



YOUR ROAD MAP TO ONTARIO WHOLESALE ELECTRICITY PRICES

May 2004 - April 2005

A Guide for Business and Industry
www.ieso.ca



The Independent Electricity System Operator (IESO) manages the Province's power system so that Ontarians receive power when and where they need it. Ontario's IESO balances demand for electricity against available supply through the wholesale market and directs the flow of electricity across the transmission system.

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TAKE CONTROL OF YOUR ELECTRICITY COSTS

Today in Ontario, more than half of all electricity consumed in the province is paid for at market prices, which means that consumers have an increasing influence on prices by choosing when and how much electricity they use.

After three years of operation, Ontario's wholesale market continues to evolve and offer opportunities for consumers to better manage their electricity use. As the market has matured, information about price and demand trends has developed, offering wholesale customers key data for their energy management decisions.

Consider these facts:

- Prices at night and on weekends in the past market year were, on average, 35 per cent lower than weekday prices.
- During the same period, if a company with average hourly consumption of one megawatt, halved its electricity consumption in the hours between 5 p.m. and 6 p.m. every weekday, its electricity costs alone would have been reduced by roughly \$8,600.
- Ontario's wholesale market is growing to include greater numbers of energy suppliers, contributing to increased competition.
- The Ontario Energy Board has put forward a plan that would require all homes and businesses across Ontario to use interval or smart meters that track how much electricity they use and when they use it. This move will allow more businesses to take advantage of the fluctuating market rate.

This guide provides an overview of demand, supply and price information over the last year, as well as IESO demand forecasts for the upcoming year and a half.

As you will see, watching market prices and managing your electricity use accordingly can pay off.



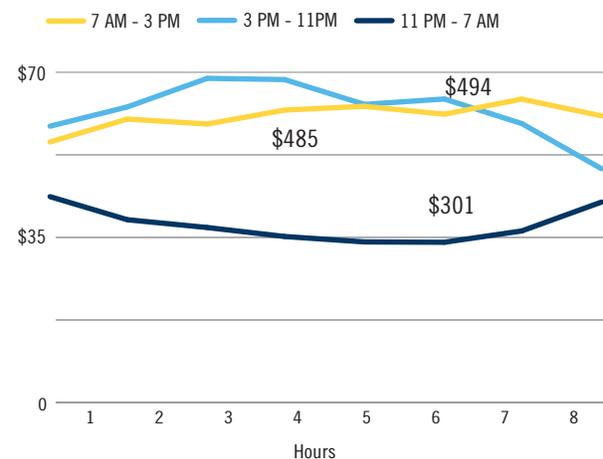
Knowing when changes in price are likely to happen provides you with a valuable tool in your efforts to drive down costs.

Shifting Your Electricity Costs

Not all businesses can cut their electricity costs by moderating their consumption hour by hour. Yet, most businesses, armed with a little information, can structure their operations and processes to take advantage of lower average prices.

If, for example, your company has a day shift and an afternoon shift, it may be more cost-effective to run your day shift at higher capacity. Or, there may be some processes that need not take place during regular business hours at all.

Average Hourly Cost to Use 1 MW
(including daily totals)



This example compares the cost of consuming 1 MW during a day, afternoon and night shift. During the past year, the savings from running processes overnight are profound, cutting electricity costs by more than a third.

It may be worth investing in equipment that allows you to use electricity at off-peak hours to perform tasks that are typically done during the day. If you have a large facility, using thermal storage to chill water overnight to supply air conditioning during the day may produce significant pay-offs.

To help you get a sense of whether you can use market prices to your advantage, the chart to the right shows the average price for each hour of the day on weekdays. An energy management professional can provide you with options to consider - what processes and equipment can help you better manage your electricity use and what information you need to be able to make better energy management decisions.

The key is to factor in electricity pricing trends as part of your overall decision-making process. The IESO Web site (www.ieso.ca) is a useful resource, with hourly updates of price and demand information as well as historical data. Familiarizing yourself with Ontario's electricity market will help you better understand how you can turn the way you use electricity into a competitive advantage for your organization.

AVERAGE HOURLY PRICE (WEEKDAYS ONLY)		
Hour	Price (a.m.)	Price (p.m.)
12:00	3.87 ¢/kWh	6.11 ¢/kWh
1:00	3.71	6.43
2:00	3.52	6.07
3:00	3.40	5.85
4:00	3.40	6.26
5:00	3.64	6.87
6:00	4.25	6.84
7:00	5.52	6.32
8:00	6.01	6.43
9:00	5.90	5.91
10:00	6.20	4.95
11:00	6.28	4.36

WHO PAYS THE WHOLESALE PRICE?

Companies that pay the wholesale price fall into one of two categories:

Market Participants: Almost 300 companies currently participate directly in the wholesale market. These are the generators, suppliers, local distribution companies and industrial consumers who buy and sell electricity in the wholesale market. Some of these industrial users are "dispatchable loads," meaning they can reduce consumption on short notice, based on instructions from the IESO.

Medium and Large-Volume Users: Roughly 50,000 medium and large businesses pay wholesale prices through their local utilities. These companies consume more than 250,000 kWh of electricity a year (typically paying more than \$2,000 a month.) Companies with interval meters that track how much electricity they consume and when they consume it, pay the fluctuating rate. Those companies without an interval meter pay an average hourly price.

Homeowners and small companies pay regulated rates set by the Ontario Energy Board (OEB) that are tied to wholesale pricing trends. Those low-volume consumers with interval or smart meters may choose to opt out of the Regulated Rate Plan and pay wholesale prices.

SUPPLY AND DEMAND

Demand in 2004-2005 grew 1.2 per cent – primarily a result of a harsh winter season. On December 20, 2004, Ontario set an all-time winter record peak of 24,979 MW. Maximum available generation capacity on that day reached 25,805 MW, which along with imports of 1,040 MW, ensured an adequate supply of electricity to meet that peak in demand.



Over the next 18 months, the supply situation in Ontario looks generally positive. The opening of a new gas-fired facility in the Windsor area in 2004 and the expected return of an additional unit at Ontario Power Generation's Pickering A Nuclear Generating Station this fall increases the supply available in the market to meet demand. Any potential short-term deficits over the next 18 months will be addressed through imports and the cancellation of planned generator outages.

The Long View

For the past number of years, Ontario has faced a long-term deficit in electricity generation capacity. Demand continues to grow, while a number of aging generation facilities will need to be replaced within the next 10-15 years. In addition, the Ontario government has committed to phasing out coal-fired generation in response to concerns about health and the environment. As a result, Ontario will require as much as 25,000 MW in new electricity supply or conservation projects within the next two decades.

In response, the Ontario government has announced new supply initiatives including 2,235 MW of supply from new natural gas facilities as well as 395 MW in renewable energy projects.

Demand response projects are also joining Ontario's supply mix. Here, large volume users curtail consumption once the price reaches a certain level, which has the effect of reducing demand during peak times. Roughly 650 MW in demand response, almost enough to power a city the size of Hamilton, is expected to be available during peak hours by mid-2006.

These changes in the supply infrastructure are also triggering changes to our transmission system. Increases or reductions in the amount of electricity produced or consumed in any part of the province can require adjustments in the transmission capacity in order to avoid overloads on the system. For example, the closure of the Lakeview coal-fired generating station in April 2005, required additional transmission capacity to bring replacement power into the Greater Toronto Area.

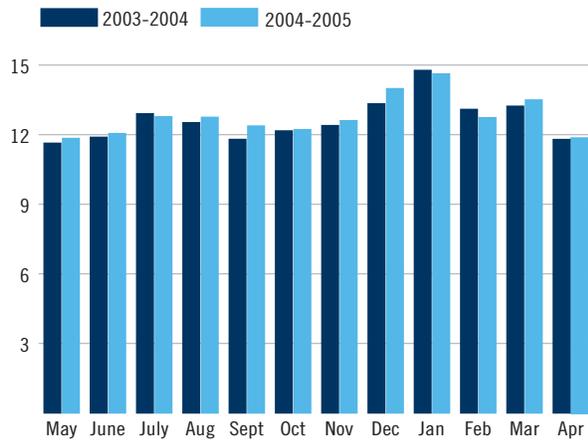
In Summer 2005, the IESO will release a 10-Year Outlook identifying the province's electricity requirements over the next decade. Copies of the report will be available on the IESO Web site.

New Generation Outlook

Four new generation facilities are due to come into service in 2005.

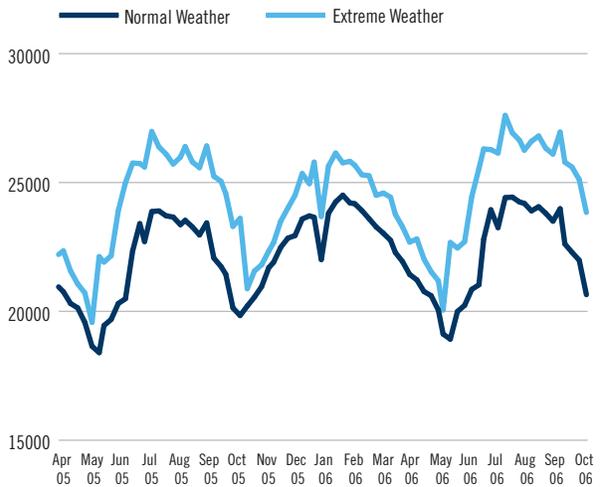
Facility	Fuel	Generation Capacity	In-Service Date
Pickering Unit 1	Nuclear	515 MW	September 2005
Greater Toronto Airports Authority	Gas	90 MW	October 2005
Kingsbridge Wind Power Project	Wind	40 MW	Q4 2005
Melancthon Grey Wind Project	Wind	68 MW	December 2005

Ontario Electricity Demand (Terawatt-hours)



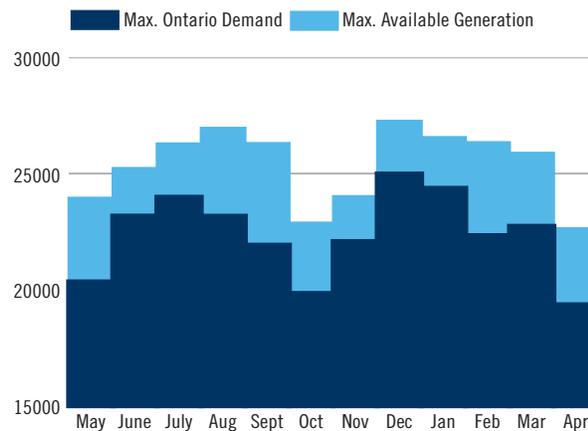
Overall electricity use increased throughout the year, particularly in December when a series of cold spells drove up consumption. (Note: 1 TWh = 1 billion kWh)

Outlook – Expected Weekly Peaks* (MW)



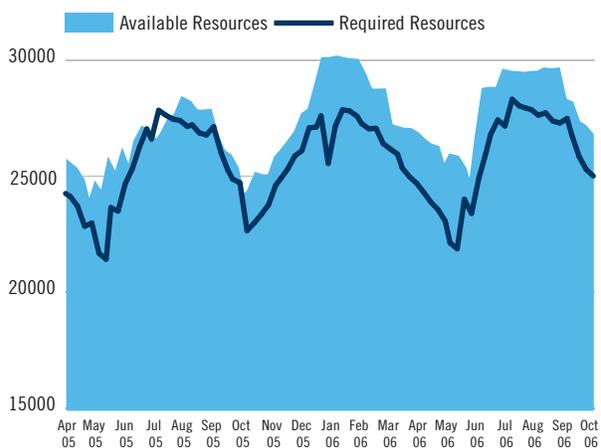
Under normal weather conditions, demand peaks are expected to remain below 25,000 MW. In extreme weather conditions, however, this can easily change with demand potentially rising much higher.

Ontario Demand vs. Available Generation Maximum Hourly Ontario Demand vs. Maximum Hourly Available Generation (MW)



Ontario's supply of electricity continued to improve over the last year with adequate resources to meet the increased demand.

Outlook – Available Generation vs. Required Resources* (MW)



Over the next 18 months, available generation and demand response measures should be adequate to meet electricity demand in normal weather conditions and provide extra electricity in reserve. Ontario also has the capability to import up to 4,000 MW from neighbouring jurisdictions.

* From the IESO 18-Month Outlook, issued March 29, 2005.

FUEL SUPPLY AND COSTS

The cost of producing electricity differs by the type of fuel used to produce it. To understand how the type of fuel affects the price, one must first understand how the market price is determined.

The wholesale price is a “market clearing price,” with generators submitting offers to supply electricity for each hour of the day. The IESO stacks up these offers, from the lowest to the highest, until it has enough offers to meet demand for that hour. The highest priced offer that is accepted sets the market clearing price, which is paid to all suppliers. This is also the price paid by businesses who pay the wholesale price through their local utility. Typically, coal-fired generation sets the price in

Ontario’s market. These generators are generally available to produce electricity most of the hours of the day, but need to offer electricity at higher rates than other round-the-clock generators in order to cover their costs.

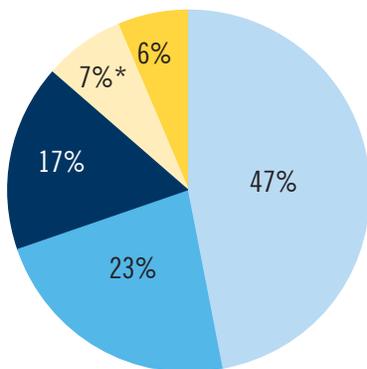
The dynamics of the market will change as coal is phased out from Ontario’s supply mix and natural gas begins to play a greater role in meeting the province’s electricity needs.

Currently, natural gas influences prices during high-demand hours when greater amounts of supply is needed. As Ontario becomes more reliant on natural gas as a fuel supply, it will have an increased influence on price.

ONTARIO'S CHANGING SUPPLY MIX

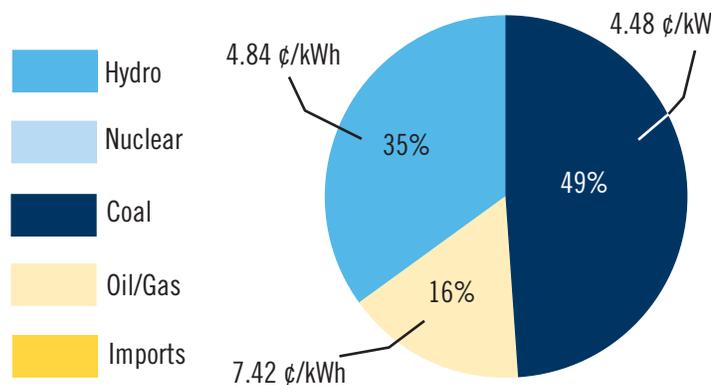
The amount of electricity produced in Ontario by coal-fired generators has decreased over the last 12 months and will continue to do so in the coming years as these facilities are phased out. Coal-fired production, however, set the price 49 per cent of the time, at an average price of 4.48 ¢/kWh. Natural gas accounted for 23 per cent of supply, and is expected to make up the bulk of the difference as coal is phased out. Nuclear generation increased production, accounting for 47 per cent of electricity demand, yet rarely set the price.

Energy Supply By Fuel Type (%)



* also includes woodwaste

Share of Wholesale Prices Set by Fuel Type (%) and Average Price



WHOLESALE PRICES

On the face of it, prices over the last year took an unusual turn. The average weighted price was 5.31 ¢/kWh, only slightly higher from the year before. Yet, season to season, prices deviated from traditional pricing trends. Summer prices were low, while spring prices were the highest of the year. Closer analysis of the underlying factors that influenced these prices, however, reveals why this happened.



The differences between on and off-peak prices demonstrate the value of monitoring prices to determine the best times to consume. The average daytime price on weekdays (8 a.m. to 8 p.m.) was 6.32 ¢/kWh compared to a nighttime/weekend price of 4.70 ¢/kWh. And while there are general assumptions you can make about when the prices are at their lowest, the factors that affect prices can change from day to day, and often from hour to hour, making monitoring the price at critical times all the more valuable.

Summer prices, typically among the highest of the year, were in 2004 consistently below 5 ¢/kWh. This was because there was more generation available in the market competing to meet smaller amounts of demand. For example, a relatively cool August led to peak demands roughly 2,000 MW below summer records.

Prices were, however, highest in March and April, at an average price of 6.10 ¢/kWh and 6.36 ¢/kWh respectively. Demand in March increased two per cent over the same month the year before. Economic growth, not the weather was mainly behind this surge in demand. In April, a number of unplanned outages of nuclear generating units required the IESO to call on more expensive generation sources to meet the increased demand.

On and Off-Peak Prices

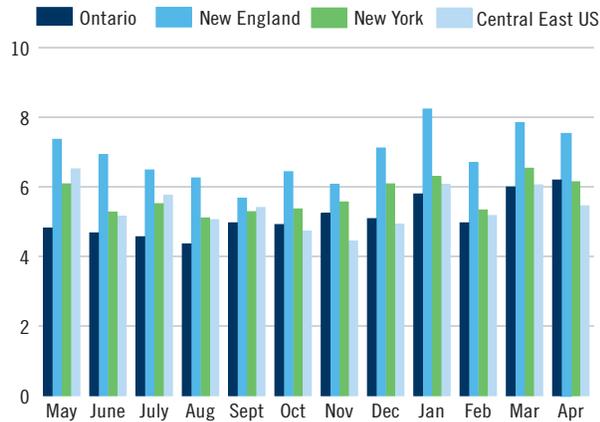
As a wholesale electricity consumer, the only way to take advantage of the fluctuations in price is to use an interval meter to track how much you use and when you use it. This will allow you to pay the Hourly Ontario Energy Price posted on the IESO web site, and not an aggregated monthly average based on the consumption patterns of a broader group of consumers in your area.

MONTHLY AVERAGE WEIGHTED PRICE*

May 2004	5.05 ¢/kWh
June	4.94
July	4.78
August	4.55
September	5.13
October	5.04
November	5.38
December	5.28
January 2005	5.98
February	5.05
March	6.10
April	6.36
Yearly Average	5.31 ¢/kWh

*Weighted by Ontario Demand

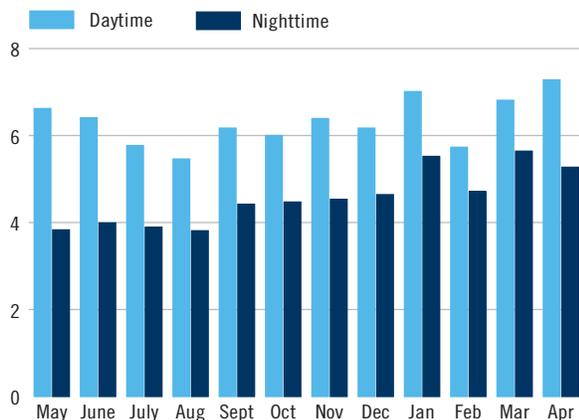
Ontario Wholesale Prices vs. Neighbouring Jurisdictions (¢/kWh*)



During three years of market operations, wholesale prices in Ontario have been consistently lower than those in neighbouring U.S. jurisdictions.

* All prices in Canadian dollars.

Weighted Daytime (8:00 a.m.- 8:00 p.m.) and Nighttime Prices on Weekdays (¢/kWh)



Shifting electricity consumption to times of the day when demand is lower can offer significant savings. The difference between daytime and nighttime prices on weekdays is, on average, 1.73 cents per kilowatt-hour.

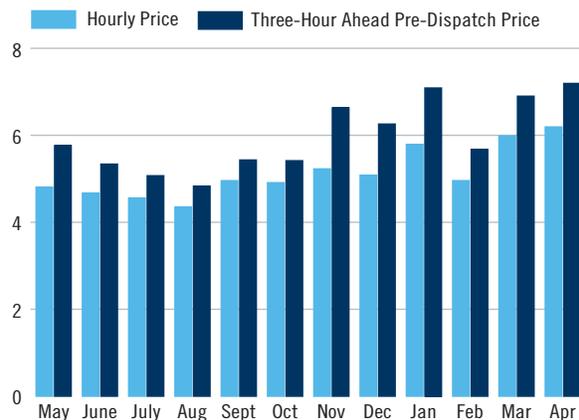
ANTICIPATING MARKET PRICES

In Ontario's wholesale market, the price of electricity is set on a real-time basis. The IESO does, however, publish a "pre-dispatch" price that provides an earlier indication of the final price.

The pre-dispatch price is based on advance offers to supply electricity. As more offers come in, the price becomes more competitive. The first pre-dispatch prices for the next day are posted on the IESO Web site each afternoon. These prices act as signals to market participants to send more offers into the market. As time progresses, the pre-dispatch changes and more closely approximates the final price.

For companies looking to moderate their consumption based on price, it can be difficult to anticipate what the price will be one-day ahead. As a result, there is a need to develop forward-looking options that will allow consumers to better plan their electricity use.

Average Hourly and Pre-Dispatch Prices (¢/kWh)



The average difference between the hourly price and pre-dispatch price has narrowed since market opening in 2002, making the pre-dispatch price a better indication of final pricing trends.

DEMAND AND PRICE IN ACTION



Governed by the laws of supply and demand, the fluctuating electricity price encourages a more efficient use of the resources used to produce electricity. The wholesale market gives consumers the opportunity to take advantage of lower prices by moderating how much electricity they use and when they use it. Daily demand and price patterns can vary depending on the time of year it is, the hour of the day, what the weather is like and the availability of supply.

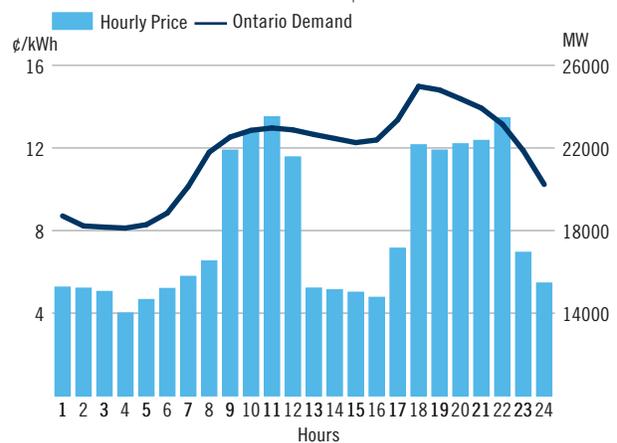
Here are some examples of days when specific events or conditions had a direct impact on demand and price.

WINTER DEMAND PEAK RECORD

December 20, 2004 was memorable for the bitterly cold weather, but also for its demand figures. On that day, the IESO marshalled almost all available capacity to meet a new winter demand peak record of 24,979 MW. Note how when demand dipped slightly, prices dropped significantly – as the market became much more competitive and responsive to changes.

WHAT THIS MEANS TO YOU:

On this day, a 50 per cent reduction in consumption during the hours when the price reached 10 ¢/kWh or more, generated 30 per cent savings in energy costs.



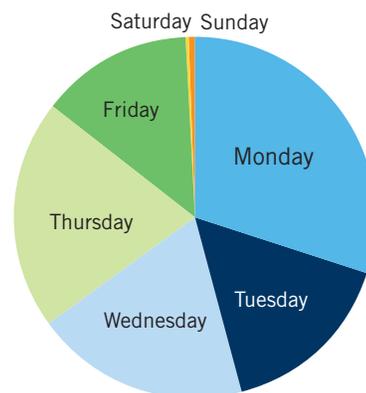
DAY OF THE WEEK

Almost a third of all weekly demand peaks take place on Monday. This is perhaps not surprising as extra energy is required to ramp up production or to heat or cool buildings after the weekend. Thursday peaks are the second most common with Friday being the least likely weekday to experience a weekly peak.

WHAT THIS MEANS TO YOU:

Businesses that schedule an outage on a Monday will generally receive greater electricity cost savings than on any other day of the week.

Weekly Peaks 1993-2004

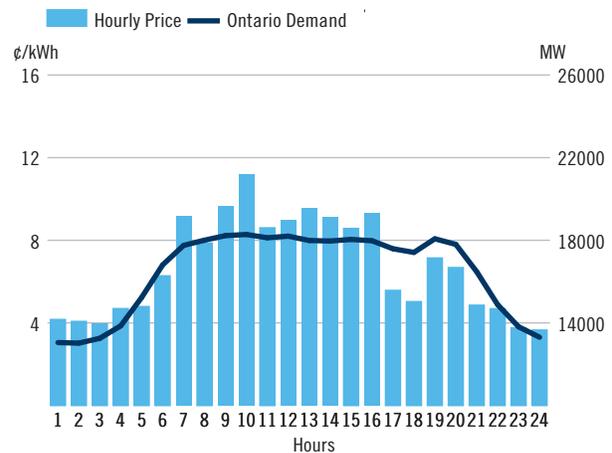


EARLY DEMAND PEAKS

While most peaks occur during the dinner hour when people come home from work, there are exceptions. Peaks can take place earlier in the day – often in spring. In this example on April 18, the peak took place at 10:00 in the morning. This is because the days are sufficiently long that lighting requirements at night are greatly reduced, and there's little need for air conditioning.

WHAT THIS MEANS TO YOU:

In the spring and fall, don't be surprised if the peak takes place earlier in the day. You can log on to the IESO Web site to find out when the daily peak will take place.

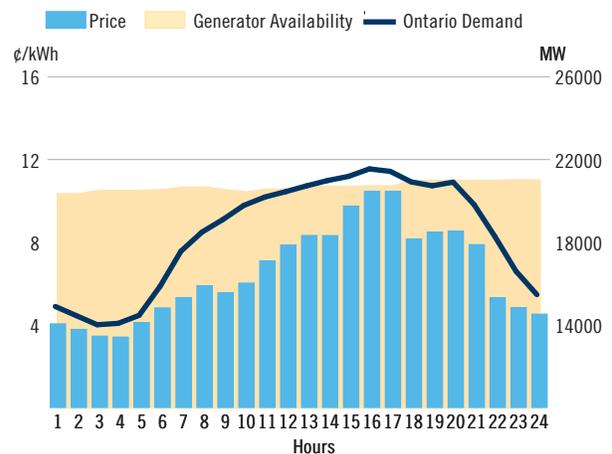


THE IMPACT OF SUPPLY ON PRICE

The availability of electricity to meet demand has a significant impact on price. This graph shows what can happen when supply is tight. In this case, the demand peak is not particularly high, but supply is relatively low. This has the effect of driving up prices, as all available capacity is brought online to meet demand and required reserves.

WHAT THIS MEANS TO YOU:

If the gap between generator availability and demand narrows, this can be a good indication of volatile prices. Both figures are posted prominently on the Business and Industry page of the IESO Web site.



FACTORS THAT AFFECT DEMAND

Weather has a significant effect on demand – day to day, hour by hour. For example, each time the temperature rises one degree above 16 °C, demand goes up by 390 MW; while each degree below 10° C increases demand by 110MW. Wind is also a factor. A 60 km/h wind in winter not only adds to the windchill factor, but can raise electricity consumption by 600 MW.

In the long-term, Ontario demand grows by roughly one per cent each year, in large part due to economic growth. One thousand new jobs or new homes will add one megawatt to Ontario demand.



YOUR ELECTRICITY BILL

Electricity bills have been revised over the last number of years, reflecting changes that have taken place in the electricity industry. Those for small businesses and homeowners have been simplified to provide easy-to-use information. Larger volume users are provided more detailed information about the various components of their bills, to allow them to more closely manage their electricity usage.



Below is a general description of the types of charges a medium or large business is likely to see on its bill. Bills may, however, vary by utility. Contact your local distribution company (LDC) with specific questions about your bill. A complete list of all LDCs in Ontario can be found on the IESO Web site.

ELECTRICITY

This is the charge for the electricity you use, whether you buy it from your LDC or through a licensed retailer. This charge is made up of:

Commodity Cost: If you have an interval meter, this will be the Hourly Ontario Energy Price set in the wholesale market. If you don't have an interval meter, this will be an average of the wholesale price based on consumption patterns of all the local distribution company's customers who also don't have interval meters. If you pay a fixed rate through a retail contract, this rate will appear here.

Provincial Benefit: This adjustment appears on every bill and replaces, in part, the quarterly Business Protection Plan Rebate that was phased out in March, 2005. (More information about the Provincial Benefit can be found on Page 13.)

DELIVERY

These charges cover the cost of delivering electricity from generating stations over the transmission lines that run to your LDC, and then along the distribution lines. While transmission and distribution charges appear as one delivery charge on a homeowner's bill, they are typically broken out on commercial accounts.

Delivery charges are approved by the Ontario Energy Board (OEB) and vary by distributor. Some components can be charged based on the your maximum demand (kW) throughout the entire billing period, or within a 7:00 a.m. to 7:00 p.m. Monday to Friday time period. Some utilities use kilovolt-amperes (kVa). Either way, if you lower your peak consumption through load shifting or through energy conservation, you can reduce your overall delivery costs. Check with your LDC to find out the exact formula it uses to determine delivery charges.

Transmission Charge: This rate is approved by the OEB and incorporates two components:

- **Network Services:** This charge covers the cost of delivering electricity along the transmission system.

- **Line and Transformation Connection Services:** This charge is based on the cost of connecting to the transmission system and reducing the voltages of electricity from the transmission grid so that it can travel along the lower voltage distribution lines.

Distribution Charge: This rate covers the cost of delivering electricity along the distribution lines within your utility's service area. This charge is also approved by the OEB.

Customer Service Charge: This is a fixed rate to cover your utility's administrative costs such as meter reading, billing and customer service.

REGULATORY

These rates provide for, in part, the reliable management of the power system and wholesale market. They are approved by the OEB, set at a rate of 0.62 ¢/kWh and include:

Wholesale Market Service Charge:

- **Physical Limitations and Losses:** These are losses that occur as electricity flows across transmission lines. It also includes other costs incurred in operating the power grid.
- **Energy Reliability:** There may be occasions when the balance between generation and demand is affected by an unanticipated event, such as equipment failure or a surge in consumption. The IESO purchases a certain level of spare capacity, or reserve, that is available on short notice to restore the balance.
- **IESO Administration Service:** The IESO charges administrative costs to manage the power system and operate the wholesale electricity market in Ontario. This rate is less than one-tenth of a cent per kilowatt-hour.

Standard Supply Service Charge: “SSS” charges are administrative costs incurred by your LDC in providing electricity to customers who buy their electricity from their LDC, instead of a licensed electricity retailer. Some LDCs include this charge in their Customer Service Charge.

Rural or Remote Electricity Rate Protection: This charge is used to partly offset the higher cost of providing electricity in rural and remote areas. The rate is fixed at one-tenth of a cent per kilowatt-hour and is established by government regulation.

DEBT RETIREMENT CHARGE

This charge of 0.7 cents per kWh has been set by the Ontario Ministry of Finance to pay down the residual stranded debt of the former Ontario Hydro.

ADJUSTMENTS TO YOUR BILL

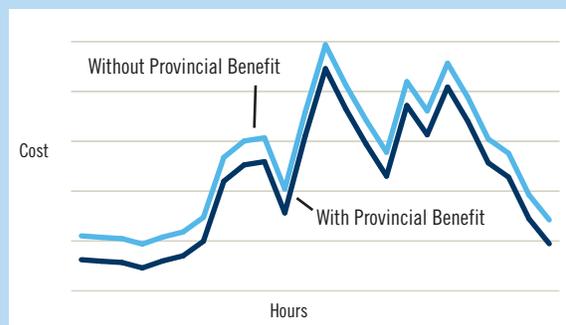
There are adjustments to the electricity prices on your bill that are designed to account for differences between the market price and rates paid to regulated and contracted generators. While these adjustments will lower overall costs, they don't affect basic market dynamics. Prices will still continue to peak and fall, retaining the value of shifting consumption to off-peak hours. Here's a brief description of the adjustments that appear on your electricity bill:

Provincial Benefit

This adjustment accounts for differences between the market price and rates paid to regulated and contracted generators. When it was introduced in January 2005, the Provincial Benefit appeared on your bill as a reduction of .01 ¢/kWh.

Rebate on OPG Unregulated Assets

The Ontario government has established a set price of 4.7 ¢/kWh on 85 per cent of the output from Ontario Power Generation's coal-fired and smaller hydro operations, which will be lifted on April 30, 2006. At that time, monies collected above the set price will be refunded.



While adjustments to the wholesale price will reduce total costs, the benefits of responding to price changes remains.

FOR MORE INFORMATION

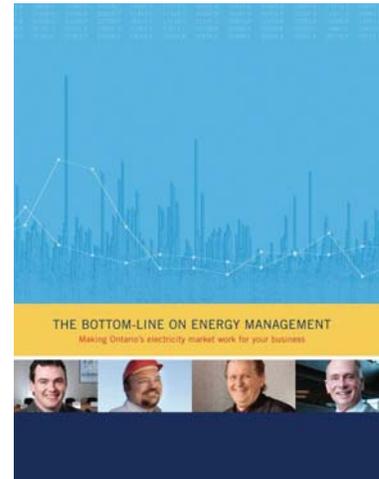
THE BOTTOM LINE ON ENERGY MANAGEMENT

For some companies, a 20 per cent reduction in energy consumption is roughly equivalent to a 5 per cent increase in sales.¹ These numbers are hard to ignore, and make spending some time to learn more about energy management a very good investment.

The IESO, in partnership with local distribution companies throughout the province, has prepared a publication, “The Bottom Line on Energy Management,” that provides four real-life examples of Ontario businesses who make the market work in their favour with positive results on their bottom line. Here, you can learn more about load shifting, conservation, interval meters and retail contracts, to decide whether these options might work for you.

Ontario’s electricity distributors are currently launching Conservation and Demand Management programs designed to support the adoption of energy efficient technologies to help consumers reduce overall peak demand. Your local distributor is a potential source of ideas and programs that may assist you in your own energy savings initiatives.

Copies of the brochure are available on the IESO Web site at www.ieso.ca/business.



WATCHING THE WEB

The IESO web site (www.ieso.ca/business) offers a wealth of information about electricity demand and prices targeted to the needs of businesses like yours. The Business and Industry home page features the latest news from Ontario’s electricity sector. Here are some other pages to watch:

Category	Value
Projected Demand at 4:00 p.m. EDT	18,344 MW
Today's Expected Peak (at previous date)	18,213 MW
Summer Record Peak (Aug 21, 2003)	25,414 MW

Demand and Price: provides hourly demand and price figures for the previous, current and next day. The Ontario Demand chart shows current and projected demand for electricity within Ontario.

This section also displays the projected peak for the current day and when it is expected take place. This can be useful in determining when the highest prices of the day will be. The Wholesale Prices chart provides an overview of that day’s actual prices, as well as pre-dispatch prices.

Monthly Market Update: provides a brief overview of the previous month’s market activity including average daytime and nighttime prices.

Power Outlook: features the IESO demand forecasts for the current season. This information can help you determine when demand may be high or supplies may be tight, identifying opportunities for large volume users to schedule maintenance.

¹ Energy Ideas at Work, 2002/2003 Annual Report of Canadian Industry Program for Energy Conservation, Office of Energy Efficiency, NRCan

This review provides highlights from Ontario's wholesale electricity market in its third year of operation (May 1, 2004 to April 30, 2005.) Additional copies can be ordered by contacting the IESO at 1-888-448-7777 or can be downloaded from the IESO Web site at www.ieso.ca/business.

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