



PROPRIETARY & CONFIDENTIAL

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David Storwick
Engineering Manager
Columbia Water & Light
Email: David.Storwick@como.gov

Subject: City of Columbia Grindstone – Perche Creek 161kV OHTL Estimate

David:

Black & Veatch is pleased to submit this estimate summary to the City of Columbia in support of your 161kV rebuild project. Summarized below are the various estimates provided to the City of Columbia, associated attachments, and explanation of what changed at each stage to ultimately arrive at our opinion of probable cost for the project.

Abbreviations

- B&V – Black & Veatch
- COMO – City of Columbia
- EPC – Engineer, Procure, Construct
- Mob/Demob – Mobilization/Demobilization
- OHTL – Overhead Transmission Line
- OPGW – Optical Ground Wire
- ROW – Right-of-Way
- UGTL – Underground Transmission Line

Budgetary Estimate

Preliminary Estimate (submitted 11/10/2025)

Black & Veatch submitted the below preliminary estimate to support the city planning board meeting for City of Columbia. Additionally, Black & Veatch confirmed the following:

- It was not feasible from a strength and clearance perspective to reuse the existing 69kV wood poles to accommodate a double circuit 69kV/161kV overhead transmission line.
- UGTL alternatives are estimated to be approximately 3x to 5x the project cost of the OHTL.
- Conceptual drawings were provided for structure framing and foundations to help facilitate discussions with the approval board (see attachments).

| Item No. | Item | Chapel Hill Route | Vawter School Route | Comments |
|----------|-------------------------------------|-------------------|---------------------|---------------------------------------------------------------------------------------|
| 1.0 | Construction | \$ 21,467,647 | \$ 14,810,497 | |
| | | | | |
| 2.0 | Material | \$ 6,966,927 | \$ 4,923,640 | |
| 2.1 | Tubular Steel | \$ 6,031,814 | \$ 4,308,156 | |
| 2.2 | Conductor | \$ 403,218 | \$ 265,194 | \$1.62/FT used for estimate, per COMO stock. Estimates received were \$3.32/FT |
| 2.3 | Shield Wire | \$ 29,050 | \$ 7,000 | |
| 2.4 | OPGW | \$ 120,045 | \$ 129,055 | |
| 2.5 | Insulators & Hardware | \$ 382,800 | \$ 214,235 | |
| | | | | |
| 3.0 | Engineering & Management | \$ 6,696,296 | \$ 4,638,512 | |
| 3.1 | Complete Engineering | \$ 3,412,149 | \$ 2,368,096 | |
| 3.2 | EPC Construction Contract Adder | \$ 2,146,765 | \$ 1,481,050 | |
| 3.3 | Eng & Proj Mgmt | \$ 1,137,383 | \$ 789,365 | |
| | | | | |
| 4.0 | Real Estate | \$ 5,938,081 | \$ 4,208,761 | |
| 4.1 | ROW Easement | \$ 5,938,081 | \$ 4,208,761 | Easement cost: 50% of fee value |
| | | | | |
| 5.0 | Contingency | \$ 1,987,193.48 | \$ 1,405,604.07 | |
| | TOTAL | \$ 43,056,144 | \$ 29,987,013 | Chapel: assumes 11 months of construction Vawter: assumes 8 months of construction |

Final Estimate – REV1 (submitted 12/19/2025)

Black & Veatch revised the estimate to better refine anticipated foundation costs and incorporate the comments received from the City of Columbia.

- Final Estimate clarifications were provided (see attachments).
- COMO comments were related to overall project contingency and utilization of market pricing rather than stock pricing of conductor.

| Item No. | Item | Chapel Hill Route | Vawter School Route |
|------------|----------------------------------------|----------------------|----------------------|
| 1.0 | Construction | \$ 16,895,653 | \$ 12,481,852 |
| 1.1 | Mob/Demob, Access/Matting, Restoration | \$ 2,398,282 | \$ 1,831,630 |
| 1.2 | Drilled Pier Foundations | \$ 2,876,181 | \$ 3,206,711 |
| 1.3 | Direct Embed Foundations | \$ 723,444 | \$ 529,902 |
| 1.4 | Structure Framing & Erection | \$ 2,328,399 | \$ 1,921,618 |
| 1.5 | Wire Stringing | \$ 6,577,218 | \$ 4,464,577 |
| 1.6 | 69kV Demo | \$ 1,992,129 | \$ 527,414 |
| | | | |
| 2.0 | Material | \$ 7,391,030 | \$ 5,211,702 |
| 2.1 | Tubular Steel | \$ 6,031,814 | \$ 4,308,156 |
| 2.2 | Conductor | \$ 827,321 | \$ 553,256 |
| 2.3 | Shield Wire | \$ 29,050 | \$ 7,000 |
| 2.4 | OPGW | \$ 120,045 | \$ 129,055 |
| 2.5 | Insulators & Hardware | \$ 382,800 | \$ 214,235 |
| | | | |
| 3.0 | Engineering & Management | \$ 5,575,435 | \$ 4,079,154 |
| 3.1 | Complete Engineering | \$ 2,914,402 | \$ 2,123,226 |
| 3.2 | EPC Construction Contract Adder | \$ 1,689,565 | \$ 1,248,185 |
| 3.3 | Eng & Proj Mgmt | \$ 971,467 | \$ 707,742 |
| | | | |
| 4.0 | Real Estate | \$ 5,938,081 | \$ 4,208,761 |
| 4.1 | ROW Easement | \$ 5,938,081 | \$ 4,208,761 |
| | | | |
| 5.0 | Contingency | \$ 2,629,558 | \$ 1,871,132 |
| | TOTAL | \$ 38,429,756 | \$ 27,852,600 |

Final Estimate – REV2 (submitted 1/9/2026)

Black & Veatch reviewed the clarifications/assumptions we provided with REV1 of the final estimate and associated cost where possible to avoid this from being unintentionally "hidden" for funding approval – in particular for the anticipated rock drilling w/foundations.

- These costs are now included in the estimate below and represents Black & Veatch's final submission for our opinion of probable cost of the project.
- Final Estimate clarifications remained the same (see attachments).

| Item No. | Item | Chapel Hill Route | Vawter School Route |
|------------|----------------------------------------|----------------------|----------------------|
| 1.0 | Construction | \$ 17,940,170 | \$ 13,497,337 |
| 1.1 | Mob/Demob, Access/Matting, Restoration | \$ 2,398,282 | \$ 1,831,630 |
| 1.2 | Drilled Pier Foundations | \$ 3,812,181 | \$ 4,142,711 |
| 1.3 | Direct Embed Foundations | \$ 831,960 | \$ 609,387 |
| 1.4 | Structure Framing & Erection | \$ 2,328,399 | \$ 1,921,618 |
| 1.5 | Wire Stringing | \$ 6,577,218 | \$ 4,464,577 |
| 1.6 | 69kV Demo | \$ 1,992,129 | \$ 527,414 |
| | | | |
| 2.0 | Material | \$ 7,391,030 | \$ 5,211,702 |
| 2.1 | Tubular Steel | \$ 6,031,814 | \$ 4,308,156 |
| 2.2 | Conductor | \$ 827,321 | \$ 553,256 |
| 2.3 | Shield Wire | \$ 29,050 | \$ 7,000 |
| 2.4 | OPGW | \$ 120,045 | \$ 129,055 |
| 2.5 | Insulators & Hardware | \$ 382,800 | \$ 214,235 |
| | | | |
| 3.0 | Engineering & Management | \$ 5,847,009 | \$ 4,343,180 |
| 3.1 | Complete Engineering | \$ 3,039,744 | \$ 2,245,085 |
| 3.2 | EPC Construction Contract Adder | \$ 1,794,017 | \$ 1,349,734 |
| 3.3 | Eng & Proj Mgmt | \$ 1,013,248 | \$ 748,362 |
| | | | |
| 4.0 | Real Estate | \$ 5,938,081 | \$ 4,208,761 |
| 4.1 | ROW Easement | \$ 5,938,081 | \$ 4,208,761 |
| | | | |
| 5.0 | Contingency | \$ 3,585,543 | \$ 2,847,954 |
| | TOTAL | \$ 40,701,833 | \$ 30,108,934 |

Attachments

Supplemental documentation for this estimate is outlined below:

Estimate Clarifications

- COMO 161-69kV OHTL Estimate Clarifications.xlsx

Conceptual Drawings

- COMO-CH-STR-001.pdf
- COMO-CH-STR-002.pdf
- COMO-CH-STR-003.pdf
- COMO-FDN-001.pdf
- COMO-FDN-002.pdf
- COMO-VS-STR-001.pdf
- COMO-VS-STR-002.pdf
- COMO-VS-STR-003.pdf
- COMO-VS-STR-004.pdf
- COMO-VS-STR-005.pdf
- COMO-VS-STR-006.pdf

Black & Veatch appreciates this opportunity to support the City of Columbia with the estimating effort for this important 161kV rebuild project. Please let us know if you have any questions or require any additional information.

Very truly yours,

BLACK & VEATCH CORPORATION



Taylor Krolak
Engineering Manager

cc: Mike Wilson
Cullen Gabler

ESTIMATE CLARIFICATIONS
B&V-COMO 161/69KV OHTL - Budgetary Estimate
Submittal Date: 12/19/2025

| ID | CONTRACTOR CLARIFICATION QUESTION | CUSTOMER RESPONSE |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| General | | |
| G001 | Pricing is indicative and to be used for budgetary nature only. | |
| G002 | Escalation on labor and equipment has been included thru 2027. | |
| G003 | Pricing is based on one mobilization and one demobilization. | |
| G004 | Bird pricing does not include any "hot work" or working in close proximity to energized lines. | |
| G005 | Proposal does not include contingencies for underground obstructions and unforeseen conditions. | |
| | | |
| Construction: | | |
| C001 | Construction durations are assumed to be 11 months for the Chapel Hill route or 8 months for the Vawter School | |
| C002 | It is recommended to perform a comprehensive geotechnical investigation upon selection of the final route. This will help to refine anticipated geotechnical costs for the project. | |
| C003 | Pricing for Drilling Direct Embeds & providing 57 Rock Backfill is included. It is assumed that standard "open hole" drilling conditions in cohesive soils will be encountered, and does not include utilization of slurry, provisions for dewatering, rock drilling, etc. As a ballpark, we would anticipate \$2200/ft for a rock drilling adder. | |
| C004 | Pricing does not include hand excavation, pot-holing, hydro-excavation or relocation of any existing underground obstructions. | |
| C005 | Pricing assumes all spoils can be spread on the ROW and that there will be no testing nor handling of contaminated | |
| C006 | No temporary or permanent casing is included. | |
| C007 | Pricing for installing 98 structures for Chapel Hill & 92 structures for Vawter School Routes are included. | |
| C008 | Pole grounds, one ground attachment per structure is included. Additional ground rods, counterpoise or cathodic protection are NOT included. | |
| C009 | An environmental should be completed during detailed design to confirm if provisions for anti perching devices, anti nesting devices, phase covers, bird flight diverters, or marker balls are required. | |
| C010 | Pricing for restoration of disturbed areas is limited to de-rutting and light grading. Seeding and laser leveling of agricultural fields is excluded. | |
| C011 | 69kV demolition costs do not include relocation of distribution. | |
| | | |
| Right-Of-Way: | | |
| R001 | ROW Acquisition estimate is an indicative desktop estimate only. If a more accurate easement estimate is required, a full market study and appraisals will be required. | |
| R002 | It is recommended that when the design is finalized, the ROW acquisition estimate is rerun to verify estimate accuracy. | |
| R003 | If relocations and/or full property acquisitions are required, the ROW acquisition estimate does not include these situations. | |
| R004 | ROW acquisition estimate excludes the labor costs for permitting and ROW acquisition. | |
| R005 | Property and per acre values were determined off of County Assessor valuation data. | |
| R006 | Eastment cost is assumed as 50% of fee value. | |
| | | |