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I. TECHNICAL DESCRIPTION OF PROPOSED FACILITIES

As described in Section H, after considering both underground and overhead line technologies along various potential routes, CL&P identified as the proposed configuration for the Connecticut portion of the Greater Springfield Reliability Project the use of an overhead line along the approximately 12-mile long existing transmission corridor between North Bloomfield Substation and the Connecticut/Massachusetts state border.

This section provides technical descriptions for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route (Section I.1), the Manchester to Meekville Junction Circuit Separation Project (Section I.2), and Connecticut portion of the Massachusetts Southern Route Alternative for the Agawam to Ludlow 345-kV line (Section I.3.) Technical information for each project includes:

- Estimated construction and life-cycle costs;
- Conductor sizes and specifications;
- Overhead line structure design, appearance and height;
- Route length by municipality;
- Initial design voltages and capacities;
- ROWs and access ways;
- Proposed structure location envelopes[1];
- Substation data; and
- Service area.

[1] "Structure location envelope" refers to the 100-foot area on either side of the anticipated location of a new transmission line structure.

I.1 BASE DESIGN OF PROPOSED CONNECTICUT FACILITIES FOR THE GSRP

I.1.1 345-kV Conductor Sizes and Specification

The proposed overhead 345-kV line will consist of three phases, each of which would consist of a bundle of two 1,590,000 circular mil (1,590-kcmil) aluminum conductors with steel reinforcement (ACSR). The new line would be protected by an overhead lightning shield wire, 19 No. 10 Alumoweld, and a second shield wire would contain optical glass fibers for communications purposes (also known as Optical Ground Wire or "OPGW").

I.1.2 Design and Appearance

The design and appearance of the proposed overhead line that would be aligned along the approximately 12 miles of CL&P ROW between the North Bloomfield Substation and the Connecticut/Massachusetts state border, is described below. The description of the proposed facilities is presented in terms of the two ROW segments which comprise the approximately 12-mile route.

I.1.2.1 Segment 1 (North Bloomfield - Granby Junction) –Cross-Section XS-1 in Volume 10

I.1.2.1.1 Existing ROW and Facilities

- Total ROW length is 4.7 miles.
- ROW width is generally 385 feet.
- Existing transmission line facilities occupying the ROW consist of wood-pole H-frame structures typically 60 feet in height that support one 115-kV circuit. Existing lattice-steel towers typically 70 feet in height support two 115-kV circuits. Existing wood distribution line poles are approximately 40 feet in height.

I.1.2.1.2 Proposed GSRP Facilities

- None of the existing transmission or distribution line structures are to be removed; however, the existing 115-kV circuit sections would be removed from service once the 345-kV line is completed. CL&P proposes to leave in-place all existing facilities not in conflict with the proposed transmission upgrades throughout the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. Construction sequencing for the project will require the new 345-kV line to be constructed adjacent to the existing, active 115-kV lines as a long-term outage of the existing lines along the corridor will not be practical. Only after the new 345-kV transmission line is energized and 115-kV line changes are made at and north of Granby Junction could the existing facilities be removed, however this would result in increased construction impacts as access roads to the existing structures would be required for demolition. It would also increase the construction/demolition duration along the corridor. Maintaining the retired facilities in-place allows for flexibility in the future as the retired lines could be re-energized to improve power-transfer capabilities along the corridor with minimal cost and construction activity.
- Existing ROW width is sufficient for a new 345-kV overhead line.
- Structures proposed to support the new 345-kV circuit conductors are steel-or wood-pole H-frame structures averaging 90 feet in height with a horizontal configuration of the line conductors.
- New line-structure placement would be typically near the existing structure locations.
- Of the 385 feet of existing ROW, approximately 195 feet are currently being maintained for the existing transmission facilities. With the addition of the new 345-kV line, approximately 290 feet would be maintained; the remainder of the ROW (approximately 95 feet) would not be affected.

I.1.2.2 Segment 2 (Granby Junction - CT/MA State Border) – Cross-Section XS-2 in Volume 10

I.1.2.2.1 Existing ROW and Facilities

- Total ROW length is 7.2 miles.

- ROW width is generally 305 feet.
- Existing lattice-steel towers typically 70 feet in height support two existing 115-kV circuits.

I.1.2.2.2 Proposed GSRP Facilities

- None of the existing line structures would be removed. The existing double-circuit 115-kV line would continue in use, with the two circuits "bundled" together to operate as a single-circuit from South Agawam Switching Station to Southwick Substation via Granby Junction. This would be accomplished by bundling the circuit conductors together at approximately 1-mile intervals.
- Additional ROW width would be required for the new 345-kV line construction, approximately an additional 100 feet in width for a distance of approximately 1,000 linear feet between Phelps Road and Mountain Road, and for approximately 400 linear feet east of Ratley Road. At both locations, adjacent land is partially owned by CL&P (See Section H).
- Structures proposed in the base design to support the new 345-kV circuit conductors are: steel- or laminated-wood-pole H-frame structures averaging 90 feet in height with a horizontal configuration of the line conductors.
- Other structures considered were steel monopoles averaging 130 feet in height with a vertical configuration of the line conductors; and steel monopoles averaging 110 feet in height with a delta configuration of the line conductors.
- New line-structure placement is typically near to existing structure locations.
- A section of ROW approximately between the closest approach of Country Club Lane in East Granby and the crossing of Phelps Road in Suffield, has been identified as a focus area for application of the Council's EMF Best Management Practices (See Section O). In this area, a new 345-kV line employing steel-monopole structures with a delta configuration of the line conductors is proposed. The average height of these poles will be 110 feet. This section is approximately 3.2 miles long.

- Of the 305 feet of existing ROW, approximately 110 feet are currently being maintained for the existing transmission line. The new 345-kV line would increase the maintained ROW width to approximately 205 feet; approximately 100 feet of the ROW would remain unaffected by the GSRP.

I.2 BASE DESIGN OF PROPOSED MMP

I.2.1 Conductor Sizes and Specifications

One existing 115-kV transmission circuit between Manchester Substation and Meekville Junction would be replaced on a new line of steel monopoles using bundled 1,590-kcmil ACSR conductors. The existing circuit conductors (bundled 954,000 circular mil ACSR conductors) would remain on the lattice-steel towers.

I.2.2 Design and Appearance

The existing double-circuit lattice-steel towers along the east side of the ROW currently support an existing 115-kV circuit and a 345-kV circuit and would remain. The existing 115-kV transmission circuit on these towers would be replaced on a separate line of steel-monopole structures. The details of this work are described below.

I.2.2.1 Existing ROW and Facilities

- Total ROW length of the circuit-separation route is approximately 2.2 miles.
- Existing ROW width is generally 350 feet.
- A line of existing lattice-steel towers averaging 155 feet in height supports one 115-kV circuit and one 345-kV circuit, both of which have 345-kV class conductor bundles, insulation and conductor spacings for a majority of the route. To the west of this line, a second line of existing

lattice-steel towers with a typical height of 130 feet supports two 115-kV circuits. Existing wood distribution poles on portions of the ROW are approximately 40 feet in height.

I.2.2.2 Proposed MMP Facilities

- The ROW width is typically sufficient to install a new 115-kV overhead line in between the two existing double-circuit transmission lines. For approximately 120 feet north of the Tolland Turnpike the ROW would need to be expanded by approximately 20 feet.
- Structures proposed to support the circuit separation are steel monopoles with a typical height of 155 feet with a vertical configuration of the line conductors. The proposed line location is between the existing lines to minimize additional clearing and other environmental impacts. The proposed new structure heights would be about the same as the existing 345-kV lattice-steel towers, ranging between 120 and 190 feet in height, and the new 115-kV line will utilize 345-kV class conductor bundles, insulation and conductor spacings.
- None of the existing transmission lines would be removed; however, approximately four of the existing 115-kV double-circuit lattice-steel structures in different locations throughout the corridor would need to be relocated to accommodate the new transmission line. Most of the existing wood distribution poles would need to be relocated to accommodate the new 115-kV overhead line.
- New line structure placements are proposed to be in the vicinity of existing structure locations.
- Additional vegetation clearing would be minimal since the reconstructed line would be placed in between two existing transmission lines.

I.3 BASE DESIGN OF THE CONNECTICUT PORTIONS OF THE MASSACHUSETTS SOUTHERN ROUTE ALTERNATIVE

I.3.1 Conductor Sizes and Specifications

The proposed Agawam to Ludlow 345-kV line along the Massachusetts Southern Route Alternative would also utilize 1,590-kcmil ACSR conductors, two per phase. Also, the new line would be protected by an OPGW cable and a second 19 No. 10 Alumoweld shield wire as required.

I.3.2 Design and Appearance

The design and appearance of the proposed overhead line that would be aligned along the approximately 5.4 miles of CL&P ROW between the Connecticut/Massachusetts state border southeast of the South Agawam Switching Station and the Connecticut/Massachusetts state border near Franconia Junction, is described below. The description of the proposed facilities is presented in terms of the two ROW segments that comprise the 5.4-mile route. The segments are separated by a short segment that crosses into the Massachusetts near the Connecticut River Crossing.

I.3.2.1 Segment 1 (CT/MA State Border – Connecticut River) – Cross-Section XS-S05 in Volume 10

I.3.2.1.1 Existing ROW and Facilities

- Total ROW length of this section is approximately 1.1 miles.
- Existing ROW width is generally 300 feet.
- Existing transmission line facilities occupying the ROW consist of wood-pole H-frame structures typically 60 feet in height that support one 115-kV circuit.
- The Connecticut River crossing structure is much taller, approximately 215 feet in height.

I.3.2.1.2 Proposed GSRP Facilities

- The existing line and its wood-pole H-frame structures would remain.
- Existing ROW width is sufficient for a new 345-kV overhead line.
- New line-structure placement would typically be near the existing structure locations.
- Of the 300 feet of existing ROW, approximately 110 feet are currently being maintained for the existing transmission facilities. With the addition of the new 345-kV line, approximately 205 feet would be maintained. The remainder of the ROW (approximately 95 feet) would not be affected.

I.3.2.2 Segment 2 (Connecticut River - CT/MA State Border) – Cross-Section XS-S07 in Volume 10

I.3.2.2.1 Existing ROW and Facilities

- Total ROW length of this section is approximately 4.3 miles.
- Existing ROW width generally ranges from 280 feet to 300 feet.
- Existing transmission line facilities occupying the ROW consist of wood-pole H-frame structures typically 60 feet in height that support one 115-kV circuit.

I.3.2.2.2 Proposed GSRP Facilities

- The existing line and its wood-pole H-frame structures would remain.
- Existing ROW width is sufficient for a new 345-kV overhead line.
- New line-structure placement would typically be near the existing structure locations.
- Of the 280 to 300 feet of existing ROW, approximately 110 feet are currently being maintained for the existing transmission facilities. With the addition of the new 345-kV line, approximately 205 feet would be maintained. The remainder of the ROW (approximately 75 to 95 feet) would not be affected.

I.4 LINE CONFIGURATION AND ENGINEERING REQUIREMENTS

I.4.1 Segments by Municipality

The aerial photograph mapsheets in Volumes 9 and 11 depict the locations of both the proposed GSRP 345-kV transmission line route and the ROW where the MMP circuits will be separated, in relation to prominent land-use and environmental features. For each mapsheet, the following information is included: existing and proposed overhead line structure configurations, route length and ROW width, and pertinent land uses. The first page of the aerial mapsheets is a key map showing the location of each mapsheet in relation to the proposed route. Table I-1 provides a key to the alignment map sheets, listing the various maps associated with each of the Connecticut municipalities that would be traversed by, or located within 2,500 feet of the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route and the Manchester to Meekville Junction Circuit Separation Project.

Table I-1 Key to Towns Along or Near the Proposed Projects, Aerial Alignment Map Sheets

Town	Traversed by the CT Portion of the North Bloomfield to Agawam 345-kV Line Route, MMP and Connecticut Portion of the Massachusetts Southern Route Alternative	Aerial Alignment Mapsheet Numbers		Cross-Section
		100 Scale	400 Scale	
Bloomfield	Yes	1 – 5 of 45	1 of 10	XS-1
Simsbury	No	NA	1 & 2 of 10	NA
East Granby	Yes	5 – 28 of 45	2 – 6 of 10	XS-1, XS-2, XS-2BMP
Granby	No	NA	NA	NA
Suffield	Yes	28 – 45 of 45	6 -10 of 10	XS-2, XS-2BMP
Manchester	Yes	1-11 of 11	1 - 3 of 13	XS-21, XS-21BMP
South Windsor	No	NA	3 of 3	NA
East Hartford	No	NA	3 of 3	NA
Enfield	Yes	1 – 21 of 21	1 – 5 of 5	XS-S05, S07

I.4.2 Initial and Design Voltages and Capacities

The new North Bloomfield to Agawam line would be designed for nominal 345-kV operation. The bundled 1,590-kcmil ACSR conductors would provide approximately 2,040 MVA of summer normal line capacity at 345 kV – more than is needed or would be used. The size of the conductors has not been dictated by capacity requirements, but rather is a design choice made to reduce corona, thereby holding audible noise and radio-frequency noise production in wet weather to very low levels. For 345-kV lines, using two conductors per phase, and then using conductors with larger diameters, greatly reduces electric fields, and therefore corona, on conductor surfaces.

The replacement Manchester Substation to Meekville Junction 115-kV line would use bundled 1,590-kcmil ACSR conductors, which would provide approximately 680 MVA of summer normal line capacity at 115 kV. Electric field intensity on the surface of conductors for 115-kV transmission lines typically do not produce significant levels of corona. The rebuilt line would be designed for nominal 345 kV operation but would operate initially at nominal 115 kV. Constructing the line so that it could be operated at 345 kV will allow for system upgrades including replacing the existing three terminal 345-kV circuit with a set of two-terminal circuits.

The Massachusetts Southern Route Alternative will utilize the same conductor and design voltage level because the requirements for the Ludlow to Agawam 345-kV line are independent of the route selected. As with the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route, the proposed line would be designed for nominal 345-kV configuration utilizing bundled 1,590-kcmil ACSR conductors.

I.4.3 ROW and Access Way Requirements

The width of the existing ROW along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route for the 345-kV line varies. The existing ROW is generally 385 feet wide from North

Bloomfield Substation to Granby Junction and generally 305 feet wide from Granby Junction to the Connecticut/Massachusetts state border. These typical ROW widths are shown on the cross-section drawings in Volume 10 and in Table I-2.

CL&P has designed the overhead 345-kV line to use the existing ROW. There are only two small areas of the proposed GSRP ROW in Connecticut where additional easement will be required to accommodate the new 345-kV overhead line. In Suffield, the existing CL&P transmission line ROW includes two locations where the ROW width is reduced: these are a 1,000-foot-long section of the ROW between Phelps Road and Mountain Road and a 400-foot-long section east of Ratley Road. In these locations, up to an additional 100 feet of ROW width may be required.

The Manchester to Meekville Junction Circuit Separation Project would typically occur within CL&P's existing ROW. The existing ROW width varies, but is typically 350 feet wide. There is one parcel located near Tolland Turnpike that would require additional easements. Approximately 2,400 square feet would be required on this parcel. A typical cross-section drawing for this circuit separation project can be found in Volume 10. Summary information is included and is in Table I-2.

The Massachusetts Southern Route Alternative would require a new 345-kV line on existing transmission corridors in Enfield, Connecticut. The existing ROW in Enfield, Connecticut is typically 280 to 300 feet wide and has sufficient room to install the proposed 345-kV transmission facilities. These typical ROW widths are shown on the cross-section drawings XS-S05 and XS-S07 in Volume 10 and in Table I-2.

Table I-2 Summary of Existing and Proposed ROW Configurations: GSRP and MMP

Transmission Line Segment (Municipality)	Approx. Mileage	Existing Structure Configurations and Typical ROW Width		Proposed 345-kV/Reconstructed 115-kV Configurations and Typical ROW Width	
		Structure Type and Height	ROW Width (feet)	Structure Type and Height	ROW Width (feet)
GSRP Segment 1 North Bloomfield to Granby Junction (Bloomfield, East Granby)	4.7	One 115-kV wood-pole H-frame structure line typically 60 feet in height, one distribution line, single wood-pole distribution line typically 40 feet in height, and one double-circuit 115-kV lattice-steel structure line typically 70 feet in height	~385	Install one steel- or wood-pole 345-kV H-frame line, typically 90 feet in height. Existing structures to remain. Figure XS-1 in Volume 10	385 (No additional ROW required)
GSRP Segment 2 Granby Junction to CT/MA state border (East Granby, Suffield)	7.2	One double-circuit 115-kV lattice-steel structure line typically 70 feet in height	~305	Install one steel- or wood-pole 345-kV H-frame line, typically 90 feet in height. Existing structures to remain. Figure XS-2 in Volume 10	305 (except for a 400-foot-long and 1,000-foot-long section, both in Suffield)
Manchester Substation to Meekville Junction	2.2	One double-circuit 345/115 kV lattice-steel structure line typically 155 feet in height. One double-circuit 115-kV lattice-steel structure line typically 130 feet in height. One double-circuit wood-pole distribution line averaging 40 feet in height.	~350	Install one steel-monopole 115-kV single circuit line, averaging 155 feet in height. New pole will be configured with 345-kV layout and hardware. Existing structures to remain. Figure XS-23 in Volume 1	350 (An additional 20 foot width would be required for 120 feet near Tolland Turnpike, otherwise, no expansion required)
Southern Route CT/MA state border to Connecticut River	1.1	One 115-kV wood-pole H-frame structure line typically 60 feet in height	~300	Install one steel- or wood-pole 345-kV H-frame line, typically 90 feet in height. Existing structures to remain Figure XS-S05 in Volume 10	300 (No additional ROW required)
Southern Route CT/MA state border to Connecticut River	4.1	One 115-kV wood-pole H-frame structure line typically 60 feet in height	~280	Install one steel- or wood-pole 345-kV H-frame line, typically 90 feet in height. Existing structures to remain Figure XS-S07 in Volume 10	280 (No additional ROW required)

Referenced Figures refer to Typical Cross-Sections in Volume 10.

I.4.4 Proposed Structure Location Envelopes

Along the overhead line route, the preliminary locations of each of the proposed transmission line structures were determined using transmission line design software (Power Line System's "PLS-CADD"™) as shown on the plan and profile drawings (Volume 10, *Plan & Profile Drawings*), as well as on the 100 scale aerial photos (Volume 11, *Aerial Photographs-100 scale*).

In selecting potential locations for new line structures, CL&P applied overhead line-route analysis criteria listed in Section H.1.2; therefore, the new structures were initially spotted adjacent to the locations of existing structures, to the extent possible. The structure locations may change based upon information obtained from subsurface investigations, final engineering and environmental surveys, constructability reviews, input from the municipalities and regulatory agencies, and the Council's approval. After this information has been analyzed, final detailed line engineering will determine the exact locations of the structures. The final locations will typically be within the 100 foot envelope ahead or back from the proposed structure locations along the structure centerline.

I.4.5 Modification of North Bloomfield Substation

The North Bloomfield Substation is located in the northeast portion of a 34-acre site, owned by CL&P, near the intersection of Hoskins Road and Tariffville Road. The proposed modifications at the North Bloomfield Substation that would be required for the GSRP include constructing a new 345-kV switchyard to interconnect the existing 345-kV line that extends into the substation from the south and the proposed new 345-kV line that would extend into the substation from the north, as well as two 345/115-kV autotransformers (one new and one existing), with space provisions for future 345-kV line connections, and expansion of the existing relay and control enclosure.

In the 115-kV switchyard, a bus tie will be removed, and the new autotransformer will be connected to the bus using an existing circuit breaker. The construction of the above modifications would take place

within the substation property. A section of the substation fence would have to be relocated but would remain within CL&P's property. Based on the existing substation footprint of approximately 7 acres, existing substation fence would be relocated approximately 32 feet to the northwest, 292 feet to the south east and 193 feet to the southwest, for a total expansion of approximately 2.7 acres within the existing property. These modifications are illustrated in Volume 7 of the Application.

I.4.6 Service Areas Benefits

The GSRP and the MMP would provide immediate benefits to the service areas of Greater Springfield and north-central Connecticut. In combination with the other NEEWS projects, these projects would provide benefits to all of Connecticut and to the Southern New England region.

I.5 ESTIMATED PROJECT COSTS

I.5.1 Estimated Capital Cost of all GSRP[2] Facilities, Connecticut and Massachusetts

Description	Opinion of Probable Costs	
	OH Transmission	Substation
Build a new 345-kV overhead line from Ludlow 19S Substation to Agawam 16C Substation	$151,871,000	
Build a new 345-kV overhead line from Agawam 16C Substation to North Bloomfield 2A Substation (MA Only)	$57,288,000	
Build a new 345-kV line from Agawam 16C Substation to North Bloomfield 2A Substation (CT Only)	$41,290,000	
Rebuild lines 1781 / 1782 and reconfigure 115-kV system (1768 / 1836 / 1821)	$14,630,000	
Break Three-Terminal Circuits 1254/1723 into Two-Terminal Circuits creating a total of four (4) circuits (1601-1604)	$40,796,000	
Place 1845 line on the Ludlow to Agawam 345/115-kV double-circuit line structures	$3,875,000	
Rebuild lines 1481, 1426, and 1552 from Cadwell 50F Switching Station to Ludlow 19S Substation	$49,462,000	
Rebuild lines 1601, 1602, 1314, and 1230 from Agawam 16C Substation to E. Springfield Jct.	$28,432,000	
Ludlow 19S Substation		$67,500,000
Agawam 16C Substation		$77,743,000
North Bloomfield 2A Substation		$92,080,000
Fairmont 16H Switching Station (Greenfield)		$49,111,000
Cadwell 50F Switching Station		$21,013,000
Miscellaneous Substations		$19,133,000
Project Total	$387,644,000	$326,580,000

I.5.2 Estimated Capital Cost of Connecticut Portion of GSRP Facilities

Description	Opinion of Probable Costs	
	OH Transmission	Substation
Build a new 345-kV line from Mass/CT state border to North Bloomfield 2A Substation	$41,290,000	$0
North Bloomfield 2A Substation	$0	$92,080,000
CT Project Total Costs	$133,370,000	

[2] GSRP cost estimate for all OH line along the Preferred Northern Route in Massachusetts.

I.5.3 Life-Cycle Cost

Table I-3 Comparison of Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route to Underground Variations

Underground Alternative Estimates (GSRP - CT)	
Route	**Total CT Project Costs**
Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route (All OH) - 12 miles	$133,370,000
Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route Including 3.6-Mile In-ROW Underground Line Route Variation	$286,957,000
Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route Including 4.6-Mile In-ROW Underground Line Route Variation	$317,817,000
Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route Including Newgate Road Underground Line Route Variation (6 miles)	$380,631,000
Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route Including State Route 168/187 Underground Route Line Variation (8 miles)	$455,306,000

CL&P performed a present-value analysis of capital and operating costs over a 35-year economic life in accordance with the Council's *Life-Cycle Cost Studies for Overhead and Underground Transmission Lines* (2007). The following items were considered:

- Annual carrying charges of the capital cost (I.4.1 above)
- Annual operation and maintenance costs
- Cost of energy losses
- Cost of capacity

The life-cycle costs calculated for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route and underground line route variations are shown in Table I-4.

Table I-4 Comparison of Life-Cycle Costs for the Connecticut Portion of the North Bloomfield to Agawam Line Route and Variations

Description	Overhead Life-Cycle Cost	Underground Life-Cycle Cost	Total Life-Cycle Cost[1]
Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route (All OH) - 12 miles	$84,900,000	$0	$84,900,000
Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route with the 3.6-Mile In-ROW Underground Line Route Variation (3.6 miles UG, 8.4 miles OH)	$59,500,000	$236,300,000	$295,800,000
Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route with the 4.6-Mile In-ROW Underground Line Route Variation (4.6 miles UG, 7.4 miles OH)	$52,500,000	$318,300,000	$370,800,000
Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route with the Newgate Road Underground Line Route Variation (6.0 miles UG, 7.4 miles OH)	$53,100,000	$374,200,000	$427,300,000
Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route with the State Route 168/167 Underground Line Route Variation (8.0 miles UG, 7.4 miles OH)	$53,100,000	$480,700,000	$533,800,000

[1]: The total life cycle cost does not reflect cost associated with substations which is applicable to all alternatives but it does include cost for the line transition stations.