



# ENERGY SUPPLY AND COGENERATION

# ENERGY OPTIONS

- ▶ The energy market in Alberta provides you with alternatives to purchasing your energy from the traditional large energy retailers.
- ▶ This presentation identifies information and options available to you so that you can decide how to stabilize and maximize your purchasing power for all of your energy purchases and how we can assist you to achieve those goals.

# OVERVIEW

- ▶ The current Alberta electrical energy market is comprised of two major components, the commodity and the delivery.
- ▶ Currently much of Alberta's base load commodity supply is coal fired. Current Provincial Regulations require that electrical generation (the commodity) switch from coal fired to natural gas fueled.
- ▶ Delivery is done via the integrated provincial transmission and distribution wires system.

## OVERVIEW (2)

- ▶ There are several mandated improvements to the Provincial electrical delivery system that are either under construction or that are completed.
- ▶ The conversions and improvements to the electrical generation plants and to the electrical delivery system, have caused the facility operators to invest significant amounts of money.
- ▶ The money invested by the facility operators is recovered by increasing your current and future electrical bills through cost of service increases.

# POWER GENERATION

- ▶ Electricity generation in Alberta is managed by the Alberta Electric System Operator (AESO) and is operated primarily by provincially regulated operators such as TransAlta and ATCO Power.
- ▶ Alberta's conventional power generation is in the process of converting approximately 3,300 MW of coal fired generation to natural gas fired units by 2020.
- ▶ Once these conversions are completed, the generating companies will be able to recover their newly developed investments by increasing the cost of power.

# POWER TRANSMISSION

- ▶ The Provincial Transmission System is regulated and managed by the Alberta Electric System Operator (AESO) but are owned/operated by provincially regulated operators such as AltaLink and ATCO Power.
- ▶ Recently, two 500 KV DC Transmission projects were completed, with a new 500 KV AC Transmission project currently under construction.
- ▶ The transmission operators are paid for operating and improving their system through the Transmission Tariff that is included in your electrical bill.

# POWER DISTRIBUTION

- ▶ The Provincial Distribution Systems are provincially regulated by the Alberta Utilities Commission (AUC) but operated by various owner/operators such as FortisAlberta, Atco Electric, EPCOR and ENMAX.
- ▶ Power transported within these Distribution systems is generally sourced from the Transmission system.
- ▶ The Distribution operators, like the Transmission operators, are paid for operating and improving their system through the Distribution Tariff that is part of your electrical bill.

# WHAT ARE THE ALTERNATIVES?

- ▶ Wind?
- ▶ Solar?
- ▶ Cogeneration?





# COGENERATION

## ► How Cogeneration works:

- Natural gas is used as the fuel to operate an engine.
- The engine produces electricity, heat and exhaust gases.
- The electricity is primarily used on site with any surpluses sold to the grid.
- The heat is captured and utilized on site.
- The exhaust gases, if requested by the customer, can be captured for onsite utilization.

# COGENERATION (2)

## ▶ How Cogeneration is evaluated:

- An energy audit is performed to evaluate the customer's energy needs.
- If the energy audit determines that a cogeneration unit is a good economic and operational fit, then an energy supply program is developed and a contract is signed.
- The contract identifies the volume of electricity to be delivered, how much heat will be captured and delivered and, if requested, how much exhaust gases are captured and delivered to the customer.

# 2019 Residential Comparison

## Billing Period of 31 days with consumption of 1,000 kWh

ITEM	Utility Rate	Units consumed this bill	Monthly Bill (estimated)	Monthly Bill with cogen
Energy per kWh	*At Market	1,000 kW	*At Market	**Project specific
Administration Charge per day	\$0.2345/kW	31 Days	\$7.77	\$0.00
Distribution Charge per kWh	\$0.0493/kW	1,000 kW	\$49.30	\$0.00
Transmission Charge per kWh	\$0.0370/kW	1,000 kW	\$37.00	\$0.00
Access Fee	10%		\$8.63	\$0.00
GST			\$8.13	TBD
BILL TOTAL (without energy cost)	\$0.1108/kWh		<b><u>\$110.83</u></b>	**Project specific
BILL TOTAL (with current retail market energy included)	\$0.1707/kWh		<b><u>\$170.73</u></b>	**Project specific

- \*Current retail market energy is approximately \$0.0599/kWh
- \*\*Project specific cost determined by customer's energy profile.

# ADVANTAGES OF COGENERATION

- ▶ Your electricity is produced on site.
- ▶ Your existing grid connection is retained as backup.
- ▶ You can set long term commodity (electricity and natural gas) pricing.
- ▶ Excess electricity can be sold to the grid for an additional revenue stream for our clients.
- ▶ Our clients should realize energy savings in the ranges of 15% to 30% per year over 10 to 15 year terms.

# SUMMARY

- ▶ HF Energy:
  - Will work with you to determine your best energy supply options.
  - Can secure long term energy purchase pricing for input fuel.
  - Manage the sale of any surplus energy produced.
  - Has the team with the knowledge, ability and network connections to Develop, Construct, Finance and Operate your project. All of which results in you obtaining energy security now and into the future.
  
- ▶ HF offers the following Ownership and Operational project options:
  - Ownership (HF ownership, Customer ownership or Joint Venture)
  - Operation of all or part of the cogeneration facility



QUESTIONS