



talk about

Alberta's electricity transmission system

June 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.

Electricity is generated using different fuel sources. Alberta's electricity is generated from coal, natural gas, hydro, wind, waste and forestry biomass and fuel oil.

Alberta's electricity transmission system—the grid—has not been significantly upgraded in more than two decades. **No major new lines have been built since the 1980s.** At the same time, demand for electricity by Albertans has increased substantially with the growth of industry, population and business.

From 2001 to 2008, Albertans' demand for power has grown so much that it has been equal to adding a city twice the size of Red Deer *each year* to the province.

Like repairs to an aging home or new paving on major roadways, it is time for Alberta to upgrade its transmission system to ensure safe and reliable electricity service.




Transmission is the "backbone" of the entire electric system. Alberta's transmission system is aging, congested and inefficient. The need for major new transmission is critical.

Albertans need reliable power at home to turn on the lights and to power appliances. Albertans need reliable power on the farm and to keep businesses running. Albertans need reliable power at industrial sites—it is an essential input to the function of our economy.


What is the Government doing about this?

The Government of Alberta's plan, described in the [Provincial Energy Strategy](#), for an upgraded electricity transmission system 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, including:

-  Lead the development of a plan for a comprehensive upgrade to the transmission system.
-  Adopt and implement a policy to build transmission, as part of the Alberta interconnected electricity system, to zones of renewable or low-emission electricity.
-  Review and enhance the regulatory process for transmission siting. Landowner issues will be heard, impacts will be mitigated to the extent possible and landowners will receive fair compensation.

www.energy.alberta.ca

 Adopt and implement a policy to build interties to other markets to ensure an adequate supply of electricity to Alberta as well as to facilitate development of additional wind generation.

The goal is to ensure there is sufficient critical transmission infrastructure to provide for the addition of new generation capable of meeting long-term demand throughout the province.

For more information on the *Provincial Energy Strategy*, visit: www.energy.alberta.ca.

To move forward on these actions, legislation has been introduced. Bill 50, the *Electric Statutes Amendment Act, 2009*, was given first reading on June 1, 2009. To follow the progress of this bill visit www.assembly.ab.ca.

Under this proposed legislation, the Government of Alberta will approve the need for critical transmission infrastructure. The existing regulatory process will continue to address public concerns as to where transmission facilities are located.

Why do this now?

With current and anticipated growth, additional electricity transmission is needed now. In recent years, the transmission system has been working at or near its limits for extended periods of time. This results in increased risk of wide-spread power outages and unreliable service.

Approximately 11,000 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.

Generation is built and paid for by private investors. To encourage new investment in all forms of electric generation—whether it is cleaner coal, natural gas, wind, hydro or biomass—generation companies need to know they will be able to deliver their product to electricity consumers.

Without sufficient transmission, new electricity generation is like a product that sits in the factory where it is made, gathering dust. It cannot be delivered to where it is needed.

With the current economic slowdown, there is an opportunity to build transmission projects now using available labour forces and taking advantage of declining prices for materials such as steel.



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What is line loss?

Transmission lines carry electricity from where it is produced to where it is used. As electricity is carried along transmission lines, some of it is lost as heat. Line losses increase when transmission lines are working at or near their limits.

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

It is estimated that the cost of line losses in 2008 was about \$220 million. That lost energy is enough to power 350,000 homes for one year.

Where are the new lines going? How many new lines are there?

No decisions have been made on the siting of new transmission lines. The Alberta Electric System Operator (AESO) has completed extensive planning, which has identified five critical transmission infrastructure projects:

- Edmonton to Calgary: two new high-voltage direct current (HVDC) lines that will carry more power to customers in central and southern Alberta;
- Edmonton to the Heartland region: one new 500 kilovolt (kV) alternating current (AC) line to address the power needs of industry;
- Edmonton/Heartland region to Fort McMurray: two new 500 kV AC lines to support ongoing oil sands development and connection of industrial cogeneration to the provincial transmission system;
- Calgary reinforcement: an upgrade of the system in and around the City of Calgary. The upgrade is required to carry additional electricity and provide stronger connections and power service to the city and nearby towns; and
- South reinforcement: two new double circuit 240 kV lines along with a new 500 kV substation to increase the ability of the southern system to connect new wind farms.

The first four projects are included in Bill 50. The South reinforcement is currently before the AUC.

The AESO is a not-for-profit, independent organization that plans and operates Alberta's transmission system. The AESO's mandate is to provide safe, reliable and economic operation of the electricity system for Albertans.

The AESO is involved in more than 90 transmission system planning projects in the province. www.aeso.ca.

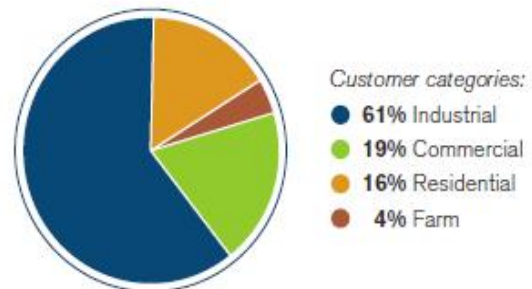
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How much will the upgrades cost and who pays for them?

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 or delivery service. The rates paid for transmission are regulated and approved by the Alberta Utilities Commission (AUC), a quasi-judicial body.

The amount paid for transmission is based on the amount of power consumed. In Alberta, the largest consumers of electricity are industrial and commercial users. The chart below is an approximation of how transmission costs are allocated.



What about landowner concerns?

When it comes to transmission siting, 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.