**Who we are**

The Alberta Electric System Operator (AESO) leads the safe, reliable planning and operation of Alberta’s Interconnected Electric System. We are an independent, not-for-profit organization acting in the public interest of all Albertans. The AESO has no financial interest or investment of any kind in the power industry.

The AESO also facilitates Alberta’s fair, efficient and openly competitive electricity market, which in 2011 had about 160 market participants and approximately $8 billion in annual energy transactions.

**What we do**

The AESO operates the provincial transmission system so that all Albertans can count on safe and reliable electricity to power our homes and businesses each and every day. The AESO also carefully plans upgrades to the system to ensure we keep pace with Alberta’s growing demand for power.

**What you’ll find in this issue**

- How Alberta’s electricity market attracts investment and helps fuel the economy
- Consultation: The many ways the electricity industry keeps you informed
- How emerging energy storage technologies may shape our future
- The Utilities Consumer Advocate: Information and advice for all Albertans
- A list of common devices and appliances and how much electricity they use
- Facts and definitions to help you understand electricity and make informed decisions

**We’re listening**

Powering Albertans is published to help Albertans better understand the complex electricity industry and its importance to our quality of life and the province’s economic well-being. We would love to hear what you think about our publication. Previous editions are available at www.poweringalberta.com

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**Power Lingo**

The electricity industry has a language all its own. Look for these terms throughout the magazine to learn more.

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**Kilowatt Hour (kWh)/Megawatt Hour (MWh)**

Power is measured in watts, with one kilowatt (kW) equaling 1,000 watts. Imagine 10 lamps lit with 100 watt bulbs for one hour. At the end of the hour, the lamps will have used one kilowatt hour of electricity. Electricity retailers typically bill households in kilowatt hours. A megawatt (MW) is equal to 1,000 kilowatts. A megawatt hour measures the amount of electricity a generator produces in one hour.

**Transmission facility owner (TFO)**

Transmission facility owners own and operate high-voltage power lines and equipment within specific service areas that link generating units to large customers and distribution systems. Siting, routing and construction of transmission facilities are the responsibility of the TFO.

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**Generator/Generating Unit**

A generator is a machine that converts mechanical energy into electrical energy. Generator can also refer to a facility that produces electricity from a variety of fuel sources. A generating unit is any combination of physically connected machinery (e.g., boilers, turbines, etc.) operating together to produce electric power.

**Alberta Interconnected Electric System (AIES)**

Sometimes referred to as “the grid,” the AIES is a network comprised of all electrical transmission facilities and distribution systems in Alberta that are interconnected.

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**Needs Identification Document (NID)**

A document filed by the AESO with the Alberta Utilities Commission (AUC) in which the AESO demonstrates a need to reinforce the transmission system to meet demand and/or provide access to interconnect new customers and generators to the system.

**Black start**

This service involves the provision of generating equipment that can be started without an outside electrical supply. Black start capability allows a defined portion of the transmission system to be energized following a system blackout. This means it can be synchronized to the rest of the system in the process of restoring transmission system operation.

**Supply/demand balance**

Within an electric system, supply and demand for power must always balance. Electricity currently cannot be stored efficiently so it must be used at the same instant it is produced. The AESO’s system controllers are responsible for ensuring there is adequate power on the electric system and that supply and demand balance at all times.

**Dispatch**

The process by which the system operator directs the real-time operation of a supplier or a purchaser to cause a specified amount of electric energy to be provided to or taken off the system. Dispatch control includes instructions to synchronize, desynchronize, increase or decrease electrical output and any other instruction relevant to maintaining system security.
No matter which part of the province you live in, electricity is vital to us all.

For this reason, involving the public in the planning and operation of our interconnected electric system is equally important.

Long before the AESO outlines proposed transmission development in a Needs Identification Document (NID) and submits it to the Alberta Utilities Commission (AUC), and well before transmission and other electrical systems are constructed, the industry undertakes a careful, detailed public consultation process so that the province’s interconnected electric system serves Albertans in the best possible way.

That’s why, under guidelines set by the AUC, the electricity industry conducts hundreds of open houses and travels thousands of kilometres down Alberta highways every year.

On any given day, representatives from different sectors of the industry will be consulting somewhere in the province, perhaps visiting a local Chamber of Commerce, accepting a request for a one-on-one meeting, hosting a focus group or meeting with provincial and municipal governments or First Nations and Métis about proposed projects in the area.

NID applications are advertised in local newspapers, complete with a map, contact information and a website where the document can be found prior to being filed with the AUC. As well, project information packages are mailed to potentially affected landowners.
All stakeholders have the right to comment on the AESO’s plans, decisions and actions.

Who seeks consultation?
Consultation on a proposed transmission line or other developments affecting the current delivery of electricity often happens in stages. At the initial planning stage, the AESO consults with potentially directly affected stakeholders to provide the information they need and get meaningful input in return. The need for new transmission is discussed and it is not until after that input is carefully considered that a NID outlining the AESO’s proposals is submitted to the AUC.

From there, the local transmission facility owner (TFO) will embark on its own public consultation efforts to address concerns on routing, impact on land values and local agriculture and much more. This gives stakeholders more than one opportunity to weigh in on important plans affecting all Albertans. The AESO often participates at this stage too, helping to ensure that the full range of information is available.

The benefits of listening
Face-to-face stakeholder sessions provide the opportunity to ask questions and build mutual understanding. At the planning stage, the AESO uses the input of stakeholders to improve the quality and implementation of its decisions.

It’s important to note that the AESO consults with the public and industry representatives to ensure that proposed plans carefully balance technical, cost and social considerations.

Making information accessible
Besides making specific project consultation details accessible, the AESO also provides numerous fact sheets, industry media coverage, transmission planning documents, video segments, past issues of Powering Albertans magazine and more at www.poweringalberta.com.

QUESTIONS?
Contact the AESO at 1-888-539-AESO (2376)
email us at powering.albertans@aeso.ca
or visit www.poweringalberta.com
You’ve Got a
Powerful Voice in the UCA

As an electricity or natural gas customer in Alberta, consumers have a powerful voice. The Utilities Consumer Advocate (UCA) is that voice, providing information and advice and representing your interests in Alberta’s electricity and natural gas markets.

In addition to providing accurate information to help make choices that work best for consumers, the UCA has the power to investigate, mediate and make your voice heard by both government regulators and the utilities industry.
Some of the ways the UCA represents electricity consumers include:

- **Advocating for reasonable costs** – acting as the voice of consumers during regulatory proceedings to secure the lowest possible regulated rates, consistent with reasonable service.

- **Empowering Albertans** – providing consumers with the information needed to make informed choices about how to purchase electricity.

- **Safeguarding consumer interests** – working closely with other government agencies and utility service providers, ensuring consumer interests are addressed in policies, regulations and industry practices.

- **Providing balanced representation** – advocating for equitable distribution of rates among all rate classes and fair consideration of consumers’ current and long-term interests.

- **Resolving concerns respectfully** – investigating and mediating concerns with utility companies when consumers have exhausted known avenues of issue resolution.

**RATING YOUR OPTIONS**

Many customers have a contract with their supplier that ensures they are charged either a fixed rate or a variable rate for electricity. Customers who are not on a contract are charged a regulated rate that is reviewed by the Alberta Utilities Commission each month. The regulated rate is based on the monthly forward market price for electricity (the predetermined price to be delivered in the next month). Regulated rate customers may notice the price of electricity fluctuates from month to month due to factors such as weather, the economy, supply and demand and generator fuel costs. Customers can choose between a contract from a competitive retailer and the regulated rate from a regulated supplier.

FOR MORE INFORMATION
Visit [www.ucahelps.alberta.ca](http://www.ucahelps.alberta.ca)
To receive assistance from the UCA, call **310-4-UCA (310-4822)** or email [UCAhelps@gov.ab.ca](mailto:UCAhelps@gov.ab.ca)
Follow the Flow of Electricity!

*From its source to your home*

**A. Generating plants**
Power is generated using a fuel source—primarily coal or natural gas—to create a rotating motion that is turned into electricity.

**B. Wind turbines**
Electricity is generated when wind causes turbines to spin.

**C. Transmission substation**
A set of large transformers increases the voltage of power coming from a generating plant for the long journey through the transmission grid to customers.

**D. Transmission line**
Transmission is the backbone of the electrical system, moving power from where it is generated to where it is needed in our homes, farms, businesses and industries. Towers and poles support sets of high-capacity wires that move electricity throughout the province.

**E. Intertie**
Connections with neighbouring electric systems allow power to move in or out of the province, ensuring a stable and reliable supply of electricity.

**F. Solar panels**
When sunlight hits thin metallic plates called photovoltaic cells, it creates electrical currents that produce electricity. Photovoltaic cells are grouped together to form solar panels that can be installed on roofs of houses, office towers, barns and other buildings to supply electricity.
**G. Industrial customer**
Industry uses about 60 per cent of Alberta’s total electricity supply. Some facilities generate waste heat that can be converted into electricity and used as a power source or sold back to the transmission grid.

**H. Distribution substation**
Power lines enter a substation where a transformer reduces voltage to a level that can be safely carried on the lines that deliver electricity to homes, farms and businesses.

**I. Distribution line**
Low voltage power lines are best for transporting electricity over short distances. These distribution lines carry electricity from a substation to homes, farms and businesses.

**J. Power meter**
Power meters measure the amount of electricity delivered to a home, farm or business.

**K. Run-of-river hydro power**
The flow and elevation drop of a river is harnessed to generate electricity. Some of the river’s water is diverted through a pipe leading to turbines, then returned to the river downstream. Run-of-river projects do not require dams and flooding of surrounding land, so the impact on people and the environment is minimal.
Alberta’s wholesale electricity market encourages the development of new generation, delivering competitively priced electricity with no government investment or taxpayer debt.

Our need for electricity has grown by 84 per cent over the last 20 years, driven by a 43 per cent growth in our population. With an additional 6,000 megawatts (MW) of power required by 2020, it is good to know that Alberta’s competitive wholesale electricity market is set up to make sure Albertans continue to have reliable, competitively priced electricity.

Alberta’s market design has encouraged the addition of over 6,400 MW of supply since 1998, with investors bearing both the financial risk and reward.

Having the province’s total electricity demand met by openly competitive generation is important. Generation is the most significant component of our overall electricity costs. The wholesale market gives us access to competitively priced power by providing a reliable price signal, aiding companies in making investment decisions about building electricity generation. This has been well proven, says Kelly Gunsch, Vice-President, Market Services for the AESO.

“From 2009 to 2010, electricity rates for end users rose across Canada but here in Alberta they actually fell due to a market design that more clearly aligns prices with supply, demand and the fuel market,” says Gunsch. “Alberta’s wholesale market has delivered on its objectives and we expect it to continue to do so.”

When demand for power drops in Alberta, as it did during the recession, consumers can and did benefit from a corresponding drop in prices. An openly competitive wholesale market has helped keep the province’s average electricity prices middle-of-the-pack compared to other provinces, despite massive growth and increased electricity demand in Alberta that has exceeded all other provinces.
Confirmed by experts
These points are well supported by an independent study recently commissioned by the Utilities Consumer Advocate, the Independent Power Producers Society of Alberta and the Industrial Power Consumers Association of Alberta. Conducted by London Economics International in March 2011, the study benchmarked Alberta’s electricity prices for the next five years against other Canadian provinces, including the rate impact of proposed transmission projects. It concluded that, when compared fairly, Alberta’s all-in delivered energy prices—the total cost of getting electricity to the consumer including generation, transmission and distribution—are competitive across Canada for both residential and industrial consumers.

The London Economics study also showed that the fact Alberta has maintained electricity rates comparable to other provinces—despite having considerably less access to cheaper forms of generation such as the abundant hydro resources in Quebec, Manitoba and British Columbia—is testament to the effectiveness of our open market system.

This conclusion is further supported by a report from The Brattle Group, an organization of global financial and economic experts, stating that “the current market design is well-functioning” and “as a result we see no compelling need for major changes in Alberta’s electricity market.” Johannes Pfeifenberger is a Principal at The Brattle Group and headed the study of Alberta’s market. He notes that customers in Alberta are not bearing the risk of generation investment. “It’s investors who bear the risk of investment,” he says. “Sure, if you put all the risk back to taxpayers, you might have some years where you wind up having lower costs but you might have other years where you have higher costs due to the fact that you have no competitive pressures.”

Reaping the benefits
The advantages electricity consumers gain from a competitive wholesale electricity market are numerous. Alberta’s market design has proven capable of attracting generation investment and will continue to deliver a long-term supply of needed electricity without government investment or taxpayer debt.

“We looked at whether new generation technologies were financially viable or not—and we found that current market prices do support new entry. As we’ve seen, a number of projects have been announced—they are getting built,” says Pfeifenberger. “Importantly, the risk of that new investment is entirely shouldered by the investors.”

In a regulated system, utilities have the right to recoup all their costs as well as earn a regulated profit. In the open market system, the generation investors themselves bear the risks associated with both costs and the resulting profits or losses. In the case of the 6,400 MW of new generation added since 1998, that amounts to approximately $11.5 billion of private investment not borne by taxpayers.

As well, the existing policy framework surrounding Alberta’s Interconnected Electric System, market design and transmission system supports the development of all forms of electrical generation, whether it’s large-scale, local, fossil-fuel based or renewable.

“Power costs in Alberta approximate the full economic cost of providing electricity much more closely than do power costs in other provinces,” says the AESO’s Kelly Gunsch.

“Today, Alberta has an installed capacity of more than 13,000 MW of power, and the wholesale electricity market is designed to send a strong message to investors to enter the marketplace and ultimately supply the 19,000 MW we will need less than 10 years from now. As a key enabler of our approximately $300 billion economy, this added generation will be vital and the province can be confident it will be there.”
Key Industry Players

What’s really involved in moving electricity from where it’s produced to your home or business? The process involves several organizations, each with specific roles and responsibilities that ensure the lights go on when you flick the switch.

Department of Energy
The Department of Energy (DOE) is responsible for ensuring Alberta’s resources are developed in a way that is appropriate, environmentally sustainable and in the public interest. To assure Albertans of a long-term, reliable supply of competitively priced electricity, the DOE develops acts and regulations that provide the legal authority for the planning and operation of the transmission system, the connection of customers and the facilitation of the competitive electricity market.

Alberta Electric System Operator
The Alberta Electric System Operator (AESO) is responsible for the safe, reliable and economic planning and operation of the Alberta Interconnected Electric System. As a not-for-profit entity, the AESO owns no assets and has no industry affiliations or financial investment of any kind in the electricity industry. The AESO is mandated to interconnect customers and plan and coordinate the day-to-day operation of the province’s electric transmission system and the wholesale electricity market. When the AESO determines the transmission system must be expanded or enhanced to meet increased need for electricity, it prepares a Needs Identification Document (NID) for approval with the Alberta Utilities Commission (AUC). The AESO also monitors market participant compliance to rules, and refers any suspected breach of those rules to the Market Surveillance Administrator for investigation and enforcement.

Generators
Generators are facilities that produce electricity from a variety of fuel sources. Generation is not regulated or centrally planned in Alberta, and the decision to build generation is in the hands of investors. Thermal sources account for most of Alberta’s installed generating capacity. Coal-fired plants make up approximately 45 per cent of the province’s total generating capacity and natural gas accounts for about 40 per cent. This includes cogeneration at industrial operations producing electricity as a by-product of normal activities. The remaining generation sources are hydro, wind and biomass (energy produced from organic sources such as wood waste or garbage).
Transmission Facility Owners
Transmission facility owners (TFOs) own, operate, build and maintain the system of high-voltage power lines and other electrical equipment that moves power from generators to towns, cities and large industrial customers. There are four major TFOs in Alberta: ATCO Electric Ltd., AltaLink Management Ltd., EPCOR Utilities Inc. and ENMAX Power Corporation. After the AESO files a NID with the AUC, TFOs apply for approval to construct and operate the specific transmission infrastructure associated with the NID. Matters of routing and transmission facility siting are the responsibility of the TFO.

Distribution Facility Owners
Distribution facility owners (DFOs) own and operate the portion of the Alberta electrical system operating at 25 kilovolts or less. These distribution lines provide service to most consumers, except for some very large industries that are directly connected to the grid. For most others, the power must be stepped down or decreased to a lower voltage before it can be used. ENMAX and EPCOR operate distribution systems in Calgary and Edmonton respectively. ATCO and FortisAlberta Inc. operate distribution systems in other parts of the province.

Retailers
Alberta’s residential retail electricity market gives consumers a choice of service providers. In addition, large industrial and commercial customers, who account for roughly 80 per cent of all electricity consumed in the province, choose from a number of retailers for their electricity supply. Some customers who own generation facilities act as self-retailers, selling their energy to the market.

Balancing Pool
The Government of Alberta created the Balancing Pool in 1999 as a result of electricity industry restructuring. The main role of the Balancing Pool is to oversee the remaining Power Purchase Arrangements (the rights to own generating capacity) post-restructuring and manage the decommissioning cost of retiring generation plants. The Balancing Pool is responsible for managing these assets on behalf of all electricity consumers in Alberta.

Rural Electrification Associations
Rural Electrification Associations (REAs) are not-for-profit cooperatives, incorporated or continued under the Rural Utilities Act, which own distribution systems providing electric services to customers in specific rural regions of the province.

Alberta Utilities Commission
The Alberta Utilities Commission (AUC) regulates investor-owned electric and natural gas utilities. It is the governing body for both the approval of the need for and siting of transmission projects in Alberta. The AUC is responsible for approving the need and construction of transmission, including all costs of operating the electricity system in the province. As a provincial regulator, it operates independently of government.

Utilities Consumer Advocate
The Office of the Utilities Consumer Advocate (UCA) was created in 2003 by the Government of Alberta to represent the interests of electricity and natural gas consumers—residential, small business and agriculture—in Alberta. The UCA works to ensure these consumers have the information, representation and protection they need to make informed choices in Alberta’s restructured electricity and natural gas markets.

FOR MORE INFORMATION
See page 4 for information about how the UCA helps Alberta consumers.
New energy storage technologies may offer many benefits to Albertans in the years to come.

A joint study authored by Alberta Innovates and funded in part by the AESO and several key industry partners was issued in late 2011. Entitled Energy Storage—Making Intermittent Power Dispatchable, it outlines how emerging energy storage technology could help integrate more renewable energy into the province’s electrical system.

One particular example relates to wind generation. Wind does not always blow when there is a demand for the electricity it can provide. In fact, wind generation levels are historically low when demand for electricity is highest. Supply and demand on the Alberta Interconnected Electric System must be balanced at all times and, according to the study’s authors, a means of storing this energy when it is generated and saving it for when it is needed could be instrumental in overcoming some of these challenges.

“The lack of cost-effective energy storage today is definitely a barrier to the integration of more large-scale renewable energy,” says expert Richard Caldwell. An engineer with a strong background in energy systems, Caldwell was a key creator and instructor of the Northern Alberta Institute of Technology’s (NAIT) energy storage course, part of the Edmonton institution’s new alternative energy diploma program. The biggest opportunity energy storage can provide to Albertans right now, he asserts, is backing up wind generation. “This technology could potentially enable a generator to deliver 100 megawatt hours of energy in the late afternoon, even if the wind is not blowing, because the energy was stored the previous night.”

There are numerous other energy storage benefits as well. They range from the ability to provide black start services, where an initial amount of electricity is required to restart large generation systems that have gone offline, or time shifting where stored electricity is brought onto the grid when demand is at peak levels. Stored energy can also provide on-demand amounts to help maintain the system’s careful balance of supply and demand at all times.

From giant battery-like structures to mechanical systems such as pumped hydro facilities, there are numerous types of energy storage technologies in various stages of development, all with unique advantages. And while there is no one silver bullet, says Caldwell, “they all have their capabilities that can help the Alberta grid in many different ways.”
Power Facts

How much electricity are your appliances using?

To get a better understanding of your own electricity consumption, consult this handy guide.* To calculate what you are paying to use an appliance, multiply the kilowatt hours (kWh) by the price-per-kWh indicated on your bill.

### Kitchen

<table>
<thead>
<tr>
<th>Appliance</th>
<th>kWh/h or kWh/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microwave oven (1,000 W)</td>
<td>1.0</td>
</tr>
<tr>
<td>Freezer (350 W)</td>
<td>1.0</td>
</tr>
<tr>
<td>Refrigerator (500 W)</td>
<td>1.2</td>
</tr>
<tr>
<td>Dishwasher (1,300 W)</td>
<td>0.6</td>
</tr>
<tr>
<td>Oven at 177°C (350°F) (3,000 W)</td>
<td>3.0</td>
</tr>
<tr>
<td>Stove element – small (1,500 W)</td>
<td>1.5</td>
</tr>
<tr>
<td>Stove element – large (2,000 W)</td>
<td>2.0</td>
</tr>
<tr>
<td>Toaster oven (1,250 W)</td>
<td>1.25</td>
</tr>
<tr>
<td>Toaster (1,150 W)</td>
<td>1.15</td>
</tr>
<tr>
<td>Electric kettle (1,500 W)</td>
<td>1.5</td>
</tr>
<tr>
<td>Coffee maker (900 W)</td>
<td>0.275</td>
</tr>
</tbody>
</table>

### Bedroom and Bathroom

<table>
<thead>
<tr>
<th>Appliance</th>
<th>kWh/h or kWh/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clock (5 W)</td>
<td>0.12</td>
</tr>
<tr>
<td>Radio (stereo) (30 W)</td>
<td>0.03</td>
</tr>
<tr>
<td>Hair dryer (1,000 W)</td>
<td>1.0</td>
</tr>
</tbody>
</table>

### Living Room

<table>
<thead>
<tr>
<th>Appliance</th>
<th>kWh/h or kWh/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video game system (250 W)</td>
<td>0.25</td>
</tr>
<tr>
<td>Home stereo/theatre (800 W)</td>
<td>0.8</td>
</tr>
<tr>
<td>32-inch television (120 W)</td>
<td>0.12</td>
</tr>
<tr>
<td>50-inch television (200 W)</td>
<td>0.2</td>
</tr>
<tr>
<td>Computer, monitor, printer (200 W)</td>
<td>0.2</td>
</tr>
</tbody>
</table>

### Laundry

<table>
<thead>
<tr>
<th>Appliance</th>
<th>kWh/h or kWh/load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washer (500 W)</td>
<td>0.5</td>
</tr>
<tr>
<td>Dryer (5,000 W)</td>
<td>5.0</td>
</tr>
</tbody>
</table>

### Heating and Cooling

<table>
<thead>
<tr>
<th>Appliance</th>
<th>kWh/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air conditioner (window) (1,000 W)</td>
<td>1.0</td>
</tr>
<tr>
<td>Electric heater (1,500 W)</td>
<td>1.5</td>
</tr>
</tbody>
</table>

### Lighting

<table>
<thead>
<tr>
<th>Light bulb</th>
<th>kWh/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light bulb – compact fluorescent (13 W)</td>
<td>0.013</td>
</tr>
<tr>
<td>Light bulb – compact fluorescent (23 W)</td>
<td>0.023</td>
</tr>
<tr>
<td>Light bulb – incandescent (40 W)</td>
<td>0.04</td>
</tr>
<tr>
<td>Light bulb – incandescent (60 W)</td>
<td>0.06</td>
</tr>
<tr>
<td>Light bulb – incandescent (100 W)</td>
<td>0.10</td>
</tr>
<tr>
<td>Light bulb – incandescent (150 W)</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Consumption information reproduced with permission from the SEEDS Foundation, a non-profit foundation providing energy and environmental information resources to Canadian teachers and students. For more information, visit [www.seedsfoundation.ca](http://www.seedsfoundation.ca)

* Energy consumption may vary depending on make and model of appliance and household consumption habits.
Inside Education’s Electricity Education programs help teachers and students understand the PUZZLES of electricity.

**TEACHERS AND PARENTS:**
use this activity to explore Alberta’s electricity with the young students in your life. Even give it a try to test your own knowledge!

**CLUES**

**ACROSS**
2. ___________ lines connect power generation to the electric grid and eventually to your home.
6. Hydroelectricity mainly provides electricity to Alberta’s power supply during _______ demand hours.
7. This season is when we use the most electricity. (Hint: it’s dark a lot!)
9. The acronym for the organization that publishes “Powering Albertans”.
10. ______ energy is Alberta’s fastest growing source of renewable energy.

**DOWN**
1. The #1 source of Alberta’s electricity comes from burning this.
3. This meal is often associated with the daily peak demand for electricity.
4. Changing Christmas lights to LED style is one way to be more energy ____________.
5. The #2 source of electricity in Alberta comes from burning this. (2 words)
8. This southern Alberta river is home to four hydroelectric dams.

FIND THE SOLUTION AT
www.insideeducation.ca

While you’re there, check out Inside Education’s award-winning environmental and natural resource education programs and services—including great programs on electricity!