Impacts and Cost Calculations

Route	Route Length (mi)	Permanent Impacts (acres)	Temporary Impacts (acres)	Corridor Rebuild (mi)	Corridor Sharing (mi)	Rebuild, % of Total Route Length	Sharing, % of Total Route Length	New ROW Length (mi)	New ROW required (acres)	Homes < 100'	Homes 100-150'	Homes 150-300'	Homes 300-500'	PWIs Crossed	WPAs and WMAs crossed	Permanent Impact to Prime Farmland (acres)	Permanent Impacts to Prime Farmland when Drained (acres)	Permanent Impacts to Farmland of Statewide Importance (acres)	Total Costs Single Pole	Total Costs H-frame
Morris Route 1	40.2	6.96	236.69	40.09	40.09	99.7%	99.7%	0.12	2.4	1	1	7	7	10	6	4.63	1.80	0.24	$17,287,079 - $18,412,750	$15,879,992 - $17,005,662
Morris Route 2	42.2	7.31	248.46	0.00	38.19	0.0%	90.5%	4.01	61.56	1	0	9	11	2	8	4.96	1.80	0.23	$15,526,715 - $16,708,359	$14,049,659 - $15,231,304
Willmar Route 1	78.5	13.59	462.00	0.00	67.73	0.0%	86.3%	10.75	161.51	1	2	26	34	0	2	6.13	6.32	0.41	$26,837,328 - $29,034,536	$24,090,818 - $26,288,026
Willmar Route 2	88.0	15.24	518.16	0.00	64.69	0.0%	73.5%	23.32	352.02	1	3	13	26	7	3	7.64	6.87	0.35	$30,099,517 - $32,563,805	$27,019,157 - $29,483,445
Granite Falls Route 1	56.1	8.70	345.13	35.18	52.42	62.8%	93.4%	3.68	6.67	1	1	2	6	1	0	3.50	4.21	0.39	$24,158,629 - $29,177,899	$29,694,135 - $33,173,910
Granite Falls Route 2	59.4	9.14	365.66	0.00	54.36	0.0%	91.5%	5.04	91.36	2	3	9	16	0	1	4.00	4.03	0.55	$25,615,337 - $25,717,791	$27,593,523 - $31,814,148
Granite Falls Route 3	83.1	12.79	512.94	35.18	54.90	42.3%	66.1%	28.20	452.66	2	2	3	19	1	2	5.29	5.93	0.78	$37,359,894 - $39,764,067	$40,958,167 - $48,705,850
Granite Falls Route 4	86.2	13.19	531.84	0.00	76.44	0.0%	88.7%	9.76	176.48	1	2	12	16	0	1	5.47	5.86	1.17	$38,776,683 - $41,261,486	$38,748,566 - $47,195,801

Segments in Route

Morris Route 1	M-1, M-2, M-3, M-5, M-7, M-9, M-10, M-17
Morris Route 2	M-1, M-2, M-4, M-5, M-8, M-9, M-11, M-13, M-14, M-18
Willmar Route 1	G-W, W-2, W-3, W-6, W-7, W-9, W-12, W-15, W-16
Willmar Route 2	G-W, W-1A, W-19, W-20, W-21, W-22, W-23, W-24, W-29, W-14, W-17, W-18
Granite Falls Route 1	G-14, G-15A, G-15B, G-21, G-30, G-31, G-32, G-39, G-45, G-49, G-50, G-53
Granite Falls Route 2	G-14, G-16, G-20, G-23, G-24, G-26, G-27, G-29, G-32, G-34, G-38, G-42, G-44, G-46, G-47, G-48, G-51, G-52, G-53
Granite Falls Route 3	G-14, G-15A, G-15B, G-21, G-30, G-31, G-32, G-39, G-45, G-49, G-50, G-53, G-59, G-61, G-63, G-65, G-67, G-69, G-70
Granite Falls Route 4	G-24, G-26, G-27, G-29, G-32, G-34, G-38, G-42, G-44, G-46, G-47, G-48, G-51, G-52, G-53, G-54, G-55, G-56, G-57, G-58

Assumptions

1. Number of poles was determined using the average span between poles, which was divided into the length of each route segment. This number is approximate since the final number of poles is dependent on the final engineering design. Average span for the 345 kV poles is 800 feet. Average span for the 230 kV poles is 700 feet.
2. Temporary impacts was calculated by summing the impacts from the temporary construction road (20 foot width times the length of the route segment) and the temporary impacts from poles (25,00 square feet per 345 kV pole; 20,000 square feet per 230 kV pole). This is a conservatively large number since it likely double circuit impacts around poles (construction road will likely overlap temporary pole impacts).
3. Permanent impacts were calculated assuming 1,000 square feet of impact per structure (both 230 kV and 345 kV)
4. ROW Required represents the amount of additional ROW that will be needed based on the structure types proposed.
5. When the transmission line is routed cross country, ROW needed for the 345 kV structure is 150 feet; 125 feet is required for the 230 kV structure.
6. When paralleling a road, 98.5 feet of ROW is required for the 345 kV structure, and 82.5 feet of ROW is required for the 230 kV structure.
7. No additional ROW will be required if the transmission line follows the existing 115 kV line.
8. Shared length is the length of existing ROW (t-line, road, or rail) that the proposed route will follow.
9. All costs are estimates
10. Total Costs incorporates line costs and ROW costs
11. ROW costs are estimated at $275,000 per miles (230 kV wood H-frame), $310,000 per mile (230 kv steel single pole), $385,000 per mile (345 kV wood H-frame), $460,000 per mile (345 kV steel single pole) and $ 515,000 per mile (345 kV steel H-frame)
12. Estimates are 2005 costs