energize**EASTSIDE**

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Community Advisory Group route options data table

Overview

The table below presents data for the 18 potential route options for the Energize Eastside project. Route options are represented by tree names (e.g. "Ash," "Aspen," "Cedar," etc) with their corresponding route segment combinations, and are separated into two categories indicating whether they were selected as part of the Community Advisory Group's preliminary route recommendation at Meeting #5b on Oct. 8, 2014. Pages 1 through 6 present data organized by nine evaluation factors confirmed by the advisory group, listed in alphabetical order. Page 7 includes additional information on route options provided by Puget Sound Energy (PSE) related to constructability, permitability, and other considerations. Finally, page 8 presents supplemental "near" data, i.e. within 600 feet of proposed route options.

Unless otherwise noted, color coding (white to dark teal) indicates where the cell value falls within the range for the data row, with white indicating a low value (or fewer potential impacts to a factor) and teal indicating a high value (or more potential impacts to a factor).

Data	Description	Unit	Data Range Min	Data Range Max	PRELIMINARY ROUTE RECOMMENDATION — Ash A-C-D-F-G1-I-K2-M-N	Oak A-C-E-G2-I-K2-M-N	Redwood A-C-E-G2-G1-H-K1-K2-M-N	Willow A-C-E-J-M-N	ROUTE OPTIONS REMOVED from consideration — Aspen A-C-E-G2-I-K1-L-N	Cedar A-C-E-G2-G1-H-L-N	Cherry A-B-F-G1-I-K1-L-N	Cottonwood A-C-D-F-G1-G2-J-M-N	Dogwood A-C-D-F-G1-G2-J-K2-K1-L-N	Elm A-C-D-F-H-H-K1-K2-M-N	Fir A-C-E-J-K2-K1-L-N	Laurel A-C-D-F-H-L-N	Magnolia A-C-D-F-G1-I-K1-L-N	Maple A-B-F-H-L-N	Pine A-B-F-G1-I-K2-M-N	Poplar A-B-F-G1-G2-J-K2-K1-L-N	Spruce A-B-F-H-K1-K2-M-N	Sycamore A-B-F-G1-G2-J-M-N
Evaluation Factor - Avoids impacts to aesthetics																						
					Please refer to photo simulations at http://www.energizeeastside.com/photo-simulations.																	
Evaluation Factor - Avoids residential areas																						
Residential Tax Accounts	Residential tax payers within 25 feet of a corridor (based on King County assessor data).	Count of Tax Accounts	1,217	1,935	1,608	1,425	1,522	1,422	1,713	1,730	1,506	1,607	1,935	1,621	1,750	1,829	1,896	1,439	1,218	1,545	1,231	1,217
Residential Use	Residential use within 25 feet of a corridor without existing transmission lines (based on King County assessor data).	Count of Parcels	5	285	6	5	52	5	126	173	238	6	127	53	126	174	127	285	117	238	164	117
	Residential use within 25 feet of a corridor (based on King County assessor data).	Count of Parcels	433	711	455	524	575	616	502	531	577	549	567	500	634	456	433	600	599	711	644	693

Data	Description	Unit	Data Range Min	Data Range Max	PRELIMINARY ROUTE RECOMMENDATION Ash A-C-D-F-G1-I-K2-M-N	Oak A-C-E-G2-I-K2-M-N	Redwood A-C-E-G2-G1-H-K1-K2-M-N	Willow A-C-E-J-M-N	ROUTE OPTIONS REMOVED from consideration Aspen A-C-E-G2-I-K1-L-N	Cedar A-C-E-G2-G1-H-L-N	Cherry A-B-F-G1-I-K1-L-N	Cottonwood A-C-D-F-G1-G2-J-M-N	Dogwood A-C-D-F-G1-G2-J-K2-K1-L-N	Elm A-C-D-F-H-K1-K2-M-N	Fir A-C-E-J-K2-K1-L-N	Laurel A-C-D-F-H-L-N	Magnolia A-C-D-F-G1-I-K1-L-N	Maple A-B-F-H-L-N	Pine A-B-F-G1-I-K2-M-N	Poplar A-B-F-G1-G2-J-K2-K1-L-N	Spruce A-B-F-H-K1-K2-M-N	Sycamore A-B-F-G1-G2-J-M-N
Evaluation Factor - Avoids sensitive community land uses																						
Schools	School use within 25 feet of a corridor (based on King County assessor data and Google Earth).	Count	1	8	4	3	5	4	2	2	6	5	4	4	3	1	3	4	7	7	7	8
Religious Service Institutions	Religious Service Institution use within 25 feet of a corridor (based on King County assessor data and Google Earth).	Count	2	11	9	8	6	4	5	3	8	5	4	5	3	2	6	4	11	6	7	7
Parks	Park use within 25 feet of a corridor (based on King County assessor data).	Count of Parcels	10	18	14	11	15	13	11	11	12	16	18	16	15	12	14	10	12	16	14	14
Recreation	Recreational use within 25 feet of a corridor (based on King County assessor data).	Count of Parcels	6	18	6	8	10	7	14	12	13	7	17	8	17	10	12	11	7	18	9	8
Trails	Count of trails within 25 feet of a corridor (based on King County Trails File).	Count	3	10	7	8	9	6	10	9	7	5	9	8	10	8	9	6	5	7	6	3
	Length of trails within 25 feet of a corridor (based on King County Trails File).	Miles	1.97	5.27	3.33	3.01	3.15	2.95	4.95	4.86	3.97	3.27	5.24	3.47	4.91	5.19	5.27	3.89	2.03	3.93	2.17	1.97
Historic Sites	Registered Historic Sites within half mile of corridor.	Count	2	6	5	6	6	6	3	3	2	5	2	5	3	2	2	2	5	2	5	5
Child Care	Child Care Facilities within 25 feet of a corridor (based on King County assessor data and Google Earth).	Count of Parcels	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1

Data	Description	Unit	Data Range		PRELIMINARY ROUTE RECOMMENDATION				ROUTE OPTIONS REMOVED from consideration													
			Min	Max	Ash A-C-D-F-G1-I-K2-M-N	Oak A-C-E-G2-I-K2-M-N	Redwood A-C-E-G2-G1-H-K1-K2-M-N	Willow A-C-E-J-M-N	Aspen A-C-E-G2-I-K1-L-N	Cedar A-C-E-G2-G1-H-L-N	Cherry A-B-F-G1-I-K1-L-N	Cottonwood A-C-D-F-G1-G2-J-M-N	Dogwood A-C-D-F-G1-G2-J-K2-K1-L-N	Elm A-C-D-F-H-K1-K2-M-N	Fir A-C-E-J-K2-K1-L-N	Laurel A-C-D-F-H-L-N	Magnolia A-C-D-F-G1-I-K1-L-N	Maple A-B-F-H-L-N	Pine A-B-F-G1-I-K2-M-N	Poplar A-B-F-G1-G2-J-K2-K1-L-N	Spruce A-B-F-H-K1-K2-M-N	Sycamore A-B-F-G1-G2-J-M-N
Evaluation Factor - Avoids sensitive environmental areas																						
Wildlife	Number of State Documented wildlife species present per state Priority Habitat and Species Data. Includes known salmonid species present.	Species Count	20	30	25	21	26	21	20	25	21	25	26	30	22	29	24	26	22	23	27	22
Wetlands	Wetlands identified within 50 feet on both sides of corridor centerline (either from GIS data or field reconnaissance). This information is based on visual observations and does not include delineations.	Count	24	60	24	30	39	25	44	47	47	25	51	33	51	41	38	50	33	60	42	34
Stream Crossings	Streams identified within 50 feet both sides of corridor centerline (based on GIS layers and field reconnaissance).	Count	18	49	19	32	36	22	43	45	29	19	46	23	49	32	30	31	18	45	22	18
High Slope Instability	High Instability within 25 feet of the corridor (based on WA DNR Slope Stability Rating Area).	Percent of Corridor	3.53	6.86	4.00	3.95	4.99	4.94	3.53	5.18	3.88	3.79	4.50	5.69	5.63	6.12	3.64	6.86	4.29	4.78	6.19	4.05
Medium Slope Instability	Medium Instability within 25 feet of the corridor (based on WA DNR Slope Stability Rating Area).	Percent of Corridor	4.38	6.99	4.62	5.09	5.62	6.67	4.82	6.00	4.38	4.84	5.41	5.44	6.99	5.82	4.38	6.06	4.65	5.51	5.57	4.90
Low Slope Instability	Low Instability within 25 feet of the corridor (based on WA DNR Slope Stability Rating Area).	Percent of Corridor	0.97	2.89	1.27	1.77	1.85	2.89	1.46	1.92	0.97	1.62	1.65	1.74	2.62	1.80	0.99	1.92	1.29	1.71	1.82	1.68
Steep Slopes	Slopes greater than 40% within 25 feet of the corridor derived from King County LiDAR elevation.	Percent of Corridor	9.24	18.10	11.29	10.99	14.18	9.91	11.78	14.01	13.21	9.24	12.66	15.61	14.44	15.82	11.98	18.10	12.43	13.71	17.28	10.13
Moderately Steep Slopes	Slopes greater than 20% and less than 40% within 25 feet of the corridor derived from King County LiDAR elevation.	Percent of Corridor	15.82	21.25	15.82	17.57	19.02	21.25	18.90	20.51	17.59	17.59	17.71	17.76	20.49	19.11	17.00	20.26	16.26	18.26	18.45	18.26
Fault lines	Number of faults that are within 25 feet of the corridor derived from WADNR fault data set.	Count	5	11	5	5	6	7	5	6	5	11	11	6	7	6	5	6	5	11	6	11

Data	Description	Unit	Data Range		PRELIMINARY ROUTE RECOMMENDATION				ROUTE OPTIONS REMOVED from consideration												
			Min	Max	Ash A-C-D-F-G1-I-K2-M-N	Oak A-C-E-G2-I-K2-M-N	Redwood A-C-E-G2-G1-H-K1-K2-M-N	Willow A-C-E-J-M-N	Aspen A-C-E-G2-I-K1-L-N	Cedar A-C-E-G2-G1-H-L-N	Cherry A-B-F-G1-I-K1-L-N	Cottonwood A-C-D-F-G1-G2-J-M-N	Dogwood A-C-D-F-G1-G2-J-K2-K1-L-N	Elm A-C-D-F-H-K1-K2-M-N	Fir A-C-E-J-K2-K1-L-N	Laurel A-C-D-F-H-L-N	Magnolia A-C-D-F-G1-I-K1-L-N	Maple A-B-F-H-L-N	Pine A-B-F-G1-I-K2-M-N	Poplar A-B-F-G1-G2-J-K2-K1-L-N	Spruce A-B-F-H-K1-K2-M-N	Sycamore A-B-F-G1-G2-J-M-N
Evaluation Factor - Least cost to the rate payer																						
Cost	Total cost.	USD (Millions)	$154	$289	$267	$176	$169	$154	$186	$169	$289	$259	$250	$249	$181	$245	$273	$261	$285	$252	$266	$277
	Estimated monthly increase to average residential customer.	USD	$0.90	$1.69	$1.56	$1.03	$0.99	$0.90	$1.09	$0.99	$1.69	$1.52	$1.46	$1.46	$1.06	$1.43	$1.60	$1.53	$1.67	$1.47	$1.56	$1.62

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The following table presents data for the "maximizes longevity" and "maximizes opportunity areas" evaluation factors. Please note that for these data, white indicates that there is greater longevity or more opportunity areas, whereas teal indicates that there is less longevity or fewer opportunity areas.

Data	Description	Unit	Data Range Max (Greater longevity / More opportunities)	Data Range Min (Less longevity / Fewer opportunities)	PRELIM. ROUTE REC. Ash A-C-D-F-G1-I-K2-M-N	Oak A-C-E-G2-I-K2-M-N	Redwood A-C-E-G2-G1-H-K1-K2-M-N	Willow A-C-E-J-M-N	Aspen A-C-E-G2-K1-L-N	Cedar A-C-E-G2-G1-H-L-N	Cherry A-B-F-G1-I-K1-L-N	Cottonwood A-C-D-F-G1-G2-J-M-N	Dogwood A-C-D-F-G1-G2-J-K2-K1-L-N	Elm A-C-D-F-H-K1-K2-M-N	Fir A-C-E-J-K2-K1-L-N	Laurel A-C-D-F-H-L-N	Magnolia A-C-D-F-G1-I-K1-L-N	Maple A-B-F-H-L-N	Pine A-B-F-G1-I-K2-M-N	Poplar A-B-F-G1-G2-J-K2-K1-L-N	Spruce A-B-F-H-K1-K2-M-N	Sycamore A-B-F-G1-G2-J-M-N
Evaluation Factor - Maximizes longevity																						
Longevity	Estimated year when the next 230 kV line for a second Eastside transformer is needed.	Year	2038	2034	2034	2034	2034	2038	2034	2034	2034	2034	2034	2034	2034	2034	2034	2034	2034	2034	2034	2034
Future Flexibility	Percent of route on existing corridor.	Percent	100%	10%	61%	83%	79%	100%	47%	48%	10%	71%	36%	61%	56%	31%	29%	10%	39%	19%	40%	50%
Evaluation Factor - Maximizes opportunity areas																						
Existing Infrastructure	Miles of existing overhead transmission infrastructure.	Miles	16.59	8.95	14.65	16.59	16.45	16.15	13.44	12.16	11.27	15.59	14.20	13.47	14.76	9.18	11.50	8.95	14.42	13.97	13.24	15.36
	Percent of route on existing corridor.	Percent	100%	10%	61%	83%	79%	100%	47%	48%	10%	71%	36%	61%	56%	31%	29%	10%	39%	19%	40%	50%
Industrial Land Use	Industrial use within 25 feet of a corridor (based on King County assessor data).	Count of Parcels	37	6	25	15	16	6	16	17	19	36	37	26	7	27	26	20	18	30	19	29
Type of right-of-way	Miles of railroad right-of-way with adjacent existing overhead transmission infrastructure.	Miles	2.50	0.00	0.00	0.00	0.00	0.00	2.50	2.50	2.50	0.00	2.50	0.00	2.50	2.50	2.50	2.50	0.00	2.50	0.00	0.00
	Corridor length on Eastside Rail Corridor or Railroad right-of-way.	Miles	8.92	0.02	1.33	0.02	1.12	0.02	5.02	6.12	7.82	1.33	6.33	2.43	5.02	7.43	6.33	8.92	2.82	7.82	3.92	2.82
	Corridor length on public road right-of-way.	Miles	8.04	0.98	5.81	3.27	2.98	0.98	2.86	1.45	7.57	4.52	5.87	4.76	2.33	3.23	5.40	5.40	7.98	8.04	6.93	6.69
	Cross-country transmission corridor length.	Miles	16.15	3.63	10.81	13.79	13.79	16.15	10.26	10.26	3.63	13.17	9.64	10.81	12.62	7.28	7.28	3.63	7.16	5.99	7.16	9.52
Road access for construction	Access from roads using typical bucket truck equipment based on King County parcels and ArcGIS Basemap imagery.	Miles	12.00	1.68	6.38	4.04	3.43	1.68	6.97	5.38	11.60	5.02	9.71	5.53	6.37	7.48	9.31	9.77	8.67	12.00	7.82	7.31

Note: For the last two evaluation factors, color coding reverts to its original scale, where white indicates a low value (or fewer potential impacts to a factor) and teal indicates a high value (or more potential impacts to a factor).

Data	Description	Unit	Data Range Min	Data Range Max	PRELIMINARY ROUTE RECOMMENDATION Ash A-C-D-F-G1-I-K2-M-N	Oak A-C-E-G2-I-K2-M-N	Redwood A-C-E-G2-G1-H-K1-K2-M-N	Willow A-C-E-J-M-N	ROUTE OPTIONS REMOVED from consideration Aspen A-C-E-G2-I-K1-L-N	Cedar A-C-E-G2-G1-H-L-N	Cherry A-B-F-G1-I-K1-L-N	Cottonwood A-C-D-F-G1-G2-J-M-N	Dogwood A-C-D-F-G1-G2-J-K2-K1-L-N	Elm A-C-D-F-H-K1-K2-M-N	Fir A-C-E-J-K2-K1-L-N	Laurel A-C-D-F-H-L-N	Magnolia A-C-D-F-G1-I-K1-L-N	Maple A-B-F-H-L-N	Pine A-B-F-G1-I-K2-M-N	Poplar A-B-F-G1-G2-J-K2-K1-L-N	Spruce A-B-F-H-K1-K2-M-N	Sycamore A-B-F-G1-G2-J-M-N
Evaluation Factor - Protects health and safety																						
Fuel Pipeline	Liquid fuel pipelines present with existing high voltage transmission lines.	Miles	0.60	16.15	9.11	12.56	12.56	16.15	7.23	7.23	0.60	11.94	6.61	9.11	9.59	4.25	4.25	0.60	5.93	2.96	5.93	8.29
Polychlorinated Biphenyl (PCB) Levels	None of the equipment proposed along any segment or as part of substation improvements will contain PCBs.	Additional PCBs	0	>0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EMF	EMF levels are design and operationally dependent; however, all levels will be below published World Health Organization (W.H.O.) and Institute of Electrical and Electronics Engineers (IEEE) recommended exposure levels.	Below Recomm-ended W.H.O and IEEE Levels	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Evaluation Factor - Protects mature vegetation																						
Tree Removal	Total number of trees greater than 4-inch (dbh) that would require removal or trimming. The following methods were used to develop the tree estimates: LiDAR, Google Earth, and/or field reconnaissance.	Tree Total >4-inch (dbh)	7,756	12,374	8,084	7,756	8,985	7,879	9,049	9,566	9,853	8,699	11,898	9,125	11,078	9,706	9,377	10,182	8,560	12,374	9,601	9,175

Additional information

The following table includes additional information provided by PSE on constructability, permitability, maintainability and length of the 18 route options.

Data	Description	Unit	Data Range Min	Data Range Max	PRELIMINARY ROUTE RECOMMENDATION Ash A-C-D-F-G1-I-K2-M-N	Oak A-C-E-G2-I-K2-M-N	Redwood A-C-E-G2-G1-H-K1-K2-M-N	Willow A-C-E-J-M-N	ROUTE OPTIONS REMOVED from consideration Aspen A-C-E-G2-I-K1-L-N	Cedar A-C-E-G2-G1-H-L-N	Cherry A-B-F-G1-I-K1-L-N	Cottonwood A-C-D-F-G1-G2-J-M-N	Dogwood A-C-D-F-G1-G2-J-K2-K1-L-N	Elm A-C-D-F-H-K1-K2-M-N	Fir A-C-E-J-K2-K1-L-N	Laurel A-C-D-F-H-L-N	Magnolia A-C-D-F-G1-I-K1-L-N	Maple A-B-F-H-L-N	Pine A-B-F-G1-I-K2-M-N	Poplar A-B-F-G1-G2-J-K2-K1-L-N	Spruce A-B-F-H-K1-K2-M-N	Sycamore A-B-F-G1-G2-J-M-N
Additional information - Constructability, permitability, maintainability, future flexibility, length																						
Constructability	Ease of construction.	Less Difficult ↓ Neutral ↔ More Difficult ↑	Less Difficult ↓	More Difficult ↑	↑	↔	↔	↑	↓	↓	↔	↑	↔	↔	↔	↓	↓	↓	↑	↔	↔	↑
Permitability	Ease of permitting.	Less Difficult ↓ Neutral ↔ More Difficult ↑	Less Difficult ↓	More Difficult ↑	↔	↔	↔	↔	↑	↑	↑	↔	↑	↔	↑	↑	↑	↑	↔	↑	↔	↔
Maintainability	Ease of maintenance.	Less Difficult ↓ Neutral ↔ More Difficult ↑	Less Difficult ↓	More Difficult ↑	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Length	Length of corridor.	Miles	16.15	22.14	17.70	16.59	17.50	16.15	17.88	18.06	19.46	18.62	21.69	17.61	19.22	17.78	19.01	18.23	18.15	22.14	18.06	19.07

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Supplemental data

The following table includes "near" data (within 600 feet of proposed route options). It is provided as supplemental to the "adjacent" data (within 25 feet of proposed route options) above.

Data	Description	Unit	Data Range Min	Data Range Max	PRELIMINARY ROUTE RECOMMENDATION Ash A-C-D-F-G1-I-K2-M-N	Oak A-C-E-G2-I-K2-M-N	Redwood A-C-E-G2-G1-H-K1-K2-M-N	Willow A-C-E-J-M-N	ROUTE OPTIONS REMOVED from consideration Aspen A-C-E-G2-I-K1-L-N	Cedar A-C-E-G2-G1-H-L-N	Cherry A-B-F-G1-I-K1-L-N	Cottonwood A-C-D-F-G1-G2-J-M-N	Dogwood A-C-D-F-G1-G2-J-K2-K1-L-N	Elm A-C-D-F-H-K1-K2-M-N	Fir A-C-E-J-K2-K1-L-N	Laurel A-C-D-F-H-L-N	Magnolia A-C-D-F-G1-I-K1-L-N	Maple A-B-F-H-L-N	Pine A-B-F-G1-I-K2-M-N	Poplar A-B-F-G1-G2-J-K2-K1-L-N	Spruce A-B-F-H-K1-K2-M-N	Sycamore A-B-F-G1-G2-J-M-N
Near (within 600 feet) data and other information																						
Schools	School use within 600 feet of a corridor (based on King County assessor data and Google Earth).	Count	3	13	9	8	9	7	5	4	11	10	9	8	6	3	6	6	12	12	11	13
	Number of students attending schools within 600 feet of a corridor (based on King County assessor data and Google Earth). Some attendance data not readily available.	Count	671	17,925	16,292	13,558	15,191	13,032	2,304	671	2,769	15,766	7,778	17,925	5,044	3,405	5,038	1,136	14,023	5,509	15,656	13,497
Religious Service Institutions	Religious Service Institution use within 600 feet of a corridor (based on King County assessor data and Google Earth).	Count	5	16	16	12	13	7	8	7	13	13	11	13	5	7	12	7	16	11	13	13
Trails	Count of trails within 600 feet of a corridor (based on King County Trails File).	Count	8	15	13	11	15	9	13	15	12	11	15	15	13	15	15	12	10	12	12	8
	Length of trails within 600 feet of a corridor (based on King County Trails File).	Miles	9.18	20.72	12.66	10.76	13.04	9.55	16.88	17.42	16.50	11.45	20.72	14.78	18.82	19.16	18.78	16.89	10.39	18.45	12.50	9.18
Residential Use	Residential Use within 600 feet of a corridor (based on King County assessor data).	Count of Parcels	2,723	4,114	3,272	3,538	3,817	3,970	3,002	3,077	3,072	3,778	3,572	3,463	3,764	2,723	2,736	3,059	3,608	3,908	3,799	4,114
	Residential Use within 600 feet of a corridor that have no existing transmission lines (based on King County assessor data).	Count of Parcels	7	794	42	8	190	7	216	398	612	43	251	224	215	432	250	794	404	613	586	405
Industrial/Medical /Retail/Business Use	Industrial, Medical, Retail/Business use within 600 feet of a corridor (based on King County assessor data).	Count of Parcels	123	335	335	202	172	136	189	159	223	325	312	279	123	266	322	210	279	256	223	269
Industrial Use	Industrial present use within 600 feet of a corridor (based on King County assessor data).	Count of Parcels	39	115	80	63	70	46	71	78	39	107	115	75	54	83	88	47	44	79	39	71