ALBERTA UTILITIES COMMISSION

IN THE MATTER OF THE NEED FOR REINFORCEMENT OF THE TRANSMISSION SYSTEM IN THE FORT MCMURRAY REGION

AND IN THE MATTER OF THE *ELECTRIC UTILITIES ACT*, SA 2003, C. E-5.1, THE *ALBERTA UTILITIES COMMISSION ACT*, SA 2007, C. A-31.2, THE *TRANSMISSION REGULATION*, AR 86/2007 AND ALBERTA UTILITIES COMMISSION RULE 007

APPLICATION of the ALBERTA ELECTRIC SYSTEM OPERATOR for APPROVAL of its 9L66 LINE RELOCATION TRANSMISSION DEVELOPMENT NEEDS IDENTIFICATION DOCUMENT

Overview

1. Pursuant to Section 34 of the *Electric Utilities Act* (EUA) and in accordance with the further legislative provisions set out in the recital to this application, the Alberta Electric System Operator (AESO) applies for approval from the Alberta Utilities Commission (Commission) of the attached 9L66 Line Relocation Transmission Development Needs Identification Document (9L66 NID), as more specifically described therein.[1]

2. The 9L66 NID identifies and describes necessary reinforcements and enhancements of the relocated section of 9L66 line in the region north of Fort McMurray. The AESO has determined, in accordance with its statutory mandate, that this development is required to meet Alberta's need and is in the public interest, specifically to alleviate conditions that affect the ability of the Fort McMurray Region to provide safe, reliable and economic electricity service to local area load.

Background

3. The Alberta Integrated Electric System (AIES) is a vital component of Alberta's electric industry and provides a platform for its competitive electricity market. The AESO is responsible for the safe, reliable operation of the AIES, as well as its future development. The AESO is charged with planning the transmission elements of the AIES, and strives to

[1] The 9L66 NID consists of the NID itself, and Appendices A and B.

ensure that it keeps pace with growing consumer demand, meets the needs of generation development to satisfy that demand, and provides safe, reliable and economic service.

4. Local area load in the north of Fort McMurray Region is primarily served by a double circuit line consisting of a section of the 9L66 line and a 240 kV network. However, given load growth in the area, the current transmission system in the region north of Fort McMurray requires reinforcement.

Participant Involvement Program

5. Stakeholders were notified and consulted about the relocation project by ATCO Electric as part of ATCO Electric's participant involvement program for a facilities application. ATCO Electric's package of information (dated May 15, 2009) provided information about the need for the project and about the conductor and design alterations, provided the AESO's toll-free number to stakeholders, and advised stakeholders to contact the AESO for questions about transmission needs. No stakeholders contacted the AESO, and ATCO Electric has confirmed that no stakeholders identified any concerns about the need during facility project consultations.

The AESO's Preferred Alternative

6. The AESO's preferred alternative – designated as Alternative two (2) in the 9L66 NID – contemplates that the relocated section of line 9L66 be constructed as a single circuit 240 kV line with 2 x 795 kcmil conductors.

Costs and Benefits

7. The estimated total cost of for the relocation project is $10 million ($2010, +20/-10%) inclusive of capital cost, AFUDC, Engineering & Supervision, and Contingency. Of the estimated total cost, $8.8 million is deemed customer cost and the remaining $1.2 million is deemed system cost.

8. As set out in the 9L66 NID, the AESO believes that the recommended reinforcement and enhancement will benefit Alberta by increasing the capacity of the transmission system to serve future area load.

Relief Requested

9. For all of the reasons set out herein and in the 9L66 NID, the AESO requests that the Alberta Utilities Commission approve the 9L66 Line Relocation Reinforcement Needs Identification Document or grant such further and other relief in addition to, or in substitution for, that applied for by the AESO, as may appear to the Alberta Utilities Commission to be just and appropriate.

All of which is respectfully submitted this 17th day of September, 2009.

ALBERTA ELECTRIC SYSTEM OPERATOR

William Strongman P.Eng.
Director, Regional System Planning

9L66 Line Relocation Project

Needs Identification Document

Application Number: _____

Date: September 01, 2009

	Name	Signature	Date
Prepared:	Joseph Lee, P.Eng.		Sept. 1, 2009
Approved:	Bill Strongman, P. Eng.		Sept. 3/09

APEGGA Permit to Practice P-08200

Executive Summary

Shell Canada Energy (Shell) has requested relocation of a 5 km section of double circuit 240 kV line within its mine lease just west of the existing Muskeg River Substation 847S. The double circuit line consists of 9L66 line and a de-energized circuit (201-PTL260-2). Both circuits are built with 1x795 kcmil conductors. The Alberta Electric System Operator (AESO) does not foresee the need for the de-energized 201-PTL260-2 circuit. However, the AESO does see a need for the relocated section of 9L66 line to have the same capacity as the rest of 9L66 line and the existing 240 kV network in the region. This will avoid 9L66 line becoming a bottleneck when it is integrated into the transmission network in the future.

There are two alternatives for this customer requested line relocation. The first alternative is to relocate the line as is with 1x795 conductor. The second alternative is to build the relocated line with 2x795 kcmil conductors.

The AESO's recommendation is to build the relocated section of 9L66 line with single circuit and 2x795 kcmil conductors to avoid a potential bottleneck or strand capital in the future. The total project cost is $10.0 million, of which $8.8 million is deemed customer cost and $1.2 million is deemed system cost. All costs are in 2010 dollars. The requested in-service date for this project is July 15, 2010.

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1. Existing System

Shell Canada Energy (Shell) has requested relocation of a 5 km section of double circuit 240 kV line within its mine lease just west of the existing Muskeg River Substation 847S. The existing 9L66 Line runs from Joslyn 849S to Muskeg River 847S.The double circuit line consists of 9L66 line and a de-energized circuit (201-PTL260-2). Both circuits are built with 1x795 kcmil conductors. The Alberta Electric System Operator (AESO) does not foresee the need for the de-energized 201-PTL260-2 circuit. However, the AESO does see a need for the relocated section of 9L66 line to have the same capacity as the rest of 9L66 line and the existing 240 kV network in the region. This will avoid 9L66 line becoming a potential bottleneck when it is integrated to the transmission network in the future. Therefore the AESO requested ATCO Electric to build the relocated line as a single circuit with 2x795 kcmil conductors.

2. Criteria and Assumptions

Evaluation of the need for capacity increase is strictly based on load forecast in the region for this application since 9L66 line is currently a radial line. Reliability Criteria will be applied when 9L66 line is looped into the transmission network in the future.

2.1 Load Forecast

The area load forecast projects over 700 MW of load and 300 MW of generation in the region north of Fort McMurray by 2018. Table 2.1-1 shows the load forecast for the region and Table 2.1-2 shows the generation forecast for the region north of Fort McMurray.

Table 2.1-1: North of Fort McMurray Load Forecast

Load (MW)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Shell Albian & Jackpine	220	220	220	220	220	220	220	220	220	220
IOR Kearl Project*		10	20	100	100	100	100	100	100	100
Husky Sunrise*				33	33	33	33	70	70	70
UTS Equinox*				10	14	85	85	85	85	85
Ivanhoe*					40	40	40	50	100	125
PC Fort Hills#			5	15	45	45	55	55	55	55
Total Northern Lights#							30	60	60	60
EnCana Borealis#						10	13	15	20	20

Table 2.1-2: North of Fort McMurray Generation Forecast

Generation (MW)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Shell Albian & Jackpine	170	170	170	170	170	170	170	170	170	170
IOR Kearl Project*					100	100	100	100	100	100

* Customer who has applied to the AESO for Interconnection.
# Customer who has applied to the AESO for Interconnection but postponed the project.
Note: No historic load is available since there is no transmission network in the region.

3. Need Analysis

The need of this project is to ensure that the relocated line maintains the same capacity as was originally intended. The 9L66 line was designed and built to provide the equivalent capacity of 2x795 kcmil conductors. The 5 km section of line being relocated was temporarily constructed with 1x795 kcmil since Shell indicated that the line would be relocated due to its mine expansion plans. The new relocated line location is expected to be permanent and the AESO deems it prudent to match the capacity of the relocated line with the rest of 9L66 line.

Power flow, short circuit and transient analysis are not required for this application since this is a line relocation project and 9L66 line is currently a radial line. The justifications for the need of the system portion of this relocation project are described below.

3.1 Area Load Growth

The area load forecast projects over 700 MW of load and 300 MW of generation in the region north of Fort McMurray by 2018. This load growth will require additional transmission lines to have adequate capacity to be integrated with the area transmission development.

3.2 Integration of 9L66 Line to the Regional Transmission Network

The 9L66 line is currently a radial line. This line will be integrated into the transmission network as load and generation starts to develop. The line needs to be built with adequate capacity in order not to create a bottleneck in the future. The standard design for transmission lines in the region is 240 kV with 2x795 kcmil conductors.

3.3 Avoid Potential Stranding of Capital

If the relocated line is built with 1x795 kcmil conductor, the future cost to increase the capacity may be substantially higher and for reliability reasons, Shell may prohibit any extended outages for line rebuilds. Therefore, new line maybe required to bypass the constrained segment.

The system cost to provide the incremental capacity to avoid stranding 9L66 line is $700,000. There is an additional $500,000 for the salvage of the de-energized 201-PTL260-2 line.

4. Development of Alternatives

There are two alternatives for this customer requested line relocation. Alternative 1 is to relocate the line as is with 1x795 conductor. Alternative 2 is to build the relocated line with 2x795 kcmil conductors.

5. Evaluation of Alternatives

The AESO sees the Alternative 2 as a responsible long term solution that will serve public interest. Therefore, the AESO submits this Needs Identification Document (NID) to seek approval from the Alberta Utilities Commission (Commission) to build the relocated line with 2x795 kcmil conductors and pay for the incremental expenses at system cost.

5.1 Power Flow

Not applicable.

5.2 Transfer-out Capability

Not applicable.

5.3 Economic Evaluation

Not applicable.

5.4 Social and Land Use Impacts

There would be no social or land use impact as the relocated line is within Shell's mine lease.

5.5 Participant Involvement Program (PIP)

Stakeholders were notified and consulted about the relocation project by ATCO Electric as part of ATCO Electric's participant involvement program for a facilities application. ATCO Electric's package of information (dated May 15, 2009) provided information about the need for the project and about the conductor and design alterations, provided the AESO's toll-free number to stakeholders, and advised stakeholders to contact the AESO for questions about transmission needs. No stakeholders contacted the AESO, and ATCO Electric has confirmed that no stakeholders identified any concerns about the need during facility project consultations.

The AESO considers that ATCO Electric's participant involvement program is sufficient to meet the requirements of this NID. As an additional opportunity for stakeholders to identify questions or concerns about the need, the AESO will publish a copy of this NID on the AESO's web site for two weeks prior to this submission to the Commission.

6. Recommended Proposal

The Alberta Transmission System (ATS) is a vital component of the electric industry and provides a platform for a competitive wholesale electricity market. The Alberta Interconnected Electric System connects generators to load over a large and diverse geographic area and is designed to deliver electric energy to Alberta customers reliably and efficiently under a wide variety of system operating conditions and continuously changing customer demands.

The ATS in many parts of Alberta is reaching or exceeding its capability to reliably serve growing load and to integrate new generation additions. A strong transmission network is required in the Fort McMurray region to serve the fast growing oil sands mining load.

Therefore, AESO's recommendation is to spend the nominal amount of system dollars today to avoid a potential bottleneck or to strand capital in the future. The AESO hereby respectfully request the approval from the Commission to allow the relocated line to be constructed as a single circuit 240 kV line with 2x795 kcmil conductors for a total cost of $10.0 million, of which $8.8 million is deemed customer cost and $1.2 million is deemed system cost. All costs are in 2010 dollars.

APPENDIX A 9L66 Line

Figure A-1 Exisiting 9L66 Line Configuration

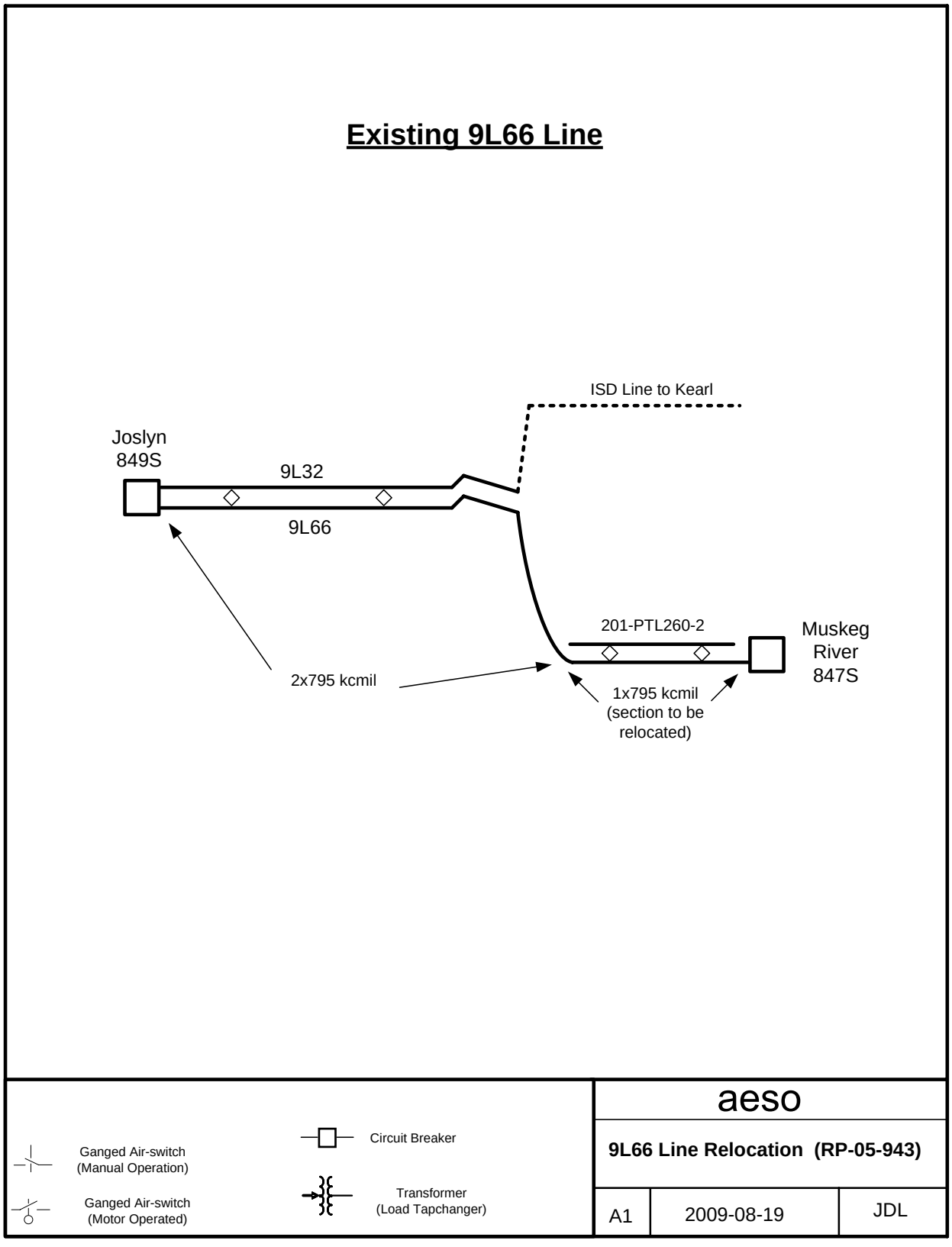
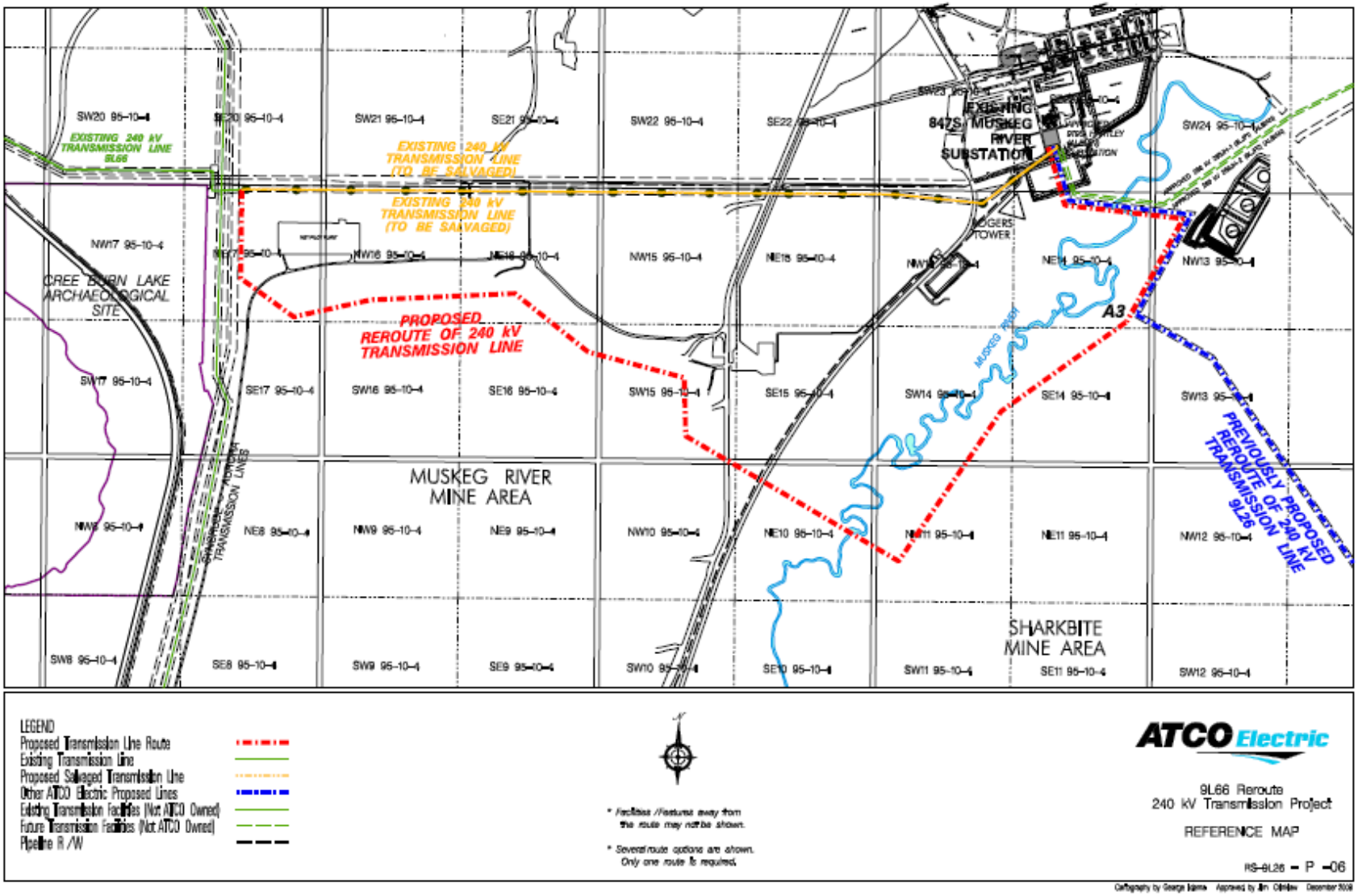


Figure A-2 9L66 Line Relocation Line Route



APPENDIX B Cost Estimate

Proposal to Provide Services (PPS) - Estimate Summary

Project Name: 9L66 Relocation
Estimate Prepared by: ATCO Electric - Craig Shutt
Estimate Date: April 20, 2009
Estimate Accuracy: +20 / -10 %
Version: AESO System Portion not yet determined.
Version Date: August 2, 2005

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Transmission Line Costs				
Material	$ 371,000	$ 4,187,000	$ 4,558,000	$ -
Labour	$ 149,000	$ 2,520,000	$ 2,669,000	$ -
Total-Transmission line	$ 520,000	$ 6,707,000	$ 7,227,000	$ -
Substation Facilities Cost				
Material	$ -	$ 10,000	$ 10,000	$ -
Labour	$ -	$ 175,000	$ 175,000	$ -
Total-Substations	$ -	$ 185,000	$ 185,000	$ -
Telecommunication Cost				
Material	$ -	$ -	$ -	$ -
Labour	$ -	$ -	$ -	$ -
Total-Telecommunication	$ -	$ -	$ -	$ -
Owner Costs				
Proposal to Provide Service	$ -	$ 71,000	$ 71,000	$ -
Facility Applications	$ -	$ 69,000	$ 69,000	$ -
Land Rights - Easements	$ -	$ 138,000	$ 138,000	$ -
Land - Damage Claims	$ -	$ 51,000	$ 51,000	$ -
Land - Acquisitions	$ -	$ -	$ -	$ -
Total - Owner's Cost	$ -	$ 329,000	$ 329,000	$ -
Distributed Costs				
Procurement	$ -	$ -	$ -	$ -
Project Management	$ -	$ 267,000	$ 267,000	$ -
Construction Management	$ -	$ 91,000	$ 91,000	$ -
Contingency	$ -	$ -	$ -	$ -
Total - Distributed Costs	$ -	$ 358,000	$ 358,000	$ -
Total Direct Costs	$ 520,000	$ 7,579,000	$ 8,099,000	$ -
Salvage				
Transmission Line Labour	$ 533,500	$ 533,500	$ 1,067,000	$ -
Substation Labour	$ -	$ -	$ -	$ -
Land Remediation and Reclamation	$ -	$ -	$ -	$ -
Total-Salvage	$ 533,500	$ 533,500	$ 1,067,000	$ -
Other Costs				
AFUDC	$ 57,000	$ -	$ 57,000	$ -
E&S	$ 84,000	$ 649,000	$ 733,000	$ -
Total - Other Costs	$ 141,000	$ 649,000	$ 790,000	$ -
Total In-Direct Costs	$ 674,500	$ 1,182,500	$ 1,857,000	$ -
TOTAL PROJECT COSTS	$ 1,194,500	$ 8,761,500	$ 9,956,000	$ -

Notes:
1. All figures in 2010 dollars.
2.This project has an ISD of June 2010
3.General line route has been developed with Albian Sands
4.Final route development and consultation must still be completed.
5. Project costs will be based on actual costs.

PPS Estimate Summary 55149 9L66 Relocation PPS.xlsx Page 1

Transmission Line - PPS Estimate

Project Name: 9L66 Relocation

Estimating Guidelines: Refer to the Notes sheet in this workbook and "Proposal to Provide Services" template for guidelines on estimating requirements

	System Portion	Customer Portion	TOTAL	Capital Maintenance
Line <9L66 Relocation, from T-tap point to Muskeg River Substation 847S>				
Materials				
Foundations	$ -	$ 1,887,000	$ 1,887,000	$ -
Structures	$ 87,000	$ 1,810,000	$ 1,897,000	$ -
Hardware	$ 22,000	$ 232,000	$ 254,000	$ -
Conductor	$ 262,000	$ 258,000	$ 520,000	$ -
Subtotal-Material	$ 371,000	$ 4,187,000	$ 4,558,000	$ -
Labour				
Detailed Engineering	$ -	$ 46,000	$ 46,000	$ -
Survey	$ -	$ 111,000	$ 111,000	$ -
R/W Preparation & Brushing	$ -	$ 254,000	$ 254,000	$ -
Construction	$ 149,000	$ 2,009,000	$ 2,158,000	$ -
Commissioning	$ -	$ 100,000	$ 100,000	$ -
Subtotal-Labour	$ 149,000	$ 2,520,000	$ 2,669,000	$ -
Sub Total-Material and Labour	$ 520,000	$ 6,707,000	$ 7,227,000	$ -
Summary				
Total - Material Costs	$ 371,000	$ 4,187,000	$ 4,558,000	$ -
Total - Labour Costs	$ 149,000	$ 2,520,000	$ 2,669,000	$ -
Total - Transmission Line Costs	$ 520,000	$ 6,707,000	$ 7,227,000	$ -