

**TABLE 8-10. COST ESTIMATE: KNICKERBOCKER-PLEASANT VALLEY 345 kV LINE ALTERNATIVE 1
(I-87 ROW)**

| | Materials (\$ x 1000) | Labor (\$ x 1000) | Variance |
|---|----------------------------------|------------------------------|-----------------|
| Equipment | 50,353 | | ±15% |
| Engineering and Design | | 2,100 | ±5% |
| Permitting and Environmental Monitoring | | 4,509 | ±20% |
| Site Acquisition | 8,576 | 1,843 | ±20% |
| Procurement Services | | 5,285 | ±10% |
| Construction | | 178,586 | ±15% |
| Construction Management | | 1,800 | ±15% |
| Commissioning | | 150 | ±10% |
| Attachment Facilities | 2,500 | 1,655 | ±10% |
| Community Impact Mitigation | 9,213 | | ±25% |
| Property and Sales Tax | 12,088 | | ±10% |
| Insurance, Overheads, Fees for Legal and Other Services | | 4,665 | ±10% |
| Contingency | 22,671 | 34,006 | |
| Subtotal | 105,401 | 234,599 | |
| Total | | | 340,000 |

**TABLE 8-11. COST ESTIMATE: KNICKERBOCKER-PLEASANT VALLEY 345/115 kV LINE ALTERNATIVE 2
(115 kV ROW)***

| | Materials | Labor | Variance |
|---|------------------|--------------|-----------------|
| Equipment | 54,175 | | ±15% |
| Engineering and Design | | 1,545 | ±5% |
| Permitting and Environmental Monitoring | | 3,824 | ±20% |
| Demolition | | 37,587 | ±30% |
| Site Acquisition | 7,884 | 1,355 | ±20% |
| Procurement Services | | 5,201 | ±10% |
| Construction | | 197,987 | ±15% |
| Construction Management | | 1,890 | ±15% |
| Commissioning | | 150 | ±10% |
| Attachment Facilities | 2,500 | 1,655 | ±10% |
| Community Impact Mitigation | 5,420 | | ±25% |
| Property and Sales Tax | 15,230 | | ±10% |
| Insurance, Overheads, Fees for Legal and Other Services | | 6,674 | ±10% |
| Contingency | 11,653 | 46,611 | |
| Subtotal | 96,861 | 304,479 | |
| Total | | | 401,340 |

*Does not include compensation to existing 115 kV transmission line owner (net of salvage value), as these costs are unknown and unknowable at this time. North America is willing to work with the existing transmission owners related to coownership of the new 345 kV/115 kV transmission line resulting from this proposal.

**Knickerbocker-Pleasant Valley 345/115 kV Line
115 kV ROW Alternative 2
Itemized Worksheet - CORRECTED**

| Line | | Major Equipment | |
|---|----------------------|---|----------------------|
| Mileage: | 54.2 | Structure Materials: | \$54,175,180 |
| Structure Materials Per Mile (Note 1): | \$999,542 | Line Termination Materials: | \$2,500,000 |
| Construction Labor Per Mile (Note 1): | \$3,652,891 | Series Comp Materials: | \$0 |
| Removal Labor: | \$693,492 | Major Equipment Total: | \$56,675,180 |
| Total Line Unit Cost: | \$5,345,925 | | |
| Total Line Base Cost: | \$289,749,140 | | |
| Real Estate | | Construction Labor | |
| Easement Cost/Acre: | \$12,000 | Construction Labor: | \$197,986,704 |
| Easement Width(ft): | 100 | Removal Labor: | \$37,587,257 |
| Real Estate Cost: | \$7,883,632 | Line Termination Labor: | \$1,655,000 |
| Real Estate Acquisition Costs (Note 2): | \$1,355,000 | Series Comp Labor: | \$0 |
| Real Estate Total: | \$9,238,632 | Commissioning: | \$150,000 |
| | | Construction Labor Total: | \$237,378,961 |
| Substation (Note 3) | | Real Estate | |
| Line Termination Materials: | \$2,500,000 | Easement Cost/Acre: | \$12,000 |
| Line Termination Labor: | \$1,655,000 | Easement Width(ft): | 100 |
| Commissioning: | \$150,000 | Real Estate Cost: | \$7,883,632 |
| Line Termination Total: | \$4,305,000 | Real Estate Acquisition Contract: | \$1,355,000 |
| | | Real Estate Total: | \$9,238,632 |
| Series Comp | | Engineering | |
| Series Comp Materials: | | Engineering - Contract: | \$1,355,000 |
| Series Comp Labor: | | Engineering - Internal: | \$189,700 |
| Series Comp Total: | \$0 | Engineering Total: | \$1,544,700 |
| Engineering | | CM/P | |
| Engineering - Contract: | \$1,355,000 | Construction Management Total: | \$1,890,000 |
| Engineering - Internal: | \$189,700 | Procurement Services: | \$5,200,918 |
| Engineering Total: | \$1,544,700 | | |
| CM/P | | Permitting and Approvals | |
| Construction Management Total: | \$1,890,000 | Permitting and Monitoring Total: | \$3,823,525 |
| Procurement Services: | \$5,200,918 | | |
| Permitting and Monitoring | | Overhead | |
| Permitting Total: | \$1,303,525 | Overhead Total: | \$27,323,939 |
| Environmental Monitoring (Note 4): | \$2,520,000 | | |
| Permitting and Monitoring Total: | \$3,823,525 | | |
| Overhead | | Total: | \$343,075,855 |
| Development Total: | \$6,674,283 | Contingency: | \$58,264,147 |
| Community Impact Mitigation: | \$5,420,000 | Total Project Cost: | \$401,340,002 |
| Property and Sales Tax (Note 5): | \$15,229,656 | | |
| Total: | \$343,075,855 | | |

Notes:

1. Structure materials and labor assumptions shown on Construction Assumptions Worksheet (KN-PV 115kV Corridor).
2. Real Estate acquisition costs include surveys, legal costs, land agents, and other costs related to easement negotiation.
3. Line terminations into substations based on utility estimates in Edic-Fraser Feasibility Study Report.
4. Assuming 5 environmental monitors during construction period.
5. Assumes 8.75% sales tax on materials and 3.2% average property tax during construction period.

Construction Assumptions Worksheet

Knickerbocker-Pleasant Valley 115 kV Corridor Alternate 2



Yards & Office

| Description | Qty | UOM | Cost Ea. | | Ext Cost |
|--------------------------|-----|-------|-----------|--|--------------------|
| Land Rent | 20 | month | \$20,000 | | \$400,000 |
| Office Rent and Supplies | 20 | month | \$7,000 | | \$140,000 |
| Ice / Water / Supplies | 20 | month | \$1,220 | | \$24,390 |
| Office & man trailer | 20 | month | \$5,000 | | \$100,000 |
| office setup | 1 | ls | \$300,000 | | \$300,000 |
| 40 YD Dumpster + Toilets | 20 | month | \$2,500 | | \$50,000 |
| Special Tools Purchase | 1 | ls | \$200,000 | | \$200,000 |
| Two Way Radio Rental | 1 | ls | \$100,000 | | \$100,000 |
| | | | | | \$1,314,390 |

Safety & Training

| Description | Qty | UOM | Cost Ea. | | Ext Cost |
|---------------------------|-----|---------|-----------|--|------------------|
| Crew Orientation Training | 150 | man-day | \$1,000 | | \$150,000 |
| Crew Skills Training | 150 | man-day | \$100 | | \$15,000 |
| Awards Program | 1 | ls | \$200,000 | | \$200,000 |
| | | | | | \$365,000 |

Project Management

| Description | Qty | UOM | Cost Ea. | | Ext Cost |
|---|-----|-------|----------|--|--------------------|
| Management Staff | 60 | month | \$21,500 | | \$1,290,000 |
| Adminstration Staff | 80 | month | \$11,180 | | \$894,400 |
| Safety & QC Staff | 40 | month | \$14,620 | | \$584,800 |
| Management Staff (vehicle & expenses) | 60 | month | \$1,150 | | \$69,000 |
| Adminstration Staff (vehicles & expenses) | 80 | month | \$850 | | \$68,000 |
| Safety & QC Staff (vehicles & expenses) | 40 | month | \$900 | | \$36,000 |
| Mechanic | 20 | month | \$12,040 | | \$240,800 |
| Mech Vehicle & Expenses | 20 | month | \$1,100 | | \$22,000 |
| | | | | | \$3,205,000 |



Mobilization/Demobilization

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|----------------|-----|-----|--------------|---------------|----------------|----------------|---------------------|------------------|
| Mobilization | 1 | ls | \$216,829 | | \$216,829 | \$216,829.00 | \$0 | \$216,829 |
| Demobilization | 1 | ls | \$164,665 | | \$164,665 | \$164,665.00 | \$0 | \$164,665 |
| | | | | | | | | \$381,494 |

Material Handling

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|---------------------------------------|-------|------|--------------|---------------|----------------|----------------|---------------------|---------------------|
| Receive, Haul & Spot Steel Structures | 472.1 | ea | \$18,678 | | \$18,678 | \$8,817,929.00 | \$0 | \$8,817,929 |
| Receive, Haul & Spot Materials | 472.1 | str | \$4,850 | | \$4,850 | \$2,289,567.00 | \$0 | \$2,289,567 |
| Receive, Haul & Spot Wire | 412.9 | reel | \$2,157 | | \$2,157 | \$890,687.00 | \$0 | \$890,687 |
| | | | | | | | | \$11,998,183 |

Civil**Clearing**

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|---|-----|------|--------------|---------------|----------------|----------------|---------------------|--------------------|
| Clear assume 40% of length x 100' width | 286 | acre | \$18,750 | | \$18,750 | \$5,365,800 | \$0 | \$5,365,800 |
| | | | | | | | \$0 | \$0 |
| | | | | | | | | \$5,365,800 |

Access Roads & Matting

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|--------------|------|-------|--------------|---------------|----------------|----------------|---------------------|---------------------|
| Access roads | 54.2 | miles | \$312,500 | | \$312,500 | \$16,937,500 | \$0 | \$16,937,500 |
| Matting | 15 | miles | \$1,000,000 | | \$1,000,000 | \$15,000,000 | \$0 | \$15,000,000 |
| | | | | | | | | \$31,937,500 |

Direct Buried & Cassion Foundations

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|---|-------|-----|--------------|---------------|----------------|----------------|---------------------|---------------------|
| Drilled piers tangent str | 27977 | cy | \$1,443 | \$331 | \$1,774 | \$40,370,811 | \$9,267,381 | \$49,638,192 |
| Drilled piers DE str | 7253 | cy | \$1,443 | \$331 | \$1,774 | \$10,466,079 | \$2,402,556 | \$12,868,635 |
| Rock excavation at 20% of total excavated | 6,354 | cy | \$1,563 | | \$1,563 | \$9,928,613 | \$0 | \$9,928,613 |
| | | | | | | | | \$72,435,441 |

Restoration

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|-------------|------|------|--------------|---------------|----------------|----------------|---------------------|---------------------|
| restore | 54.2 | mile | \$250,000 | | \$250,000 | \$13,550,000 | \$0 | \$13,550,000 |
| | | | | | | | | \$0 |
| | | | | | | | | \$13,550,000 |

Electrical**Guard Structures and Crossing Protection**

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|--------------------|-----|------|--------------|---------------|----------------|----------------|---------------------|--------------------|
| Guard structures | 132 | ea | \$18,968 | \$625 | \$19,593 | \$2,503,785 | \$82,500 | \$2,586,285 |
| Highway crossing | 10 | ea | \$15,174 | \$1,250 | \$16,424 | \$151,745 | \$12,500 | \$164,245 |
| Highway protection | 10 | mile | \$5,000 | | \$5,000 | \$50,000 | \$0 | \$50,000 |
| River crossing | 1 | ea | \$6,250 | | \$6,250 | \$6,250 | \$0 | \$6,250 |
| | | | | | | | | \$2,806,779 |

Install H-Frame Steel Structures

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|----------------------------|-----|-----|--------------|---------------|----------------|----------------|---------------------|---------------------|
| Steel structure tangent | 450 | ea | \$33,758 | \$77,642 | \$111,400 | \$15,190,997 | \$34,938,900 | \$50,129,897 |
| Steel poles angle | | ea | | | \$0 | \$0 | \$0 | \$0 |
| Steel structure dead-end | 27 | ea | \$57,870 | \$183,555 | \$241,425 | \$1,562,503 | \$4,955,985 | \$6,518,488 |
| River crossing lattice str | 2 | ea | \$1,652,341 | \$1,000,000 | \$2,652,341 | \$3,304,681 | \$2,000,000 | \$5,304,681 |
| | | | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | | | | \$61,953,066 |

Install 345kV Conductor

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|-------------------|------|-----------|--------------|---------------|----------------|----------------|---------------------|---------------------|
| Pull conductor | 54.2 | cir miles | \$267,051 | \$94,802 | \$361,853 | \$14,474,138 | \$5,138,268 | \$19,612,407 |
| Clip in tangent | 431 | str | \$4,413 | \$2,000 | \$6,413 | \$1,901,942 | \$861,936 | \$2,763,878 |
| Clip in angle | 0 | str | \$5,884 | \$3,000 | \$8,884 | \$0 | \$0 | \$0 |
| Install dead-ends | 257 | ea | \$6,988 | \$1,500 | \$8,488 | \$1,793,180 | \$384,910 | \$2,178,091 |
| Install loops | 133 | ea | \$4,659 | | \$4,659 | \$620,716 | \$0 | \$620,716 |
| Install spacers | 474 | span | \$2,688 | \$720 | \$3,408 | \$1,273,402 | \$341,090 | \$1,614,491 |
| | | | | | | | | \$26,789,583 |

Install OPGW & static

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|--------------------------|------|--------|--------------|---------------|----------------|----------------|---------------------|--------------------|
| Pull OPGW & Static | 54.2 | miles | \$28,064 | \$8,712 | \$36,776 | \$1,521,053 | \$472,190 | \$1,993,244 |
| Clip in OPGW & Static | 431 | ea | \$699 | \$150 | \$849 | \$301,139 | \$64,645 | \$365,784 |
| DE OPGW & Static | 84 | ea | \$1,747 | \$300 | \$2,047 | \$146,547 | \$25,167 | \$171,714 |
| Downleads & splice boxes | 24 | ea | \$3,494 | \$4,375 | \$7,869 | \$83,850 | \$105,000 | \$188,850 |
| Test fiber | 1 | ls | \$45,000 | | \$45,000 | \$37,011 | \$0 | \$37,011 |
| Splice fiber | 24 | ea loc | \$3,500 | \$500 | \$4,000 | \$84,000 | \$12,000 | \$96,000 |
| | | | | | | | | \$2,852,602 |

Install 115kV Conductor

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|-------------------|-------|-----------|--------------|---------------|----------------|----------------|---------------------|---------------------|
| Pull conductor | 108.4 | cir miles | \$90,304 | \$34,927 | \$125,231 | \$9,788,957 | \$3,786,087 | \$13,575,044 |
| Clip in tangent | 450 | str | \$4,413 | \$1,800 | \$6,213 | \$1,985,933 | \$810,000 | \$2,795,933 |
| Clip in angle | | str | | | \$0 | \$0 | \$0 | \$0 |
| Install dead-ends | 372 | ea | \$2,795 | \$750 | \$3,545 | \$1,039,821 | \$279,000 | \$1,318,821 |
| Install loops | 186 | ea | \$1,398 | | \$1,398 | \$259,955 | \$0 | \$259,955 |
| Install spacers | | span | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | | | | \$17,949,752 |

Wire removal

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|------------------------|-----------|------------|--------------|---------------|----------------|----------------|---------------------|---------------------|
| Un-clip from structure | 638 | str | \$10,000 | | \$10,000 | \$6,380,000 | \$0 | \$6,380,000 |
| Remove conductor | 88 | / cir pull | \$100,000 | | \$100,000 | \$8,800,000 | \$0 | \$8,800,000 |
| Conductor disposal | 3,002,630 | ft | \$0.050 | | \$0 | \$150,132 | \$0 | \$150,132 |
| | | | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | | | | \$15,330,132 |

Structure removal

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|--------------------------------|------|-----|--------------|---------------|----------------|----------------|---------------------|---------------------|
| Remove H-frame | 2 | ea | \$7,000 | | \$7,000 | \$14,000 | \$0 | \$14,000 |
| Remove 2-circuit Lattice Tower | 635 | ea | \$25,000 | | \$25,000 | \$15,875,000 | \$0 | \$15,875,000 |
| Remove Monopole | 1 | ea | \$15,000 | | \$15,000 | \$15,000 | \$0 | \$15,000 |
| Wood disposal | 1 | ls | \$625 | | \$625 | \$625 | \$0 | \$625 |
| Steel disposal | 1 | ls | \$0 | | \$0 | \$0 | \$0 | \$0 |
| Remove foundations | 2541 | ea | \$2,500 | | \$2,500 | \$6,352,500 | \$0 | \$6,352,500 |
| | | | | | | | | \$22,257,125 |

Sectionalize and temp Sho-Flys

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|---------------------------|-----|-----|--------------|---------------|----------------|----------------|---------------------|--------------------|
| Install temporary sho-fly | 16 | ea | \$51,498 | \$9,500 | \$60,998 | \$823,970 | \$152,000 | \$975,970 |
| Remove sho-fly | 16 | ea | \$15,020 | | \$15,020 | \$240,325 | \$0 | \$240,325 |
| | | | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | | | | \$1,216,295 |

Tie in and complete line at section points

| Description | Qty | OUM | L&E Cost Ea. | Mat. Cost Ea. | Total Cost Ea. | Total L&E Cost | Total Material Cost | Total Cost |
|---|-----|-----|--------------|---------------|----------------|----------------|---------------------|------------------|
| Take outage and grounding | 16 | ea | \$7,098 | | \$7,098 | \$113,562 | \$0 | \$113,562 |
| Install new conductor spans and connect | 16 | ea | \$42,586 | | \$42,586 | \$681,374 | \$0 | \$681,374 |
| Remove grounds and energize | 16 | ea | \$7,098 | | \$7,098 | \$113,562 | \$0 | \$113,562 |
| | | | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | \$0 | \$0 | \$0 | \$0 |
| | | | | | | | | \$908,498 |

\$4,884,390 In-directs**\$284,864,750 Directs****\$289,749,140 Total**

\$54,175,180 materials

\$197,986,704 Construction Labor

\$37,587,257 Demolition Labor

\$3,652,891.22 Per mile construction labor

\$693,491.82 Per mile demolition labor

\$999,542.06 Per mile material

**OUTPUTS TO
ITEMIZED
WORKSHEET**