

With respect to reliability and ability to meet the electric need, no measurable difference exists between the routes. On balance, the Northern Route is far superior to the Southern Route, just as Option A was found to be far superior to Options B and C in terms of system performance (Section 2.2.2 and Section 2.2.3⁴⁴).

3.5 FINAL COST COMPARISONS FOR OPTIONS 6A NORTH (WITH AND WITHOUT CABLES), 6A SOUTH (WITH AND WITHOUT CABLES), 6B SOUTH (WITH AND WITHOUT CABLES) AND 7A SOUTH

Table 3-13 below contains cost estimates for seven 345-kV route/Stony Brook connection pairs which NUSCO considered as a feasible “short list” of alternative configurations for purposes of cost estimating in this Petition. As explained in Section 2.2.10, above (with further detail in Section 4), when WMECO decided to eliminate the SCP and all other cable upgrades in the City of Springfield, only the alternatives which include “no cables” were in the actual final “short list”. However, the interim cable configuration (as of February, 2008) described in Section 3.4.2, above, was included in the table for comparison in order to show the significant total cost reduction associated with the elimination of all of the cable work in the City of Springfield.

Table 3-13 shows all of the results set forth in the Northern Route versus Southern Route comparison in Section 3.4.2 (which are repeated here), and in addition the following results:

- Each 6a option using the Northern Route is less expensive than its counterpart option using the Southern Route;
- For the Springfield Solution (without cables), the 6a option using the Northern Route is less expensive than the 6a option using the Southern Route by over \$52 million; and
- If different options with respect to Stony Brook are compared on the Northern and the Southern Routes for the solutions without cables, the Northern Route is still superior to the Southern Route (for 6a option (without cables) on the North, i.e., the Springfield Solution, versus 6b option (without cables) on the South, the difference is about \$20 million)
- Removing the cables⁴⁵ from option 6a North reduces costs by \$148 million;

⁴⁴ See also Section 7.2.4 of Exhibit 3.1, for the assessment of the operations personnel from ISO-NE and CONVEX as reported in the Options Analysis.

⁴⁵ The “cables” being removed at this stage are those in the interim configuration of the cables project described above in Section 3.2.5.2, i.e., two upgraded cable circuits, one from the East Springfield Substation to the Breckwood Substation and the other from the Breckwood Substation to the West Springfield Substation. These “cables” are not comparable to the three-cable SCP in scope or in cost.

- Removing the cables from option 6a South reduces costs by \$100 million;
- Removing the cables from option 6b South reduces costs by \$135 million; and
- Options 6a South, 6b South and 7a South have approximate costs on the high end of the spectrum and no cost advantage can be associated with the loss of electrical performance associated with eliminating the Agawam 345/115-kV connection in option 7a.

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Table 3-13: Electrical Alternative Cost Table

Description								
	6a North	6a South	6n North	6n South	6b North	6b South	6b South	7a South
Build a new 345-kV line from Ludlow 19S Substation to Agawam 16C Substation (MA Only)	\$155,090,000	\$109,485,000	\$151,871,000	\$109,485,000	\$151,871,000	\$109,485,000	\$109,485,000	
Build a new 345-kV line from Ludlow 19S Substation to S. Agawam Jct. (MA Only)								\$91,633,660
Build a new 345-kV line from Ludlow 19S Substation to Agawam 16C Substation (CT Only)		\$21,363,000		\$21,363,000		\$21,363,000	\$21,363,000	
Build a new 345-kV line from Agawam 16C Substation to North Bloomfield 2A Substation (MA Only)	\$57,288,000	\$47,583,000	\$57,288,000	\$47,583,000	\$57,288,000	\$47,583,000	\$47,583,000	
Build a new 345-kV line from Agawam 16C Substation to North Bloomfield 2A Substation (CT Only)	\$41,290,000	\$41,290,000	\$41,290,000	\$41,290,000	\$41,290,000	\$41,290,000	\$41,290,000	\$41,290,000
Build a new 345-kV line from S.Agawam Jct. to North Bloomfield 2A Substation (MA Only)								\$23,981,000
Build a new 345-kV line from S.Agawam Jct. to North Bloomfield 2A Substation (CT Only)								\$21,363,000
Rebuild lines 1781 / 1782 and reconfigure 115-kV system (1768 / 1836 / 1821)	\$14,630,000	\$5,312,000	\$14,630,000	\$5,312,000	\$14,630,000	\$5,312,000	\$5,312,000	
Break Three-Terminal Circuits 1254/1723 into Two-Terminal Circuits creating a total of four (4) circuits (1601-1604)	\$40,796,000	\$56,387,000	\$40,796,000	\$56,387,000	\$40,796,000	\$56,387,000	\$56,387,000	\$56,387,000
Place 1845 line on the Ludlow to Agawam 345/115-kV double circuit structures	\$3,875,000	\$37,411,000	\$3,875,000	\$37,411,000	\$3,875,000			
Rebuild lines 1481, 1426, and 1552 from Cadwell 50F Switching Station to Ludlow 19S Substation	\$60,476,000	\$60,476,000	\$49,462,000	\$49,462,000	\$8,765,000			\$75,110,000
Rebuild lines 1601, 1602, 1314, and 1230 from Agawam 16C Substation to E. Springfield Jct.	\$28,432,000	\$25,823,000	\$28,432,000	\$72,282,000	\$28,432,000	\$63,066,000	\$63,066,000	
Build connection between Fairmont 16H Switching Station and Stony Brook 54B Substation					\$82,173,000	\$82,173,000	\$82,173,000	
Rebuild Cadwell 50F Switching Station to E. Springfield 5J Substation lines	\$7,698,000	\$7,698,000					\$7,698,000	\$7,698,000
Replace the West Springfield 8C Substation to Breckwood 20A Substation cable with 3500 kcmil XLPE cable	\$70,909,000	\$70,909,000					\$70,909,000	\$70,909,000
Install new cable circuit from Breckwood 20A Substation to East Springfield 5J Substation	\$52,323,000	\$52,323,000					\$52,323,000	\$52,323,000
Ludlow 19S Substation	\$67,500,000	\$67,500,000	\$67,500,000	\$67,500,000	\$42,504,000	\$42,504,000	\$42,504,000	\$67,500,000
Agawam 16C Substation	\$78,354,000	\$77,743,000	\$77,743,000	\$77,743,000	\$77,743,000	\$77,743,000	\$77,743,000	\$4,781,000
North Bloomfield 2A Substation	\$92,080,000	\$92,080,000	\$92,080,000	\$92,080,000	\$92,080,000	\$92,080,000	\$92,080,000	\$92,080,000
Fairmont 16H Switching Station (Greenfield)	\$48,308,000	\$48,308,000	\$49,111,000	\$48,308,000	\$49,916,000	\$49,916,000	\$49,916,000	\$48,308,000
Cadwell 50F Switching Station	\$26,218,000	\$26,218,000	\$21,013,000	\$21,013,000	\$21,013,000	\$21,013,000	\$26,218,000	\$26,218,000
Phase Shifters								\$163,375,000
Miscellaneous Substations	\$17,404,000	\$18,016,000	\$19,133,000	\$18,867,000	\$24,464,000	\$24,464,000	\$23,613,000	\$22,423,000
Project Total	\$862,671,000	\$865,925,000	\$714,224,000	\$766,086,000	\$736,840,000	\$734,379,000	\$869,663,000	\$865,379,660

Notes:

1. Estimates are "All-In" dollars, escalated to future year of spend (assuming 2013 ISD).
2. Estimates are based on Burns & McDonnell Estimate dated 4-22-08

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