in pale green on Map 1, and plans to provide funds in support of the County's acquisition of additional properties, depicted in bright green on the same map. The OWEB Board conditioned the pending funds on, among several things, the County's commitment to restore both the prior-purchase and pending-purchase properties to fully functioning tidal wetlands. In exchange for past and pending grant funds from OWEB, the County will grant OWEB a conservation easement on the properties.

The purpose of an OWEB conservation easement is to protect the conservation values of a property over time including, in the case of the properties described above, facilitating the restoration of tidal wetlands. The restoration will entail removing roads, buildings, dikes, and other infrastructure that is not consistent with functioning tidal wetlands. Accordingly, power line infrastructure in the wetlands and power line appurtenances such as roads would not be consistent with the intent of the OWEB grant or the purpose of the conservation easement. This includes a power line built on the PUD's proposed Routes 1B and 1C, a depiction of which you provided on a map, attached as Map 2.

A power line depicted by you as Route 1D on Map 2 and described by you as requiring no infrastructure other than aerial power lines in the conservation easement area and requiring no ground infrastructure or access, could possibly be consistent with the purpose of the conservation easement. Any final determination by OWEB would include but not be limited to confirmation that the power line will not hinder wetland vegetation (e.g., tree) growth after the restoration project. Further, OWEB would require involvement in reviewing and approving the utility easement that would be granted to the PUD

by the County to allow the power lines to pass over the property. The U.S. Fish and Wildlife Service, which is OWEB's partner in funding the County's acquisitions and restoration work, might also opt to review the utility easement.

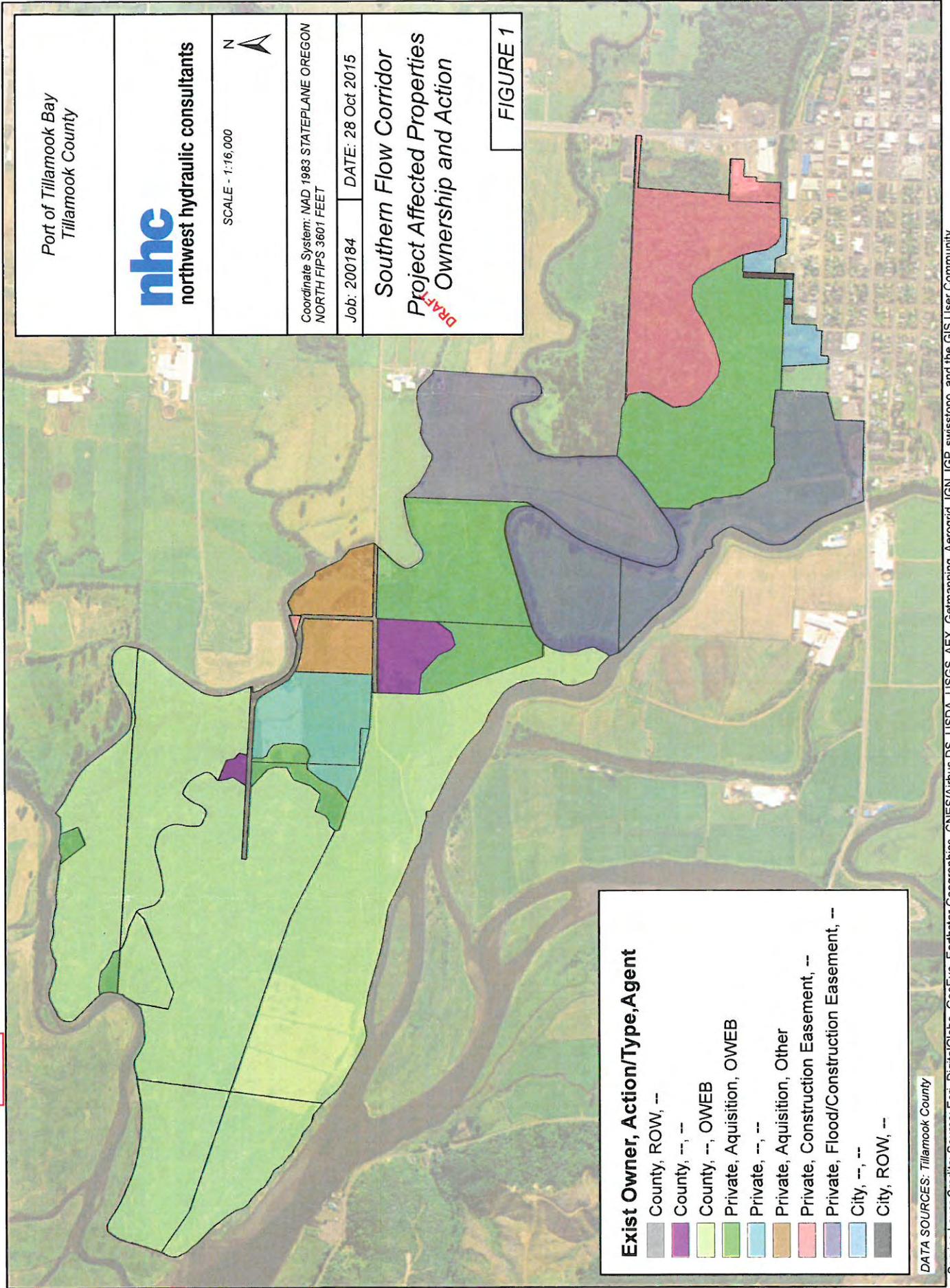
I hope this information helps in the PUD's assessment of alternatives for siting the power line. Please do not hesitate to let me know if I can be of additional assistance.

Sincerely,



Miriam Hulst
Acquisitions Coordinator

Map 1



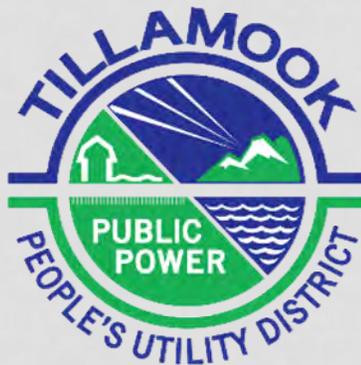
Map 2. Provided to OWEB by Bob White

Draft - Routes Currently Under Consideration on Restoration Project Lands

October 14, 2015



***Appendix C – Board Workshop October 13, 2016
Presentation***



**TILLAMOOK TO OCEANSIDE
TRANSMISSION LINE PROJECT
OCTOBER 13, 2016
BOARD WORKSHOP**

CALL TO ORDER & INTRODUCTIONS

INTRODUCTIONS

Project Team

- Tillamook PUD:
 - KC Fagen, Engineering Manager
 - Barbara Johnson, Public Relations Manager
 - Terry Blanc, Utility Asset Supervisor
- Sam Imperati, ICM Resolutions

AGENDA

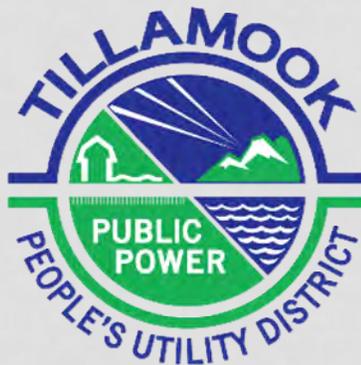
- Project Mission and Background
- Purpose and Need Overview
- Public Involvement: Route Selection
- Current Route Options
- Decision Tables & Polling
- Public Comments
- Next Steps

PROJECT MISSION & BACKGROUND

PROJECT MISSION: Tillamook PUD is committed to providing all customers with safe and reliable power at the best value to all customers.

BACKGROUND:

- Need first identified over 50 years ago
- Very early route (1990s) put on hold when project need diminished
- PUD work plans (2005 and 2007) detailed project as a priority to address reliability and capacity
- PUD proposed to build a new overhead 115 kilovolt (kV) transmission line to connect the existing BPA substation in Tillamook to a new substation to be built near Oceanside
- First formal PUD proposed route unsuccessful (2013) – unable to permit through City



**TILLAMOOK TO OCEANSIDE
TRANSMISSION LINE PROJECT
OCTOBER 13, 2016
BOARD WORKSHOP**

PURPOSE AND NEED OVERVIEW

PURPOSE & NEED OVERVIEW

TILLAMOOK OCEANSIDE TRANSMISSION LINE

I. Reliability

- Poor reliability for Feeder W51 serving Netarts and Oceanside

II. Operations and Maintenance

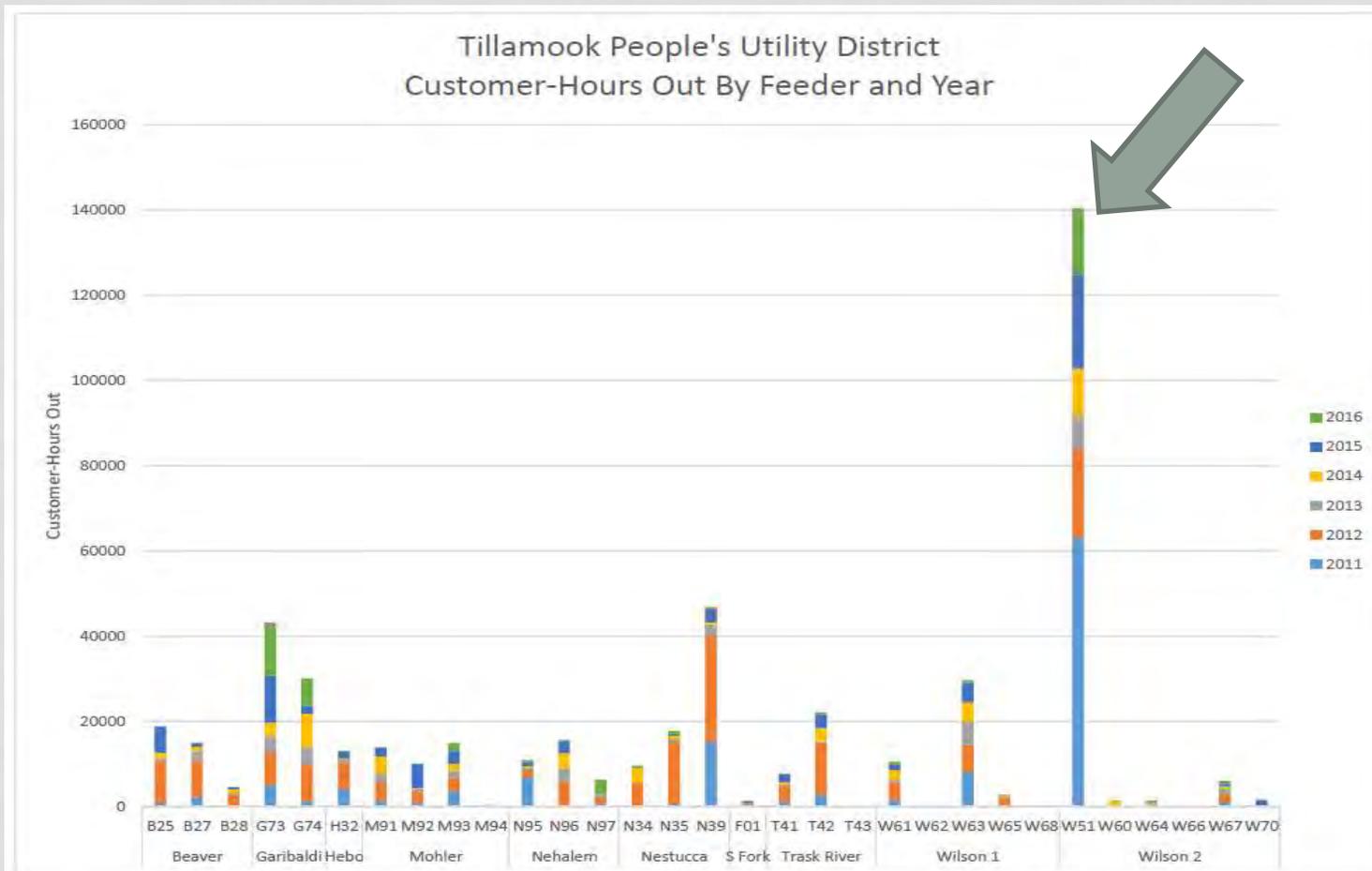
- Lack of redundant power sources for Netarts and Oceanside
- Hinders maintenance and operations by having to interrupt power to 1,750 customers

III. Capacity

- Insufficient capacity in the valley floor to serve load for an N-1 contingency: Wilson, Garibaldi, and Trask substations. (N-1, normal less one, means removing the largest single line or equipment)
- Oceanside & Netarts represents 1/5 of the peak load in the central valley: 11.5 MVA of 60 MVA (“capacity”)
- Loads are growing

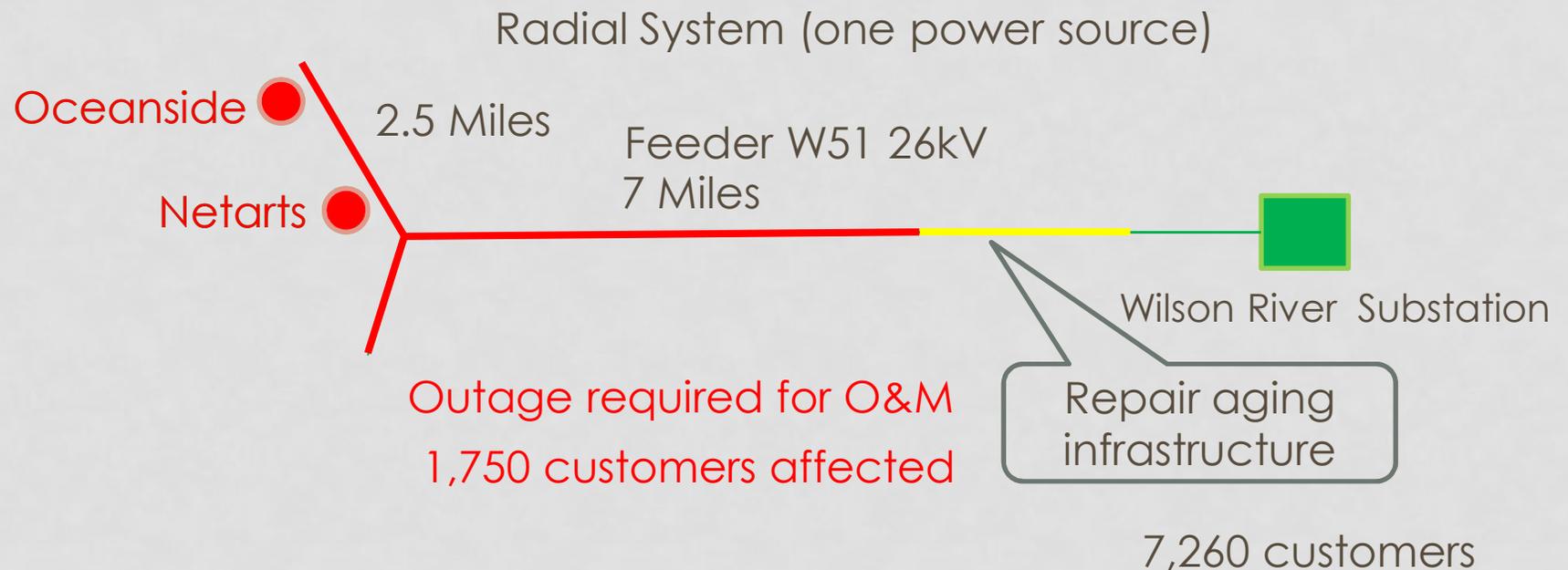
RELIABILITY: CUSTOMER HOURS OUT BY YEAR

- Feeder W51 is 2.8 times less reliable than other feeders



REPAIR/ REPLACE AGING INFRASTRUCTURE

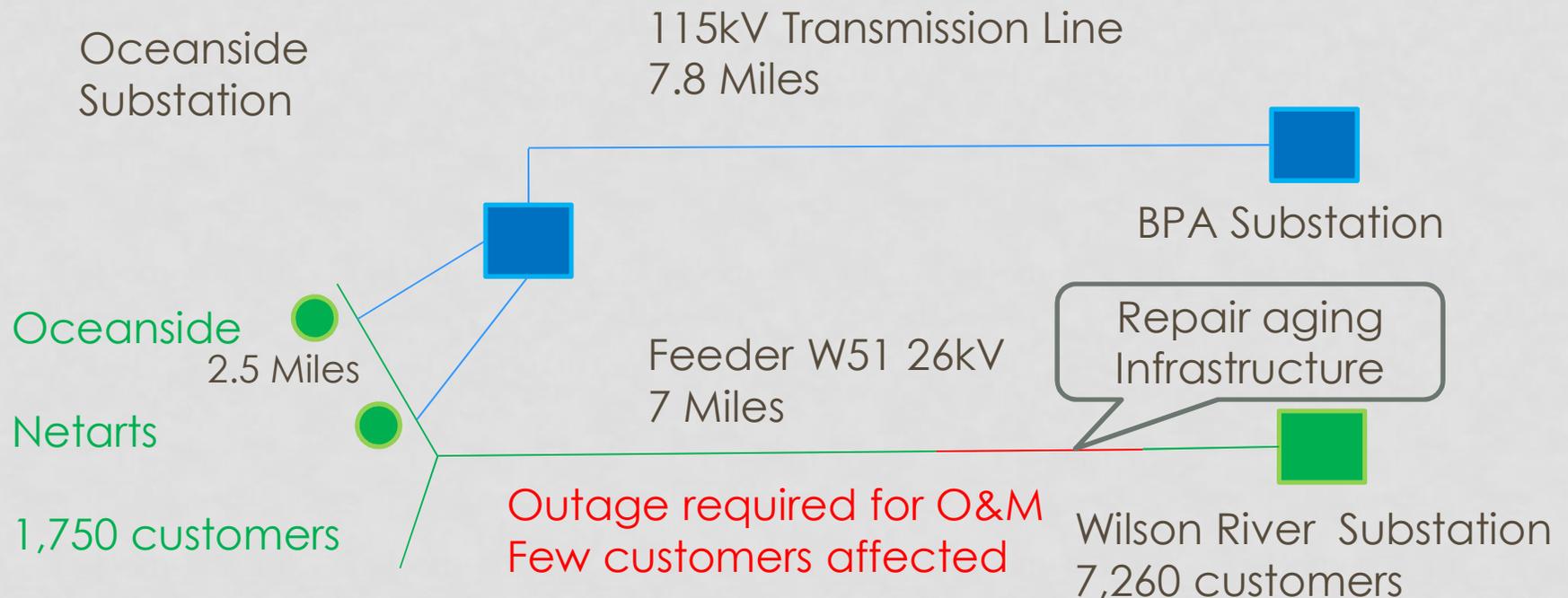
- To perform maintenance, 1,750 customers are interrupted because a second power source is not available



OPERATION AND MAINTENANCE AGING INFRASTRUCTURE

- A looped system would allow sections of line to be taken out of service without disruption to all customers

Looped System



CAPACITY

HISTORICAL LOAD DATA

Historical Data Shows:

- From 2000 through 2015, the system peak growth rate was 1.8% annualized.
- The energy purchased between 2000 and 2016 shows an annualized system growth rate of 1.1%.
- During the same period, the annualized growth rate for new customers has been 0.8%.
- At Wilson T1, the annualized system peak growth rate since 2006 has been 0.2%, and max capacity during switching has been exceeded twice.
- At Wilson T2, the growth rate has been 1.2% and has exceeded industry standard planning guidelines six times.
- Finally, Wilson (1 and 2) annualized growth rate has been 0.9%.

As a result, the Central Tillamook Valley is at the maximum capacity today, when the largest equipment out of service.

CAPACITY

ADDITIONAL CAPACITY NEEDED

- Results of Power Flow Simulation Model
- Loss of Transformer T2 at Wilson River Sub – Normal less one condition (N-1 = Largest Component Out of Service)
 - 2016 Loads

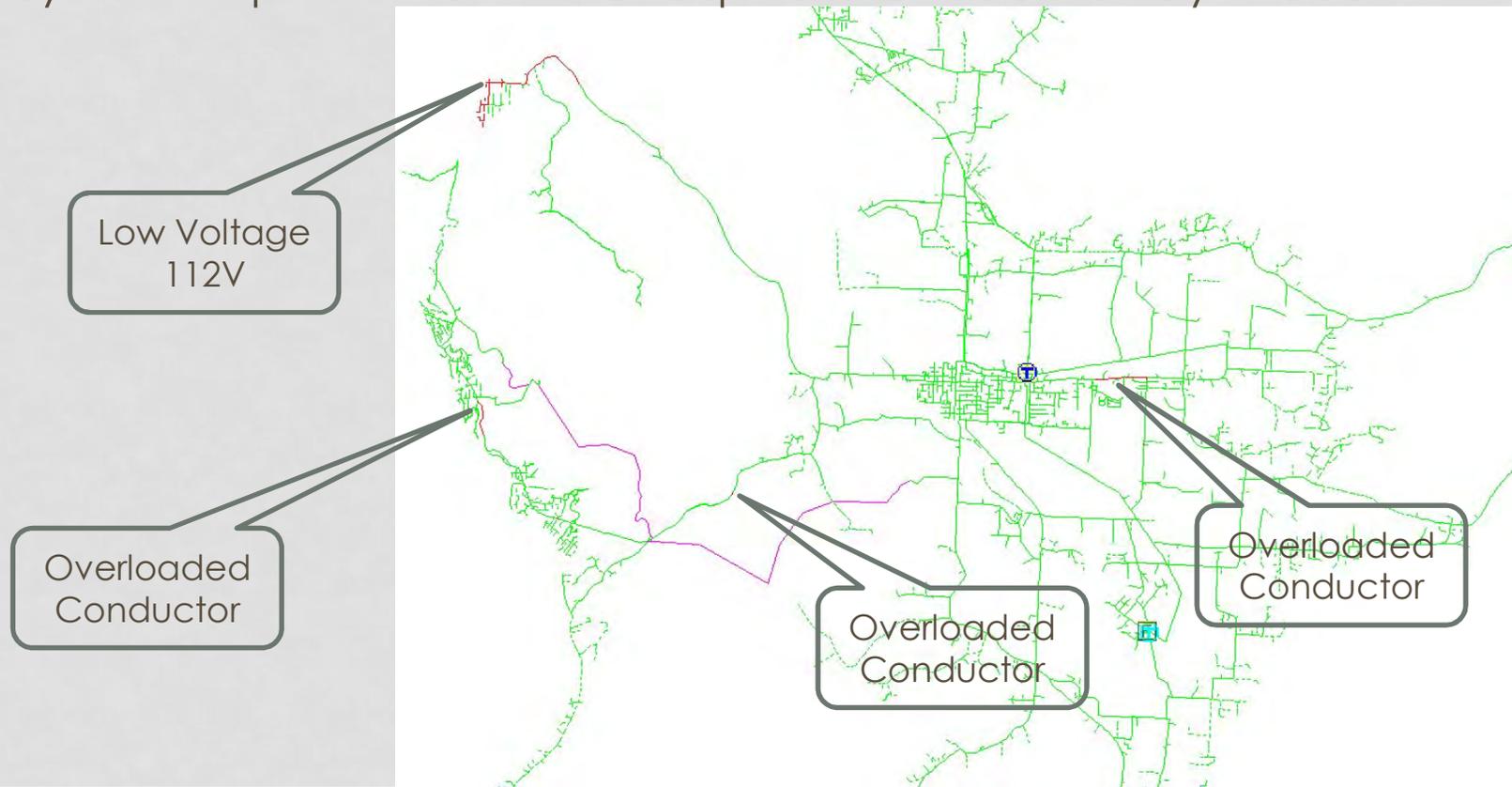
Substation (year built)	Load (MVA)	Capacity (MVA)	Loading (%)
Garibaldi (1994)	22.7	25.0	91%
Wilson T1 (1971)	33.2	33.3	100%
Wilson T2 (2002)	0.0	0.0	
Trask (1996)	35.3	36.9	96%
Totals	94.1	95.2	96%

- Transferred 4 MVA to South Fork and Mohler substations to reduce loads on Garibaldi and Wilson T1
- There are areas that have poor voltage and overloaded conductors

CAPACITY

SYSTEM IMPROVEMENTS REQUIRED

- Today's system would result in areas with below acceptable voltage limits – less than 114 volts and lines exceeding their capacity
- System improvements are required to meet today's loads



OPTIONS CONSIDERED

Option 1

- Do nothing

Option 2

- Improve system to provide redundant 26kV feeders to Netarts and Oceanside
- Strengthen tie points between Wilson and Trask substations
- Perform improvements to resolve voltage and loading issues

Option 3

- Same improvements as Option 2
- Replace Wilson T1 with equivalent size of Wilson T2 (44 MVA)

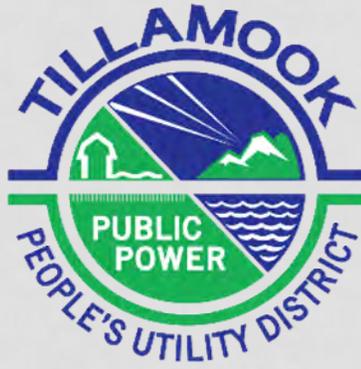
Option 4

- Construct the Tillamook to Oceanside transmission line and a 33 MVA substation

SUMMARY OF OPTIONS

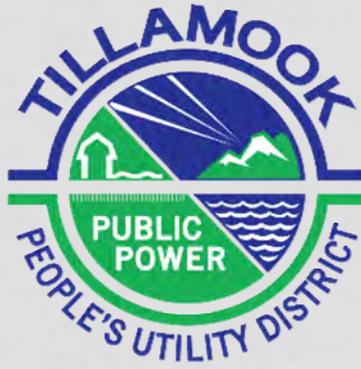
	Option 1	Option 2	Option 3	Option 4
Cost (Million)	\$0.8	\$3.8 - \$4.2	\$5.5 - \$6.0	\$9-\$10.5
Capacity Addition	0 MVA	0 MVA	12 MVA	33 MVA
\$/MVA	0	0	0.5	0.3
Reliability	None	Good	Good	Excellent
Longevity	0 years	2 years	13 years	33 years

CONCLUSION: The Tillamook to Oceanside transmission line project provides the lowest cost per unit of capacity (MVA) and has the life expectancy of 33 years (2.8 times the non-transmission line option).



**TILLAMOOK TO OCEANSIDE
TRANSMISSION LINE PROJECT
OCTOBER 13, 2016
BOARD WORKSHOP**

QUESTIONS & ANSWERS



**TILLAMOOK TO OCEANSIDE
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PUBLIC INVOLVEMENT: ROUTE SELECTION

CITIZEN ADVISORY GROUP (2015)

- Citizen Advisory Group (CAG), formed to assist Tillamook PUD in transmission line route selection, through multi-stakeholder, collaborative, public process.

www.tpud.org/news-community/projects

- CAG Representatives:
 - Local government (2)
 - City of Tillamook
 - Tillamook County
 - Landowner (3)
 - Agriculture (2)
 - Business (2)
 - Non-governmental agency (1)
 - Citizens-at-large (3)
 - PUD Board Member (non-voting) (1)

Number of CAG Members = 14

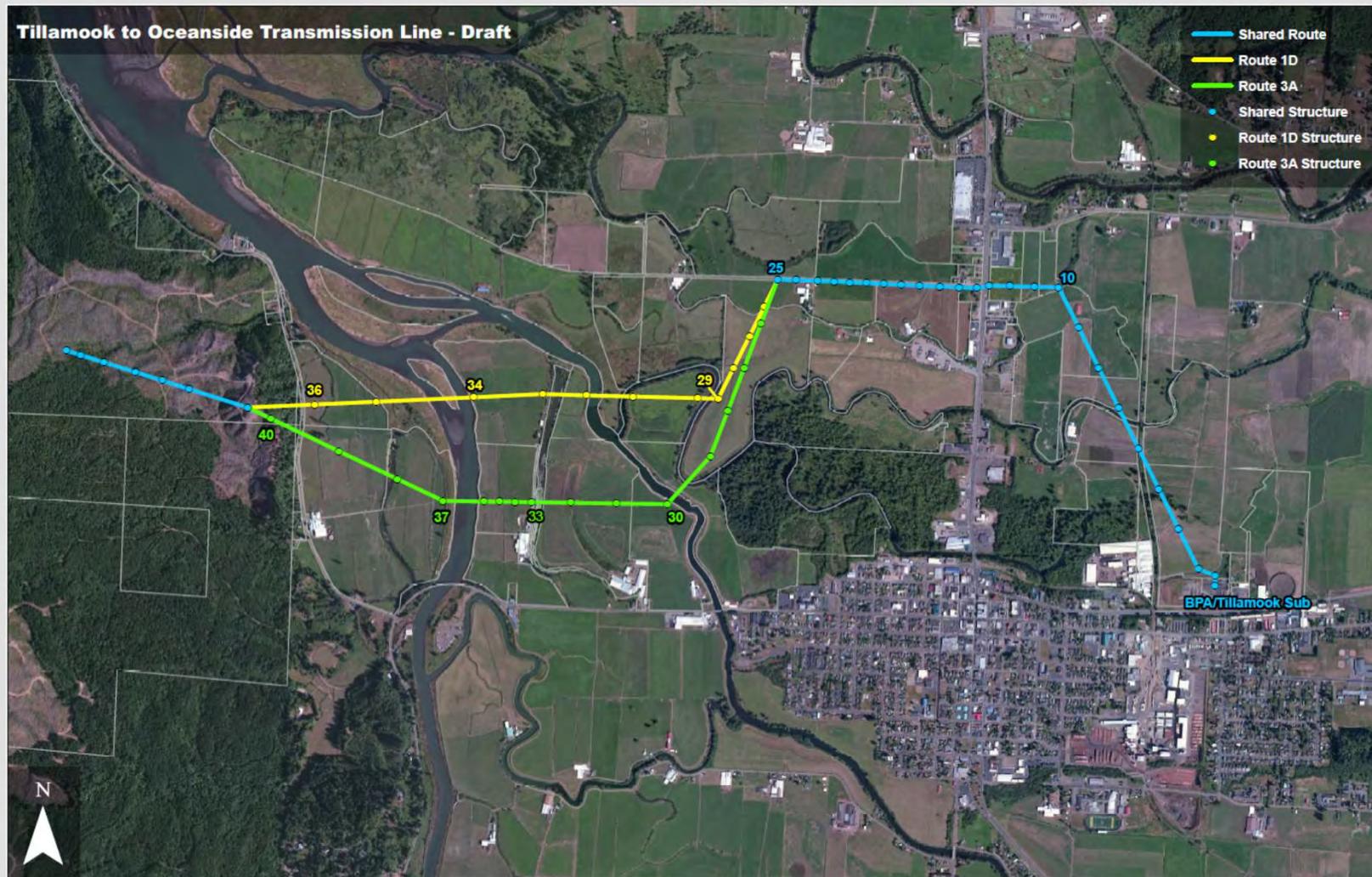
ROUTES CAG REVIEWED



CITIZEN ADVISORY GROUP CONTINUED

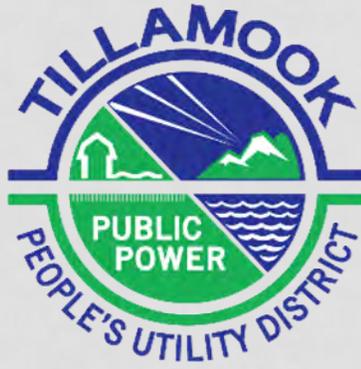
- Summary of CAG work (January – August 2015)
 - 8 public CAG meetings
 - 2 public open house meetings
 - Field Trip
 - 1 PUD Board Workshop
- The majority of the group said they could support proposed route 3A, but recommended the PUD continue to explore a more northern route.
- PUD staff then developed northern route 1D, and subsequently, northern routes through the Southern Flow Corridor.

RESULTS OF CAG PROCESS



RECENT EVENTS

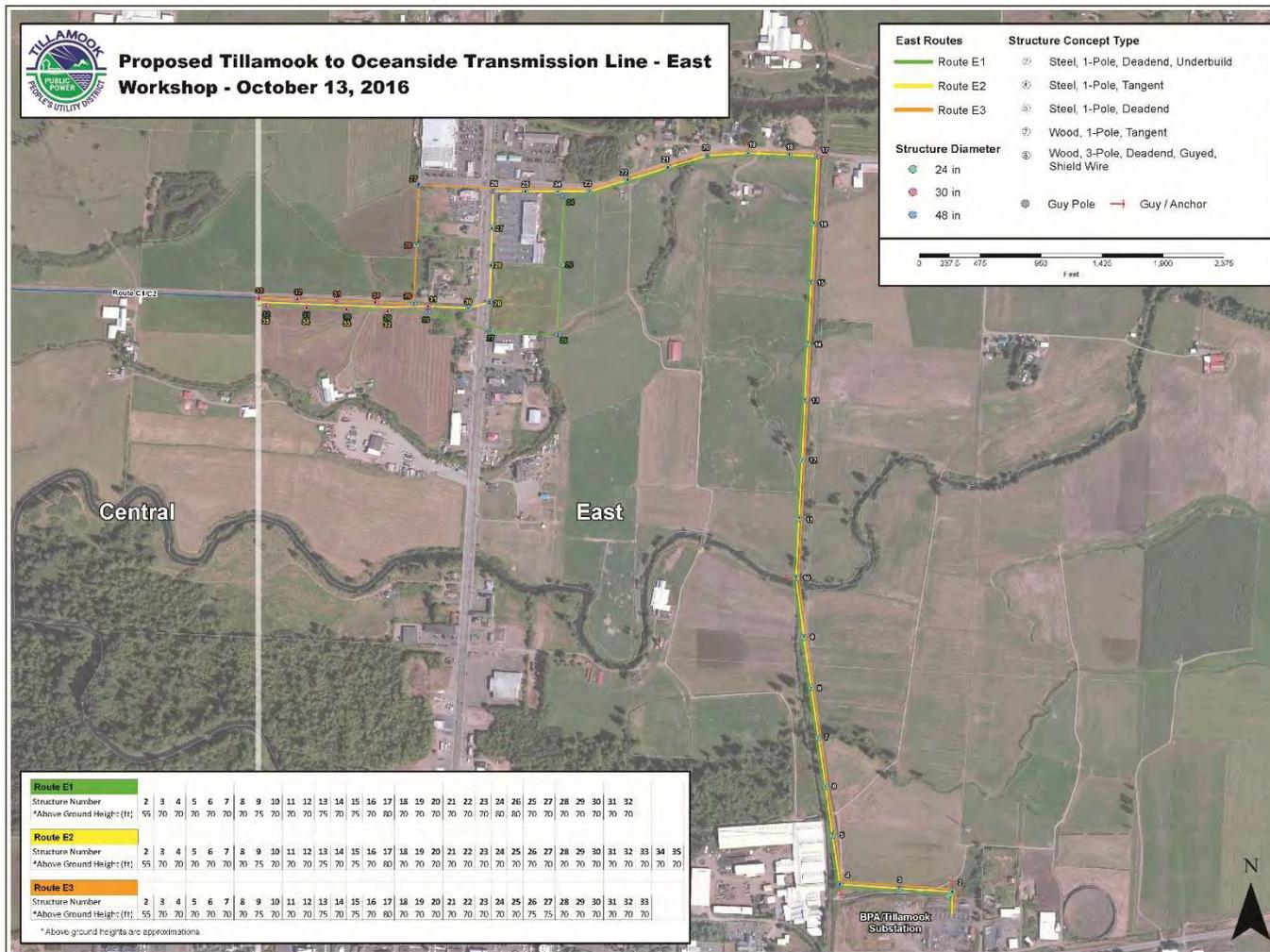
- PUD staff met with potentially impacted landowners (April – May 2016)
- Routes 3A and 1D presented at May 25, 2016, Tillamook PUD Public Workshop
- PUD staff meetings with Tillamook County and Oregon Watershed Enhancement Board (August 2016)
- PUD staff meetings with potentially impacted landowners (August – September 2016)
- PUD staff responded to feedback received with updated route alternatives (October 2016)



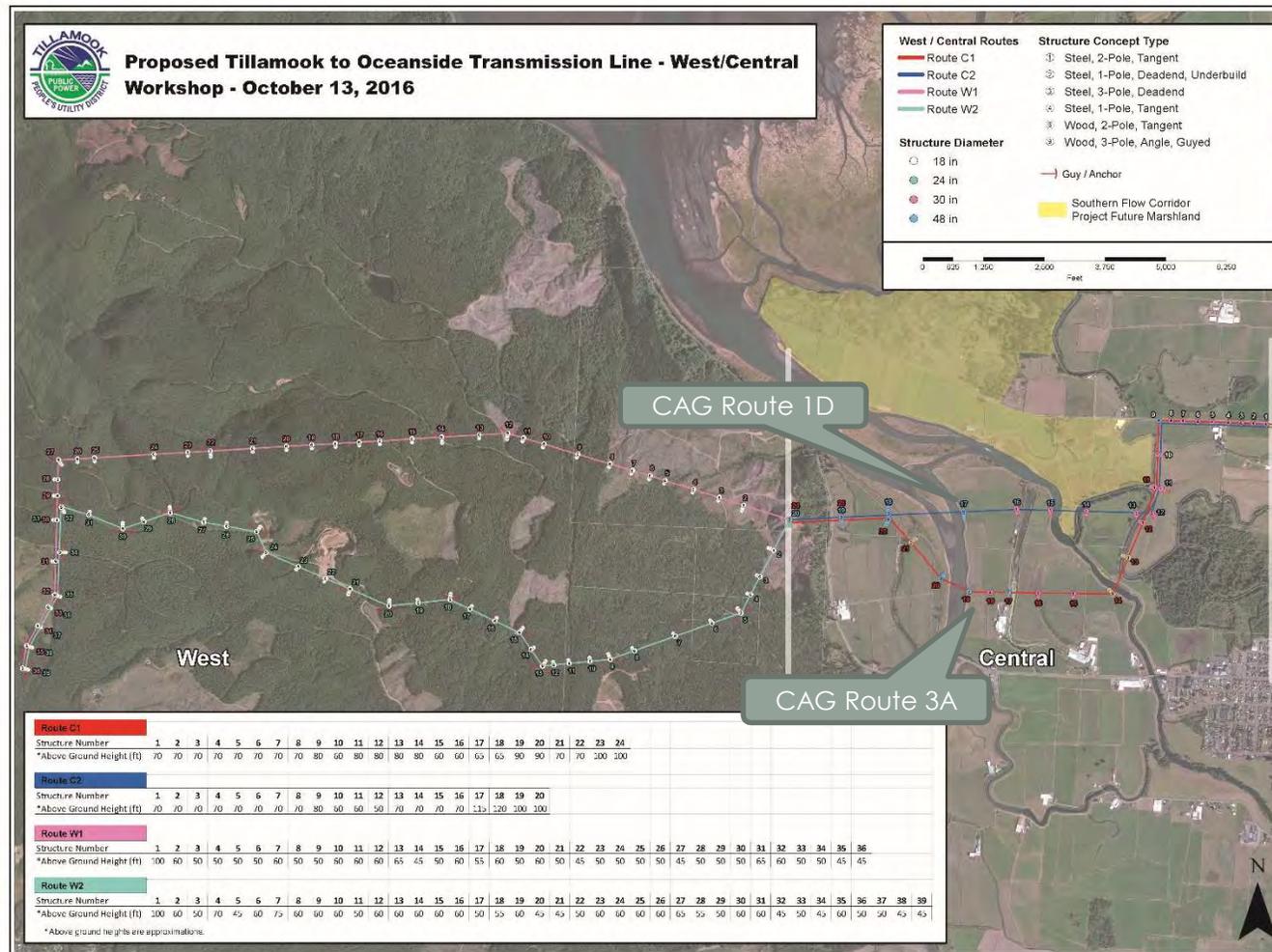
**TILLAMOOK TO OCEANSIDE
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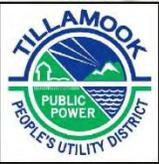
CURRENT ROUTE OPTIONS

CURRENT ROUTE OPTIONS

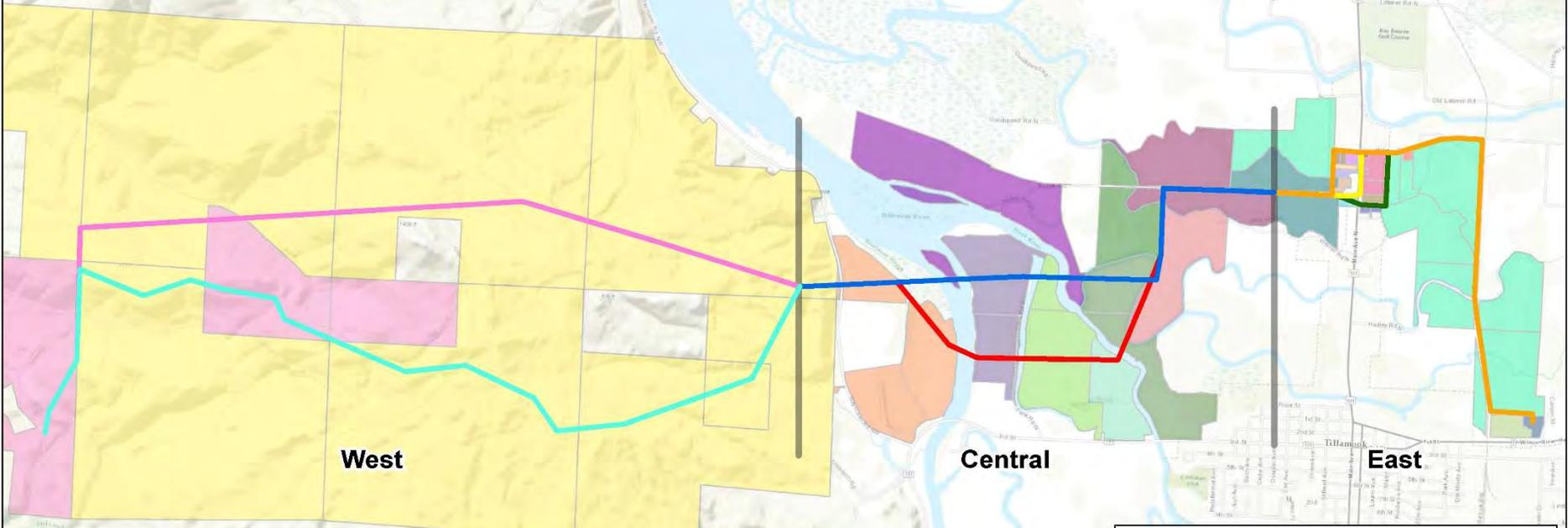


CURRENT ROUTE OPTIONS



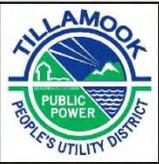


Tax lots showing unique landowners within transmission line easement

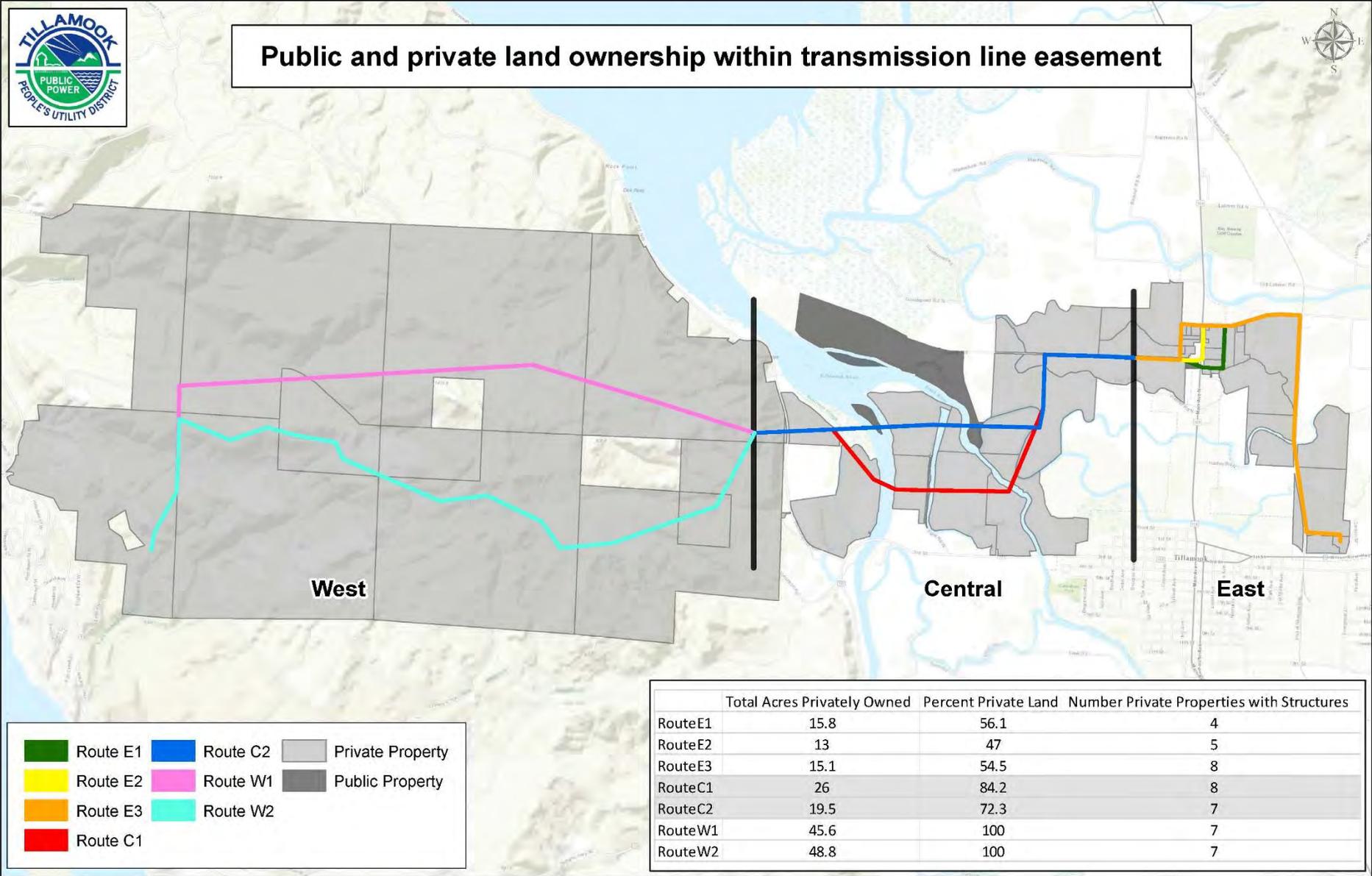


	Route E1		Route E3		Route C2		Route W2
	Route E2		Route C1		Route W1		

	Unique Landowners	Total Tax Lots
RouteE1	11	27
RouteE2	11	27
RouteE3	14	30
RouteC1	11	21
RouteC2	11	17
RouteW1	2	7
RouteW2	2	8

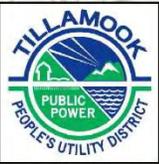


Public and private land ownership within transmission line easement

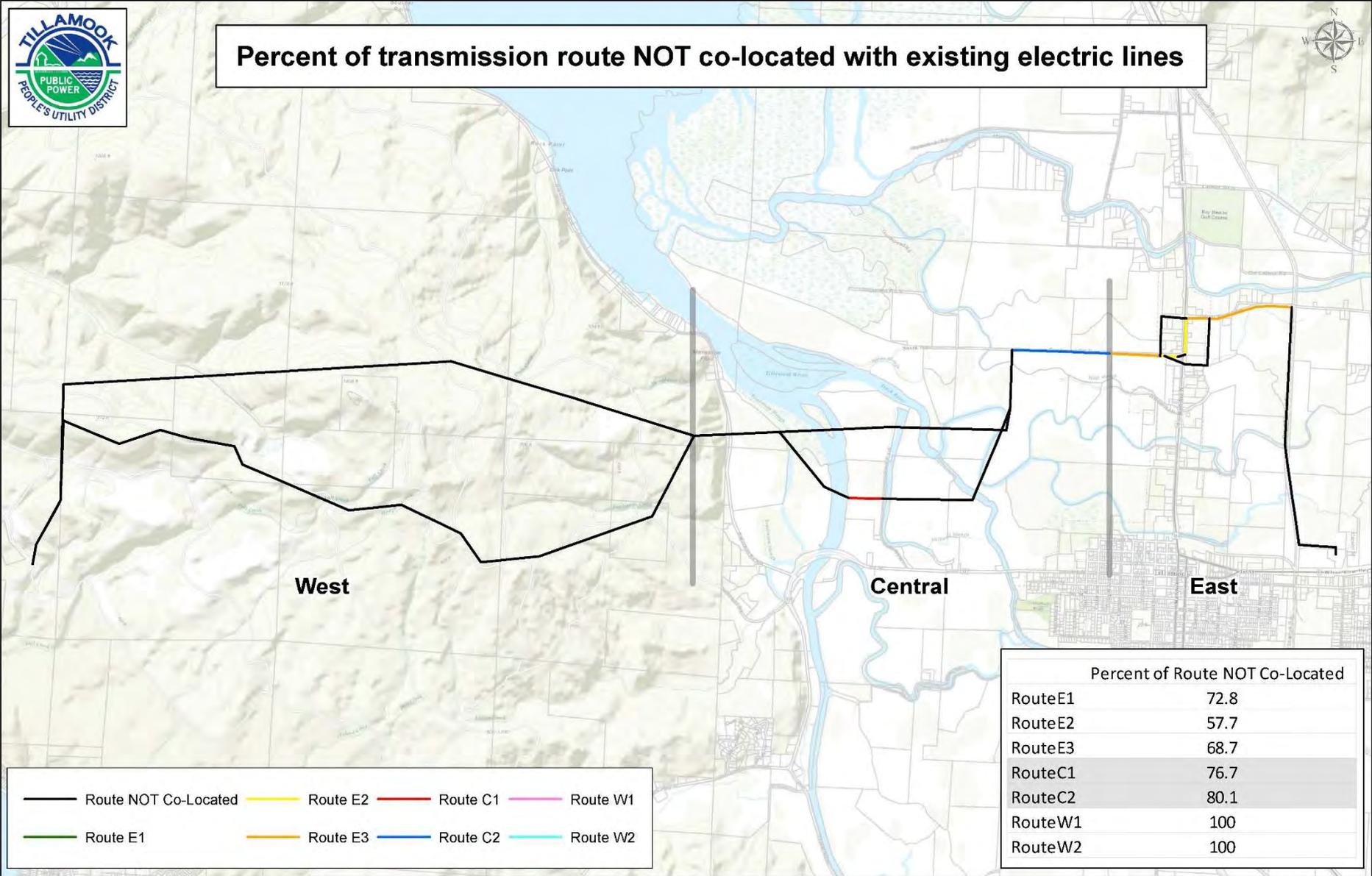


■ Route E1	■ Route C2	■ Private Property
■ Route E2	■ Route W1	■ Public Property
■ Route E3	■ Route W2	
■ Route C1		

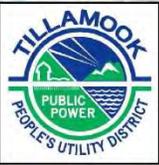
	Total Acres Privately Owned	Percent Private Land	Number Private Properties with Structures
RouteE1	15.8	56.1	4
RouteE2	13	47	5
RouteE3	15.1	54.5	8
RouteC1	26	84.2	8
RouteC2	19.5	72.3	7
RouteW1	45.6	100	7
RouteW2	48.8	100	7



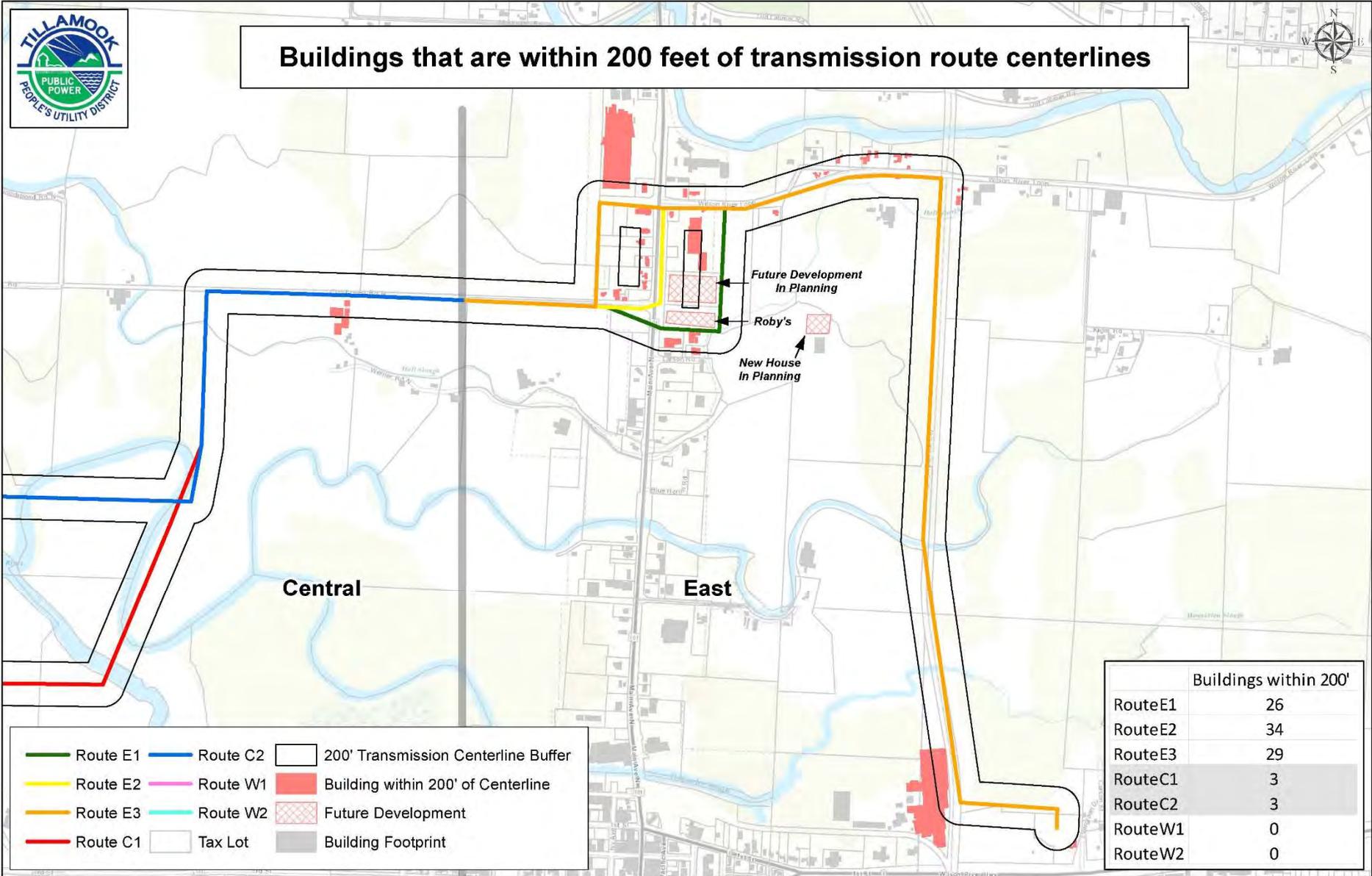
Percent of transmission route NOT co-located with existing electric lines

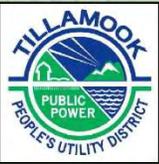


- Route NOT Co-Located
- Route E2
- Route C1
- Route W1
- Route E1
- Route E3
- Route C2
- Route W2

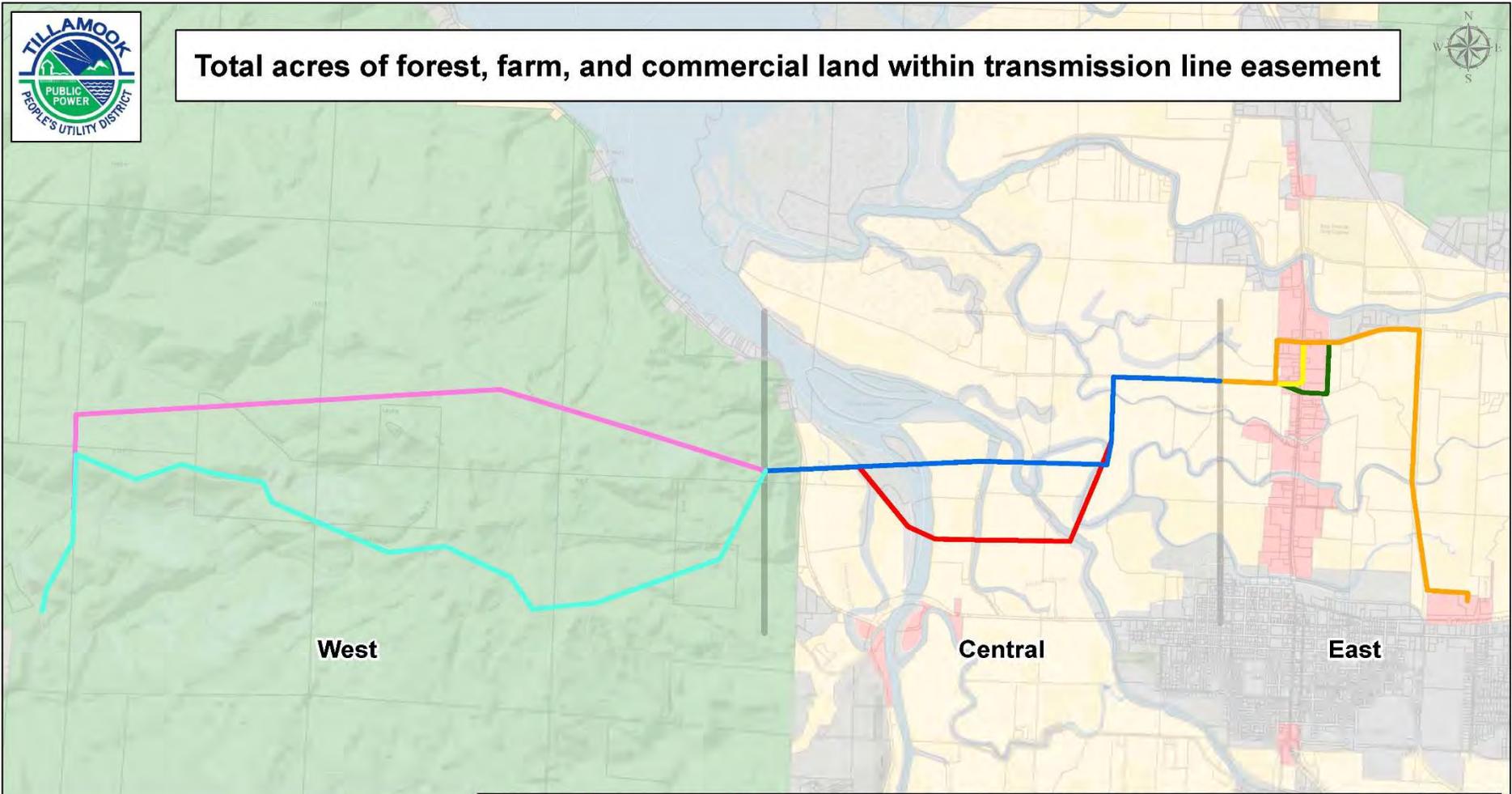


Buildings that are within 200 feet of transmission route centerlines



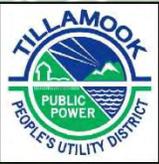


Total acres of forest, farm, and commercial land within transmission line easement

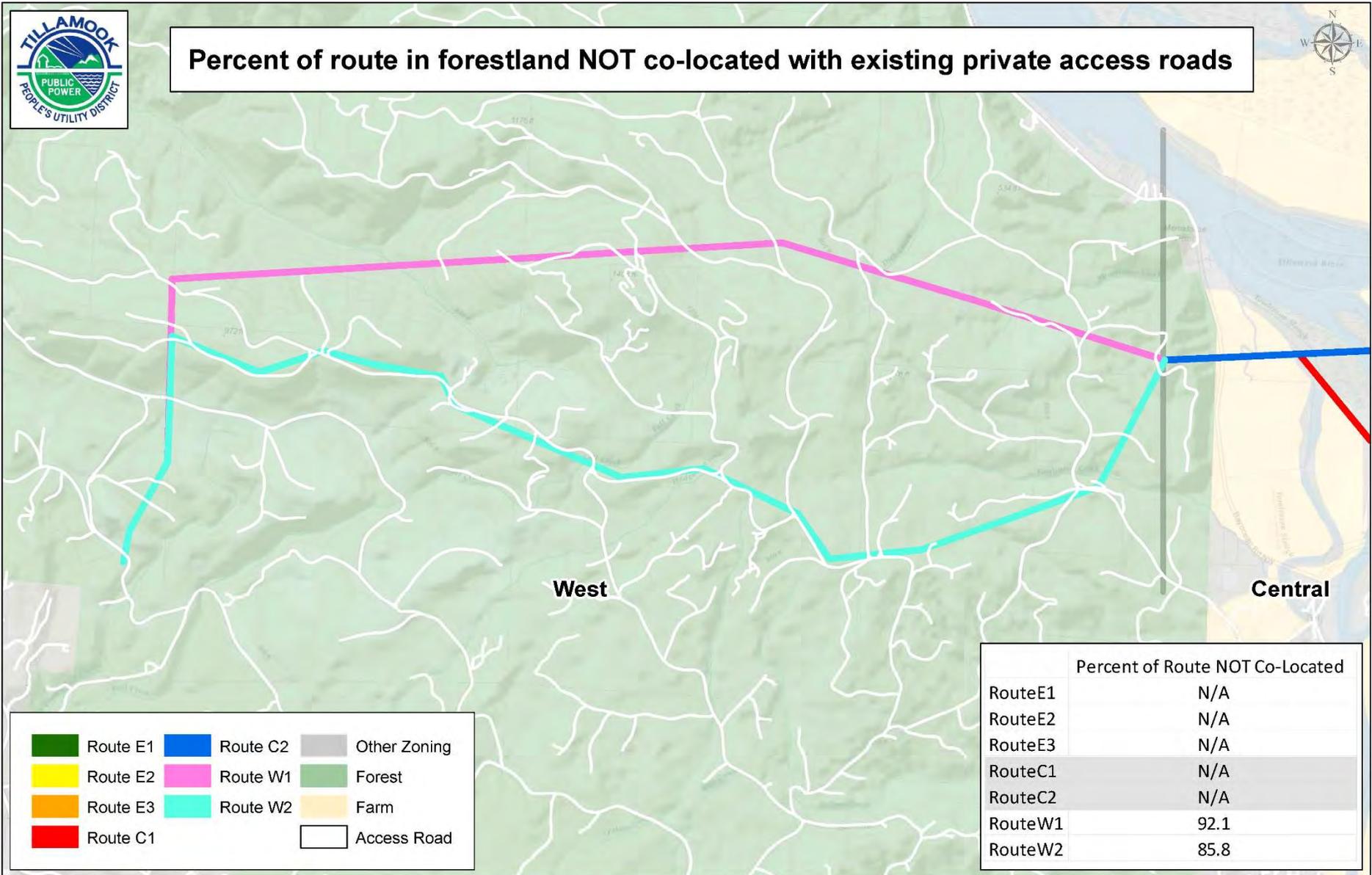


■ Route E1	■ Route C2	■ Other Zoning
■ Route E2	■ Route W1	■ Forest
■ Route E3	■ Route W2	■ Farm
■ Route C1	□ Tax Lot	■ Commercial

	Total Acres Forest	Total Acres Farm	Total Acres Commercial	Avg % Easement	Largest % Easement	Avg % Structure Footprint	Largest % Structure Footprint
RouteE1	0	13	3.9	10.7	33.2	<0.01	0.1
RouteE2	0	12.3	4.9	7.1	52.9	<0.01	0.1
RouteE3	0	13.5	3.8	11	47.4	<0.01	0.1
RouteC1	1.9	12.6	0	3.7	11.5	<0.01	<0.01
RouteC2	1.9	12.7	0	4.5	10.1	<0.01	<0.01
RouteW1	39.9	0	0	1.5	2.5	<0.01	<0.01
RouteW2	42.9	0	0	2.7	7.6	<0.01	0.1

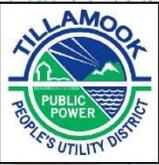


Percent of route in forestland NOT co-located with existing private access roads

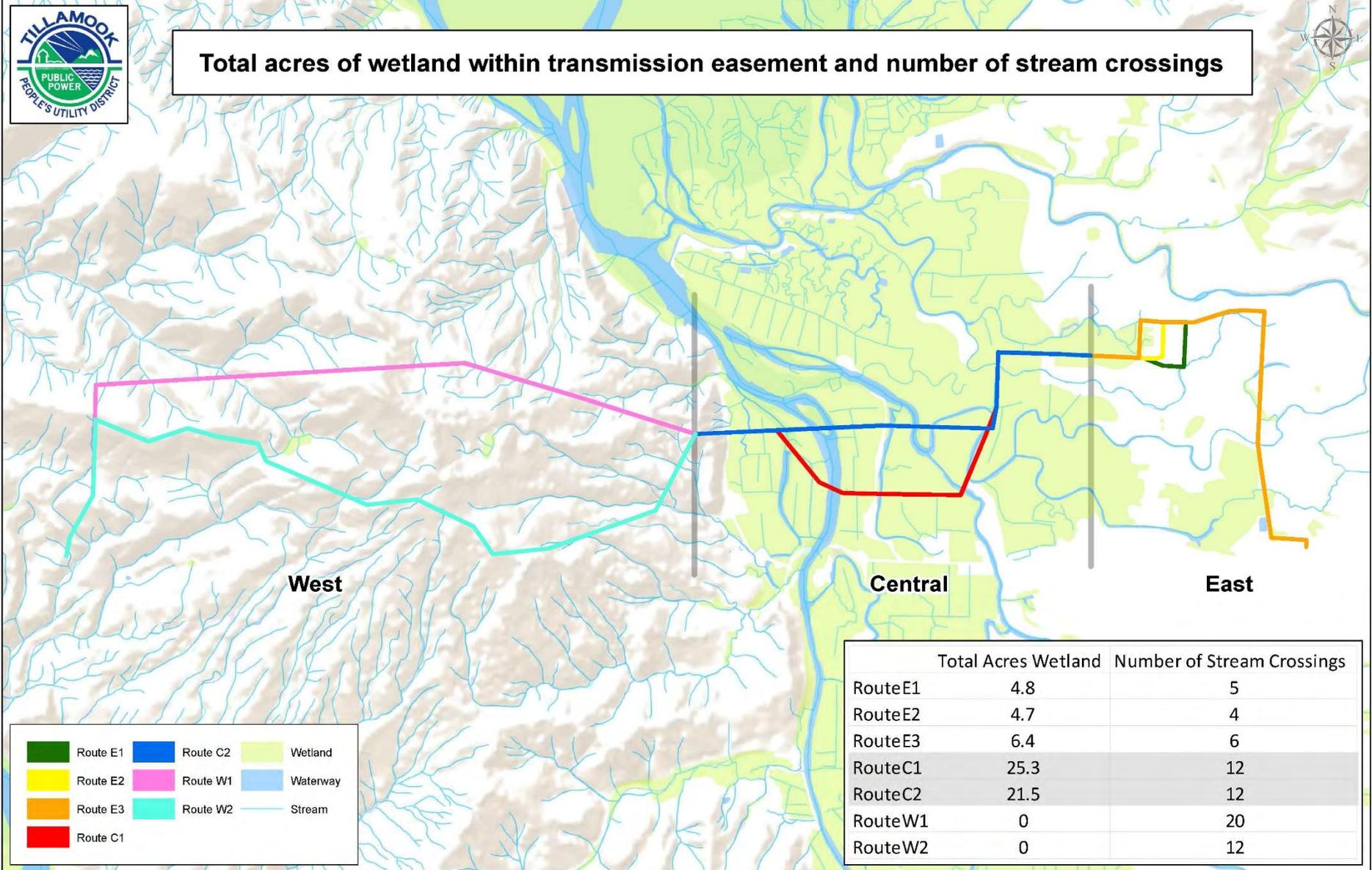


- Route E1
- Route E2
- Route E3
- Route C1
- Route C2
- Route W1
- Route W2
- Other Zoning
- Forest
- Farm
- Access Road

	Percent of Route NOT Co-Located
RouteE1	N/A
RouteE2	N/A
RouteE3	N/A
RouteC1	N/A
RouteC2	N/A
RouteW1	92.1
RouteW2	85.8



Total acres of wetland within transmission easement and number of stream crossings

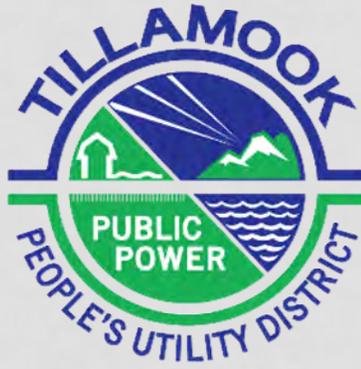


	Total Acres Wetland	Number of Stream Crossings
RouteE1	4.8	5
RouteE2	4.7	4
RouteE3	6.4	6
RouteC1	25.3	12
RouteC2	21.5	12
RouteW1	0	20
RouteW2	0	12

ANALYSIS OF CURRENT ROUTES

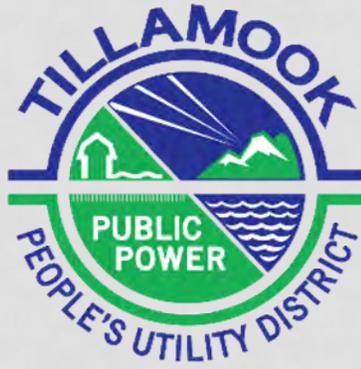
Data not represented in maps

- Reliability (B)
 - All route have essentially the same reliability – very high
- PUD Transmission Line Costs (E)
 - Summarized in the Table (Estimates)
 - Low end \$5.1 M
 - High end \$6.2 M
- Community Economics (Benefits/Impacts) (F)
 - Will be driven by “polling” results.



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DECISION TABLES & POLLING

MAKING GROUP DECISIONS

- A. All information is subject to questions about validity.
- B. Many think science is conducted wholly in the realm of testable knowledge.
- C. Subjective knowledge plays a large role and should be surfaced.
- D. Disputes are rarely caused by technical information, *per se*. Most often, they are about differing values/goals.
- E. Group decisions are best made with clear alternatives and balanced evaluation criteria.
- F. The “cards up” process should consider various perspectives and be an exploration – not a debate.



DECISION TABLE: AN EFFECTIVE TOOL

EXAMPLE:

- A. Provides external memory
- B. Compares alternatives systematically
- C. Focuses on facts
- D. Quantifies subjective factors
- E. Analyzes alternatives by evaluation criteria
- F. Allows for weighting of criteria and ranking of alternatives
- G. Thought process and analysis documented
- H. Reasons for agreement and disagreement understood



EXAMPLE TROUTDALE AIRPORT :



EXAMPLE: TROUTDALE AIRPORT

BASIC TABLE

Evaluation Criteria

Alternatives	Alignment with forecasts	Community economic benefits	Community planning compatibility	Environmental impacts	Financial impacts	Fit with local airport system	Legal feasibility
	A: Maximum commercial / industrial						
	B: More commercial / industrial; less business aviation						
	C: More business aviation; less commercial / industrial						
	D: Maximum aviation						

EXAMPLE: TROUTDALE AIRPORT

SCORING ALTERNATIVES BASED UPON EVALUATION CRITERIA

Assign a color to each alternative that describes how well the alternative aligns with each evaluation category, compared to other alternatives.



Very favorable / well-aligned



Neutral / neither favorable nor unfavorable



Not favorable / not well-aligned

Tillamook to Oceanside Transmission Line Project: Decision Table

Name: _____ Date: _____	Evaluator Information: Select one: <input type="checkbox"/> Member of the public <input type="checkbox"/> Property Owner	Property Address: _____																																					
Evaluation Categories Evaluation Factors	Social	Land Use / Environmental	Economic																																				
Sample Measures	A) Property Effects and Visual Impacts	B) Reliability	C) Impacts to Farm / Forest / Commercial	D) Environmental Impacts	E) Tillamook PUD Costs	F) Community Economics (Benefits / Impacts)																																	
1) Number of unique land owners 2) Number of tax lots 3) Total acreage of privately-owned land within easement 4) Percentage of easement on privately-owned land 5) Number of private properties that have a transmission structure on it 6) Percentage of route NOT co-located with existing electric lines 7) Number of buildings within 200' of transmission centerline 8) Quantity of transmission structures (number of 1-pole, 2-pole, 3-pole) 9) Average pole height	Considerations: Frequency and duration of potential outages, cost to get back online, difficulty of getting back online, (e.g. accessibility, number of wetlands, water crossings, soils, need for special equipment), etc.	1) Total acres of forestland within easement 2) Total acres of farmland within easement 3) Total acres of commercial land within easement 4) Average percentage of easement on property 5) Largest percentage of easement on property 6) Average percentage of structure footprint on property 7) Largest percentage of structure footprint on property 8) Percentage of route in forestland NOT co-located with existing private access roads	1) Total acres of wetland within easement 2) Total number of streams that cross transmission line	1) Construction costs (Infrastructure, roads, etc.) 2) Operation & maintenance 3) Time to Construct	Considerations: Job creation, business revenue, property values, construction disruption, site development options, etc.																																		
Step 1: Weighting Evaluation Criteria																																							
Rating Instructions: Circle one number in each column to rate the importance of the evaluation factor.																																							
Extremely Important	10	10	10	10	10	10																																	
Very Important	9	9	9	9	9	9																																	
Important	8	8	8	8	8	8																																	
Moderately Important	7	7	7	7	7	7																																	
Slightly Important	6	6	6	6	6	6																																	
Not at all Important	5	5	5	5	5	5																																	
	4	4	4	4	4	4																																	
	3	3	3	3	3	3																																	
	2	2	2	2	2	2																																	
	1	1	1	1	1	1																																	
Step 2: Scoring Alternatives based on Evaluation Factors																																							
Rating Instructions: Circle one color (Green, Yellow, Red) in each rating cell to specify how well each alternative satisfies each evaluation factor.																																							
Leaving any cell blank will result in a vote of 3 = "Neutral".																																							
Measures Guidance	Fewer unique property owners, smaller private acreage, lower Percentage private land, fewer number of private properties with structures, and lower Percentage of route NOT co-located with existing lines is better.	Lower frequency and duration of outages, cost, and difficulty to get back on line is better.	Fewer acres and lesser impact on practices is better.	Fewer acres of wetland and fewer number of stream crossings is better.	Lower costs of construction, operation & maintenance, and less time to construct is better.	Subjective valuation of the above considerations: Net between positive and negative factors.																																	
Evaluation Factors and Sample Measures	1) Unique land owners (R) 2) Number of tax lots within easement (R) 3) Privately-owned land owned land (%) 4) Easement on privately-owned land (%) 5) Private properties with transmission structures (R) 6) Percentage of route NOT co-located with existing electric lines 7) Buildings within 200' of transmission centerline (R) 8) Quantity of transmission structures (R) 9) Average pole height (R)	Overall Reliability VOTE: Reliability VOTE: Property Effects & Visual Impacts	1) Forestland within easement (Acres) 2) Farmland within easement (Acres) 3) Commercial land within easement (Acres) 4) Average easement on property (%) 5) Largest easement on property (%) 6) Average structure footprint on property (%) 7) Largest structure footprint on property (%) 8) Percentage of route in forestland NOT co-located with existing private access roads (%) VOTE: Impacts to Farm / Forest / Commercial	1) Wetland with easement (Acres) 2) Streams that cross transmission line (R) VOTE: Environmental Impacts	1) Estimated Construction costs (thousands of \$) 2) Estimated Annual O & M (thousands of \$) 3) Time to Construct (months) VOTE: Tillamook PUD Costs	Your Notes: VOTE: Community Economics (Benefits / Impacts)																																	
East Section	Route E1	11	27	15.8	56.1%	4	72.8%	26	31 (30,0,1)	71'	3	2	1	-99%+	3	2	1	0	13	3.9	10.7%	33.2%	<0.01%	0.1%	N/A	3	2	1	4.8	5	3	2	1	1,300	6.5	3.5	3	2	1
	Route E2	11	27	13	47.0%	5	57.7%	34	34 (33,0,1)	70'	3	2	1	-99%+	3	2	1	0	12.3	4.9	7.1%	52.9%	<0.01%	0.1%	N/A	3	2	1	4.7	4	3	2	1	1,500	7.5	4	3	2	1
	Route E3	14	30	15.1	54.5%	8	68.7%	29	32 (31,0,1)	71'	3	2	1	-99%+	3	2	1	0	13.5	3.8	11.0%	47.4%	<0.01%	0.1%	N/A	3	2	1	6.4	6	3	2	1	1,400	7.0	3	3	2	1
Central Section	Route C1	11	21	26	84.2%	8	76.7%	3	24 (12,5,7)	75'	3	2	1	-99%+	3	2	1	1.9	12.6	0	3.7%	11.5%	<0.01%	<0.01%	N/A	3	2	1	25.3	12	3	2	1	2,900	14.5	6	3	2	1
	Route C2	11	17	19.5	72.3%	7	80.1%	3	20 (9,8,5)	76'	3	2	1	-99%+	3	2	1	1.9	12.7	0	4.6%	10.1%	<0.01%	<0.01%	N/A	3	2	1	21.6	12	3	2	1	2,600	13.0	5	3	2	1
West Section	Route W1	2	7	45.6	100%	7	100%	0	36 (0,27,9)	54'	3	2	1	-99%+	3	2	1	39.9	0	0	1.5%	2.5%	<0.01%	<0.01%	92.1%	3	2	1	0	20	3	2	1	1,400	7.0	5	3	2	1
	Route W2	2	8	48.8	100%	7	100%	0	39 (0,21,18)	57'	3	2	1	-99%+	3	2	1	42.9	0	0	2.7%	7.6%	<0.01%	0.1%	85.8%	3	2	1	0	12	3	2	1	1,900	9.5	5	3	2	1

Evaluation Categories	Social	
Evaluation Factors	A) Property Effects and Visual Impacts	B) Reliability
Sample Measures	1) Number of unique land owners 2) Number of tax lots 3) Total acreage of privately-owned land within easement 4) Percentage of easement on privately-owned land 5) Number of private properties that have a transmission structure on it 6) Percentage of route NOT co-located with existing electric lines 7) Number of buildings within 200' of transmission centerline 8) Quantity of transmission structures (number of 1-pole, 2-pole, 3-pole) 9) Average pole height	Considerations: Frequency and duration of potential outages, cost to get back online, difficulty of getting back online, (e.g. accessibility, number of wetlands, water crossings, soils, need for special equipment), etc.
Rating Instructions: Circle one number in each column to rate the importance of the evaluation factor.		
Extremely Important	10	10
Very Important	9	9
Important	8	8
Moderately Important	7	7
Slightly Important	6	6
Not at all Important	5	5
Not at all Important	4	4
Not at all Important	3	3
Not at all Important	2	2
Not at all Important	1	1

Evaluation Categories	Land Use / Environmental	
Evaluation Factors	C) Impacts to Farm / Forest / Commercial	D) Environmental Impacts
Sample Measures	1) Total acres of forestland within easement 2) Total acres of farmland within easement 3) Total acres of commercial land within easement 4) Average percentage of easement on property 5) Largest percentage of easement on property 6) Average percentage of structure footprint on property 7) Largest percentage of structure footprint on property 8) Percentage of route in forestland NOT co-located with existing private access roads	1) Total acres of wetland within easement 2) Total number of streams that cross transmission line
Rating Instructions: Circle one number in each column to rate the importance of the evaluation factor.		
Extremely Important	10	10
Very Important	9	9
	8	8
Important	7	7
	6	6
Moderately Important	5	5
	4	4
Slightly Important	3	3
	2	2
Not at all Important	1	1

Evaluation Categories	Economic	
Evaluation Factors	E) Tillamook PUD Costs	F) Community Economics (Benefits / Impacts)
Sample Measures	1) Construction costs (Infrastructure, roads, etc.) 2) Operation & maintenance 3) Time to Construct	Considerations: Job creation, business revenue, property values, construction disruption, site development options, etc.
	Rating Instructions: Circle one number in each column to rate the importance of the evaluation factor.	
Extremely Important	10	10
Very Important	9	9
	8	8
Important	7	7
	6	6
Moderately Important	5	5
	4	4
Slightly Important	3	3
	2	2
Not at all Important	1	1

Step 2: Scoring Alternatives based on Evaluation Factors

Alternative satisfies each evaluation factor. **5** = "Well-aligned" **3** = "Neutral" **1** = "Poorly-aligned"

Measures Guidance	Fewer unique property owners, smaller private acreage, lower Percentage private land, fewer number of private properties with structures, and lower Percentage of route NOT co-located with existing lines is better.										Lower frequency and duration of outages, cost, and difficulty to get back on line is better.	
Evaluation Factors and Sample Measures	1) Unique land owners (#)	2) Number of tax lots	3) Privately-owned land within easement (acres)	4) Easement on privately-owned land (%)	5) Private properties with transmission structures (#)	6) % of route NOT co-located with existing electric lines	7) Buildings within 200' of transmission centerline (#)	8) Transmission structures (# 1-pole, 2-pole, 3-pole)	9) Average pole height (ft.)	VOTE: Property Effects & Visual Impacts	Overall Reliability:	
East Section	Route E1	11	27	15.8	56.1%	4	72.8%	26	31 (30,0,1)	71'	5 3 1	~99%+
	Route E2	11	27	13	47.0%	5	57.7%	34	34 (33,0,1)	70'	5 3 1	~99%+
	Route E3	14	30	15.1	54.5%	8	68.7%	29	32 (31,0,1)	71'	5 3 1	~99%+
Central Section	Route C1	11	21	26	84.2%	8	76.7%	3	24 (12,5,7)	75'	5 3 1	~99%+
	Route C2	11	17	19.5	72.3%	7	80.1%	3	20 (9,6,5)	76'	5 3 1	~99%+
West Section	Route W1	2	7	45.6	100%	7	100%	0	36 (0,27,9)	54'	5 3 1	~99%+
	Route W2	2	8	48.8	100%	7	100%	0	39 (0,21,18)	57'	5 3 1	~99%+

Step 2: Scoring Alternatives based on Evaluation Factors

Alternative satisfies each evaluation factor.



= "Well-aligned"



= "Neutral"



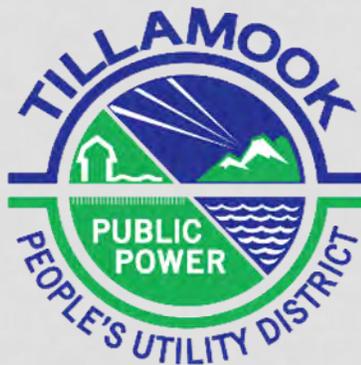
= "Poorly-aligned"

Measures Guidance	Fewer acres and lesser impact on practices is better.									Fewer acres of wetland and fewer number of stream crossings is better.				
	1) Forestland (acres)	2) Farmland within easement (acres)	3) Commercial land within easement (acres)	4) Average land within property (%)	5) Largest easement on property (%)	6) Average structure on property (%)	7) Largest structure footprint property (%)	8) % forestland route located with existing priv. Rds.	VOTE: Impacts to Forest / Commercial	1) Wetland (acres)	2) Streams that cross transmission line (#)			
East Section		0	13	3.9	10.7%	33.2%	< 0.01%	0.1%	N/A	5	3	1	4.8	5
		0	12.3	4.9	7.1%	52.9%	< 0.01%	0.1%	N/A	5	3	1	4.7	4
		0	13.5	3.8	11.0%	47.4%	< 0.01%	0.1%	N/A	5	3	1	6.4	6
Central Section		1.9	12.6	0	3.7%	11.5%	< 0.01%	< 0.01%	N/A	5	3	1	25.3	12
		1.9	12.7	0	4.5%	10.1%	< 0.01%	< 0.01%	N/A	5	3	1	21.5	12
West Section		39.9	0	0	1.5%	2.5%	< 0.01%	< 0.01%	92.1%	5	3	1	0	20
		42.9	0	0	2.7%	7.6%	< 0.01%	0.1%	85.8%	5	3	1	0	12

Step 2: Scoring Alternatives based on Evaluation Factors

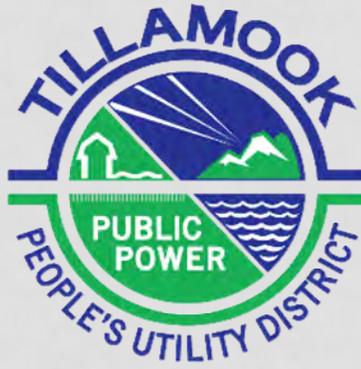
Alternative satisfies each evaluation factor. 5 = "Well-aligned" 3 = "Neutral" 1 = "Poorly-aligned"

Measures Guidance	Lower costs of construction, operation & maintenance, and less time to construct is better.				Subjective valuation of the above considerations: Net between positive and negative factors.			
Evaluation Factors and Sample Measures	1) Estimated Construction costs (thousands of \$)	2) Estimated Annual O & M (thousands of \$)	3) Time to Construct (months)	VOTE: Tillamook PUD Costs		Your Notes:	VOTE: Community Economics / Impacts	
East Section		1,300	6.5	3.5	5 3 1		5 3 1	
		1,500	7.5	4	5 3 1		5 3 1	
		1,400	7.0	3	5 3 1		5 3 1	
Central Section		2,900	14.5	6	5 3 1		5 3 1	
		2,600	13.0	5	5 3 1		5 3 1	
West Section		1,400	7.0	5	5 3 1		5 3 1	
		1,900	9.5	5	5 3 1		5 3 1	



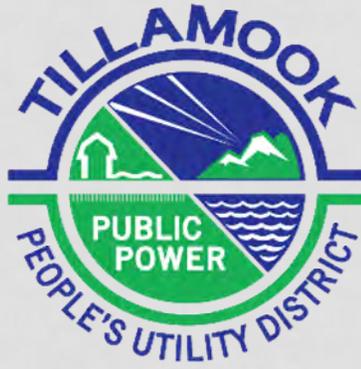
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TRANSMISSION LINE PROJECT
OCTOBER 13, 2016
BOARD WORKSHOP**

QUESTIONS & ANSWERS



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PUBLIC COMMENTS

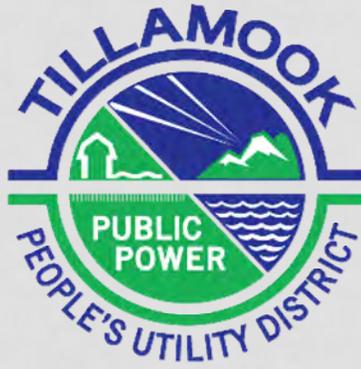


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NEXT STEPS

NEXT STEPS

- 10/17/2016 – TBCC Property Owner-Focused Public Workshop and Poll
- 10/25/2016 – PUD Public-Focused Public Workshop and Poll
- 11/15/2016 - Staff Recommendation to Board at Regular Board Meeting
- 12/13/2016 – Board Adopts Route Option at Regular Board Meeting
- Projected Timeline from Route Selection:
 - Permitting: Year 1
 - Construction: Years 2 and 3
 - Energization: Upon completion



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MEETING CONCLUSION: THANK YOU!