

4.6.7 Description and Selection of Potential 345-kV Underground Line Route for the Noticed-Alternative Southern Route – South Agawam Switching Station to Agawam Substation (Section 2)

As an variation to placing both of the 345-kV transmission lines in the existing transmission line ROW, three underground line-route variations were considered between South Agawam Switching Station and Agawam Substation (See Figure 4-9). For the Noticed-Alternative Southern Route option, approximately 2,400 linear feet of the existing ROW would need to be expanded by 65 feet and approximately 1.6 linear miles of the existing ROW would need to be expanded by 15 feet. If one of the 345-kV lines is placed underground, the ROW would look similar to what is proposed for the Preferred Northern Route, where approximately 2,000 linear feet of the existing ROW would need to be expanded by 35 feet. Portions of this route section cross property owned by NU and would not require expansion of the ROW. Five underground line-route variations were evaluated for South Agawam Switching Station to Agawam Substation. Two of these line-route variations were removed from further consideration because they scored worse than the other three line-route variations. The two line-routes variations that were removed were “hybrid” variations that combined portions of their line routes along or within existing roadway and partially within the existing transmission line corridor. For further information on how these three line-route variations were selected, see Section 6.6.2. In addition, transition stations occupying approximately two to four acres each would need to be located at South Agawam Switching Station and Agawam Substation to transition from overhead to underground and back to overhead transmission line.

Underground line-route variation UG-South 02A (approximately 4.5 miles long) is located primarily along or within existing roadway. The line route would extend south from South Agawam Switching Station, within the existing ROW to Moylan Drive, and then would follow Shoemaker Lane, northwest to Poplar Street. The line route continues northeast along Poplar Street to Springfield Street and follows Springfield Street to Agawam Substation.

Underground line-route variation UG-South 02B (approximately 5.0 miles long) is located primarily along or within existing roadway. The line route would extend south from South Agawam Switching Station, within the existing ROW to Moylan Drive and then would follow Shoemaker Lane, east to Suffield Street. The route then would continue north along Suffield Street to Springfield Street. The line route then would continue west along Springfield Street to Agawam Substation.

Underground line-route variation UG-South 02E (approximately 3.3 miles long) is located within existing overhead transmission line ROW and would extend from South Agawam Switching Station to Agawam Substation.

Table 4-9 below represents the scoring for the remaining three line-route variations discussed above (UG-South 02A, UG-South 02B and UG-South 02E)

Table 4-9: Project Evaluation Criteria Metrics – 345-kV Noticed-Alternative Southern Line Route Section 2

Evaluation Criteria Metrics	UG-South 02A	UG-South 02B	UG-South 2E
Total Length (Miles)	4.5	5.0	3.3
Angles $\leq 90^\circ$ (Number)	1	2	0
Bore/Drill crossings (Number)	3	8	6
Rating of constructibility (ROWS/road width)	492	503	0
Rating of constructibility (traffic)	547	616	0
Length NOT through Pavement/Street or Existing ROW	0	0	0
Number of potential private easements	18	26	0
Residences within 100 feet of edge of ROW or centerline	150	182	21
Businesses within 100 feet of edge of ROW or centerline	56	40	10
Public Facilities within 100 feet of edge of ROW or centerline	0	0	0
Length by land use (Commercial/Industrial)	10,389	10,940	3,076
Length by land use (Residential)	11,745	14,248	4,721
Length by land use (Undeveloped Land)	1,053	956	8,759
Length by land use (Park/School/Open Space)	388	86	720
Length through stream or wetland	0	0	885
Length through environmentally sensitive area	365	365	5,975
Length through floodplains	0	0	0
Length through or adjacent to Cultural Resources Historic District	0	0	0

Tables 4-10 and 4-11 present the unweighted and weighted ratio-scoring respectively for the three underground line-route variations set forth in Table 4-9.

Table 4-10: Unweighted Common Data Range Ratio-Scoring for 345-kV Noticed-Alternative Southern Line Route Section 2

Evaluation Criteria Metrics	UG-South 02A	UG-South 02B	UG-South 02E
Total Length (Miles)	0.85	0.94	0.62
Angles $\leq 90^\circ$ (Number)	0.50	1.00	0.00
Bore/Drill crossings (Number)	0.33	0.89	0.67
Rating of constructibility (ROWS/road width)	0.98	1.00	0.00
Rating of constructibility (traffic)	0.89	1.00	0.00
Length NOT through Pavement/Street or Existing ROW	n/a	n/a	n/a
Number of potential private easements	0.70	1.00	0.00
Residences within 100 feet of edge of ROW or centerline	0.82	1.00	0.12
Businesses within 100 feet of edge of ROW or centerline	1.00	0.71	0.18
Public Facilities within 100 feet of edge of ROW or centerline	0.00	0.00	0.00
Length by land use (Commercial/Industrial)	0.95	1.00	0.28
Length by land use (Residential)	0.79	0.96	0.32
Length by land use (Undeveloped Land)	0.12	0.11	1.00
Length by land use (Park/School/Open Space)	0.38	0.08	0.71
Length through stream or wetland	0.00	0.00	1.00
Length through environmentally sensitive area	0.06	0.06	1.00
Length through floodplains	n/a	n/a	n/a
Length through or adjacent to Cultural Resources Historic District	n/a	n/a	n/a
TOTAL	8.38	9.76	5.89

Table 4-11: Weighted Common Data Range Ratio-Scoring for 345-kV Noticed-Alternative Southern Line Route Section 2

Evaluation Criteria Metrics	Weight	UG-South 02A	UG-South 02B	UG-South 02E
Total Length (Miles)	5	4.24	4.72	3.11
Angles $\leq 90^\circ$ (Number)	1	0.50	1.00	0.00
Bore/Drill crossings (Number)	4	1.33	3.56	2.67
Rating of constructibility (ROWS/road width)	3	2.93	3.00	0.00
Rating of constructibility (traffic)	3	2.66	3.00	0.00
Length NOT through Pavement/Street or Existing ROW	4	2.81	4.00	0.00
Length within existing ROW (not Pavement/Street)	2	0.12	0.12	2.00
Number of potential private easements	4	n/a	n/a	n/a
Residences within 100 feet of edge of ROW or centerline	3	2.47	3.00	0.35
Businesses within 100 feet of edge of ROW or centerline	2	2.00	1.43	0.36
Public Facilities within 100 feet of edge of ROW or centerline	4	0.00	0.00	0.00
Length by land use (Commercial/Industrial)	2	1.90	2.00	0.56
Length by land use (Residential)	4	3.16	3.84	1.27
Length by land use (Undeveloped Land)	1	0.12	0.11	1.00
Length by land use (Park/School/Open Space)	4	1.52	0.34	2.82
Length through stream or wetland	3	0.00	0.00	3.00
Length through environmentally sensitive area	3	0.18	0.18	3.00
Length through floodplains	3	n/a	n/a	n/a
Length through or adjacent to Cultural Resources Historic District	3	n/a	n/a	n/a
TOTAL		25.85	30.17	18.14

Based on the results for the criteria analysis presented in Tables 4-10 and 4-11, and explained in further detail in Section 6.6.2, three underground variations were evaluated for placing one of the 345-kV lines proposed for the Noticed-Alternative Southern Route underground. As noted in the results of the scoring, the underground variation located within the existing transmission line ROW (UG-South 02E) scored

better (lowest score) than the two off-ROW options located within or adjacent to existing roadway. Underground line-route variation UG-South 02E is further discussed as a variation to the Noticed-Alternative Southern Route overhead transmission line route in Section 5.6.

Figure 4-9: Potential 345-kV Underground Line Route for the Noticed-Alternative Southern Route – South Agawam Switching Station to Agawam Substation

