

TECHNICAL MEMORANDUM



Date: September 1, 2016
To: Victoria Wilson, A.C.
From: Amber Raynsford, PLA, GISP
TWC Project: 111103
Number:
Project Name: Energize Eastside Tree Impact Assessment

Subject: Energize Eastside Vegetation Impact Analysis

Results of the GIS-based vegetation impact analysis for the existing easement and proposed route alternatives, Willow 1, Willow 2, Oak 1, and Oak 2, Bypass 1, and Bypass 2 routes are provided in the tables below. Results are broken down by EIS Segment, according to maps provided by PSE (July 2016). Trees on the Richards Creek Substation parcel are omitted from the results presented.

Vegetation impacts were calculated according to the following criteria:

- Remove all trees within the proposed wire zone (WZ) and managed right-of-way (MROW) with a maximum potential height¹ (MPH) that exceeds 15 feet.
- Remove all trees within the legal ROW and outside of the MROW with a maximum potential height exceeding 70 feet.
- Remove all dead and dying trees².

For each EIS Segment, tree removal is further broken out by route, impact area³, significance⁴, occurrence in a critical area⁵ or critical area buffer⁶, and occurrence on park property⁷.

Detailed tree attribute information, including MPH, significance, and condition, was not available for 265 trees in the study set. These records are presented in the total by

¹ Maximum potential height assigned by species. When feasible during field assessment, arborists identified cultivars and varieties through observation and nursery tag information, if found

² Trees rated as dead or dying based on visual field assessment by arborist field crews.

³ For the purpose of the vegetation impact analysis, impact areas comprise the proposed wire zone, managed ROW, and legal ROW that occurs outside of the managed ROW.

⁴ Significance is determined according to local jurisdiction definition. Significance may consider tree species, DBH, date of planting, or other factors.

⁵ Wetlands and streams along the existing easement were located by The Watershed Company field crews.

⁶ Critical areas were rated to determine buffer widths along existing easement only. Other critical areas were not rated; therefore, actual buffer widths are not known.

⁷ Park boundaries from geospatial data produced by King County GIS (County, King, 20060314, Parks in King County: King County, King County, WA. [downloaded August 22, 2016]) and City of Bellevue Geospatial Technology Services (City of Bellevue, 20160405, Park Property: Bellevue and Redmond, Bellevue, WA. [downloaded August 26, 2016]).

impact areas for each segment, but could not be further categorized by criteria or attribute.

Tree Impact Assessment, EIS Segment 1 - Redmond

Table 1A. Results for EIS Segment 1 by Impact Area - Existing Easement

| Impact Area | Total | To be Retained | Estimated Trees to be Removed | Removal Criteria | | |
|---------------------------------|------------|----------------|-------------------------------|------------------|------------|---|
| | | | | MPH > 15' | MPH > 70' | Additional Removal (Dead and Dying Trees) |
| Legal ROW (outside MROW) | 229 | 31 | 198 | - | 198 | 0 |
| Managed ROW | 85 | 1 | 84 | 84 | - | 0 |
| Wire Zone | 349 | 2 | 347 | 347 | - | 0 |
| Not impacted | 116 | 116 | - | - | - | - |
| | 779 | 150 | 629 | 431 | 198 | 0 |

Table 1B. Summary of Tree Removal by Route, EIS Segment 1

| Route | Estimated Total Trees to be Removed | Breakdown of Tree Removal Impacts ⁸ | | | | |
|--------------------------|-------------------------------------|--|-------------------------|------------------|----------------|-----------------------|
| | | Total Significant | Total in Critical Areas | Total in Buffers | Total in Parks | Total Diameter Inches |
| Existing Easement | 629 | 509 | 84 | 167 | 0 | 7,081 in |

Tree Impact Assessment, EIS Segment 2 - Bellevue North

Table 2A. Results for EIS Segment 2 by Impact Area - Existing Easement

| Impact Area | Total | To be Retained | Estimated Trees to be Removed | Removal Criteria |
|-------------|-------|----------------|-------------------------------|------------------|
|-------------|-------|----------------|-------------------------------|------------------|

⁸ Individual trees may be fit more than one condition shown. For example, a tree identified for removal may be both significant and located within a park.

| | | | | MPH > 15' | MPH > 70' | Additional Removal of Dead and Dying Trees |
|---------------------------------|------------|------------|------------|------------|------------|--|
| Legal ROW (outside MROW) | 297 | 174 | 123 | - | 121 | 2 |
| Managed ROW | 100 | 19 | 81 | 81 | - | 0 |
| Wire Zone | 345 | 40 | 305 | 305 | - | 0 |
| Not impacted | 87 | 87 | - | - | - | - |
| | 829 | 320 | 509 | 386 | 121 | 2 |

Table 2B. Summary of Tree Removal by Route, EIS Segment 2

| Route | Estimated Total Trees to be Removed | Breakdown of Tree Removal Impacts ⁹ | | | | |
|--------------------------|-------------------------------------|--|-------------------------|------------------|----------------|-----------------------|
| | | Total Significant | Total in Critical Areas | Total in Buffers | Total in Parks | Total Diameter Inches |
| Existing Easement | 509 | 180 | 1 | 2 | 3 | 3,434 in |

Tree Impact Assessment, EIS Segment 3 - Bellevue Central

Table 3A. Results for EIS Segment 1 by Impact Area - Existing Easement

| Impact Area | Total | To be Retained | Estimated Trees to be Removed | Removal Criteria | | |
|---------------------------------|--------------|----------------|-------------------------------|------------------|------------|--|
| | | | | MPH > 15' | MPH > 70' | Additional Removal of Dead and Dying Trees |
| Legal ROW (outside MROW) | 213 | 98 | 115 | - | 113 | 2 |
| Managed ROW | 80 | 2 | 78 | 78 | - | 0 |
| Wire Zone | 419 | 11 | 408 | 408 | - | 0 |
| Not impacted | 3,066 | 3,066 | - | - | - | - |
| | 3,778 | 3,177 | 601 | 486 | 113 | 2 |

⁹ Individual trees may be fit more than one condition shown. For example, a tree identified for removal may be both significant and located within a park.

Table 3B. Results for EIS Segment 3 by Impact Area - Bypass 1 Route¹⁰

| Impact Area | Total | To be Retained | Estimated Trees to be Removed | Removal Criteria | | |
|---------------------------------|--------------|----------------|-------------------------------|------------------|--------------|--|
| | | | | MPH > 15' | MPH > 70' | Additional Removal of Dead and Dying Trees |
| Legal ROW (outside MROW) | 1,320 | 274 | 1,046 | - | 1,038 | 8 |
| Managed ROW | 182 | 2 | 180 | 180 | - | 0 |
| Wire Zone | 575 | 12 | 563 | 563 | - | 0 |
| Not impacted | 1,701 | 1,701 | - | - | - | - |
| | 3,778 | 1,989 | 1,789 | 743 | 1,038 | 8 |

Table 3C. Results for EIS Segment 3 by Impact Area - Bypass 2 Route¹¹

| Impact Area | Total | To be Retained | Estimated Trees to be Removed | Removal Criteria | | |
|---------------------------------|--------------|----------------|-------------------------------|------------------|------------|--|
| | | | | MPH > 15' | MPH > 70' | Additional Removal of Dead and Dying Trees |
| Legal ROW (outside MROW) | 1,040 | 229 | 811 | - | 806 | 5 |
| Managed ROW | 128 | 0 | 128 | 128 | - | 0 |
| Wire Zone | 304 | 1 | 303 | 303 | - | 0 |
| Not impacted | 2,306 | 2,306 | - | - | - | - |
| | 3,778 | 2,536 | 1,242 | 431 | 806 | 5 |

Table 3D. Summary of Tree Removal by Route, EIS Segment 3

| Route | Estimated Total Trees to be Removed | Breakdown of Tree Removal Impacts ¹² | | | | |
|-------|-------------------------------------|---|-------------------------|--------------------------------|----------------|-----------------------|
| | | Total Significant | Total in Critical Areas | Total in Buffers ¹³ | Total in Parks | Total Diameter Inches |
| | | | | | | |

¹⁰ Bypass 1 results include all trees within EIS Segment 3.

¹¹ Bypass 2 results include all trees within EIS Segment 3.

¹² Individual trees may be fit more than one condition shown. For example, a tree identified for removal may be both significant and located within a park.

¹³ Critical areas along the bypass routes were not rated; therefore, actual buffer widths are not known. Instead, approximately buffer widths were estimated based on minimum and maximum buffers defined by City of Bellevue Codes. Figures shown are approximate.

| | | | | | | |
|--------------------------|--------------|-------|-----|-----|-----|-----------|
| Existing Easement | 601 | 232 | 50 | 151 | 4 | 4,462 in |
| Bypass 1 | 1,789 | 1,231 | 244 | 928 | 204 | 20,505 in |
| Bypass 2 | 1,242 | 928 | 177 | 695 | 125 | 14,987 in |

Tree Impact Assessment, EIS Segment 4 - Bellevue South

Table 4A. Results for EIS Segment 4 by Impact Area - Willow 1

| Impact Area | Total | To be Retained | Estimated Trees to be Removed | Removal Criteria | | |
|---------------------------------|--------------|----------------|-------------------------------|------------------|------------|--|
| | | | | MPH > 15' | MPH > 70' | Additional Removal of Dead and Dying Trees |
| Legal ROW (outside MROW) | 468 | 242 | 226 | - | 221 | 5 |
| Managed ROW | 163 | 3 | 160 | 160 | - | 0 |
| Wire Zone | 659 | 18 | 641 | 640 | - | 1 |
| Not impacted | 2,075 | 2,075 | 0 | - | - | - |
| | 3,365 | 2,338 | 1,027 | 800 | 221 | 6 |

Table 4B. Results for EIS Segment 4 by Impact Area - Willow 2

| Impact Area | Total | To be Retained | Estimated Trees to be Removed | Removal Criteria | | |
|---------------------------------|--------------|----------------|-------------------------------|------------------|------------|--|
| | | | | MPH > 15' | MPH > 70' | Additional Removal of Dead and Dying Trees |
| Legal ROW (outside MROW) | 1,021 | 324 | 697 | - | 692 | 5 |
| Managed ROW | 220 | 3 | 217 | 217 | - | 0 |
| Wire Zone | 743 | 18 | 725 | 724 | - | 1 |
| Not impacted | 1,381 | 1,381 | - | - | - | - |
| | 3,365 | 1,726 | 1,639 | 941 | 692 | 6 |

Table 4C. Results for EIS Segment 4 by Impact Area - Oak 1

| Impact Area | Total | To be Retained | Estimated Trees to be Removed | Removal Criteria |
|-------------|-------|----------------|-------------------------------|------------------|
| | | | | |

| | | | | MPH > 15' | MPH > 70' | Additional Removal of Dead and Dying Trees |
|---------------------------------|--------------|--------------|--------------|------------|------------|--|
| Legal ROW (outside MROW) | 637 | 137 | 500 | - | 497 | 3 |
| Managed ROW | 103 | 2 | 101 | 101 | - | 0 |
| Wire Zone | 445 | 12 | 433 | 432 | - | 1 |
| Not impacted | 2,180 | 2,180 | - | - | - | - |
| | 3,365 | 3,131 | 1,034 | 533 | 497 | 4 |

Table 4D. Results for EIS Segment 4 by Impact Area - Oak 2

| Impact Area | Total | To be Retained | Estimated Trees to be Removed | Removal Criteria | | |
|---------------------------------|--------------|----------------|-------------------------------|------------------|--------------|--|
| | | | | MPH > 15' | MPH > 70' | Additional Removal of Dead and Dying Trees |
| Legal ROW (outside MROW) | 1,573 | 562 | 1,011 | - | 1,003 | 8 |
| Managed ROW | 158 | 9 | 149 | 149 | - | 0 |
| Wire Zone | 487 | 46 | 441 | 440 | - | 1 |
| Not impacted | 1,147 | 1,147 | - | - | - | - |
| | 3,365 | 1,764 | 1,601 | 589 | 1,003 | 9 |

Table 4E. Summary of Tree Removal by Route, EIS Segment 4

| Route | Estimated Total Trees to be Removed | Breakdown of Tree Removal Impacts ¹⁴ | | | | |
|-----------------|-------------------------------------|---|-------------------------|------------------|----------------|-----------------------|
| | | Total Significant | Total in Critical Areas | Total in Buffers | Total in Parks | Total Diameter Inches |
| Willow 1 | 1,027 | 446 | 4 | 75 | 52 | 8,445 in |
| Willow 2 | 1,639 | 856 | 4 | 78 | 70 | 15,022 in |
| Oak 1 | 1,034 | 632 | 2 | 73 | 58 | 10,649 in |
| Oak 2 | 1,601 | 943 | 3 | 79 | 73 | 16,061 in |

¹⁴ Individual trees may be fit more than one condition shown. For example, a tree identified for removal may be both significant and located within a park.

Tree Impact Assessment, EIS Segment 5 - Newcastle

Table 5A. Results for EIS Segment 5 by Impact Area - Existing Easement

| Impact Area | Total | To be Retained | Estimated Trees to be Removed | Removal Criteria | | |
|--------------------------|------------|----------------|-------------------------------|------------------|-----------|--|
| | | | | MPH > 15' | MPH > 70' | Additional Removal of Dead and Dying Trees |
| Legal ROW (outside MROW) | 76 | 34 | 42 | - | 42 | 0 |
| Managed ROW | 66 | 1 | 65 | 65 | - | 0 |
| Wire Zone | 198 | 2 | 196 | 196 | - | 0 |
| Not impacted | 30 | 30 | 0 | - | - | - |
| | 370 | 67 | 303 | 261 | 42 | 0 |

Table 5B. Summary of Tree Removal by Route, EIS Segment 5

| Route | Estimated Total Trees to be Removed | Breakdown of Tree Removal Impacts ¹⁵ | | | | |
|-------------------|-------------------------------------|---|-------------------------|------------------|----------------|-----------------------|
| | | Total Significant | Total in Critical Areas | Total in Buffers | Total in Parks | Total Diameter Inches |
| Existing Easement | 303 | 35 | 2 | 57 | 84 | 1,864 in |

Tree Impact Assessment, EIS Segment 6 - King County / Renton

Table 6A. Results for EIS Segment 6 by Impact Area - Existing Easement

| Impact Area | Total | To be Retained | Estimated Trees to be Removed | Removal Criteria | | |
|-------------|-------|----------------|-------------------------------|------------------|-----------|--|
| | | | | MPH > 15' | MPH > 70' | Additional Removal of Dead and Dying Trees |
| Legal ROW | 213 | 115 | 98 | - | 97 | 1 |

¹⁵ Individual trees may be fit more than one condition shown. For example, a tree identified for removal may be both significant and located within a park.

| | | | | | | |
|---------------------|------------|------------|------------|------------|-----------|----------|
| (outside MROW) | | | | | | |
| Managed ROW | 60 | 5 | 55 | 55 | - | 0 |
| Wire Zone | 241 | 43 | 198 | 198 | - | 0 |
| Not impacted | 107 | 107 | 0 | - | - | - |
| | 621 | 270 | 351 | 253 | 97 | 1 |

Table 6B. Summary of Tree Removal by Route, EIS Segment 6

| Route | Estimated Total Trees to be Removed | Breakdown of Tree Removal Impacts ¹⁶ | | | | |
|--------------------------|-------------------------------------|---|-------------------------|------------------|----------------|-----------------------|
| | | Total Significant | Total in Critical Areas | Total in Buffers | Total in Parks | Total Diameter Inches |
| Existing Easement | 351 | 249 | 3 | 38 | 102 | 2,999 in |

¹⁶ Individual trees may be fit more than one condition shown. For example, a tree identified for removal may be both significant and located within a park.