APPENDIX G

Cost Estimates and Economic Analysis

Cost Estimates

Regional Alternative 1

Regional Alternative 2

Regional Alternative 3

Recommended Regional Alternative 1

(Including common set of local reinforcements)

Summary of Total Capital Cost for Preferred Regional Alternative 1

Development Name	Description	Cost ($)
Stage I		
Cold Lake Area 2012	New Mahihkan SS, new Bonnyville 240 kV prebuild	76,050,000
St. Paul - Alt 1B	St. Paul, Willingdon upgrade	35,069,000
Battle River contingency	Heisler, Kitscoty upgrades	22,651,000
Line Clearance Mitigation - Alt 1A	7L14, 7L701, 7L53 (Verm to Irish)	12,640,000
Line Clearance Mitigation - Alt 1B	7L53 (Irish to Bonnyville)	4,874,000
Vermilion Voltage Support	25 MVAr 144 kV cap at Vermilion	1,939,000
Development A - Alt 4	517L rebuild, in-out at Wainwright	56,244,925
Area High Wind - Alt 1A	Rebuild 7L749 from Lloyd to boundary	13,189,000
Development E - Alt 1a	Rebuild 749L from Edgerton to boundary	11,489,997
Provost (unit cost)	Build new Hayter to Provost line, rebuild 749L, 748L, 715L	76,023,674
2012 Cost		310,170,596
Stage II		
Cold Lake Area 2017	Prebuild 240 kV from Marguerite to new Mahihkan	17,340,000
7L50 rebuild - Alt 1CC	Rebuild 7L50 from Battle River to Buffalo Creek	42,368,000
Development C	Rebuild 704L from Jarrow to 7L50 tap	437,150
2017 Cost		60,145,150
Total Project Cost		**370,315,746**

Recommended Regional Alternative 1

Stage I (2012)

Estimate Summary for Need Identification Document (NID)

Project: Central East
Cold Lake Area 2012
TFO: ATCO Electric
Prepared by: ATCO Electric
Date: October 5 , 2009
Accuracy:

2012 Time Frame - New Mahihkan area switching substation. New Bonnyville line pre-built to 240kV. Salvage Bonnyville SVC.

Estimate Valid For 90 Days

+/- 30 %, 2009 $

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 47,003,000	$ 6,720,000	$ 53,723,000	$ -
Substation Facilities	$ 6,850,000	$ -	$ 6,850,000	$ -
Telecommunication	$ 725,000	$ 75,000	$ 800,000	$ -
Substation Salvage	$ 275,000	$ -	$ 275,000	$ -
Transmission Line Salvage	$ 2,250,000	$ -	$ 2,250,000	$ -
Total Facility Costs	**$ 57,103,000**	**$ 6,795,000**	**$ 63,898,000**	**$ -**
Owners Costs	$ 1,995,000	$ 240,000	$ 2,235,000	$ -
Distributed Costs	$ 8,865,000	$ 1,055,000	$ 9,920,000	$ -
Total Owners and Dist. Costs	**$ 10,860,000**	**$ 1,295,000**	**$ 12,155,000**	**$ -**
Total Direct Costs	**$ 67,963,000**	**$ 8,090,000**	**$ 76,053,000**	**$ -**
E&S	$ 5,437,000	$ 647,000	$ 6,084,000	$ -
AFUDC	$ 2,650,000	$ 315,000	$ 2,965,000	$ -
Total Indirect Costs	**$ 8,087,000**	**$ 962,000**	**$ 9,049,000**	**$ -**
TOTAL PROJECT COSTS	**$ 76,050,000**	**$ 9,052,000**	**$ 85,102,000**	**$ -**

Assumptions and Risks

1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with apparatus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage
11. Bonnyville SVC must be salvaged first
12. We will obtain the land for New Mahihkan from Imperial Oil

Line NID Estimate

		System Portion	Customer Portion	TOTAL
Cold Lake 2012	**< Rebuild 7L83 - Single Cct 477 MCM OPGW 10km >**			
Re-build 7L83 from	Materials < Line, Foundations, Structures, Hardware >	$ 491,150	$ -	$ 491,150
New Mahihkan to	Labour < Engineering, Survey, Brushing, Construction >	$ 1,125,961	$ -	$ 1,125,961
Lemming Lake	**Sub - Total**	**$ 1,617,111**	**$ -**	$ 1,617,111
Cold Lake 2012	**< Rebuild 7L74 - Single Cct 795 MCM 2xOPGW 20km >**			
Re-build 7L74 from	Materials < Line, Foundations, Structures, Hardware >	$ 1,324,200	$ -	$ 1,324,200
Wolf Lake to	Labour < Engineering, Survey, Brushing, Construction >	$ 7,634,500	$ -	$ 7,634,500
New Mahihkan	**Sub - Total**	**$ 8,958,700**	**$ -**	$ 8,958,700
Cold Lake 2012	**< 50 km, Pre-built to 240kV, energized at 144kV, Double Cct 2x795 MCM - one side strung >**			
New Line from	Materials < Line, Foundations, Structures, Hardware >	$ 10,007,500	$ -	$ 10,007,500
Mahihkan to	Labour < Engineering, Survey, Brushing, Construction >	$ 19,005,100	$ -	$ 19,005,100
Bonnyville (pre-build 240kV)	**Sub - Total**	**$ 29,012,600**	**$ -**	$ 29,012,600
Cold Lake 2012	**< 2 km, 144kV, Double Cct 477 MCM OPGW 2 km >**			
New Line from	Materials < Line, Foundations, Structures, Hardware >	$ 158,920	$ -	$ 158,920
New Mahihkan	Labour < Engineering, Survey, Brushing, Construction >	$ 462,058	$ -	$ 462,058
to Mahihkan	**Sub - Total**	**$ 620,978**	**$ -**	$ 620,978
Cold Lake 2012	**< Rebuild 7L87 - Single Cct 795MCM OPGW 15km >**			
Re-build 7L87 from	Materials < Line, Foundations, Structures, Hardware >	$ 1,068,150	$ -	$ 1,068,150
Marguerite Lake	Labour < Engineering, Survey, Brushing, Construction >	$ 5,725,875	$ -	$ 5,725,875
to Wolf Lake	**Sub - Total**	**$ 6,794,025**	**$ -**	$ 6,794,025
TOTAL -Transmission Line Project Cost with 240kV Pre-build to Bonnyville from New Mahihkan		**$ 47,003,414**	**$ -**	**$ 47,003,414**

Cold Lake 2012	**< Salvage 7L83, 7L74, 7L87 - 45km >**			
Salvage 7L83, 7L74,	Labour < Engineering, Survey, Brushing, Construction >	$ 2,250,000	$ -	$ 2,250,000
and 7L87		$ -	$ -	$ -
	Sub - Total	**$ 2,250,000**	**$ -**	$ 2,250,000
	TOTAL - Transmission Line Salvage Costs	**$ 2,250,000**	**$ -**	**$ 2,250,000**
Cold Lake 2012	**< Rebuild 7L35 - Single Cct 795 MCM 2xOPGW 12km >**			
Customer Owned	Materials < Line, Foundations, Structures, Hardware >	$ -	$ 914,520	$ 914,520
Rebuild 7L35 from	Labour < Engineering, Survey, Brushing, Construction >	$ -	$ 4,580,700	$ 4,580,700
tap to Primrose	**Sub - Total**	**$ -**	**$ 5,495,220**	$ 5,495,220
Cold Lake 2012	**< Rebuild 7L105 - Single Cct 397.5 MCM 4km >**			
Customer Owned	Materials < Line, Foundations, Structures, Hardware >	$ -	$ 177,738	$ 177,738
Rebuild 7L105 from	Labour < Engineering, Survey, Brushing, Construction >	$ -	$ 1,046,855	$ 1,046,855
New Mahihkan to MahNo	**Sub - Total**	**$ -**	**$ 1,224,593**	$ 1,224,593
	Total Customer Cost for Line Re-builds		**$ 6,719,813**	

Substation NID Estimate

Sub. Name	**< Cold Lake Area 2012 - NEW Mahihkan > REVISED - IOL wants 7L105 to stay at Mahihan**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <8 - 144kV>	$ 630,000	$ -	$ 630,000
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ 315,000	$ -	$ 315,000
	Switch Yard and Substation Control Building	$ 1,050,000	$ -	$ 1,050,000
	Protection, control, metering	$ 525,000	$ -	$ 525,000
	SCADA	$ 175,000	$ -	$ 175,000
	Engineering	$ 525,000	$ -	$ 525,000
	Construction & Commissioning	$ 2,450,000	$ -	$ 2,450,000
	Sub - Total	**$ 5,670,000**	**$ -**	**$ 5,670,000**
	TOTAL - Substation Project Costs	**$ 5,670,000**	**$ -**	**$ 5,670,000**
Sub. Name	**< Cold Lake Area 2012 - 837S Mahihkan >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ -	$ -	$ -
	Protection, control, metering	$ 50,000	$ -	$ 50,000
	SCADA	$ 10,000	$ -	$ 10,000
	Engineering	$ 25,000	$ -	$ 25,000
	Construction & Commissioning	$ 100,000	$ -	$ 100,000
	Sub - Total	**$ 185,000**	**$ -**	**$ 185,000**
	< Salvage >			
	144kV bay - REVISED _ NO Salvage	$ -	$ -	$ -
		$ -	$ -	$ -
		$ -	$ -	$ -
	Sub - Total	**$ -**	**$ -**	**$ -**
	TOTAL - Substation Project Costs	**$ 185,000**	**$ -**	**$ 185,000**
Sub. Name	**< Cold Lake Area 2012 - 700S Bonnyville >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <1 - 144kV>	$ 90,000	$ -	$ 90,000
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ 150,000	$ -	$ 150,000
	Protection, control, metering	$ 75,000	$ -	$ 75,000
	SCADA	$ 25,000	$ -	$ 25,000
	Engineering	$ 75,000	$ -	$ 75,000
	Construction & Commissioning	$ 350,000	$ -	$ 350,000
	Sub - Total	**$ 765,000**	**$ -**	**$ 765,000**
	< Salvage >			
	SVC Building	$ 150,000	$ -	$ 150,000
	703T SVC Transformer	$ 100,000	$ -	$ 100,000
	SVC Breaker 700	$ 25,000	$ -	$ 25,000
	Sub - Total	**$ 275,000**	**$ -**	**$ 275,000**
	TOTAL - Substation Project Costs	**$ 1,040,000**	**$ -**	**$ 1,040,000**
Sub. Name	**< Cold Lake Area 2012 - 822S Wolf Lake >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ -	$ -	$ -
	Protection, control, metering	$ 20,000	$ -	$ 20,000
	SCADA	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ 10,000
	Construction & Commissioning	$ 20,000	$ -	$ 20,000
	Sub - Total	**$ 50,000**	**$ -**	**$ 50,000**
	TOTAL - Substation Project Costs	**$ 50,000**	**$ -**	**$ 50,000**
Sub. Name	**< Cold Lake Area 2012 - 715S Leming Lake >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ -	$ -	$ -
	Protection, control, metering	$ 20,000	$ -	$ 20,000
	SCADA	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ 10,000
	Construction & Commissioning	$ 20,000	$ -	$ 20,000
	Sub - Total	**$ 50,000**	**$ -**	**$ 50,000**
	TOTAL - Substation Project Costs	**$ 50,000**	**$ -**	**$ 50,000**

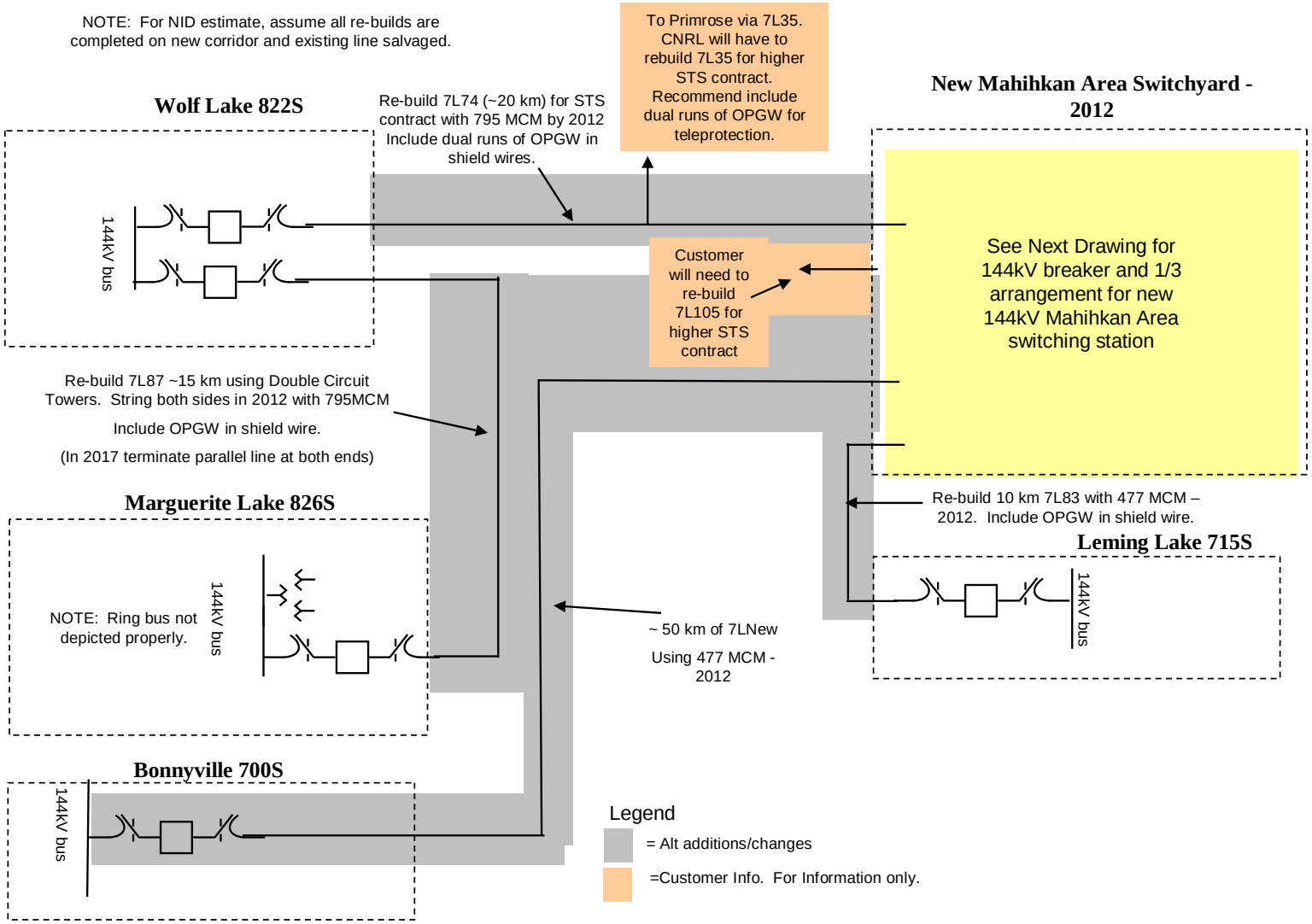
Sub. Name	**< Cold Lake Area 2012 - Marguerite Lake >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ -	$ -	$ -
	Protection, control, metering	$ 20,000	$ -	$ 20,000
	SCADA	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ 10,000
	Construction & Commissioning	$ 20,000	$ -	$ 20,000
	Sub - Total	**$ 50,000**	**$ -**	**$ 50,000**
	TOTAL - Substation Project Costs	**$ 50,000**	**$ -**	**$ 50,000**
Sub. Name	**< Cold Lake Area 2012 - 7L35 Primrose >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ -	$ -	$ -
	Protection, control, metering	$ 10,000	$ -	$ 10,000
	SCADA	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ 10,000
	Construction & Commissioning	$ 20,000	$ -	$ 20,000
	Sub - Total	**$ 40,000**	**$ -**	**$ 40,000**
	TOTAL - Substation Project Costs	**$ 40,000**	**$ -**	**$ 40,000**
Sub. Name	**< Cold Lake Area 2012 - 7L705 IOL >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ -	$ -	$ -
	Protection, control, metering	$ 10,000	$ -	$ 10,000
	SCADA	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ 10,000
	Construction & Commissioning	$ 20,000	$ -	$ 20,000
	Sub - Total	**$ 40,000**	**$ -**	**$ 40,000**
	TOTAL - Substation Project Costs	**$ 40,000**	**$ -**	**$ 40,000**
	TOTAL - Alternative Substation Project Costs	**$ 6,850,000**		

Telecommunication NID Estimate

		System Portion	Customer Portion	TOTAL
Sub. Name	**< Cold Lake Area - NEW Mahihkan >**			
	Tower/Antenna	$ 200,000	$ -	$ -
	Fiber	$ 125,000	$ -	$ -
	Radio Equipment	$ 150,000	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ 25,000	$ -	$ -
	Construction and Commissioning	$ 50,000	$ -	$ -
	Sub - Total	$ 550,000	$ -	$ 550,000
	TOTAL - Telecommunication Project Costs	$ 550,000	$ -	$ 550,000
Sub. Name	**< Cold Lake Area - 837S Mahihkan >**			
	Tower/Antenna	$ -	$ -	$ -
	Fiber	$ 50,000	$ -	$ -
	Radio Equipment	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ -	$ -	$ -
	Construction and Commissioning	$ -	$ -	$ -
	Sub - Total	$ 50,000	$ -	$ 50,000
	TOTAL - Telecommunication Project Costs	$ 50,000	$ -	$ 50,000
Sub. Name	**< Cold Lake Area - 822S Wolf Lake >**			
	Tower/Antenna	$ -	$ -	$ -
	Fiber	$ 75,000	$ -	$ -
	Radio Equipment	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ -	$ -	$ -
	Construction and Commissioning	$ -	$ -	$ -
	Sub - Total	$ 75,000	$ -	$ 75,000
	TOTAL - Telecommunication Project Costs	$ 75,000	$ -	$ 75,000
Sub. Name	**< Cold Lake Area - 715S Leming Lake >**			
	Tower/Antenna	$ -	$ -	$ -
	Fiber	$ 25,000	$ -	$ -
	Radio Equipment	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ -	$ -	$ -
	Construction and Commissioning	$ -	$ -	$ -
	Sub - Total	$ 25,000	$ -	$ 25,000
	TOTAL - Telecommunication Project Costs	$ 25,000	$ -	$ 25,000
Sub. Name	**< Cold Lake Area - Marguerite Lake >**			
	Tower/Antenna	$ -	$ -	$ -
	Fiber	$ 25,000	$ -	$ -
	Radio Equipment	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ -	$ -	$ -
	Construction and Commissioning	$ -	$ -	$ -
	Sub - Total	$ 25,000	$ -	$ 25,000
	TOTAL - Telecommunication Project Costs	$ 25,000	$ -	$ 25,000
TOTAL - Alternative Telecommunication Project Costs				**$ 725,000**

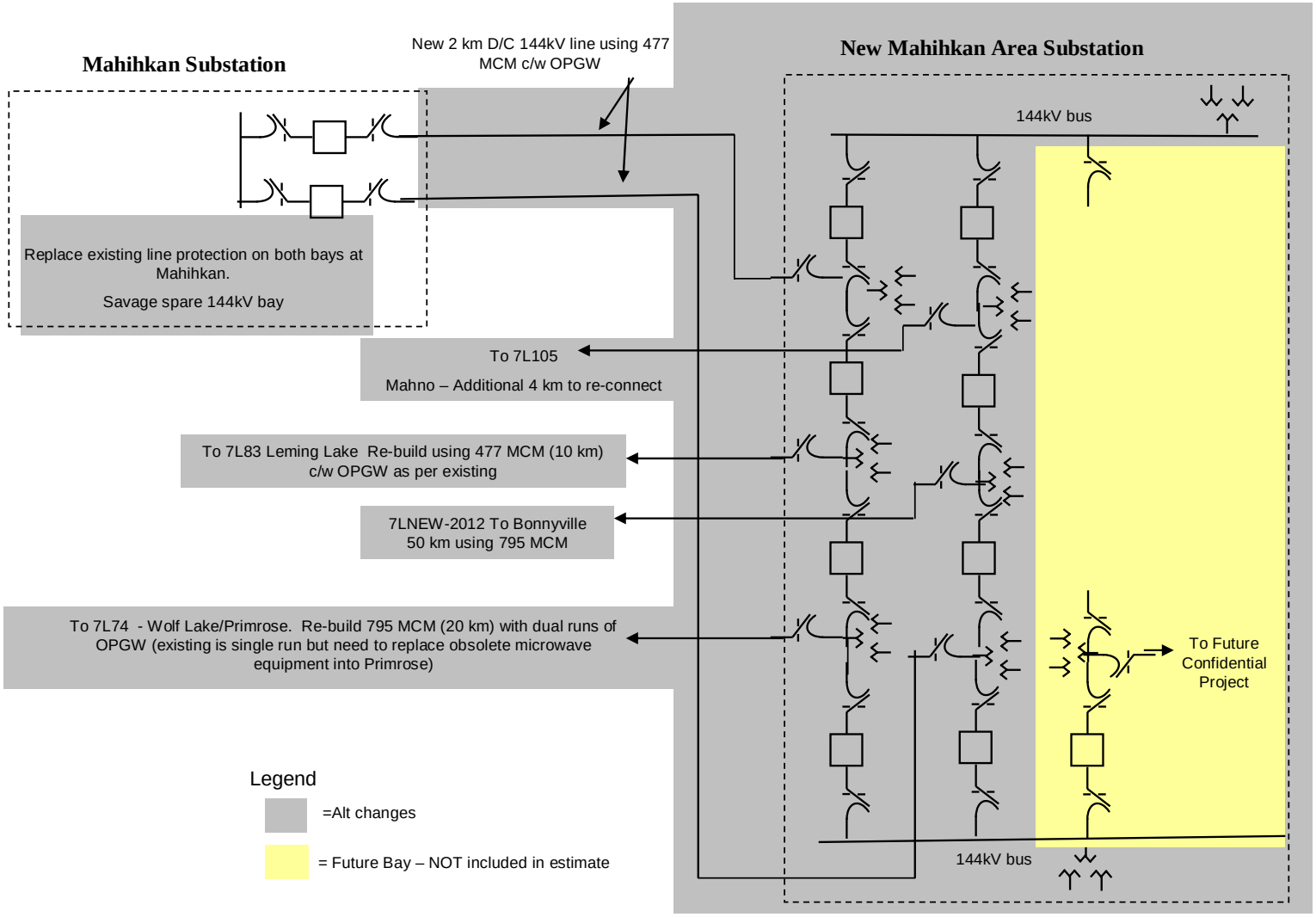
Sub. Name	**< Cold Lake Area - 7L35 Primrose >**			
	Tower/Antenna	$ -	$ -	$ -
	Fiber	$ -	$ 50,000	$ 50,000
	Radio Equipment	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ -	$ -	$ -
	Construction and Commissioning	$ -	$ -	$ -
	Sub - Total	**$ -**	**$ 50,000**	**$ 50,000**
	TOTAL - Telecommunication Project Costs	**$ -**	**$ 50,000**	**$ 50,000**
Sub. Name	**< Cold Lake Area - 7L105 IOL >**			
	Tower/Antenna	$ -	$ -	$ -
	Fiber	$ -	$ 25,000	$ 25,000
	Radio Equipment	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ -	$ -	$ -
	Construction and Commissioning	$ -	$ -	$ -
	Sub - Total	**$ -**	**$ 25,000**	**$ 25,000**
	TOTAL - Telecommunication Project Costs	**$ -**	**$ 25,000**	**$ 25,000**
TOTAL - Alternative Customer Telecommunication Project Costs				**$ 75,000**

Cold Lake Area Alternative-2012



Cold Lake Alternative Base

New Mahihkan 144kV switchyard



Estimate Summary for Need Identification Document (NID)

Project: Central East
St. Paul - Alternative 1B
TFO: ATCO Electric
Prepared by: ATCO Electric
Date: August 27, 2009
Accuracy:

Connect St. Paul as in/out 144kV off of 7L70 with Willingdon at 144kV tapped off 7L92. Bonnyville second POD transformer added and all 72kV equipment removed. (6L82 and 6L79 from St. Paul to Willingdon handed over to Distribution.)

Estimate Valid For 90 Days

+/- 30 %, 2009 $

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 12,282,000	$ -	$ 12,282,000	$ -
Substation Facilities	$ 11,940,000	$ -	$ 11,940,000	$ -
Telecommunication	$ 425,000	$ -	$ 425,000	$ -
Substation Salvage	$ 1,750,000	$ -	$ 1,750,000	$ -
Transmission Line Salvage	$ -	$ -	$ -	$ -
Total Facility Costs	**$ 26,397,000**	**$ -**	**$ 26,397,000**	**$ -**
Owners Costs	$ 855,000	$ -	$ 855,000	$ -
Distributed Costs	$ 4,088,000	$ -	$ 4,088,000	$ -
Total Owners and Dist. Costs	**$ 4,943,000**	**$ -**	**$ 4,943,000**	**$ -**
Total Direct Costs	**$ 31,340,000**	**$ -**	**$ 31,340,000**	**$ -**
E&S	$ 2,507,000	$ -	$ 2,507,000	$ -
AFUDC	$ 1,222,000	$ -	$ 1,222,000	$ -
Total Indirect Costs	**$ 3,729,000**	**$ -**	**$ 3,729,000**	**$ -**
TOTAL PROJECT COSTS	**$ 35,069,000**	**$ -**	**$ 35,069,000**	**$ -**

Assumptions and Risks

1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with apparatus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage
11. Can energize St. Paul at 144kV prior to de-energizing any 72kV line
12. 6L82 and 6L79 from St. Paul to Willingdon handed over to Distribution - no cost to Transmission

Connect St. Paul as in/out 144kV off of 7L70 with Willingdon at 144kV tapped off 7L92. Bonnyville second POD transformer added and all 72kV equipment removed.

Line NID Estimate

St. Paul 1B	**< 32 km, 144kV, Double Cct 266.8 MCM >**			
New Line from 7L70	Materials < Line, Foundations, Structures, Hardware >	$ 1,875,488	$ -	$ 1,875,488
to St. Paul	Labour < Engineering, Survey, Brushing, Construction >	$ 9,532,850	$ -	$ 9,532,850
	Sub - Total	**$ 11,408,338**	**$ -**	**$ 11,408,338**
St. Paul 1B	**< 5 km, 144kV, Single Cct 266.8 MCM >**			
New Line from 7L92	Materials < Line, Foundations, Structures, Hardware >	$ 188,620	$ -	$ 188,620
tap to Willingdon sub	Labour < Engineering, Survey, Brushing, Construction >	$ 684,734	$ -	$ 684,734
	Sub - Total	**$ 873,354**	**$ -**	**$ 873,354**
	TOTAL - New Transmission Line Costs	**$ 12,281,692**	**$ -**	**$ 12,281,692**

Substation NID Estimate

Sub. Name	**< St. Paul Area Alt. 1A/1B/2A/2B - 700S Bonnyville >**			
	Transformers <1 -144/25 kV, 25/33/41.6 MVA LTC>	$ 1,000,000	$ -	$ 1,000,000
	Circuit Breakers <1 - 144kV>	$ 90,000	$ -	$ 90,000
	Circuit Breakers < 2 - 25kV >	$ 80,000	$ -	$ 80,000
	PT's & CT's	$ 100,000	$ -	$ 100,000
	Switch Yard and Substation Control Building	$ 280,000	$ -	$ 280,000
	Protection, control, metering	$ 150,000	$ -	$ 150,000
	SCADA	$ 50,000	$ -	$ 50,000
	Engineering	$ 250,000	$ -	$ 250,000
	Construction & Commissioning	$ 800,000	$ -	$ 800,000
	Sub - Total	**$ 2,800,000**	**$ -**	**$ 2,800,000**
	< Salvage >			
	Transformer 601T, 501VR	$ 150,000	$ -	$ 150,000
	Transformer 602T, 502VR	$ 150,000	$ -	$ 150,000
	72kV structures, buswork, brkr	$ 100,000	$ -	$ 100,000
	Sub - Total	**$ 400,000**	**$ -**	**$ 400,000**
	TOTAL - Substation Project Costs	**$ 3,200,000**	**$ -**	**$ 3,200,000**

Sub. Name	**< St. Paul Area Alt. 1B/2B - 707S St. Paul >**			
	Transformers <voltage, size>	$ 2,000,000	$ -	$ 2,000,000
	Circuit Breakers <4 - 144kV>	$ 360,000	$ -	$ 360,000
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ 100,000	$ -	$ 100,000
	Switch Yard and Substation Control Building	$ 400,000	$ -	$ 400,000
	Protection, control, metering	$ 300,000	$ -	$ 300,000
	SCADA	$ 150,000	$ -	$ 150,000
	Engineering	$ 500,000	$ -	$ 500,000
	Construction & Commissioning	$ 1,600,000	$ -	$ 1,600,000
	Sub - Total	**$ 5,410,000**	**$ -**	**$ 5,410,000**
	< Salvage >			
	Transformer 601T, 501VR	$ 150,000	$ -	$ 150,000
	Transformer 602T, 502VR	$ 150,000	$ -	$ 150,000
	72kV structures, buswork, brkr	$ 100,000	$ -	$ 100,000
	72kV structures, buswork, brkr	$ 50,000	$ -	$ 50,000
	Transformer 603T	$ 100,000	$ -	$ 100,000
	Sub - Total	**$ 550,000**	**$ -**	**$ 550,000**
	TOTAL - Substation Project Costs	**$ 5,960,000**	**$ -**	**$ 5,960,000**

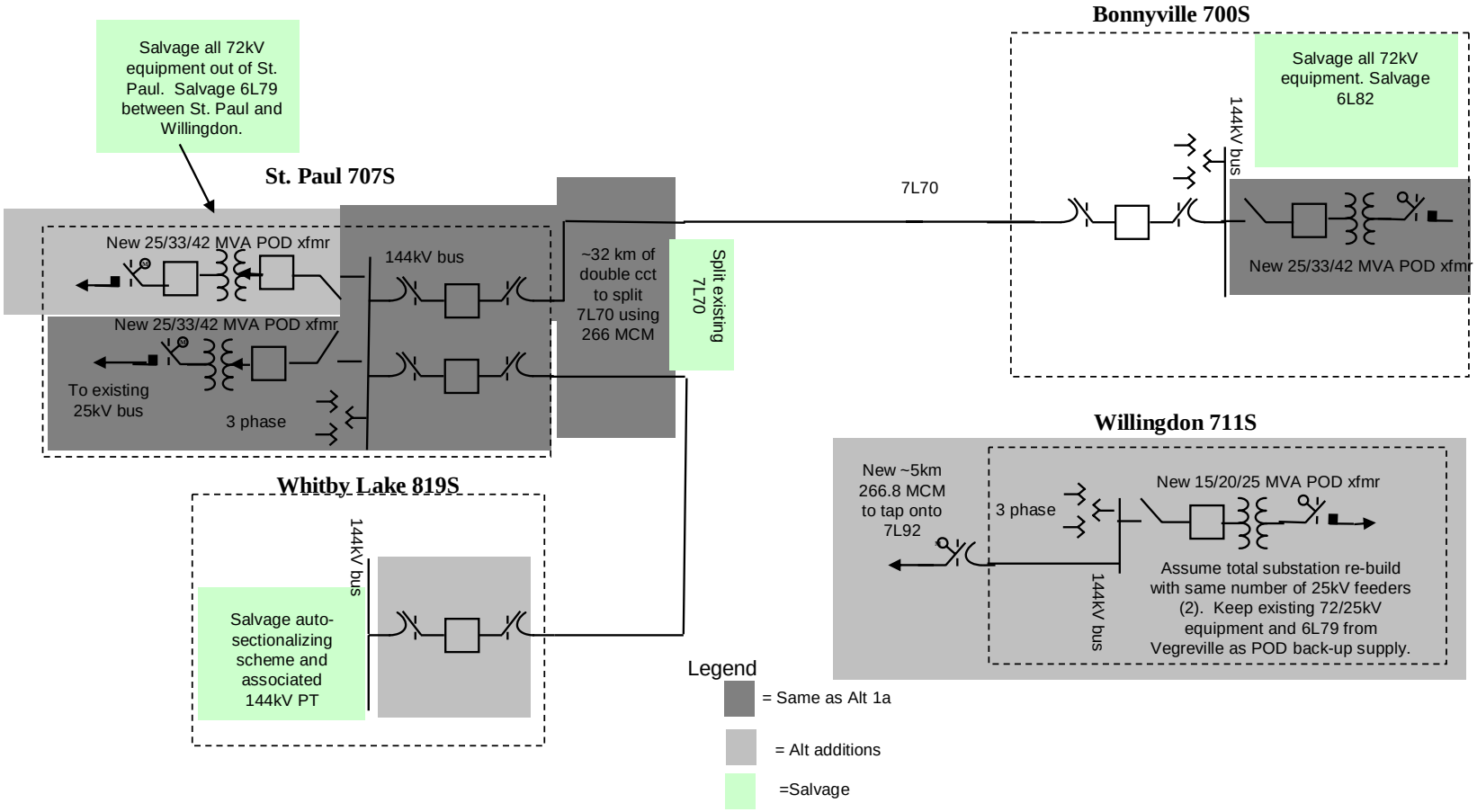
Sub. Name	**< St. Paul Area Alt. 1B/2B - 711S Willingdon - SALVAGE >**			
	Salvage Substation	$ 800,000	$ -	$ 800,000
			$ -	$ -
	Sub - Total	**$ 800,000**	**$ -**	**$ 800,000**
	TOTAL - Substation Project Costs	**$ 800,000**	**$ -**	**$ 800,000**

Sub. Name	< St. Paul Area Alt. 1B/2B - NEW Willingdon >					
	Transformers <voltage, size>	$	1,000,000	$	-	$ 1,000,000
	Circuit Breakers <1 - 144kV>	$	90,000	$	-	$ 90,000
	Circuit Breakers 2 - 25 kV>	$	80,000	$	-	$ 80,000
	PT's & CT's	$	45,000	$	-	$ 45,000
	Switch Yard and Substation Control Building	$	450,000	$	-	$ 450,000
	Protection, control, metering	$	200,000	$	-	$ 200,000
	SCADA	$	100,000	$	-	$ 100,000
	Engineering	$	100,000	$	-	$ 100,000
	Construction & Commissioning	$	900,000	$	-	$ 900,000
	Sub - Total	**$**	**2,965,000**	**$**	**-**	**$ 2,965,000**
	TOTAL - Substation Project Costs	**$**	**2,965,000**	**$**	**-**	**$ 2,965,000**
Sub. Name	**< St. Paul Area Alt. 1A/1B - 819S Whitby Lake >**					
	Transformers <voltage, size>	$	-	$	-	$ -
	Circuit Breakers <1 - 144kV>	$	90,000	$	-	$ 90,000
	Circuit Breakers <voltage 2>	$	-	$	-	$ -
	PT's & CT's	$	-	$	-	$ -
	Switch Yard and Substation Control Building	$	150,000	$	-	$ 150,000
	Protection, control, metering	$	75,000	$	-	$ 75,000
	SCADA	$	25,000	$	-	$ 25,000
	Engineering	$	75,000	$	-	$ 75,000
	Construction & Commissioning	$	350,000	$	-	$ 350,000
	Sub - Total	**$**	**765,000**	**$**	**-**	**$ 765,000**
	TOTAL - Substation Project Costs	**$**	**765,000**	**$**	**-**	**$ 765,000**
		$	11,940,000			
		$	1,750,000			

Telecommunication NID Estimate

Sub. Name	< St. Paul Area Alt. 1B/2B - NEW Willingdon >					
	Tower/Antenna	$	200,000	$	-	$ -
	Fiber	$	-	$	-	$ -
	Radio Equipment	$	150,000	$	-	$ -
	Building (If substation building not utilized)	$	-	$	-	$ -
	Engineering	$	25,000	$	-	$ -
	Construction and Commissioning	$	50,000	$	-	$ -
	Sub - Total	**$**	**425,000**	**$**	**-**	**$ 425,000**
	TOTAL - Telecommunication Project Costs	**$**	**425,000**	**$**	**-**	**$ 425,000**

72kV Network between Bonnyville & Vegreville – Alternative 1b



Estimate Summary for Need Identification Document (NID)

Project: Central East
Battle River
TFO: ATCO Electric
Prepared by: ATCO Electric
Date: August 27, 2009
Accuracy:

Battle River 701T contingency. 7L14 contingency.

Estimate Valid For 90 Days
+/- 30 %, 2009 $

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 3,803,000	$ -	$ 3,803,000	$ -
Substation Facilities	$ 10,590,000	$ -	$ 10,590,000	$ -
Telecommunication	$ 170,000	$ -	$ 170,000	$ -
Substation Salvage	$ 800,000	$ -	$ 800,000	$ -
Transmission Line Salvage	$ 1,850,000	$ -	$ 1,850,000	$ -
Total Facility Costs	**$ 17,213,000**	**$ -**	**$ 17,213,000**	**$ -**
Owners Costs	$ 390,000	$ -	$ 390,000	$ -
Distributed Costs	$ 2,640,000	$ -	$ 2,640,000	$ -
Total Owners and Dist. Costs	**$ 3,030,000**	**$ -**	**$ 3,030,000**	**$ -**
Total Direct Costs	**$ 20,243,000**	**$ -**	**$ 20,243,000**	**$ -**
E&S	$ 1,619,000	$ -	$ 1,619,000	$ -
AFUDC	$ 789,000	$ -	$ 789,000	$ -
Total Indirect Costs	**$ 2,408,000**	**$ -**	**$ 2,408,000**	**$ -**
TOTAL PROJECT COSTS	**$ 22,651,000**	**$ -**	**$ 22,651,000**	**$ -**

Assumptions and Risks

1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with apparatus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage
11. No refurbishment costs for Vermilliion tie transformer or Heisler transformer
12. No Alberta transportation restrictions on Kitscoty expansion

Battle River 701T contingency. 7L14 contingency.

Battle River Alternative - Line Estimates

Battle River	**< 3 km, 144kV, Single Cct 397.5 MCM >**			
New Line from	Materials < Line, Foundations, Structures, Hardware >	$ 133,303	$ -	$ 133,303
Heisler to 7L701 tap	Labour < Engineering, Survey, Brushing, Construction >	$ 785,141	$ -	$ 785,141
	Sub - Total	**$ 918,445**	**$ -**	$ 918,445
Battle River	**< 8 km, 144kV, Double Cct 266.8 MCM >**			
New Line from	Materials < Line, Foundations, Structures, Hardware >	$ 301,792	$ -	$ 301,792
Kitscoty to 7L14	Labour < Engineering, Survey, Brushing, Construction >	$ 2,383,213	$ -	$ 2,383,213
	Sub - Total	**$ 2,685,005**	**$ -**	$ 2,685,005
Battle River	**< Bypass for Kitscoty on 7L14 >**			
Bypass for	Materials < Line, Foundations, Structures, Hardware >	$ 50,000	$ -	$ 50,000
Kitscoty on 7L14	Labour < Engineering, Survey, Brushing, Construction >	$ 150,000	$ -	$ 150,000
	Sub - Total	**$ 200,000**	**$ -**	$ 200,000
	TOTAL - New Transmission Line Costs	**$ 3,803,449**	**$ -**	**$ 3,803,449**
Battle River	**< Salvage 6L06 - 37km >**			
Salvage 6L06	Labour < Engineering, Survey, Brushing, Construction >	$ 1,850,000	$ -	$ 1,850,000
		$ -	$ -	$ -
	Sub - Total	**$ 1,850,000**	**$ -**	**$ 1,850,000**
	TOTAL - Transmission Line Salvage Costs	**$ 1,850,000**	**$ -**	**$ 1,850,000**
	TOTAL - Transmission Line Project Costs	**$ 5,653,449**	**$ -**	**$ 5,653,449**

Battle River Alternative - Substation Estimates

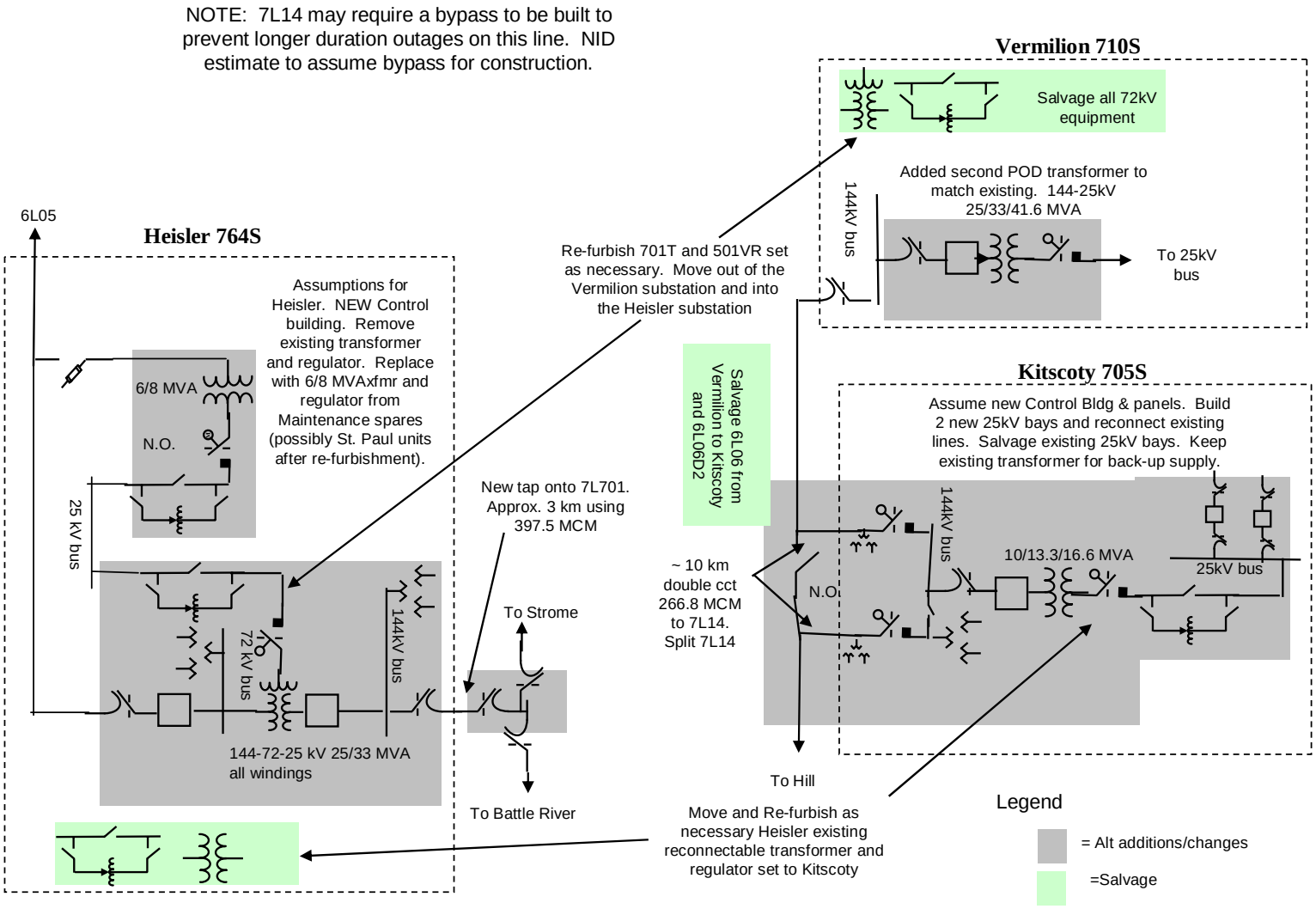
Sub. Name	**< Battle River - 764S Heisler >**			
	Transformers <voltage, size>	$ 600,000	$ -	$ 600,000
	Circuit Breakers <2 - 144kV>	$ 180,000	$ -	$ 180,000
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ 75,000	$ -	$ 75,000
	Switch Yard and Substation Control Building	$ 700,000	$ -	$ 700,000
	Protection, control, metering	$ 400,000	$ -	$ 400,000
	SCADA	$ 100,000	$ -	$ 100,000
	Engineering	$ 400,000	$ -	$ 400,000
	Construction & Commissioning	$ 1,500,000	$ -	$ 1,500,000
	Sub - Total	**$ 3,955,000**	**$ -**	**$ 3,955,000**
	< Salvage >			
	144-72kV reconnectable xfmr + 25kV VR	$ 150,000	$ -	$ 150,000
	building	$ 100,000	$ -	$ 100,000
		$ -	$ -	$ -
	Sub - Total	**$ 250,000**	**$ -**	**$ 250,000**
	TOTAL - Substation Project Costs	**$ 4,205,000**	**$ -**	**$ 4,205,000**
Sub. Name	**< Battle River - 710S Vermilion >**			
	Transformers <1 -144/25 kV, 25/33/41.6 MVA LTC>	$ 1,000,000	$ -	$ 1,000,000
	Circuit Breakers <1 - 144kV>	$ 90,000	$ -	$ 90,000
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ 300,000	$ -	$ 300,000
	Protection, control, metering	$ 150,000	$ -	$ 150,000
	SCADA	$ 50,000	$ -	$ 50,000
	Engineering	$ 150,000	$ -	$ 150,000
	Construction & Commissioning	$ 1,050,000	$ -	$ 1,050,000
	Sub - Total	**$ 2,790,000**	**$ -**	**$ 2,790,000**
	< Salvage >			
	501TD, 501VR, 72kV buswork, 602, 600PT1	$ 400,000	$ -	$ 400,000
	Sub - Total	**$ 400,000**	**$ -**	**$ 400,000**
	TOTAL - Substation Project Costs	**$ 3,190,000**	**$ -**	**$ 3,190,000**

Sub. Name	**< Battle River - 705S Kitscoty >**			
	Transformers <>	$ 600,000	$ -	$ 600,000
	Circuit Breakers <1 - 144kV>	$ 90,000	$ -	$ 90,000
	Circuit Breakers <2 - 25kV>	$ 80,000	$ -	$ 80,000
	PT's & CT's	$ 75,000	$ -	$ 75,000
	Switch Yard and Substation Control Building	$ 600,000	$ -	$ 600,000
	Protection, control, metering	$ 400,000	$ -	$ 400,000
	SCADA	$ 100,000	$ -	$ 100,000
	Engineering	$ 400,000	$ -	$ 400,000
	Construction & Commissioning	$ 1,500,000	$ -	$ 1,500,000
	Sub - Total	**$ 3,845,000**	**$ -**	**$ 3,845,000**
	< Salvage >			
	Building and 25kv Bays	$ 150,000	$ -	$ 150,000
			$ -	$ -
	Sub - Total	**$ 150,000**	**$ -**	**$ 150,000**
TOTAL - Substation Project Costs		**$ 3,995,000**	**$ -**	**$ 3,995,000**
Total Salvage				**$ 800,000**
Total Combined Substation Costs				**$10,590,000**

Battle River Alternative - Telecommunications Estimates

Sub. Name	**< Battle River - 764S Heisler >**			
	Tower/Antenna	$ -	$ -	$ -
	Fiber	$ -	$ -	$ -
	Radio Equipment	$ 50,000	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ -
	Construction and Commissioning	$ 25,000	$ -	$ -
	Sub - Total	**$ 85,000**	**$ -**	**$ 85,000**
TOTAL - Telecommunication Project Costs		**$ 85,000**	**$ -**	**$ 85,000**
Sub. Name	**< Battle River - 705S Kitscoty >**			
	Tower/Antenna	$ -	$ -	$ -
	Fiber	$ -	$ -	$ -
	Radio Equipment	$ 50,000	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ -
	Construction and Commissioning	$ 25,000	$ -	$ -
	Sub - Total	**$ 85,000**	**$ -**	**$ 85,000**
TOTAL - Telecommunication Project Costs		**$ 85,000**	**$ -**	**$ 85,000**
Total Combined Telecommuncations Costs				**$ 170,000**

Combined Heisler & Kitscoty Alternative



Estimate Summary for Need Identification Document (NID)

Project: Central East
Line Clearace Mitigation - Alternative 1A
TFO: ATCO Electric
Prepared by: ATCO Electric
Date: August 27, 2009 **Estimate Valid For 90 Days**
Accuracy: **+/- 30 %, 2009 $**

Mitigate Clearance issues on 7L14, 7L701, and 7L53 from Vermillion to Irish Creek.

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 9,445,000	$ -	$ 9,445,000	$ -
Substation Facilities	$ -	$ -	$ -	$ -
Telecommunication	$ -	$ -	$ -	$ -
Substation Salvage	$ -	$ -	$ -	$ -
Transmission Line Salvage	$ -	$ -	$ -	$ -
Total Facility Costs	**$ 9,445,000**	**$ -**	**$ 9,445,000**	**$ -**
Owners Costs	$ 378,000	$ -	$ 378,000	$ -
Distributed Costs	$ 1,473,000	$ -	$ 1,473,000	$ -
Total Owners and Dist. Costs	**$ 1,851,000**	**$ -**	**$ 1,851,000**	**$ -**
Total Direct Costs	**$ 11,296,000**	**$ -**	**$ 11,296,000**	**$ -**
E&S	$ 904,000	$ -	$ 904,000	$ -
AFUDC	$ 440,000	$ -	$ 440,000	$ -
Total Indirect Costs	**$ 1,344,000**	**$ -**	**$ 1,344,000**	**$ -**
TOTAL PROJECT COSTS	**$ 12,640,000**	**$ -**	**$ 12,640,000**	**$ -**

Assumptions and Risks

1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with appartus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage

Line Mitigation 1A	**< 7L14 - 63km >**			
Mitigate 7L14 from Vermillion to Hill	Materials < Line, Foundations, Structures, Hardware >	$ 4,793,628	$ -	$ 4,793,628
	Labour < Engineering, Survey, Brushing, Construction >	$ -	$ -	$ -
	Sub - Total	**$ 4,793,628**	**$ -**	$ 4,793,628
Line Mitigation 1A	**< 7L701 - 39km >**			
Mitigate 7L701 from Battle River to Strome	Materials < Line, Foundations, Structures, Hardware >	$ 1,871,662	$ -	$ 1,871,662
	Labour < Engineering, Survey, Brushing, Construction >	$ -	$ -	$ -
	Sub - Total	**$ 1,871,662**	**$ -**	$ 1,871,662
Line Mitigation 1A	**< 7L53 - (Irish Creek to Vermillion) 58km >**			
Mitigate 7L53 from Irish Creek to Vermillion	Materials < Line, Foundations, Structures, Hardware >	$ 2,779,612	$ -	$ 2,779,612
	Labour < Engineering, Survey, Brushing, Construction >	$ -	$ -	$ -
	Sub - Total	**$ 2,779,612**	**$ -**	$ 2,779,612
	TOTAL - Transmission Line Mitigation Costs	**$ 9,444,902**	**$ -**	**$ 9,444,902**

Estimate Summary for Need Identification Document (NID)

Project: Central East
Line Clearace Mitigation - Alternative 1B
TFO: ATCO Electric
Prepared by: ATCO Electric
Date: August 27, 2009 **Estimate Valid For 90 Days**
Accuracy: **+/- 30 %, 2009 $**

Mitigate Clearance issues on 7L53 from Irish Creek to Bonnyville.

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 3,642,000	$ -	$ 3,642,000	$ -
Substation Facilities	$ -	$ -	$ -	$ -
Telecommunication	$ -	$ -	$ -	$ -
Substation Salvage	$ -	$ -	$ -	$ -
Transmission Line Salvage	$ -	$ -	$ -	$ -
Total Facility Costs	**$ 3,642,000**	**$ -**	**$ 3,642,000**	**$ -**
Owners Costs	$ 146,000	$ -	$ 146,000	$ -
Distributed Costs	$ 568,000	$ -	$ 568,000	$ -
Total Owners and Dist. Costs	**$ 714,000**	**$ -**	**$ 714,000**	**$ -**
Total Direct Costs	**$ 4,356,000**	**$ -**	**$ 4,356,000**	**$ -**
E&S	$ 348,000	$ -	$ 348,000	$ -
AFUDC	$ 170,000	$ -	$ 170,000	$ -
Total Indirect Costs	**$ 518,000**	**$ -**	**$ 518,000**	**$ -**
TOTAL PROJECT COSTS	**$ 4,874,000**	**$ -**	**$ 4,874,000**	**$ -**

Assumptions and Risks

1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with appartus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage

Mitigate Clearance issues on 7L53 from Irish Creek to Bonnyville.

Line Mitigation 1B	**< 7L53 - (Bonnyville to Irish Creek) 76km >**			
Mitigate 7L53 from Bonnyville to Irish Creek	Materials < Line, Foundations, Structures, Hardware >	$ 3,642,250	$ -	$ 3,642,250
	Labour < Engineering, Survey, Brushing, Construction >	$ -	$ -	$ -
	Sub - Total	**$ 3,642,250**	**$ -**	$ 3,642,250
	TOTAL - Transmission Line Mitigation Costs	**$ 3,642,250**	**$ -**	**$ 3,642,250**

Estimate Summary for Need Identification Document (NID)

Project: Central East Vermillion Voltage Support
TFO: ATCO Electric
Prepared by: ATCO Electric
Date: August 27, 2009
Accuracy:

Add a new 25 MVar 144kV capacitor bank at Vermilion.

Estimate Valid For 90 Days
+/- 30 %, 2009 $

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ -	$ -	$ -	$ -
Substation Facilities	$ 1,356,000	$ -	$ 1,356,000	$ -
Telecommunication	$ -	$ -	$ -	$ -
Substation Salvage	$ -	$ -	$ -	$ -
Transmission Line Salvage	$ -	$ -	$ -	$ -
Total Facility Costs	**$ 1,356,000**	**$ -**	**$ 1,356,000**	**$ -**
Owners Costs	$ 150,000	$ -	$ 150,000	$ -
Distributed Costs	$ 226,000	$ -	$ 226,000	$ -
Total Owners and Dist. Costs	**$ 376,000**	**$ -**	**$ 376,000**	**$ -**
Total Direct Costs	**$ 1,732,000**	**$ -**	**$ 1,732,000**	**$ -**
E&S	$ 139,000	$ -	$ 139,000	$ -
AFUDC	$ 68,000	$ -	$ 68,000	$ -
Total Indirect Costs	**$ 207,000**	**$ -**	**$ 207,000**	**$ -**
TOTAL PROJECT COSTS	**$ 1,939,000**	**$ -**	**$ 1,939,000**	**$ -**

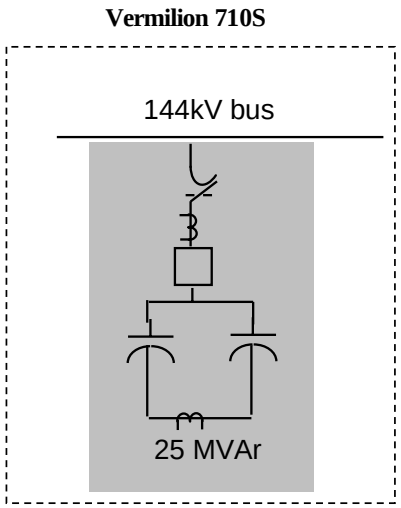
Assumptions and Risks

1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with appartus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage

Substation NID Estimate

Sub. Name	**< Vermilion Area Voltage Support - 710S Vermilion >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <1 - 144kV 0-Xing>	$ 130,000	$ -	$ 130,000
	Capacitor Bank <2 - 144kV 12.5 MVar >	$ 150,000	$ -	$ 150,000
	PT's & CT's	$ 36,000	$ -	$ 36,000
	Switch Yard and Substation Control Building	$ 260,000	$ -	$ 260,000
	Protection, control, metering	$ 70,000	$ -	$ 70,000
	SCADA	$ 10,000	$ -	$ 10,000
	Engineering	$ 150,000	$ -	$ 150,000
	Construction & Commissioning	$ 550,000	$ -	$ 550,000
	Sub - Total	**$ 1,356,000**	**$ -**	**$ 1,356,000**
	TOTAL - Substation Project Costs	**$ 1,356,000**	**$ -**	**$ 1,356,000**

Vermilion Area Voltage Support



Legend

= Alt additions

Estimate Summary for Need Identification Document (NID)

Project: Central East Area Transmission Development A: Alternative 4 (2009$)
TFO: AltaLink
Prepared by: Teshmont
Date: July 19, 2009
Accuracy: +30%/-30%

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 31,871,400	$ -	$ 31,871,400	$ -
Substation Facilities	$ 4,062,298	$ -	$ 4,062,298	$ -
Telecommunication	$ 440,000	$ -	$ 440,000	$ -
Total Facility Costs	**$ 36,373,698**	**$ -**	**$ 36,373,698**	**$ -**
Owners Costs	$ 1,745,219	$ -	$ 1,745,219	$ -
Distributed Costs	$ 10,236,361	$ -	$ 10,236,361	$ -
Total Owners and Dist. Costs	**$ 11,981,580**	**$ -**	**$ 11,981,580**	**$ -**
Total Direct Costs	**$ 48,355,278**	**$ -**	**$ 48,355,278**	**$ -**
Salvage Costs	$ 1,800,000	$ -	$ 1,800,000	$ -
Other Costs				
E&S	$ 3,868,422	$ -	$ 3,868,422	$ -
AFUDC	$ 4,021,225	$ -	$ 4,021,225	$ -
Total Indirect Costs	**$ 7,889,647**	**$ -**	**$ 7,889,647**	**$ -**
TOTAL PROJECT COSTS	**$ 56,244,925**	**$ -**	**$ 56,244,925**	**$ -**

Assumptions and Risks

The Salvage Costs does not impact the Total project Costs
Existing 138 kV transmission lines are rebuilt on existing R/W

Transmission Line - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Line 1	**From Jarrow 252S to the junction 704AL**				
	20km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OHSW	$ 4,576,000	$ -	$ 4,576,000	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 4,576,000**	**$ -**	**$ 4,576,000**	**$ -**
Line 2	**From junction 704AL to Wainwright 51S**				
	26km of line using 1x477 MCM that is D/C, using D/C steel pole structures and one OHSW	$ 11,983,400	$ -	$ 11,983,400	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 11,983,400**	**$ -**	**$ 11,983,400**	**$ -**
Line 3	**From junction 704AL to structure # 704L260**				
	25km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OHSW	$ 5,720,000	$ -	$ 5,720,000	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 5,720,000**	**$ -**	**$ 5,720,000**	**$ -**
Line 4	**From Wainwright 51S to Edgerton 899S**				
	40km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OPGW	$ 9,592,000	$ -	$ 9,592,000	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 9,592,000**	**$ -**	**$ 9,592,000**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 31,871,400**	**$ -**	**$ 31,871,400**	**$ -**

Substation - NID Estimate

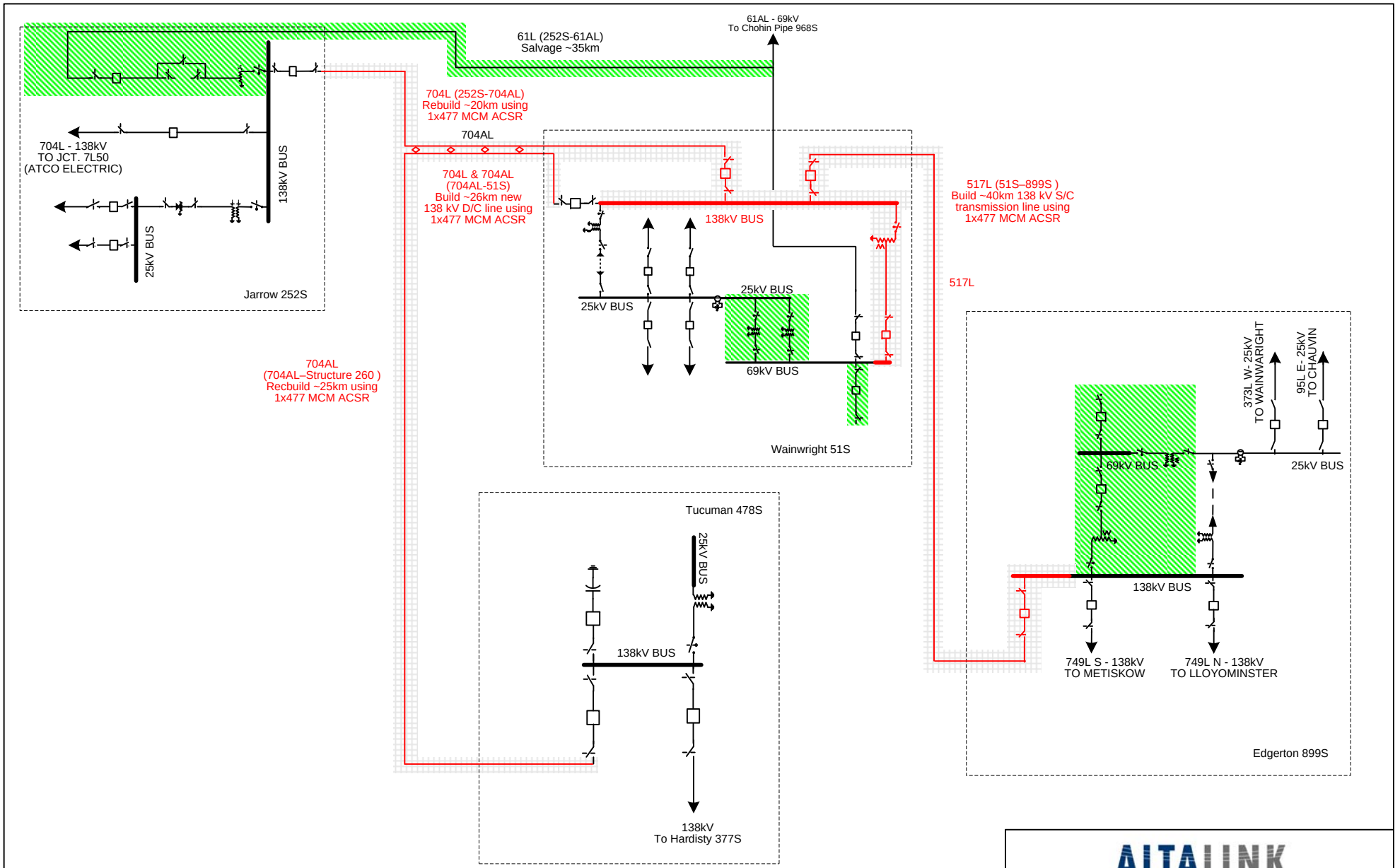
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub 1	**Edgerton 899S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty:1, dead tank, 138kV>	$ 219,714	$ -	$ 219,714	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 1CVT, 138kV>	$ 47,236	$ -	$ 47,236	$ -
	Switch Yard and Substation Control Building	$ 625,925	$ -	$ 625,925	$ -
	Protection, control, metering	$ 115,060	$ -	$ 115,060	$ -
	SCADA	$ 27,500	$ -	$ 27,500	
	Sub - Total	**$ 1,091,734**	**$ -**	**$ 1,091,734**	**$ -**
Sub 2	**Wainwright 51S**				
	Transformer <1, 132/72kV, 18.75/25 MVA, moved from Edgerton 899S	$ 357,566	$ -	$ 357,566	$ -
	Circuit Breakers <Qty: (2) dead tank and (1) live tank, 138kV>	$ 493,824	$ -	$ 493,824	$ -
	Circuit Breakers <Qty: (1) dead tank, 69kV>	$ 96,899	$ -	$ 96,899	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: (3) CVT's & (1) CT, 138kV>	$ 262,020	$ -	$ 262,020	$ -
	Protection, Control and Metering	$ 297,737	$ -	$ 297,737	$ -
	SCADA	$ 27,500	$ -	$ 27,500	$ -
	Switch Yard and Substation Control Building	$ 1,378,720	$ -	$ 1,378,720	$ -
	Station Energization	$ 56,298	$ -	$ 56,298	$ -
	Sub - Total	$ 2,970,564	$ -	$ 2,970,564	**$ -**
	TOTAL - Substation Project Costs	**$ 4,062,298**	**$ -**	**$ 4,062,298**	**$ -**

Telecommunication NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Telecom 1	**Edgerton 899S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 220,000**	**$ -**	**$ 220,000**	**$ -**
Telecom 2	**Wainwright 51S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 220,000**	**$ -**	**$ 220,000**	**$ -**
	TOTAL - Telecommunication Project Costs	**$ 440,000**	**$ -**	**$ 440,000**	**$ -**

Estimate Summary with Owner's Cost

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Facility Cost				
Transmission Line Project Costs	$ 31,871,400	$ -	$ 31,871,400	$ -
Substation Project Costs	$ 4,062,298	$ -	$ 4,062,298	$ -
Telecommunications Project Costs	$ 440,000	$ -	$ 440,000	$ -
Salvage Costs	$ -	$ -	$ -	$ -
Sub - Total	**$ 36,373,698**	**$ -**	**$ 36,373,698**	**$ -**
Owners Cost				
Preliminary Engineering	$ 20,000	$ -	$ 20,000	$ -
Siting	$ 400,000	$ -	$ 400,000	$ -
Protection Settings	$ 85,000	$ -	$ 85,000	$ -
Land	$ 1,240,219	$ -	$ 1,240,219	$ -
Metering	$ -	$ -	$ -	$ -
Sub - Total	**$ 1,745,219**	**$ -**	**$ 1,745,219**	**$ -**
Distributed Cost				
Distributed Cost	$ 5,840,427	$ -	$ 5,840,427	$ -
Contingency	$ 4,395,934	$ -	$ 4,395,934	$ -
Escalation	$ -	$ -	$ -	$ -
Sub - Total	**$ 10,236,361**	**$ -**	**$ 10,236,361**	**$ -**
Indirect Costs				
E&S	$ 3,868,422	$ -	$ 3,868,422	$ -
AFUDC	$ 4,021,225	$ -	$ 4,021,225	$ -
Sub - Total	**$ 7,889,647**	**$ -**	**$ 7,889,647**	**$ -**
Total Project Cost	**$ 56,244,925**	**$ -**	**$ 56,244,925**	**$ -**



Legend

- Circuit Breaker
- Ganged Air-Switch (Motor Operated)
- Ganged Air-Switch (Manual Operated)
- Existing
- Salvage
- Transformer
- Voltage Regulator
- Lighting Arrester
- Future Provision
- New Construction
- Auto Transformer
- Power Reactor
- Shunt Capacitor
- Voltage Transformer
- Capacitive Voltage Transformer

ALTALINK

Central East Area Transmission Development A: Alternative 4 – Proposed Station Connection Diagram

Date:	By:	SLD No.
2009-06-17		09-408

Teshmont

Estimate Summary for Need Identification Document (NID)

Project: Central East
Area High Wind - Alternative 1A
TFO: ATCO Electric
Prepared by: ATCO Electric
Date: August 27, 2009
Accuracy:

Re-build 7L749 from Lloydminster to ownership boundary with 477 MCM conductor.

Estimate Valid For 90 Days

+/- 30 %, 2009 $

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 7,194,000	$ -	$ 7,194,000	$ -
Substation Facilities	$ -	$ -	$ -	$ -
Telecommunication	$ -	$ -	$ -	$ -
Substation Salvage	$ -	$ -	$ -	$ -
Transmission Line Salvage	$ 2,350,000	$ -	$ 2,350,000	$ -
Total Facility Costs	**$ 9,544,000**	**$ -**	**$ 9,544,000**	**$ -**
Owners Costs	$ 705,000	$ -	$ 705,000	$ -
Distributed Costs	$ 1,537,000	$ -	$ 1,537,000	$ -
Total Owners and Dist. Costs	**$ 2,242,000**	**$ -**	**$ 2,242,000**	**$ -**
Total Direct Costs	**$ 11,786,000**	**$ -**	**$ 11,786,000**	**$ -**
E&S	$ 943,000	$ -	$ 943,000	$ -
AFUDC	$ 460,000	$ -	$ 460,000	$ -
Total Indirect Costs	**$ 1,403,000**	**$ -**	**$ 1,403,000**	**$ -**
TOTAL PROJECT COSTS	**$ 13,189,000**	**$ -**	**$ 13,189,000**	**$ -**

Assumptions and Risks

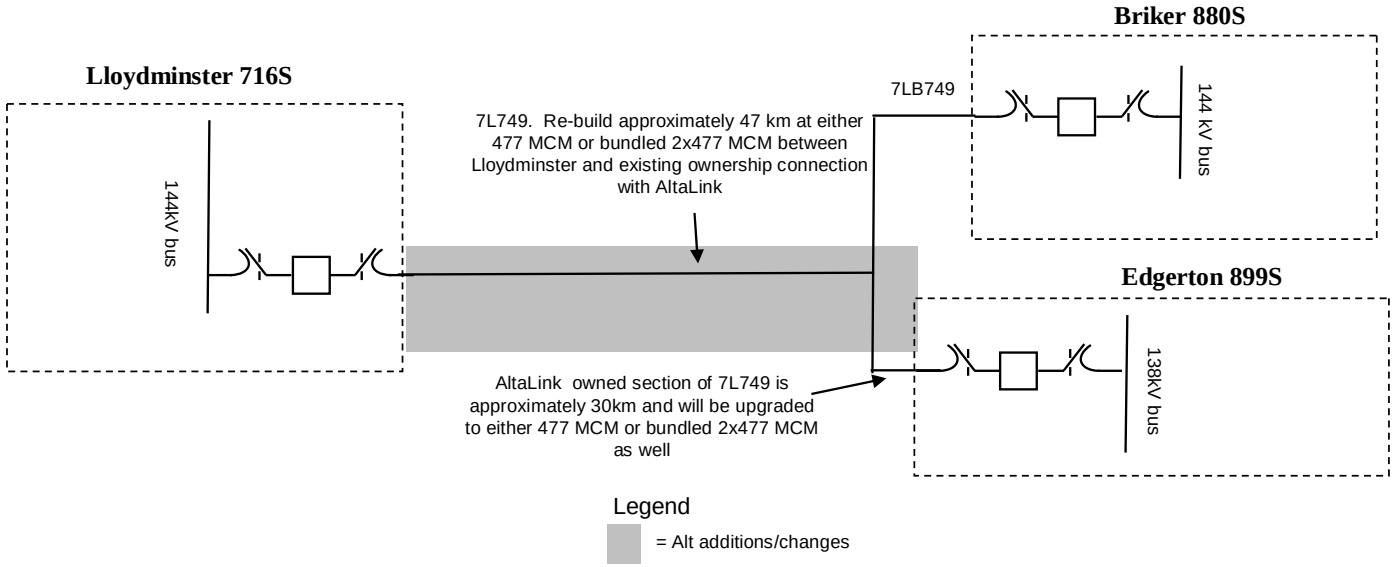
1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with appartus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage

Lloydminster 1A	**< 47 km, 144kV, 1x477 MCM (7L749) >**			
High Wind Upgrade	Materials < Line, Foundations, Structures, Hardware >	$ 1,901,808	$ -	$ 1,901,808
Rebuild 7L49 from	Labour < Engineering, Survey, Brushing, Construction >	$ 5,292,017	$ -	$ 5,292,017
Lloydminster to Boundary	**Sub - Total**	**$ 7,193,825**	**$ -**	$ 7,193,825
	TOTAL - New Transmission Line Costs	**$ 7,193,825**	**$ -**	**$ 7,193,825**

Lloydminster 1A	**< Salvage 7L749 47km >**			
High Wind Upgrade	Materials < Line, Foundations, Structures, Hardware >	$ 2,350,000	$ -	$ 2,350,000
Salvage 7L749		$ -	$ -	$ -
	Sub - Total	**$ 2,350,000**	**$ -**	$ 2,350,000
	TOTAL - Transmission Line Salvage Costs	**$ 2,350,000**	**$ -**	**$ 2,350,000**

Lloydminster Area 144kV Line Upgrade

Rebuild existing line 7L749.



Estimate Summary for Need Identification Document (NID)

Project: Central East Area Transmission Development E: Alternative 1a (2009$)
TFO: AltaLink
Prepared by: Teshmont
Date: July 19, 2009
Accuracy: +30%/-30%

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 7,194,000	$ -	$ 7,194,000	$ -
Substation Facilities	$ 145,063	$ -	$ 145,063	$ -
Telecommunication	$ 220,000	$ -	$ 220,000	$ -
Total Facility Costs	**$ 7,559,063**	**$ -**	**$ 7,559,063**	**$ -**
Owners Costs	$ 150,000	$ -	$ 150,000	$ -
Distributed Costs	$ 2,169,198	$ -	$ 2,169,198	$ -
Total Owners and Dist. Costs	**$ 2,319,198**	**$ -**	**$ 2,319,198**	**$ -**
Total Direct Costs	**$ 9,878,260**	**$ -**	**$ 9,878,260**	**$ -**
Salvage Costs	$ 450,000		$ 450,000	$ -
Other Costs				
E&S	$ 790,261	$ -	$ 790,261	$ -
AFUDC	$ 821,476	$ -	$ 821,476	$ -
Total Indirect Costs	**$ 1,611,737**	**$ -**	**$ 1,611,737**	**$ -**
TOTAL PROJECT COSTS	**$ 11,489,997**	**$ -**	**$ 11,489,997**	**$ -**

Assumptions and Risks

Salvage Costs does not impact the Total Project Costs
Existing 138 kV transmission lines are rebuilt on existing R/W

Transmission Line - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Line 1	**From Edgerton 899S to the structure # 472**				
	30km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OPGW	$ 7,194,000	$ -	$ 7,194,000	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 7,194,000**	**$ -**	**$ 7,194,000**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 7,194,000**	**$ -**	**$ 7,194,000**	**$ -**

Substation - NID Estimate

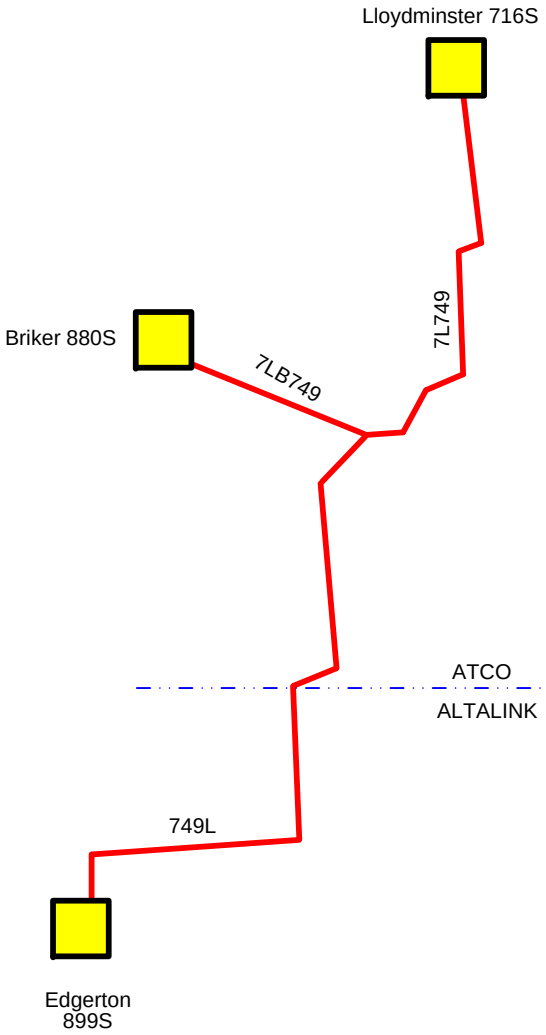
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub 1	**Edgerton 899S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's &CT's <quantity, voltage>	$ -	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ 145,063	$ -	$ 145,063	$ -
	Protection, control, metering	$ -	$ -	$ -	$ -
	SCADA	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 145,063**	**$ -**	**$ 145,063**	**$ -**
	TOTAL - Substation Project Costs	**$ 145,063**	**$ -**	**$ 145,063**	**$ -**

Telecommunication NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Telecom 1	**Edgerton 899S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 220,000**	**$ -**	**$ 220,000**	**$ -**
TOTAL - Telecommunication Project Costs		**$ 220,000**	**$ -**	**$ 220,000**	**$ -**

Estimate Summary with Owner's Cost

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Facility Cost				
Transmission Line Project Costs	$ 7,194,000	$ -	$ 7,194,000	$ -
Substation Project Costs	$ 145,063	$ -	$ 145,063	$ -
Telecommunications Project Costs	$ 220,000	$ -	$ 220,000	$ -
Salvage Costs	$ -	$ -	$ -	$ -
Sub - Total	**$ 7,559,063**	**$ -**	**$ 7,559,063**	**$ -**
Owners Cost				
Preliminary Engineering	$ 20,000	$ -	$ 20,000	$ -
Siting	$ 100,000	$ -	$ 100,000	$ -
Protection Settings	$ 30,000	$ -	$ 30,000	$ -
Land	$ -	$ -	$ -	$ -
Metering	$ -	$ -	$ -	$ -
Sub - Total	**$ 150,000**	**$ -**	**$ 150,000**	**$ -**
Distributed Cost				
Distributed Cost	$ 1,271,174	$ -	$ 1,271,174	$ -
Contingency	$ 898,024	$ -	$ 898,024	$ -
Escalation	$ -	$ -	$ -	$ -
Sub - Total	**$ 2,169,198**	**$ -**	**$ 2,169,198**	**$ -**
Indirect Costs				
E&S	$ 790,261	$ -	$ 790,261	$ -
AFUDC	$ 821,476	$ -	$ 821,476	$ -
Sub - Total	**$ 1,611,737**	**$ -**	**$ 1,611,737**	**$ -**
Total Project Cost	**$ 11,489,997**	**$ -**	**$ 11,489,997**	**$ -**



LEGEND

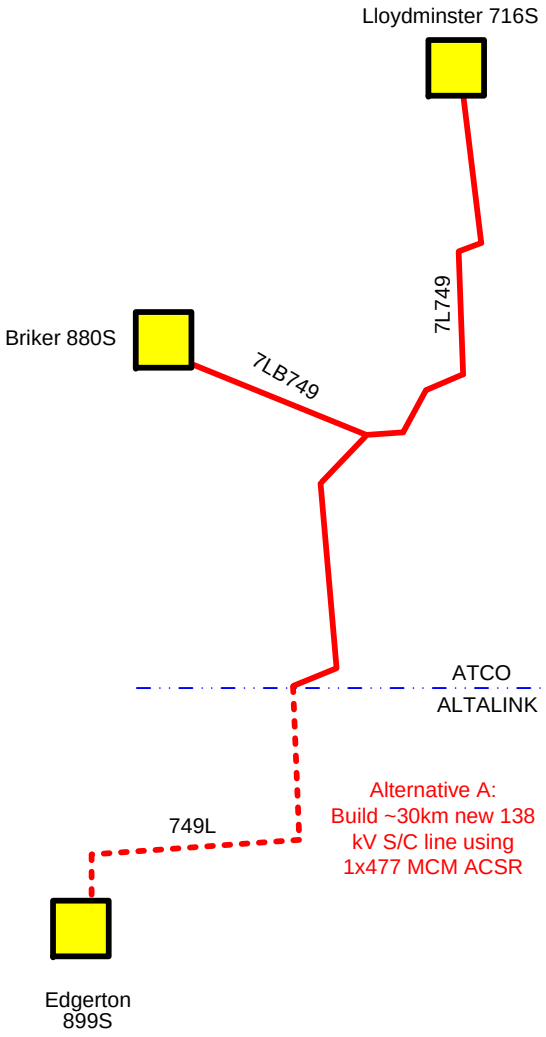
- Existing 69 kV
- Existing 138 kV
- Future provisions to 69 kV
- Future provisions to 138 kV

ALTALINK

Central East Area Transmission Development: Development E – Existing System

Date:	By:	SLD No.
2009-07-02		09-496

Teshmont



LEGEND

- Existing 69 kV
- Existing 138 kV
- Future provisions to 69 kV
- Future provisions to 138 kV

ALTALINK

Central East Area Transmission Development: Development E – Alternative 1 Proposed System

Date:	By:	SLD No.
2009-07-02		09-498

Teshmont

Estimate Summary for Need Identification Document (NID)

Project: Central East Area Transmission Development
TFO: AltaLink AltaLink
Prepared by: Ed Mayer (AESO)
Date: December 16, 2009
Accuracy: +/- 30 %

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 42,878,821	$ -	$ 42,878,821	$ -
Substation Facilities	$ 5,350,806	$ -	$ 5,350,806	$ -
Telecommunication	$ 1,650,000	$ -	$ 1,100,000	$ -
Total Facility Costs	**$ 49,879,627**	**$ -**	**$ 49,329,627**	**$ -**
Owners Costs	$ 1,522,671	$ -	$ 1,522,671	$ -
Distributed Costs	$ 13,966,296	$ -	$ 13,966,296	$ -
Total Owners and Dist. Costs	**$ 15,488,967**	**$ -**	**$ 15,488,967**	**$ -**
Total Direct Costs	**$ 65,368,593**	**$ -**	**$ 64,818,593**	**$ -**
Salvage Costs	$ -	$ -	$ -	$ -
Other Costs				
E&S	$ 5,229,487	$ -	$ -	$ -
AFUDC	$ 5,425,593	$ -	$ 5,425,593	$ -
Total Indirect Costs	**$ 10,655,081**	**$ -**	**$ 5,425,593**	**$ -**
TOTAL PROJECT COSTS	**$ 76,023,674**	**$ -**	**$ 70,244,187**	**$ -**

Assumptions and Risks

1. The Salvage Costs does not impact the Total project Costs
2. Existing 138 kV transmission lines are rebuilt on existing R/W

Transmission Line - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
<Line 1>	**From Hayter 277S to Provost 545S**				
	30km of line using 1x795MCM that is S/C wood pole structure and one OPGW	$ 8,217,000	$ -	$ 8,217,000	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 8,217,000**	**$ -**	**$ 8,217,000**	**$ -**
<Line 2>	**From Killarney Lake 267S to tap point of 749L**				
	18km of line using 1x795 MCM that is D/C, using D/C steel structures and one OHSW	$ 9,928,651	$ -	$ 9,928,651	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 9,928,651**	**$ -**	**$ 9,928,651**	**$ -**
<Line 3>	**749L from Edgerton 899S to Metiskow 648S**				
	48km of line using 1x795MCM that is S/C wood pole structure and one OPGW	$ 13,147,200	$ -	$ 13,147,200	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 13,147,200**	**$ -**	**$ 13,147,200**	**$ -**
<Line 4>	**748L from Killarney Lake 267S to Hayter 277S**				
	20.8km of line using 1x795MCM that is S/C wood pole structure and one OPGW	$ 5,697,120	$ -	$ 5,697,120	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 5,697,120**	**$ -**	**$ 5,697,120**	**$ -**
<Line 5>	**715L from Hansman Lake 655S to Provost 545S**				
	21.5km of line using 1x795MCM that is S/C wood pole structure and one OPGW	$ 5,888,850	$ -	$ 5,888,850	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 5,888,850**	**$ -**	**$ 5,888,850**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 42,878,821**	**$ -**	**$ 42,878,821**	**$ -**

Substation - NID Estimate

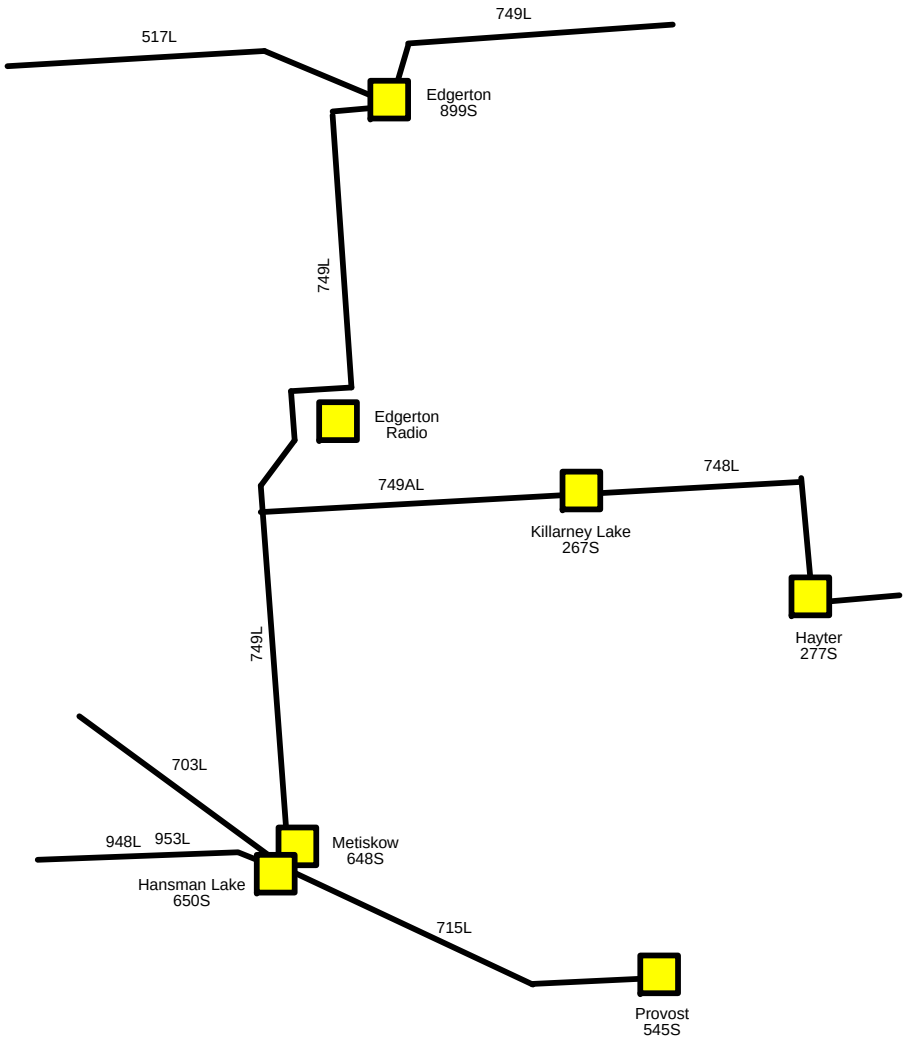
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub. Name	**Killarney Lake 267S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty: 2, 138 kV>	$ 747,040	$ -	$ 747,040	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 2 CVTs, 138 kV>	$ 182,860	$ -	$ 182,860	$ -
	Switch Yard and Substation Control Building	$ 371,246	$ -	$ 371,246	$ -
	Protection, control, metering	$ 257,697	$ -	$ 257,697	$ -
	SCADA	$ 27,500	$ -	$ 27,500	$ -
	Station Energization	$ 56,298	$ -	$ 56,298	$ -
	Sub - Total	**$ 1,642,641**	**$ -**	**$ 1,642,641**	**$ -**
Sub. Name	**Hayter 277S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty: 2, 138 kV>	$ 747,040	$ -	$ 747,040	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 5, 138 kV>	$ 268,024	$ -	$ 268,024	$ -
	Switch Yard and Substation Control Building	$ 270,566	$ -	$ 270,566	$ -
	Protection, control, metering	$ 257,697	$ -	$ 257,697	$ -
	SCADA	$ 27,500	$ -	$ 27,500	$ -
	Station Energization	$ 56,980	$ -	$ 56,980	$ -
	Sub - Total	**$ 1,627,807**	**$ -**	**$ 1,627,807**	**$ -**
Sub. Name	**Provost 545S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty: 2, 138 kV>	$ 747,040	$ -	$ 747,040	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 5, 138 kV>	$ 268,024	$ -	$ 268,024	$ -
	Switch Yard and Substation Control Building	$ 723,799	$ -	$ 723,799	$ -
	Protection, control, metering	$ 257,697	$ -	$ 257,697	$ -
	SCADA	$ 27,500	$ -	$ 27,500	$ -
	Station Energization	$ 56,298	$ -	$ 56,298	$ -
	Sub - Total	**$ 2,080,358**	**$ -**	**$ 2,080,358**	**$ -**
	TOTAL - Substation Project Costs	**$ 5,350,806**	**$ -**	**$ 5,350,806**	**$ -**

Telecommunication NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
TELECOM 1	**Provost 545S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 440,000	$ -	$ 440,000	$ -
	Sub - Total	**$ 440,000**	**$ -**	**$ 440,000**	**$ -**
TELECOM 2	**Hayter 277S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 440,000	$ -	$ 440,000	$ -
	Sub - Total	**$ 440,000**	**$ -**	**$ 440,000**	**$ -**
TELECOM 3	**Killarney Lake 267S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ 330,000	$ -	$ 330,000	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 550,000**	**$ -**	**$ 550,000**	**$ -**
TELECOM 4	**Hansman Lake 650S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 220,000**	**$ -**	**$ 220,000**	**$ -**
	TOTAL - Telecommunication Project Costs	**$ 1,650,000**	**$ -**	**$ 1,100,000**	**$ -**

Estimate Summary with Owner's Cost

	System Portion	Customer Portion	TOTAL	Capital Maintenance
FACILITY COSTS				
Transmission Line Project Costs	$ 42,878,821	$ -	$ 42,878,821	$ -
Substation Project Costs	$ 5,350,806	$ -	$ 5,350,806	$ -
Telecommunications Project Costs	$ 1,650,000	$ -	$ 1,650,000	$ -
Salvage Costs	$ -	$ -	$ -	$ -
Sub - Total	**$ 49,879,627**	$ -	**$ 49,879,627**	$ -
OWNERS COST				
Preliminary Engineering	$ 20,000	$ -	$ 20,000	$ -
Siting	$ 400,000	$ -	$ 400,000	$ -
Protection Settings	$ 105,000	$ -	$ 105,000	$ -
Land	$ 997,671	$ -	$ 997,671	$ -
Metering	$ -	$ -	$ -	$ -
Sub - Total	**$ 1,522,671**	$ -	**$ 1,522,671**	$ -
DISTRIBUTED COST				
Distributed Cost	$ 7,980,740	$ -	$ 7,980,740	$ -
Contingency	$ 5,985,555	$ -	$ 5,985,555	$ -
Escalation	$ -	$ -	$ -	$ -
Sub - Total	**$ 13,966,296**	$ -	**$ 13,966,296**	$ -
INDIRECT COSTS				
E&S	$ 5,229,487	$ -	$ 5,229,487	$ -
AFUDC	$ 5,425,593	$ -	$ 5,425,593	$ -
Sub - Total	**$ 10,655,081**	$ -	**$ 10,655,081**	$ -
TOTAL PROJECT COST	**$ 76,023,674**	**$ -**	**$ 76,023,674**	**$ -**



LEGEND

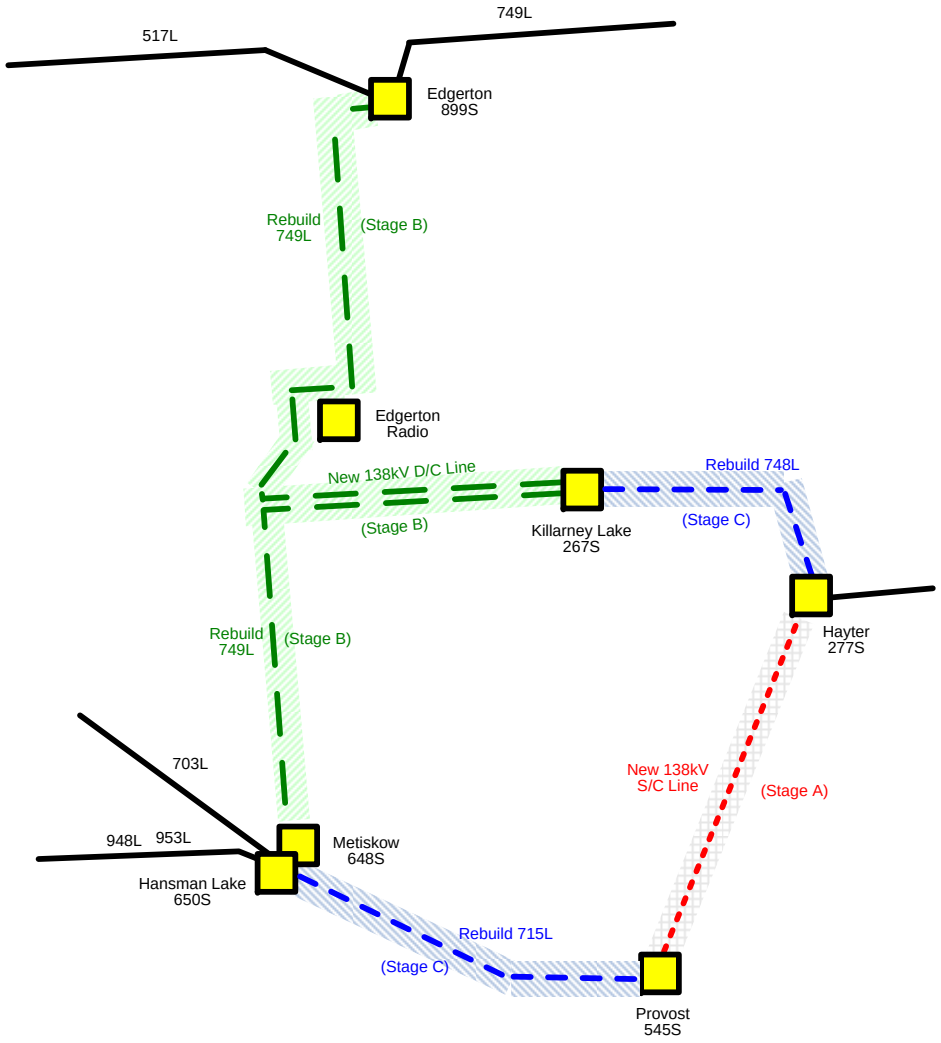
- Existing 138 kV
- Provision in Stage A
- Provision in Stage B
- Provision in Stage C

ALTALINK

Central East Area Transmission Development:
Development B – Provost Area
Exiting System

Date:	By:	SLD No.
2009-06-15		09-415

Teshmont



LEGEND

- Existing 138 kV
- Provision in Stage A
- Provision in Stage B
- Provision in Stage C

ALTALINK

Central East Area Transmission Development:
Development B - Provost Area
Proposed System

Date:	By:	SLD No.
2009-06-15		09-425

Teshmont

Recommended Regional Alternative 1

Stage II (2017)

Estimate Summary for Need Identification Document (NID)

Project: Central East
Cold Lake Area 2017
TFO: ATCO Electric
Prepared by: ATCO Electric
Date: October 5, 2009
Accuracy:

2017 Time Frame - New Pre-build to 240kV energized at 144kV line between Marguerite Lake and New Mahihkan.

Estimate Valid For 90 Days

+/- 30 %, 2009 $

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 11,605,000	$ -	$ 11,605,000	$ -
Substation Facilities	$ 1,695,000	$ -	$ 1,695,000	$ -
Telecommunication	$ 25,000	$ -	$ 25,000	$ -
Substation Salvage	$ -	$ -	$ -	$ -
Transmission Line Salvage	$ -	$ -	$ -	$ -
Total Facility Costs	**$ 13,325,000**	**$ -**	**$ 13,325,000**	**$ -**
Owners Costs	$ 150,000	$ -	$ 150,000	$ -
Distributed Costs	$ 2,021,000	$ -	$ 2,021,000	$ -
Total Owners and Dist. Costs	**$ 2,171,000**	**$ -**	**$ 2,171,000**	**$ -**
Total Direct Costs	**$ 15,496,000**	**$ -**	**$ 15,496,000**	**$ -**
E&S	$ 1,240,000	$ -	$ 1,240,000	$ -
AFUDC	$ 604,000	$ -	$ 604,000	$ -
Total Indirect Costs	**$ 1,844,000**	**$ -**	**$ 1,844,000**	**$ -**
TOTAL PROJECT COSTS	**$ 17,340,000**	**$ -**	**$ 17,340,000**	**$ -**

Assumptions and Risks

1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with apparatus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage
11. Bonnyville SVC must be salvaged first
12. We will obtain the land for New Mahihkan from Imperial Oil

Line Estimate - NID

Cold Lake 2017	< 20 km, Pre-built to 240kV, energized at 144kV, Double Cct 2x795 MCM - one sid			
New Line from	Materials < Line, Foundations, Structures, Hardware >	$ 4,003,000	$ -	$ 4,003,000
New Mahihkan to	Labour < Engineering, Survey, Brushing, Construction >	$ 7,602,040	$ -	$ 7,602,040
Marguerite (pre-build 2	**Sub - Total**	**$ 11,605,040**	**$ -**	$ 11,605,040

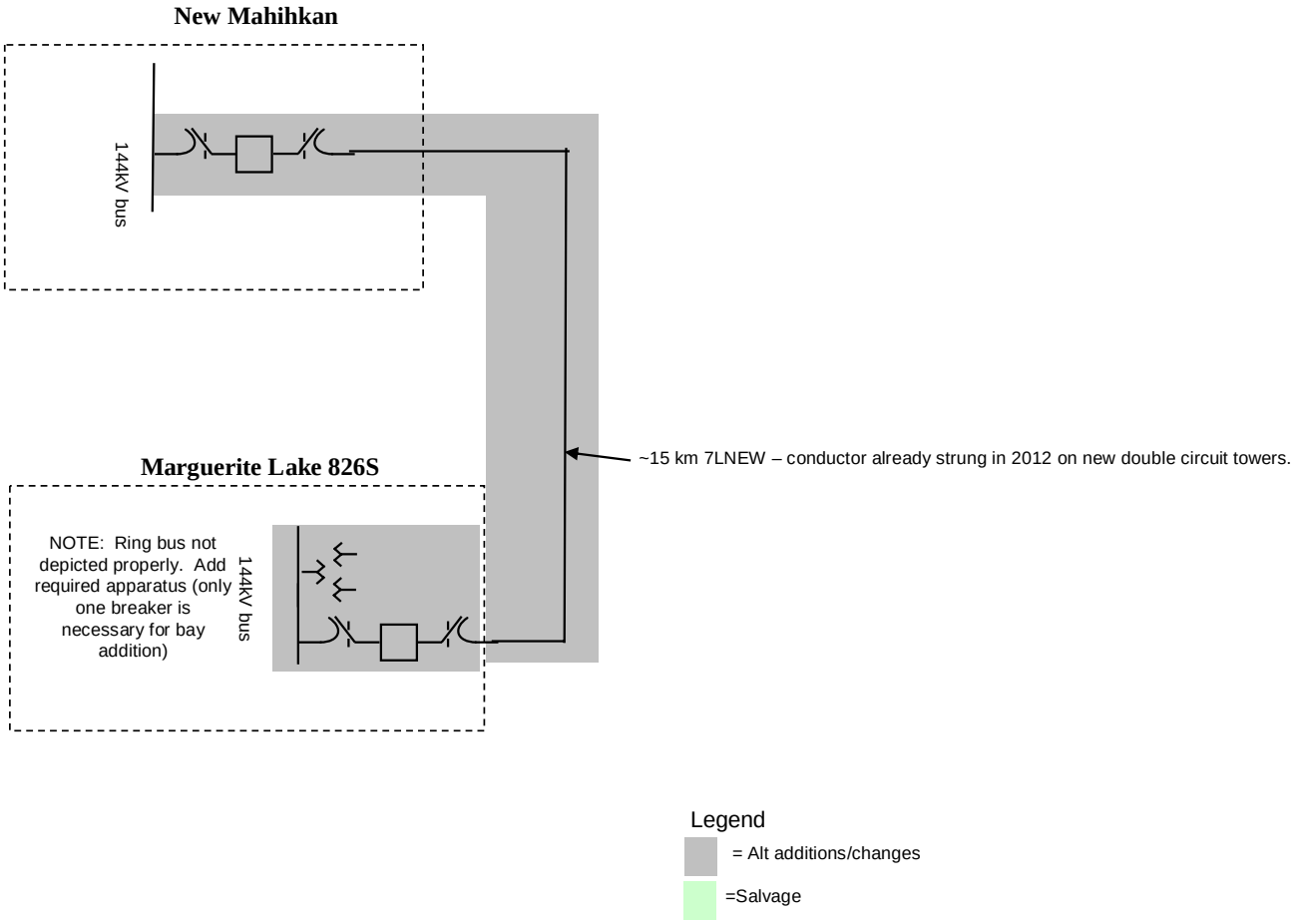
Substation Estimate - NID

Sub. Name	< Cold Lake Area 2017 - New Mahihkan >			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <1 - 144kV>	$ 90,000	$ -	$ 90,000
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ 45,000	$ -	$ 45,000
	Switch Yard and Substation Control Building	$ 150,000	$ -	$ 150,000
	Protection, control, metering	$ 75,000	$ -	$ 75,000
	SCADA	$ 25,000	$ -	$ 25,000
	Engineering	$ 75,000	$ -	$ 75,000
	Construction & Commissioning	$ 375,000	$ -	$ 375,000
	Sub - Total	**$ 835,000**	**$ -**	**$ 835,000**
TOTAL - Substation Project Costs		**$ 835,000**	**$ -**	**$ 835,000**
Sub. Name	**< Cold Lake Area 2017 - 826S Marguerite Lake >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <1 - 144kV>	$ 90,000	$ -	$ 90,000
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ 45,000	$ -	$ 45,000
	Switch Yard and Substation Control Building	$ 150,000	$ -	$ 150,000
	Protection, control, metering	$ 100,000	$ -	$ 100,000
	SCADA	$ 25,000	$ -	$ 25,000
	Engineering	$ 75,000	$ -	$ 75,000
	Construction & Commissioning	$ 375,000	$ -	$ 375,000
	Sub - Total	**$ 860,000**	**$ -**	**$ 860,000**
TOTAL - Substation Project Costs		**$ 860,000**	**$ -**	**$ 860,000**
TOTAL Alternative Substation Project Costs		**$ 1,695,000**		

Telecommuncations Estimate - NID

Sub. Name	< Cold Lake Area - Marguerite Lake >			
	Tower/Antenna	$ -	$ -	$ -
	Fiber	$ 25,000	$ -	$ -
	Radio Equipment	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ -	$ -	$ -
	Construction and Commissioning	$ -	$ -	$ -
	Sub - Total	**$ 25,000**	**$ -**	**$ 25,000**
TOTAL - Telecommunication Project Costs		**$ 25,000**	**$ -**	**$ 25,000**

Cold Lake Area Alternative -2017



Estimate Summary for Need Identification Document (NID)

Project: Central East
7L50 Re-build - Alternative 1CC

2017 - Rebuild 7L50 to 477kcmil ACSR from Battle River to Buffalo Creek ASSUMING permitting process requires new ROW (use maximum eastern ROW length of 160 km versus 140 km for western route or 135 km if allowed on existing corridor)

TFO: ATCO Electric
Prepared by: ATCO Electric
Date: March 9, 2010
Accuracy:

Estimate Valid For 90 Days
+/- 30 %, 2009 $

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 25,874,000	$ -	$ 25,874,000	$ -
Substation Facilities	$ -	$ -	$ -	$ -
Telecommunication	$ -	$ -	$ -	$ -
Substation Salvage	$ -	$ -	$ -	$ -
Transmission Line Salvage	$ 5,000,000	$ -	$ 5,000,000	$ -
Total Facility Costs	**$ 30,874,000**	**$ -**	**$ 30,874,000**	**$ -**
Owners Costs	$ 2,050,000	$ -	$ 2,050,000	$ -
Distributed Costs	$ 4,939,000	$ -	$ 4,939,000	$ -
Total Owners and Dist. Costs	**$ 6,989,000**	**$ -**	**$ 6,989,000**	**$ -**
Total Direct Costs	**$ 37,863,000**	**$ -**	**$ 37,863,000**	**$ -**
E&S	$ 3,029,000	$ -	$ 3,029,000	$ -
AFUDC	$ 1,476,000	$ -	$ 1,476,000	$ -
Total Indirect Costs	**$ 4,505,000**	**$ -**	**$ 4,505,000**	**$ -**
TOTAL PROJECT COSTS	**$ 42,368,000**	**$ -**	**$ 42,368,000**	**$ -**

Assumptions and Risks

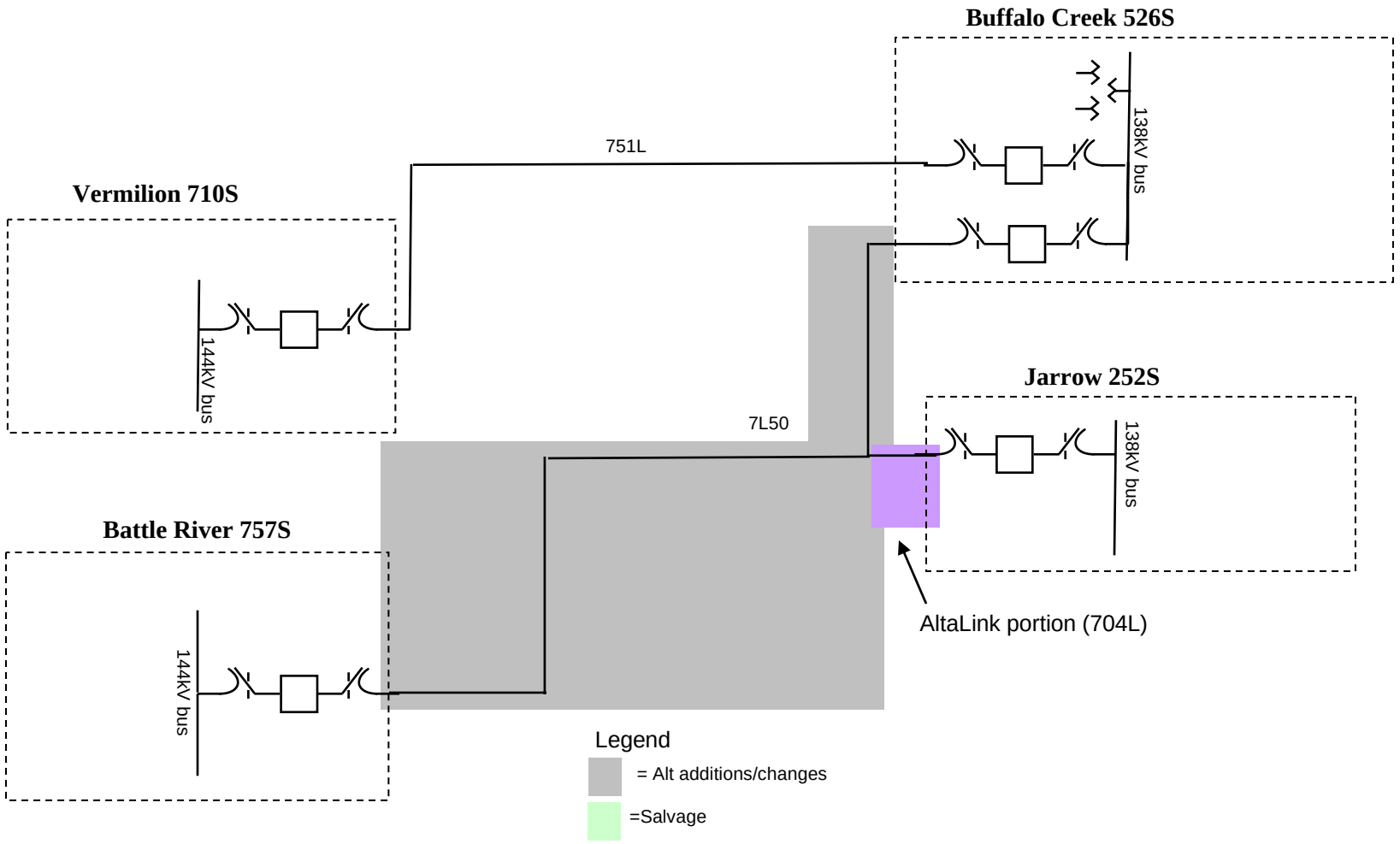
1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with apparatus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage

7L50 Rebuild 1CC **Rebuild 7L50 from Battle River to Buffalo Creek assuming new ROW maximum length**	**< 160 km, 144kV, Single Cct 477 MCM, c/w OPGW >**			
	Materials < Line, Foundations, Structures, Hardware >	$ 7,858,400		$ 7,858,400
	Labour < Engineering, Survey, Brushing, Construction >	$ 18,015,377	$ -	$ 18,015,377
	Sub - Total	**$ 25,873,777**	**$ -**	$ 25,873,777
	TOTAL - New Transmission Line Costs	**$ 25,873,777**	**$ -**	**$ 25,873,777**
7L50 Rebuild 1CC **Salvage 7L50**	**< Salvage Existing 7L50 - 100km >**			
	Labour < Engineering, Survey, Brushing, Construction >	$ 5,000,000	$ -	$ 5,000,000
		$ -	$ -	$ -
	Sub - Total	**$ 5,000,000**	**$ -**	$ 5,000,000
	TOTAL - Transmission Line Salvage Costs	**$ 5,000,000**	**$ -**	**$ 5,000,000**

7L50 Alternatives:

Pending permit process; rebuild on existing corridor – 100 km or rebuild on new corridor (up to 160 km)

Entire 7L50 to be re-built using 477 MCM



Estimate Summary for Need Identification Document (NID)

Project: Central East Area Transmission Development C (2009$)
TFO: AltaLink
Prepared by: Teshmont
Date: July 19, 2009
Accuracy: +30%/-30%

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 91,520	$ -	$ 91,520	$ -
Substation Facilities	$ 145,063	$ -	$ 145,063	$ -
Telecommunication	$ -	$ -	$ -	$ -
Total Facility Costs	**$ 236,583**	**$ -**	**$ 236,583**	**$ -**
Owners Costs	$ 58,000	$ -	$ 58,000	$ -
Distributed Costs	$ 81,247	$ -	$ 81,247	$ -
Total Owners and Dist. Costs	**$ 139,247**	**$ -**	**$ 139,247**	**$ -**
Total Direct Costs	**$ 375,830**	**$ -**	**$ 375,830**	**$ -**
Salvage Costs	$ 6,000	$ -	$ 6,000	$ -
Other Costs				
E&S	$ 30,066	$ -	$ 30,066	$ -
AFUDC	$ 31,254	$ -	$ 31,254	$ -
Total Indirect Costs	**$ 61,320**	**$ -**	**$ 61,320**	**$ -**
TOTAL PROJECT COSTS	**$ 437,150**	**$ -**	**$ 437,150**	**$ -**

Assumptions and Risks

Salvage Costs does not impact the Total Project Costs

Existing 138 kV transmission lines are rebuilt on existing R/W

Transmission Line - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Line 1	**From Jarrow 252S to the junction 7L50**				
	0.4km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OHSW	$ 91,520	$ -	$ 91,520	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 91,520**	**$ -**	**$ 91,520**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 91,520**	**$ -**	**$ 91,520**	**$ -**

Substation - NID Estimate

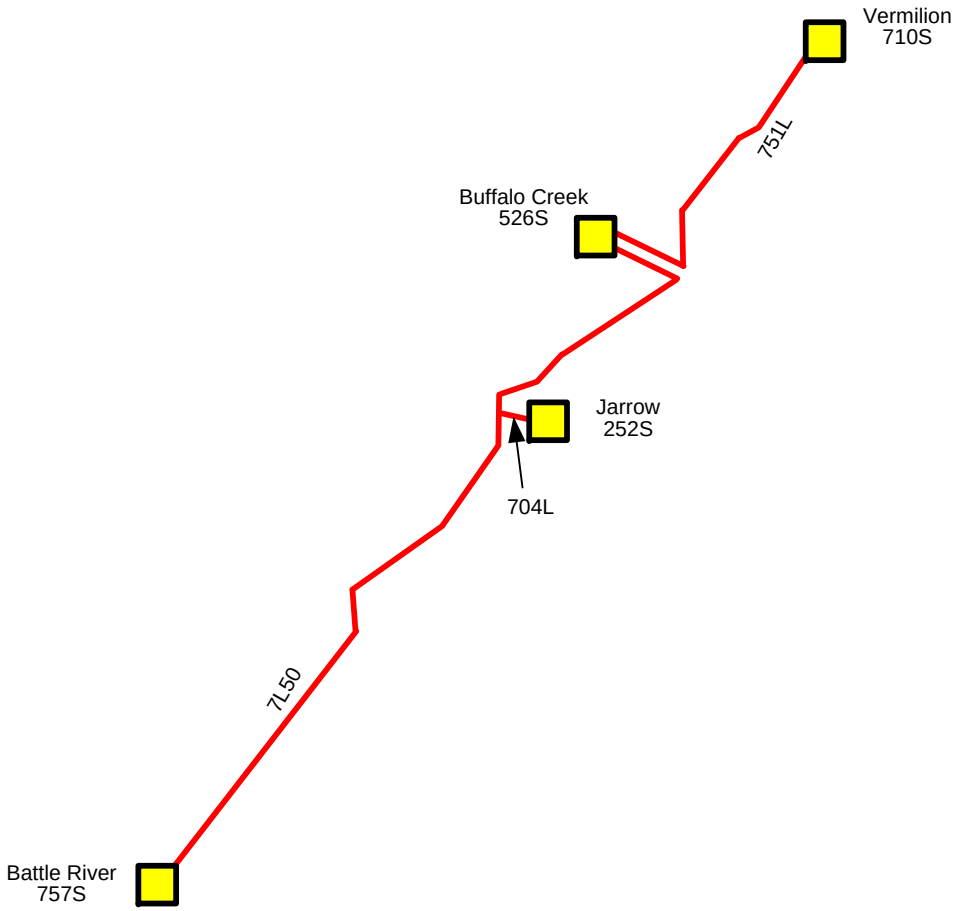
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub 1	**Jarrow252S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's &CT's <quantity, voltage>	$ -	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ 145,063	$ -	$ 145,063	$ -
	Protection, control, metering	$ -	$ -	$ -	$ -
	SCADA	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 145,063**	**$ -**	**$ 145,063**	**$ -**
	TOTAL - Substation Project Costs	**$ 145,063**	**$ -**	**$ 145,063**	**$ -**

Telecommunication NID Estimate

	System Portion	Customer Portion	TOTAL	Capital Maintenance
TOTAL - Telecommunication Project Costs	**$ -**	**$ -**	**$ -**	**$ -**

Estimate Summary with Owner's Cost

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Facility Cost				
Transmission Line Project Costs	$ 91,520	$ -	$ 91,520	$ -
Substation Project Costs	$ 145,063	$ -	$ 145,063	$ -
Telecommunications Project Costs	$ -	$ -	$ -	$ -
Salvage Costs	$ -	$ -	$ -	$ -
Sub - Total	**$ 236,583**	**$ -**	**$ 236,583**	**$ -**
Owners Cost				
Preliminary Engineering	$ 20,000	$ -	$ 20,000	$ -
Siting	$ 8,000	$ -	$ 8,000	$ -
Protection Settings	$ 30,000	$ -	$ 30,000	$ -
Land	$ -	$ -	$ -	$ -
Metering	$ -	$ -	$ -	$ -
Sub - Total	**$ 58,000**	**$ -**	**$ 58,000**	**$ -**
Distributed Cost				
Distributed Cost	$ 47,081	$ -	$ 47,081	$ -
Contingency	$ 34,166	$ -	$ 34,166	$ -
Escalation	$ -	$ -	$ -	$ -
Sub - Total	**$ 81,247**	**$ -**	**$ 81,247**	**$ -**
Indirect Costs				
E&S	$ 30,066	$ -	$ 30,066	$ -
AFUDC	$ 31,254	$ -	$ 31,254	$ -
Sub - Total	**$ 61,320**	**$ -**	**$ 61,320**	**$ -**
Total Project Cost	**$ 437,150**	**$ -**	**$ 437,150**	**$ -**



LEGEND

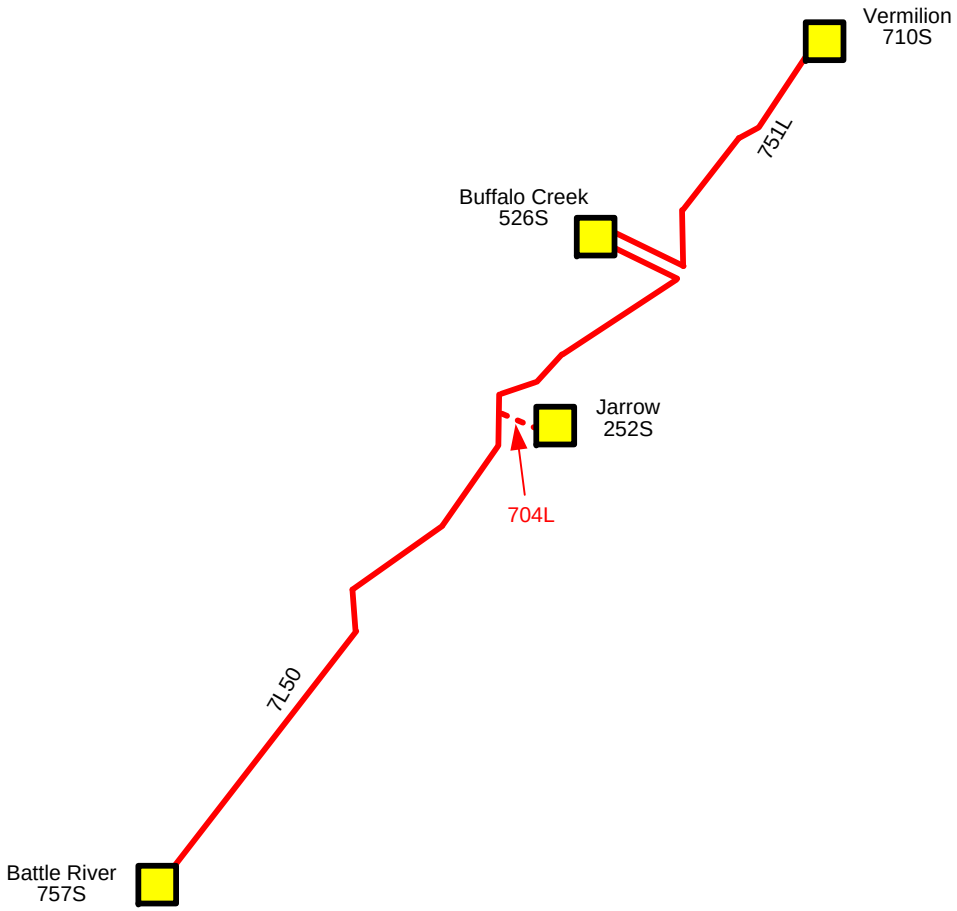
- Existing 69 kV
- Existing 138 kV
- Future provisions to 69 kV
- Future provisions to 138 kV

ALTALINK

Central East Area Transmission Development: Development C – Line 7L50 Existing System

Date:	By:	SLD No.
2009-06-16		09-452

Teshmont



LEGEND

- Existing 69 kV
- Existing 138 kV
- Future provisions to 69 kV
- Future provisions to 138 kV

ALTALINK

Central East Area Transmission Development: Development C - Proposed 138 kV Line 704L Upgrade

Date:	By:	SLD No.
2009-06-16		09-454

Teshmont

Regional Alternative 2

(Common set of local reinforcements not reproduced)

Estimate Summary for Need Identification Document (NID)

Project: Central East Area Transmission Development A: Alternative 2 (2009$)
TFO: AltaLink
Prepared by: Teshmont
Date: July 19, 2009
Accuracy: +30%/-30%

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 26,126,916	$ -	$ 26,126,916	$ -
Substation Facilities	$ 3,741,282	$ -	$ 3,741,282	$ -
Telecommunication	$ 1,650,000	$ -	$ 1,650,000	$ -
Total Facility Costs	**$ 31,518,198**	**$ -**	**$ 31,518,198**	**$ -**
Owners Costs	$ 1,337,907	$ -	$ 1,337,907	$ -
Distributed Costs	$ 8,901,061	$ -	$ 8,901,061	$ -
Total Owners and Dist. Costs	**$ 10,238,968**	**$ -**	**$ 10,238,968**	**$ -**
Total Direct Costs	**$ 41,757,165**	**$ -**	**$ 41,757,165**	**$ -**
Salvage Costs	$ 1,800,000	$ -	$ 1,800,000	$ -
Other Costs				
E&S	$ 3,340,573	$ -	$ 3,340,573	$ -
AFUDC	$ 3,472,526	$ -	$ 3,472,526	$ -
Total Indirect Costs	**$ 6,813,099**	**$ -**	**$ 6,813,099**	**$ -**
TOTAL PROJECT COSTS	**$ 48,570,265**	**$ -**	**$ 48,570,265**	**$ -**

Assumptions and Risks

The Salvage Costs does not impact the Total project Costs
Existing 138 kV transmission lines are rebuilt on existing R/W

Transmission Line - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Line 1	**From Jarrow 252S to the junction 704AL**				
	20km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OHSW	$ 4,576,000	$ -	$ 4,576,000	$ -
	Switches / Airbreaks/Taps	$ 145,058	$ -	$ 145,058	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 4,721,058**	**$ -**	**$ 4,721,058**	**$ -**
Line 2	**From junction 704AL to Wainwright 51S**				
	26km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OHSW	$ 5,948,800	$ -	$ 5,948,800	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 5,948,800**	**$ -**	**$ 5,948,800**	**$ -**
Line 3	**From junction 704AL to structure # 704L260**				
	25km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OHSW	$ 5,720,000	$ -	$ 5,720,000	$ -
	Switches / Airbreaks / Taps	$ 145,058	$ -	$ 145,058	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 5,865,058**	**$ -**	**$ 5,865,058**	**$ -**
Line 4	**From Wainwright 51S to Edgerton 899S**				
	40km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OPGW	$ 9,592,000	$ -	$ 9,592,000	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 9,592,000**	**$ -**	**$ 9,592,000**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 26,126,916**	**$ -**	**$ 26,126,916**	**$ -**

Substation - NID Estimate

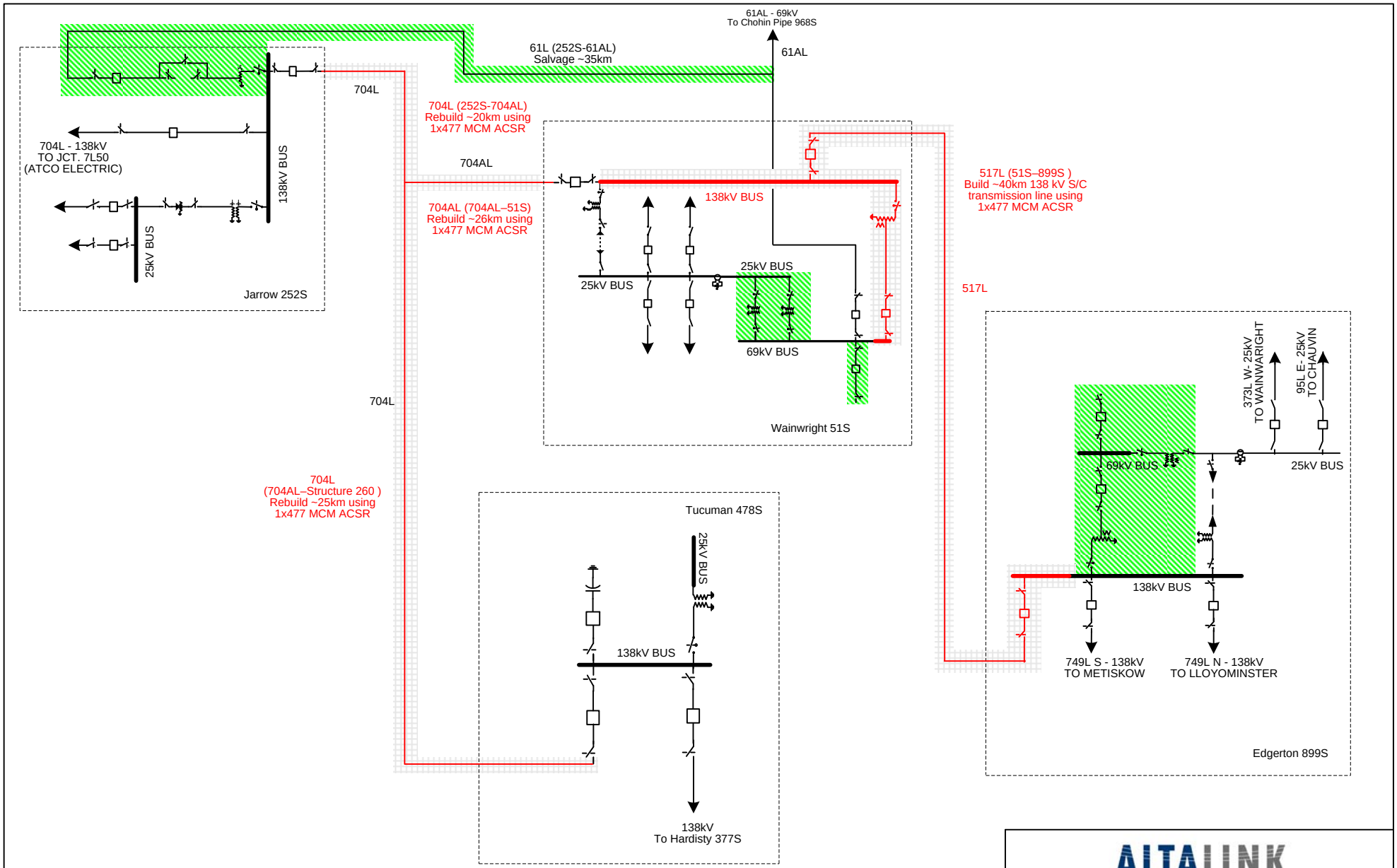
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub 1	**Edgerton 899S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty:1, dead tank, 138kV>	$ 219,714	$ -	$ 219,714	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 1CVT, 138kV>	$ 47,236	$ -	$ 47,236	$ -
	Switch Yard and Substation Control Building	$ 625,925	$ -	$ 625,925	$ -
	Protection, control, metering	$ 115,060	$ -	$ 115,060	$ -
	SCADA	$ 27,500	$ -	$ 27,500	$ -
	<Station Energization>	$ 56,298	$ -	$ 56,298	$ -
	Sub - Total	**$ 1,091,734**	**$ -**	**$ 1,091,734**	$ -
Sub 2	**Wainwright 51S**				
	Transformer <Qty: 1, 132/72kV, 18.75/25 MVA, moved from Edgerton 899S >	$ 357,566	$ -	$ 357,566	$ -
	Circuit Breakers <Qty: (1) dead tank and (1) live tank, 138kV>	$ 316,613	$ -	$ 316,613	$ -
	Circuit Breakers <Qty:(1) dead tank, 69kV>	$ 96,899	$ -	$ 96,899	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 2CVT and 1Ct, 138kV>	$ 243,056	$ -	$ 243,056	$ -
	Switch Yard and Substation Control Building	$ 1,012,506	$ -	$ 1,012,506	$ -
	Protection, control, metering	$ 539,110	$ -	$ 539,110	$ -
	SCADA	$ 27,500	$ -	$ 27,500	$ -
	<Station Energization>	$ 56,298	$ -	$ 56,298	$ -
	Sub - Total	**$ 2,649,548**	**$ -**	**$ 2,649,548**	**$ -**
	TOTAL - Substation Project Costs	**$ 3,741,282**	**$ -**	**$ 3,741,282**	**$ -**

Telecommunication NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Telecom 1	**Edgerton 899S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 220,000**	**$ -**	**$ 220,000**	**$ -**
Telecom 2	**Wainwright 51S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ 330,000	$ -	$ 330,000	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 550,000**	**$ -**	**$ 550,000**	**$ -**
Telecom 3	**Jarrow 252S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<Telecom tower and communication equipment>	$ 550,000	$ -	$ 550,000	$ -
	Sub - Total	**$ 550,000**	**$ -**	**$ 550,000**	**$ -**
Telecom 4	**Tucuman 478S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ 330,000	$ -	$ 330,000	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 330,000**	**$ -**	**$ 330,000**	**$ -**
	TOTAL - Telecommunication Project Costs	**$ 1,650,000**	**$ -**	**$ 1,650,000**	**$ -**

Estimate Summary with Owner's Cost

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Facility Cost				
Transmission Line Project Costs	$ 26,126,916	$ -	$ 26,126,916	$ -
Substation Project Costs	$ 3,741,282	$ -	$ 3,741,282	$ -
Telecommunications Project Costs	$ 1,650,000	$ -	$ 1,650,000	$ -
Salvage Costs	$ -	$ -	$ -	$ -
Sub - Total	**$ 31,518,198**	**$ -**	**$ 31,518,198**	**$ -**
Owners Cost				
Preliminary Engineering	$ 30,000	$ -	$ 30,000	$ -
Siting	$ 400,000	$ -	$ 400,000	$ -
Protection Settings	$ 70,000	$ -	$ 70,000	$ -
Land	$ 837,907	$ -	$ 837,907	$ -
Metering	$ -	$ -	$ -	$ -
Sub - Total	**$ 1,337,907**	**$ -**	**$ 1,337,907**	**$ -**
Distributed Cost				
Distributed Cost	$ 5,104,955	$ -	$ 5,104,955	$ -
Contingency	$ 3,796,106	$ -	$ 3,796,106	$ -
Escalation	$ -	$ -	$ -	$ -
Sub - Total	**$ 8,901,061**	**$ -**	**$ 8,901,061**	**$ -**
Indirect Costs				
E&S	$ 3,340,573	$ -	$ 3,340,573	$ -
AFUDC	$ 3,472,526	$ -	$ 3,472,526	$ -
Sub - Total	**$ 6,813,099**	**$ -**	**$ 6,813,099**	**$ -**
Total Project Cost	**$ 48,570,265**	**$ -**	**$ 48,570,265**	**$ -**



Legend

- Circuit Breaker
- Ganged Air-Switch (Motor Operated)
- Ganged Air-Switch (Manual Operated)
- Existing
- Salvage
- Transformer
- Voltage Regulator
- Lighting Arrester
- Future Provision
- New Construction
- Auto Transformer
- Power Reactor
- Shunt Capacitor
- Voltage Transformer
- Capacitive Voltage Transformer

ALTALINK

Central East Area Transmission Development A: Alternative 2 – Proposed Station Connection Diagram

Date:	By:	SLD No.
2009-06-17		09-378

Teshmont

Estimate Summary for Need Identification Document (NID)

Project: Central East
Area High Wind - Alternative 1A
TFO: ATCO Electric
Prepared by: ATCO Electric
Date: August 27, 2009
Accuracy:

Re-build 7L749 from Lloydminster to ownership boundary with 477 MCM conductor.

Estimate Valid For 90 Days

+/- 30 %, 2009 $

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 7,194,000	$ -	$ 7,194,000	$ -
Substation Facilities	$ -	$ -	$ -	$ -
Telecommunication	$ -	$ -	$ -	$ -
Substation Salvage	$ -	$ -	$ -	$ -
Transmission Line Salvage	$ 2,350,000	$ -	$ 2,350,000	$ -
Total Facility Costs	**$ 9,544,000**	**$ -**	**$ 9,544,000**	**$ -**
Owners Costs	$ 705,000	$ -	$ 705,000	$ -
Distributed Costs	$ 1,537,000	$ -	$ 1,537,000	$ -
Total Owners and Dist. Costs	**$ 2,242,000**	**$ -**	**$ 2,242,000**	**$ -**
Total Direct Costs	**$ 11,786,000**	**$ -**	**$ 11,786,000**	**$ -**
E&S	$ 943,000	$ -	$ 943,000	$ -
AFUDC	$ 460,000	$ -	$ 460,000	$ -
Total Indirect Costs	**$ 1,403,000**	**$ -**	**$ 1,403,000**	**$ -**
TOTAL PROJECT COSTS	**$ 13,189,000**	**$ -**	**$ 13,189,000**	**$ -**

Assumptions and Risks

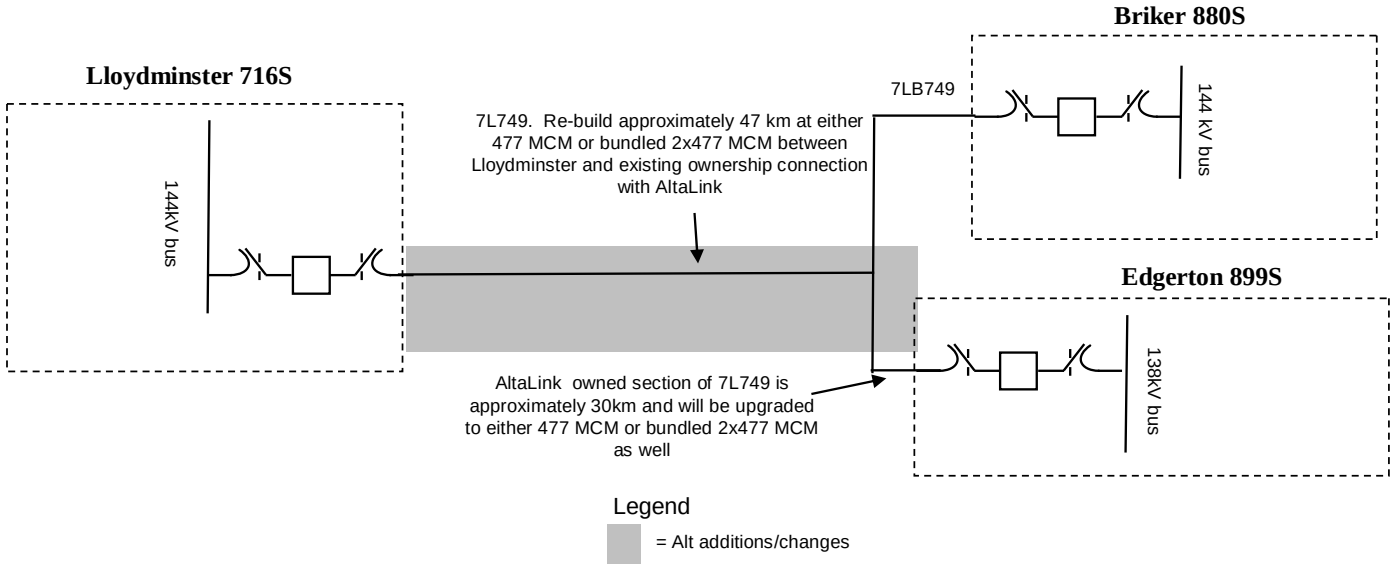
1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with appartus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage

Lloydminster 1A	**< 47 km, 144kV, 1x477 MCM (7L749) >**			
High Wind Upgrade	Materials < Line, Foundations, Structures, Hardware >	$ 1,901,808	$ -	$ 1,901,808
Rebuild 7L49 from	Labour < Engineering, Survey, Brushing, Construction >	$ 5,292,017	$ -	$ 5,292,017
Lloydminster to Boundary	**Sub - Total**	**$ 7,193,825**	**$ -**	$ 7,193,825
	TOTAL - New Transmission Line Costs	**$ 7,193,825**	**$ -**	**$ 7,193,825**

Lloydminster 1A	**< Salvage 7L749 47km >**			
High Wind Upgrade	Materials < Line, Foundations, Structures, Hardware >	$ 2,350,000	$ -	$ 2,350,000
Salvage 7L749		$ -	$ -	$ -
	Sub - Total	**$ 2,350,000**	**$ -**	$ 2,350,000
	TOTAL - Transmission Line Salvage Costs	**$ 2,350,000**	**$ -**	**$ 2,350,000**

Lloydminster Area 144kV Line Upgrade

Rebuild existing line 7L749.



Estimate Summary for Need Identification Document (NID)

Project: Central East Area Transmission Development E: Alternative 1a (2009$)
TFO: AltaLink
Prepared by: Teshmont
Date: July 19, 2009
Accuracy: +30%/-30%

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 7,194,000	$ -	$ 7,194,000	$ -
Substation Facilities	$ 145,063	$ -	$ 145,063	$ -
Telecommunication	$ 220,000	$ -	$ 220,000	$ -
Total Facility Costs	**$ 7,559,063**	**$ -**	**$ 7,559,063**	**$ -**
Owners Costs	$ 150,000	$ -	$ 150,000	$ -
Distributed Costs	$ 2,169,198	$ -	$ 2,169,198	$ -
Total Owners and Dist. Costs	**$ 2,319,198**	**$ -**	**$ 2,319,198**	**$ -**
Total Direct Costs	**$ 9,878,260**	**$ -**	**$ 9,878,260**	**$ -**
Salvage Costs	$ 450,000		$ 450,000	$ -
Other Costs				
E&S	$ 790,261	$ -	$ 790,261	$ -
AFUDC	$ 821,476	$ -	$ 821,476	$ -
Total Indirect Costs	**$ 1,611,737**	**$ -**	**$ 1,611,737**	**$ -**
TOTAL PROJECT COSTS	**$ 11,489,997**	**$ -**	**$ 11,489,997**	**$ -**

Assumptions and Risks

Salvage Costs does not impact the Total Project Costs
Existing 138 kV transmission lines are rebuilt on existing R/W

Transmission Line - NID Estimate

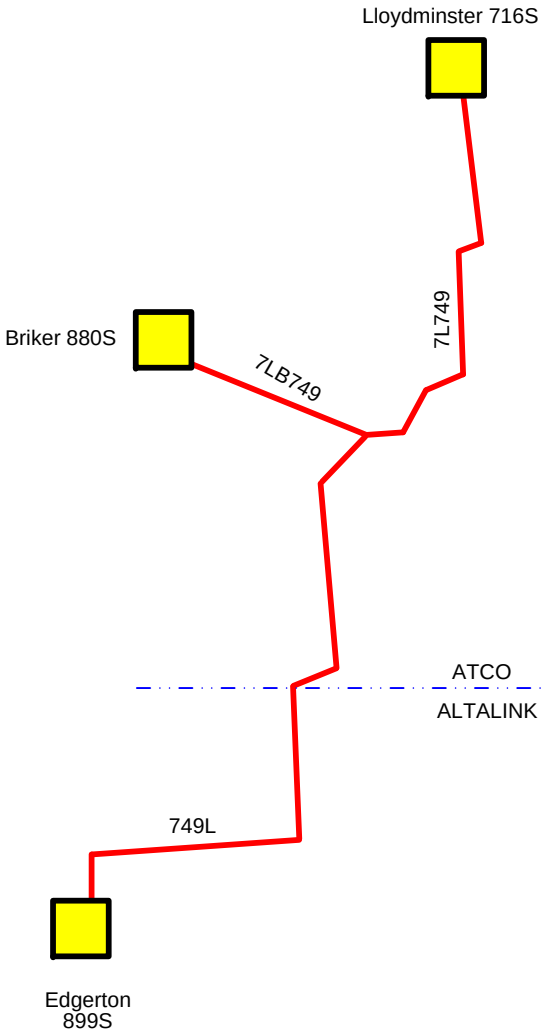
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Line 1	**From Edgerton 899S to the structure # 472**				
	30km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OPGW	$ 7,194,000	$ -	$ 7,194,000	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 7,194,000**	**$ -**	**$ 7,194,000**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 7,194,000**	**$ -**	**$ 7,194,000**	**$ -**

Substation - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub 1	**Edgerton 899S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's &CT's <quantity, voltage>	$ -	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ 145,063	$ -	$ 145,063	$ -
	Protection, control, metering	$ -	$ -	$ -	$ -
	SCADA	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 145,063**	**$ -**	**$ 145,063**	**$ -**
	TOTAL - Substation Project Costs	**$ 145,063**	**$ -**	**$ 145,063**	**$ -**

Telecommunication NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Telecom 1	**Edgerton 899S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 220,000**	**$ -**	**$ 220,000**	**$ -**
TOTAL - Telecommunication Project Costs		**$ 220,000**	**$ -**	**$ 220,000**	**$ -**



LEGEND

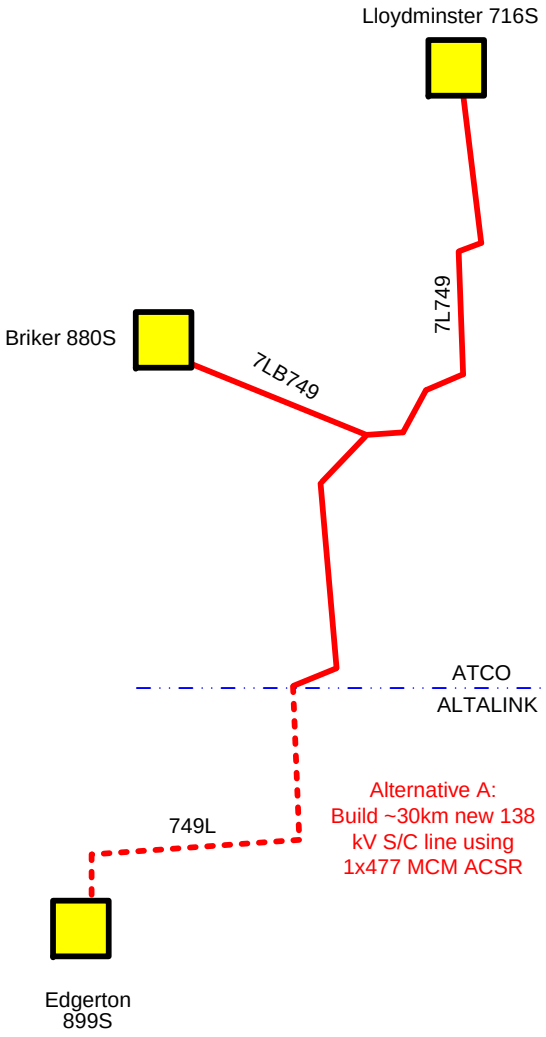
- Existing 69 kV
- Existing 138 kV
- Future provisions to 69 kV
- Future provisions to 138 kV

ALTALINK

Central East Area Transmission Development: Development E – Existing System

Date:	By:	SLD No.
2009-07-02		09-496

Teshmont



LEGEND

- Existing 69 kV
- Existing 138 kV
- Future provisions to 69 kV
- Future provisions to 138 kV

ALTALINK

Central East Area Transmission Development: Development E – Alternative 1 Proposed System

Date:	By:	SLD No.
2009-07-02		09-498

Teshmont

Estimate Summary for Need Identification Document (NID)

Project: Central East Area Transmission Development
TFO: AltaLink AltaLink
Prepared by: Ed Mayer (AESO)
Date: December 16, 2009
Accuracy: +/- 30 %

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 42,878,821	$ -	$ 42,878,821	$ -
Substation Facilities	$ 5,350,806	$ -	$ 5,350,806	$ -
Telecommunication	$ 1,650,000	$ -	$ 1,100,000	$ -
Total Facility Costs	**$ 49,879,627**	**$ -**	**$ 49,329,627**	**$ -**
Owners Costs	$ 1,522,671	$ -	$ 1,522,671	$ -
Distributed Costs	$ 13,966,296	$ -	$ 13,966,296	$ -
Total Owners and Dist. Costs	**$ 15,488,967**	**$ -**	**$ 15,488,967**	**$ -**
Total Direct Costs	**$ 65,368,593**	**$ -**	**$ 64,818,593**	**$ -**
Salvage Costs	$ -	$ -	$ -	$ -
Other Costs				
E&S	$ 5,229,487	$ -	$ -	$ -
AFUDC	$ 5,425,593	$ -	$ 5,425,593	$ -
Total Indirect Costs	**$ 10,655,081**	**$ -**	**$ 5,425,593**	**$ -**
TOTAL PROJECT COSTS	**$ 76,023,674**	**$ -**	**$ 70,244,187**	**$ -**

Assumptions and Risks

1. The Salvage Costs does not impact the Total project Costs
2. Existing 138 kV transmission lines are rebuilt on existing R/W

Transmission Line - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
<Line 1>	**From Hayter 277S to Provost 545S**				
	30km of line using 1x795MCM that is S/C wood pole structure and one OPGW	$ 8,217,000	$ -	$ 8,217,000	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 8,217,000**	**$ -**	**$ 8,217,000**	**$ -**
<Line 2>	**From Killarney Lake 267S to tap point of 749L**				
	18km of line using 1x795 MCM that is D/C, using D/C steel structures and one OHSW	$ 9,928,651	$ -	$ 9,928,651	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 9,928,651**	**$ -**	**$ 9,928,651**	**$ -**
<Line 3>	**749L from Edgerton 899S to Metiskow 648S**				
	48km of line using 1x795MCM that is S/C wood pole structure and one OPGW	$ 13,147,200	$ -	$ 13,147,200	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 13,147,200**	**$ -**	**$ 13,147,200**	**$ -**
<Line 4>	**748L from Killarney Lake 267S to Hayter 277S**				
	20.8km of line using 1x795MCM that is S/C wood pole structure and one OPGW	$ 5,697,120	$ -	$ 5,697,120	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 5,697,120**	**$ -**	**$ 5,697,120**	**$ -**
<Line 5>	**715L from Hansman Lake 655S to Provost 545S**				
	21.5km of line using 1x795MCM that is S/C wood pole structure and one OPGW	$ 5,888,850	$ -	$ 5,888,850	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 5,888,850**	**$ -**	**$ 5,888,850**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 42,878,821**	**$ -**	**$ 42,878,821**	**$ -**

Substation - NID Estimate

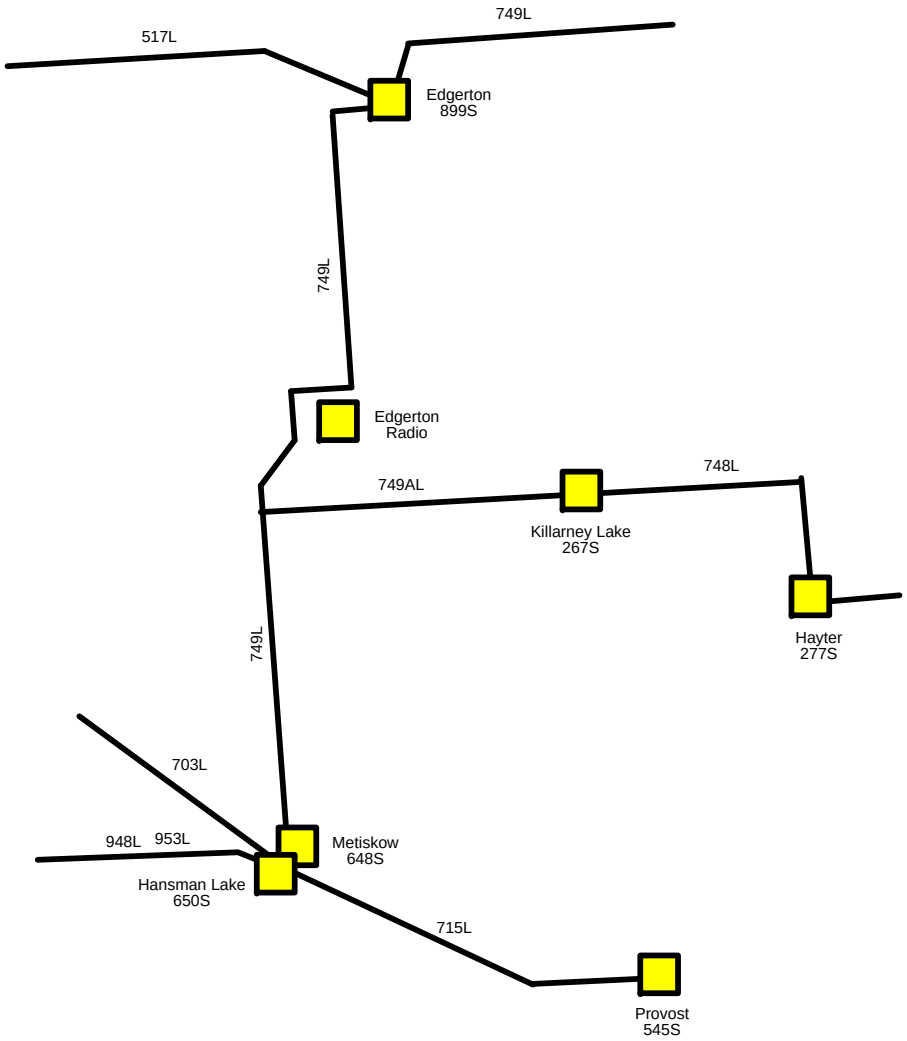
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub. Name	**Killarney Lake 267S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty: 2, 138 kV>	$ 747,040	$ -	$ 747,040	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 2 CVTs, 138 kV>	$ 182,860	$ -	$ 182,860	$ -
	Switch Yard and Substation Control Building	$ 371,246	$ -	$ 371,246	$ -
	Protection, control, metering	$ 257,697	$ -	$ 257,697	$ -
	SCADA	$ 27,500	$ -	$ 27,500	$ -
	Station Energization	$ 56,298	$ -	$ 56,298	$ -
	Sub - Total	**$ 1,642,641**	**$ -**	**$ 1,642,641**	**$ -**
Sub. Name	**Hayter 277S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty: 2, 138 kV>	$ 747,040	$ -	$ 747,040	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 5, 138 kV>	$ 268,024	$ -	$ 268,024	$ -
	Switch Yard and Substation Control Building	$ 270,566	$ -	$ 270,566	$ -
	Protection, control, metering	$ 257,697	$ -	$ 257,697	$ -
	SCADA	$ 27,500	$ -	$ 27,500	$ -
	Station Energization	$ 56,980	$ -	$ 56,980	$ -
	Sub - Total	**$ 1,627,807**	**$ -**	**$ 1,627,807**	**$ -**
Sub. Name	**Provost 545S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty: 2, 138 kV>	$ 747,040	$ -	$ 747,040	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 5, 138 kV>	$ 268,024	$ -	$ 268,024	$ -
	Switch Yard and Substation Control Building	$ 723,799	$ -	$ 723,799	$ -
	Protection, control, metering	$ 257,697	$ -	$ 257,697	$ -
	SCADA	$ 27,500	$ -	$ 27,500	$ -
	Station Energization	$ 56,298	$ -	$ 56,298	$ -
	Sub - Total	**$ 2,080,358**	**$ -**	**$ 2,080,358**	**$ -**
	TOTAL - Substation Project Costs	**$ 5,350,806**	**$ -**	**$ 5,350,806**	**$ -**

Telecommunication NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
TELECOM 1	**Provost 545S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 440,000	$ -	$ 440,000	$ -
	Sub - Total	**$ 440,000**	**$ -**	**$ 440,000**	**$ -**
TELECOM 2	**Hayter 277S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 440,000	$ -	$ 440,000	$ -
	Sub - Total	**$ 440,000**	**$ -**	**$ 440,000**	**$ -**
TELECOM 3	**Killarney Lake 267S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ 330,000	$ -	$ 330,000	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 550,000**	**$ -**	**$ 550,000**	**$ -**
TELECOM 4	**Hansman Lake 650S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 220,000**	**$ -**	**$ 220,000**	**$ -**
	TOTAL - Telecommunication Project Costs	**$ 1,650,000**	**$ -**	**$ 1,100,000**	**$ -**

Estimate Summary with Owner's Cost

	System Portion	Customer Portion	TOTAL	Capital Maintenance
FACILITY COSTS				
Transmission Line Project Costs	$ 42,878,821	$ -	$ 42,878,821	$ -
Substation Project Costs	$ 5,350,806	$ -	$ 5,350,806	$ -
Telecommunications Project Costs	$ 1,650,000	$ -	$ 1,650,000	$ -
Salvage Costs	$ -	$ -	$ -	$ -
Sub - Total	**$ 49,879,627**	$ -	**$ 49,879,627**	$ -
OWNERS COST				
Preliminary Engineering	$ 20,000	$ -	$ 20,000	$ -
Siting	$ 400,000	$ -	$ 400,000	$ -
Protection Settings	$ 105,000	$ -	$ 105,000	$ -
Land	$ 997,671	$ -	$ 997,671	$ -
Metering	$ -	$ -	$ -	$ -
Sub - Total	**$ 1,522,671**	$ -	**$ 1,522,671**	$ -
DISTRIBUTED COST				
Distributed Cost	$ 7,980,740	$ -	$ 7,980,740	$ -
Contingency	$ 5,985,555	$ -	$ 5,985,555	$ -
Escalation	$ -	$ -	$ -	$ -
Sub - Total	**$ 13,966,296**	$ -	**$ 13,966,296**	$ -
INDIRECT COSTS				
E&S	$ 5,229,487	$ -	$ 5,229,487	$ -
AFUDC	$ 5,425,593	$ -	$ 5,425,593	$ -
Sub - Total	**$ 10,655,081**	$ -	**$ 10,655,081**	$ -
TOTAL PROJECT COST	**$ 76,023,674**	**$ -**	**$ 76,023,674**	**$ -**



LEGEND

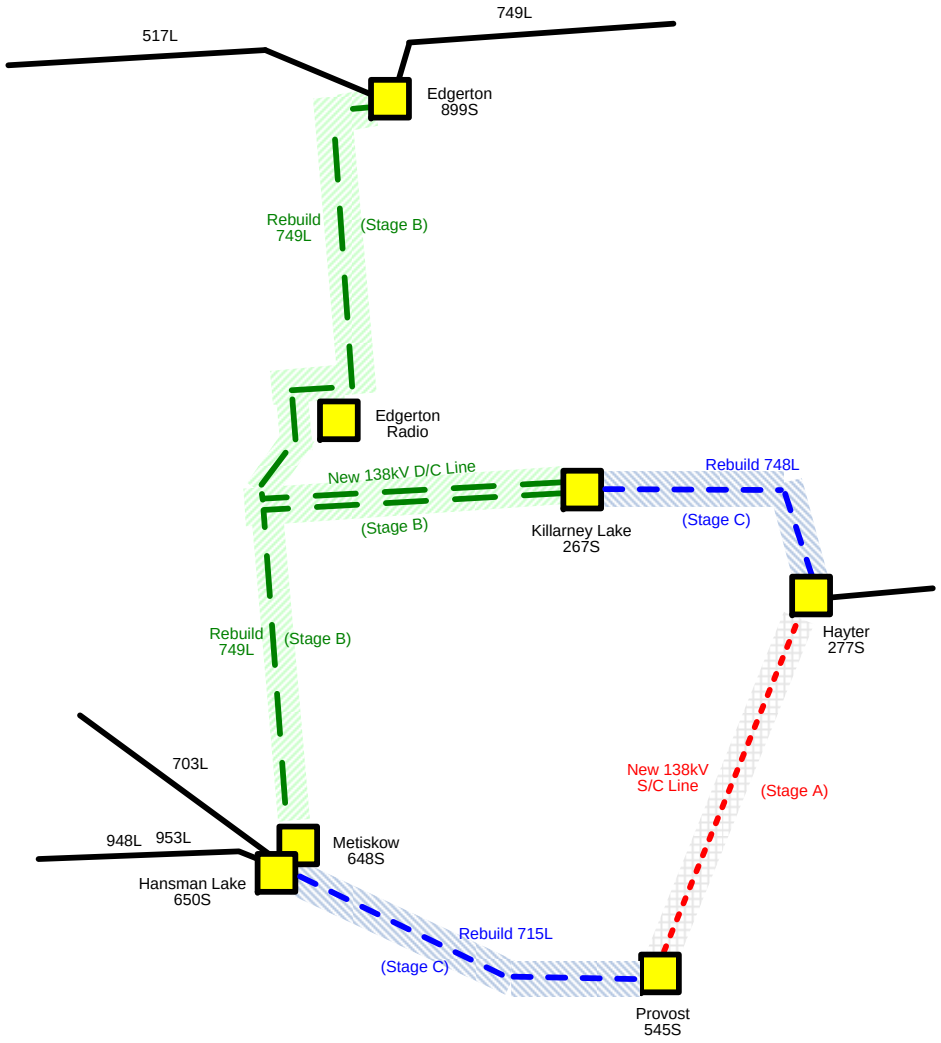
- Existing 138 kV
- Provision in Stage A
- Provision in Stage B
- Provision in Stage C

ALTALINK

Central East Area Transmission Development:
Development B – Provost Area
Exiting System

Date:	By:	SLD No.
2009-06-15		09-415

Teshmont



LEGEND

- Existing 138 kV
- Provision in Stage A
- Provision in Stage B
- Provision in Stage C

ALTALINK

Central East Area Transmission Development:
Development B - Provost Area
Proposed System

Date:	By:	SLD No.
2009-06-15		09-425

Teshmont

Estimate Summary for Need Identification Document (NID)

Project: Central East
7L50 Re-build - Alternative 1CC

2017 - Rebuild 7L50 to 477kcmil ACSR from Battle River to Buffalo Creek ASSUMING permitting process requires new ROW (use maximum eastern ROW length of 160 km versus 140 km for western route or 135 km if allowed on existing corridor)

TFO: ATCO Electric
Prepared by: ATCO Electric
Date: March 9, 2010
Accuracy:

Estimate Valid For 90 Days
+/- 30 %, 2009 $

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 25,874,000	$ -	$ 25,874,000	$ -
Substation Facilities	$ -	$ -	$ -	$ -
Telecommunication	$ -	$ -	$ -	$ -
Substation Salvage	$ -	$ -	$ -	$ -
Transmission Line Salvage	$ 5,000,000	$ -	$ 5,000,000	$ -
Total Facility Costs	**$ 30,874,000**	**$ -**	**$ 30,874,000**	**$ -**
Owners Costs	$ 2,050,000	$ -	$ 2,050,000	$ -
Distributed Costs	$ 4,939,000	$ -	$ 4,939,000	$ -
Total Owners and Dist. Costs	**$ 6,989,000**	**$ -**	**$ 6,989,000**	**$ -**
Total Direct Costs	**$ 37,863,000**	**$ -**	**$ 37,863,000**	**$ -**
E&S	$ 3,029,000	$ -	$ 3,029,000	$ -
AFUDC	$ 1,476,000	$ -	$ 1,476,000	$ -
Total Indirect Costs	**$ 4,505,000**	**$ -**	**$ 4,505,000**	**$ -**
TOTAL PROJECT COSTS	**$ 42,368,000**	**$ -**	**$ 42,368,000**	**$ -**

Assumptions and Risks

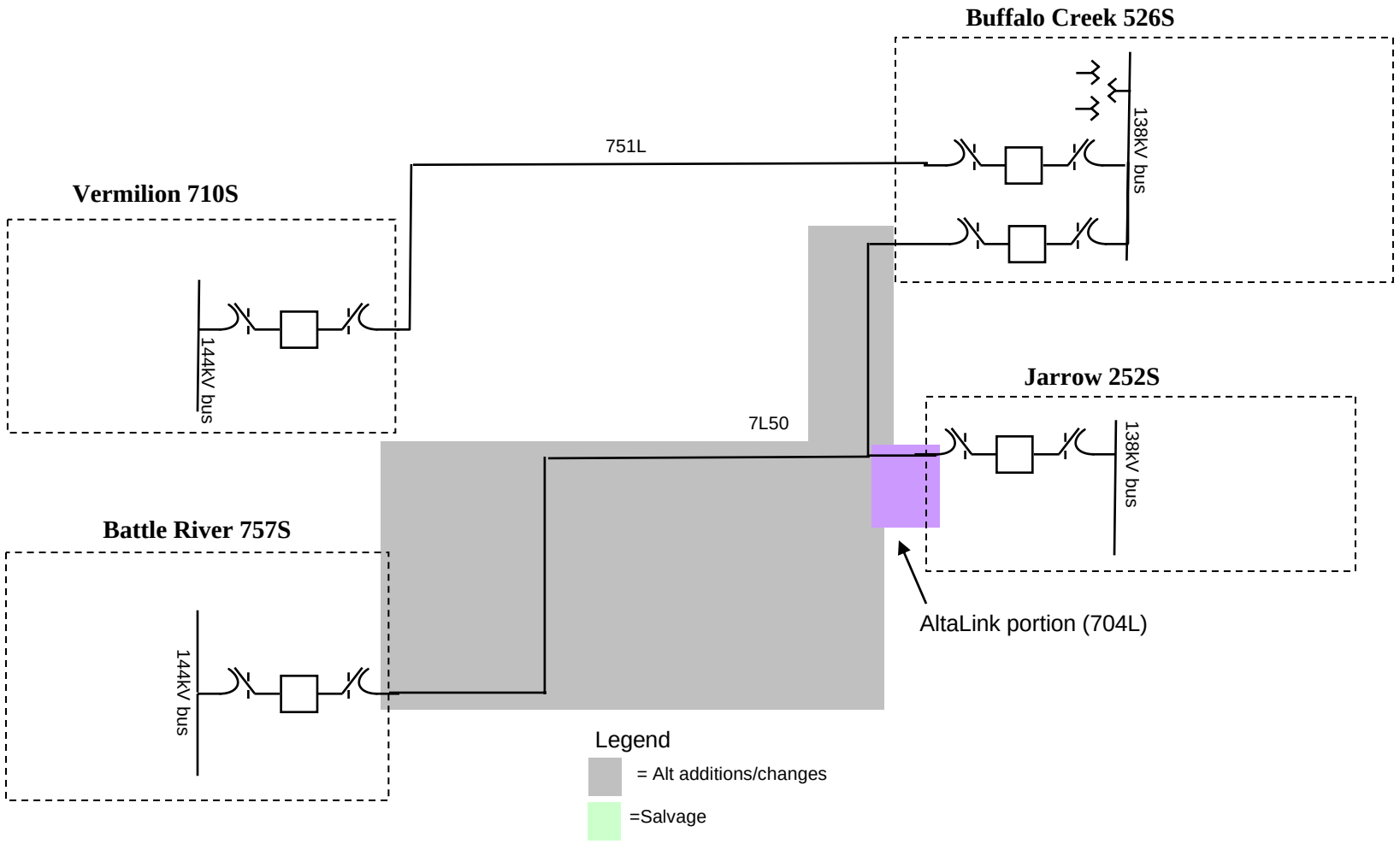
1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with apparatus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage

7L50 Rebuild 1CC **Rebuild 7L50 from Battle River to Buffalo Creek assuming new ROW maximum length**	**< 160 km, 144kV, Single Cct 477 MCM, c/w OPGW >**			
	Materials < Line, Foundations, Structures, Hardware >	$ 7,858,400		$ 7,858,400
	Labour < Engineering, Survey, Brushing, Construction >	$ 18,015,377	$ -	$ 18,015,377
	Sub - Total	**$ 25,873,777**	**$ -**	$ 25,873,777
	TOTAL - New Transmission Line Costs	**$ 25,873,777**	**$ -**	**$ 25,873,777**
7L50 Rebuild 1CC **Salvage 7L50**	**< Salvage Existing 7L50 - 100km >**			
	Labour < Engineering, Survey, Brushing, Construction >	$ 5,000,000	$ -	$ 5,000,000
		$ -	$ -	$ -
	Sub - Total	**$ 5,000,000**	**$ -**	$ 5,000,000
	TOTAL - Transmission Line Salvage Costs	**$ 5,000,000**	**$ -**	**$ 5,000,000**

7L50 Alternatives:

Pending permit process; rebuild on existing corridor – 100 km or rebuild on new corridor (up to 160 km)

Entire 7L50 to be re-built using 477 MCM



Estimate Summary for Need Identification Document (NID)

Project: Central East Area Transmission Development C (2009$)
TFO: AltaLink
Prepared by: Teshmont
Date: July 19, 2009
Accuracy: +30%/-30%

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 91,520	$ -	$ 91,520	$ -
Substation Facilities	$ 145,063	$ -	$ 145,063	$ -
Telecommunication	$ -	$ -	$ -	$ -
Total Facility Costs	**$ 236,583**	**$ -**	**$ 236,583**	**$ -**
Owners Costs	$ 58,000	$ -	$ 58,000	$ -
Distributed Costs	$ 81,247	$ -	$ 81,247	$ -
Total Owners and Dist. Costs	**$ 139,247**	**$ -**	**$ 139,247**	**$ -**
Total Direct Costs	**$ 375,830**	**$ -**	**$ 375,830**	**$ -**
Salvage Costs	$ 6,000	$ -	$ 6,000	$ -
Other Costs				
E&S	$ 30,066	$ -	$ 30,066	$ -
AFUDC	$ 31,254	$ -	$ 31,254	$ -
Total Indirect Costs	**$ 61,320**	**$ -**	**$ 61,320**	**$ -**
TOTAL PROJECT COSTS	**$ 437,150**	**$ -**	**$ 437,150**	**$ -**

Assumptions and Risks

Salvage Costs does not impact the Total Project Costs

Existing 138 kV transmission lines are rebuilt on existing R/W

Transmission Line - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Line 1	**From Jarrow 252S to the junction 7L50**				
	0.4km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OHSW	$ 91,520	$ -	$ 91,520	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 91,520**	**$ -**	**$ 91,520**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 91,520**	**$ -**	**$ 91,520**	**$ -**

Substation - NID Estimate

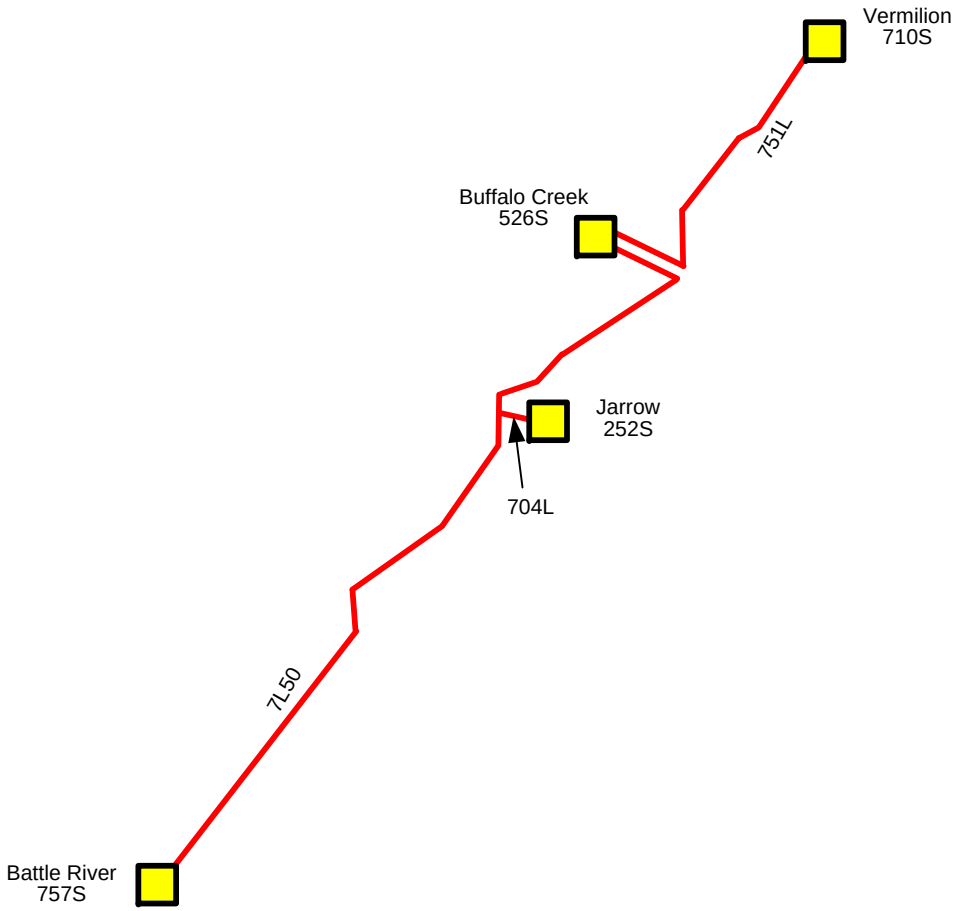
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub 1	**Jarrow252S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's &CT's <quantity, voltage>	$ -	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ 145,063	$ -	$ 145,063	$ -
	Protection, control, metering	$ -	$ -	$ -	$ -
	SCADA	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 145,063**	**$ -**	**$ 145,063**	**$ -**
	TOTAL - Substation Project Costs	**$ 145,063**	**$ -**	**$ 145,063**	**$ -**

Telecommunication NID Estimate

	System Portion	Customer Portion	TOTAL	Capital Maintenance
TOTAL - Telecommunication Project Costs	**$ -**	**$ -**	**$ -**	**$ -**

Estimate Summary with Owner's Cost

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Facility Cost				
Transmission Line Project Costs	$ 91,520	$ -	$ 91,520	$ -
Substation Project Costs	$ 145,063	$ -	$ 145,063	$ -
Telecommunications Project Costs	$ -	$ -	$ -	$ -
Salvage Costs	$ -	$ -	$ -	$ -
Sub - Total	**$ 236,583**	**$ -**	**$ 236,583**	**$ -**
Owners Cost				
Preliminary Engineering	$ 20,000	$ -	$ 20,000	$ -
Siting	$ 8,000	$ -	$ 8,000	$ -
Protection Settings	$ 30,000	$ -	$ 30,000	$ -
Land	$ -	$ -	$ -	$ -
Metering	$ -	$ -	$ -	$ -
Sub - Total	**$ 58,000**	**$ -**	**$ 58,000**	**$ -**
Distributed Cost				
Distributed Cost	$ 47,081	$ -	$ 47,081	$ -
Contingency	$ 34,166	$ -	$ 34,166	$ -
Escalation	$ -	$ -	$ -	$ -
Sub - Total	**$ 81,247**	**$ -**	**$ 81,247**	**$ -**
Indirect Costs				
E&S	$ 30,066	$ -	$ 30,066	$ -
AFUDC	$ 31,254	$ -	$ 31,254	$ -
Sub - Total	**$ 61,320**	**$ -**	**$ 61,320**	**$ -**
Total Project Cost	**$ 437,150**	**$ -**	**$ 437,150**	**$ -**



LEGEND

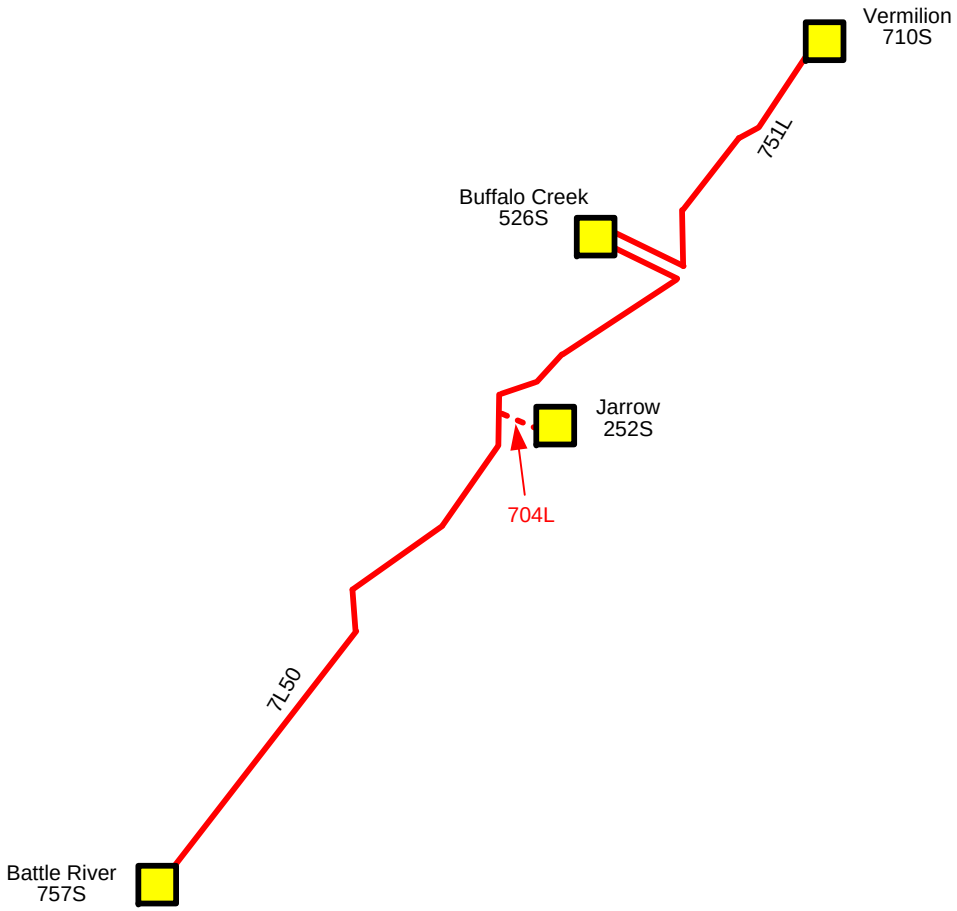
- Existing 69 kV
- Existing 138 kV
- Future provisions to 69 kV
- Future provisions to 138 kV

ALTALINK

Central East Area Transmission Development: Development C – Line 7L50 Existing System

Date:	By:	SLD No.
2009-06-16		09-452

Teshmont



LEGEND

- Existing 69 kV
- Existing 138 kV
- Future provisions to 69 kV
- Future provisions to 138 kV

ALTALINK

Central East Area Transmission Development: Development C - Proposed 138 kV Line 704L Upgrade

Date:	By:	SLD No.
2009-06-16		09-454

Teshmont

Estimate Summary for Need Identification Document (NID)

Project: Central East Vermillion - Alternative 1D
TFO: ATCO Electric
Prepared by: ATCO Electric
Date: August 27, 2009
Accuracy:

Single circuit 240kV line connection with single transformation. New 240kV line with D/C tower with one side strung with 2x795 MCM bundled conductor.

Estimate Valid for 90 days
+/- 30 %, 2009 $

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 22,371,000	$ -	$ 22,371,000	$ -
Substation Facilities	$ 10,905,000	$ -	$ 10,905,000	$ -
Telecommunication	$ 550,000	$ -	$ 550,000	$ -
Substation Salvage	$ 50,000	$ -	$ 50,000	$ -
Transmission Line Salvage	$ 150,000	$ -	$ 150,000	$ -
Total Facility Costs	**$ 34,026,000**	**$ -**	**$ 34,026,000**	**$ -**
Owners Costs	$ 1,200,000	$ -	$ 1,200,000	$ -
Distributed Costs	$ 5,284,000	$ -	$ 5,284,000	$ -
Total Owners and Dist. Costs	**$ 6,484,000**	**$ -**	**$ 6,484,000**	**$ -**
Total Direct Costs	**$ 40,510,000**	**$ -**	**$ 40,510,000**	**$ -**
E&S	$ 3,241,000	$ -	$ 3,241,000	$ -
AFUDC	$ 1,579,000	$ -	$ 1,579,000	$ -
Total Indirect Costs	**$ 4,820,000**	**$ -**	**$ 4,820,000**	**$ -**
TOTAL PROJECT COSTS	**$ 45,330,000**	**$ -**	**$ 45,330,000**	**$ -**

Assumptions and Risks

1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with apparatus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage

Transmission Lines

Vermillion 1D	**< 20 km, 144kV, DC Tower 2x795 MCM OPGW - One Side >**			
240kV Opt D	Materials < Line, Foundations, Structures, Hardware >	$ 4,003,000	$ -	$ 4,003,000
	Labour < Engineering, Survey, Brushing, Construction >	$ 7,602,040	$ -	$ 7,602,040
	Sub - Total	**$ 11,605,040**	**$ -**	$ 11,605,040
Vermillion Common	**< 10 km, 144kV, Double Cct 477 MCM OPGW >**			
New Line from	Materials < Line, Foundations, Structures, Hardware >	$ 794,600	$ -	$ 794,600
Vermillion to	Labour < Engineering, Survey, Brushing, Construction >	$ 3,465,437	$ -	$ 3,465,437
New Vermillion	**Sub - Total**	**$ 4,260,037**	**$ -**	$ 4,260,037
Vermillion Common	**< 20 km, 144kV, Single Cct 266.8 MCM (7L65) >**			
New Line to	Materials < Line, Foundations, Structures, Hardware >	$ 837,460	$ -	$ 837,460
extend 7L65 to	Labour < Engineering, Survey, Brushing, Construction >	$ 2,054,201	$ -	$ 2,054,201
New Vermillion	**Sub - Total**	**$ 2,891,661**	**$ -**	$ 2,891,661
Vermillion Common	**< 5 km, 144kV, Single Cct 266.8 MCM (7L14) >**			
New Line to	Materials < Line, Foundations, Structures, Hardware >	$ 209,365	$ -	$ 209,365
extend 7L14 to	Labour < Engineering, Survey, Brushing, Construction >	$ 513,550	$ -	$ 513,550
New Vermillion	**Sub - Total**	**$ 722,915**	**$ -**	$ 722,915
Vermillion Common	**< 20 km, 144kV, Single Cct 266.8 MCM (7L53) >**			
New Line to	Materials < Line, Foundations, Structures, Hardware >	$ 837,460	$ -	$ 837,460
extend 7L53 to	Labour < Engineering, Survey, Brushing, Construction >	$ 2,054,201	$ -	$ 2,054,201
New Vermillion	**Sub - Total**	**$ 2,891,661**	**$ -**	$ 2,891,661
	TOTAL - New Transmission Line Costs	**$ 22,371,314**	**$ -**	**$ 22,371,314**

Substations

Vermillion Common	**< Salvage 7L14, 7L53, 7L65 connections >**			
Salvage Connections	Materials < Line, Foundations, Structures, Hardware >	$ 150,000	$ -	$ 150,000
into Vermillion for Lines		$ -	$ -	$ -
7L14, 7L53 and 7L65	**Sub - Total**	**$ 150,000**	**$ -**	**$ 150,000**
	TOTAL - Transmission Line Salvage Costs	**$ 150,000**	**$ -**	**$ 150,000**

Sub. Name	**< Bulk System Vermilion Area Alt. 1 - NEW Vermilion >**			
	Transformers <1 - 240/144 180/240/300>	$ 3,000,000	$ -	$ 3,000,000
	Circuit Breakers <6 - 144kV>	$ 540,000	$ -	$ 540,000
	Circuit Breakers <1 - 240kV>	$ 100,000	$ -	$ 100,000
	PT's & CT's	$ 240,000	$ -	$ 240,000
	Switch Yard and Substation Control Building	$ 1,550,000	$ -	$ 1,550,000
	Protection, control, metering	$ 775,000	$ -	$ 775,000
	SCADA	$ 275,000	$ -	$ 275,000
	Engineering	$ 775,000	$ -	$ 775,000
	Construction & Commissioning	$ 3,450,000	$ -	$ 3,450,000
	Sub - Total	**$ 10,705,000**	**$ -**	**$ 10,705,000**
	TOTAL - Substation Project Costs	**$ 10,705,000**	**$ -**	**$ 10,705,000**

Sub. Name	**< Bulk System Vermilion Area Alt. 1/2 - 709S Vegreville >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ -	$ -	$ -
	Protection, control, metering	$ -	$ -	$ -
	SCADA	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ 10,000
	Construction & Commissioning	$ 10,000	$ -	$ 10,000
	Sub - Total	**$ 20,000**	**$ -**	**$ 20,000**
	TOTAL - Substation Project Costs	**$ 20,000**	**$ -**	**$ 20,000**
Sub. Name	**< Bulk System Vermilion Area Alt. 1/2 - 706S Irish Creek >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ -	$ -	$ -
	Protection, control, metering	$ -	$ -	$ -
	SCADA	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ 10,000
	Construction & Commissioning	$ 10,000	$ -	$ 10,000
	Sub - Total	**$ 20,000**	**$ -**	**$ 20,000**
	TOTAL - Substation Project Costs	**$ 20,000**	**$ -**	**$ 20,000**

Sub. Name	**< Bulk System Vermilion Area Alt. 1/2 - 751S Hill >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ -	$ -	$ -
	Protection, control, metering	$ -	$ -	$ -
	SCADA	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ 10,000
	Construction & Commissioning	$ 10,000	$ -	$ 10,000
	Sub - Total	**$ 20,000**	**$ -**	**$ 20,000**
	TOTAL - Substation Project Costs	**$ 20,000**	**$ -**	**$ 20,000**
Sub. Name	**< Bulk System Vermilion Area Alt. 1/2 - 710S Vermilion >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ 50,000	$ -	$ 50,000
	Protection, control, metering	$ 50,000	$ -	$ 50,000
	SCADA	$ -	$ -	$ -
	Engineering	$ 20,000	$ -	$ 20,000
	Construction & Commissioning	$ 20,000	$ -	$ 20,000
	Sub - Total	**$ 140,000**	**$ -**	**$ 140,000**
	< Salvage >			
	144kV bay	$ 50,000	$ -	$ 50,000
		$ -	$ -	$ -
		$ -	$ -	$ -
	Sub - Total	**$ 50,000**	**$ -**	**$ 50,000**
	TOTAL - Substation Project Costs	**$ 140,000**	**$ -**	**$ 140,000**
	TOTAL - Overall Substation Project Costs	**$ 10,905,000**	**$ -**	**$ 10,905,000**

Telecommunications

Sub. Name	**< Bulk System Vermilion Area Alt. 1 - NEW Vermilion >**			
	Tower/Antenna	$ 200,000	$ -	$ -
	Fiber	$ 125,000	$ -	$ -
	Radio Equipment	$ 150,000	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ 25,000	$ -	$ -
	Construction and Commissioning	$ 50,000	$ -	$ -
	Sub - Total	**$ 550,000**	**$ -**	**$ 550,000**
	TOTAL - Telecommunication Project Costs	**$ 550,000**	**$ -**	**$ 550,000**

240kV from Nilrem to New Vermilion Area Substation -

Single 240kV connection and single tie transformer

Existing Vermilion 710S

ASSUME transformers and 72kV stay at Vermilion 710S

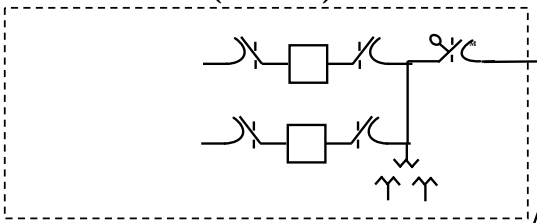
-Estimate 10 KM double cct 710S to New Vermilion at 477 MCM

-Estimate 20km extension for 7L65

-Estimate 5km extension for 7L14

-Estimate 20km extension for 7L53

New Nilrem Substation (AltaLink)



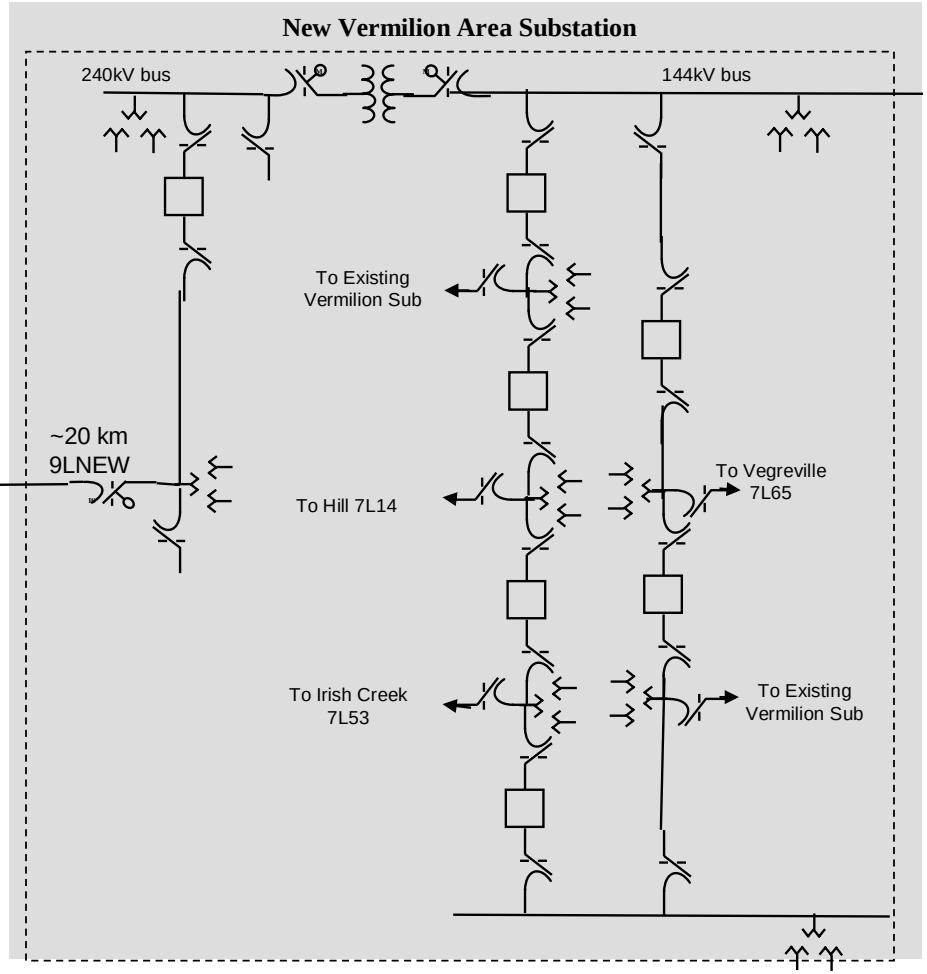
240kV structures either single or one side strung double cct towers.

240kV conductor either 2x477MCM or 2x795 MCM

ASSUMPTION: 240kV line approximate length of 100km.

Legend

=Alt additions



Estimate Summary for Need Identification Document (NID)

Project: Central East Area 240 kV Transmission Development - Alternative 2b (2009$)
TFO: AltaLink
Prepared by: Eduardo Torres
Date: June 11, 2009
Accuracy: +30%/-15%

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 74,539,641	$ -	$ 74,539,641	$ -
Substation Facilities	$ 1,541,477	$ -	$ 1,541,477	$ -
Telecommunication	$ 118,135	$ -	$ 118,135	$ -
Total Facility Costs	**$ 76,199,253**	**$ -**	**$ 76,199,253**	**$ -**
Owners Costs	$ 4,328,595	$ -	$ 4,328,595	$ -
Distributed Costs	$ 15,040,168	$ -	$ 15,040,168	$ -
Total Owners and Dist. Costs	**$ 19,368,763**	**$ -**	**$ 19,368,763**	**$ -**
Total Direct Costs	**$ 95,568,016**	**$ -**	**$ 95,568,016**	**$ -**
Salvage Costs	$ -	$ -	$ -	$ -
Other Costs				
E&S	$ 7,645,441	$ -	$ 7,645,441	$ -
AFUDC	$ 9,598,851	$ -	$ 9,598,851	$ -
Total Indirect Costs	**$ 17,244,293**	**$ -**	**$ 17,244,293**	**$ -**
TOTAL PROJECT COSTS	**$ 112,812,308**	**$ -**	**$ 112,812,308**	**$ -**

Assumptions and Risks

Transmission Line - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Line 1	**New line 240 kV line between Nilrem and new Vermillion**				
	"80" km of line using <2x795 Drake conductor type> that is D/C one side strung w/o underbuild	$ 74,539,641	$ -	$ 74,539,641	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 74,539,641**	**$ -**	**$ 74,539,641**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 74,539,641**	**$ -**	**$ 74,539,641**	**$ -**

Substation - NID Estimate

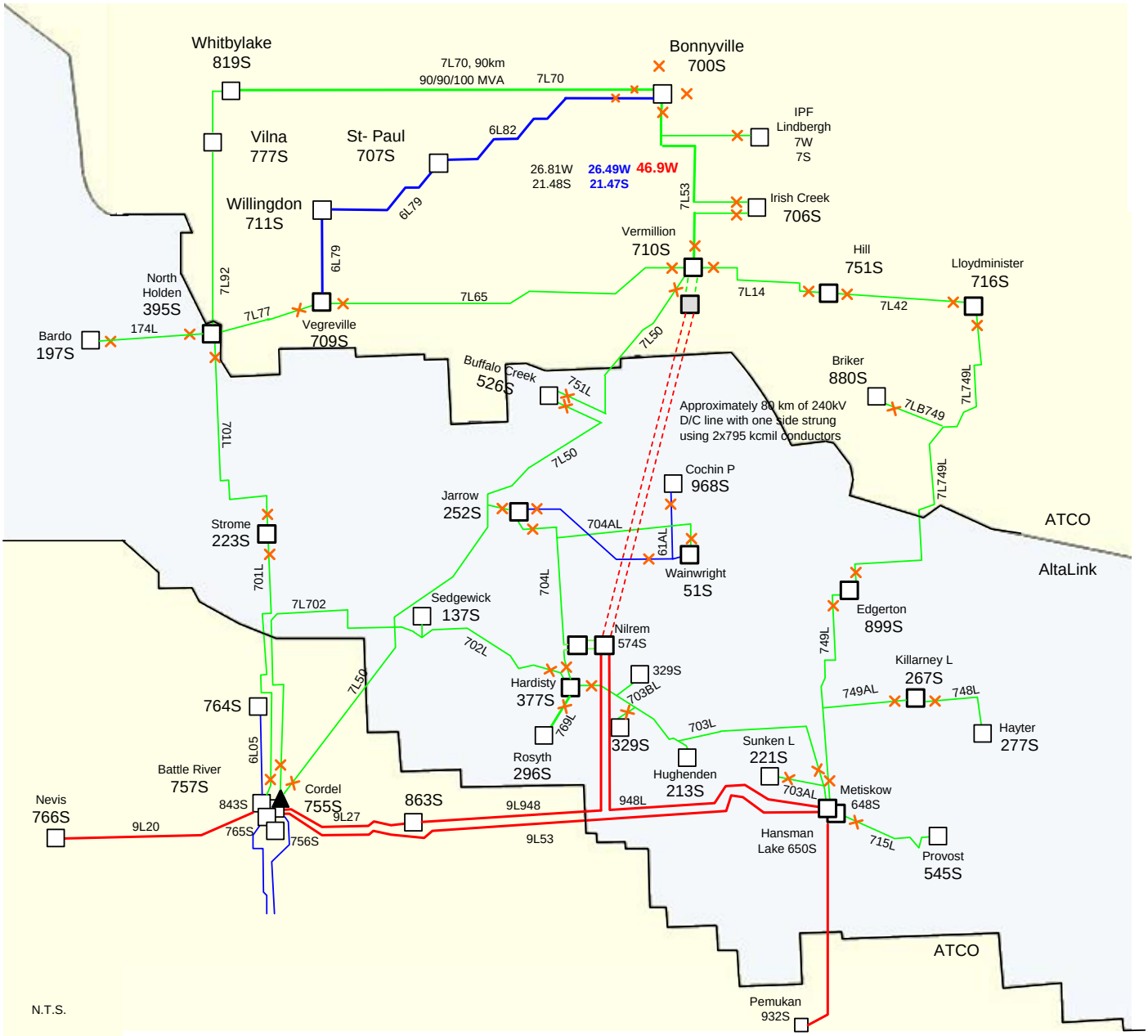
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub 1	**Nilrem 574S Description**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <live tank, 240 kV>	$ 397,162	$ -	$ 397,162	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's &CT's <2x3 240 kV>	$ 238,406	$ -	$ 238,406	$ -
	Switch Yard and Substation Control Building	$ 677,581	$ -	$ 677,581	$ -
	Protection, control, metering	$ 202,429	$ -	$ 202,429	$ -
	SCADA	$ 22,635	$ -	$ 22,635	$ -
	<Misc.>	$ 3,265	$ -	$ 3,265	$ -
	Sub - Total	**$ 1,541,477**	**$ -**	**$ 1,541,477**	**$ -**
	TOTAL - Substation Project Costs	**$ 1,541,477**	**$ -**	**$ 1,541,477**	**$ -**

Telecommunication NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Telecom 1	**Nilrem 574T Description**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ 13,383	$ -	$ 13,383	$ -
	Radio Equipment	$ 104,752	$ -	$ 104,752	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 118,135**	**$ -**	**$ 118,135**	**$ -**
	TOTAL - Telecommunication Project Costs	**$ 118,135**	**$ -**	**$ 118,135**	**$ -**

Estimate Summary with Owner's Cost

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Facility Cost				
Transmission Line Project Costs	$ 74,539,641	$ -	$ 74,539,641	$ -
Substation Project Costs	$ 1,541,477	$ -	$ 1,541,477	$ -
Telecommunications Project Costs	$ 118,135	$ -	$ 118,135	$ -
Salvage Costs	$ -	$ -	$ -	$ -
Sub - Total	**$ 76,199,253**	**$ -**	**$ 76,199,253**	**$ -**
Owners Cost				
Preliminary Engineering	$ 10,000	$ -	$ 10,000	$ -
Siting	$ 700,000	$ -	$ 700,000	$ -
Protection Settings	$ 20,000	$ -	$ 20,000	$ -
Land	$ 3,598,595	$ -	$ 3,598,595	$ -
Metering	$ -	$ -	$ -	$ -
Sub - Total	**$ 4,328,595**	**$ -**	**$ 4,328,595**	**$ -**
Distributed Cost				
Distributed Cost	$ 6,352,166	$ -	$ 6,352,166	$ -
Contingency	$ 8,688,001	$ -	$ 8,688,001	$ -
Escalation	$ -	$ -	$ -	$ -
Sub - Total	**$ 15,040,168**	**$ -**	**$ 15,040,168**	**$ -**
Indirect Costs				
E&S	$ 7,645,441	$ -	$ 7,645,441	$ -
AFUDC	$ 9,598,851	$ -	$ 9,598,851	$ -
Sub - Total	**$ 17,244,293**	**$ -**	**$ 17,244,293**	**$ -**
Total Project Cost	**$ 112,812,308**	**$ -**	**$ 112,812,308**	**$ -**



LEGEND

New Substation	New 138kV Line
Existing Substation	Existing 138kV Line
New 69kV Line	New 240kV Line
Existing 69kV Line	Existing 240kV Line

ALTALINK

Single Line Diagram

Central East Area Transmission Development F: Alternative 2B

Date:	By:	SLD No.:
2009-06-25	ET	09-364

240kV from Nilrem to New Vermilion Area Substation -

Single 240kV connection and single tie transformer

Existing Vermilion 710S

ASSUME transformers and 72kV stay at Vermilion 710S

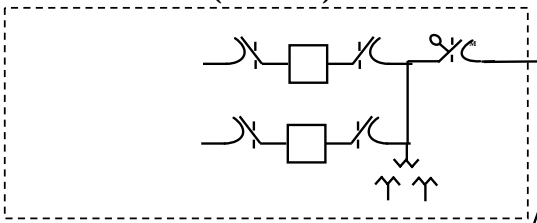
-Estimate 10 KM double cct 710S to New Vermilion at 477 MCM

-Estimate 20km extension for 7L65

-Estimate 5km extension for 7L14

-Estimate 20km extension for 7L53

New Nilrem Substation (AltaLink)



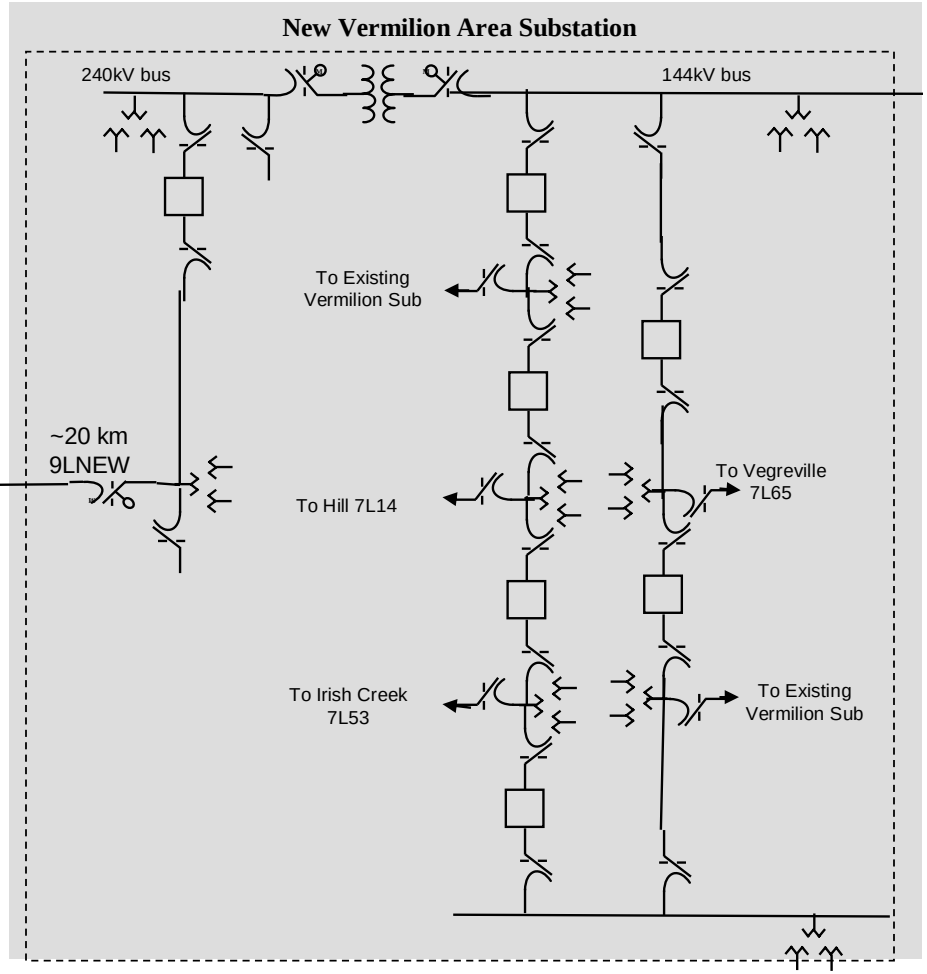
240kV structures either single or one side strung double cct towers.

240kV conductor either 2x477MCM or 2x795 MCM

ASSUMPTION: 240kV line approximate length of 100km.

Legend

=Alt additions



Regional Alternative 3

(Common set of local reinforcements not reproduced)

Estimate Summary for Need Identification Document (NID)

Project: Central East Area Transmission Development A: Alternative 3 - A (2009$)
TFO: AltaLink
Prepared by: Teshmont
Date: July 19, 2009
Accuracy: +30%/-30%

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 30,478,800	$ -	$ 30,478,800	$ -
Substation Facilities	$ 4,260,506	$ -	$ 4,260,506	$ -
Telecommunication	$ 440,000	$ -	$ 440,000	$ -
Total Facility Costs	**$ 35,179,306**	**$ -**	**$ 35,179,306**	**$ -**
Owners Costs	$ 1,755,419	$ -	$ 1,755,419	$ -
Distributed Costs	$ 9,923,018	$ -	$ 9,923,018	$ -
Total Owners and Dist. Costs	**$ 11,678,437**	**$ -**	**$ 11,678,437**	**$ -**
Total Direct Costs	**$ 46,857,742**	**$ -**	**$ 46,857,742**	**$ -**
Salvage Costs	$ 1,800,000	$ -	$ 1,800,000	$ -
Other Costs				
E&S	$ 3,748,619	$ -	$ 3,748,619	$ -
AFUDC	$ 3,896,690	$ -	$ 3,896,690	$ -
Total Indirect Costs	**$ 7,645,309**	**$ -**	**$ 7,645,309**	**$ -**
TOTAL PROJECT COSTS	**$ 54,503,052**	**$ -**	**$ 54,503,052**	**$ -**

Assumptions and Risks

The Salvage Costs does not impact the Total project Costs
Existing 138 kV transmission lines are rebuilt on existing R/W

Transmission Line - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Line 1	**From Jarrow 252S to the junction 704AL**				
	20km of line using 1x477 MCM that is D/C, using D/C steel pole structures with OHSW	$ 9,218,000	$ -	$ 9,218,000	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 9,218,000**	**$ -**	**$ 9,218,000**	**$ -**
Line 2	**From junction 704AL to Wainwright 51S**				
	26km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OHSW	$ 5,948,800	$ -	$ 5,948,800	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 5,948,800**	**$ -**	**$ 5,948,800**	**$ -**
Line 3	**From junction 704AL to structure # 704L260**				
	25km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OHSW	$ 5,720,000	$ -	$ 5,720,000	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 5,720,000**	**$ -**	**$ 5,720,000**	**$ -**
Line 4	**From Wainwright 51S to Edgerton 899S**				
	40km of line using 1x477 MCM that is S/C, using S/C wood pole structures and one OPGW	$ 9,592,000	$ -	$ 9,592,000	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 9,592,000**	**$ -**	**$ 9,592,000**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 30,478,800**	**$ -**	**$ 30,478,800**	**$ -**

Substation - NID Estimate

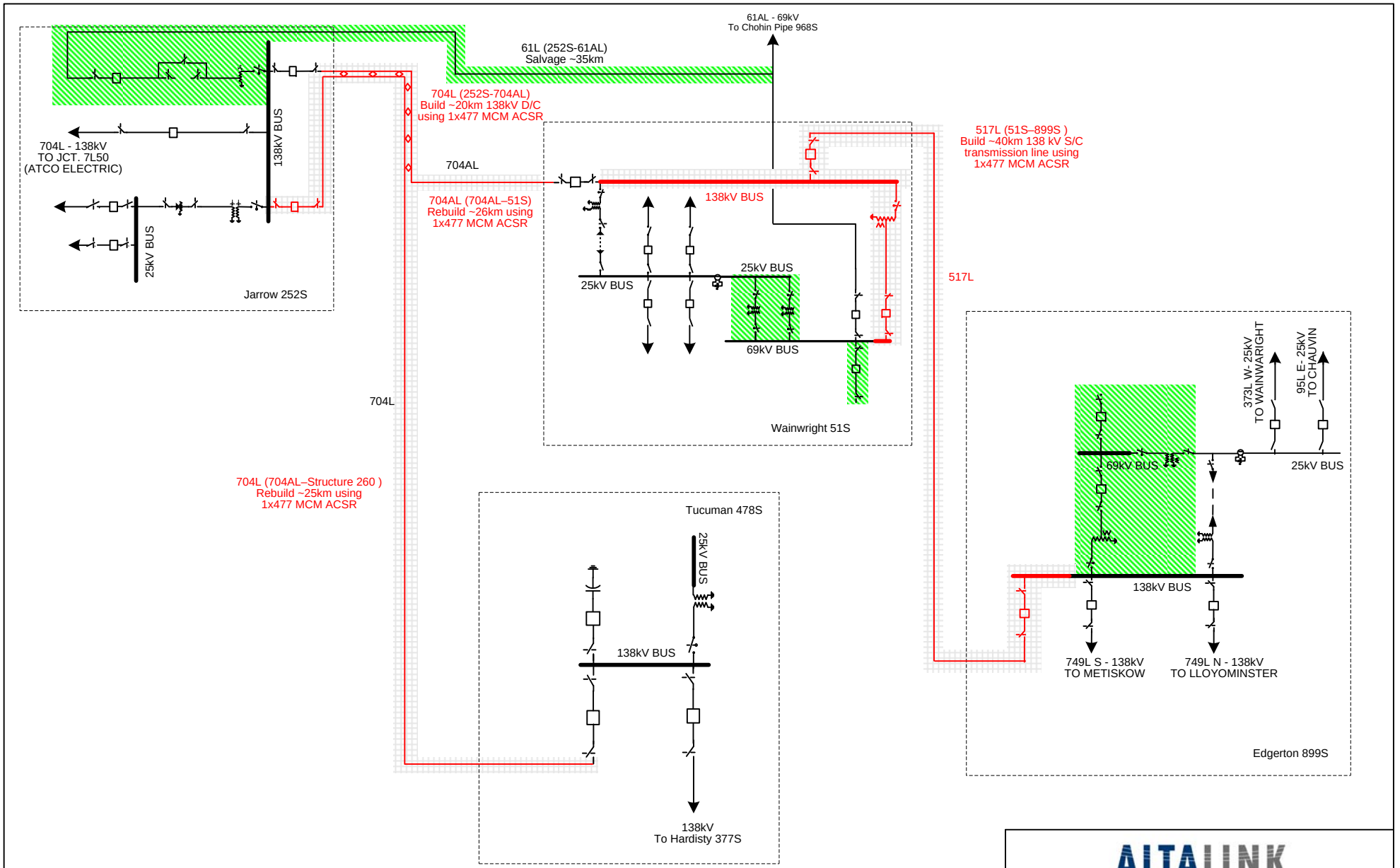
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub 1	**Edgerton 899S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty:1, dead tank, 138kV>	$ 219,714	$ -	$ 219,714	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 1CVT, 138kV>	$ 47,236	$ -	$ 47,236	$ -
	Switch Yard and Substation Control Building	$ 625,925	$ -	$ 625,925	$ -
	Protection, control, metering	$ 115,060	$ -	$ 115,060	$ -
	SCADA	$ 27,500	$ -	$ 27,500	
	Sub - Total	**$ 1,091,734**	**$ -**	**$ 1,091,734**	**$ -**
Sub 2	**Wainwright 51S**				
	Transformer <Qty: 1, 132/72kV, 18.75/25 MVA, moved from Edgerton 899S >	$ 357,566	$ -	$ 357,566	$ -
	Circuit Breakers <Qty: (1) dead tank and (1) live tank, 138kV>	$ 316,613	$ -	$ 316,613	$ -
	Circuit Breakers <Qty:(1) dead tank, 69kV>	$ 96,899	$ -	$ 96,899	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 2CVT and 1Ct, 138kV>	$ 243,056	$ -	$ 243,056	$ -
	Switch Yard and Substation Control Building	$ 1,012,506	$ -	$ 1,012,506	$ -
	Protection, control, metering	$ 209,110	$ -	$ 209,110	$ -
	SCADA	$ 27,500	$ -	$ 27,500	$ -
	<Station Energization>	$ 56,298	$ -	$ 56,298	$ -
	Sub - Total	**$ 2,319,548**	**$ -**	**$ 2,319,548**	**$ -**
Sub 3	**Jarrow 252S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	138kV Circuit Breakers <Qty: (1) dead tank>	$ 219,714	$ -	$ 219,714	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: (1) CVT, 138kV>	$ 47,236	$ -	$ 47,236	$ -
	Protection, Control and Metering	$ 115,060	$ -	$ 115,060	$ -
	SCADA	$ 27,500	$ -	$ 27,500	$ -
	Switch Yard and Substation Control Building	$ 383,416	$ -	$ 383,416	$ -
	<Station Energization>	$ 56,298	$ -	$ 56,298	$ -
	Sub - Total	**$ 849,224**	**$ -**	**$ 849,224**	**$ -**
	TOTAL - Substation Project Costs	**$ 4,260,506**	**$ -**	**$ 4,260,506**	**$ -**

Telecommunication NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Telecom 1	**Edgerton 899S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 220,000**	**$ -**	**$ 220,000**	**$ -**
Telecom 2	**Wainwright 51S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 220,000**	**$ -**	**$ 220,000**	**$ -**
	TOTAL - Telecommunication Project Costs	**$ 440,000**	**$ -**	**$ 440,000**	**$ -**

Estimate Summary with Owner's Cost

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Facility Cost				
Transmission Line Project Costs	$ 30,478,800	$ -	$ 30,478,800	$ -
Substation Project Costs	$ 4,260,506	$ -	$ 4,260,506	$ -
Telecommunications Project Costs	$ 440,000	$ -	$ 440,000	$ -
Salvage Costs	$ -	$ -	$ -	$ -
Sub - Total	**$ 35,179,306**	**$ -**	**$ 35,179,306**	**$ -**
Owners Cost				
Preliminary Engineering	$ 30,000	$ -	$ 30,000	$ -
Siting	$ 400,000	$ -	$ 400,000	$ -
Protection Settings	$ 90,000	$ -	$ 90,000	$ -
Land	$ 1,235,419	$ -	$ 1,235,419	$ -
Metering	$ -	$ -	$ -	$ -
Sub - Total	**$ 1,755,419**	**$ -**	**$ 1,755,419**	**$ -**
Distributed Cost				
Distributed Cost	$ 5,663,223	$ -	$ 5,663,223	$ -
Contingency	$ 4,259,795	$ -	$ 4,259,795	$ -
Escalation	$ -	$ -	$ -	$ -
Sub - Total	**$ 9,923,018**	**$ -**	**$ 9,923,018**	**$ -**
Indirect Costs				
E&S	$ 3,748,619	$ -	$ 3,748,619	$ -
AFUDC	$ 3,896,690	$ -	$ 3,896,690	$ -
Sub - Total	**$ 7,645,309**	**$ -**	**$ 7,645,309**	**$ -**
Total Project Cost	**$ 54,503,052**	**$ -**	**$ 54,503,052**	**$ -**



ALTALINK

Central East Area Transmission Development A: Alternative 3A – Proposed Station Connection Diagram

Date:	By:	SLD No.
2009-06-17		09-384

Teshmont

Estimate Summary for Need Identification Document (NID)

Project: Central East Area Transmission Development B:
TFO: AltaLink
Prepared by: Shawn Beasse (AESO)
Date: April 13, 2010
Accuracy: +/- 30 %

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 7,194,000	$ -	$ 7,194,000	$ -
Substation Facilities	$ 1,854,083	$ -	$ 1,854,083	$ -
Telecommunication	$ 440,000	$ -	$ 440,000	$ -
Total Facility Costs	**$ 9,488,083**	**$ -**	**$ 9,488,083**	**$ -**
Owners Costs	$ 334,988	$ -	$ 334,988	$ -
Distributed Costs	$ 2,900,042	$ -	$ 2,900,042	$ -
Total Owners and Dist. Costs	**$ 3,235,029**	**$ -**	**$ 3,235,029**	**$ -**
Total Direct Costs	**$ 12,723,112**	**$ -**	**$ 12,723,112**	**$ -**
Salvage Costs	$ -	$ -	$ -	$ -
Other Costs				
E&S	$ 1,087,044	$ -	$ -	$ -
AFUDC	$ 1,129,982	$ -	$ 1,129,982	$ -
Total Indirect Costs	**$ 2,217,026**	**$ -**	**$ 1,129,982**	**$ -**
TOTAL PROJECT COSTS	**$ 14,940,137**	**$ -**	**$ 13,853,094**	**$ -**

Assumptions and Risks

1. The Salvage Costs does not impact the Total project Costs
2. Existing 138 kV transmission lines are rebuilt on existing R/W

Transmission Line - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
<Line 1>	**From Hayter 277S to Provost 545S**				
	30km of line using 1x477MCM that is S/C wood pole structure and one OPGW	$ 7,194,000	$ -	$ 7,194,000	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 7,194,000**	**$ -**	**$ 7,194,000**	**$ -**
<Line 2>					
			$ -	$ -	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ -**	**$ -**	**$ -**	**$ -**
<Line 3>					
			$ -	$ -	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ -**	**$ -**	**$ -**	**$ -**
<Line 4>					
			$ -	$ -	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ -**	**$ -**	**$ -**	**$ -**
<Line 5>					
			$ -	$ -	$ -
	Switches / Airbreaks / Taps	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ -**	**$ -**	**$ -**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 7,194,000**	**$ -**	**$ 7,194,000**	**$ -**

Substation - NID Estimate

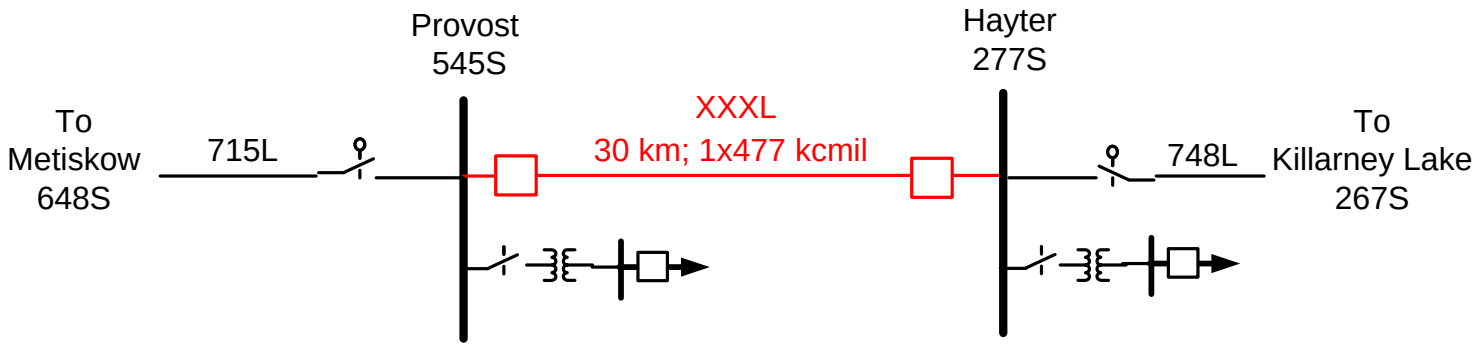
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub. Name					
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty: 2, 138 kV>		$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 2 CVTs, 138 kV>		$ -	$ -	$ -
	Switch Yard and Substation Control Building		$ -	$ -	$ -
	Protection, control, metering		$ -	$ -	$ -
	SCADA		$ -	$ -	$ -
	Station Energization		$ -	$ -	$ -
	Sub - Total	**$ -**	**$ -**	**$ -**	**$ -**
Sub. Name	**Hayter 277S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty: 1, 138 kV>	$ 373,520	$ -	$ 373,520	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 5, 138 kV>	$ 134,012	$ -	$ 134,012	$ -
	Switch Yard and Substation Control Building	$ 135,283	$ -	$ 135,283	$ -
	Protection, control, metering	$ 128,849	$ -	$ 128,849	$ -
	SCADA	$ 13,750	$ -	$ 13,750	$ -
	Station Energization	$ 28,490	$ -	$ 28,490	$ -
	Sub - Total	**$ 813,904**	**$ -**	**$ 813,904**	**$ -**
Sub. Name	**Provost 545S**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <Qty: 1, 138 kV>	$ 373,520	$ -	$ 373,520	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's & CT's <Qty: 5, 138 kV>	$ 134,012	$ -	$ 134,012	$ -
	Switch Yard and Substation Control Building	$ 361,900	$ -	$ 361,900	$ -
	Protection, control, metering	$ 128,849	$ -	$ 128,849	$ -
	SCADA	$ 13,750	$ -	$ 13,750	$ -
	Station Energization	$ 28,149	$ -	$ 28,149	$ -
	Sub - Total	**$ 1,040,179**	**$ -**	**$ 1,040,179**	**$ -**
	TOTAL - Substation Project Costs	**$ 1,854,083**	**$ -**	**$ 1,854,083**	**$ -**

Telecommunication NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
TELECOM 1	**Provost 545S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 220,000**	**$ -**	**$ 220,000**	**$ -**
TELECOM 2	**Hayter 277S**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>	$ 220,000	$ -	$ 220,000	$ -
	Sub - Total	**$ 220,000**	**$ -**	**$ 220,000**	**$ -**
TELECOM 3					
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment		$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>		$ -	$ -	$ -
	Sub - Total	**$ -**	**$ -**	**$ -**	**$ -**
TELECOM 4					
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ -	$ -	$ -	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<OPGW Terminal Equipment.>		$ -	$ -	$ -
	Sub - Total	**$ -**	**$ -**	**$ -**	**$ -**
	TOTAL - Telecommunication Project Costs	**$ 440,000**	**$ -**	**$ 440,000**	**$ -**

Estimate Summary with Owner's Cost

	System Portion	Customer Portion	TOTAL	Capital Maintenance
FACILITY COSTS				
Transmission Line Project Costs	$ 7,194,000	$ -	$ 7,194,000	$ -
Substation Project Costs	$ 1,854,083	$ -	$ 1,854,083	$ -
Telecommunications Project Costs	$ 440,000	$ -	$ 440,000	$ -
Salvage Costs	$ -	$ -	$ -	$ -
Sub - Total	**$ 9,488,083**	$ -	**$ 9,488,083**	$ -
OWNERS COST				
Preliminary Engineering	$ 4,400	$ -	$ 4,400	$ -
Siting	$ 88,000	$ -	$ 88,000	$ -
Protection Settings	$ 23,100	$ -	$ 23,100	$ -
Land	$ 219,488	$ -	$ 219,488	$ -
Metering	$ -	$ -	$ -	$ -
Sub - Total	**$ 334,988**	$ -	**$ 334,988**	$ -
DISTRIBUTED COST				
Distributed Cost	$ 1,664,764	$ -	$ 1,664,764	$ -
Contingency	$ 1,235,277	$ -	$ 1,235,277	$ -
Escalation	$ -	$ -	$ -	$ -
Sub - Total	**$ 2,900,042**	$ -	**$ 2,900,042**	$ -
INDIRECT COSTS				
E&S	$ 1,087,044	$ -	$ 1,087,044	$ -
AFUDC	$ 1,129,982	$ -	$ 1,129,982	$ -
Sub - Total	**$ 2,217,026**	$ -	**$ 2,217,026**	$ -
TOTAL PROJECT COST	**$ 14,940,137**	**$ -**	**$ 14,940,137**	**$ -**



aeso
ALBERTA ELECTRIC SYSTEM OPERATOR

Central East Region Transmission Development – Alternative 3

Provost to Hayter line

Date: 2010-05-03	Rp-05-811	

Estimate Summary for Need Identification Document (NID)

Project: Central East Lloydminster - Alternative 1B
TFO: ATCO Electric
Prepared by: ATCO Electric
Date: August 27, 2009
Accuracy:

Build 240kV system between Hansman Lake, Hayter and Lloydminster substations. Expand existing Lloydminster substation. 240kV single side strung with 2x795 MCM bundled conductor. (NO 7L42 rebuild)

Estimate Valid For 90 Days
+/- 30 %, 2009 $

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 27,852,000	$ -	$ 27,852,000	$ -
Substation Facilities	$ 7,520,000	$ -	$ 7,520,000	$ -
Telecommunication	$ 75,000	$ -	$ 75,000	$ -
Substation Salvage	$ -	$ -	$ -	$ -
Transmission Line Salvage		$ -	$ -	$ -
Total Facility Costs	**$ 35,447,000**	**$ -**	**$ 35,447,000**	**$ -**
Owners Costs	$ 1,070,000	$ -	$ 1,070,000	$ -
Distributed Costs	$ 5,478,000	$ -	$ 5,478,000	$ -
Total Owners and Dist. Costs	**$ 6,548,000**	**$ -**	**$ 6,548,000**	**$ -**
Total Direct Costs	**$ 41,995,000**	**$ -**	**$ 41,995,000**	**$ -**
E&S	$ 3,360,000	$ -	$ 3,360,000	$ -
AFUDC	$ 1,637,000	$ -	$ 1,637,000	$ -
Total Indirect Costs	**$ 4,997,000**	**$ -**	**$ 4,997,000**	**$ -**
TOTAL PROJECT COSTS	**$ 46,992,000**	**$ -**	**$ 46,992,000**	**$ -**

Assumptions and Risks

1. Estimate based on AESO Functional Spec - Rev 9 - August 19, 2009
2. Pricing based on 2009 $
3. No geo-technical data available
4. Telecom estimates assume an acceptable beam path can be established
5. No major easement or right-of-way issues for the proposed lines
6. No issues with line or facilities outages
7. No issues with site expansions
8. No issues with apparatus supply or unforseen costs
9. No issues with the supply of resources
10. No environemental contamination from any salvage

Transmission Line Costs

Lloydminster 1B	**< 48 km, 240kV, DC Tower 2x795 MCM OPGW - One Side >**			
New Line between	Materials < Line, Foundations, Structures, Hardware >	$ 9,607,200	$ -	$ 9,607,200
New Lloydminster and	Labour < Engineering, Survey, Brushing, Construction >	$ 18,244,896	$ -	$ 18,244,896
Service Boundary	**Sub - Total**	**$ 27,852,096**	**$ -**	$ 27,852,096

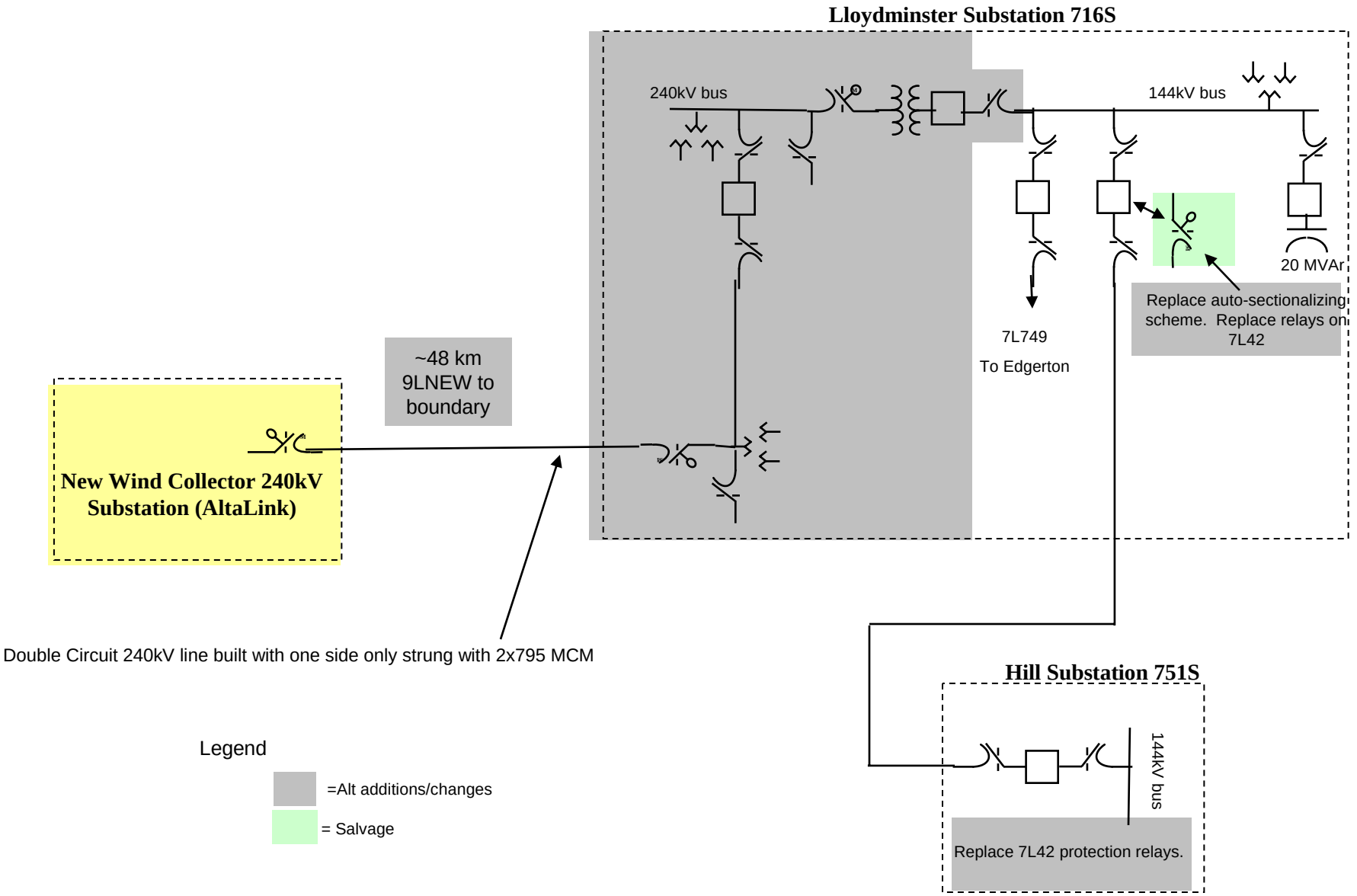
Substation Costs

Sub. Name	**< Bulk System Lloydminster Area Alt. 1 - 716S Lloydminster >**			
	Transformers <1 - 240/144 180/240/300>	$ 3,000,000	$ -	$ 3,000,000
	Circuit Breakers <2 - 144kV>	$ 180,000	$ -	$ 180,000
	Circuit Breakers <1 - 240kV>	$ 100,000	$ -	$ 100,000
	PT's & CT's	$ 75,000	$ -	$ 75,000
	Switch Yard and Substation Control Building	$ 950,000	$ -	$ 950,000
	Protection, control, metering	$ 475,000	$ -	$ 475,000
	SCADA	$ 175,000	$ -	$ 175,000
	Engineering	$ 475,000	$ -	$ 475,000
	Construction & Commissioning	$ 2,050,000	$ -	$ 2,050,000
	Sub - Total	**$ 7,480,000**	**$ -**	**$ 7,480,000**
	TOTAL - Substation Project Costs	**$ 7,480,000**	**$ -**	**$ 7,480,000**
Sub. Name	**< Bulk System Lloydminster Area Alt. 1A/1B - 751S Hill >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ -	$ -	$ -
	Protection, control, metering	$ -	$ -	$ -
	SCADA	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ 10,000
	Construction & Commissioning	$ 10,000	$ -	$ 10,000
	Sub - Total	**$ 20,000**	**$ -**	**$ 20,000**
	TOTAL - Substation Project Costs	**$ 20,000**	**$ -**	**$ 20,000**
Sub. Name	**< Bulk System Lloydminster Area Alt. 1A/1B - 880S Briker - fault evaluation & setting changes >**			
	Transformers <voltage, size>	$ -	$ -	$ -
	Circuit Breakers <voltage 1>	$ -	$ -	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -
	PT's & CT's	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ -	$ -	$ -
	Protection, control, metering	$ -	$ -	$ -
	SCADA	$ -	$ -	$ -
	Engineering	$ 10,000	$ -	$ 10,000
	Construction & Commissioning	$ 10,000	$ -	$ 10,000
	Sub - Total	**$ 20,000**	**$ -**	**$ 20,000**
	TOTAL - Substation Project Costs	**$ 20,000**	**$ -**	**$ 20,000**
	TOTAL - Overall Substation Project Costs	**$ 7,520,000**	**$ -**	**$ 7,480,000**

Telecommunications Costs

Sub. Name	**< Bulk System Lloydminster Area Alt. 1A/1B - 716S Lloydminster >**			
	Tower/Antenna	$ -	$ -	$ -
	Fiber	$ 75,000	$ -	$ -
	Radio Equipment	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -
	Engineering	$ -	$ -	$ -
	Construction and Commissioning	$ -	$ -	$ -
	Sub - Total	**$ 75,000**	**$ -**	**$ 75,000**
	TOTAL - Telecommunication Project Costs	**$ 75,000**	**$ -**	**$ 75,000**

240kV from Hansman Lake to Wind Collector Substation to Lloydminster



Estimate Summary for Need Identification Document (NID)

Project: Central East Area Transmission Development G: Alternative 1-B (2009$)
TFO: AltaLink
Prepared by: Eduardo Torres
Date: June 5, 2009
Accuracy: +30%/-15%

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Lines	$ 66,173,195	$ -	$ 66,173,195	$ -
Substation Facilities	$ 14,259,514	$ -	$ 14,259,514	$ -
Telecommunication	$ 519,380	$ -	$ 519,380	$ -
Total Facility Costs	**$ 80,952,089**	**$ -**	**$ 80,952,089**	**$ -**
Owners Costs	$ 4,967,412	$ -	$ 4,967,412	$ -
Distributed Costs	$ 22,377,534	$ -	$ 22,377,534	$ -
Total Owners and Dist. Costs	**$ 27,344,945**	**$ -**	**$ 27,344,945**	**$ -**
Total Direct Costs	**$ 108,297,034**	**$ -**	**$ 108,297,034**	**$ -**
Salvage Costs	$ -	$ -	$ -	$ -
Other Costs				
E&S	$ 8,663,763	$ -	$ 8,663,763	$ -
AFUDC	$ 9,005,981	$ -	$ 9,005,981	$ -
Total Indirect Costs	**$ 17,669,744**	**$ -**	**$ 17,669,744**	**$ -**
TOTAL PROJECT COSTS	**$ 125,966,778**	**$ -**	**$ 125,966,778**	**$ -**

Assumptions and Risks

Transmission Line - NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Line 1	**New line from Hasman Lake 650S to New Hayter sub**				
	50km of line using 2x795 MCM that is D/C using D/C steel lattice tower structures with one side strung and one OPGW	$ 28,177,386	$ -	$ 28,177,386	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<QQ & angle towers>	$ 7,843,000	$ -	$ 7,843,000	$ -
	Sub - Total	**$ 36,020,386**	**$ -**	**$ 36,020,386**	**$ -**
Line 2	**From new Hayter substation to Lloydminster 716S (up to ATCO/AltaLink border)**				
	40 km of line using 2x795 MCM that is using D/C steel lattice tower structures with one side strung and one OPGW	$ 23,470,309	$ -	$ 23,470,309	$ -
	Switches / Airbreaks/Taps	$ -	$ -	$ -	$ -
	<QQ & angle towers>	$ 6,682,500	$ -	$ 6,682,500	$ -
	Sub - Total	**$ 30,152,809**	**$ -**	**$ 30,152,809**	**$ -**
	TOTAL - Transmission Line Project Costs	**$ 66,173,195**	**$ -**	**$ 66,173,195**	**$ -**

Substation - NID Estimate

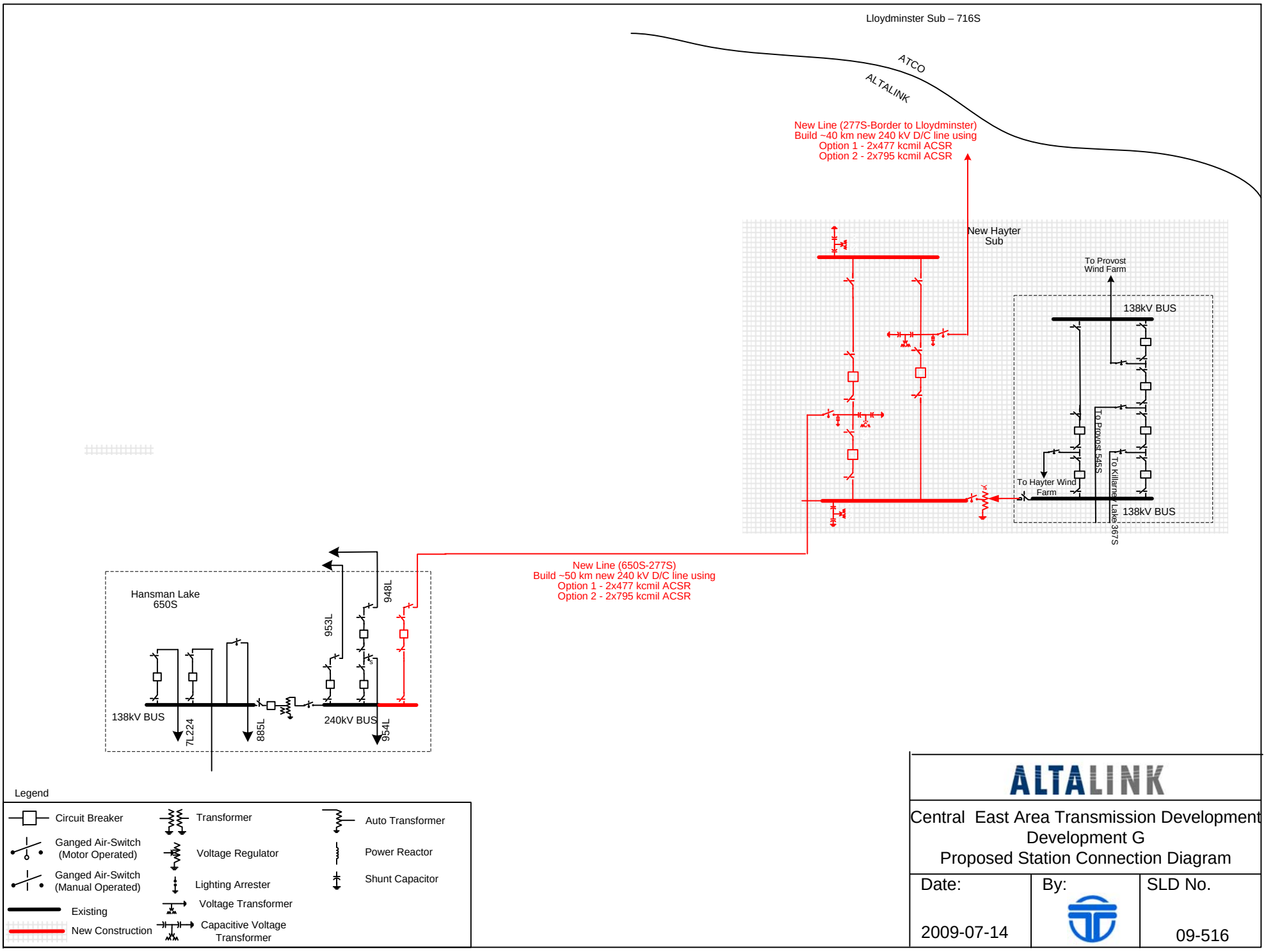
		System Portion	Customer Portion	TOTAL	Capital Maintenance
Sub 1	**New Hayter Sub Description**				
	Transformers <1, 400MVA, and 240/138kV>	$ 5,456,370	$ -	$ 5,456,370	$ -
	Circuit Breakers <3 x 240 kV>	$ 4,295,776	$ -	$ 4,295,776	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's &CT's <quantity, voltage>	$ -	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ 1,857,836	$ -	$ 1,857,836	$ -
	Protection, control, metering	$ 258,669	$ -	$ 258,669	$ -
	SCADA	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 11,868,652**	**$ -**	**$ 11,868,652**	**$ -**
Sub 2	**Hansman Lake 650S Description**				
	Transformers <number, size, and voltage>	$ -	$ -	$ -	$ -
	Circuit Breakers <1 x 240kV>	$ 1,859,618	$ -	$ 1,859,618	$ -
	Circuit Breakers <voltage 2>	$ -	$ -	$ -	$ -
	Capacitor Bank <size, voltage>	$ -	$ -	$ -	$ -
	Reactor Bank	$ -	$ -	$ -	$ -
	PT's &CT's <quantity, voltage>	$ -	$ -	$ -	$ -
	Switch Yard and Substation Control Building	$ 401,909	$ -	$ 401,909	$ -
	Protection, control, metering	$ 129,335	$ -	$ 129,335	$ -
	SCADA	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 2,390,862**	**$ -**	**$ 2,390,862**	**$ -**
	TOTAL - Substation Project Costs	**$ 14,259,514**	**$ -**	**$ 14,259,514**	**$ -**

Telecommunication NID Estimate

		System Portion	Customer Portion	TOTAL	Capital Maintenance
Telecom 1	**New Hayter Sub Description**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ 259,690	$ -	$ 259,690	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 259,690**	**$ -**	**$ 259,690**	**$ -**
Telecom 2	**Hansman Lake 650S Description**				
	Tower/Antenna	$ -	$ -	$ -	$ -
	Fiber (km)	$ 259,690	$ -	$ 259,690	$ -
	Radio Equipment	$ -	$ -	$ -	$ -
	Building (If substation building not utilized)	$ -	$ -	$ -	$ -
	<Misc.>	$ -	$ -	$ -	$ -
	Sub - Total	**$ 259,690**	**$ -**	**$ 259,690**	**$ -**
	TOTAL - Telecommunication Project Costs	**$ 519,380**	**$ -**	**$ 519,380**	**$ -**

Estimate Summary with Owner's Cost

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Facility Cost				
Transmission Line Project Costs	$ 66,173,195	$ -	$ 66,173,195	$ -
Substation Project Costs	$ 14,259,514	$ -	$ 14,259,514	$ -
Telecommunications Project Costs	$ 519,380	$ -	$ 519,380	$ -
Salvage Costs	$ -	$ -	$ -	$ -
Sub - Total	**$ 80,952,089**	**$ -**	**$ 80,952,089**	**$ -**
Owners Cost				
Preliminary Engineering	$ 10,000	$ -	$ 10,000	$ -
Siting	$ 750,000	$ -	$ 750,000	$ -
Protection Settings	$ 60,000	$ -	$ 60,000	$ -
Land	$ 4,147,412	$ -	$ 4,147,412	$ -
Metering	$ -	$ -	$ -	$ -
Sub - Total	**$ 4,967,412**	**$ -**	**$ 4,967,412**	**$ -**
Distributed Cost				
Distributed Cost	$ 12,532,349	$ -	$ 12,532,349	$ -
Contingency	$ 9,845,185	$ -	$ 9,845,185	$ -
Escalation	$ -	$ -	$ -	$ -
Sub - Total	**$ 22,377,534**	**$ -**	**$ 22,377,534**	**$ -**
Indirect Costs				
E&S	$ 8,663,763	$ -	$ 8,663,763	$ -
AFUDC	$ 9,005,981	$ -	$ 9,005,981	$ -
Sub - Total	**$ 17,669,744**	**$ -**	**$ 17,669,744**	**$ -**
Total Project Cost	**$ 125,966,778**	**$ -**	**$ 125,966,778**	**$ -**


Lloydminster Sub – 716S
ATCO
ALTALINK
New Line (277S-Border to Lloydminster)
Build ~40 km new 240 kV D/C line using
Option 1 - 2x477 kcmil ACSR
Option 2 - 2x795 kcmil ACSR
New Hayter Sub
To Provost Wind Farm
138kV BUS
To Provost 545S
To Killarney Lake 367S
To Hayter Wind Farm
138kV BUS
New Line (650S-277S)
Build ~50 km new 240 kV D/C line using
Option 1 - 2x477 kcmil ACSR
Option 2 - 2x795 kcmil ACSR
Hansman Lake 650S
948L
953L
138kV BUS
7L224
885L
240kV BUS
954L
Legend
Circuit Breaker
Ganged Air-Switch (Motor Operated)
Ganged Air-Switch (Manual Operated)
Existing
New Construction
Transformer
Voltage Regulator
Lighting Arrester
Voltage Transformer
Capacitive Voltage Transformer
Auto Transformer
Power Reactor
Shunt Capacitor
ALTALINK
Central East Area Transmission Development
Development G
Proposed Station Connection Diagram
Date:
2009-07-14
By:
SLD No.
09-516
Teshmont

Economic Analysis

Needs Identification Document
Economic Comparison of the Alternatives Considered

Project Name: Central East Transmission Development
Date: May, 2010

Note: This version of the model contains single-variable sensitivity Analysis

Variables

1. Description of the options considered

Alternative	Description	Stages
1	7L50 rebuild to 144 kV	2012/2017
2	240 kV from Nilrem to Vermillion	2012/2017
3	240 kV from Hansman to Lloydminster	2012/2017

2. List of variables

Variable	Value	Reference
After-tax Return on Equity	9%	AUC Decision 2009-216 Generic Cost of Capital
Equity percent	36%	AUC Decision 2009-216 Generic Cost of Capital
Debt Percent	64%	
Cost of Debt	5.07%	Bank of Canada - L/T Bond Rate +1% (March, 2010)
Federal Corporate Tax Rate	18%	Canada Revenue Agency
Alberta Corporate Tax Rate	10%	Alberta Tax Act, Section 21 (o)
Total Tax Rate	28%	
Annual Depreciation Rate	2.88%	Average of AltaLink 07/08 GTA & ATCO 09/10 GTA rates
Annual Operating & Maintenance	1.50%	Based on feedback from Transmission Facility Owners

3. Discount rate calculation 7.74%

Before-tax Weighted Average Cost of Capital

4. Annual forecast power price and escalation rate

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Power Price	$81	$76	$83	$82	$79	$81	$95	$103	$105	$103

5. Annual escalation rate

	2010	2011	2012	2013	2014	2015	2016	2017
Escalation Rate	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%

[Continued] 4. Annual Forecast Power Price and Escalation Rate

2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
$104	$105	$103	$109	$114	$116	$122	$131	$121	$125

Results

1. Table 1. Summary of Results Relative to Alternative 1

Alternative	Description	Present Value Revenue Requirement Relative to Alt 1	Present Value System Losses Relative to Alternative 1	Net Cost
1	7L50 rebuild to 144 kV	$0	$0	$0
2	240 kV from Nilrem to Vermillion	$114	($5)	$109
3	240 kV from Hansman to Lloydminster	$35	($8)	$27

Table 1. Summary of Results (millions)

Capital Cost/Revenue Requirement

1. Table 2. Capital Cost Estimates and Present Value of Revenue Requirement (millions)

Alternative	Description	Capital Cost Estimate (2009 dollars)	Present Value Revenue Requirement	Present Value Revenue Requirement Relative to Alt 1
1	7L50 rebuild to 144 kV	$370	$369	$0
2	240 kV from Nilrem to Vermillion	$521	$483	$114
3	240 kV from Hansman to Lloydminster	$417	$404	$35

Table 2. Capital Cost Estimates and Present Value of Revenue Requirement (millions)

2. Cost escalation from 2009 dollars to in-service date dollars (millions)

		2009	2010	2011	2012	2013	2014	2015	2016	2017
Alternative 1	Stage 1	$310	$323	$335	$349					
	Stage 2	$60	$63	$65	$68	$70	$73	$76	$79	$82
Alternative 2	Stage 1	$302	$315	$327	$340					
	Stage 2	$218	$227	$236	$246	$255	$266	$276	$287	$299
Alternative 3	Stage 1	$302	$314	$327	$340					
	Stage 2	$115	$119	$124	$129	$134	$139	$145	$151	$157

3. Revenue Requirement Calculations (millions)

Alternative 1 - 7L50 rebuild to 144 kV	Year 1 2010	Year 2 2011	Year 3 2012	Year 4 2013	Year 5 2014	Year 6 2015	Year 7 2016	Year 8 2017	Year 9 2018	Year 10 2019
Operating expense	$0	$0	$5	$5	$5	$5	$5	$6	$6	$6
Depreciation	$0	$0	$5	$10	$10	$10	$10	$11	$12	$12
Income Tax	$0	$0	$4	$4	$4	$4	$4	$4	$5	$4
Debt Costs	$0	$0	$11	$11	$11	$10	$10	$11	$12	$12
Equity Return	$0	$0	$11	$11	$11	$10	$10	$11	$12	$12
Total Revenue Requirement	$0	$0	$37	$42	$41	$40	$39	$44	$47	$46
Plant & Equipment										
Beginning Plant & Equipment	$0	$0	$0	$349	$349	$349	$349	$349	$431	$431
Capital Outlay During the Year	$0	$0	$349	$0	$0	$0	$0	$82	$0	$0
Ending Plant & Equipment	$0	$0	$349	$349	$349	$349	$349	$431	$431	$431
Accumulated Depreciation										
Beginning Accumulated Depr.	$0	$0	$0	$5	$15	$25	$35	$45	$56	$69
Annual Depreciation	$0	$0	$5	$10	$10	$10	$10	$11	$12	$12
Ending Accumulated Depr.	$0	$0	$5	$15	$25	$35	$45	$56	$69	$81
Year End Rate Base										
Plant and Equipment	$0	$0	$349	$349	$349	$349	$349	$431	$431	$431
Accumulated Depreciation	$0	$0	$5	$15	$25	$35	$45	$56	$69	$81
Net (Plant less Acc. Depr.)	$0	$0	$344	$334	$324	$314	$304	$375	$362	$350
Previous Net Plant	$0	$0	$0	$344	$334	$324	$314	$304	$375	$362
Subtotal (Net + Prior Year)	$0	$0	$344	$678	$658	$638	$617	$678	$737	$712
Year End Rate Base (subtotal/2)	$0	$0	$344	$339	$329	$319	$309	$340	$369	$356

[Continued] 3. Revenue Requirement Calculations - Alternative 1

Year 11 2020	Year 12 2021	Year 13 2022	Year 14 2023	Year 15 2024	Year 16 2025	Year 17 2026	Year 18 2027	Year 19 2028	Year 20 2029
$6	$6	$6	$6	$6	$6	$6	$6	$6	$6
$12	$12	$12	$12	$12	$12	$12	$12	$12	$12
$4	$4	$4	$4	$4	$4	$3	$3	$3	$3
$11	$11	$10	$10	$10	$9	$9	$8	$8	$8
$11	$11	$10	$10	$10	$9	$9	$8	$8	$8
$46	$45	$44	$43	$42	$41	$40	$39	$38	$37
$431	$431	$431	$431	$431	$431	$431	$431	$431	$431
$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
$431	$431	$431	$431	$431	$431	$431	$431	$431	$431
$81	$94	$106	$119	$131	$143	$156	$168	$181	$193
$12	$12	$12	$12	$12	$12	$12	$12	$12	$12
$94	$106	$119	$131	$143	$156	$168	$181	$193	$205
$431	$431	$431	$431	$431	$431	$431	$431	$431	$431
$94	$106	$119	$131	$143	$156	$168	$181	$193	$205
$338	$325	$313	$300	$288	$275	$263	$251	$238	$226
$350	$338	$325	$313	$300	$288	$275	$263	$251	$238
$687	$663	$638	$613	$588	$563	$538	$514	$489	$464
$344	$331	$319	$306	$294	$282	$269	$257	$244	$232

Alternative 2 - 240 kV from Nilrem to Vermillion

	Year 1 2010	Year 2 2011	Year 3 2012	Year 4 2013	Year 5 2014	Year 6 2015	Year 7 2016	Year 8 2017	Year 9 2018	Year 10 2019
Operating expense	$0	$0	$5	$5	$5	$5	$5	$10	$10	$10
Depreciation	$0	$0	$5	$10	$10	$10	$10	$14	$18	$18
Income Tax	$0	$0	$4	$4	$4	$4	$4	$7	$7	$7
Debt Costs	$0	$0	$11	$11	$10	$10	$10	$19	$19	$18
Equity Return	$0	$0	$11	$11	$10	$10	$10	$19	$19	$18
Total Revenue Requirement	$0	$0	$36	$40	$40	$39	$38	$69	$72	$71
Plant & Equipment										
Beginning Plant & Equipment	$0	$0	$0	$340	$340	$340	$340	$340	$639	$639
Capital Outlay During the Year	$0	$0	$340	$0	$0	$0	$0	$299	$0	$0
Ending Plant & Equipment	$0	$0	$340	$340	$340	$340	$340	$639	$639	$639
Accumulated Depreciation										
Beginning Accumulated Depr.	$0	$0	$0	$5	$15	$24	$34	$44	$58	$77
Annual Depreciation	$0	$0	$5	$10	$10	$10	$10	$14	$18	$18
Ending Accumulated Depr.	$0	$0	$5	$15	$24	$34	$44	$58	$77	$95
Year End Rate Base										
Plant and Equipment	$0	$0	$340	$340	$340	$340	$340	$639	$639	$639
Accumulated Depreciation	$0	$0	$5	$15	$24	$34	$44	$58	$77	$95
Net (Plant less Acc. Depr.)	$0	$0	$335	$326	$316	$306	$296	$581	$562	$544
Previous Net Plant	$0	$0	$0	$335	$326	$316	$306	$296	$581	$562
Subtotal (Net + Prior Year)	$0	$0	$335	$661	$641	$622	$602	$877	$1,143	$1,106
Year End Rate Base (subtotal/2)	$0	$0	$335	$330	$321	$311	$301	$590	$572	$553

[Continued] 3. Revenue Requirement Calculations - Alternative 2

Year 11 2020	Year 12 2021	Year 13 2022	Year 14 2023	Year 15 2024	Year 16 2025	Year 17 2026	Year 18 2027	Year 19 2028	Year 20 2029
$10	$10	$10	$10	$10	$10	$10	$10	$10	$10
$18	$18	$18	$18	$18	$18	$18	$18	$18	$18
$7	$7	$6	$6	$6	$6	$5	$5	$5	$5
$17	$17	$16	$16	$15	$14	$14	$13	$13	$12
$17	$17	$16	$16	$15	$14	$14	$13	$13	$12
$69	$68	$67	$65	$64	$62	$61	$59	$58	$57
$639	$639	$639	$639	$639	$639	$639	$639	$639	$639
$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
$639	$639	$639	$639	$639	$639	$639	$639	$639	$639
$95	$113	$132	$150	$169	$187	$205	$224	$242	$261
$18	$18	$18	$18	$18	$18	$18	$18	$18	$18
$113	$132	$150	$169	$187	$205	$224	$242	$261	$279
$639	$639	$639	$639	$639	$639	$639	$639	$639	$639
$113	$132	$150	$169	$187	$205	$224	$242	$261	$279
$526	$507	$489	$470	$452	$434	$415	$397	$378	$360
$544	$526	$507	$489	$470	$452	$434	$415	$397	$378
$1,070	$1,033	$996	$959	$922	$886	$849	$812	$775	$738
$535	$516	$498	$480	$461	$443	$424	$406	$388	$369

Alternative 3 - 240 kV from Hansman to Lloydminster

	Year 1 2010	Year 2 2011	Year 3 2012	Year 4 2013	Year 5 2014	Year 6 2015	Year 7 2016	Year 8 2017	Year 9 2018	Year 10 2019
Operating expense	$0	$0	$5	$5	$5	$5	$5	$7	$7	$7
Depreciation	$0	$0	$5	$10	$10	$10	$10	$12	$14	$14
Income Tax	$0	$0	$4	$4	$4	$4	$4	$6	$5	$5
Debt Costs	$0	$0	$11	$11	$11	$10	$10	$15	$14	$14
Equity Return	$0	$0	$11	$11	$11	$10	$10	$15	$14	$14
Total Revenue Requirement	$0	$0	$36	$40	$40	$39	$38	$54	$55	$54
Plant & Equipment										
Beginning Plant & Equipment	$0	$0	$0	$340	$340	$340	$340	$340	$496	$496
Capital Outlay During the Year	$0	$0	$340	$0	$0	$0	$0	$157	$0	$0
Ending Plant & Equipment	$0	$0	$340	$340	$340	$340	$340	$496	$496	$496
Accumulated Depreciation										
Beginning Accumulated Depr.	$0	$0	$0	$5	$15	$24	$34	$44	$56	$70
Annual Depreciation	$0	$0	$5	$10	$10	$10	$10	$12	$14	$14
Ending Accumulated Depr.	$0	$0	$5	$15	$24	$34	$44	$56	$70	$85
Year End Rate Base										
Plant and Equipment	$0	$0	$340	$340	$340	$340	$340	$496	$496	$496
Accumulated Depreciation	$0	$0	$5	$15	$24	$34	$44	$56	$70	$85
Net (Plant less Acc. Depr.)	$0	$0	$335	$325	$315	$305	$296	$440	$426	$412
Previous Net Plant	$0	$0	$0	$335	$325	$315	$305	$296	$440	$426
Subtotal (Net + Prior Year)	$0	$0	$335	$660	$640	$621	$601	$736	$867	$838
Year End Rate Base (subtotal/2)	$0	$0	$335	$330	$325	$310	$301	$448	$433	$419

[Continued] 3. Revenue Requirement Calculations - Alternative 3

Year 11 2020	Year 12 2021	Year 13 2022	Year 14 2023	Year 15 2024	Year 16 2025	Year 17 2026	Year 18 2027	Year 19 2028	Year 20 2029
$7	$7	$7	$7	$7	$7	$7	$7	$7	$7
$14	$14	$14	$14	$14	$14	$14	$14	$14	$14
$5	$5	$5	$5	$4	$4	$4	$4	$4	$3
$13	$13	$12	$12	$11	$11	$10	$10	$9	$9
$13	$13	$12	$12	$11	$11	$10	$10	$9	$9
$53	$52	$51	$50	$49	$48	$46	$45	$44	$43
$496	$496	$496	$496	$496	$496	$496	$496	$496	$496
$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
$496	$496	$496	$496	$496	$496	$496	$496	$496	$496
$85	$99	$113	$128	$142	$156	$170	$185	$199	$213
$14	$14	$14	$14	$14	$14	$14	$14	$14	$14
$99	$113	$128	$142	$156	$170	$185	$199	$213	$228
$496	$496	$496	$496	$496	$496	$496	$496	$496	$496
$99	$113	$128	$142	$156	$170	$185	$199	$213	$228
$398	$383	$369	$355	$340	$326	$312	$297	$283	$269
$412	$398	$383	$369	$355	$340	$326	$312	$297	$283
$809	$781	$752	$724	$695	$666	$638	$609	$581	$552
$405	$390	$376	$362	$347	$333	$319	$305	$290	$276

System energy Loss

1. Table 3. Loss Estimates and Present Value of Losses (millions)

Alternative	Description	Present Value System Energy Loss
1	7L50 rebuild to 144 kV	$0
2	240 kV from Nilrem to Vermillion	-$5
3	240 kV from Hansman to Lloydminster	-$8
Table 3. Present Value of Losses (millions)		

2. Estimated System Energy Loss (MWh)

Alternative	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	2,755,145	2,848,583	2,942,021	3,035,460	3,128,898	3,222,337	3,315,775	3,409,213	3,502,652
2	2,754,838	2,847,742	2,940,647	3,033,551	3,126,455	3,219,359	3,312,263	3,405,167	3,498,071
3	2,753,794	2,846,418	2,939,043	3,031,668	3,124,292	3,216,917	3,309,542	3,402,166	3,494,791

3. Estimated System Energy Loss (MWh) - Relative to Alternative 1

Alternative	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	0	0	0	0	0	0	0	0	0
2	-306	-841	-1,375	-1,909	-2,443	-2,978	-3,512	-4,046	-4,581
3	-1,351	-2,165	-2,979	-3,792	-4,606	-5,420	-6,233	-7,047	-7,861

3. Loss multiplied by Power Price (millions)

Alternative	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	-1	-1	-1

CONTINUED 2. Estimated System Energy Loss (MWh)

2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
3,596,090	3,689,528	3,782,967	3,876,405	3,969,843	4,063,282	4,156,720	4,250,159	4,343,597	4,437,035	4,530,474
3,590,975	3,683,879	3,776,783	3,869,688	3,962,592	4,055,496	4,148,400	4,241,304	4,334,208	4,427,112	4,520,016
3,587,416	3,680,040	3,772,665	3,865,290	3,957,914	4,050,539	4,143,164	4,235,788	4,328,413	4,421,038	4,513,662

CONTINUED 2. Estimated System Energy Loss (MWh)

2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
0	0	0	0	0	0	0	0	0	0	0
-5,115	-5,649	-6,183	-6,718	-7,252	-7,786	-8,320	-8,855	-9,389	-9,923	-10,457
-8,674	-9,488	-10,302	-11,115	-11,929	-12,743	-13,557	-14,370	-15,184	-15,998	-16,811

2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
0	0	0	0	0	0	0	0	0	0	0
-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-2	-2	-2	-2	-2

	A	B	C	D	E	F	G	H	I	J	K	L
1	**Sensitivity Analysis**											
2												
3	Note: Cells requiring inputs are shown in yellow											
4												
5	**1. Capital Cost**											
6												
7	Chosen Scenario (1= higher by 30%, 2 = base case, 3 = lower by 30%)							2				
8												
9			+30%	Basecase	-30%							
10	Alternative 1	Stage 1	$403	$310	$217							
11		Stage 2	$78	$60	$42							
12												
13	Alternative 2	Stage 1	$393	$302	$212							
14		Stage 2	$284	$218	$153							
15												
16	Alternative 3	Stage 1	$393	$302	$211							
17		Stage 2	$149	$115	$80							
18												
19	**2. Discount Rate**											
20												
21	Chosen Scenario (1= higher by 2%, 2 = base case, 3 = lower by 2%)							2				
22												
23	Scenario	Description		Value								
24	1	Higher by 2%		9.74%								
25	2	Base case		7.74%								
26	3	Lower by 2%		5.74%								
27												
28	**3. Depreciation Rate**											
29												
30	Chosen Scenario (1= higher by 2%, 2 = base case, 3 = lower by 2%)							2				
31												
32	Scenario	Description		Value								
33	1	Higher by 2%		4.88%								
34	2	Base case		2.88%								
35	3	Lower by 2%		0.88%								
36												

	A	B	C	D	E	F	G	H	I	J	K	L
37	**Sensitivity Analysis (Continued)**											
38												
39												
40	**4. Power Prices**											
41												
42	Chosen Scenario (1= Double, 2 = base case, 3 = Half)							2				
43												
44				2010	2011	2012	2013	2014	2015	2016	2017	2018
45	1	Double		$162	$151	$166	$164	$158	$163	$190	$206	$210
46	2	Base Case		$81	$76	$83	$82	$79	$81	$95	$103	$105
47	3	Half		$40	$38	$42	$41	$40	$41	$48	$52	$52
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40	**CONTINUED Sensitivity Analysis - 4. Power Prices**										
41											
42											
43											
44	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
45	$207	$208	$209	$205	$218	$228	$233	$245	$261	$241	$249
46	$103	$104	$105	$103	$109	$114	$116	$122	$131	$121	$125
47	$52	$52	$52	$51	$54	$57	$58	$61	$65	$60	$62
48											