



talk about

Alberta's regulated electricity transmission system

December 2009

The transmission system is the electrical equivalent of our highway system. Transmission lines move power from where it is made—generated—to where it is needed. Transmission is the “backbone” of the entire electric system. Alberta’s transmission system is aging, congested and inefficient.

Alberta’s electricity transmission system has not been significantly upgraded in more than two decades. No major new lines have been built since the 1980s.

Congestion limits the connection of new generation sources, limiting competition in the market. Inefficiency leads to line losses. Consumers pay for congestion and inefficiency in the form of higher energy costs.

Demand for electricity by Albertans has increased substantially with the growth of industry, population and business. Compared to other provinces, growth in demand for electricity is the highest in Alberta.

From 2001 to 2008, Albertans’ demand for power has been equivalent to adding two Red Deer-sized cities *each year* to the province.

New generation and new transmission

Approximately 11,500 megawatts of new generation—nearly equal to the current amount of electricity that can be produced in the province today—will be required during the next 20 years to meet forecasted demand and to replace older power plant facilities.

Government’s plan to keep the lights on

The Government of Alberta’s plan for an upgraded electricity transmission system, described in the [Provincial Energy Strategy](#), is based on the policy that transmission is a public good that must be available in advance of need.

The Provincial Energy Strategy identifies several key actions Alberta will take to support sustained economic prosperity and clean energy production. Actions include planning for a comprehensive upgrade to the transmission system with access to renewable or low-emission electricity, such as wind power in southern Alberta.

The Alberta Electric System Operator (AESO) has identified critical transmission infrastructure projects needed for Albertans as described by the Provincial Energy Strategy.

The AESO, Alberta’s not-for-profit electricity system planner, is independent from the electricity industry and the Government of Alberta. The AESO has identified the transmission system that is required to meet the needs of Albertans into the future.

The AESO operates in the public interest in accordance with direction contained in the *Electric Utilities Act*.

The AESO has the statutory mandate, the resources, the technical expertise, and the skills to prepare long-term transmission system plans for Alberta. Transmission facility owners takes direction from the AESO.

The AESO’s long-term plan identifies the immediate requirement for five critical transmission infrastructure projects (see page two for project overview).

The need for one of these, a southern system reinforcement to open the grid to more wind power, was approved by the provincial regulator, the Alberta Utilities Commission (AUC) on September 8, 2009.

The transmission of electricity is regulated through the AUC. The AUC is responsible for making decisions about transmission facilities and lines. This includes whether they are needed, where they will go and how the costs are passed on to consumers. With the *Electric Statutes Amendment Act, 2009*, (formerly Bill 50) the AUC will no longer be responsible for deciding need on critical transmission infrastructure. That responsibility goes to the Government of Alberta. Currently, the need for four new projects has been approved under the act. The Electricity Statutes Amendment Act was passed in November 2009.

How will new transmission help fix the problem of congestion?

Transmission is the highway system that allows the producers of electricity (generators) to deliver their product (electricity) to market (customers). The transmission system we have today is not able to deliver all the electricity that may be produced to the customers. The critical transmission infrastructure projects identified will help ensure there is an adequate supply of competitively priced electricity available for Albertans.

How will new transmission help fix the problem of inefficiency and line loss?

As electricity is carried along transmission lines, some of it is lost as heat. Line losses rapidly increase when transmission lines are working at or near their limits.

When electricity is lost during transmission, more electricity has to be generated to meet demand, which increases costs. Any increase in the cost to produce electricity ultimately results in increased costs to consumers.

The cost of line losses in 2008 was about \$220 million. That lost energy is enough to power about 350,000 homes for one year. Without new transmission line losses will continue to increase.



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Immediately required critical transmission infrastructure project overview

The first of these critical transmission infrastructure projects, the southern system reinforcement, was approved by the provincial regulator on September 8, 2009.

The South reinforcement is a looped double circuit 240 kilovolt (kV) system that includes an extension to connect to the existing 500 kV line. This will increase the ability of the southern system to connect up to 2,700 megawatts of electricity from new wind farms. Currently, Alberta has 591 megawatts of wind generation capacity.

The Government of Alberta approved the need for the remaining four critical transmission infrastructure projects under the *Electric Statutes Amendment Act, 2009*. The projects are:

1. Two new high-voltage direct current lines between Edmonton and Calgary to carry more power to Alberta consumers in central and southern Alberta.
2. One new alternating current line between Edmonton and the Heartland area to carry power to industrial consumers like Alberta upgrading facilities.
3. Two new alternating current lines between Edmonton and Fort McMurray to carry power from co-generation plants to Alberta consumers.
4. A substation in Calgary to provide more reliable service to customers in south Calgary.

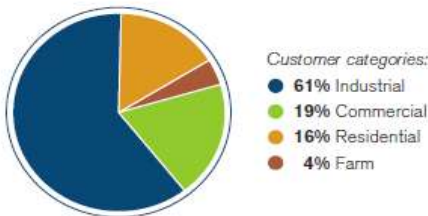
The total cost estimate for these five projects is \$4.167 billion.

How much will immediately required transmission cost and who pays?

The system that delivers electricity to Alberta consumers is owned, built and maintained by investor-owned companies known as transmission facility owners.

All consumers—whether industrial, commercial, residential, farm or irrigators—have always paid for transmission.

This chart is an approximation of how transmission costs are allocated:



In Alberta, the largest consumers of electricity are industrial and commercial users.

Transmission rates, the charges for transmission projects on customers bills, are regulated by the AUC. Transmission rates are user based (related to consumption).

For every billion dollars spent on transmission, the estimated cost for the average residential household (which uses approximately 600 kilowatt hours per month) is \$1.00 per month.

The impact to the average residential customer's bill for the costs associated with the *Electric Statutes Amendment Act* (Bill 50) will be about \$3.50 per month or \$42 per year. This increase will start showing up on bills around 2012 or 2013 and will gradually increase to \$3.50 as the transmission projects in the act are completed. **(This cost estimate is based on staging of projects, see fact sheet on the Electric Statutes Amendment Act, 2009.)**

Imports/exports

Alberta is a net importer of power, which means over the long term, power has to be brought in from Saskatchewan and British Columbia to meet Albertans' needs.

Interties, the lines over which electricity is exchanged with our neighbours, are required for reliability. All provinces except Alberta have interties with neighbouring provinces **and** states.

Alberta is the least interconnected jurisdiction in Canada.

Consumers pay for transmission to the extent that they use the service. Exporters also pay for use of the system. If a company uses one of Alberta's interties (with Saskatchewan or British Columbia) to export power, it must pay to use the Alberta transmission line. The payments made by exporters for the use of the lines to export power offset the costs to Alberta customers for the transmission system.

Landowner concerns

When it comes to transmission siting of new projects, landowner issues will be heard, impacts will be mitigated to the extent possible and landowners will receive fair compensation.

Specific siting for projects will be determined during the AUC's open and transparent hearing process. This hearing process starts after a facilities application has been filed. No facilities applications have been filed for the five critical transmission infrastructure projects.

Transmission lines are designed to be safe, built to be safe and operated to be safe. For the Government of Alberta, the AESO and the AUC, there is no other option.