REVIEW OF THE COST STATUS OF MAJOR TRANSMISSION PROJECTS IN ALBERTA

From The Transmission Facilities Cost Monitoring Committee

JUNE 2013 REPORT

Industry Abbreviations Found In This Report

Alberta Electric System Operator . . . . . .(AESO)

Alberta Utilities Commission . . . . . (AUC)

AltaLink Management Ltd. . . . . (AltaLink)

ATCO Electric Ltd. . . . . (ATCO)

Critical Transmission Infrastructure. . . . . (CTI)

Distribution Facility Owner . . . . . (DFO)

ENMAX Power Corporation. . . . . .(ENMAX)

EPCOR Distribution and Transmission Inc. . . . . (EDTI)

EPCOR Utilities Inc. . . . . .(EPCOR)

General Tariff Application . . . . . (GTA)

High Voltage Direct Current. . . . . .(HVDC)

In-Service Date . . . . . .(ISD)

Long-Term Plan . . . . . .(LTP)

Needs Identification Document. . . . . .(NID)

Proposal to Provide Service . . . . . (PPS)

Permit and Licence . . . . . (P&L)

TransAlta Corporation . . . . . (TransAlta)

Transmission Cost Recovery Subcommittee . . (TCRS)

Transmission Facilities Cost Monitoring Committee . . . . . (TFCMC)

Transmission Facility Owner . . . . . (TFO)

Transportation Utility Corridor. . . . . (TUC)

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Message From The Chair

This is the fifth report from the Transmission Facilities Cost Monitoring Committee (TFCMC) to its stakeholders. The report provides a detailed and structured summary of the cost, scope and schedule information of the transmission projects monitored by the Committee on a monthly basis for the period of November 1, 2012 to April 30, 2013.

During this period, the Committee examined the progression of 16 major transmission projects, with the total cost of these projects estimated at more than $10.6 billion. A listing of the 16 projects can be found in Section 1 while details for these projects are contained in Appendices B and C. The Yellowhead Area Transmission Development Project, which was completed during this reporting period, was approved in May 2010 at an estimate of $87.8 million at the project's Needs Identification Document (NID) stage. The final cost for this project is $148.4 million.

Section 2 of this report contains several key observations made by the Committee while monitoring the progress of these 16 transmission projects. One of the Committee's observations resulted in a letter to the Minister of Energy, supporting Alberta Energy's initiative to improve the legislative environment and to allow for more aggressive cost management of transmission development projects. During the report period, the Committee also solicited expert input to understand how TFCMC data was used to support meaningful participation by ratepayer groups in the ATCO General Tariff Application (GTA) proceeding, and to enhance the Committee's knowledge of bulk transmission line technical requirements.

Section 3 provides a status update on the Transmission Cost Recovery Subcommittee (TCRS) initiative. Given the government's recent release of the TCRS report and its plans regarding transmission costs and rates, the TFCMC intends to close the chapter on this initiative.

Through the TFCMC's work in monitoring transmission project costs, it has identified many opportunities to control costs. Since its inception, the Committee has made recommendations to take advantage of these opportunities. Section 4 provides an update on the status of all previous recommendations. The Committee is heartened by the proactive responses from the Alberta Electric System Operator (AESO) and Alberta Energy. The AESO's continuing work in enhancing the benchmarking database and in strengthening Rule 9.1 in the areas of cost estimates, cost reporting and procurement are just some examples of their positive responses to the Committee's recommendations. Meanwhile, Alberta Energy has been evaluating ways the Province can get ahead of the costs. In response to Alberta Energy's intent to consult with industry on the top priorities in improving transmission cost management, the TFCMC developed its Top 5 recommendations. The recommendations were submitted to Alberta Energy for its consideration. Section 5 contains the details of our submission.

Since its inception, the Committee has a cost reimbursement subcommittee to provide transparency in the area of expense claims by TFCMC members. Evan Bahry, Executive Director of the Independent Power Producers Society of Alberta (IPPSA), has agreed to replace Sheldon Fulton as chair of this subcommittee due to his retirement from the TFCMC. I would like to take this opportunity to recognize Sheldon's contributions to the TFCMC. His tenacious advocacy on behalf of the ratepayers, his experience, and his willingness to challenge the status quo will be missed.

Thank you for your continuing support. The TFCMC's next report is scheduled for early 2014. Your comments to improve the report will be much appreciated. Please email your comments to **TFCMC@gov.ab.ca**

Henry Yip
Chair, Transmission Facilities Cost Monitoring Committee

1. Transmission Projects Covered Under The TFCMC's Mandate

The TFCMC has the authority to review records relating to the cost, scope and schedule of transmission facility projects that are expected to cost more than $100 million. These projects include all lines and substations, which make up the transmission facilities required to transfer power between generators and loads.

Currently Monitored Projects

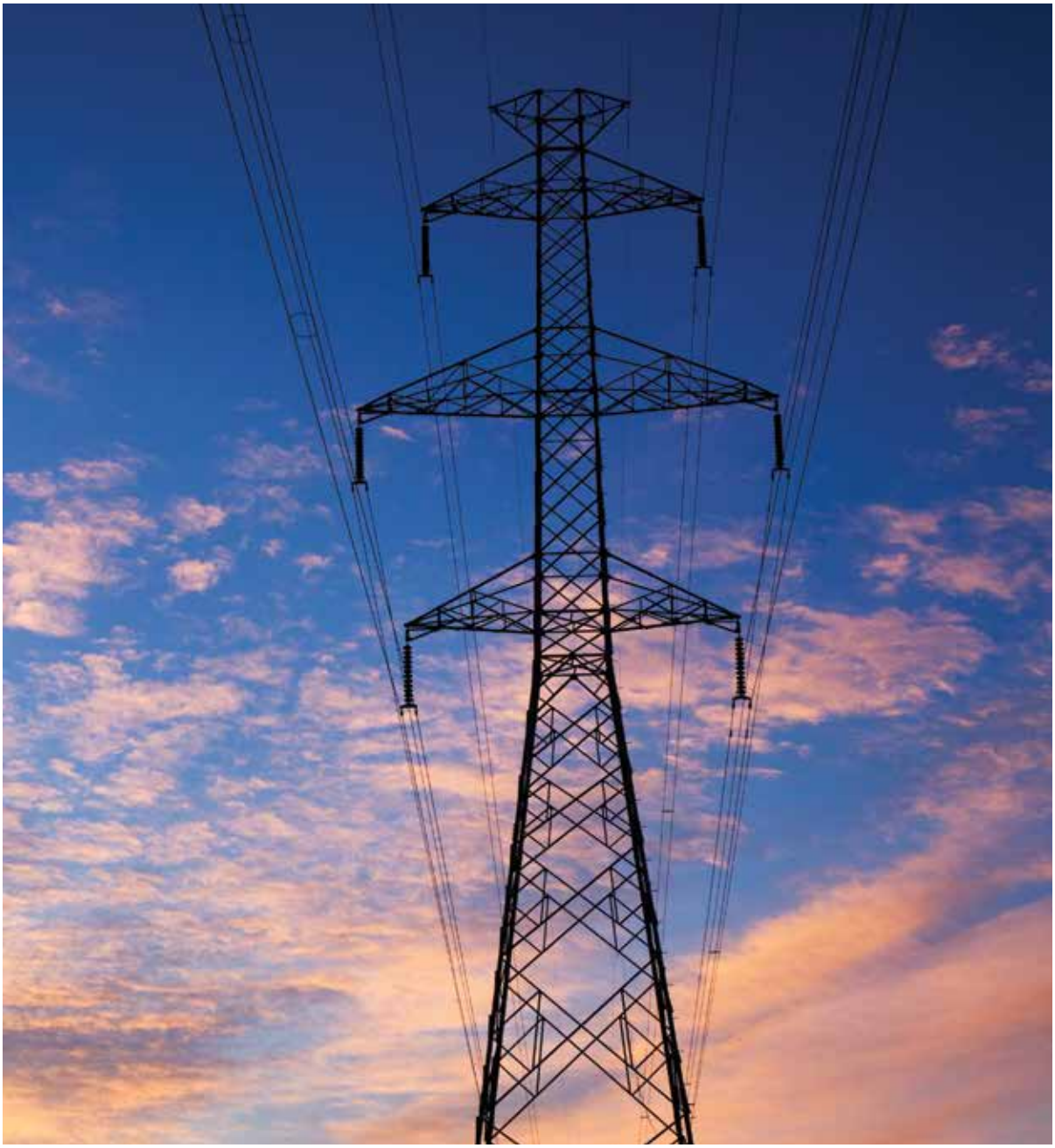
The TFCMC is monitoring 16 projects valued at a total of $10.653 billion[1] (based solely on the current estimated costs noted in Appendix B of this report). The projects, in alphabetical order, are:

- **ALBERTA INDUSTRIAL HEARTLAND BULK TRANSMISSION DEVELOPMENT (HBTD);** PROJECT 629 – Construction of a double-circuit 500 kV transmission line, which will connect the Heartland region (northeast of Fort Saskatchewan) to existing 500 kV transmission facilities in the Edmonton area.
- **CENTRAL EAST AREA TRANSMISSION DEVELOPMENT (CETD);** PROJECT 811 – Transmission development in Wainwright, Lloydminster, Provost, Vegreville and Cold Lake.
- **CHRISTINA LAKE AREA 240 KV TRANSMISSION DEVELOPMENT (CHL);** PROJECT 1101 – To establish transmission facilities to serve new oilsands developments and enhance reliability to existing oilsands operations.
- **EAST CALGARY TRANSMISSION PROJECT AND ENMAX SHEPARD ENERGY CENTRE CONNECTION (ECTP);** PROJECT 719 – To serve growing demand for electricity in the Calgary and High River planning areas.
- **EDMONTON REGION 240 KV LINE UPGRADES (ERLU);** PROJECT 786 – Upgrading 240 kV lines in the Edmonton area; adding one 240 kV phase shifter at Dover substation.
- **ENMAX NO. 65 SUBSTATION (ESCS);** PROJECT 922 – New 240 kV substation in south Calgary and 138 kV development due to overloading in south Calgary.
- **FOOTHILLS AREA TRANSMISSION DEVELOPMENT – EAST PROJECT (FATD);** PROJECT 1117 – To meet growing demand in South Calgary, High River and the surrounding area.
- **FORT MCMURRAY AREA TRANSMISSION BULK SYSTEM REINFORCEMENT (FMAC);** PROJECT 838 – Construction of 500 kV transmission lines from the Edmonton region to the Fort McMurray area.
- **HANNA REGION TRANSMISSION DEVELOPMENT (HATD);** PROJECT 812 – Transmission development in Hanna, Sheerness and Battle River.
- **NORTH FORT MCMURRAY TRANSMISSION DEVELOPMENT (NFMD);** PROJECT 791 – Transmission development to relieve constraints and to serve forecast demand north of Fort McMurray.
- **NORTH SOUTH TRANSMISSION REINFORCEMENT (HVDC);** PROJECT 737 – Construction of two 500 kV HVDC transmission lines from the Edmonton area to the Calgary and south regions.[2]

1 This figure does not include costs for Project 838 – Fort McMurray Area Transmission Bulk System Reinforcement (FMAC) – as this project falls under a competitive procurement process.

2 In late February 2012, this project received provincial government approval to proceed after previously being put under review by the government.

- **NORTHWEST FORT MCMURRAY TRANSMISSION DEVELOPMENT (NW FMM);** PROJECT 1180 – To provide service and connect future industrial customers in areas where there are no transmission facilities.
- **NORTHWEST TRANSMISSION DEVELOPMENT (NWTD);** PROJECT 535 – Transmission expansion and enhancement in northwest Alberta.
- **RED DEER REGION TRANSMISSION DEVELOPMENT (RDTD);** PROJECT 813 – Transmission system reinforcements in the Red Deer area.
- **SOUTHERN ALBERTA TRANSMISSION REINFORCEMENT (SATR);** PROJECT 787 – To accommodate wind generation in southern Alberta.
- **YELLOWHEAD AREA TRANSMISSION DEVELOPMENT (YATD);** PROJECT 671 – To serve increased electricity demand, replace aging infrastructure and improve reliability in the Drayton Valley, Hinton, Edson and Alberta Beach areas.



2. TFCMC Observations To Date

As the TFCMC moves forward with its mandate to review the cost of major transmission projects, it embarks on in-depth assessments of these undertakings (in the case of new projects)[3] or focuses on a more detailed analysis of existing ones and relevant issues based on the monthly reports[4] it receives.

The Committee has observed the following concerns and or issues during the six-month period covered by this report.

HVDC Converter Station Costs

The TFCMC continues to be concerned with the costs associated with the Eastern Alberta Transmission Line (EATL) and Western Alberta Transmission Line (WATL). Committee members are having difficulties reconciling the prices that both ATCO Electric Ltd. (ATCO) and AltaLink Management Ltd. (AltaLink) are paying for the HVDC converter stations.

As noted in our December 2012 Report, the TFCMC is concerned that the budgetary cost of the converter stations for the ATCO EATL project, at $453M, is significantly higher than the cost of similar projects in other jurisdictions around the world[5] . The TFCMC's HVDC expert, TransGrid Solutions Ltd. (TGS), provided a cost estimate for EATL of $371.5 million including the provision of supply of two STATCOMs (Static Compensators) as part of the project.

With regard to the AltaLink WATL project, the converter station costs are stated as being $497.9 million. Expert evidence, commissioned by several TFCMC members for the AltaLink General Tariff Application (GTA), estimates the AltaLink converter station costs to be between $319 million and $355 million[6].

Both of these projects are conventional HVDC projects and it follows that in both of these instances the converter station costs should track the global market price of HVDC converter stations.

To date, in spite of the Committee's many efforts, the TFCMC has been unsuccessful in obtaining relevant information from the two Transmission Facility Owners (TFOs) to reconcile the price differences. The Alberta Electric System Operator (AESO) has verbal confirmation that both the EATL and WATL converter stations were procured through the lowest cost bids, as required under the AESO's rule. However, no details of the bids or contracts were made available and the aggregate costs of these projects are considerably higher than what TFCMC consultants estimate they should be.

TFCMC members also note that both ATCO and AltaLink have declined to provide additional cost information to the AESO, in spite of the requirement in the Electric Utilities Act. That requirements states: "Each owner of a transmission facility must, in a timely manner, assist the Independent System Operator in any manner to enable the Independent System Operator to carry out its duties, responsibilities and functions."

Meanwhile, the AESO has a compliance program[7] in place that will include EATL and WATL. Results of the AESO's compliance programs are confidential.

It is unclear to the TFCMC how ratepayers can be satisfied that the cost estimates for these converter stations are reasonable, if the TFOs refuse to provide the requested information, particularly considering that these facilities are the largest projects being executed in Alberta at this moment. In the current environment, the TFOs will seek approval of these costs in their revenue requirement as long as the procurement rules in ISO Rule 9.1 were followed. In this case ratepayers will be required to the carry the extra costs without any

3 New projects added to the TFCMC's purview receive an in-depth review in addition to being inserted into the Committee's month-to-month examination process.

4 The TFCMC continues to receive monthly reports from the AESO, which originate from the TFOs, on all projects valued at $100 million and over.

5 TFCMC December 2012 Report, Section 2, page 7.

6 TGS Report prepared for the Ratepayer Group, AltaLink General Tariff Application, AUC Proceeding ID 2044.

7 The AESO's compliance programs are defined and documented formalized business processes to ensure it meets its obligations in regards to mandatory requirements. Examples include programs currently in place to ensure the AESO is in a state of compliance with ISO Rules, Alberta legislation and more.

recourse or even an understanding of why the converter station costs are so much higher than our national and international peers.

Several TFCMC members are pursuing this issue further in the current AltaLink General Tariff Application (GTA) hearing. AltaLink stated in their rebuttal evidence for the GTA that it has appropriately provided the actual tender market price in the confidential portion of the proceeding. Some of the ratepayer groups' representatives registered for this proceeding, however, are not able to access the confidential information due to extremely onerous non-disclosure provisions. Of course, their participation in the hearings would be more meaningful and efficient if they were able to secure the necessary information.

More importantly, this issue highlights the need to strengthen the Province's legislative environment in the transmission area to incent more aggressive cost management and to compel more transparency in disclosure of transmission project costs.

EATL and the corresponding WATL project, being built by ATCO and AltaLink respectively, combine to form the North South Transmission Reinforcement (HVDC) development, also referred to as Project 737 – the construction of two 500 kV HVDC transmission lines from the Edmonton area to the Calgary and south regions.

Yellowhead Transmission Development

As Project 671, Yellowhead Area Transmission Development, enters its final stages – construction and energization have been completed with some salvage work remaining – the TFCMC has some concerns.

One of those was a change order of more than $15 million that was submitted retroactively to the AESO for this project.

Further, as noted in the December 2012 TFCMC Report, the cost for Project 671 was initially forecast at $88 million at the Needs Identification Document (NID) stage. This rose to $126 million at the Proposal to Provide Service (PPS) level and ultimately the project came in at $148 million.

In a presentation to the TFCMC in January 2013, AltaLink – arising out of the TFCMC's questions on the $15.4-million change order – noted that from an overall perspective the Yellowhead project is within the Proposal to Provide Service (PPS) accuracy range.

The TFCMC was told that in regards to the Yellowhead project there was one NID and four Facility Applications (FAs), one of which was for the Hinton-Edson sub-project, which was 31% higher than the original PPS estimate. The Hinton-Edson sub-project included 90 kilometres of 745L rebuild and had significant complexities, AltaLink said. That included one winter to construct instead of the planned two due to a delayed Permit & License (P&L); a customer requirement for no extended outages; an interdependency with DFO (Distribution Facility Owner) under-build; and salvage preceding rebuild.

Construction was compressed from two winters to one and was followed by one of the wettest springs and summers in the province's history. AltaLink said that at one point conditions literally went from frozen to non-frozen overnight. The Hinton-Edson portion of the line transgressed considerable muskeg, terrain one would want to construct on when it is frozen.

In terms of whether to proceed with the work on the sub-project or delay to the next winter, the TFCMC was told that an extensive review was undertaken. Results showed it would cost $18.5 million to delay versus $15.4 million to move ahead and deal with the challenges posed by the above average rainfall.

Overall, AltaLink said it views the Yellowhead program as a successful one, with the PPS estimate within the accuracy band and that execution on three of the four sub-projects went extremely well. As far as the Hinton Edson sub-project, it said that the action taken was the best option in terms of minimizing costs and improving system reliability.

As to the change order in question, AltaLink said the date on it was actually the final document, and that it had informed the AESO of the reasons for the change order and about what was going on. AltaLink also said that starting in June it had noted there was an issue but it did not have the numbers until September as it was still negotiating with contractors. AltaLink said it wanted to ensure the numbers were reasonable and that is why negotiations (with contractors) took a considerable amount of time.

AltaLink said lessons learned are that when projects have a significant interdependency on the DFO, these risks need to be costed, or alternatively, project schedules may need to allow for additional time for DFO work to be executed in advance of the TFO work. It also said Northern Alberta projects have a limited construction winter window. Contingency plans and/or relaxed project schedules need to reflect these winter construction windows.

Yellowhead Case Study

After having reviewed AltaLink's presentation, the Committee still felt that there needs to be more effort by the TFO in terms of contingency costs and estimate accuracy. As such, the TFCMC felt a case study would be of value as the experience of this project offers several learning and improvement opportunities for the future; such as:

- Visibility of change order details to the TFCMC;
- Clarity of contingency requirement and use;
- Information flow process between TFOs and the AESO, and the TFCMC; and
- The project cost trade-off process during implementation.

The AESO is preparing the case study, which is expected to be presented to the TFCMC later in 2013.

Cost & Performance Audits

The TFCMC sees value in conducting cost and performance audits when and where appropriate for selected major TFO projects. The potential benefits of cost and performance audits include:

1. The opportunity to obtain cost monitoring information closer to real time, a stated desire of the Alberta Utilities Commission (AUC) as well;
2. As often occurs, the costs of the audits can be more than paid for from savings arising from the audits;
3. Greater insight into cost drivers than can be obtained from benchmarking since all data related to the project is available;
4. In cases where costs appear to be higher than normal, a cost and performance audit can conduct a root cause analysis to determine the real causes for the higher costs;
5. When a cost and performance audit is conducted on what appears to be a very effective and efficient project or process, the reasons for the success can be determined and then passed on where there are opportunities for other projects and processes to benefit; and
6. If the cost and performance audits are performed by the AUC or another independent body, the TFOs confidentiality concerns can be addressed.

Transmission Tower Design

The AESO updated the TFCMC on a draft transmission line rule/design review plan that includes an analysis of transmission tower designs.

The four-step process, currently in progress, started with a review of current functional specification capacities and transmission line standards. The second and third steps, establishing the review group's terms of reference and identifying new projects' conductor and tower design needs is in also underway and expected to be complete in October 2013.

The last two steps, reviewing and testing existing tower designs and if required, testing new tower designs, would take place starting October 2013 and are expected to be completed by October 2014.

Observations On New Projects

No new transmission developments were added to the TFCMC's roster of monitored projects during the period covered by this report.

3. The TCRS Report

The Transmission Cost Recovery Subcommittee (TCRS), a TFCMC initiative that dates back to 2011, had its report made public earlier this year by Alberta Energy.

The report, which examined the potential cost impact of Alberta's transmission build, looked at developing alternative cost-recovery mechanisms in order to minimize near-term rate shock while seeking a solution to ensure that transmission costs were fairly allocated between current and future ratepayers.

The TCRS concluded in its report that a wires price cap, a fixed annual transfer amount and non-ratepayer funding warranted further consideration as potential mechanisms to address the cost impact of the proposed transmission build in Alberta, noting that these options are not all mutually exclusive and some of the options could be combined.

As an outcome of the report, Alberta Energy directed the Alberta Utilities Commission (AUC) to consult on rate mitigation measures considering the alternatives presented in the TCRS report as well as others offered by interested parties. The AUC initiated Proceeding 2421 and on March 18, 2013 held a stakeholder conference. The AUC is assessing the input from the conference and will advise on next steps in the near future.

Impacts of the measures considered in the TCRS report were tested using the model[8] prepared by the TCRS. The model has recently been updated by the Alberta Electric System Operator (AESO) in preparation for their 2014-2016 General Tariff Application (GTA) and it was expected to be provided to the AUC in late June or in July.

The TCRS arose out of an opportunity where the TFCMC saw a chance to assist the province to find ways to potentially minimize projected rate increases from Alberta's major electrical transmission build. At the end of April 2012, the TFCMC accepted a report prepared by its Transmission Cost Recovery Subcommittee (TCRS), along with the accompanying simulation model developed by the subcommittee to evaluate the various options outlined in the report. The report and the simulation model were then submitted to Alberta Energy. Previous plans by Alberta Energy, to recommend that the Government proceed with an inquiry conducted by the AUC, have since changed as the department conducts a review of transmission related items.

In order to proceed with this then contemplated work, the TFCMC advised the Energy Minister that creative rate-setting solutions needed to be explored. The TFCMC submitted a formal request for a mandate extension, which was approved in late June 2011. The TFCMC then formed the TCRS, with select members of the TFCMC taking part as well as representatives from AESO, AltaLink Management Ltd., ATCO Electric Ltd., ENMAX Power Corp. and EPCOR Distribution and Transmission Inc.

8 To reach those objectives, the TCRS developed a detailed model to forecast the cost impact of the proposed transmission build, and to analyze the impact on transmission wires rates of various cost-recovery options.

4. Results to Date: Status of Previous TFCMC Recommendations

To date, the TFCMC has issued four semi-annual reports containing a total of 10 recommendations, all with the goal of enhancing the management of transmission costs in Alberta.

Of the 10 recommendations, eight were directed to the Alberta Electric System Operator (AESO) and two have been made to the Alberta Energy.

Recommendations to the Alberta Electric System Operator

The AESO has been proactive in its response to recommendations made by the TFCMC, adopting a number of the recommendations and working on implementing others. The TFCMC is encouraged by this as well as the overall direction and response the AESO has taken in regards to these recommendations.

Recommendations already implemented:

- **JUNE 2011 REPORT:** That the AESO improve future NID estimates by including fully loaded costs – allowance for funds used during construction (AFUDC), escalation, engineering and supervision, and owners' cost;
- **JUNE 2011 REPORT:** That the AESO improve the estimates in the AESO Long-Term Transmission Plan by employing third-party cost estimates or cost estimate verification as well as from benchmark data being compiled by AESO;
- **JUNE 2011 REPORT:** That the AESO enhance compliance of the material procurement provisions of Rule 9.1.

Recommendations in the process of being implemented:

- **JUNE 2011 REPORT:** That the AESO develop a transmission cost benchmarking competency and database;
- **JUNE 2011 REPORT:** Initiate a review process on the current framework for cost accountability;
- **JUNE 2012 REPORT:** That for each Direct Assigned Capital project estimated to cost in excess of $100 million[9] at the Needs Identification Document stage, the AESO will publish a cost benchmarking report at the time the Transmission Facility Owner files its Facility Application with the Alberta Utilities Commission for approval. To the extent that there are significant project cost changes between the Proposal to Provide Service stage and the TFO's application before the AUC for rate base approval, the AESO will update and publish its cost benchmark report.
- **DECEMBER 2012 REPORT:** The AESO, with assistance from TFCMC consultants, undertake a case study concerning the cost changes for Project 671 – from the NID through to the PPS and the authorized budget – and this should include lessons learned from the Yellowhead project and lessons about reporting under ISO Rule 9.1 (Compliance Monitoring).

The remaining recommendation:

The AESO has expanded the following recommendation into the broader context of the TFCMC's earlier cost accountability recommendation. The AESO's goal is to coordinate with the Alberta Utilities Commission on the development of a reporting protocol with respect to the treatment of transmission project costs.

9 According to Section 10 of Ministerial Order 64/2010, the mandate of the TFCMC is to review all Transmission Facility Projects forecast to cost in excess of $100 million. In a letter dated January 12, 2011, the Minister of Energy clarified that the starting point for the TFCMC when reviewing cost variances is the estimate in place when a project is approved by an Order in Council for Critical Transmission Infrastructure (CTI) projects, or, the estimate in place when the Needs Identification Document (NID) is approved by the Alberta Utilities Commission (AUC). The AESO, of course, is at liberty to file benchmarking cost reports with various stakeholders, including the AUC, in respect of projects below the $100-million threshold.

- **DECEMBER 2011 REPORT:** That for each Direct Assigned project, the AESO provide to the Alberta Utilities Commission a summary of the scope changes authorized by the AESO for that project including the following:

  I. The AESO's assessment on whether each scope change was needed;

  II. A summary of the alternatives available to meet each scope change;

  III. The AESO's assessment on whether the alternative recommended by the TFO to address each needed scope change was the most appropriate alternative, and

  IV. The AESO's assessment on whether the cost of each scope change as estimated by the TFO was reasonable.

  This information would form part of the AUC's consideration, under section 25(4) of the Transmission Regulation, in determining the TFO's prudence in managing the cost of the Direct Assigned project.

AESO Cost Accountability Recommendation: ISO Rule Section 9.1 Consultation Update

The ISO Rules 9.1 industry working group held meetings from January through March 2013 to discuss project cost estimating and cost reporting/change proposals. Significant progress was made during these discussions.

The ISO Rules 9.1 industry working group meetings were put on hold in April as Alberta Energy announced there would be Transmission Regulation amendments and new transmission cost management initiatives implemented in 2013.

On May 14, 2013, Alberta Energy said they will be proceeding with a spring Transmission Regulation amendment to remove presumption of prudence and would establish an industry working group for coordinated development of transmission cost management initiatives in June. The ISO Rules 9.1 industry working group will restart once the working group announced by Alberta Energy concludes its work.

Based on the recommendations from the Transmission Facilities Cost Monitoring Committee's June 2011 Report, the AESO began a review of the cost accountability framework in November 2011.

AESO Transmission Cost Accountability Recommendation: Reporting and Oversight Protocol

Reporting protocol with the Alberta Utilities Commission (AUC) was put on hold as a result of the May 14, 2013 Alberta Energy announcement as well.

AESO Cost Benchmarking Recommendation Update

On March 28, 2013, the AESO published its Cost Benchmarking Report for transmission development projects within Alberta, utilizing transmission cost data for the 2005–2102 time period.

The purpose of the Cost Benchmarking Report is to establish a baseline for transmission project cost information, which can be used by the AESO to assess future project cost estimates. It can also be used by stakeholders to undertake other types of analysis such as cost trending, identification of cost improvement opportunities, final cost reconciliation, and order-of-magnitude cost estimates for potential transmission project development in Alberta.

The AESO plans to update the benchmark data with cost information from future projects as that cost information becomes available, and will update the benchmarking report twice a year. The AESO has been investigating interactive analysis technology that would allow stakeholders to utilize the transmission benchmarking data through the AESO's website and enable stakeholders to conduct their own analysis. The AESO will inform stakeholders of its progress once more information is available.

The AESO views the process of compiling and reporting benchmark data as an evolving process to improve the transparency of transmission cost information across the electricity industry in Alberta. The AESO is committed to enhancing the benchmarking data so that continuous improvements can occur to processes, practices and reporting. The AESO is also in the process of collecting transmission facility cost benchmarking data from other jurisdictions and anticipates posting this information on the AESO website by the end of the second quarter of 2013.

This initiative is based on a recommendation from the TFCMC, in its June 2011 Semi Annual Report, to develop a cost benchmarking database that will enable the AESO to further assess the reasonableness of the costs proposed by Transmission Facility Owners (TFOs) in the Needs Identification Document (NID) and Proposal to Provide Service (PPS) stages of a transmission development project.

Recommendations to the Provincial Government

The TFCMC has directed two recommendations to the Alberta Energy through its semi-annual reports. One[10] of the two, in the June 2011 Report, was considered premature by the Department given the implementation of the other recommendations from the same semi-annual report.

The TFCMC made a second recommendation for the Department to consider. This one, in the December 2011 Report, reads as follows:

- That the Minister of Energy modify the Transmission Regulation to require TFOs to seek AESO authorization of CTI pre-construction expenditures incurred prior to AUC approval of the Facility Application.

The Minister, in a letter to the Committee, advised that Alberta Energy would consider this recommendation as it reviews potential amendments to the Transmission Regulation. The review was underway at the time of this report.

10 The recommendation reads: That for non Critical Transmission Infrastructure (CTI) projects, the Department of Energy consider legislative changes to require a second approval stage by the AUC if cost estimates exceed a pre-determined limit. The TFCMC recognizes the need to avoid unnecessary project delays due to factors outside the control of the TFOs.

5. TFCMC Conclusions & Recommendations

This section contains a look into how the work of TFCMC continues to play a role in the regulatory forum.

As well, the Committee has submitted five recommendations to Alberta Energy – as part of a provincial government consultation with industry organizations – on the top priorities to improve transmission cost management. The recommendations, and the context for them, are included.

The TFCMC's Work and The Regulatory Forum

More effective and efficient interventions by consumer groups as well as a better understanding of transmission project development is arising out of the work being done by the TFCMC.

In creating the TFCMC, it was envisioned[11] that consumers would benefit from an increased level of transparency and information relating to major transmission projects – those with a cost of $100 million or higher – while also improving the ability for consumer groups to monitor costs prior to and after regulatory hearings.

TFCMC-related information has allowed these member groups, representing a range of electricity users, to make a more significant contribution to both their membership and the community at large when it comes to evaluating the cost of major transmission developments currently underway in Alberta.

In both the ATCO Electric and AltaLink Management Ltd. 2013-2014 General Tariff Applications (GTA) to the Alberta Utilities Commission (AUC), TFCMC material has enabled these consumer groups to better prepare and provide more comprehensive evidence and information responses during the hearings. Four consumer groups that are members of TFCMC have been active in both ATCO's GTA and the AltaLink GTA.

Even though there is a two-month lag in how current TFCMC material is from the Transmission Facility Owners (TFOs) – due to information processing requirements – this information is still generally more current than application information available at the GTA hearings.

At both the ATCO and AltaLink GTA hearings, some of the benefits arising out of the TFCMC's work include:

- Improved ability to confirm and test forecast assumptions;
- Identifying projects experiencing development slippage;
- Identifying cost variances that need further review; and
- Providing project cost data that can be used for future benchmarking considerations.

In a presentation to the TFCMC in March 2013, Roger Belland of CRD Management Inc., noted that not only has the TFCMC provided interveners with a better understanding of what is happening with the province's massive transmission build, the Committee also asks pertinent questions of the TFOs and the AESO in order to obtain better information. He also said more detailed monthly reporting (for material, labour and other cost variances can flag problems) would add to the TFCMC's effectiveness.

TFCMC Work: Instances of Assistance

Some examples of information provided to the TFCMC that has proven valuable in the AltaLink GTA hearing are:

- HVDC converter station cost analysis and presentations from TransGrid Solutions Ltd., a consultant to the TFCMC;
- A presentation by Manitoba Hydro International comparing Alberta DC transmission line and converter station costs with Newfoundland and Manitoba;
- AltaLink monthly reports on the AltaLink WATL project, which includes converter station costs;
- Information from AltaLink and EPCOR Distribution & Transmission Inc. (EDTI) on the Heartland Project cost estimates from the Heartland application;

11 Ministerial Order 64/2010, August 5, 2010; covering letter from the Government of Alberta.

- Presentations from AltaLink and the AESO evaluating cost increases on the Yellowhead project by the AESO;
- Presentations by AltaLink on the progress and cost changes on the Cassils-Bowmanton-Whitla project;
- A presentation by Burns and McDonnell (for AltaLink) on a Line Optimization – Structure Configuration study for the AltaLink Christina Lake Area Development;
- An AESO presentation on the Foothills Area Transmission Development – East Project, including benchmarking information;
- A TransCanada Keystone presentation on Hanna area projects compared to similar projects in other jurisdictions;
- An AESO presentation on the Christina Lake Area Transmission Development;
- An Enbridge Pipelines presentation on interconnection costs, schedule and other concerns;
- An AltaLink presentation on the EPC Competitive Procurement Process;
- An AltaLink presentation on the Hanna Nilrem Decision impact on costs;
- An AESO presentation on the Christina Lake Area Development and North Fort McMurray Transmission Development, including benchmarking information;
- A Center to Grand Forks 345 kV Transmission Project cost comparison to the Southern Alberta Transmission Reinforcement;
- An AESO presentation on Black Fly to McClelland (North Fort McMurray Transmission Development);
- An AESO presentation on their Draft Transmission Rate Impact projection;
- Monthly cost reports from AltaLink provided to the AESO and circulated to the TFCMC; and
- Benchmarking studies prepared by the AESO and presented to the TFCMC, including cost comparisons of engineering, overhead, materials and labour.

The Ratepayer Group, comprised of the Alberta Direct Connect Consumers Association, the Consumers' Coalition of Alberta and the Industrial Power Consumers Association of Alberta, filed a substantial amount of Direct Evidence and drew upon the work of the TFCMC throughout that evidence. Also, when responding to information requests, more than 5,800 pages of information was filed that originated from the work of the TFCMC.

Top 5 Transmission Priorities

At the request of Alberta Energy, the TFCMC created a Top 5 list of transmission priorities. This provincial government initiative seeks advice from leaders in the electricity sector as Alberta Energy recognizes the impact that rising transmission costs are having on consumers, and moves to address these concerns.

Since its inception, members of the TFCMC have been exploring ideas to minimize the cost of building the transmission grid while meeting the demand of a growing province for a reliable and robust electricity supply system.

Transmission cost information availability, management and oversight are changing with the provincial government announcements and the various initiatives underway at the AESO. The TFCMC is encouraged by these initiatives, and has five additional focus areas to recommend for consideration by the government, the AESO and TFOs, as progress is made with the Alberta transmission build.

The TFCMC's recommendations for improving transmission cost management are based on the following premises:

A. New Government Initiatives on Transmission Costs

While the majority of the recent government announcements focused on the retail market, there were several important changes with regards to transmission, including:

- Giving the AUC greater authority to scrutinize costs associated with new power lines;
- Requiring transmission companies to have the burden of proof to justify costs if challenged by consumers;

- Enabling the AUC to determine the best process to amortize paying for transmission lines over the long term; and
- Requesting a review of the adequacy of resources for oversight of transmission costs available to ratepayers through the AUC's Rule 22.

B. AESO Initiatives on Transmission Costs

In addition, the AESO has undertaken actions in key areas of cost accountability with its ongoing dialogue with the AUC on transmission cost management as well as its update of TFO cost reporting through the Rule 9.1 review initiative.

TFCMC Recommendations For Action On Transmission Costs

Above and beyond these government and AESO initiatives, the TFCMC views the following areas as priorities to complement Alberta Energy's efforts and as such, the TFCMC's recommendations are:

1. Cost Estimates

The need for transparency, consistency and accuracy in developing cost estimates for projects including:

a. Consistency in definitions for various cost categories;

b. The use of benchmarks for hard and soft costs;

c. Guidelines for the use of contingency estimates and the depletion of contingencies;

d. Ongoing reporting of variances for all cost categories; and

e. The use of earned value reporting.

2. Joint TFO Cost Reduction Practices

Consider introducing incentives for coordinated cost saving initiatives by all TFOs together, including the following:

a. Incentives for collaborative procurement strategies amongst the TFOs for bidding of goods and services. This would include AltaLink, ATCO Electric, ENMAX, EPCOR and other TFOs to coordinate the bidding of materials and the timing of construction so that vendors are not stressed to meet schedules; and

b. Incentives for a repository of shared resources to minimize duplication of maintenance services and replacement parts.

3. Incentive And Penalty Mechanisms

The need to develop appropriate accountability metrics for TFOs including:

a. Establish a baseline estimate (i.e. the Proposal to Provide Service or PPS) that captures the reasonable cost of developing the project.

b. Prepare a benchmark comparative at the time of submitting the PPS to contrast the cost differences. Any variances would require justification by the TFOs to the AESO;

c. For project risk areas:
   - Identify potential project risk areas at the outset and quantify their impacts on project costs and milestones for risk assessments;
   - Require full disclosure of the assumptions and methodology used to quantify the project risk areas;
   - Develop and identify project execution strategy and cost control strategies around each potential project risk area.

d. Consider establishing firm price construction costing with penalties and incentives:
   - Penalty: shifting of cost variance responsibility to the TFO – they pay any extra costs that are incurred outside the identified risk quantification bounds; and
   - Incentive: the TFO gets to retain a percentage portion of any unused project risk account that is identified and quantified as an incentive.

4. Project Prioritization

Ratepayers are concerned with the risk of transmission overbuild and underutilization. At the same time, ratepayers are cognizant of the requirement for transmission to be built in advance of need, to avoid creating investor risk and possibly discouraging new customers. Ratepayers are also concerned with the amount of construction resources necessary to complete the significant transmission build underway. Ratepayers generally understand that transmission system project in-service dates are driven through Needs Identification Document (NID) studies based on transmission planning criteria and requirements articulated in legislation. Importantly, transmission customer projects are driven by the customer's requested in-service date.

The AESO is required to ensure that there are adequate transmission facilities available so the system can operate in a safe, reliable and efficient manner and to promote a fair, efficient and openly competitive market for electricity. Advancing projects in stages, based on milestones can help to guide the orderly development of transmission facilities. An assessment of generation and load forecasts, system studies, and customer interests may provide the opportunity to determine the certainty of that need at each milestone.

It is reasonable to expect that changes will occur from time to time, resulting in a need to make adjustments to project schedules and planned in-service dates. These changes, due to load forecasts or generation additions/deletions, will impact the need for transmission projects. Likewise, in areas where congestion is increasing, in-service dates could be advanced. These are, in fact, a form of prioritizing projects.

Transmission projects take many years to develop from conceptual design to commissioning and priority changes are possible early in the life cycle. However, when projects reach the procurement and construction phases, adjusting in-service dates and re-prioritizing becomes harder and may not provide customers with any rate benefits. At present, there is little attention given to prioritizing amongst competing transmission projects. Further, approvals of projects are required to follow due process and therefore are difficult to be advanced, in spite of a situation where the need for the project has increased.

TFCMC members have shown an interest in developing more effective project prioritization given the need to better serve customers and generation while minimizing costs. Care must be taken not to increase costs through disruption during construction or pre-construction activities. Identifying the factors driving the need for projects such as customer service requests, relieving congestion, building in advance of need, and reliability can be established. Periodic reviews and adjustments to schedules are possible and could make more effective use of crews, material and equipment.

5. Competitive Bidding For All Major Transmission Projects

The TFCMC will continue to work with the government, the AESO and the TFOs to encourage progress in these five areas.

Appendix A: About The TFCMC

Origin And Composition Of The Transmission Facilities Cost Monitoring Committee

The Government of Alberta created the Transmission Facilities Cost Monitoring Committee (TFCMC) on July 31, 2010 through a Ministerial Order issued by the Honourable Ronald Liepert, then Minister of Energy, in order to make sure Albertans have the benefit of increased transparency on the cost of transmission projects.

According to the Ministerial Order, number 64/2010, the TFCMC can consist of up to 13 individuals as follows:

- the **Alberta Association of Municipal Districts and Counties** may appoint one member;
- the **Alberta Chambers of Commerce** may appoint one member;
- the **Alberta Direct Connect Consumers Association** may appoint one member;
- the **Alberta Federation of Rural Electrification Associations** may appoint one member;
- the **Alberta Urban Municipalities Association** may appoint one member;
- the **Consumers' Coalition of Alberta** may appoint one member;
- the **Canadian Federation of Independent Business** may appoint one member;
- the **Industrial Power Consumers Association of Alberta** may appoint one member;
- the I**ndependent Power Producers Society of Alberta** may appoint one member;
- the Minister may also appoint up to two ***independent members*** with technical, regulatory, transmission facility development or other experience that, in the opinion of the Minister, will benefit the Committee;
- the **Independent System Operator** ("Alberta Electric System Operator") shall appoint one member, and
- the **Office of the Utilities Consumer Advocate** shall appoint one member.

The TFCMC's Mandate

The TFCMC's mandate is to review records that relate to the cost, scope, schedule and variances of Alberta transmission facility projects forecast to cost in excess of $100 million. This may include more than one transmission facility, if it is a part of a contiguous transmission facility project. The Alberta Electric System Operator (AESO), a not-for-profit entity that is responsible for the safe, reliable and economic planning and operation of Alberta's transmission system (also known as the Alberta Interconnected Electric System) determines which transmission facilities are part of a transmission facility project.

In a letter dated January 12, 2011, the Minister of Energy clarified that the starting point for the TFCMC when reviewing cost variances is the estimate in place when a project is approved by an Order in Council for Critical Transmission Infrastructure (CTI) projects, or, the estimate in place when the Needs Identification Document (NID) is approved by the Alberta Utilities Commission (AUC). The TFCMC, therefore, does not review any of the projects from an initial prudence, need, technology choice or staging perspective.

The TFCMC cannot delay or slow the development of transmission facility projects.

In late June 2011, the Minister of Energy provided his support of a request from the TFCMC to explore and develop innovative approaches to cost recovery for new transmission facilities in Alberta. The TFCMC was asked to undertake this initiative on a priority basis, together with the Transmission Facility Owners (TFOs), the AESO and Alberta Energy. The findings of this initiative were submitted in April 2012 to the Assistant Deputy Minister, Electricity, Alternative Energy and Carbon Capture and Storage, for consideration and action.

The TFCMC's Members

The 11 organizations and two independents named in the Ministerial Order forming the TFCMC represent a cross-section of industry, consumer and business groups with ties to Alberta's electricity sector.

Organizations and independent members are listed alphabetically:

Alberta Association of Municipal Districts and Counties (AAMDC)

The AAMDC advocates on behalf of the province's 69 municipal districts and counties. The association assists its members in achieving strong, effective local government. Their representative on the TFCMC is **Dwight Oliver, a Past Director for AAMDC District 2.**

Alberta Chambers of Commerce (ACC)

The ACC is a federation of 126 Chambers of Commerce, which in turn represents more than 23,000 businesses. The ACC ensures its members' business interests are improved through the development and advocacy of policy to the provincial and federal governments. Their representative on the TFCMC is **Ken Kobly, ACC President & CEO.**

Alberta Direct Connect Consumers Association (ADC)

The ADC represents nine large industrial consumers who have facilities directly connected to the transmission system. The ADC members represent the key sectors of forestry, chemical and cement manufacturing. The aggregate electricity demand of the membership represents about 7% of the Alberta load. Their representative on the TFCMC is **Colette Chekerda, ADC Executive Director.**

Alberta Electric System Operator (AESO)

The AESO is a not-for-profit entity, is independent of any industry affiliations, and owns no transmission or market assets. It is responsible for the safe, reliable and economic planning and operation of the Alberta Interconnected Electric System. Their representative on the TFCMC is **Rob Senko, AESO's Director, Transmission Cost Monitoring.**

Alberta Federation of Rural Electrification Associations (AFREA)

The AFREA is a not-for-profit cooperative association representing member Rural Electrification Associations (REAs) who provide rural power services throughout Alberta. It is committed to promoting the economic welfare and value of its cooperative members by providing strong representation to government and industry stakeholders with one voice. Their representative on the TFCMC is **Dan Astner, AFREA 2nd Vice President.**

Alberta Urban Municipalities Association (AUMA)

The AUMA represents Alberta's 272 urban municipalities including cities, towns, villages, summer villages, and specialized municipalities. AUMA represents and advocates the interests of its members to the provincial and federal governments. Their representative on the TFCMC is **Andre Chabot, AUMA Director, Cities Over 500,000.**

Canadian Federation of Independent Business (CFIB)

The CFIB is an association representing small- and medium-sized businesses across Canada that takes direction from its more than 109,000 members, providing independent businesses a voice at all levels of government. Their representative on the TFCMC is **Richard Truscott, the CFIB's Director of Provincial Affairs, Alberta and Northwest Territories.**

Consumers' Coalition of Alberta (CCA)

The CCA is comprised of the Consumers' Association of Canada (Alberta Division) and the Alberta Council on Aging. The CCA, a coalition of two public interest groups, participates as a collective in public utility hearings to ensure rates, tolls and charges for residential customers are just and reasonable. Their representative on the TFCMC is **Azad Merani, CCA Consultant.**

Independent Power Producers Society of Alberta (IPPSA)

The IPPSA represents Alberta's power producers. IPPSA is a forum for dialogue among Alberta's power producers and a proponent of competition in Alberta's electricity market. Their representative on the TFCMC is **Evan Bahry, IPPSA's Executive Director.**

Industrial Power Consumers Association of Alberta (IPCAA)

The IPCAA is an organization representing large industrial customers, including such key sectors as oil & gas, forest products, petrochemicals and steel. Its mission is to take a leadership role in achieving a fair, open and efficient marketplace for electricity sales and service in Alberta. Their representative on the TFCMC is **Vittoria Bellissimo, IPCAA's Executive Director.**

Office of the Utilities Consumer Advocate (UCA)

The UCA is the voice of small consumers in Alberta's electricity and gas markets. The UCA advocates on behalf of Alberta's low-volume or smaller users of electricity and natural gas, those being residential, small business and farm utilities consumers, and helps them to make informed choices. As well, the UCA represents and protects their interests by participating in utility hearings and inquiries. The UCA representative on the TFCMC is **Wayne Taylor.**

TFCMC Independent Members:

Allen Snyder, of Winnipeg, brings a background and a wealth of knowledge in the electricity sector to the TFCMC. He held several key executive positions with Manitoba Hydro including Vice President of Transmission & Distribution, Power Supply and Corporate Services over the past 20 years. He also established a very successful Manitoba Hydro International with sales of software and services to more than 60 countries worldwide. Currently, he is Vice President of Energy Services for Wood West & Associates.

Henry Yip is a senior business executive with more than 30 years of broad business experience in Canada and the USA. He has held senior executive positions in large corporations and entrepreneurial business enterprises, and has advised governments in the area of city planning, strategy development, technology commercialization, international business collaboration and grant application approval. His current business interests include Executive Chair at Nirix Technology, and President of C'andcee Development. He is a past Chair of the Board at Edmonton Economic Development Corporation.

The Operations Of The TFCMC

The TFCMC meets monthly, alternating between the cities of Calgary and Edmonton. The primary purpose of the meetings is to review reports provided by AESO on the cost status of transmission projects that are within the Committee's purview. The first meeting took place in September 2010.

The TFCMC reviews the reasons for cost variances of all these projects. When appropriate, it retains external experts to prepare information requests (IRs) to the AESO and the Transmission Facility Owners (TFOs) for further illumination on the reasons for the variances.

Each calendar year, the TFCMC is required to provide at least two reports to the member organizations represented on the committee as well as at least one report to the Ministers of Energy and Service Alberta. The reports summarize the records it reviews and the status of the transmission facility projects.

The TFCMC strives for consensus in its decision-making process but a simple majority of those present at a meeting is the minimum threshold for agreement.

Independent member Henry Yip chairs the TFCMC. The TFCMC secretary is Lorena Munteanu, engaged through the Office of the Utilities Consumers Advocate (UCA).

The TFCMC will also form subcommittees from time to time to facilitate the workings of the Committee. There were two active subcommittees in operation during the period of this report:

- A standing subcommittee to monitor and approve expenditures incurred by the members of the TFCMC during the course of discharging its mandate. Evan Bahry chairs this subcommittee.
- The Information Request (IR) subcommittee. This group develops appropriate questions for the TFOs in order to get clarifications on information previously provided by the TFOs on the cost status of the various transmission projects. This subcommittee is supported by external expert advisors when required. Allen Snyder chairs this subcommittee.

Appendix B: The Transmission Projects At A Glance

As of this edition of the TFCMC semi-annual report, Facility Applications for each project are now sorted by the forecast or actual in-service date (ISD). In addition, the new Facility Application number column in each project's initial chart is provided as an easy reference to its location on that project's accompanying map.

1. **ALBERTA INDUSTRIAL HEARTLAND BULK TRANSMISSION DEVELOPMENT (HBTD);** PROJECT 629 – Construction of a double-circuit 500 kV transmission line, which will connect the Heartland region (northeast of Fort Saskatchewan) to existing 500 kV transmission facilities in the Edmonton area.

THE PROJECT: The Alberta Industrial Heartland Bulk Transmission Development calls for the construction of a double-circuit 500 kV transmission line, which will connect the Heartland region (northeast of Fort Saskatchewan) to existing 500 kV transmission facilities on the south side of Edmonton. This upgrade is to respond to the growing demand for power in this region. The Heartland project will form the foundation of electricity supply into northeast Alberta, will support oilsands development, local demand in the Heartland area, and strengthen the entire provincial network.

THE COMPONENTS: A 500 kV AC double-circuit transmission line connecting the 500 kV system on the south side of Edmonton to the new Heartland 12S Substation (the 500 kV Line Project); a 240 kV/500 kV Heartland 12S Substation, located approximately 15 kilometres northeast of Edmonton in the Gibbons-Redwater region (the Heartland 12S Substation Project), and a 240 kV double-circuit transmission line connecting the existing 240 kV system in the area to the new Heartland 12S Substation (the 240 kV Line Project). The Industrial Heartland region includes parts of Sturgeon, Strathcona and Lamont counties.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
1	500 kV 1206L/1212L	Sixty-five kilometres of 500 kV double-circuit line from Ellerslie to Heartland substation	December 7, 2013
2	Heartland 12S Ellerslie 89S and 1054L/1061L	Heartland 500 kV substation and 22 kilometres of 240 kV lines to tie in the existing system	December 7, 2013

THE TRANSMISSION FACILITY OWNER(S): AltaLink Management Ltd. and EPCOR Distribution & Transmission Inc.

PROJECT COST:

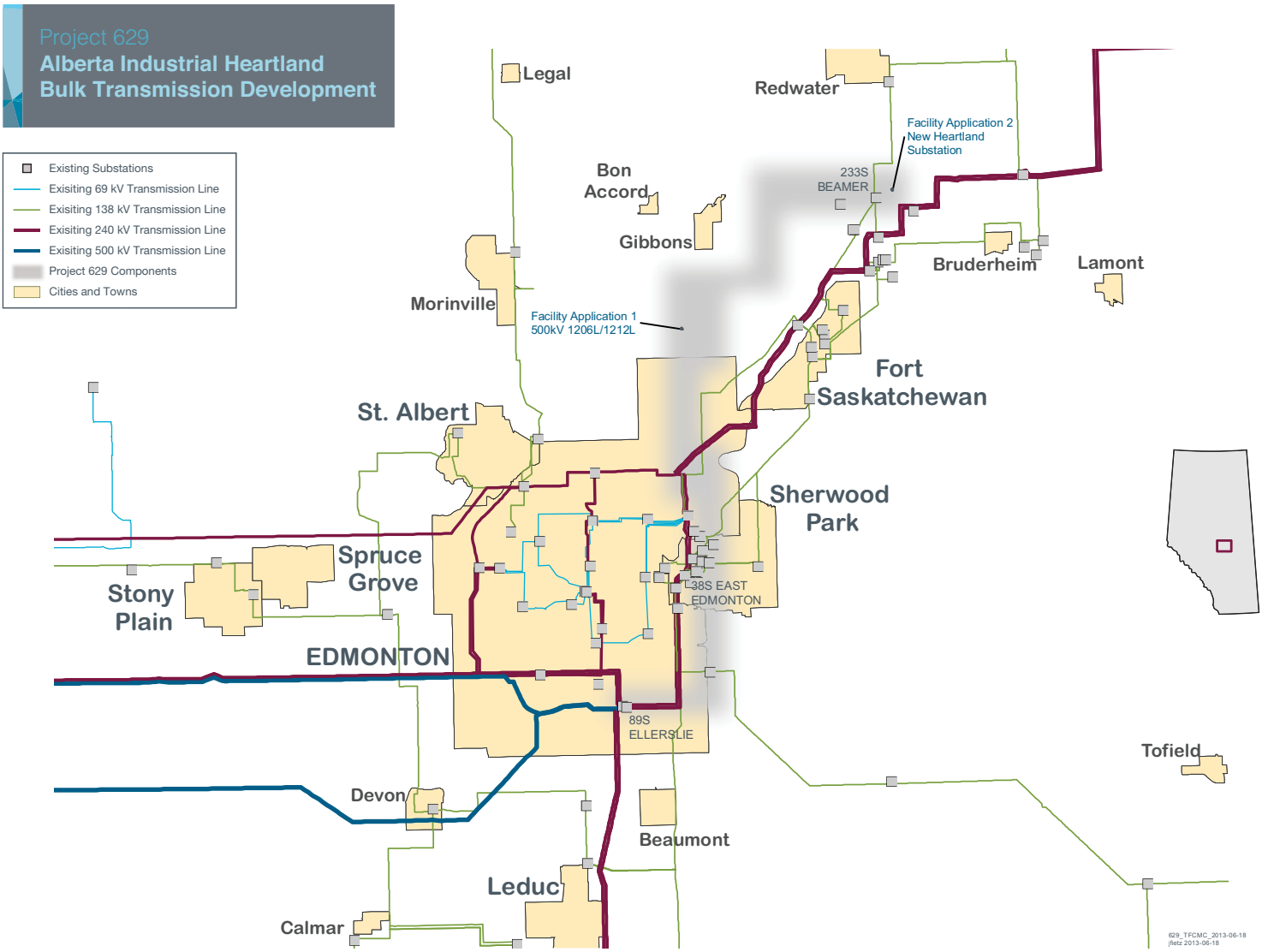
TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Alberta Industrial Heartland Bulk Transmission Development	$537 Million (2011$ without escalation)	$589 Million (ISD$ with escalation)[12]

CURRENT STATUS: The Alberta Utilities Commission (AUC) approved the Heartland Transmission Project in November 2011. The approved east route for the line skirts the city of Edmonton to the south and east, and travels through an existing Transportation/Utility Corridor (TUC) for roughly half the line's length.

On April 25, 2013, the Alberta Electric System Operator (AESO) approved an AltaLink change proposal to move the in-service date (ISD) from September 30, 2013 to December 7, 2013. The schedule impact is a result of AltaLink redistributing some of the line construction work to a different contractor. The previously assigned contractor was unable to efficiently implement schedule recovery or improve productivity. AltaLink advised that there is no cost impact. Construction for this project is ongoing.

The AESO is also currently processing another change order proposal, a $520,000 cost increase, from AltaLink. The increase in cost is attributed to the rerouting of the telecommunication link to the Lamoureux station, instead of the Bannerman station, as a result of the Bannerman Project ISD delay.

12 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.


Project 629
Alberta Industrial Heartland
Bulk Transmission Development
Existing Substations
Exisiting 69 kV Transmission Line
Exisiting 138 kV Transmission Line
Exisiting 240 kV Transmission Line
Exisiting 500 kV Transmission Line
Project 629 Components
Cities and Towns
Legal
Redwater
Facility Application 2
New Heartland
Substation
233S
BEAMER
Bon
Accord
Gibbons
Bruderheim
Lamont
Morinville
Facility Application 1
500kV 1206L/1212L
Fort
Saskatchewan
St. Albert
Sherwood
Park
Spruce
Grove
Stony
Plain
38S EAST
EDMONTON
EDMONTON
89S
ELLERSLIE
Tofield
Devon
Beaumont
Leduc
Calmar
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2. **CENTRAL EAST AREA TRANSMISSION DEVELOPMENT (CETD);** PROJECT 811 – Transmission development in Wainwright, Lloydminster, Provost, Vegreville and Cold Lake.

THE PROJECT: The Central East project serves the dual purpose of meeting the growing demand for electricity from oilsands production, and the connection of more than 500 MW of proposed gas-fired generation and wind farms in the eastern region of Central Alberta. Aging infrastructure, overloads and low voltages in the large area east of Edmonton, from Cold Lake in the Northeast region to Hardisty, compels the substantial rebuild of the 138 kV and 144 kV systems, and the decommissioning of aging 69 kV and 72 kV lines.

THE COMPONENTS: There are two stages of transmission development for the project.

The major components for Stage 1 of the project are: a new 144/25 kV Watt Lake substation; the conversation of three existing 72/25 kV substations to 144/25 kV; a new 240 kV switching station in the Cold Lake Area, energized at 144 kV initially; a new double-circuit 144 kV line from the existing Mahihkan 837S to the new switching station; a new 240 kV double-circuit line (one side strung) from the new switching station to the existing Bonnyville 700S and initially energized at 144 kV; a new single-circuit line from the existing Wainwright 51S to the existing Edgerton 899S; a new 144 kV capacitor bank at Vermilion 710S; the addition of a 138/72 kV transformer at the existing Wainwright 51S; rebuild six existing 138 kV or 144 kV lines to increase capacity, and restore ratings of existing 144 kV lines by mitigating line clearances and discontinuing the use of existing 72 kV equipment at existing substations or lines.

The major components for Stage 2 of the project are: rebuild one existing 144 kV line to increase capacity and a new 240 kV double-circuit line (one side strung) from the new switching station at Bourque to the existing Marguerite Lake 826S.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
8	7L749 Replacement	Rebuild existing 749L/7L749 from Metiskow 648S to Lloydminster 716S	Cancelled
10	Provost & Wainwright Area Upgrades	New single-circuit line from existing Wainwright 51S to existing Edgerton 899S, addition of a 138/72 kV transformer at existing Wainwright 51S; rebuild three existing 138 kV lines to increase capacity	Cancelled
5	Vermilion 710S Substation Upgrade	Addition of 144 kV–25 VAr capacitor bank; addition of a new 144/25 kV transformer; relocation of existing 144/72/25 kV transformer to Heisler 764S; discontinue use of existing 72 kV equipment at Vermilion 710S and discontinue use of 6L06 (Kitscoty 705S to Vermilion 710S)	June 1, 2013
6	Heisler Area Upgrades	Convert Heisler 764S from 72 kV to 144 kV; addition of 144/72/25 kV transformer from Vermilion 710S; new 144 kV single-circuit line from Heisler 764S to existing 7L701 and discontinue use of existing 6L05	June 1, 2013
9	Line Clearance Mitigations	Restore ratings of existing 144 kV lines by mitigating line clearances	August 1, 2013

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
3	St. Paul Area Upgrades – Watt Lake, 7LA92	New 144/25 kV Watt Lake and new 144 kV line from Watt Lake to existing 7L92	September 1, 2013
1	Cold Lake Area Reinforcements (Except Bonnyville to Bourque)	New 144 kV switching station (Bourque 970S), new 144 kV double-circuit line from existing Mahihkan 837S to new 144 kV switching station and rebuild existing 144 kV lines (7L87, 7L74 and 7L83)	October 1, 2013
7	Kitscoty Area Upgrades	Convert Kitscoty 705S from 72 kV to 144 kV; addition of 144/72/25 kV transformer from Heisler 764S, new 144 kV double-circuit line from Kitscoty 705S to existing 7L14	December 1, 2013
2	Cold Lake Area Reinforcements – Bonnyville	New 240 kV double-circuit line (one side strung) from new 144 kV switching station to existing Bonnyville 700S, initially energized at 144 kV	July 1, 2014
4	St. Paul Area Upgrades – St. Paul 707S, Whitby Lake 819S & 7L139/7L70	Rebuild St. Paul 707S from 72/25 kV to 144/25 kV substation; new 144 kV double-circuit line from St. Paul 707S to existing 7L70 creating an in/out configuration	August 1, 2014

THE TRANSMISSION FACILITY OWNER(S): AltaLink and ATCO Electric Ltd.

PROJECT COST:

TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Central East Area Transmission Development	$352 Million (2011$ without escalation)	$282 Million (ISD$ with escalation for Stage 1)[13]

CURRENT STATUS: The AUC approved the Central East Transmission Development Needs Identification Document (NID) in February 2011. The project will be developed in two stages.

For Stage 1, ATCO plans to file a total of 13 Facility Applications. To date, ATCO has filed 11 Facility Applications and received AUC approval for the nine listed below.

- 7L587;
- 144 kV developments in the Cold Lake area;
- Heisler substation;
- Kitscoty substation;
- Whitby Lake substation;
- Watt Lake substation;
- 7L701 clearance mitigation;

13 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.

- 7L53 and 7L117 clearance mitigation; and
- Vermillion upgrades.

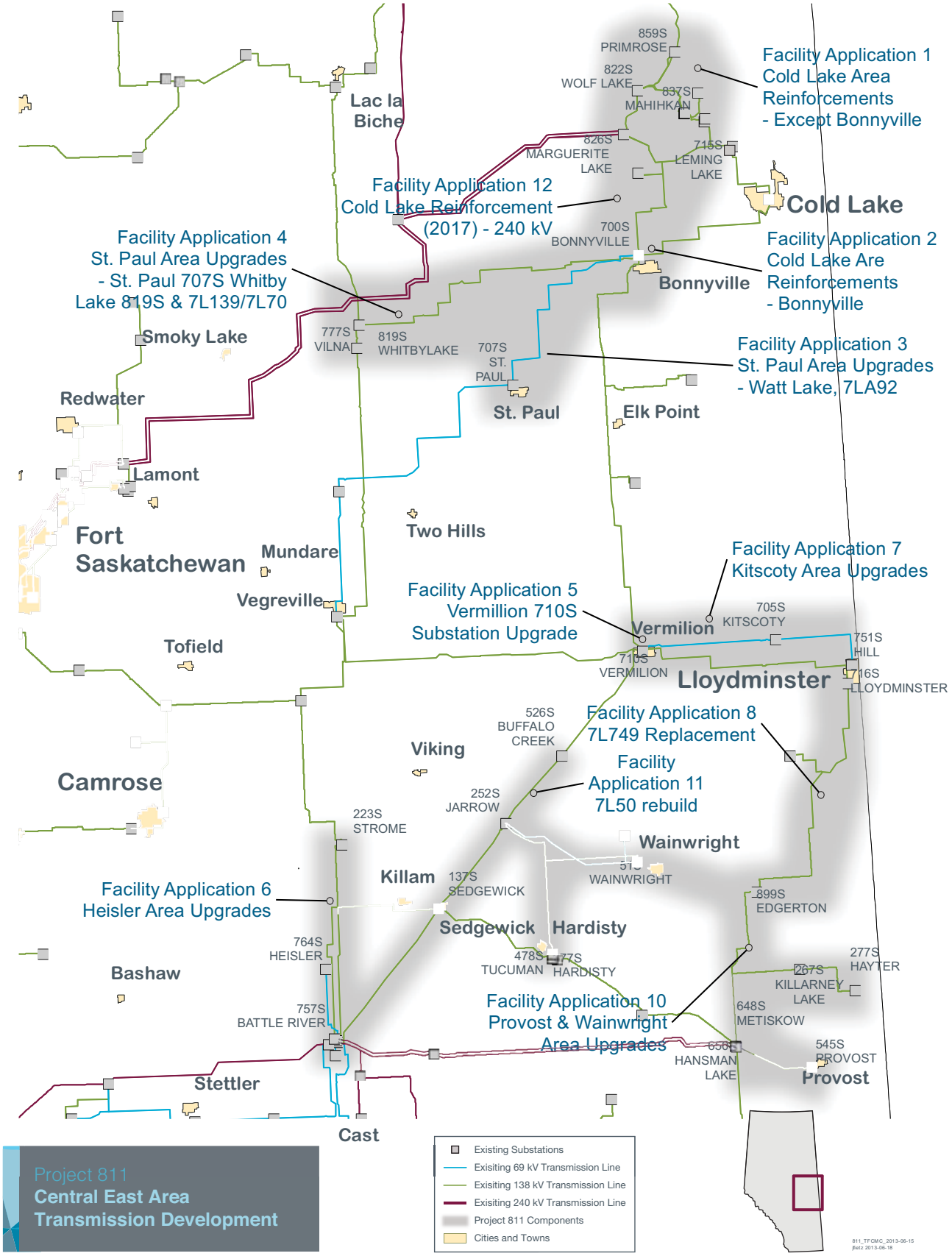
ATCO is moving through the construction phase of these facilities.

One Facility Application (Bonnyville substation reconfiguration and 7/9L146 line from Bonnyville to Bourque) was filed with the AUC on April 27, 2012, and it is expected that ATCO will file the remaining Facility Applications in the third quarter of 2013.

Further, the AESO is carrying out the Central Region System Study and has determined that the following facilities, as approved as part of the CETD NID, are no longer required:

- Clearance mitigation of line 7L14;
- The need to rebuild 7L50 line;
- The need to rebuild 7L749; and
- The need to upgrade the system in the Wainwright area.

AltaLink shares the scope of work with ATCO on 7L50 and 7L749. The system upgrade in the Wainwright area is in AltaLink's service area — since the AESO decided to put these facilities on hold, the AESO requested both Transmission Facility Owners (TFOs) to stop any activity related to these developments.


Facility Application 1
Cold Lake Area
Reinforcements
- Except Bonnyville
Facility Application 12
Cold Lake Reinforcement
(2017) - 240 kV
Facility Application 4
St. Paul Area Upgrades
- St. Paul 707S Whitby
Lake 819S & 7L139/7L70
Facility Application 2
Cold Lake Are
Reinforcements
- Bonnyville
Facility Application 3
St. Paul Area Upgrades
- Watt Lake, 7LA92
Facility Application 7
Kitscoty Area Upgrades
Facility Application 5
Vermillion 710S
Substation Upgrade
Facility Application 8
7L749 Replacement
Facility
Application 11
7L50 rebuild
Facility Application 6
Heisler Area Upgrades
Facility Application 10
Provost & Wainwright
Area Upgrades
859S
PRIMROSE
822S
WOLF LAKE
837S
MAHIHKAN
826S
MARGUERITE
LAKE
715S
LEMING
LAKE
700S
BONNYVILLE
777S
VILNA
819S
WHITBYLAKE
707S
ST.
PAUL
705S
KITSCOTY
751S
HILL
716S
LLOYDMINSTER
710S
VERMILION
526S
BUFFALO
CREEK
252S
JARROW
223S
STROME
137S
SEDGEWICK
WAINWRIGHT
899S
EDGERTON
764S
HEISLER
478S
TUCUMAN
77S
HARDISTY
267S
KILLARNEY
LAKE
277S
HAYTER
757S
BATTLE RIVER
648S
METISKOW
656S
HANSMAN
LAKE
545S
PROVOST
Lac la
Biche
Cold Lake
Bonnyville
Smoky Lake
Redwater
Lamont
Fort
Saskatchewan
Mundare
Vegreville
Tofield
Two Hills
St. Paul
Elk Point
Vermilion
Lloydminster
Viking
Camrose
Wainwright
Killam
Sedgewick
Hardisty
Bashaw
Stettler
Cast
Provost
Existing Substations
Exisiting 69 kV Transmission Line
Exisiting 138 kV Transmission Line
Exisiting 240 kV Transmission Line
Project 811 Components
Cities and Towns
Project 811
Central East Area
Transmission Development

3. **CHRISTINA LAKE AREA TRANSMISSION DEVELOPMENT (CHL);** PROJECT 1101 – Reinforcing transmission facilities for oilsands developments and enhanced reliability to existing oilsands operations.

THE PROJECT[14]: Significant oilsands development, including Steam Assisted Gravity Drainage (SAGD) and pump station facilities, in the Christina Lake area, located approximately 140 km south of the City of Fort McMurray and 100 km to the northeast of Lac La Biche, is driving this development. This project would ensure the area's transmission network is reinforced to support current load and to ensure adequate capacity to connect customers in the near-and-long term. The Christina Lake plan will reinforce the existing 138 kV network in the southern part of the new Ipiatik 240/138 kV substation, and will reinforce the 240 kV network in the north of the Christina Lake area by closing the loop through the existing Heart Lake A898S substation.

THE COMPONENTS: The AESO has proposed a transmission development plan for the area that includes developing a 240 kV looped transmission system, including three new 240 kV substations; approximately 100 km to 150 km of new 240 kV transmission line, and modifications and expansion of existing transmission substations in the area. The project consists of a new 240 kV switching station and a new 240/138 kV substation.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
1	Black Spruce substation and 240 kV lines	Black Spruce substation and interconnecting 240 kV lines	July 2013
2	Pike substation and 240 kV lines	Pike substation and interconnecting 240 kV lines to Black Spruce	June 2014
3	Pike to Ipiatik to Heart Lake and 240 kV lines and modifications to Christina Lake 723S	New Ipiatik substation, new 240 kV line from Pike to Ipiatik to Heart Lake substation and modifications to Christina Lake 723S	June –September 2015
4	Heart Lake expansion	Expand Heart Lake sub for the termination of 9L930 in/out and the new 240 kV line to Ipiatik	September 2015

THE TRANSMISSION FACILITY OWNER(S): AltaLink and ATCO.

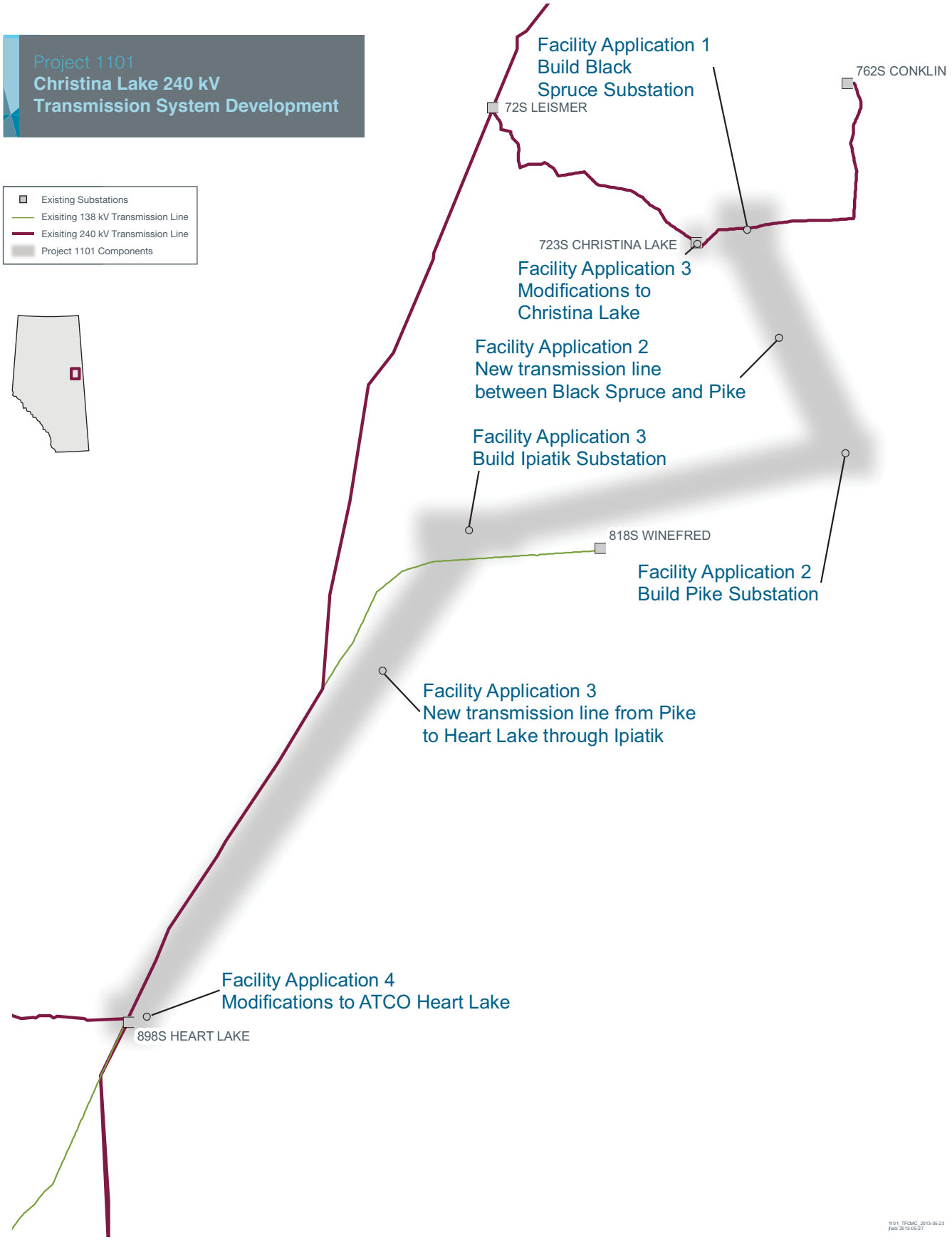
PROJECT COST:

TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Christina Lake Area Transmission Development	$358 million (2011$ without escalation)	$393 million (ISD$ with escalation)[15]

CURRENT STATUS: The NID was approved by the AUC on April 24, 2012. The Black Spruce Facility Application was filed on July 23, 2012. Permit & License (P&L) was received December 24, 2012. AltaLink filed the Facility Application for the Pike development on Jan 18, 2013, and the Facility Application for the Ipiatik development on March 28, 2013. ATCO has begun siting and routing work including preparing Proposal to Provide Service (PPS) estimates for the Heart Lake substation additions and plans to file the Facility Application in the second quarter of 2013.

14 The Christina Lake Area 240 kV Transmission Development and the Heart Lake expansion project identified in the AESO's Long-term Transmission Plan (filed June 2012) were combined into one NID.

15 The project cost is based upon the Needs Identification Document (NID) estimates (±30%) used in the NID dated October 2011.


Project 1101
Christina Lake 240 kV
Transmission System Development
Existing Substations
Exisiting 138 kV Transmission Line
Exisiting 240 kV Transmission Line
Project 1101 Components
Facility Application 1
Build Black
Spruce Substation
762S CONKLIN
72S LEISMER
723S CHRISTINA LAKE
Facility Application 3
Modifications to
Christina Lake
Facility Application 2
New transmission line
between Black Spruce and Pike
Facility Application 3
Build Ipiatik Substation
818S WINEFRED
Facility Application 2
Build Pike Substation
Facility Application 3
New transmission line from Pike
to Heart Lake through Ipiatik
Facility Application 4
Modifications to ATCO Heart Lake
898S HEART LAKE

4. **EAST CALGARY 240 KV AND 138 KV TRANSMISSION SYSTEM UPGRADES AND THE SHEPARD ENERGY CENTRE CONNECTION (ECTP);** PROJECT 719 – To serve growing demand for electricity in the Calgary and High River planning areas.

THE PROJECT: The East Calgary Transmission Project and the ENMAX Shepard Energy Centre Connection is required to serve growing demand for electricity in the Calgary and High River planning areas, enable future generation facilities to reliably connect to the system, and maintain system reliability. The project is combined with the ENMAX Shepard Energy Centre Connection project to connect the new 850 MW combined cycle generation facility via a new substation, to be called ENMAX No. 25, to the existing transmission system.

THE COMPONENTS: Modifications to existing East Calgary 5S and ENMAX No. 2 substations (including the addition of one 240/138 kV – 240/320/400 MVA transformer); a new 138 kV transmission line between ENMAX No. 23 and ENMAX No. 2; a new 138 kV transmission line between Janet 74S and ENMAX No. 23; modifications to the existing 240 kV double-circuit towers (to maintain the connection between Janet 74S and East Calgary 5S); removal of line terminations at East Calgary 5S and Janet 74S; new 240 kV double-circuit 240 kV transmission line (985L/1003L) from Janet 74S to ENMAX No. 25; addition of a 240 kV switching station (ENMAX No. 25) for connection to the transmission system and Shepard Energy Centre; addition of a second 240/138 kV – 240/320/400 MVA transformer at East Calgary 5S.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
2	East Calgary 240 kV and 138 kV transmission system upgrades and Shepard Energy Centre Connection (ENMAX Facility Application)	Modifications to existing ENMAX No. 2 and No. 23 substations, addition of new ENMAX No. 25 substation	January 2015
1	East Calgary 240 kV and 138 kV transmission system upgrades and Shepard Energy Centre Connection (AltaLink Facility Application)	Rebuild East Calgary 5S substation; upgrade AltaLink-owned infrastructure from structure 26 to Janet 74S; build D/C 240 kV transmission line between Janet 74S and ENMAX No. 25 substations, replace existing transformer at East Calgary 5S	January 2015

THE TRANSMISSION FACILITY OWNER(S): ENMAX Power Corp. and AltaLink.

PROJECT COST:

TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
East Calgary 240 kV and 138 kV Transmission System Upgrade and Shepard Energy Centre Connection	*$711 Million[16] (2011$ without escalation) *entire FATD plan	*$132 Million[17] (includes escalation and AFUDC) *ECTP and Shepard Energy Centre PPS only

CURRENT STATUS: The AESO filed the NID with the AUC on May 10, 2011. Subsequently, ENMAX and AltaLink filed Facility Applications with the AUC on June 10, 2011, and June 27, 2011, respectively. The AUC approved the development and issued P&L on November 1, 2012.

The facilities are currently under construction. The Shepard Energy Centre interconnection is planned to be in service in September 2013. The remaining facilities for the transmission system upgrade are scheduled to be completed by January 2015.

16 The AESO's Long-Term Transmission Plan identified the need for the Foothills Area Transmission Development. The East Calgary 240 kV and 138 kV transmission system upgrades is one of four components of the overall Foothills Area Transmission Development. The four components of the Foothills Area Transmission Development are:

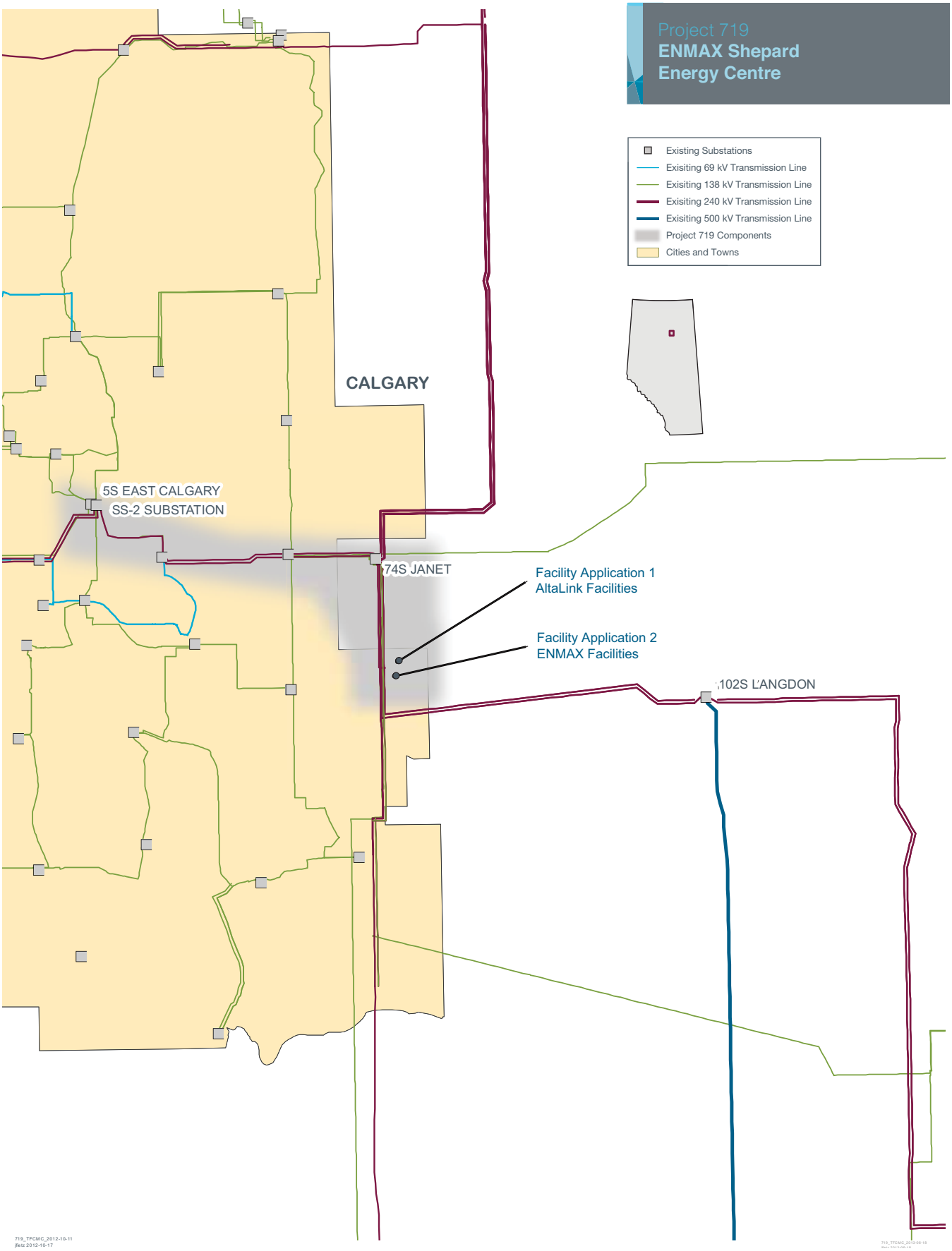
a. East Calgary 240 kV and 138 kV transmission system upgrades and Shepard Energy Centre Connection;

b. Foothills Area Transmission Development – East Region;

c. Third 138 kV circuit from ENMAX No. 65 to existing ENMAX No. 54 and 41; and

d. Foothills Area Transmission Development - West Region.

17 This is the estimated cost for the system related components of the East Calgary 240 kV and 138 kV transmission system upgrades and Shepard Energy Centre Connection based upon the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.


Project 719
ENMAX Shepard
Energy Centre
Existing Substations
Exisiting 69 kV Transmission Line
Exisiting 138 kV Transmission Line
Exisiting 240 kV Transmission Line
Exisiting 500 kV Transmission Line
Project 719 Components
Cities and Towns
CALGARY
5S EAST CALGARY
SS-2 SUBSTATION
74S JANET
Facility Application 1
AltaLink Facilities
Facility Application 2
ENMAX Facilities
102S L'ANGDON

5. **EDMONTON REGION 240 KV LINE UPGRADES (ERLU)**; PROJECT 786 – Upgrading 240 kV lines in the Edmonton area; add one 240 kV phase shifter at Dover substation.

THE PROJECT: More than 4,000 MW of baseload generation that serves as the main source of electricity for the majority of the province is situated near Wabamun Lake in the Edmonton region. This generation supports central and south Alberta loads, northwest region loads, Edmonton area loads and major industrial loads located in the Fort Saskatchewan area. There are major thermal overloads of transmission facilities throughout the Edmonton region. The 138 kV transmission paths from Wabamun to North Calder and East Edmonton to Nisku, and from East Edmonton to the Fort Saskatchewan area are weak during peak load conditions, and voltage violations occur in those two areas due to weak system support.

THE COMPONENTS: The 240 kV transmission system developments in the area include a rebuild of some sections of the existing transmission line, an increase in capacity of the lines by replacing conductors, the reconfiguration of the system, building new lines, and the installation of a special protection scheme for multiple contingencies to ensure system reliability in the area. Additionally, a 240 kV phase shifter transformer will be installed at Livock 939S in the Fort McMurray area.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
5	AltaLink 908L, 909L Restring	Restring four km of 908L and 909L outside Sundance 310P substation (first four km of the lines); 908L is renumbered to 1045L	March 2011
6	EPCOR Jasper, Petrolia	Upgrade bus work and protections	June 2011
6	EPCOR 1044EL, 1045EL	Restring approximately 24 km of existing 904L at Jasper 805S – in/out line section; renumber EPCOR's portion of the line to 1044EL (going to Petrolia 816S) and 1045EL (going to Sundance 310P)	October 2011
4	AltaLink 902L	Restring eight km of 902L at each line end; Wabamun 19S and Sundance 310P substations	April 2013
7	ATCO Phase Shifter	Add 600 MVA phase shifting transformer at Livock 939S	August 2013
1, 2 3, 8	AltaLink Rebuild 240 kV 904L (1043L) TransAlta 902L, 1043L Reterminate 909L at Sundance	Delegate the work to AltaLink for re-termination of the existing 240 kV 909L at Sundance 310P (Ellerslie 89S to Sundance 310P); rebuild approximately 50 km of the existing 240 kV line 904L between Jackfish Lake west of Edmonton and Petrolia 816S; salvage the existing 240 kV structures, conductor and hardware; build a new section of approximately 12 km of 240 kV line utilizing double-circuit structures with one side strung to connect Keephills 320P substation to the rebuild of 904L – renumbered to 1043L (Keephills 320P to Petrolia 816S)	March 2014

TRANSMISSION FACILITY OWNER(S): AltaLink, EDTI and ATCO.

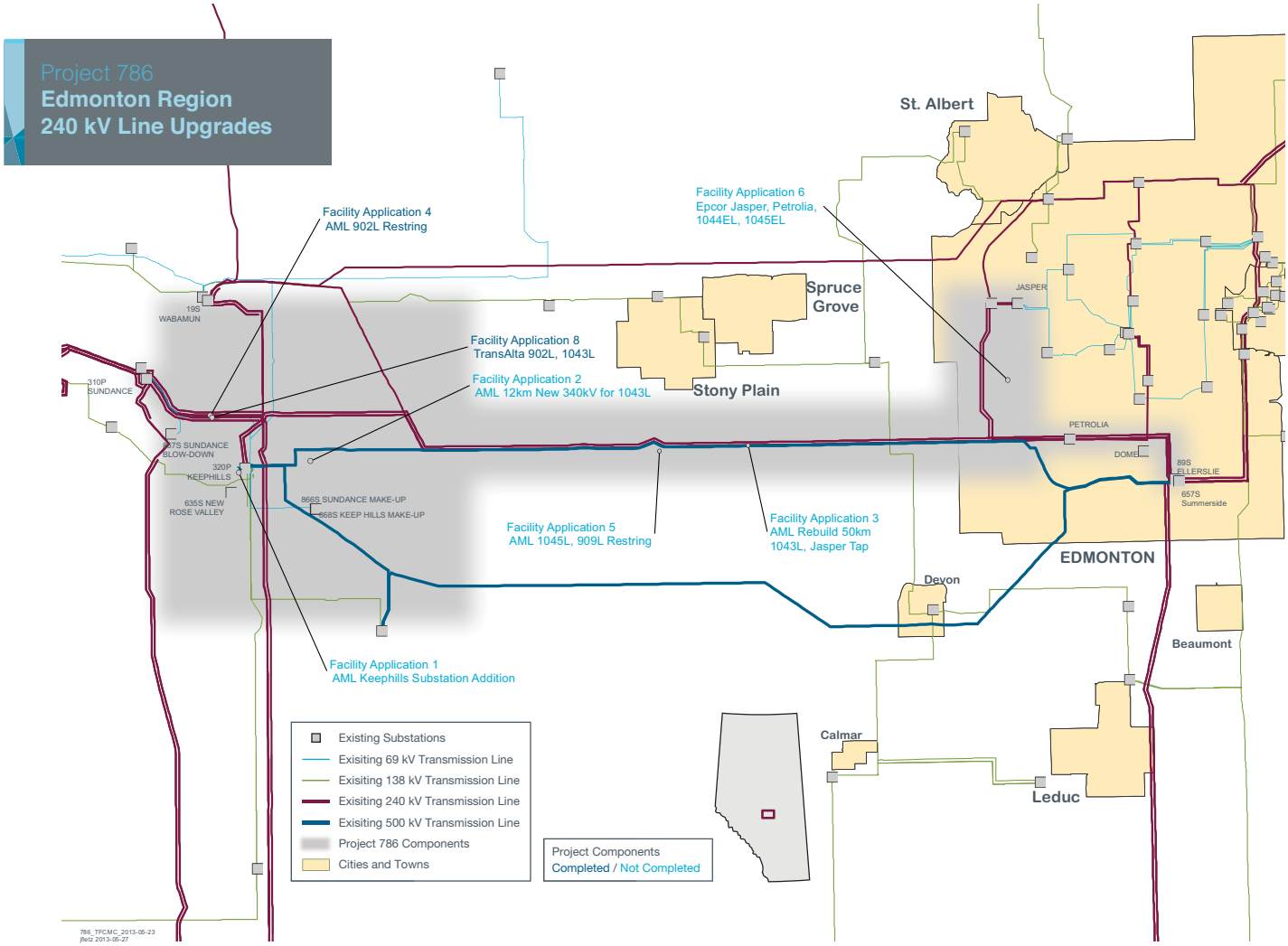
PROJECT COST:

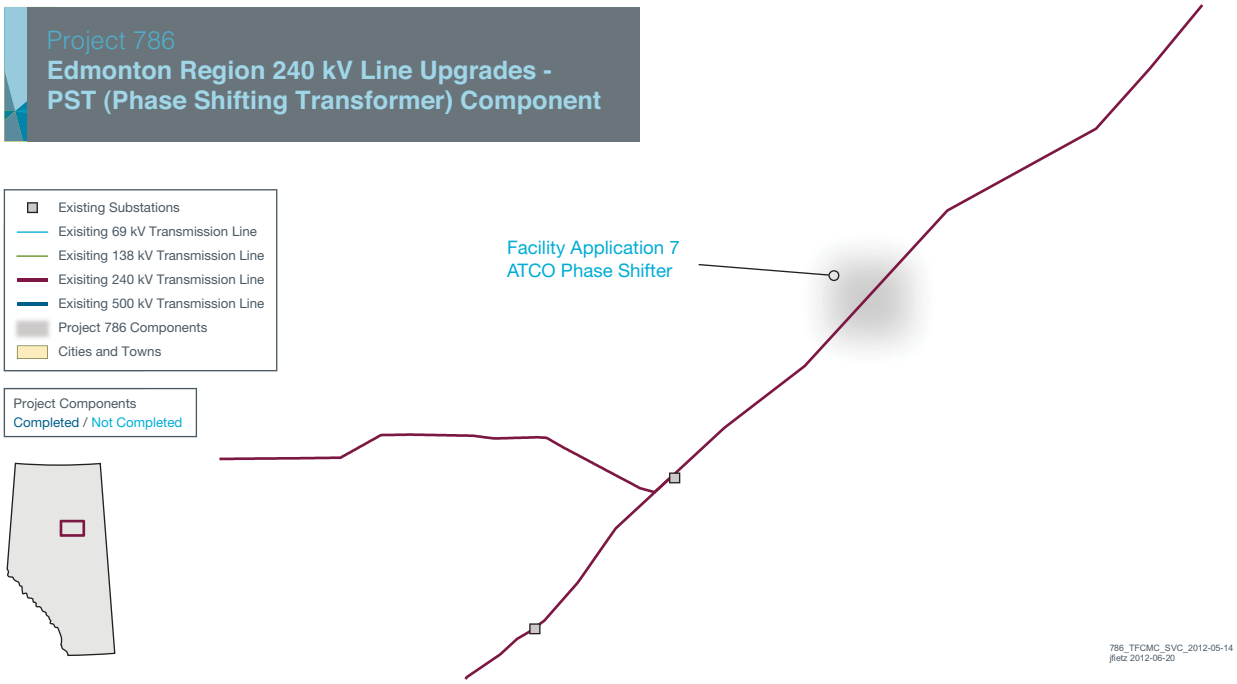
TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Edmonton Region 240 kV Line Upgrades	$153 Million (2011$ without escalation)	$174 Million (ISD$ with escalation)[18]

CURRENT STATUS: AltaLink received P&L for the 904L rebuild (renamed to 1043L) on September 30, 2011, and plans to complete the work in early 2014. Construction required to complete a small portion of the 1043L transmission line has been delayed due to land access issues. An ISD for the 1043L transmission line and re-termination of 909L cannot be determined at this time, but stakeholders will be advised of next steps once new information is available. The ISD of the phase shifter at Livock has also been delayed from March 2013 to August 2013.

902L Rebuild: The Facilities Application for the 902L restring was submitted to the AUC in early August 2011 and the project was completed on April 15, 2013.

18 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.


Project 786
Edmonton Region
240 kV Line Upgrades
St. Albert
Facility Application 6
Epcor Jasper, Petrolia,
1044EL, 1045EL
Facility Application 4
AML 902L Restring
Spruce
Grove
JASPER
19S
WABAMUN
Facility Application 8
TransAlta 902L, 1043L
Facility Application 2
AML 12km New 340kV for 1043L
Stony Plain
310P
SUNDANCE
PETROLIA
DOME
89S
ELLERSLIE
657S
Summerside
320P
KEEPHILLS
635S NEW
ROSE VALLEY
866S SUNDANCE MAKE-UP
668S KEEP HILLS MAKE-UP
Facility Application 5
AML 1045L, 909L Restring
Facility Application 3
AML Rebuild 50km
1043L, Jasper Tap
EDMONTON
Devon
Beaumont
Facility Application 1
AML Keephills Substation Addition
Existing Substations
Exisiting 69 kV Transmission Line
Exisiting 138 kV Transmission Line
Exisiting 240 kV Transmission Line
Exisiting 500 kV Transmission Line
Project 786 Components
Cities and Towns
Project Components
Completed / Not Completed
Calmar
Leduc
786_TFCMC_2013-05-23
jfletz 2013-05-27


Project 786
Edmonton Region 240 kV Line Upgrades - PST (Phase Shifting Transformer) Component
Existing Substations
Exisiting 69 kV Transmission Line
Exisiting 138 kV Transmission Line
Exisiting 240 kV Transmission Line
Exisiting 500 kV Transmission Line
Project 786 Components
Cities and Towns
Project Components
Completed / Not Completed
Facility Application 7
ATCO Phase Shifter
786_TFCMC_SVC_2012-05-14
jfietz 2012-06-20

6. **ENMAX NO. 65 SUBSTATION (ESCS);** PROJECT 922 – New 240 kV substation in south Calgary and 138 kV developments due to overloading in south Calgary.

THE PROJECT[19] : This project was originally listed as Critical Transmission Infrastructure (CTI) in the AESO 2012 Long-Term Transmission Plan. The proposed development includes a new 240/138 kV substation, to be called ENMAX No. 65 substation (located east of 88 Street SE, Calgary, and north of Highway 22X), a short double-circuit 138 kV transmission line that ties into an existing 138 kV transmission line and a double-circuit 240 kV transmission line from existing 911L to connect into the existing transmission system. The substation is required to improve capacity and reliability in response to both current and future demand for electricity in southeast Calgary.

THE COMPONENTS: The proposed development includes a new 240/138 kV substation comprising two 400 MVA 240-138 kV autotransformers; four 240 kV circuit breakers; four 138 kV circuit breakers; and approximately one kilometre of 138 kV and 240 kV transmission lines to interconnect into the existing system.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
1	New 240/138 kV Substation (named ENMAX SS 65)	New ENMAX No. 65 Substation and about one km of 138 kV transmission line to connect the new substation to the existing transmission system	September 2013
2	ENMAX No. 65 Substation interconnection	Addition of double-circuit line from existing 911L to create an in/out configuration into the new ENMAX No. 65 Substation	September 2013

THE TRANSMISSION FACILITY OWNER(S): ENMAX and AltaLink.

PROJECT COST:

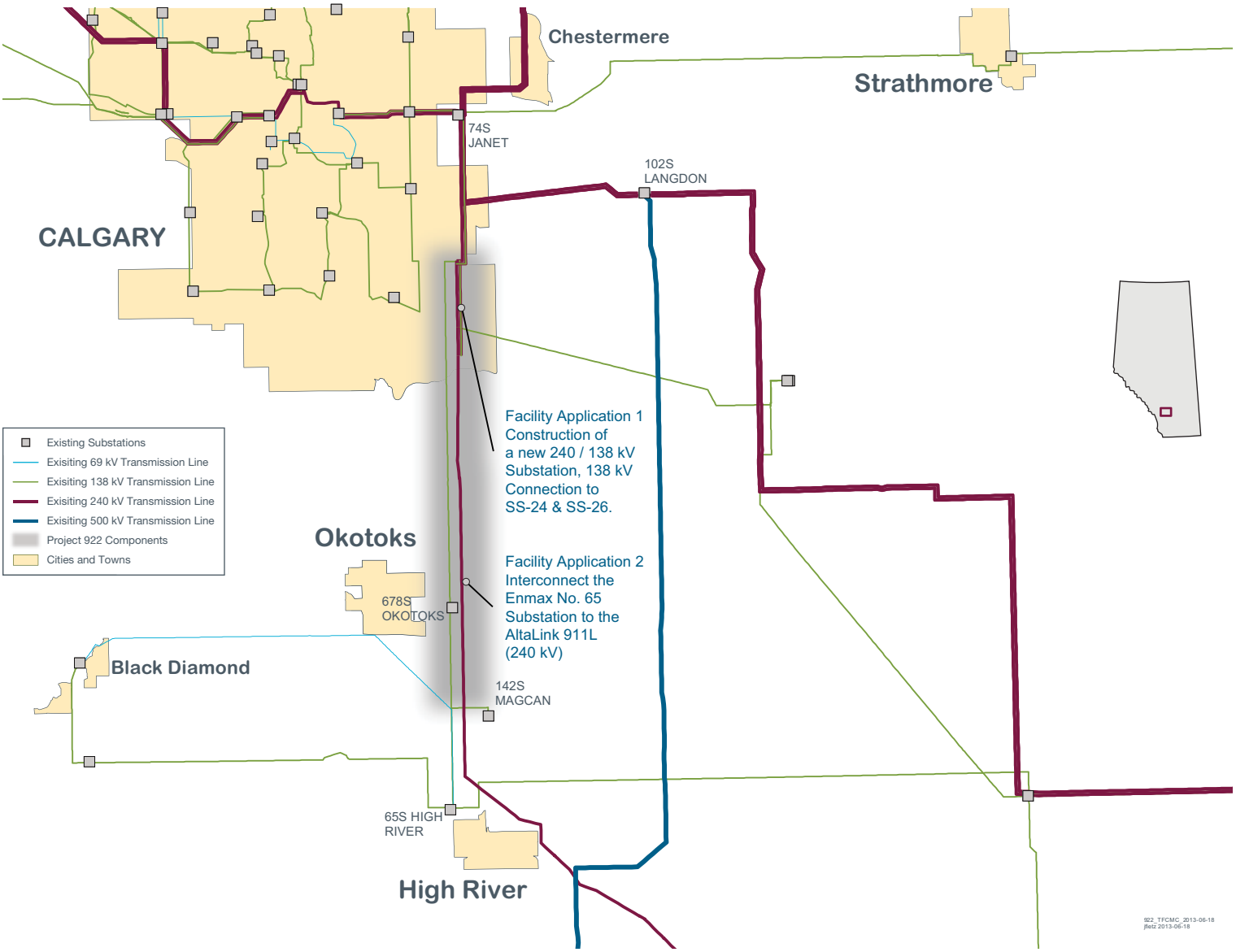
TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
ENMAX No. 65 Substation	$37 Million (2011$ without escalation)	$39 Million (ISD$ with escalation)[20]

CURRENT STATUS: On November 3, 2011, the AUC approved the Facility Application and issued the P&L for the project. Construction started in April 2012 and the forecasted in-service date is September 2013.

19 The TFCMC is monitoring Project 922, ENMAX No. 65 Substation. While the current value of the project is below the $100-million TFCMC threshold, the original project initially came in above the threshold and as such continues to be monitored by the Committee.

20 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.

Project 922
ENMAX No. 65 Substation Transmission Development



7. **FOOTHILLS AREA TRANSMISSION DEVELOPMENT – EAST PROJECT (FATD);** PROJECT 1117 – To meet growing demand in South Calgary, High River and the surrounding area.

THE PROJECT: The AESO has forecasted that transmission reliability constraints in the south Calgary and High River areas will occur within the 2014 to 2019 time frame. The FATD East development will ensure the transmission system will serve growing electricity demand in Calgary, High River, and the surrounding areas, enable new generation facilities to connect, and maintain system reliability. It will also facilitate wind generation development within adjacent areas and mitigate thermal overloads and voltage violations.

THE COMPONENTS: The project has both a 240 kV and 138 kV scope.

The 240 kV scope consists of building a new 240/138 kV substation designated Foothills 237S; adding a new 240 kV double-circuit line from the proposed Foothills 237S substation to the future ENMAX SS-65; a new 240 kV double-circuit line from the existing Langdon 102S to the existing the Janet 74S; a new 240 kV double-circuit line from Langdon 102S to East Calgary 5S using a combination of existing lines; a 240 kV double-circuit line between the future ENMAX SS-65 substation to the proposed ENMAX SS-25 substation; and the de-energization of sections of existing transmission lines.

The 138 kV scope consists of a new 138 kV single-circuit line from the proposed Foothills 237S to the existing Okotoks 678S; a new 138 kV single-circuit line from Foothills 237S to the existing High River 65S; a 138 kV single-circuit line from Okotoks 678S to Carseland 525S, and the de-energization of transmission lines and modifications to lines in the area.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
1	North Foothills Transmission Project	Construction of Foothills 235S 240/138 kV switching station, and construction of approximately 52 km of double-circuit 240 kV transmission line from Foothills 237S to ENMAX SS-65	May 2015
2	ENMAX No.25 substation 240 kV line additions and ENMAX No.65 substation 240 kV line additions	Interconnection of two new AltaLink 240 kV transmission lines at ENMAX SS-25, and termination of three new AltaLink 240 kV transmission lines at ENMAX SS-65	May 2015
5	Foothills 138 kV Project	Addition of two 240/138 kV transformers at Foothills 237S; construction of approximately 14 km of double-circuit 138 kV transmission line from Foothills 237S to High River 65S; rebuild of approximately seven km of existing transmission line to 678S, and salvage of approximately 30 km of existing line from Janet 74S to Okotoks 678S	May 2015
3, 4	Langdon to Janet Project	Construction of approximately 18 km of double-circuit 240 kV transmission line from Langdon 102S to Janet 74S; expansion of Janet 74S substation; removal of terminations at Janet 74S resulting in two new circuits terminals at East Calgary 5S and Crossing 511S, and salvage of approximately six km of 240 kV transmission line from Janet 74S to ENMAX SS-25	July 2015

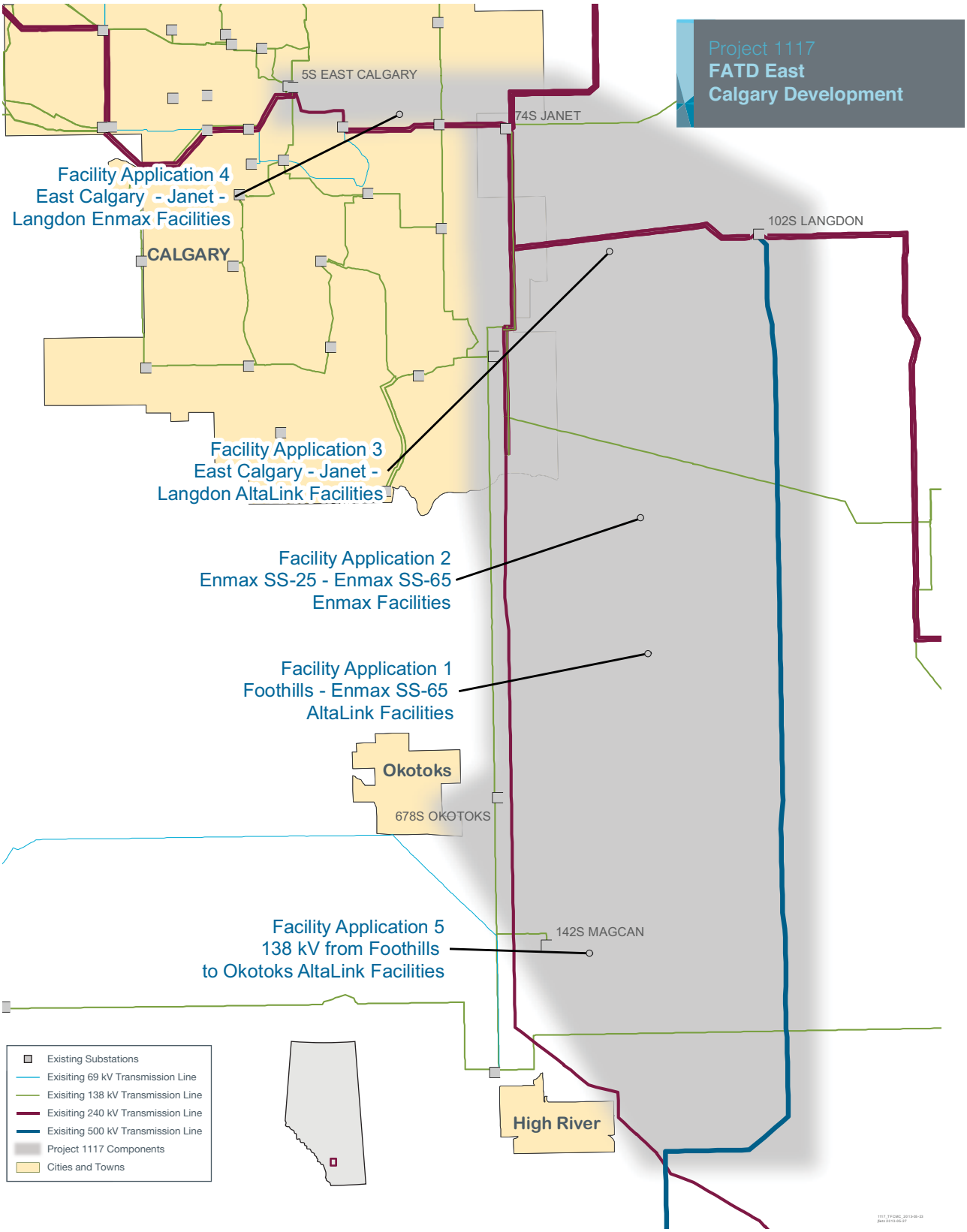
TRANSMISSION FACILITY OWNER(S): AltaLink and ENMAX.

PROJECT COST:

TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Foothills Area Transmission Development – East Project	*$711 Million (2011$ without escalation) *entire FATD plan	*$444 million (ISD$ with escalation[21] *FATD East PPS only

CURRENT STATUS: The AESO filed its NID with the AUC in July 2012. AltaLink and ENMAX filed the Facility Applications in July 2012. The AUC held a hearing in May 2013. An AUC decision and approval are pending and expected in September 2013.[21]

21 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.


Project 1117
FATD East
Calgary Development
5S EAST CALGARY
74S JANET
102S LANGDON
CALGARY
Facility Application 4
East Calgary - Janet -
Langdon Enmax Facilities
Facility Application 3
East Calgary - Janet -
Langdon AltaLink Facilities
Facility Application 2
Enmax SS-25 - Enmax SS-65
Enmax Facilities
Facility Application 1
Foothills - Enmax SS-65
AltaLink Facilities
Okotoks
678S OKOTOKS
Facility Application 5
138 kV from Foothills
to Okotoks AltaLink Facilities
142S MAGCAN
High River
Existing Substations
Exisiting 69 kV Transmission Line
Exisiting 138 kV Transmission Line
Exisiting 240 kV Transmission Line
Exisiting 500 kV Transmission Line
Project 1117 Components
Cities and Towns

8. **FORT MCMURRAY AREA TRANSMISSION BULK SYSTEM REINFORCEMENT (FMAC);** PROJECT 838 – Construction of 500 kV transmission lines from the Edmonton area to the Fort McMurray area.

THE PROJECT: The Fort McMurray area transmission project is to serve load from the expected growth of the oilsands industry in the northeastern part of the province. The AESO has recommended a 500 kV AC line from the Genesee generating station to a new 500 kV substation in the Fort McMurray area, and a 500 kV AC line from the new Heartland substation to the new Fort McMurray area 500 kV substation.

THE COMPONENTS: The major components for Stage 1 of the project (West 500 kV Line) are: approximately 500 km of 500 kV single-circuit transmission line from Thickwood Hills 951S to Sunnybrook 510S; a 500 kV substation switchyard at Thickwood Hills 951S to terminate the north end of the West 500 kV line; modifications to the Sunnybrook 510S substation to terminate the south end of the West 500 kV line, and a 500/240 kV 1200 MVA transformer bank at Thickwood Hills 951S.

The major components for Stage 2 of the project (East 500 kV Line) are: approximately 400 km of 500 kV single-circuit transmission line from Thickwood Hills 951S to Heartland 12S; modifications to the Thickwood Hills 951S substation to terminate the north end of the East 500 kV line; modifications to the Heartland 12S substation to terminate the south end of the East 500 kV line, and a second 500/240 kV 1200 MVA transformer bank at Thickwood Hills 951S.

FACILITY APPLICATION NUMBER[22]	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
	Fort McMurray Area Bulk System Development Stage 1 – West Line	One 500 kV transmission line will be constructed from a new substation at Thickwood Hills to the Genesee area, referred to as the West 500 kV line	2018
	Fort McMurray Area Bulk System Development Stage 2 – East Line	A second 500 kV transmission line will be constructed from a new substation at Thickwood Hills to the Heartland area, referred to as the East 500 kV line	2020

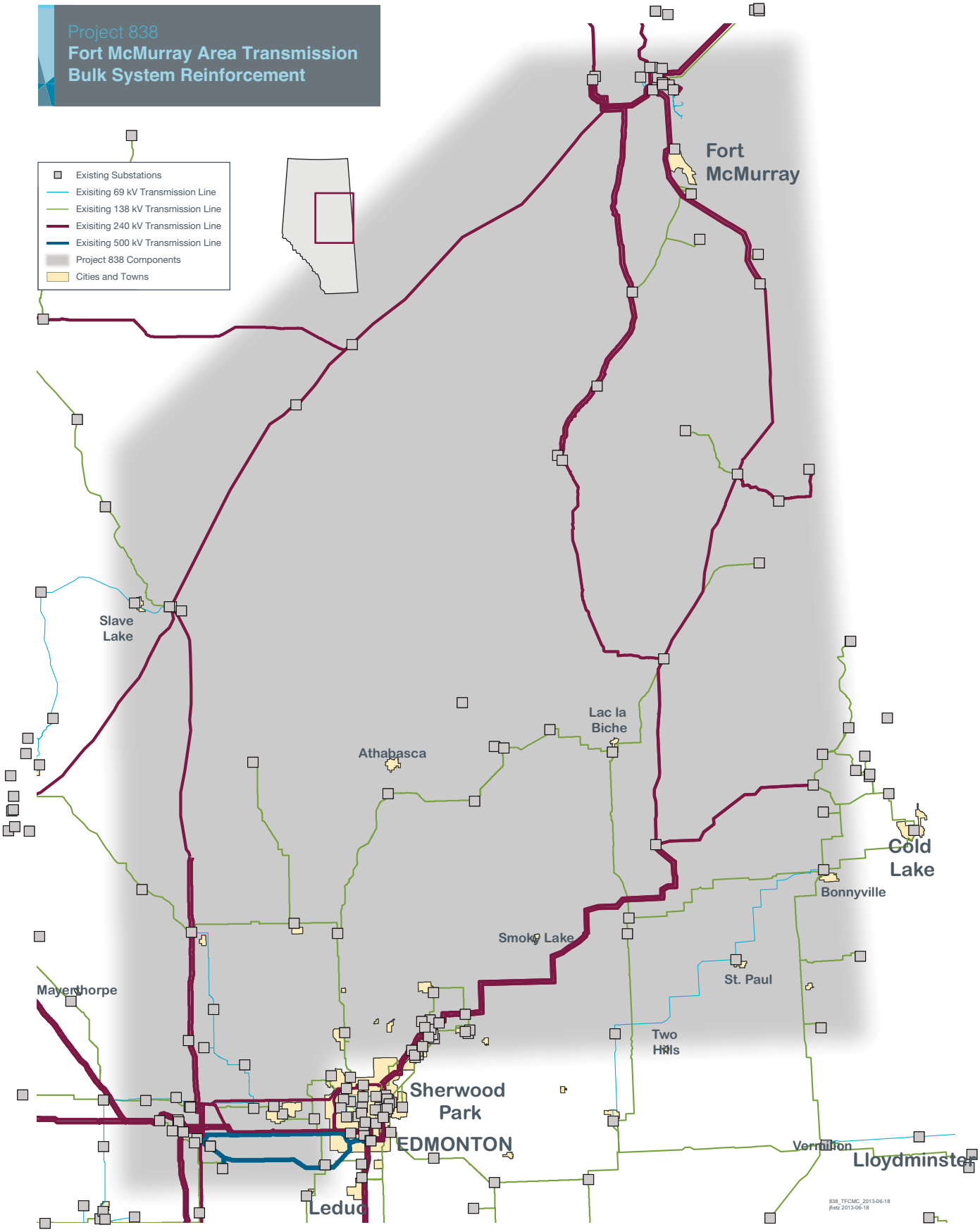
THE TRANSMISSION FACILITY OWNER(S): The TFO(s) will be determined through the Competitive Process.

PROJECT COST:

TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Fort McMurray Area Transmission Bulk System Reinforcement	Stage 1: $1.649 Billion (2011$ without escalation) Stage 2: Not Available	Not Available

CURRENT STATUS: The Alberta Utilities Commission (AUC) approved the AESO's competitive process on February 14, 2013 with certain conditions. However, one of the conditions is being reviewed by the AUC. On May 9, 2013, the AESO launched a Request for Expressions of Interest for the project – that ran until June 19, 2013. The AESO will not commence the Request for Qualifications stage until the AUC has rendered a decision on its review.

22 At the moment, there are no facility numbers for this project as an RFP is pending.


Project 838
Fort McMurray Area Transmission Bulk System Reinforcement
Existing Substations
Exisiting 69 kV Transmission Line
Exisiting 138 kV Transmission Line
Exisiting 240 kV Transmission Line
Exisiting 500 kV Transmission Line
Project 838 Components
Cities and Towns
Fort McMurray
Slave Lake
Lac la Biche
Athabasca
Cold Lake
Bonnyville
Smoky Lake
St. Paul
Mayerthorpe
Two Hills
Sherwood Park
EDMONTON
Vermilion
Lloydminster
Leduc
838_TFCMC_2013-06-18
jfietz 2013-06-18

9. **HANNA REGION TRANSMISSION DEVELOPMENT (HATD);** PROJECT 812 – Transmission development in Hanna, Sheerness and Battle River.

THE PROJECT: Transmission reinforcement in the Hanna region (East Central Alberta) will allow for the connection of up to 700 MW of wind power and serve demand of about 970 MW, largely driven by industrial development in the area. The AESO's system studies indicate that the key drivers for the project are to provide transmission capacity to meet growth (load and generation), improve the reliability of the transmission system and alleviate transmission constraints that can result in generation curtailment in the region.

THE COMPONENTS: There are two stages of transmission development for the project.

The major components for Stage 1 of the project are: a new 240/144 kV substation near Hardisty with a 240 kV double-circuit line connecting the new substation to the 240 kV line between Cordel and Hansman Lake, and a 138 kV double-circuit line connecting the new substation to the existing Tucuman 478S; a 240 kV double-circuit line from Anderson to a new 240 kV switching station south of Anderson 801S; a 240 kV double-circuit transmission line (one side strung) from the new 240 kV switching station to existing Hansman Lake 605S and two new 240/144 kV substations near Oyen and Monitor; addition of -100/+200 VAr static var compensators at existing Hansman Lake 650S and new Lanfine 959S substations; a double-circuit 240 kV line (one side strung) west from the new 240 kV switching station to a new 240/144 kV substation near the Hand Hills area, and various local area 138 kV or 144 kV enhancements.

The major components for Stage 2 of the project are: string conductor on the open side of the 240 kV lines from the 240 kV switching station south of Anderson 801S to Hansman Lake 650S; string conductor on the open side of the 240 kV line west from the 240 kV switching station south of Anderson 801S to the new 240/144 kV station in the Hand Hills area; addition of a second 240/144 kV transformer at source substations near Oyen, Monitor and Hand Hills, the addition of -100/+200 VAr static var compensator, and various local area 138 kV and 144 kV enhancements.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
2	Battle River 757S Capacitor Bank addition	Battle River 757S–72 kV Capacitor Bank addition; 144 kV circuit breaker and substation alterations	October 3, 2011
1	Youngstown 772S Capacitor Bank addition	Youngstown 772S–Capacitor Bank addition; 144 kV breaker and communication tower	October 6, 2011
13	144 kV Capacitor Bank and Circuit Breaker additions at Three Hills substation 770S	Three Hills 770S 144 kV Capacitor Bank addition; 144 kV circuit breaker and substation alterations	December 13, 2011
18	Rowley 768S–Michichi–Three Hills 144 kV DC Line 7L25	Expansion and rebuild of existing Rowley 768S substation; construction of about 13 km of new 144 kV double-circuit transmission line designated as 7L25 and 7L137 and alterations at existing substations	June 1, 2012
21	Hardisty 377S substation Capacitor Bank	138 kV Capacitor Bank addition at Hardisty 377S substation and other associated work	June 28, 2012
22	Hansman Lake 650S substation SVC addition	Addition of a -100/+200 VAr SVC at Hansman Lake 650S	October 15, 2012

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
17	Heatburg 948S–Three Hills–Nevis 144 kV D/C Line 7L16/7L159	New 144/25 kV Heatburg 948S substation; new double-circuit 144 kV transmission line from Heatburg 948S to existing 7L16; modification of 7L16 to create an in/out configuration to Heatburg 948S and alterations at existing substations	January 25, 2013
7	Oakland 946S 240 kV S/S combined with Anderson–Oakland line	New double-circuit 240 kV transmission line (designated as 9L70/9L97) from Anderson 801S to Oakland 946S, Oakland 946S substation and related alterations	March 25, 2013
8	Oakland–Lanfine 240 kV S/C line 9L924	New double-circuit 240 kV transmission line (one side strung) designated 9L24, from Oakland 946S to Lanfine 959S and alterations to Oakland 946S	March 30, 2013
19	Stettler 769S–Nevis 768S 144 kV S/C Line 7L143	New single-circuit 144 kV transmission line from Nevis 766S to Stettler 769S; alterations to Nevis 766S and alterations to Stettler 769S	April 21, 2013
3	New Lanfine 240/144 kV substation	New 240/144 kV substation designated Lanfine 959S	May 17, 2013
9	Coyote Lake 963S 240 kV S/S combined with Oakland–-Coyote line	New 240/144 kV Coyote Lake 963S; new 240 kV double-circuit transmission line (one side strung) designated as 9L29 from Oakland 949S to Coyote Lake 963S and alteration to Oakland 946S	May 17, 2013
12	New Lanfine-Pemukan 240 kV S/C Line 9L46	New double-circuit 240 kV transmission line (one side strung) designated 9L46, from Pemukan 932S to Lanfine 959S and alterations to Lanfine 959S	May 31, 2013
6	Relocate 7L98 Oyen 767S–Lanfine 959S	Decommission and salvage of transmission line 7L98 and 7LA98	May 31, 2013
10	Coyote Lake 963S–Michichi Creek 802S 144 kV SC Line 7L128	New single-circuit transmission line designated as 7L128 from Michichi Creek 802S to Coyote Lake 963S and alterations to existing Michichi Creek 802S	May 31, 2013
11	Pemukan 932S 240 kV substation	New 240/144 kV substation designated Pemukan 932S	May 31, 2013
16	Relocate 7L79 line from Monitor 774S–Pemukan 932S	Retermination of existing 7L70 from Monitor 774S to Pemukan 932S and alterations to Pemukan 932S	June 12, 2013
15	Pemukan 932S–Monitor 774S 144 kV S/C Line 7L127	Double-circuit 144 kV line (one side energized) from Pemukan 932S to Monitor 774S	June 15, 2013

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
5	Lanfine-Oyen 144 kV S/C Line 7L132	Double-circuit 144 kV line (one side energized) from Lanfine 959S to Oyen 767S	June 23, 2013
20	Nilrem 574S combined with D/C 240 kV 953L –1047L and Tucuman 478S combined with D/C 138 kV 679L–-680L	New 240/138 kV Nilrem 574S; new 240 kV double-circuit transmission line (designated as 953L/1047L) from connection point on existing 240 kV line 953L to Nilrem 574S; alteration to existing 953L; new 139 kV double-circuit transmission line (679L/680L) from Tucuman 478S to Nilrem 574S and alterations to existing Tucuman 478S	July 8, 2013
14	Hansman Lake-Pemukan 240 kV S/C Line 9L966	New double-circuit 240 kV transmission line (one side strung) designated 9L966, from Pemukan 932S to AltaLink's service territory and alterations to Pemukan 932S	August 30, 2013
23	New 240 kV line 966L from Pemukan 932S–Hansman Lake 650S	New double-circuit 240 kV transmission line (one side strung) designated 966L, from Hansman Lake 650S to ATCO's service territory and alterations to Hansman Lake 650S	August 30, 2013
24	New 240 kV line 1060L from Ware Junction 132S–West Brooks 28S	New single-circuit 240 kV transmission line (designated 1053L) from Ware Junction 132S to Cassils 324S; alterations to Ware Junction 132S and alteration to Cassils 324S	September 2, 2013
4	Lanfine 959S 200 VAr SVC	Addition of a -100/+200 VAr SVC at Lanfine 959S	December 3, 2013

THE TRANSMISSION FACILITY OWNER(S): AltaLink and ATCO.

PROJECT COST:

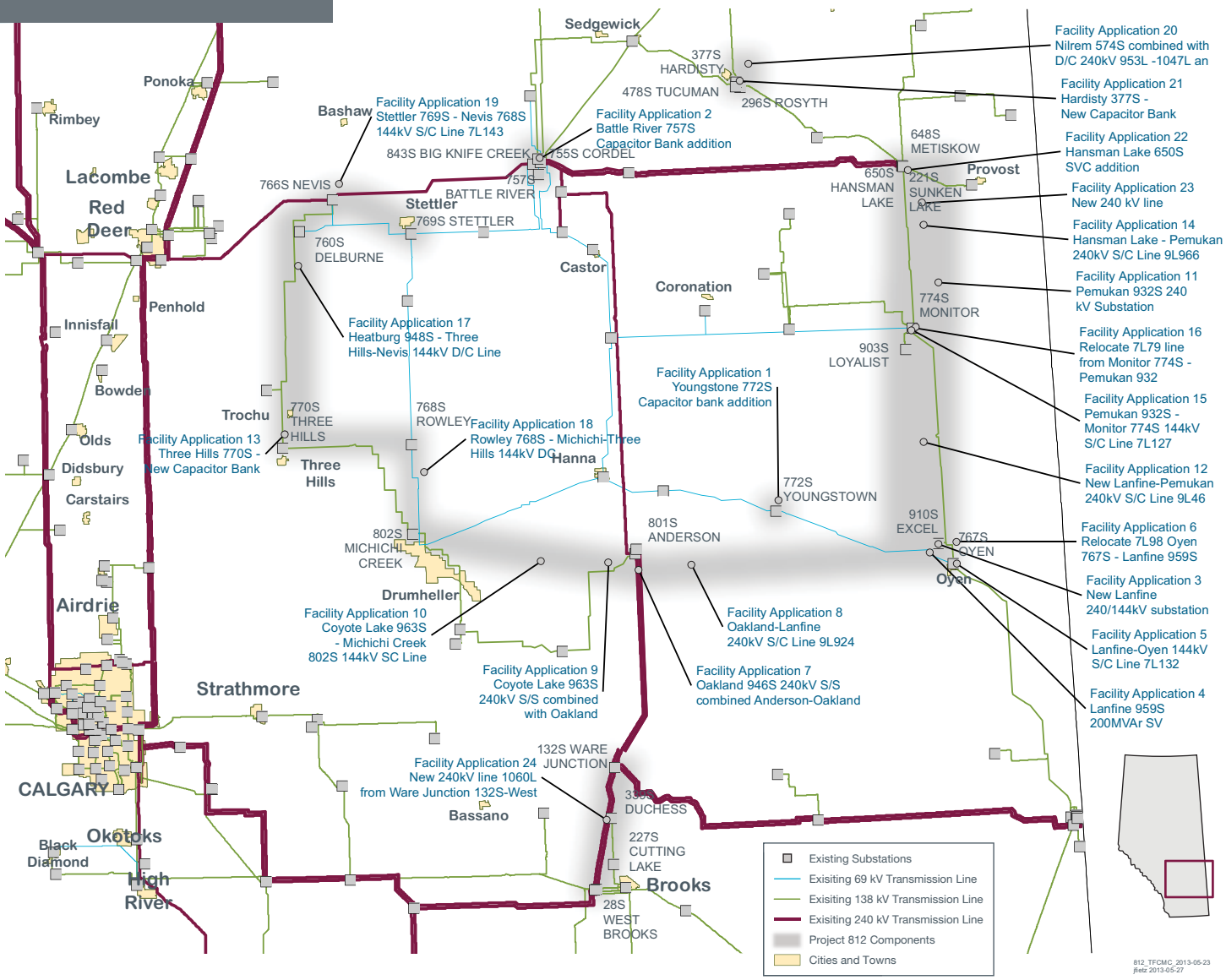
TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Hanna Region Transmission Development	$909 Million (2011$ without escalation)	$896 Million (ISD$ with escalation for stage 1)[23]

CURRENT STATUS: The Hanna Region Transmission Development NID was approved April 29, 2010. All Facilities Applications related to Stage 1 of the project have been approved by the AUC with the last Facility Application for the Heatburg 948S and Three Hills-Nevis 144 kV D/C transmission line being approved on June 13, 2012. All components are moving through the construction phase. AltaLink and ATCO are coordinating parallel and sequential work to stage the energizations.

The AESO is currently working on Stage 2 of the Hanna project; the NID identified that this development is required by 2017.

23 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.

Project 812
Hanna Region Transmission Development



10. NORTH FORT MCMURRAY TRANSMISSION DEVELOPMENT (NFMD); PROJECT 791 – Transmission development north of Fort McMurray.

THE PROJECT: The North Fort McMurray Transmission Development Project is to relieve transmission constraints and to serve forecast electrical demand as industrial load (oilsands) continues to grow in the area north of Fort McMurray.

THE COMPONENTS: The project calls for a 240 kV double-circuit line (one side strung) from Kearl Lake to Salt Creek, the addition of the McLelland 240 kV switching station near Kearl Lake, and a 240 kV switching station at Black Fly.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
1	North Fort McMurray Transmission Development	Double-circuit 240 kV line (one side strung) from Kearl Lake to Salt Creek; addition of the McLelland 240 kV switching station near Kearl Lake; and a 240 kV switching station at Black Fly	October 2013

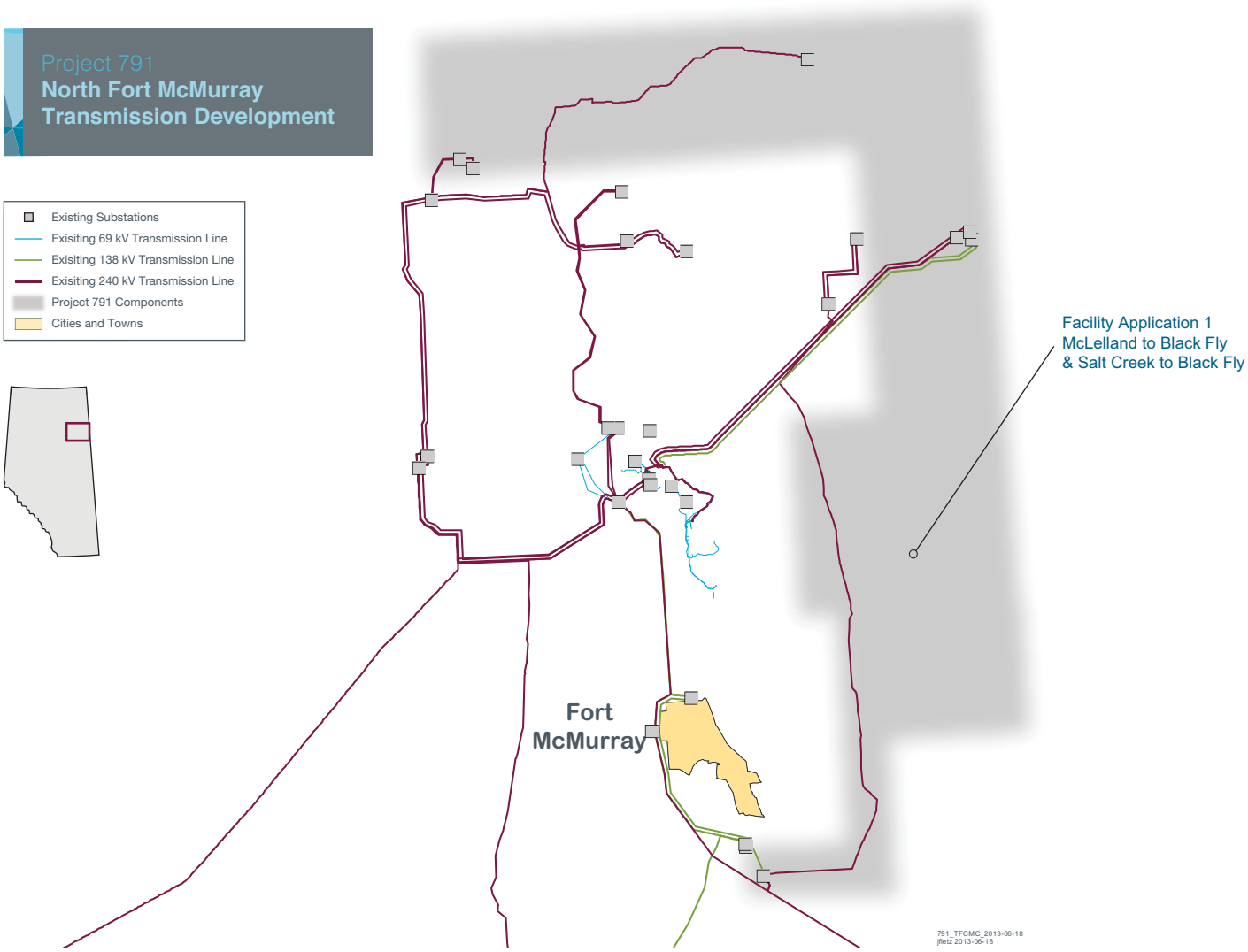
THE TRANSMISSION FACILITY OWNER(S): ATCO.

PROJECT COST:

TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
North Fort McMurray Transmission Development	$197 Million (2011$ without escalation)	$328 Million (ISD$ with escalation)[24]

CURRENT STATUS: The North Fort McMurray NID was approved June 24, 2011. On July 28, 2011, the AUC approved the south portion of the Facility Application and on December 23, 2011, granted approval to the overall project. Line 9L84, the 240 kV line from Salt Creek to the location of the new Black Fly substation, was commissioned on May 15, 2012. The north part of the project, Black Fly Substation, 9L69 from Black Fly to McLelland and McLelland substation, is scheduled for completion on October 31, 2013.

24 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.


Project 791
North Fort McMurray
Transmission Development
Existing Substations
Exisiting 69 kV Transmission Line
Exisiting 138 kV Transmission Line
Exisiting 240 kV Transmission Line
Project 791 Components
Cities and Towns
Facility Application 1
McLelland to Black Fly
& Salt Creek to Black Fly
Fort
McMurray
791_TFCMC_2013-06-18
jfietz 2013-06-18

11. NORTH SOUTH TRANSMISSION REINFORCEMENT (HVDC); PROJECT 737 – Construction of two 500 kV HVDC transmission lines from the Edmonton area to the Calgary and south regions.

THE PROJECT: The North South Transmission Reinforcement is to address increased demand in southern and central Alberta, mitigate issues with reliability, maximize efficiency, accommodate long-term growth and lead generation decisions. The project calls for two high-capacity lines between Edmonton and Calgary to reinforce the backbone of the grid and replace aging 240 kV lines. One line will be located on the west centre portion of the province, connecting to the existing Wabamun Lake hub west of Edmonton to the Calgary area hub near Langdon. The second line will be located on the east side of the province connecting the Heartland hub northeast of Edmonton to a southern hub in the Brooks area.

THE COMPONENTS: The two new lines will be 500 kV high-voltage direct current (HVDC) technology and will be built to transfer up to 1000 MW of power each. Each line and converter station can be upgradable to 2000 MW at a future date. For each line, two HVDC converter stations will be required, one at the source and one at the destination point, to convert AC power to DC and DC to AC.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
2	Eastern Alberta Transmission Line Project Facility Application – ATCO	Application to construct and operate a high-voltage DC line from Heartland to West Brook	December 15, 2014
1	Western Alberta Transmission Line Project Facility Application – AltaLink	Application to construct and operate a high-voltage DC line from Genesee to Langdon	April 2015

THE TRANSMISSION FACILITY OWNER(S): AltaLink is the designated TFO to build the Western Alberta Transmission Line (WATL) and ATCO is the designated TFO to build the Eastern Alberta Transmission Line (EATL).

PROJECT COST:

TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
North South Transmission Reinforcement – EATL	$1.622 Billion (2011$ without escalation)	$1.655 Billion (ISD$ with escalation)[25]
North South Transmission Reinforcement – WATL	$1.329 Billion (2011$ without escalation)	$1.457 Billion (ISD$ with escalation)[26]

CURRENT STATUS: The AUC public hearing for ATCO's EATL application was closed August 20, 2012. The AUC issued P&L on November 15, 2012, for Facility Applications from ATCO, AltaLink and EPCOR. The EATL ISD is scheduled for December 15, 2014.

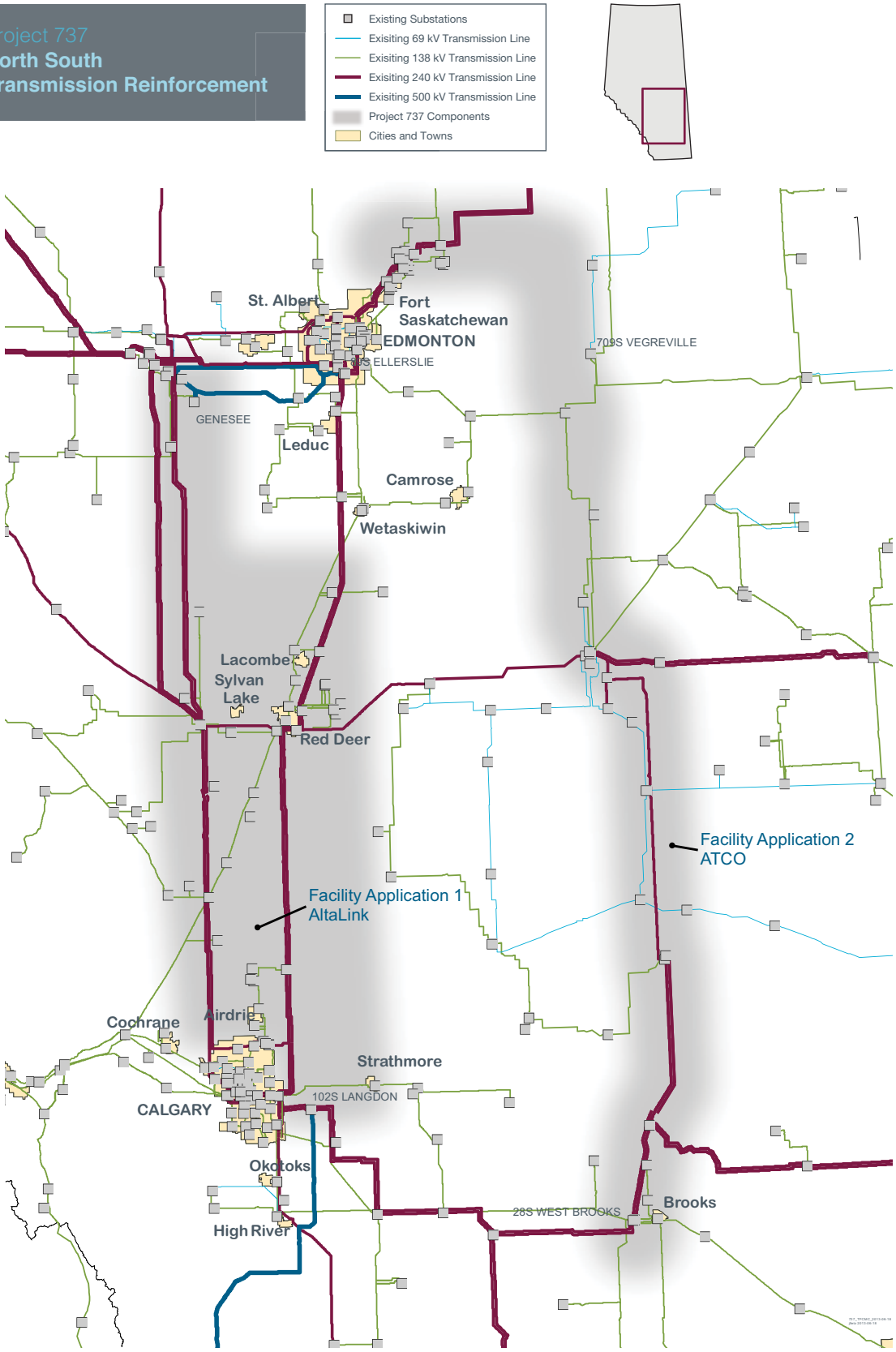
For EATL, on March 28, 2013, the AESO issued a stop-work direction to EPCOR when it determined the scope of work previously directed to EPCOR is no longer required. On April 25, 2013, the AESO approved a cost-increase change proposal of $4 million submitted by AltaLink as a result of change in Remedial Action Scheme. Construction for this project has started and is ongoing.

The AUC public hearing for AltaLink's WATL application was closed on September 10, 2012. P&L was issued on December 6, 2012. The WATL ISD is scheduled for early 2015.

25 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.

26 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.

Project 737
North South Transmission Reinforcement



12. NORTHWEST FORT MCMURRAY TRANSMISSION DEVELOPMENT (NW FMM); PROJECT 1180 – To provide service and connect future industrial customers in areas where there are no transmission facilities.

THE PROJECT: The Northwest (of) Fort McMurray 240 kV Transmission Development includes a 240 kV looped system extending west from existing transmission facilities between the Dover 888S and Joslyn 849S substations, including the addition of two new 240 kV substations. This expansion of the transmission system will serve developing electricity intensive industrial growth as oilsands extraction facilities and related industrial developments are proceeding into areas where there are currently no transmission facilities to provide service and connect future industrial customers.

THE COMPONENTS: A new 240 kV switching substation (Birchwood Creek 960S-NW FMM South); existing 9L57 line in/out at Birchwood Creek 960S; new 240 kV switching station (Ells River 2079S-NW FMM North); 9L08 Joslyn to Dover line in/out at Ells River 2079S (approximately 50 km of 240 kV double-circuit line, designated as 9L08/9L76); approximately 80 km of 240 kV double-circuit line (9L95), between Ells River 2079S and Birchwood Creek 960S.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
1	Birchwood Creek substation and 9L57 in/out. Ells River substation and 9L95, single-circuit 240 kV line between Ells River and Birchwood Creek	Birchwood Creek: new 240 kV switching substation; existing 9L57 line in/out at Birchwood Creek. Ells River: new 240 kV switching substation and 9L95; new single-circuit 240 kV line between Ells River and Birchwood Creek	October 2014
2	9L76 and 9L08, in/out double-circuit 240 kV line from existing 9L08 to Ells River Substation	9L08, Joslyn to Dover line in/out at Ells River (approximately 50 km of double-circuit 240 kV line)	April 2015

THE TRANSMISSION FACILITY OWNER(S): ATCO.

PROJECT COST:

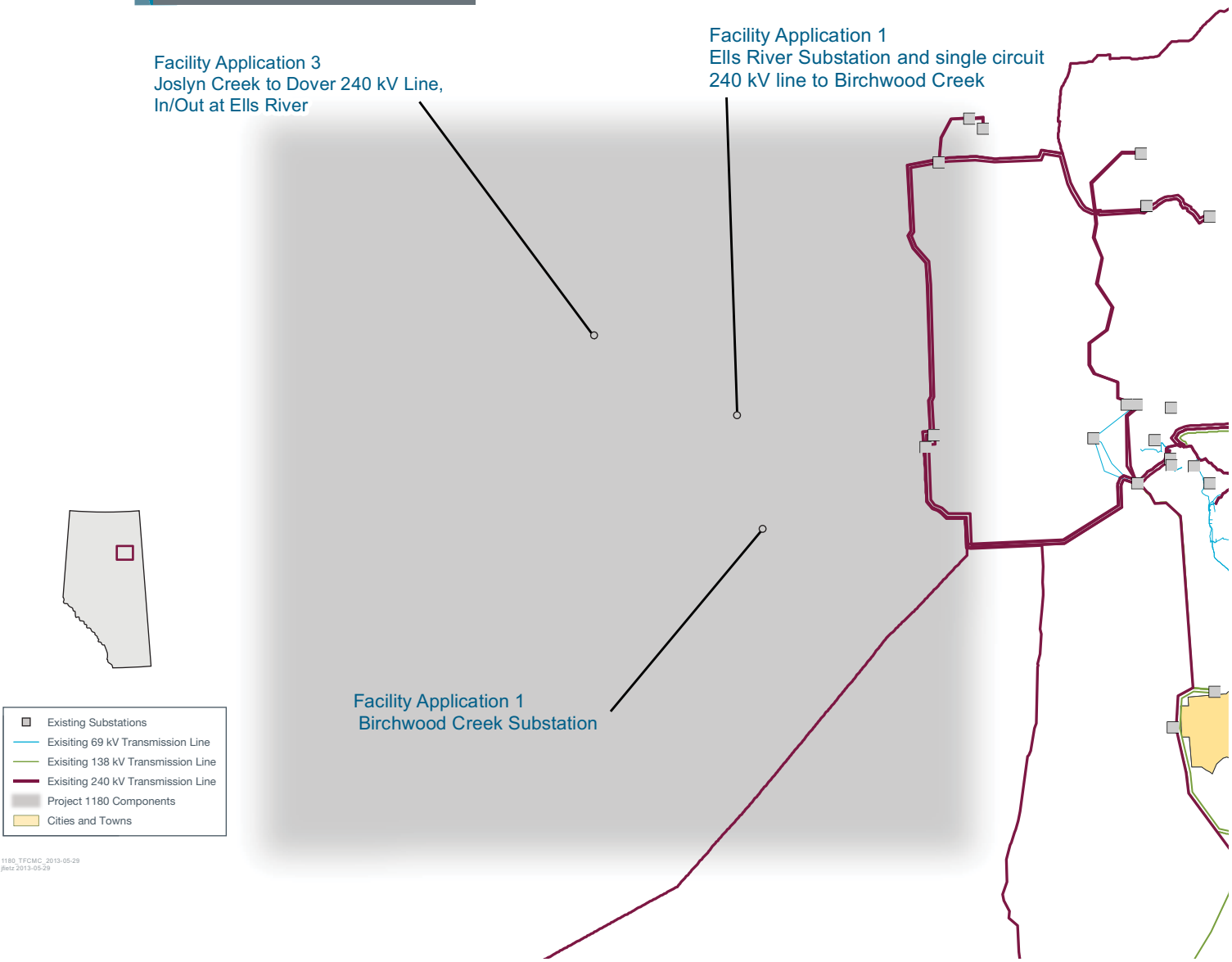
TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Northwest Fort McMurray 240 kV Transmission Development	$342 Million (2011$ without escalation)[27]	$371 Million (ISD$ with escalation)[28]

CURRENT STATUS: On June 18, 2012, the AUC approved the NID for the Northwest Fort McMurray 240 kV Transmission Development. ATCO is developing its Facility Application, which includes route and site selection for the proposed development, and anticipated filing a Facility Application for this development in the second quarter of 2013. In June 2013, the AESO planned to file a NID Amendment for the change to 9L95 line from double-circuit, one side strung construction, to single-circuit construction.

27 Referenced as "240 kV double-circuit line from Livock to Joslyn Creek" in the Long-Term Transmission Plan filed in June 2012.

28 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.

Project 1180
Northwest Fort McMurray Transmission Development



13. NORTHWEST TRANSMISSION DEVELOPMENT (NWTD); PROJECT 535 – Transmission development in northwest Alberta.

THE PROJECT[29]: The Northwest (Alberta) Transmission Development identifies transmission issues in three areas of the Northwest region.

THE COMPONENTS: The transmission development includes adding new 240/144 kV transformers, capacitor banks and reactive support devices, a 240 kV line from Brintnell to Wesley Creek, and the addition of four new 144 kV transmission lines.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
1	9L15 240 kV Wesley Creek 834S 240 kV single-circuit line	9L15 energized Wesley Creek to Brintnell 876S, two 300 MVA transformers at Wesley Creek	March 19, 2010
8	Little Smoky 813S-install +/-100 VAr SVC and two 144 kV breakers	Little Smoky 813S +/-100 VAr SVC and two 144 kV VAr Static VAr Compensator and breakers	March 31, 2010
4	High Level 786S +/- 30 VAr SVC	High Level +/- 30 VAr Static VAr Compensator	June 30, 2010
2	7L131/7L106 – 144 kV D/C line CTs Wesley Creek to Meikle 905S	Double-circuit 144 kV line from Wesley Creek to new Meikle 905S station	September 29, 2010
3	7L133 -144 kV S/C line Sulphur Point 828S to High Level 786S	Single-circuit 144 kV line from Sulphur Point 828S to High Level 786S	March 19, 2011
7	Arcenciel 930S +/- 30 VAr	Arcenciel 930S +/- 30 VAr Static VAr Compensator	September 7, 2011
5	7L113-144 kV S/C line Ring Creek 853S to New Arcenciel 930S	Single-circuit 144 kV line from Ring Creek to new Arcenciel 930S substation and one – 30 VAr Capacitor Bank at Arcenciel	December 19, 2011
6	Arcenciel 930S -30/+50 VAr synchronous condenser	Arcenciel 930S -30/+50 VAr synchronous condenser	May 31, 2013

THE TRANSMISSION FACILITY OWNER(S): ATCO.

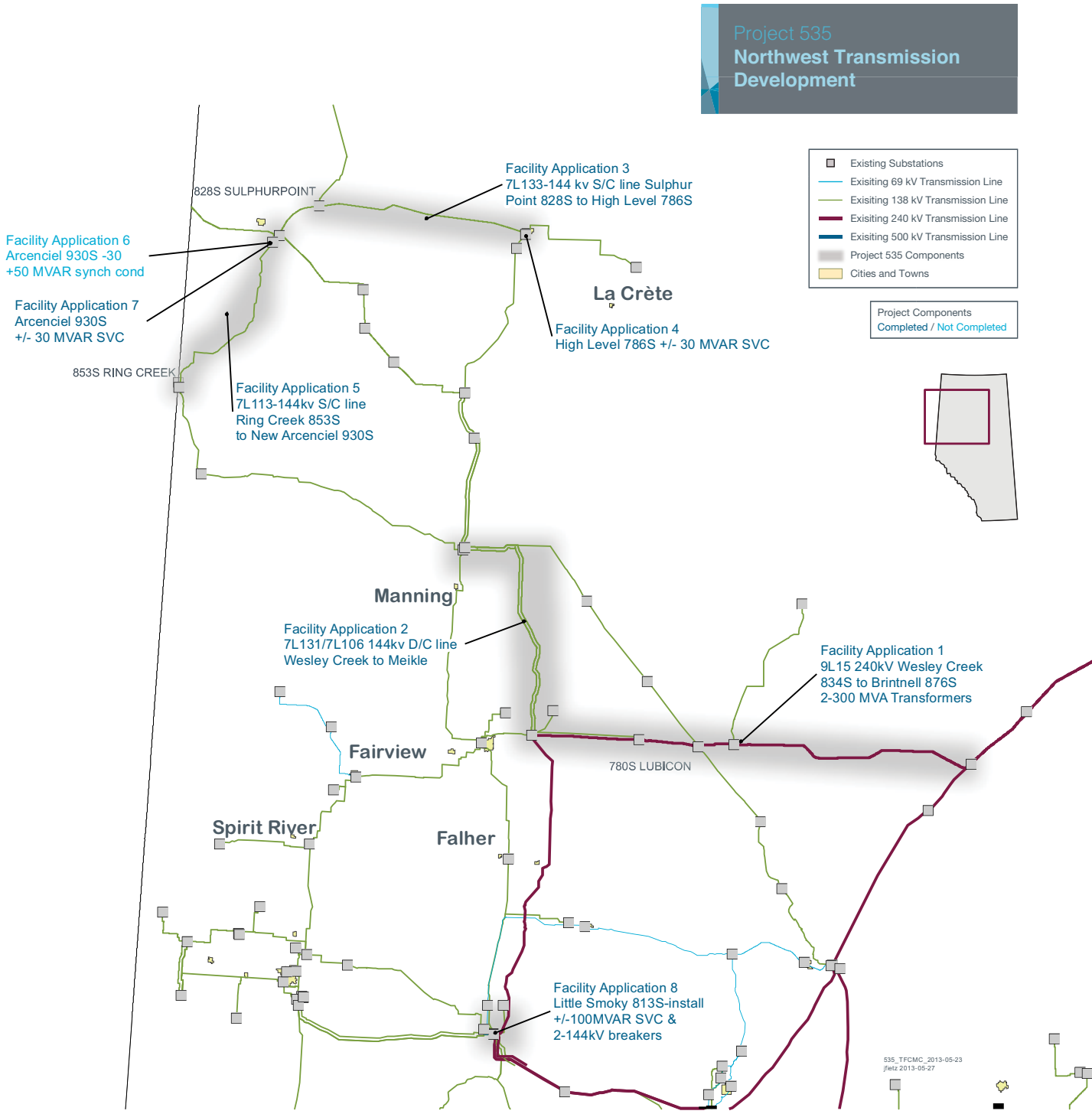
PROJECT COST:

TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Northwest Transmission Development	Not estimated in 2011 Long-Term Transmission Plan	$583 Million (ISD$ with escalation)[30]

CURRENT STATUS: The project was completed and in service in May 2013.

29 This project was not included in the AESO's Long-Term Transmission Plan (filed June 2012) as it was expected to be completed at the time of publication. The revised ISD for this project is May 2013.

30 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.


Project 535
Northwest Transmission Development
Existing Substations
Exisiting 69 kV Transmission Line
Exisiting 138 kV Transmission Line
Exisiting 240 kV Transmission Line
Exisiting 500 kV Transmission Line
Project 535 Components
Cities and Towns
Project Components
Completed / Not Completed
828S SULPHURPOINT
Facility Application 3
7L133-144 kv S/C line Sulphur Point 828S to High Level 786S
Facility Application 6
Arcenciel 930S -30 +50 MVAR synch cond
Facility Application 7
Arcenciel 930S
+/- 30 MVAR SVC
La Crète
Facility Application 4
High Level 786S +/- 30 MVAR SVC
853S RING CREEK
Facility Application 5
7L113-144kv S/C line
Ring Creek 853S
to New Arcenciel 930S
Manning
Facility Application 2
7L131/7L106 144kv D/C line
Wesley Creek to Meikle
Facility Application 1
9L15 240kV Wesley Creek
834S to Brintnell 876S
2-300 MVA Transformers
Fairview
780S LUBICON
Spirit River
Falher
Facility Application 8
Little Smoky 813S-install
+/-100MVAR SVC &
2-144kV breakers
535_TFCMC_2013-05-23
jfietz 2013-05-27

14. RED DEER REGION TRANSMISSION DEVELOPMENT (RDTD); PROJECT 813 – Transmission system reinforcements in the Red Deer area.

THE PROJECT: Growing demand from industrial, commercial, farming, and residential, along with existing constraints on the system, have created the need to strengthen the transmission system in the Red Deer region.

THE COMPONENTS: There are two stages of transmission development for the project.

The major components for Stage 1 of the project are: building new 240/138 kV substations near Didsbury, Ponoka and Innisfail; upgrading substations near Benalto and West Lacombe; adding approximately 150 km of new and rebuilt transmission line, and salvaging more than 100 km of existing transmission line.

The only component left for Stage 2 of the project is building a third 138 kV line from Gaetz to Joffre.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
1	Red Deer Area Transmission Development Stage 1 – Brownfield	Split 768L and 778L; 240/138 kV transformer at Benalto 17S; Capacitor Banks at Joffre 535S, Prentiss 276S and Ellis 332S	July 31, 2013
5	Red Deer Area Transmission Development Stage 2 – Rebuild 166L	Rebuild 166L from Didsbury 152S to Harmattan 256S	July 2014
2	Red Deer Area Transmission Development Stage 1 – Rebuilds	Rebuild 80L from S. Red Deer 194S to N. Red Deer 217S; rebuild 80L from S. Red Deer 194S to Red Deer 63S; rebuild 755L from Red Deer 63S to Piper Creek 247S to Joffre 535S, and rebuild 717L from Red Deer 63S to Benalto 17S	November 2014
3	Red Deer Area Transmission Development Stage 1 – Greenfields	New Johnston 240/138 kV substation and new transmission lines; 138 kV line from NE Lacombe 212S to Ellis 322S; new Wolf Creek 240/138 kV substation and new transmission lines; new Hazelwood 240/138 kV substation and new transmission lines	January 15, 2015
4	Red Deer Area Transmission Development Stage 1 – Salvage	Salvage 80L from Ponoka 331S to West Lacombe 958S; salvage 80L from Red Deer 63S to Innisfail 214S to Olds 55S; salvage 716L from Wetaskiwin 40S to Ponoka 331S	June 13, 2015
N/A[31]	Red Deer Area Transmission Development Stage 2 – Gaetz to Joffre	138 kV line from Gaetz 87S to Joffre 535S	November 2017

THE TRANSMISSION FACILITY OWNER(S): AltaLink.

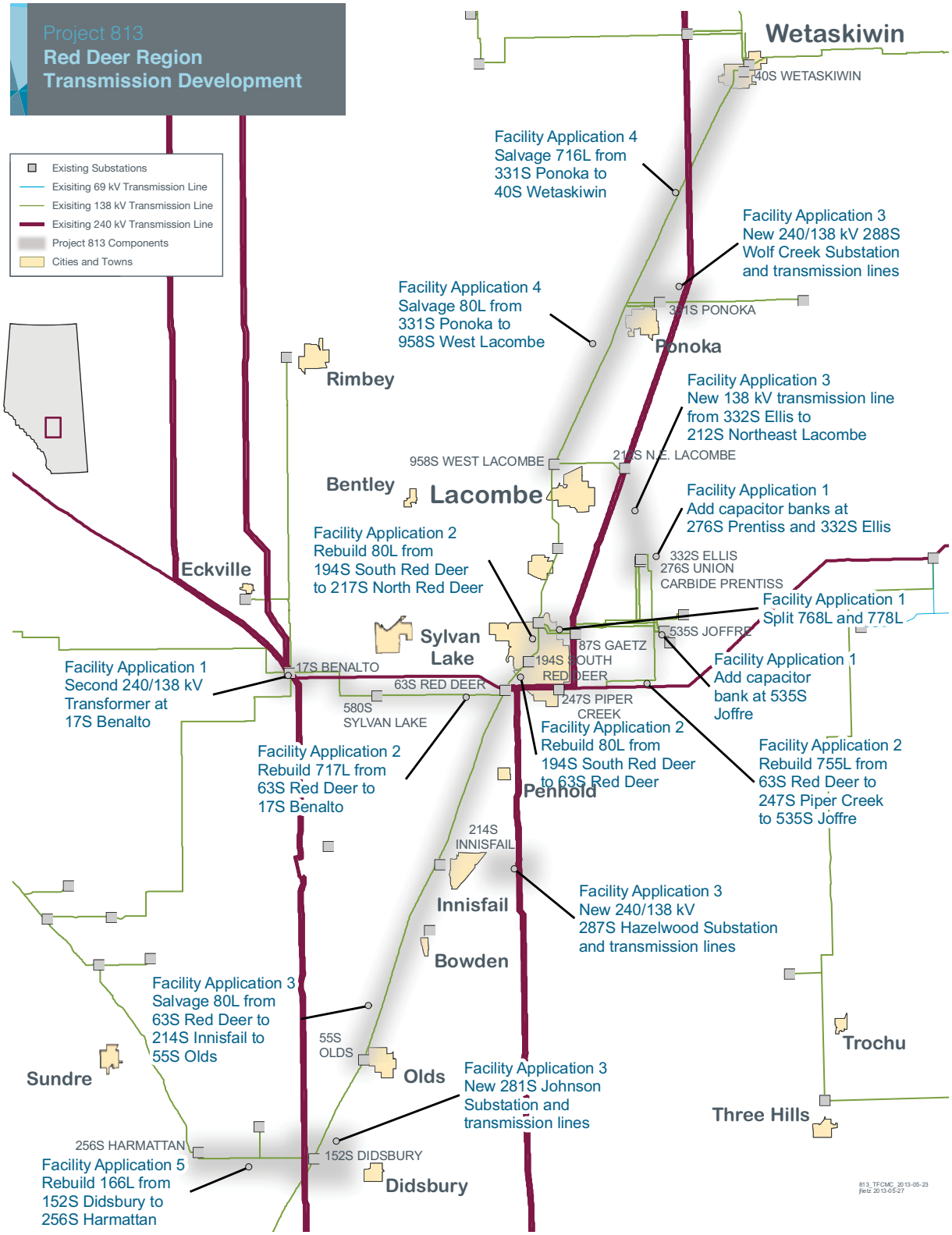
PROJECT COST:

TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Red Deer Transmission Development	$204 Million (2011$ without escalation)	$342 Million (ISD$ with escalation)[32]

CURRENT STATUS: AltaLink filed the first Facility Application for Brownfield on September 26, 2011, and received approval on September 27, 2012. At the time of this report, AltaLink indicated it would be filing Facility Application Rebuilds and Facility Application Greenfields in June 2013. Stage 2 development related to the rebuild of 166L will be advanced to 2014 to facilitate the connection of a generation facility in the Harmattan area.

31 The Facility Application in question has not yet been filed.

32 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.


Project 813
Red Deer Region
Transmission Development
Existing Substations
Exisiting 69 kV Transmission Line
Exisiting 138 kV Transmission Line
Exisiting 240 kV Transmission Line
Project 813 Components
Cities and Towns
Wetaskiwin
40S WETASKIWIN
Facility Application 4
Salvage 716L from
331S Ponoka to
40S Wetaskiwin
Facility Application 3
New 240/138 kV 288S
Wolf Creek Substation
and transmission lines
Facility Application 4
Salvage 80L from
331S Ponoka to
958S West Lacombe
331S PONOKA
Ponoka
Rimbey
Facility Application 3
New 138 kV transmission line
from 332S Ellis to
212S Northeast Lacombe
958S WEST LACOMBE
212S N.E. LACOMBE
Bentley
Lacombe
Facility Application 1
Add capacitor banks at
276S Prentiss and 332S Ellis
Facility Application 2
Rebuild 80L from
194S South Red Deer
to 217S North Red Deer
332S ELLIS
276S UNION
CARBIDE PRENTISS
Eckville
Facility Application 1
Split 768L and 778L
Sylvan
Lake
535S JOFFRE
87S GAETZ
194S SOUTH
RED DEER
Facility Application 1
Second 240/138 kV
Transformer at
17S Benalto
17S BENALTO
63S RED DEER
Facility Application 1
Add capacitor
bank at 535S
Joffre
580S
SYLVAN LAKE
247S PIPER
CREEK
Facility Application 2
Rebuild 80L from
194S South Red Deer
to 63S Red Deer
Facility Application 2
Rebuild 717L from
63S Red Deer to
17S Benalto
Facility Application 2
Rebuild 755L from
63S Red Deer to
247S Piper Creek
to 535S Joffre
Pennold
214S
INNISFAIL
Innisfail
Facility Application 3
New 240/138 kV
287S Hazelwood Substation
and transmission lines
Bowden
Facility Application 3
Salvage 80L from
63S Red Deer to
214S Innisfail to
55S Olds
55S
OLDS
Trochu
Sundre
Olds
Facility Application 3
New 281S Johnson
Substation and
transmission lines
Three Hills
256S HARMATTAN
152S DIDSBURY
Facility Application 5
Rebuild 166L from
152S Didsbury to
256S Harmattan
Didsbury
813_TFCMC_2013-05-23
jfietz 2013-05-27

15. SOUTHERN ALBERTA TRANSMISSION REINFORCEMENT (SATR); PROJECT 787 – To accommodate wind generation in southern Alberta.

THE PROJECT: The existing capacity of the transmission system in southern Alberta is insufficient to provide adequate system access for the interconnection of additional wind-powered generation. Additional substations and upgrades to existing facilities are required. The AESO has outlined the need for a 240 kV AC looped system with three stages of implementation.

THE COMPONENTS: The project includes three stages of development.

Stage 1: Planned to reinforce the 240 kV system in the Fort MacLeod and the Brooks–Medicine Hat corridor.

Stage 2: Planned to reinforce the 240 kV and 138 kV systems in the Glenwood, Lethbridge, Blackie and City of Medicine Hat areas, including a 240 kV system loop connection to the 500 kV Langdon–Cranbrook line.

Stage 3: Interconnect the Ware Junction–Langdon area via a 240 kV line.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
2	Milo Junction Switching Station	Build a switching station at Milo Junction	October 31, 2011
3	PST Addition at Russell 632S	Phase shifting transformer and new Russell substation	April 25, 2012
13	Ware Junction substation upgrade	933L line in/out at Ware Junction	November 15, 2013
4	Cassils to East Medicine Hat	240 kV lines from Cassils to Bowmanton	March 25, 2014
5	East Medicine Hat to Whitla 240 kV Transmission Line	240 kV lines from Bowmanton to new Whitla	March 31, 2014
12	Cypress Reactive Power Addition	Reactive power addition at Cypress substation	March 30, 2015
11	Blackie Area 138 kV upgrade	138 kV system upgrade in the Blackie area	July 31, 2015
1	911L Line Replacement	Build new 240 kV lines from Foothills substation to Windy Flats substation	September 21, 2015
8	Etzikom Coulee S/S and 240 kV line to MATL S/S	240 kV line from Journault to Picture Butte (formerly called MATL) substation	May 1, 2016
10	Etzikom Coulee S/S to Whitla 240 kV Line	240 kV line from Journault to Whitla substation	May 1, 2016
6	Medicine Hat Area 138 kV Line Development	138 kV system upgrades in the Medicine Hat area	May 14, 2017
7	240 kV lines from Goose Lake to Crowsnest/Chapel Rock substation	240 kV Line from Goose Lake to Chapel Rock and new Chapel Rock 500 kV substation	July 15, 2017

THE TRANSMISSION FACILITY OWNER(S): AltaLink.

PROJECT COST:

TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Southern Alberta Transmission Reinforcement	$2.287 Billion (2011$ without escalation)	$2.82 Billion (ISD$ with escalation)[33]

CURRENT STATUS: On December 30, 2008, the AESO applied to the AUC for approval of a NID for transmission reinforcement in Southern Alberta (SATR NID). AUC Approval No. U2009-340 was issued to the AESO on September 17, 2009.

On December 7, 2009, the AESO filed the finalized milestones and monitoring process with the AUC pursuant to their direction in Decision 2009-126 (SATR NID). AUC Approval No. U2010-264 was issued to the AESO on July 19, 2010.

On December 14, 2012, the AESO filed the Goose Lake to Chapel Rock Amendment to the AUC SATR Approval No. U2011-115.

The Milo Junction Switching Station and Phase-shifting transformer addition at Russell substation are in service.

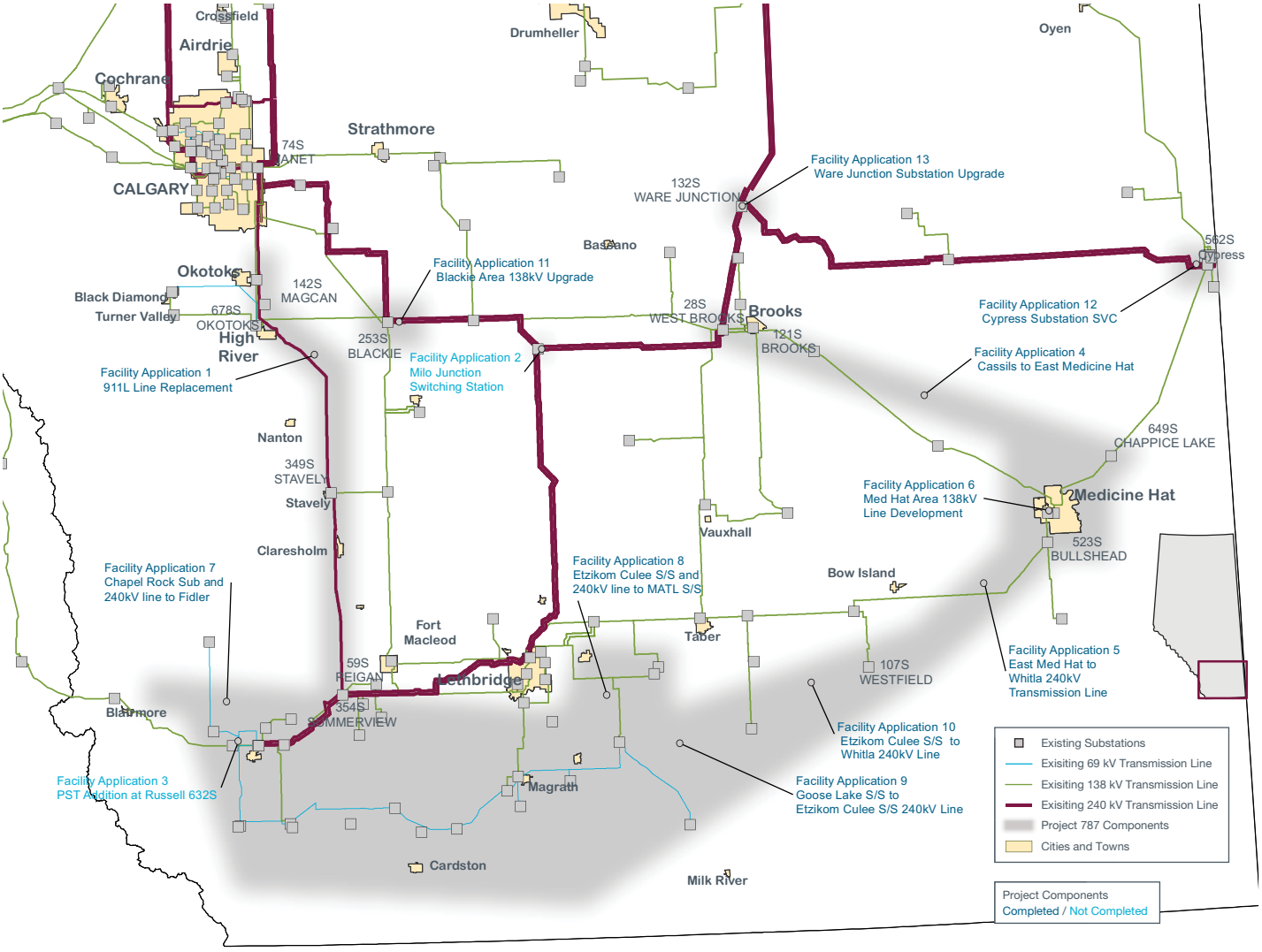
The Cassils–Bowmanton, Bowmanton–Whitla and Ware Junction substation portions of this development are currently under construction. The AESO filed the Medicine Hat area Amendment to the AUC SATR NID Approval No. U20111-115 on May 11, 2012. AltaLink filed a Facility Application for the Medicine Hat area development on December 3, 2012. The AUC posted Notice of Application on April 22, 2013.

AltaLink is preparing the PPS and Facility Applications for the Etzikom Coulee S/S and 240 kV line to MATL S/S and Etzikom Coulee S/S to Whitla 240 kV line developments and plans to file the Facility Application in July 2013.

AltaLink is preparing the PPS and Facility Application for the Goose Lake S/S to Etzikom Coulee S/S 240 kV line development and plans to file the Facility Application in October 2013.

33 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report. The $2.82-billion estimate is based on two groups of sub-projects. The first group is based on the PPS cost estimate received to date, and the second group (no PPS to date) is based on the original NID estimate with an adjustment based on the cost ratio between the PPS received and the original NID cost.

Project 787
Southern Alberta Transmission Reinforcement



16. YELLOWHEAD AREA TRANSMISSION DEVELOPMENT (YATD); PROJECT 671 – To improve reliability in the Drayton Valley, Edson and Alberta Beach areas.

THE PROJECT: The AESO identified the need for a number of transmission system upgrades to replace facilities that have deteriorated with age in Drayton Valley, Edson, Hinton and the Alberta Beach areas, and to meet the growing residential and commercial demand for electricity in the region.

THE COMPONENTS: Conversion of the 69 kV systems to 138 kV from Wabamun to Drayton Valley and Wabamun to Barrhead, and re-configuration and enhancements to the 138 kV system in the Edson-Hinton area.

FACILITY APPLICATION NUMBER	FACILITY APPLICATION NAME	FACILITY APPLICATION DESCRIPTION	FORECAST OR ACTUAL IN-SERVICE DATE
2	Cold Creek 602S 138 kV, 27 VAr Capacitor Bank	Cold Creek 602S 138 kV, 27 VAr Capacitor Bank	February 9, 2011
4	Drayton Valley Area 138 kV Transmission	Drayton Valley area 138 kV transmission development and cap bank Installations	December 21, 2011
3	Cherhill Substation and 240 kV Interconnection	Cherhill substation and 240 kV interconnection	April 2, 2012
1	Hinton/Edson Area Transmission	Hinton/Edson area 138 kV transmission upgrades	October 31, 2012

THE TRANSMISSION FACILITY OWNER(S): AltaLink.

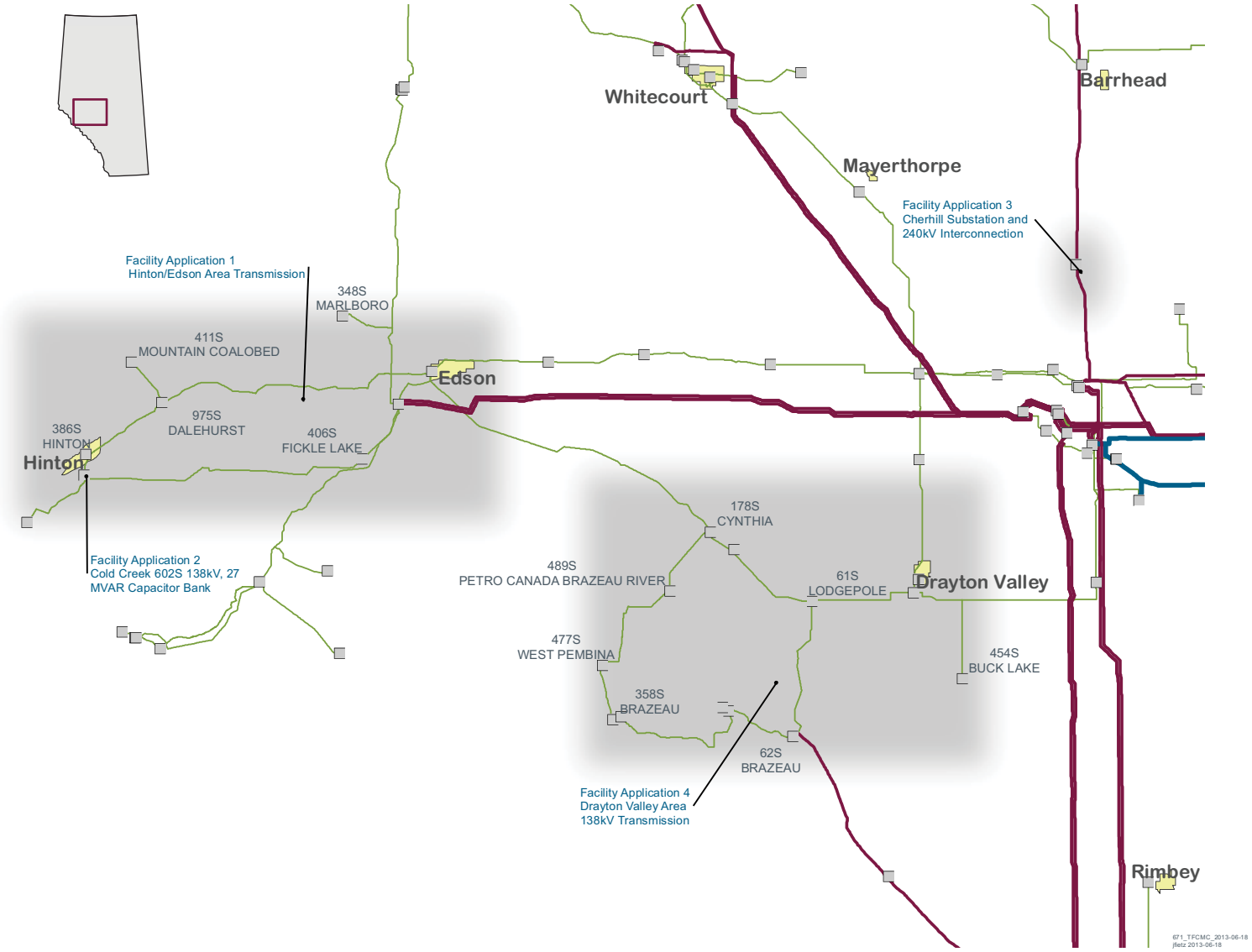
PROJECT COST:

TRANSMISSION PROJECT	AESO LONG-TERM TRANSMISSION PLAN (FILED JUNE 2012) ESTIMATED COST	CURRENT ESTIMATED COST
Yellowhead Area Transmission Development	$123 Million (2011$ without escalation)	$148 Million (ISD$ with escalation)[34]

CURRENT STATUS: All construction work and energizations are complete. The 69 kV line and substation salvaging was expected to be completed by June 2013.

34 As per the information provided to the TFCMC, which is based upon the TFO's April 2013 monthly project progress report.

Project 671
Yellowhead Area Transmission Development



Appendix C: Previously Monitored Projects

Since the TFCMC began its work, the Committee has monitored a total of 17 different transmission projects. To date, one of those projects has been completed. That undertaking, and its final cost, is listed below.

SOUTHERN ALBERTA TRANSMISSION DEVELOPMENT (SATD); PROJECT 416 – Transmission development in Goose Lake-Peigan and North Lethbridge region.

Final Project Cost: $238 million | AESO 2011 LTP Estimated Cost: $91 million

Appendix D: TFCMC Working Documents

The TFCMC receives reports and cost summary updates, on a monthly basis, in order to better understand the costs and changes associated with the transmission projects it monitors. In this part of the report, samples of the cost summary updates are included to provide readers with a better insight as to the type of material the TFCMC studies.

The cost summaries on the following pages are just a portion of the individual documents, which also include detailed information on authorized cost changes and cost estimate changes from the Needs Identification Document (NID) phase to the Proposal to Provide Service (PPS) stage.

Project Cost Reporting for TFCMC, Project 535: Northwest Transmission Development (NWTD); April 2013 Meeting

Cost Committee Monthly Summary

Project 535: North West Transmission Development

Project Description:
North West Transmission Development

Month of TFCMC Meeting : 2013 / Apr
Month of TFO Report : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO / Stage	NID Estimated Cost w AFUDC	w/o AFUDC
Mar 6,2006	Aug 17,2006	ATCO	312.0	260.5
		Total	312.0	260.5

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	9L15 240kV Wesley Creek 834S to Brintnell 876S, 2 300MVA Tx P598 (Formerly P598)	Jun 19,2007	Nov 23,2007	Mar 19,2010	$208.3		$208.3
2	7L131/7L106 144kv D/C line Wesley Creek to Meikle 905S & CTs P599 (Formerly P599)	Jul 29,2008	Dec 19,2008	Sep 29,2010	$193.2		$193.2
3	7L133-144 kv S/C line Sulphur Point 828S to High Level 786S P600 (Formerly P600)	May 19,2009	Sep 11,2009	Mar 19,2011	$77.6	-$48.0	$29.5
4	High Level 786S +/- 30 MVAR SVC (Formerly P601)	Apr 14,2009	Sep 1,2009	Jun 30,2010	$12.3		$12.3
5	7L113-144kv S/C line Ring Creek 853S to New Arcenciel 930S (Formerly P602,P604)	Jun 30,2010	Dec 2,2010	Dec 19,2011	$121.2	-$57.0	$64.3
6	Arcenciel 930S -30 +50 MVAR synch cond (Formerly P603)	Feb 3,2012	Apr 24,2012	May 31,2013	$23.2	$20.7	$43.8
7	Arcenciel 930S +/- 30 MVAR SVC (P605)	Jun 30,2010	Dec 2,2010	Sep 7,2011	$12.1	-$1.8	$10.2
8	Little Smoky 813S-install +/-100MVAR SVC & 2-144kV breakers (Formerly P606)	Jun 29,2009	Jun 29,2009	Mar 31,2010	$21.6	$0.2	$21.7
				Total:	$669.4	-$86.01	$583.4

Project Comments:
• All cost numbers are in Million$

Project Cost Reporting for TFCMC, Project 629: Alberta Industrial Heartland Bulk Transmission Development (HBTD); April 2013 Meeting

Cost Committee Monthly Summary

Project 629: Alberta Industrial Heartland Bulk Transmission Development

Project Description:

The project includes a new Heartland 12S substation, a new 500 kV double circuit line from Ellerslie 89S to Heartland 12S and connecting to a new 240 kV double circuit line from Heartland 12S into 942L and 943L 240 kV lines.

Month of TFCMC Meeting : 2013 / Apr

Month of TFO Report : 2013 / Feb

NID Application			
Filing Date	Approval Date	TFO / Stage	NID Estimated Cost
CTI	Dec 09, 2009		
		Total	

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	500kV 1206L/1212L (Formerly P629)	Sep 27,2010	Nov 1,2011	Sep 30,2013	$580.69	$7.94	$588.63
2	Heartland 12S Ellerslie 89S and 1054L/1061L (Formerly P1066)	Sep 27,2010	Nov 1,2011	Sep 30,2013			
				Total:	$580.7	$7.94	$588.6

Project Comments:

• All cost numbers are in Million$.
• Total $ includes salvage.

Project Cost Reporting for TFCMC, Project 671: Yellowhead Area Transmission Development (YATD); April 2013 Meeting

Cost Committee Monthly Summary

Project 671: Yellowhead Area Transmission Development

Project Description:

Yellowhead Area Transmission Development - all NID work completed under P671

Month of TFCMC Meeting : 2013 / Apr

Month of TFO Report : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO / Stage	NID Estimated w/ AFUDC	w/o AFUDC
09-Jun-09	May 12, 2010	AML	$87.8	$84.0
		Total	$87.8	$84.0

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	Hinton/Edson Area Transmission (Formerly P909)	Aug 5,2010	Apr 29,2011	Oct 31,2012	$51.36	$22.90	$74.26
2	Cold Creek 602S 138kV, 27 MVAR Capacitor Bank (Formerly P910)	Jul 8,2010	Aug 16,2010	Feb 9,2011	$2.25		$2.25
3	Cherhill Substation and 240kV Interconnection (Formerly P911)	Jul 26,2010	Apr 21,2011	Apr 2,2012	$30.50	-$0.77	$29.73
4	Drayton Valley Area 138kV Transmission (Formerly P912)	Jul 30,2010	Apr 27,2011	Dec 21,2011	$41.86	$0.24	$42.09
				Total:	$126.0	$22.37	$148.3

Project Comments:

• All cost numbers are in Million$.
Cost
AFUDC has been removed as per the agreed to change authorization
AFUDC distirbuted between projects

note: the yellow shaded cell has change over previous month report
the bule text cell has value that is different from atTask (table below)

Project Cost Reporting for TFCMC, Project 719: ENMAX Shepard Energy Centre (ECTP); April 2013 Meeting

Cost Committee Monthly Summary

Project 719: ENMAX Shepard Energy Centre

Project Description:

800 MW Generation Facility and Associated Substation - 3 phase project includes system work at East calgary, Janet and associated transmission upgrades.

Month of TFCMC Meeting : 2013 / Apr
Month of TFO Report : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO	NID Estimate w/ AFUDC	w/o AFUDC
10-May-11	Nov 01, 2012	AML - 1	$37.1	$34.4
		AML - 2	$33.7	$31.2
		ENMAX	$65.55	$63.14
		Total	$136.3	$128.8

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	FA1 - AltaLink Facilities	Jun 27,2011	Nov 8,2012	Jun 30,2015	$70.77	-$6.04	$64.73
2	FA2 - Enmax Facilities	Jun 10,2011	Nov 8,2012	Jun 30,2015	$65.55		$65.55
				Total:	$136.32	-$6.04	$130.28

Project Comments:

Changes from Last Month:
Authorized cost changes now reflect historical approved proposals as per the TFO cost reports.

Project Cost Reporting for TFCMC, Project 737: North South Transmission Reinforcement (HVDC) – Eastern Alberta Transmission Line; April 2013 Meeting

Cost Committee Monthly Summary

Project 737: North South Transmission Reinforcement - EATL

Project Description:

Construction of a +- 500KV bipolar HVDC transmission line from the vicinity of Heartland substation to the vicinity of West Brook substation. Initial development will be a monopole with at least 1000 MW transfer capacity.

Month of TFCMC Meeting : 2013 / Apr
Month of TFO Report : 2013 / Feb

NID Application			
Filing Date	Approval Date	TFO / Stage	NID Estimated Cost
CTI			
		Total	

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	Facility Application 1 - ATCO East DC Facilities (Currently known to TFO as P961)	Mar 29,2011	Nov 15,2012	Dec 15,2014	$1,598.76	-$2.55	$1,596.20
3	Facility Application 3 - AltaLink East DC Facilities (Currently known to TFO as P961)	May 1,2011	Nov 15,2012	Dec 15,2014	$39.35	$15.67	$55.02
4	Facility Application 4 - EPCOR East DC Facilities (Currently known to TFO as P961)	Mar 30,2011	Nov 15,2012	Dec 15,2014	$0.12		$0.12
				Total:	$1,638.23	$13.12	$1,651.35

Project Comments:

- All cost numbers are in Million$
- This report only reflects the East HVDC line (aka EATL) of the North South Transmission Reinforcement
- All 3 FAs (ATCO, AltaLink, EPCOR) for East DC were approved by AUC on Nov 15, 2012.

Project Cost Reporting for TFCMC, Project 737: North South Transmission Reinforcement (HVDC) – Western Alberta Transmission Line; April 2013 Meeting

Cost Committee Monthly Summary

Project 737: North South Transmission Reinforcement - WATL

Project Description:

Construction of a 500kV HVDC transmission line from the vicinity of the Genesee substation to the vincinity of the Langdon substation. Initial development will be a monopole with 1000 MW transfer capacity.

Month of TFCMC Meeting : 2013 / Apr
Report for the Month of : 2013 / Feb

NID Application			
Filing Date	Approval Date	TFO / Stage	NID Estimated Cost
CTI	Dec 09, 2009		
		Total	

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
2	Facility Application 2 - AltaLink West DC Facilities (Currently known to TFO as P962)	Mar 1,2011	Dec 6,2012	Apr 22,2015	$1,420.19	$21.96	$1,442.14
				Total:	$1,420.19	$21.96	$1,442.14

Project Comments:

• All cost numbers are in Million$
• AFUDC of $122.2 M has been excluded from the PPS Estimated Costs due to the approval to apply CWIP to the project instead of AFUDC. An amount of $3 M has been included in AFUDC, in the Facility Application, as this was incurred prior to the approval

Project Cost Reporting for TFCMC, Project 786: Edmonton Region 240 kV Line Upgrades (ERLU); April 2013 Meeting

Cost Committee Monthly Summary

Project 786: Edmonton Region 240kV Line Upgrades

Project Description:

Upgrade 240kV transmission lines in Edmonton area; add one 240kV phase shifter at Dover substation

Month of TFCMC Meeting : 2013 / Apr
Report for the Month of : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO	NID Estimate w/ AFUDC	w/o AFUDC
26-Aug-08	Feb 24, 2009	AML	$77.3	$72.6
		EPCOR	$9.5	$9.0
		ATCO	$38.68	$35.81
		TransAlta		
		Total	$125.4	$117.4

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	AML Keephills Substation Addition **(Formerly P953)**	Nov 6,2009	Mar 19,2010	Jul 31,2010	$101.35	$12.64	$113.99
2	AML Rebuild 240kV 904L (1043L)	Jul 28,2010	Aug 12,2011	Feb 3,2014			
4	AML 902L Restring & 909L Retermination **(Formerly P1057)**	Aug 5,2011	Nov 28,2012	Feb 3,2014			
5	AML 908L, 909L Restring **(Formerly P1058)**	Sep 13,2009	Feb 10,2010	Mar 20,2011			
6	Epoch Jasper, Petrolia (Formerly P955)	Apr 15,2010	Jun 16,2010	Jun 14,2011	$4.55	$2.60	$7.15
3	EPCOR 1044EL, 1045EL **(Formerly P955)**	Oct 15,2010	Aug 12,2011	Feb 29,2012	$7.97		$7.97
7	ATCO Phase Shifter **(Formerly P957)**	Sep 14,2009	Mar 25,2010	May 31,2013	$31.51	$3.94	$35.45
8	TransAlta 902L, 1043L **(Formerly P959)**	Aug 5,2011	Jan 11,2012	Feb 3,2014	$9.65		$9.65
				Total:	$155.0	$19.2	$174.2

Project Comments:

• All cost numbers are in Million$
FA 8 in service date delayed to Feb 2014 because of land access problems.
Change authorization dollars corrected to match the correct FA. Missed $3.3 million AFUDC credit for FA1,2,4,5
FA 1, FA5, FA 6, FA3, are complete.

Project Cost Reporting for TFCMC, Project 787: Southern Alberta Transmission Reinforcement (SATR); April 2013 Meeting

Cost Committee Monthly Summary

Project 787: Southern Alberta Transmission Reinforcement

Project Description:
Re-enforcement of transmission system in Southern Alberta

Month of TFCMC Meeting : 2013 / Apr
Month of TFO Report : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO	NID Estimated w/ AFUDC	w/o AFUDC
30-Dec-08	Sep 17, 2009	Stage I	$829.7	$829.7
		Stage II	$722.1	$722.1
		Stage III	$279.10	$279.10
		AFUDC & Escalation in NID	$1,612.00	$1,486.00
		Total	$3,442.9	$3,316.9

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	911L Line Replacement (Formerly P882)	Sep 25,2012	Nov 11,2013	Sep 21,2015	$440.17		$440.17
2	Milo Junction Switching Station (Formerly P883)	Dec 21,2009	Aug 5,2010	Nov 1,2011	$29.70	$0.47	$30.17
3	PST Addition at Russell 632S (Formerly P884)	Aug 27,2010	Jan 12,2011	Apr 25,2012	$17.21	-$0.08	$17.13
4	Cassils to Bowmanton (Formerly P886)	Jul 27,2010	Jun 8,2011	Mar 25,2014	$407.91	-$48.29	$359.62
5	Bowmanton to Whitla 240kV Transmission Line (Formerly P887)	Jul 27,2010	Jun 8,2011	Mar 31,2014	$352.75	-$42.00	$310.75
6	Med Hat Area 138kV Line Development (Formerly P888)	Dec 3,2012	Dec 10,2013	May 22,2015	$120.28	-$4.29	$115.99
7	Goose Lake to Chapel Rock 240 kV Line (Formerly P1034)	May 29,2014	Apr 24,2015	May 14,2017			
8	Etzikom Culee S/S and 240kV line to Picture Butte S/S (Formerly P1035)	May 15,2013	Apr 1,2014	Apr 30,2016			
9	Goose Lake S/S to Etzikom Culee S/S 240kV Line (Formerly P1036)	Oct 25,2013	Nov 21,2014	Sep 25,2016			
10	Etzikom Culee S/S to Whitla 240kV Line (Formerly P1037)	May 15,2013	Apr 15,2014	Dec 1,2016			
11	Blackie Area 138kV Upgrade (Formerly P1038)	May 15,2013	Mar 30,2014	Jul 17,2015			
12	Reactive Power Addition to Cypress 562S (Formerly P1039)	Aug 5,2013	Jan 20,2014	Oct 18,2014			
13	Ware Junction Substation Upgrade (Formerly P1040)	Apr 5,2011	Feb 6,2012	Nov 15,2013	$6.13	-$0.47	$5.67
					$1,374.16	**-$94.66**	**$1,279.50**

Project Comments:
• All cost numbers are in Million$

FA#1 Pending change proposal from AltaLink for AFUDC reconciliation.

Project Cost Reporting for TFCMC, Project 791: North Fort McMurray Transmission Development (NFMD); April 2013 Meeting

Cost Committee Monthly Summary

Project 791: North Ft McMurray Transmission Development

Project Description:
North Ft McMurray Transmission Development

Month of Reporting : 2013 / Apr
Report for the Month of : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO	NID Estimated w/ AFUDC	w/o AFUDC
12-Aug-10	Jun 24, 2011	ATCO	$237.4	$214.9
		Total	$237.4	$214.9

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	North Fort McMurray 240 kV Transmission Development	Sep 10,2010	Jul 28,2011	Oct 31,2013	$237.44	$91.0	$328.4
				Total:	**$237.4**	**$91.0**	**$328.4**

Project Comments:
• All cost numbers are in Million$.
AFUDC was included in the original PPS estimate of $237 million. Only a small portion of actual AFUDC prior to the change in treatment of AFUDC is included in the revised cost increase.
In service date for the remainder of the project has been delayed to Oct 31/2013 from Apr 30/2013
Approved change for $133 million

Project Cost Reporting for TFCMC, Project 811: Central East Area Transmission Development (CETD); April 2013 Meeting

Cost Committee Monthly Summary

Project 811: Central East Area Transmission Development

Project Description:

Transmission Development in Waiwright, Lloydminster, Provost, Vegreville Alliance/Battle River and Cold Lake

Month of TFCMC Meeting : 2013 / Apr

Report for the Month of : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO	NID Estimated Cost	w/o AFUDC
17-May-10	Feb 10, 2011	Stage-1 ATCO	$166.4	$160.6
		Stage-1 AML	$143.8	$133.5
		Stage-2 ATCO	$60.10	$57.99
		Escalation in NID	$60.70	$60.70
		Total	$431.0	$412.8

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	FA 1 - Cold Lake Area Reinforcements - No Bonnyville Substation	Mar 7,2012	Dec 13,2012	Oct 1,2013	$141.08		$141.08
2	FA 2 - Cold Lake Area Reinforcements - Bonnyville Substation Only	Apr 27,2012	Aug 1,2013	Dec 1,2014			
3	FA 3 - St. Paul Area Upgrades - Watt Lake, 7LA92	Dec 23,2011	Mar 1,2013	Aug 30,2013	$50.85		$50.85
4	FA 4 - St. Paul Area Upgrades - St. Paul 707S, 7L139/7L70	Jul 19,2012	Oct 1,2013	Aug 1,2014			
5	FA 5 - Vermillion 710S Substation Upgrade	Oct 24,2011	May 16,2012	Jun 1,2013	$6.70		$6.70
6	FA 6 - Heisler Area Upgrades	Dec 23,2011	Feb 27,2012	Jun 1,2013	$31.48	$4.63	$36.11
7	FA 7 - Kitscoty Area Upgrades	Jun 13,2012	May 9,2013	Jul 1,2013			
8	FA 8 - 7L749 Replacement	Jul 1,2013	Aug 1,2014	Mar 1,2015	$34.20		$34.20
9	FA 9 - 7L701 Line Clearance Mitigation (Letter Of Enquiry)	Oct 24,2011	Feb 27,2012	Apr 1,2013	$13.28		$13.28
10	FA 10 - Provost & Wainwright Area Upgrades	Sep 6,2013	Mar 21,2014	Jun 1,2015			
11	FA 11 - 7L50 Rebuild	Nov 1,2013	May 16,2014	Oct 9,2015			
12	FA 12 - Cold Lake Reinforcement (2017) - 240kV	Sep 7,2015	Mar 21,2016	Dec 1,2017			
				Total:	**$277.59**	**$4.63**	**$282.22**

Project Comments:

Project Cost Reporting for TFCMC, Project 812: Hanna Region Transmission Development (HATD); April 2013 Meeting

Cost Committee Monthly Summary

Project 812: Hanna Region Transmission Development

Project Description:
Transmission development in Hanna, Sheerness and Battle River

Month of TFCMC Meeting : 2013 / Apr
Month of TFO Report : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO	NID Estimated Cost	w/o AFUDC
14-Aug-09	Apr 29, 2010	AML	$228.1	$211.6
		ATCO	$643.9	$600.7
		Escalation in NID	$110.7	$110.7
		Total	$982.7	$922.9

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	Youngstown 772S Capacitor bank addition (Formerly P977)	Aug 9,2010	Nov 15,2010	Oct 6,2011	$6.29	-$0.36	$5.93
2	Battle River 757S Capacitor Bank addition (Formerly P978)	Aug 9,2010	Aug 27,2010	Oct 3,2011	$3.00	-$0.17	$2.83
3	New Lanfine 240/144kV substation (Formerly P979)	Dec 21,2010	May 8,2012	Mar 29,2013	$38.75	-$2.20	$36.54
4	Lanfine 959S 200MVAr SVC (Formerly P980)	Mar 4,2011	May 8,2012	May 31,2013	$39.36	-$2.24	$37.12
5	Lanfine-Oyen 144kV S/C Line 7L132 (Formerly P982)	Mar 21,2011	May 8,2012	May 31,2013	$15.62	-$0.89	$14.73
6	Relocate 7L98 Oyen 767S - Lanfine 959S (Formerly P995)	Mar 21,2011	Dec 22,2011	May 31,2013	$12.77	-$0.73	$12.04
7	Oakland 946S 240kV S/S combined with Anderson-Oakland line (Formerly P996)	Nov 25,2010	May 8,2012	Mar 29,2013	$45.47	-$1.72	$43.75
8	Oakland-Lanfine 240kV S/C Line 9L924 (Formerly P998)	Dec 21,2010	May 8,2012	Mar 29,2013	$119.93	-$3.05	$116.88
9	Coyote Lake 963S 240kV S/S combined with Oakland-Coyote line (Formerly P999)	Feb 7,2011	May 8,2012	Apr 30,2013	$77.80	-$4.42	$73.38
10	Coyote Lake 963S - Michichi Creek 802S 144kV SC Line 7L128 (Formerly P1000)	Apr 8,2011	May 8,2012	May 31,2013	$39.25	-$2.23	$37.02
11	Pemukan 932S 240 kV Substation (Formerly P1001)	Jan 24,2011	May 8,2012	May 31,2013	$32.49	-$1.85	$30.64
12	New Lanfine-Pemukan 240kV S/C Line 9L46 (Formerly P1003)	Mar 3,2011	May 8,2012	May 31,2013	$97.24	-$5.15	$92.09
13	Facility Application 13 - 144kV Capacitor Bank and Circuit Breaker Additions at Three Hills Substation 770S (Formerly P1022)	Oct 8,2010	Dec 23,2010	Dec 13,2011	$27.04	-$1.54	$25.50
18	Rowley 768S - Michichi-Three Hills 144kV DC Line 7L25 (Formerly P1022)	Nov 15,2010	May 17,2011	Jun 1,2012			
14	Hansman Lake - Pemukan 240kV S/C Line 9L966 (Formerly P1011)	Jan 24,2011	May 8,2012	May 31,2013	$67.69	-$0.34	$67.35
15	Pemukan 932S - Monitor 774S 144kV S/C Line 7L127 (Formerly P1013)	Jan 24,2011	May 8,2012	May 31,2013	$14.31	-$0.81	$13.50
16	Relocate 7L79 line from Monitor 774S - Pemukan 932S (Formerly P1015)	Jan 24,2011	May 8,2012	May 31,2013	$10.26	-$0.58	$9.68
17	Heatburg 948S - Three Hills-Nevis 144kV D/C Line 7L16/7L159 (Formerly P1021)	Feb 13,2012	Jun 13,2012	Jan 24,2013	$14.84	-$0.84	$14.00
19	Stettler 769S - Nevis 768S 144kV S/C Line 7L143 (Formerly P1023)	Jun 3,2011	Dec 20,2011	Mar 15,2013	$41.29	-$2.35	$38.94
20	Nilrem 574S combined with D/C 240kV 953L -1047L and Tucuman 478S combined with D/C 138kV 679L-680L (Formerly P1024,P1025)	Nov 12,2010	Nov 10,2011	May 31,2013	$76.50	-$0.24	$76.25
21	Hardisty 377S Substation Capacitor Bank (Formerly P1024,P1025)	Nov 29,2010	May 3,2011	Jun 28,2012			

Project Cost Reporting for TFCMC, Project 813: Red Deer Region Transmission Development (RDTD); April 2013 Meeting

Cost Committee Monthly Summary

Project 813: Red Deer Area Transmission Development

Project Description:

P813 - Transmission system development that consists of new 240/138 kV substation developments, additions to existing substations, new 138 kV transmission line developments, 138 kV transmission line rebuilds and discontinued operation of existing 138 kV transmission lines

Month of TFCMC Meeting : 2013 / Apr
Month of TFO Report : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO / Stage	NID Estimated w/ AFUDC	w/o AFUDC
20-Jul-11	Apr 10, 2012	AML Stage 1	$207.8	$196.4
		AML Stage 2	$15.0	$14.1
ed costs due to delay in P&L Complexities of work			#VALUE!	#VALUE!
		Total	#VALUE!	#VALUE!

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	Red Deer Area Transmission Development Stage I - Brownfield	Sep 26,2011	Sep 27,2012	Jul 31,2013	$20.72	$3.69	$24.41
2	Red Deer Area Transmission Development Stage I - Rebuilds	Jan 11,2013	Feb 7,2014	Aug 8,2014	$137.30		$137.30
3	Red Deer Area Transmission Development Stage I - New Builds	Jan 11,2013	Feb 7,2014	Aug 8,2014	$179.48		$179.48
4	Red Deer Area Transmission Development - Salvage	May 30,2013	Aug 30,2013				
5	RDATD Stage II 2017 Facilities	Jul 8,2013	Jan 20,2014	Jul 21,2014			
				Total:	$337.5	$3.69	$341.2

Project Comments:

Project Schedule:
• Filing of FA#2 and FA#3 delayed to April 2013 because re-design of 755L towers resulting in more consultation in area. PPS was submitted on January 17, 2013. P&L approval is expected one full after submission. Delay has also pushed ISD to Nov 2014.
• ISD for FA#1 pushed toJune 2013 because AML cannot get plant outages in winter.
etc.)
• Stage II has been added to AtTask schedule, no work has yet started to estimate scope or cost of project, other than what has been included in NID approval.

Project Cost:

On FA #1, CP#14- $1,128,000 has been approved by the AESO, but not in TFO report.
FA#2 PPS estimated cost is correct: $137,303,000 - estimate received on January 17, 2013.
FA#3PPS estimated cost is correct: $179,481,00 - estimate received October 1, 2012.

Project Cost Reporting for TFCMC, Project 922: ENMAX No. 65 Substation (ESCS); April 2013 Meeting

Cost Committee Monthly Summary

Project 922: ENMAX No. 65 Substation

Project Description:

New 240kV / 13k kV substation in south Calgary and associated transmission facilities

Month of TFCMC Meeting : 2013 / Apr
Month of TFO Report : 2013 / Feb

NID Application			
Filing Date	Approval Date	TFO / Stage	NID Estimated Cost
CTI	CTI		
		Total	

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	New 240/138 kV Substation	Dec 17,2010	Nov 3,2011	Sep 30,2013	$31.14		$31.14
2	AML- No. 65 I/C to 911L	Feb 16,2011	Nov 3,2011	Sep 30,2013	$6.90	$0.65	$7.56
				Total:	$38.0	$0.65	$38.7

Project Comments:

Changes from Last Month:
no changes this month

Project Cost Reporting for TFCMC, Project 1101: Christina Lake Area Development (CHL); April 2013 Meeting

Cost Committee Monthly Summary

Project 1101: Christina Lake Area Development

Project Description:
Christina Lake Area Development

Month of TFCMC Meeting : 2013 / Apr
Month of TFO Report : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO / Stage	NID Estimated w/ AFUDC	w/o AFUDC
20-Oct-11	Apr 24, 2012	AML	$394.9	$360.0
		ATCO	$11.7	$11.7
		Total	$406.6	$371.7

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	Facility Application 1 - CHL1 Black Spruce 154S	Jul 23,2012	Dec 24,2012	Jun 3,2013	$19.96		$19.96
2	Facility Application 2 - Black Spruce 154S to Pike 170S	Jan 18,2013	Oct 21,2013	Jun 30,2014	$116.15		$116.15
3	Facility Application 3 - Pike 170S to Ipiatik Lake 167S	Mar 28,2013	Dec 27,2013	Jul 14,2015	$256.74		$256.74
4	Facility Application 4 - ATCO Heart Lake 898S	Jul 1,2013	Apr 2,2014	Sep 18,2015			
				Total:	$392.8		$392.8

Project Comments:
• All cost numbers are in Million$.
AFUDC was included in the NID estimates - AFUDC is not included in the PPS estimates
General Comments
Schedule
Revised isd's, FA filing dates, FA approvals dates based on latest monthly reports
Costs
PPS for Ipiatik accepted - Notice to File issued

Project Cost Reporting for TFCMC, Project 1117: Foothills Area Transmission Development – East Calgary Development (FATD); April 2013 Meeting

Cost Committee Monthly Summary

Project 1117: FATD - East Calgary Development

Project Description:
Project 1117 - East Calgary Development, including:
-New 240kV line(s) from Foothills 237S to Enmax 65S
-Re-energization of 850L from 65S to 102S
-Salvage 727L from 850L junction to Janet 74S

Month of Reporting : 2013 / Apr
Report for the Month of : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO	NID Estimate w/ AFUDC	w/o AFUDC
July 5, 2012		AltaLink	$417	$391
		ENMAX	$27	$26
		Total	$444	$417

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	Facility Application 1 - Foothills-Enmax 65S AltaLink Facilities	Jul 13,2012	Jul 12,2013	Jul 30,2015	$247.94		$247.94
2	Facility Application 2 - Foothills-Enmax 65S Enmax Facilities	Jul 13,2012	Jul 12,2013	May 25,2015	$4.39		$4.39
3	Facility Application 3 - East Calgary-Janet-Langdon AltaLink Facilities	Jul 16,2012	Jul 15,2013	Jul 30,2015	$81.98		$81.98
4	Facility Application 4 - East Calgary-Janet-Langdon Enmax Enmax Facilities	Jul 13,2012	Jul 12,2013	May 25,2015	$22.66		$22.66
5	Facility Application 5 - 138kV from 237S to Okotoks	Jul 16,2012	Jul 15,2013	Jul 31,2015	$86.59		$86.59
				Total:	$443.5		$443.5

Project Comments:
Changes from Last Month:
FA#1, 3 and 5:
• Pending change proposal from AltaLink for AFUDC reconciliation, have been removed until approved.

FA#2:
There is a small difference between the PPS estimate and the "Original Budget" in TFO report, AESO is investigating with TFO on this

Project Cost Reporting for TFCMC, Project 1180: Northwest Fort McMurray Transmission Development (NW FMM); April 2013 Meeting

Cost Committee Monthly Summary

Project 1180: NW Ft McMurray Transmission Development

Project Description:
NW Ft Mac Transmission Development

Month of TFCMC Meeting : 2013 / Apr
Month of TFO Report : 2013 / Feb

NID Application				
Filing Date	Approval Date	TFO / Stage	NID Estimated Cost	w/o AFUDC
10-Nov-11	Jun 19, 2012	Stage I	$21.0	$21.0
		Stage II	$156.1	$156.1
		Stage III	$189.19	$189.19
		Total	$366.3	$366.3

Facility					Costs		
Facility Application Number	Facility Application Name	Facility Application Filing Date	Facility Application Approval Date	Overall Facility In Service Date	PPS Estimated Cost	Authorized Cost Changes	Authorized Budget
1	Facility Application 1 - Birchwood Creek9L95/Ells River	Jun 10,2013	Nov 25,2013	Sep 8,2014			
2	Facility Application 2 - Ells River/9L08/9L76	Jun 10,2013	Nov 25,2013	Jun 8,2015			
3	Facility Application 3 - To be determined	Sep 11,2013	Feb 26,2014	Jun 3,2015			
				Total:			

Project Comments:

• All cost numbers are in Million$.
AFUDC has not been included in the NID estimates
General Comments
Data updated from latest monthly reports
Costs

Schedule - schedule updated as per monthly reports or more current data

Appendix E: Transmission Facility Owners Responses

Under the TFCMC's mandate, the Committee shall allow Transmission Facility Owners (TFOs) to review and provide written comments on any report produced that references a TFO or a project a TFO is developing. The following responses were received in regards to the June 2013 Report.

ALTALINK | 2611– 3rd Avenue SE, Calgary, Alberta T2A 7W7 | www.altalink.ca

August 26, 2013

Henry Yip, Chair
Transmission Cost Monitoring Committee
Email:hcyip@teleus.net

Henry,

Thank you for the opportunity to comment on your fifth semi-annual Transmission Cost Monitoring Committee Report. AltaLink continues to be supportive of providing greater transparency to the industry practices which determine how transmission projects are built.

Section 2 of your report, *TFCMC Observations to Date*, summarizes observations regarding the cost of the HVDC converter stations, the Yellowhead project case study, cost performance audits and transmission tower design. AltaLink would like to offer the following comments for consideration to update your final report:

HVDC Converters
The HVDC converter station costs have been discussed extensively in the AltaLink General Tariff Application (GTA) proceeding. The AltaLink GTA hearing which was held in June of this year addressed many of the specific questions regarding the cost of the converter stations. I can confirm that in the confidential portion of the hearing that AltaLink did review the bid responses of the three market participants. In addition, the contract of the successful proponent was provided for review.

Also evident from the GTA proceeding was the fact that converter stations are highly customized facilities. The AESO has been involved in reviewing the technical documents that were the basis for converter bid and continues to be very involved in the technical aspects of the project. Contrary to what has been stated in your report, AltaLink has provided cost information to the AESO as requested and is currently completing the AESO 9.1.5 procurement audit on the converter stations. Given the commercially sensitive nature of the information, all cost information shared with the AESO continues to be managed in a confidential manner.

Your report raises the question of how ratepayers can be satisfied that the converter cost estimates can be reasonable. As determined through the GTA proceedings, Transgrid Solutions (TGS), the TFCMC expert consultant, has acknowledged that there are only 3 qualified HVDC global converter station providers. All 3 providers participated in both the ATCO and AltaLink converter bids. The price achieved for the converter stations is the outcome of a professional procurement process conducted in the Alberta market place. Approximately 40% of the cost of the converter stations is driven by Alberta construction labor and this influenced the ultimate market outcome. The fact that the AESO's technical experts reviewed the technical basis of the bid documents and both the ATCO and AltaLink converter stations bids independently achieved

Transmission Facility Owners Responses

ALTALINK

similar outcomes, should provide rate payers assurance that the costs are reasonable and reflect the competitive market.

Lastly, in the GTA hearing AltaLink did establish that the benchmarks provided TGS were not appropriate comparators to assess the cost of the convertor station as they were based on dated information. The assumed cost of $497M for the AltaLink converter station was shown to not be correct.

Yellowhead Transmission Development

The TFCMC has raised concern regarding a change order on the Hinton- Edson portion of the Yellowhead Transmission Development. The change order of $15M has been mischaracterized as being submitted "retroactively" to the AESO and we respectfully request that your final report be edited to remove this inaccurate characterization.

As was described in AltaLink's January presentation to the TFCMC, AltaLink had been in constant dialog with the AESO as it determined the correct course of action to take to complete the project. The cost information was provided to the AESO as soon as the contractor information was firmed up in accordance with AESO Rule 9.1. The cost order estimate provided to the AESO was that of forecasted cost to completion and was not "retroactive" or known incurred cost.

Also, the NID estimate of $88M assumed minor line salvage costs. The PPS estimate of $126M did however include an estimate of approximately $15M for the salvage work for the line. The final cost estimate for the Yellowhead project is $139M not $148M and the estimate also includes the line salvage cost. Were the full salvage cost included in the original NID estimate, the final cost would be within the accuracy of the estimate.

The Hinton Edson project was the largest singular line salvage project undertaken by AltaLink to date. The project was complex as the salvage and new build had to be done simultaneously in order to meet customer system requirements.

Cost and Performance Audits

Through the GTA process, AltaLink became aware of the interest of some intervener groups to propose cost and performance audits. The multiple different ideas put forward are extremely onerous to the TFOs and contradict the TFCMC mandate not to delay or slow the development of transmission facilities. One proposal would result in over 130 audits for AltaLink in 2014 at an estimated cost of $24M to perform the audit program. This is not practical nor would it yield the potential outcome expected in our opinion.

AltaLink believes that the AUC is in the best position to convene an industry working group to address the question of what the AUC requires in terms of information to determine the prudency of project costs.

Transmission Facility Owners Responses

ALTALINK

Tower Design

AltaLink believes that prior to submitting your final draft report that you should seek clarification with the AESO regarding the AESO's intent on reviewing and testing tower designs. A review of the tower designs would require industry participation and should include participants that have the appropriate technical knowledge to contribute to the review.

Section 3, *The TCRS Report*, summarized the progress of the Transmission Cost Recovery Subcommittee. AltaLink continues to be supportive of exploring options to appropriately manage the impact of transmission investments on customer bills.

Section 5, *TFCMC Conclusions and Recommendations*, summarizes the TFCMC's Top 5 recommended transmission priorities for Alberta Energy. AltaLink will continue to support and actively participate with customers, the AESO, the AUC and Alberta Energy industry working groups to improve the industry processes and transmission cost management.

Thank you again for the opportunity to comment on your report. If you have any questions relative to these comments, please don't hesitate to call me at 403-267-6133.

Regards,

Johanne Picard-Thompson
SVP Projects, AltaLink

cc: Jerry Mossing, VP AESO

Transmission Facility Owners Responses[35]

ATCO Electric

August 26, 2013

Henry Yip
Chair, Transmission Facilities Cost Monitoring Committee
1701 TD Tower
10088 – 102 Avenue
Edmonton, AB T5J 2Z1

Dear Sir:

Subject: Review of the Cost Status of Major Transmission Projects in Alberta – June 2013 Report

Thank you for the opportunity to review and comment on the Transmission Facilities Cost Monitoring Committee's (TFCMC) fifth report dated June 2013.

As mentioned in our comments on the TFCMC's December 2012 report, ATCO Electric (ATCO) remains committed to cooperating with all interested parties and working on a collaborative basis to help the TFCMC achieve its mandated objectives. ATCO is, however, concerned with some of the comments contained in the following sections of the report:

- **Section 2, HVDC Converter Station Costs (p. 6)**

  "As noted in our December 2012 Report, the TFCMC is concerned that the budgetary cost of the converter stations for the ATCO EATL [Eastern Alberta Transmission Line] project, at $453M, is significantly higher than the cost of similar projects in other jurisdictions around the world."

The cost of the converter stations included in the estimate resulted from a competitive process, from which the low cost bid was ultimately selected. Furthermore, the AESO conducted a procurement audit of this process and found that its procurement rules were followed. Currently, the AESO has the role of determining the reasonableness of project cost estimates on a prospective basis. As such, forecasts for ATCO's projects are derived entirely in accordance with the ISO Rules, which require a competitive bidding process that takes the unique aspects of the EATL converter station and the cost of construction in Alberta fully into account.

- **Section 2, HVDC Converter Station Costs (p. 7)**

  "*It is unclear to the TFCMC how ratepayers can be satisfied that the cost estimates for these converter stations [EATL and WATL] are reasonable, if the TFOs refuse to provide*

35 As ATCO saw an earlier form of the report, some of the pages noted in its response no longer correspond to the finalized version of the June 2013 TFCMC Report. The content referred to in the first four bullets of the letter can now be found on the pages noted below:

- The first Section 2, HVDC Converter Station Costs (p. 6) reference is actually on page 8 of this report;
- The second Section 2, HVDC Converter Station Costs (p. 7) reference is actually on page 8 of this report;
- The third Section 2, HVDC Converter Station Costs (p. 7) reference is actually on page 9 of this report;
- The Section 2, Cost and Performance Audits (p. 9) reference is actually on page 10 of this report.

Transmission Facility Owners Responses

ATCO Electric

> *the requested information. . . Several TFCMC members are pursuing this further in the current AltaLink General Tariff Application (GTA) hearing. AltaLink stated in their rebuttal evidence for the GTA that it has appropriately provided the actual tender market price in the confidential portion of the proceeding. Some of the ratepayer groups' representatives registered for this proceeding, however, are not able to access that information due to extremely onerous non-disclosure provisions. Of course, their participation in these hearings can be much more meaningful and efficient if they were able to secure the necessary information."*

These comments appear to disregard the independent adjudicatory role given to the AUC and its duty to ensure fairness in its hearing process. Providing untested evidence in a TFCMC report, while GTA proceedings charged to independently weigh such evidence are taking place, and asserting that ratepayer groups participating in those proceedings are not able to access the actual tender price evidence from the confidential portion of those proceedings, is entirely inappropriate.

The AUC's application of its own procedural non-disclosure rules and in-camera hearing process is a matter solely for the AUC to decide and apply after hearing from all parties in the proceeding. In ATCO's view, using this TFCMC Report as a vehicle to lobby for an issue that should properly be raised by intervening ratepayer parties themselves before the AUC, and independently determined by the AUC (not the Minister), is not a matter within the mandate given to the TFCMC by the Minister.

It is important to note the fact that a very significant amount of information was provided to intervener groups through ATCO Electric's 2013 – 2014 GTA with respect to the design and configuration of the EATL converter stations. Through its written evidence and during the Hearing, ATCO Electric confirmed that the contract for the EATL converter stations is a "turnkey" contract with a "lump sum" fixed price and that it had no information from the vendor with respect to the breakdown of costs within the vendor's lump sum fixed price. ATCO Electric did, however, provide information with respect to the $453M stating in its written evidence that: " *… the $453.62 million for "Material" represents the bid price of the turnkey contract plus a contingency allowance for changes in geotechnical conditions, and any scope growth items*."

- **Section 2, HVDC Converter Station Costs (p. 7)**

> *"More importantly, this issue highlights the need to strengthen the Province's legislative environment in the transmission area to incent more aggressive cost management and to compel more transparency in disclosure of transmission project costs."*

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Transmission Facility Owners Responses

ATCO Electric

Both Alberta Energy and the AESO have already initiated a review of cost accountability, as recommended by the TFCMC, including the potential for both Alberta and non-Alberta transmission development cost benchmarking.

ATCO is participating in Alberta Energy's stakeholder consultation on ways to achieve improved transmission project cost oversight and reporting. In ATCO's view, the policy outcomes of this process must reflect current demand, growth and inflation trends in Alberta and be fully capable of ensuring that TFOs can fulfill their duties to the AESO to meet Alberta's transmission needs and network reinforcement requirements in a timely and effective manner. Through this process, ATCO also hopes that the roles and responsibilities of the AESO, AUC and the TFCMC in this area are clarified.

- **Section 2, Cost and Performance Audits (p. 9)**

> *"The TFCMC sees value in conducting cost and performance audits when and where appropriate for selected major TFO projects."*

It is ATCO's view that there is no need for additional audit scrutiny as suggested by the TFCMC, as well as the Ratepayer Group, given existing internal controls and audit functions in place at the TFO, AESO and AUC.

Further, the AESO proposed to work with the AUC to develop a Transmission Project Reporting and Oversight Protocol to ensure the above processes meet the needs of all interested parties.

ATCO strongly recommends that the TFCMC conduct an objective cost-benefit analysis of this additional layer of oversight being proposed by interveners and, now, the TFCMC. Clearly the costs resulting from implementing cost and performance audits will be borne by ratepayers, if these audits do not result in cost savings.

- **Section 5, Top 5 Transmission Priorities, 1. Cost Estimates (p. 18)**

> *"We need transparency, consistency and accuracy in developing cost estimates for projects including…:*
> *e. The use of earned value reporting."*

AESO's Rule 9.1 Working Group was established to discuss issues such as earned value reporting and has been temporarily suspended. Until the Working Group has concluded its discussions and has provided recommendations, it seems premature to adopt earned value reporting, given:

- Complexity;
- Resources required for proper implementation;

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Transmission Facility Owners Responses

ATCO Electric

- Existence of lower cost alternatives; and
- Significant planning and preparation efforts required to ensure it is a workable option and to meet the requirements of different TFOs and stakeholders, different types of projects and different contracting strategies.

- **Section 5, Top 5 Transmission Priorities, 2. Joint TFO Cost Reduction Mechanisms (p. 18)**

  "Consider introducing incentives for coordinated cost saving initiatives by all TFOs together, including the following:

  a. Incentives for collaborative procurement strategies amongst the TFOs for bidding of goods and services. This would include AltaLink, ATCO Electric, ENMAX, EPCOR and other TFOs to coordinate the bidding of materials and the timing of construction so that vendors are not stressed to meet schedules; and

  b. Incentives for a repository of shared resources to minimize duplication of maintenance services and replacement parts."

ATCO Electric has the following concerns regarding collaborative procurement and, as such, does not believe that this initiative would result in cost reductions:

- A shared inventory would still need to include each TFOs complete set of maintenance parts. As a result, there would be no cost saving.
- Differences in engineering approaches among TFOs make aggregating procurement impractical, except for the most basic commodity items.

- **Section 5, Top 5 Transmission Priorities, 3. Incentives and Penalty Mechanism**

  "d. Consider establishing firm price construction costing with penalties and incentives:

  - *Penalty: shifting of cost variance responsibility to the TFO – they pay any extra costs that are incurred outside the identified risk quantification bounds; and*
  - *Incentive: the TFO gets to retain a percentage portion of any unused project risk account that is identified and quantified as an incentive."*

It is ATCO's view that a change in the regulatory compact should be very carefully considered prior to implementation. The TFOs file General Tariff Applications to recover its prudently incurred costs while also being provided an opportunity to earn a fair return. That fair return needs to be considered through many factors including an assessment of the business risks faced by the TFO. The implementation of an Incentives and Penalty Mechanism could materially impact the business risks faced by the TFOs and therefore a re-assessment of the fair return would be required.

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Transmission Facility Owners Responses

ATCO Electric

Please contact me directly at 780-420-7434 if you have any questions or require any clarification to the comments included herein.

Yours sincerely,
ATCO ELECTRIC

Dennis A. DeChamplain, C.A.
Senior Vice President, Finance and Regulatory
Transmission Division

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Transmission Facility Owners Responses

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August 19, 2013

Henry Yip, Chair
Transmission Facilities Cost Monitoring Committee
Email: hcyip@telus.net

Dear Mr. Yip,

RE: TFCMC June 2013 Report

EDTI appreciates the opportunity to comment on the June 2013 Report from the Transmission Facilities Cost Monitoring Committee ("TFCMC" or the "Committee"). EDTI remains supportive of the Committee and its efforts to understand Alberta transmission infrastructure projects and the various factors that can impact the cost, scope and schedule of these projects.

EDTI has reviewed the report with specific attention to Section 5 – TFCMC Conclusions & Recommendations, and in particular the subsection describing the TFCMC's Top 5 Transmission Priorities. EDTI is concerned that many of the TFCMC's recommendations would result in redundant regulatory processes that would not only increase project costs but would also expose TFOs to greater financial risk. EDTI provides its specific comments below.

Cost Estimates: EDTI agrees with the TFCMC that consistent and transparent cost-estimating practices would be beneficial to the industry in monitoring transmission costs. However, EDTI believes this is best accomplished not by adopting the recommendations of the TFCMC, but rather by the thorough analysis and discussions of the ISO Rules 9.1 Industry Working Group (the "Workgroup"). EDTI agrees with section 4 of the TFCMC report which states that the Workgroup was making significant progress discussing project cost estimating and cost reporting prior to the Workgroup being put on hold in April 2013. EDTI believes that the Workgroup is in the best position to review and refine cost estimating practices and procedures in the industry. EDTI will continue to participate in the Workgroup upon its reinstatement.

Joint TFO Cost Reduction Practices: Project Materials for transmission projects are currently obtained using a competitive procurement process as per ISO Rule 9.1.5. EDTI is unclear as to how collaborative procurement would reduce material cost while maintaining existing schedules, and foresees several potential detriments to such a practice. To name just a few, if a delivery is delayed or incomplete, the TFCMC recommendation provides no information on who determines who should receive the available items. Nor has the TFCMC identified any process to determine which project(s) would be delayed in such an event. If TFO's currently have different standardized equipment, a provincial standard – of which there may be none at present – would be required to implement the TFCMC recommendation, and the TFCMC recommendation is silent on how such standards would be determined. Establishing such standards could be time and cost-intensive. Further, the TFCMC recommendation could have the added effect of driving up the price on that provincially standardized equipment.

Incentive and Penalty Mechanism: EDTI believes that the TFCMC's proposed incentive and penalty mechanisms would be redundant with the current transmission cost approval process. Currently, cost

Transmission Facility Owners Responses

estimates are reviewed and approved by the AESO for reasonableness. If forecast costs are expected to exceed the Proposal to Provide Service ("PPS") estimate by 10%, the TFO submits a Project Change Proposal form outlining the reason(s) for the increase. The Change Proposal is reviewed by the AESO and either accepted or rejected. The AESO also monitors cost variances as part of the monthly reporting requirements of TFOs, and has the ability to notify the Commission of any concern or issue it has with respect to the costs of a transmission facility project. Additionally, TFOs must demonstrate that all costs incurred as part of a transmission project are incurred prudently as part of its general tariff proceeding. If the Commission is not satisfied that costs were incurred prudently, costs may be disallowed. For these reasons, additional extensive cost accountability practices that may add additional layers of regulatory burden would be unnecessary and redundant. Added regulatory burden may in fact delay some projects, and thus increase project costs rather than reduce them.

The TFCMC also appears to advocate shifting cost variance responsibilities to TFOs (see subsection d). This would increase the financial risk to TFOs, and any such increase in financial risk would need to be taken into account when setting the appropriate capital structure and return on equity of TFOs.

The cost and performance audit process proposed and discussed in Section 2 (page 9) also appears redundant with existing practices. Costs are currently monitored in real time through the monthly reporting process to the AESO. The AESO also currently audits TFO procurement practices specific to transmission projects as part of its Rule 9.1 compliance audit program, and as stated above, if the Commission is not satisfied that all costs were incurred prudently, those costs will be disallowed. An additional layer of performance audits would, in EDTI's view, constitute an unnecessary and unjustified regulatory burden. Also, EDTI does not believe the statement, "as often occurs, the costs of the audits can be more than paid for from savings arising from the audits" is accurate or supported by evidence.

Project Prioritization: The TFCMC suggests that a project prioritization process should be implemented which would enable a project's in-service date to change at any time, from when the approval process begins to right before the project is energized. EDTI notes that the AESO is responsible for assessing the current and future needs of market participants and planning the capability of the transmission system to meet those needs. This includes prioritizing major transmission projects being built in the province. Stakeholders can generally challenge the AESO's prioritization of a project and the need of a project during the Need Identification Document process.

EDTI understands that a load forecast driving the need of a project can change between the time in which permit and license is granted and when the project is energized. However, the Commission is responsible for assessing the accuracy of the load forecast in order to decide on a project's in-service date. Adding additional project prioritization reviews will not fully mitigate the risk of a project being put into service early. Whether a project has been put into service too early can only be determined when the load is actually realized in the area. Adding further project prioritization reviews after a Permit and License is granted and when the project is energized would significantly increase the financial risk to the TFOs, likely significantly increase the cost of the project, add additional regulatory burden on already scarce resources within the industry, and dilute the significance of the Permit and License.

The comments above offer a brief summary of EDTI's preliminary thoughts on the TFCMC's June 2013 report. If you have any questions, please do not hesitate to contact me at 780.441.7111.

Regards,

<<Original Signed By>>

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