

Monthly Market Report



April 2003

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This report provides a summary of key market data from the IMO-administered markets. It is intended to provide a quick reference for all market stakeholders. In all cases, the data used to produce all graphs in this report, are available for download from the [Market Summaries](#) page of the IMO Web site. Any data used in this report is provided for information purposes only, and should not be used for settlement purposes.

1. Market Prices

1.1 Introduction

This section provides information on several of the key prices in the Ontario wholesale electricity market. A brief description of each displayed price item is included. For more information on any of the price items, please refer to appropriate market rules, market manuals and IMO Marketplace Training materials, or contact the IMO Help Centre.

1.2 Hourly Ontario Energy Price (HOEP)

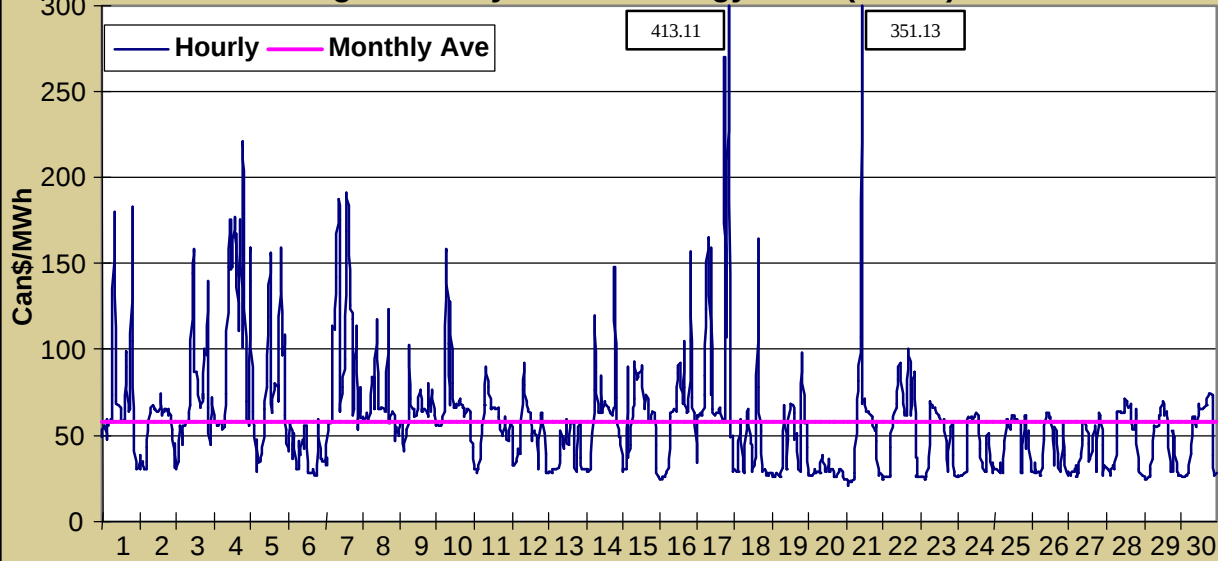
HOEP is the hourly price that is charged to Local Distributing Companies and other non-dispatchable loads. HOEP is also paid to self-scheduling generators. HOEP becomes the basis of the commodity charges in the Retail electricity market if customers receive their electricity from their Local Distributing Company. Customers who have arranged contracts with licensed Retailers are not affected by HOEP, but instead are charged their particular contract rate for the commodity.

Note: The IMO provides a convenient graph of HOEP prices for the current and previous day on the [Today's Market](#) page on the IMO Web site. These graphs also provide an estimate of future HOEP prices for the remainder of the day, and by afternoon, estimates for the next day. The estimates for future Hourly Ontario Energy Prices are extracted from an IMO report referred to as the pre-dispatch. Pre-dispatch data is updated every hour. All future prices are derived by simulating a supply/demand balance, using prices offered by suppliers in the market, prices bid by price-sensitive consumers in the market, and the IMO's forecast of the total demand for electricity in the province. The actual supply/demand balance can vary from these projections for a number of reasons:

- The actual demand for electricity can fluctuate as factors such as weather, (temperature, amount of cloud cover, wind etc.), affect the amount of electricity required by consumers.
- At the same time, operational difficulties or delays in a generation unit returning from an outage can result in higher priced generation being called on to fill the gap.
- Finally, any changes in price resulting from such variations can cause some price-sensitive loads to make alternative consumption decisions, or cause importers and exporters to revise their plans.

In this report, two graphs of HOEP are provided; the first shows a chronological graph of hourly HOEP prices for the month. The second graph shows the frequency at which the HOEP fell within specific price bands.

Fig 1 - Hourly Ontario Energy Price (HOEP)



Hourly Ontario Energy Price \$/MWh			
	April, 2003	On-Peak	Off-Peak
Average	58.88	76.23	45.00
Maximum	413.11	413.11	351.13
Minimum	21.18	28.00	21.18

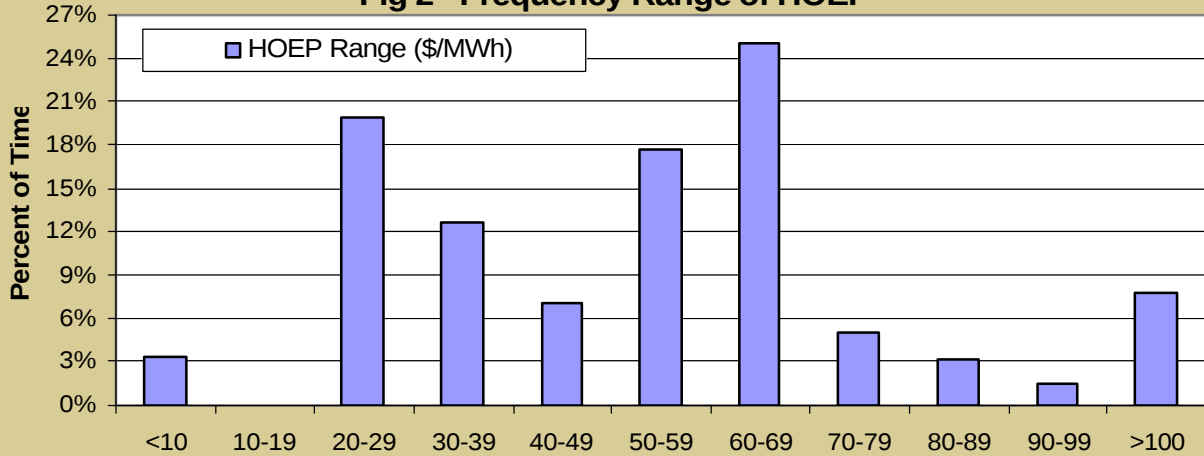
Monthly Weighted Average based on Ontario Demand = \$61.61 / MWh or 6.16 ¢/kWh.

This weighted average is provided as information, and may be of use to customers whose consumption pattern, or that of their local distributing company, approximates that of the total Ontario system.

Note:

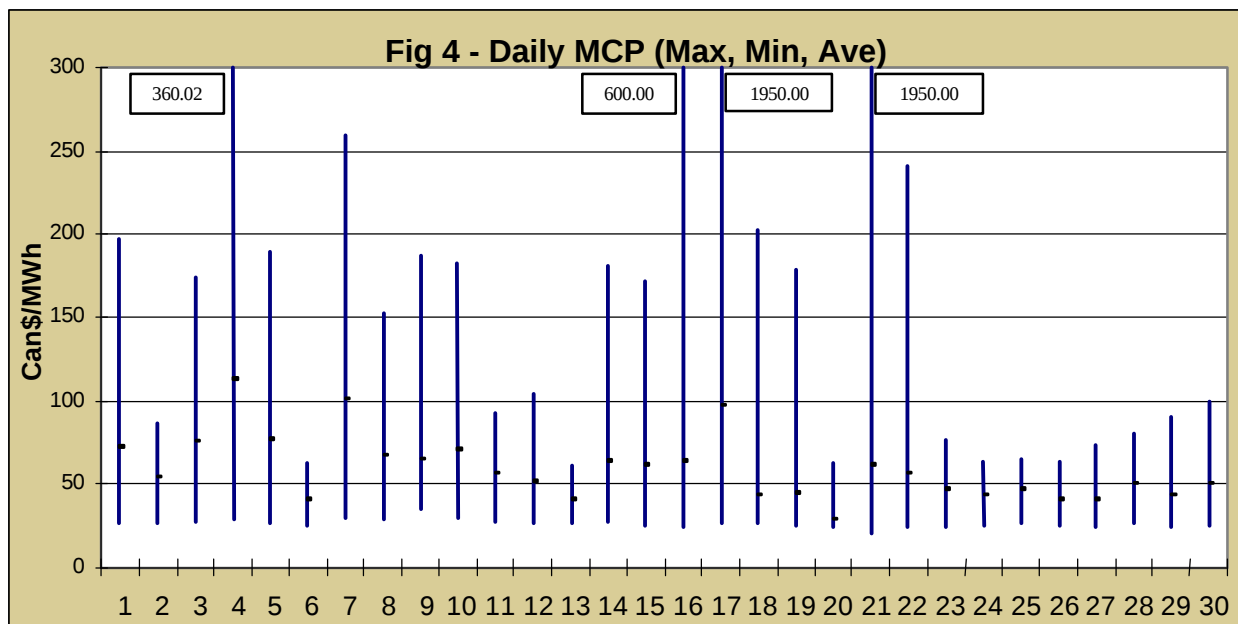
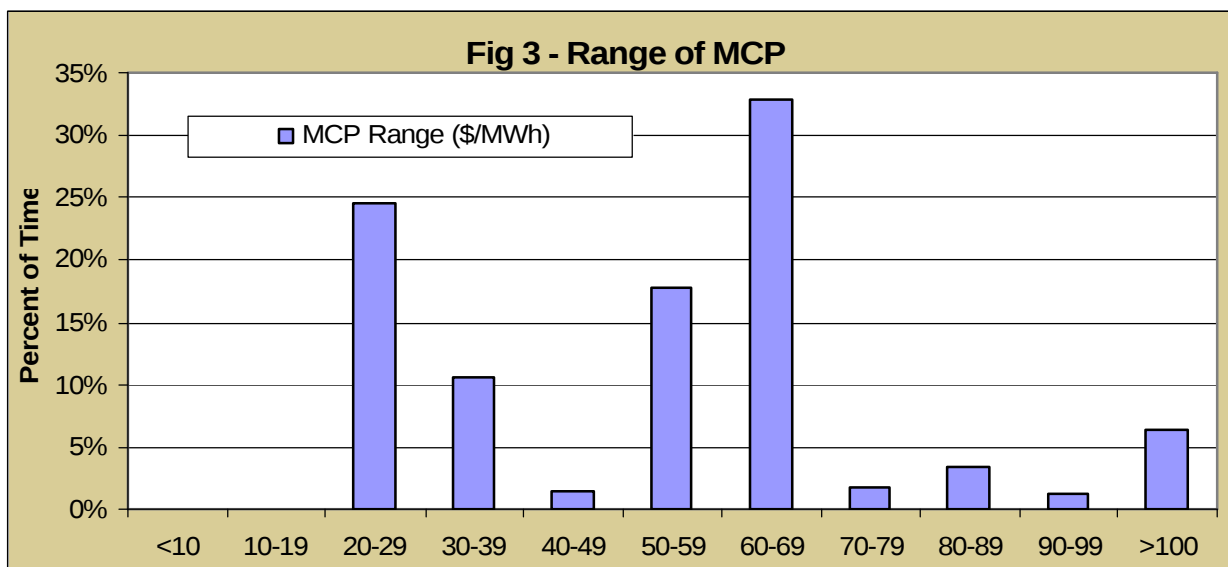
On Peak average price is the straight arithmetic average of HOEP in hours 07 to 22 (EST), Monday to Friday (5 x 16). Off Peak average price is the straight arithmetic average of HOEP for all remaining hours in the week. April 18 and April 21 were considered as 24 off-peak hours, in recognition of the Good Friday and Easter Monday statutory holidays. The wholesale market does not use a formal definition of on and off-peak hours. The IMO is providing this calculation purely for information purposes, and will continue to use this definition throughout the year.

Fig 2 - Frequency Range of HOEP



1.3 Ontario 5-Minute Market Clearing Price (MCP)

The Ontario 5-minute MCP is the price paid to dispatchable generators and charged to dispatchable loads. All other participants are charged or paid using hourly prices. The 5-minute price is calculated immediately after the fact for every 5-minute interval, using the unconstrained dispatch algorithm. The algorithm takes generator offers to sell and price-sensitive loads' bids to buy and dispatches these resources to achieve a supply-demand balance, and resulting price. The price is posted on the [Market Data](#) page on the IMO Web site, within 5-minutes of the conclusion of an interval. The 5-minute price, by its nature, will fluctuate more than the HOEP (an arithmetic average of the 12 MCPs for any particular hour), as it more directly reflects the short-term supply/demand variations caused by unexpected fluctuations in the demand for electricity or by equipment breakdowns.

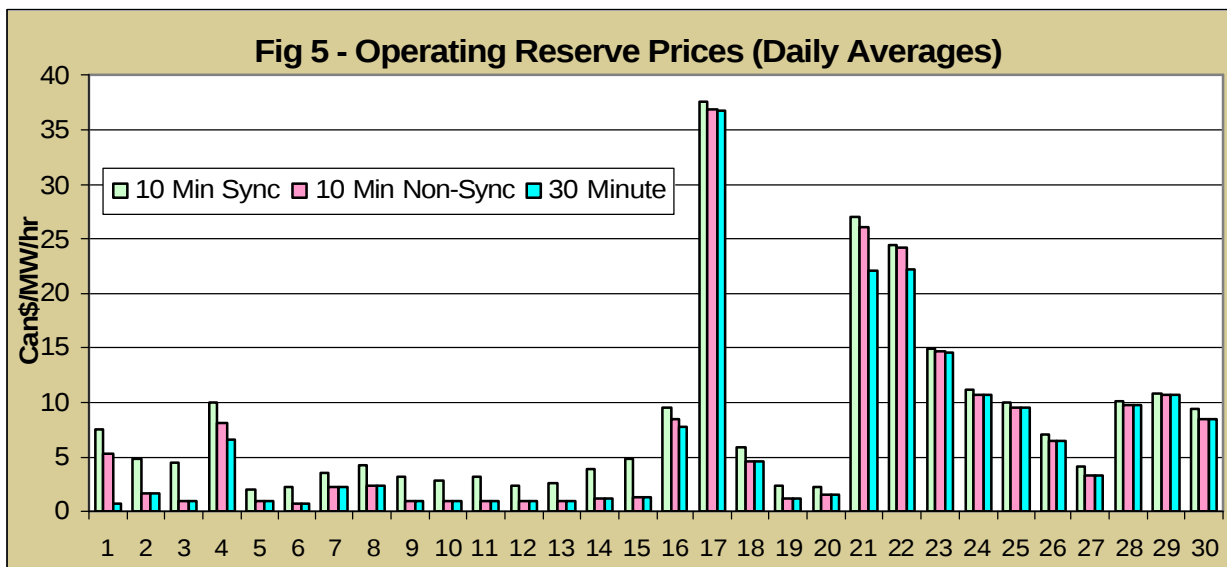


1.4 Operating Reserve Prices

Operating Reserve is generation capacity or load reduction capacity that the IMO can call upon on short notice. Operating Reserve is purchased by the IMO in amounts needed to meet the reliability rules established by the North American Electricity Reliability Council (NERC), and the Northeast Power Coordinating Council (NPCC). The IMO recovers the required funds to pay for the purchased operating reserve from all customers in the wholesale market, via the Hourly Uplift Settlement Charges. These Charges are discussed further and presented in Section 1.5 of this report.

The IMO purchases defined amounts of Operating Reserve from Participants via three real-time markets; a 10 minute synchronized reserve market, a 10 minute non-synchronized reserve market, and a 30-minute reserve market.

The operating reserve is like a buffer - a shock absorber to maintain the reliability of the system by allowing for sudden unexpected surges in demand or unanticipated reductions in supply - that is, in available generation. Like energy dispatch instructions, Operating Reserve schedules are determined every 5 minutes, with a resultant price for each type of operating reserve for every 5-minute interval. The IMO's decisions, on who will provide the market with operating reserve, and who will supply the market with energy, are integrated to arrive at the optimum market outcome. This creates a strong correlation between the energy price fluctuations and the fluctuations in reserve prices.



Average Operating Reserve Prices for April, 2003 were:

10 minute synchronized reserve:	\$8.23/MW/hr
10 minute non-synchronized reserve:	\$6.84/MW/hr
30 minute reserve:	\$6.40/MW/hr

1.5 Hourly Uplift Settlement Charges

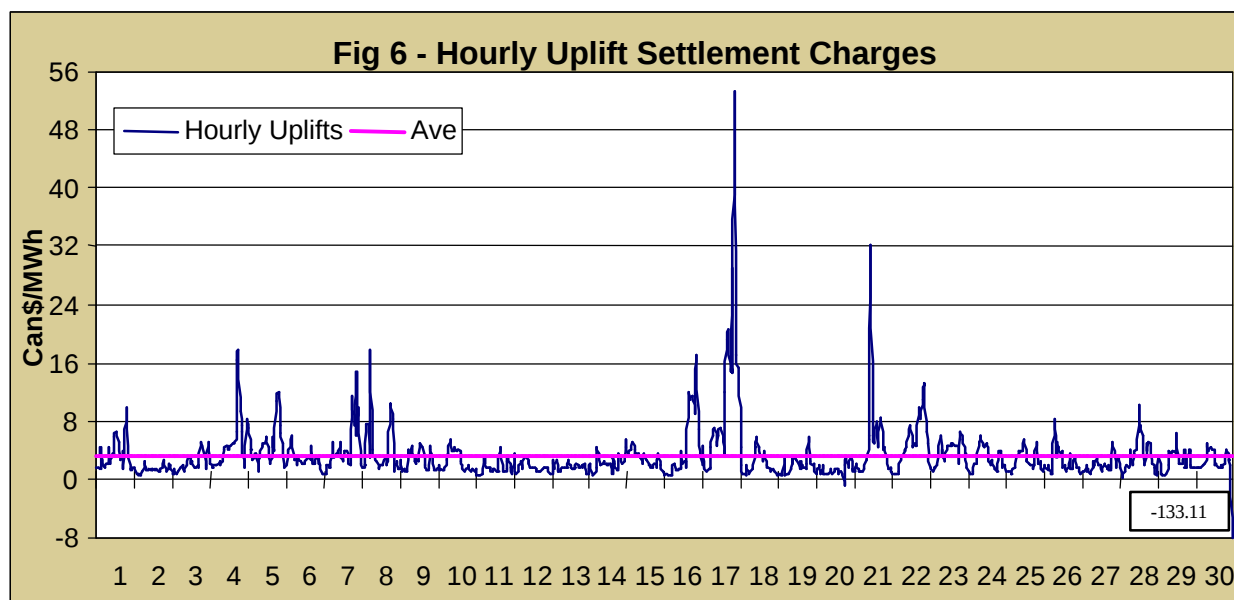
Hourly Uplift Settlement Charges are applied to all customers in the wholesale market. The IMO uses funds collected under these charges to pay for such items as the three types of Operating Reserve, any Congestion Management Settlement Credits owed to dispatchable resources, Intertie Offer Guarantee payments and other incurred hourly costs such as energy losses on the IMO-controlled grid.

For a description of Operating Reserve, and information on Operating Reserve prices, please see Section 1.4 above.

Congestion Management Settlement Credits are payments made by the IMO to all dispatchable resources, such as generators or large consumers, who responded to instructions from the IMO to take specific actions to avoid possible overloads of the transmission system, or to maintain the balance between supply and demand.

Energy losses occur when electricity flows across transmission lines. The resistance in the lines causes them to heat up, consuming power in the same way, as does the filament in a toaster. This is referred to as line losses. Since the IMO pays generators using the same price as it uses to charge customers, and since the presence of line losses requires generators to produce more than what is consumed by customers, the IMO must recoup the additional money required to pay all generators in full, and does so via the Hourly Uplift Settlement Charge.

The information on Hourly Uplift Settlement Charges graph shown below is collected from Market Participant Settlement Statements.



Average Hourly Uplift Settlement Charges to wholesale customers for April, 2003 = \$2.97 / MWh or 0.30 ¢/kWh
 Average Hourly Uplift Settlement Charges to wholesale customers since Market Opening = \$4.24 / MWh or 0.42 ¢/kWh
 Weighted Average Hourly Uplift Settlement Charges to wholesale customers for April, 2003 = \$3.11 / MWh or 0.31 ¢/kWh
 Weighted Average Hourly Uplift Settlement Charges to wholesale customers since Market Opening = \$4.83 / MWh or 0.48 ¢/kWh

1.6 Monthly Uplift Charges

The IMO incurs some monthly costs in purchasing services required to ensure the reliability of the Ontario power network, and to meet commitments to other system operators throughout the North America. Specifically, there are three services that the IMO must purchase under contract from suppliers; Black Start Capability, Voltage Support, and Regulation Service. The monthly costs incurred by the IMO under these contracts are shared among all wholesale customers on a pro rata basis. This month, the payments made by the IMO for these services resulted in charges to wholesale customers totalling \$0.29/MWh, or 0.029 ¢/kWh. For the combined effects of monthly and hourly uplifts, please see Section 7 of this report.

1.7 Transmission Rights Auction

The Transmission Rights Market is a financial market that is based on the import and export of electricity on the interconnection lines between Ontario and its surrounding markets in Manitoba, Quebec, New York, Michigan and Minnesota. The transmission capacity of these interconnections is limited. When the interconnection lines reach their limits, energy prices can differ between Ontario and its surrounding markets. The Transmission Rights Market allows participants to buy financial protection ahead of time, to hedge against the possible price differences. These transmission rights are financial only. They do not give the holder of these rights any scheduling priority and do not limit other participants' access to physical transmission across the interconnection lines.

The Transmission Rights contracts are auctioned off by the IMO. Successful bidders pay the market clearing price for the particular Transmission Right, in return for the right to receive revenues from the IMO in amounts proportional to the financial congestion which may occur over that interface for the duration of the contract.

In April, the IMO conducted one transmission rights auction. The market clearing prices in the auction are listed in the table below. The prices have been rounded to the nearest dollar.

Intertie Zone	Short Term Auction May, 2003 \$/MW/Month	
	Import to Ontario	Export from Ontario
New York	111	n/a
Michigan	209	n/a
Minnesota	n/a	n/a
Manitoba	n/a	n/a
Quebec - D5A	n/a	n/a
Quebec - D4Z	n/a	n/a
Quebec - P33C	n/a	n/a
Quebec - X2Y	n/a	n/a
Quebec - H4Z	n/a	n/a
Quebec - B5D/B31L	n/a	n/a

1.8 Transmission Rights Payments

The holders of Transmission Rights Contracts own the right to receive congestion payments from the IMO whenever congestion results in differences between the Ontario price and the relevant external zone price. The table in this section shows the payments that a holder of a 1 MW Transmission Rights Contract received from the IMO in the month of April. These payments would be made to holders of either Long-Term Transmission Rights Contracts that encompass the month of April, or Short-Term April Transmission Rights contracts.

Intertie Zone	Import to Ontario (\$ per 1 MW April contract)	Export from Ontario (\$ per 1 MW April Contract)
Manitoba	1016.23	0.0
Minnesota	0.0	0.0
Michigan	1070.53	0.0
New York	0.0	12.54
Quebec - B5D/B31L	0.0	0.0
Quebec - D4Z	0.0	0.0
Quebec - D5A	0.0	0.0
Quebec - H4Z	0.0	0.0
Quebec - P33C	0.0	0.0
Quebec - X2Y	772.62	0.0

2. Market Demand

2.1 Market Demand Definitions and Graphs

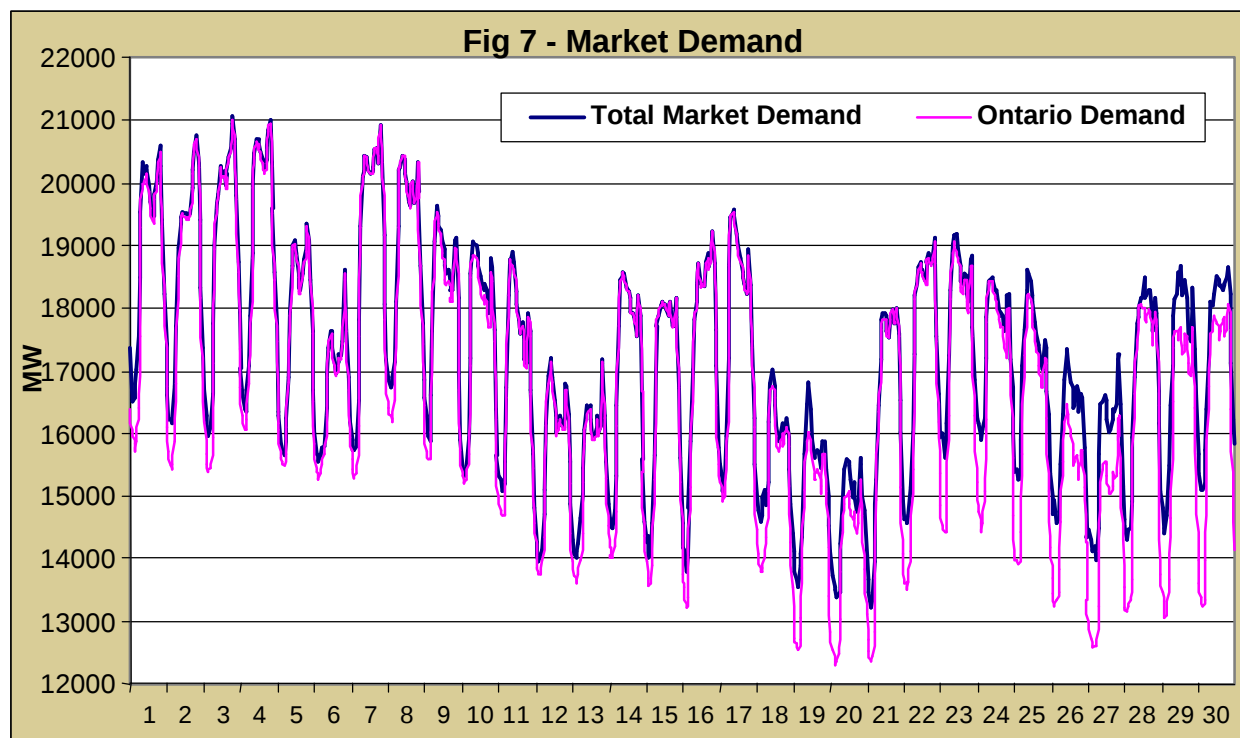
The graph below plots values for both Total Market Demand and Ontario Demand.

Total Market Demand represents the total energy that was supplied from the IMO-Administered Market.

The IMO calculates Total Market Demand by summing all output from generators registered in the Market plus all scheduled imports to the province. It is also equal to the sum of all load supplied from the Market plus exports from the province, plus all line losses incurred on the IMO-controlled grid.

Ontario Demand represents the total energy that was supplied from the IMO-Administered Market for the sake of supplying load within Ontario.

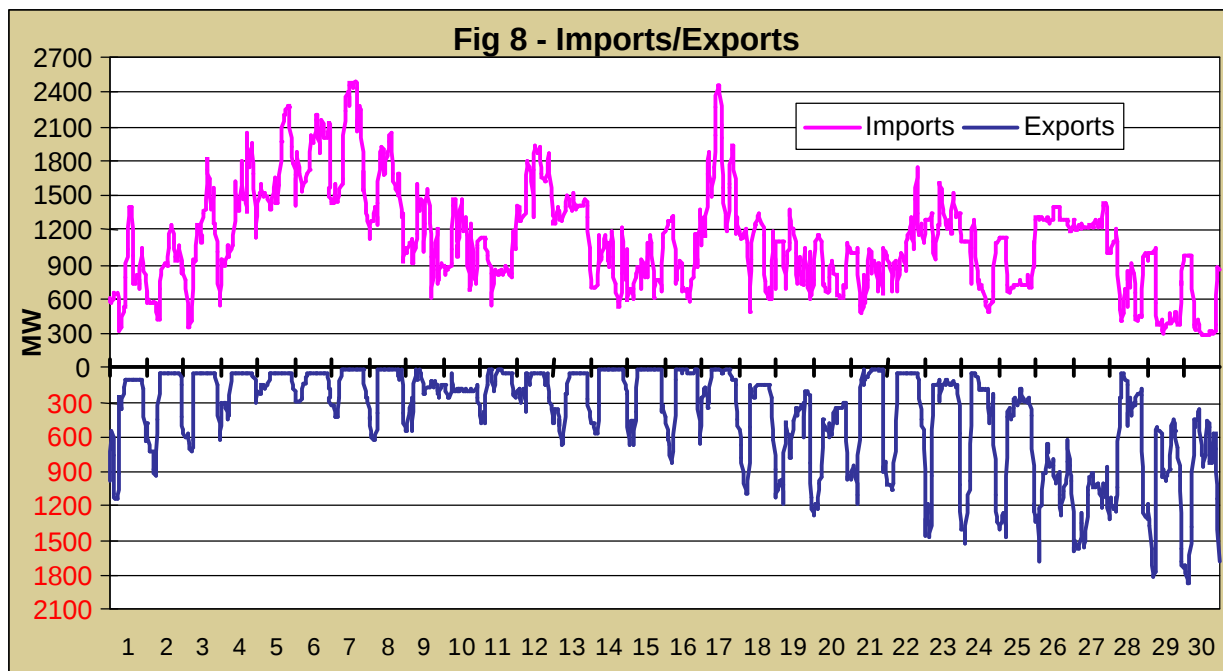
The IMO calculates Ontario Demand by subtracting exports from the Total Market Demand quantity. It is also equal to the sum of all load within Ontario which is supplied from the Market, plus all line losses incurred on the IMO-controlled grid.



	<u>Total Market Demand</u>	<u>Ontario Demand</u>
Average hourly values for the month:	17,198 MW	16,802 MW
Maximum hourly values for the month:	21,065 MW	21,010 MW
Minimum hourly values for the month:	13,204 MW	12,290 MW
Total Demand for the month:	12,382,808 MWh	12,097,198 MWh

2.2 Imports & Exports

The graph below plots both imports to Ontario and exports from Ontario during the month. Economic **imports** and **exports** are scheduled into/out of Ontario on an hourly basis, up to the physical capabilities of the Grid and the interconnections between the systems.



Average export schedule for the month = 397 MW
 Average import schedule for the month = 1,113 MW
 Average net intertie schedule = 716 MW net import

3. Unavailable Capacity

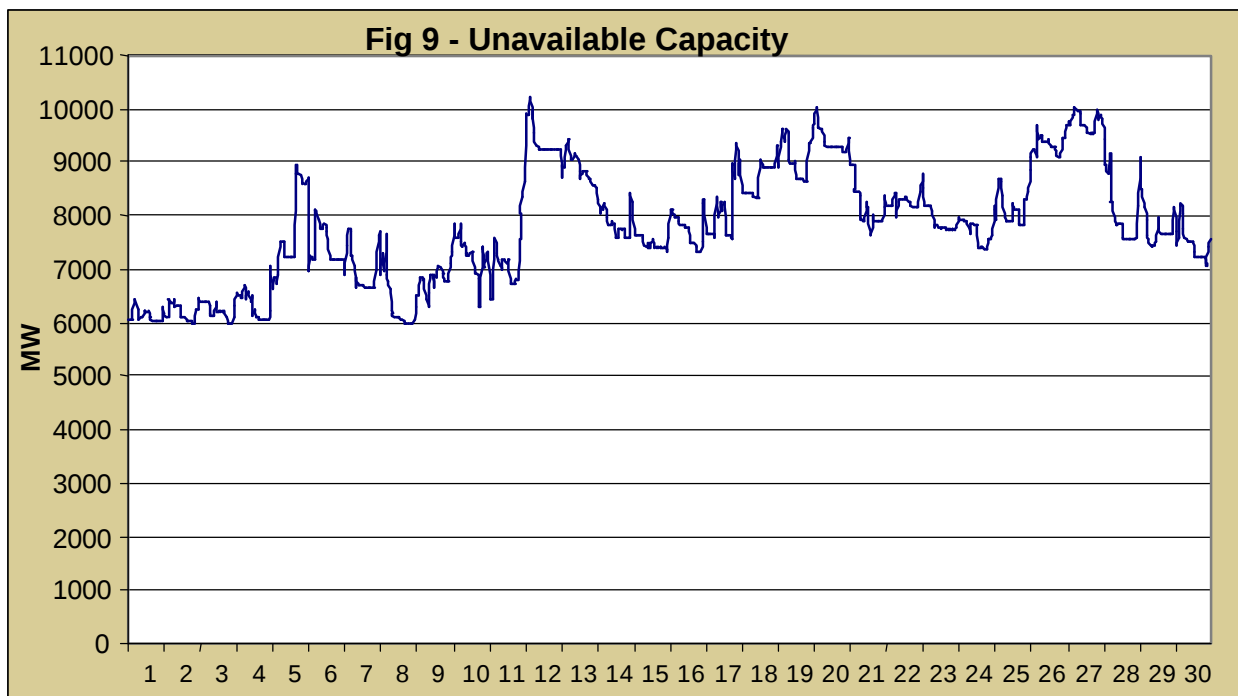
3.1 Unavailable Capacity

It is clear from the various graphs in this report that the demand for electricity varies greatly; from hour to hour, from day to day, and from season to season. The amount of generation available for operation also varies greatly over these same timeframes. The graph in this section shows the total capability of generation within Ontario that is unavailable for operation. These quantities are published by the IMO several times per day in the System Status Reports (SSR). The values in this graph are calculated by summing the following quantities (all in MW):

- capacity of generators on planned and forced outages
- capacity of planned and forced deratings
- unscheduled capacity from Intermittent, Self Scheduling, and Transitional Scheduling Generators
- constrained capacity due to operating security limits

and plotting the highest value for each day. The values are taken from the most up-to-date SSR at any point in time.

In addition, in accordance with the Market Rules, the IMO is publishing the Generator Disclosure Report on a monthly basis, six months after the fact. This report provides generating station capability and actual energy production factors of all stations with output greater than 20 MW. The report is located on the [Market Data](#) page of the IMO Web site.



4. Compliance

4.1 Compliance and Sanctions

Ensuring compliance with the market rules is key to the operation of a competitive and reliable electricity market. The Market Assessment and Compliance Division (MACD) of the IMO monitors, assesses and enforces compliance by reviewing breaches of the market rules. Market participants who breach market rules may be subject to sanctions if the IMO considers it appropriate. The sanctions cover a range of possible actions from a simple directive instructing a market participant to rectify a market breach or undertake more stringent record keeping, to financial penalties or termination from the market, depending on the nature of the breach. The process for compliance enforcement and sanctions for breaches of market rules is described in Chapter 3, section 6 of the market rules. Described below is a summary of reviews and investigations, since Market Opening.

The [Compliance](#) page on the IMO Web site provides more information about the Compliance functions of the IMO.

	Current Month Compliance Activities					Year to Date Compliance Activities				
	Under Prelim Review	Under Investigation	Discontinued	Sanctions		Under Prelim Review	Under Investigation	Discontinued	Sanctions	
				Letter	Financial				Letter	Financial
Operations:										
Failed Intertie Transactions		26	8			15	208	100		
Deviation from Dispatch	3		3			41	15	29		2
Outages						5	1	4		
Metering & Settlements	1	3	1			14	10	7	5	
Transmission										
Confidentiality						5		3	2	
Other					1		6	6	1	1

The [Sanctions](#) page on the IMO Web site provides more information on sanctions issued by MACD.

The [Compliance Activities](#) page on the IMO Web site provides information on other MACD activities.

To assist market participants, MACD has prepared an [Overview of Intertie Transaction Failures](#) which is available on the IMO Web site.

4.2 Dispute Resolution

Dispute Resolution is a process to resolve disputes involving the application and interpretation of the Market Rules by the IMO, and disputes that arise between market participants, including the IMO participant. The process is designed to resolve disputes in the most expeditious and least expensive way. The process most often includes three stages - good faith negotiations, mediation and arbitration. Disputes are confidential until they reach the arbitration stage, at which time the process becomes public. The Dispute Resolution process is described in Chapter 3, section 2 of the market rules. Described below is a summary of the disputes that have been commenced since Market Opening.

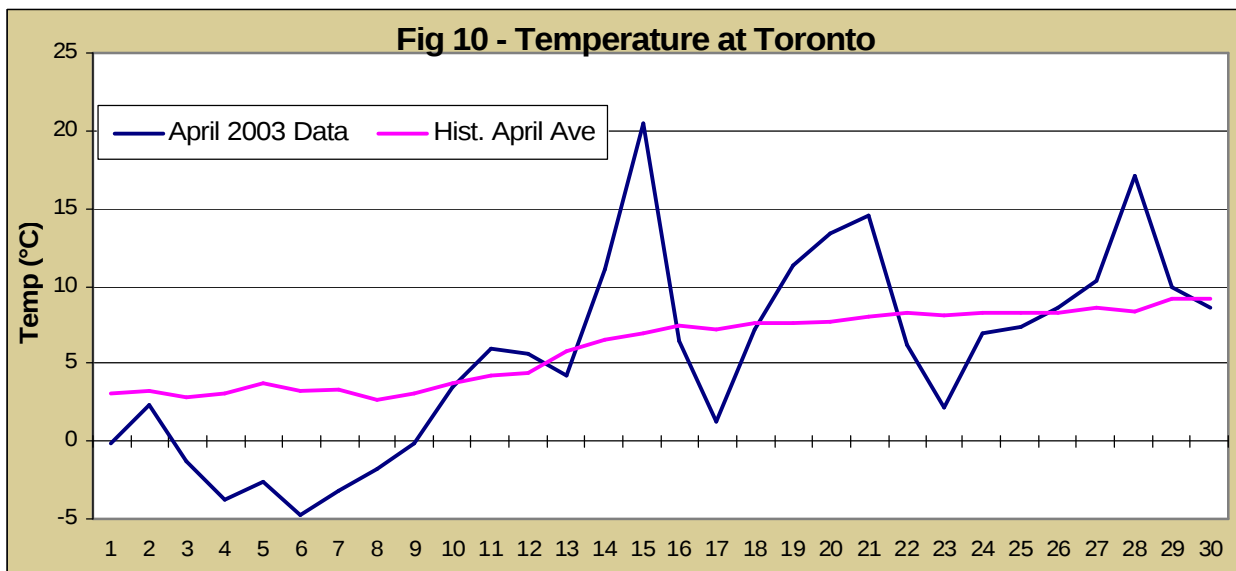
The [Dispute Resolution](#) page on the IMO Web site provides more information on the Dispute Resolution process.

Notices of Disputes Served		Number Ongoing	Number Resolved
Current Month	Year-to-date		
0	4	0	4

5. Weather

5.1 Temperature

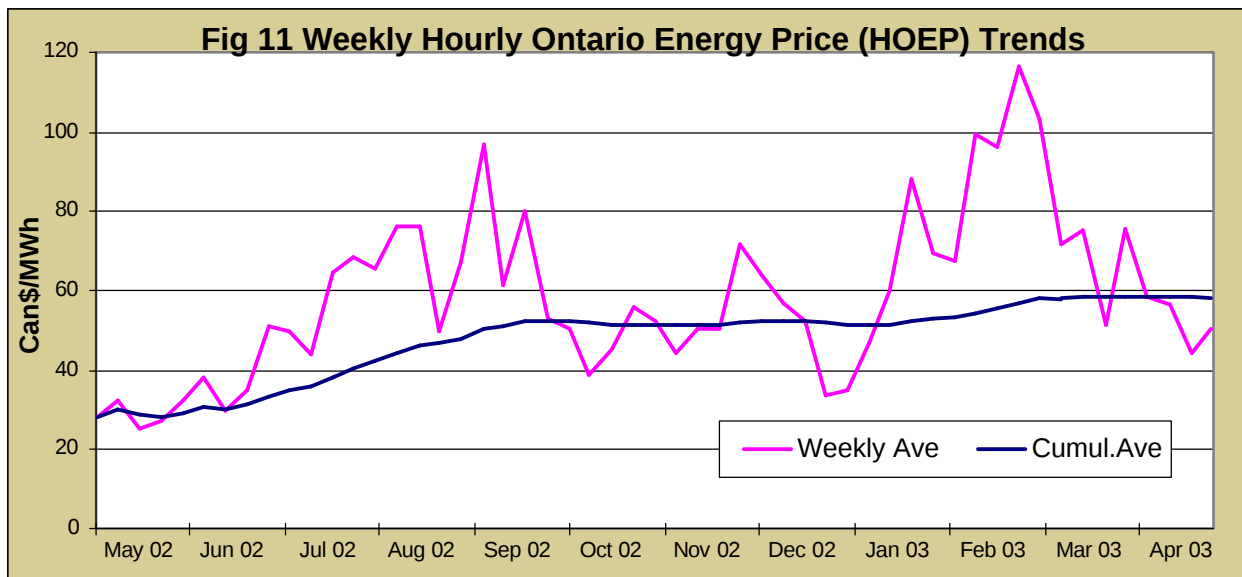
Demand for electricity is affected by weather in many ways. By far the most significant factor is temperature, with warm summer-like temperatures causing an increase in load due to air conditioning use, and cold winter temperatures resulting in additional heating load. The graph below shows the average daily temperature in Toronto throughout this month, and compares it to historic average temperatures for the corresponding days. This graph displays Toronto temperatures. However, the IMO monitors weather conditions (temperature, humidity, wind speed, illumination, storm activities) across the entire province and factors these conditions into our demand forecasting and our operational decisions.



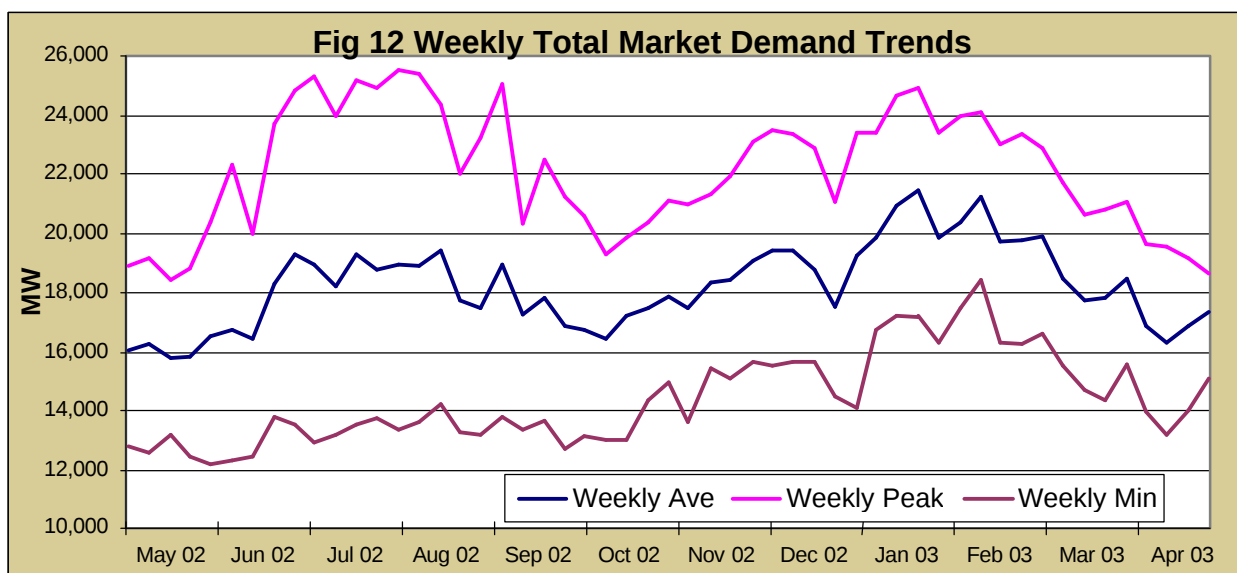
6. Longer-Term Trends

This section provides graphs that display average quantities over longer periods of time than what is available in either the Monthly graphs or in the IMO's Weekly Market Reports. This longer-term perspective will allow seasonal variations to be observed. For additional background on the particular information being graphed, please refer to the relevant monthly graph and write-up presented earlier in this report.

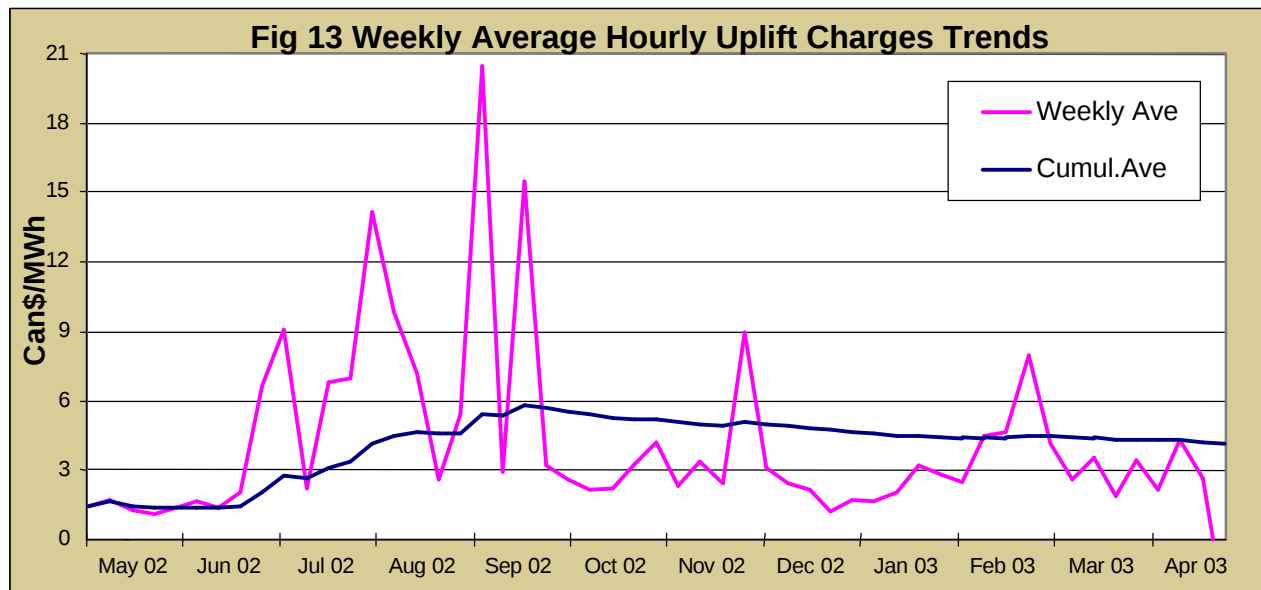
6.1 Weekly Hourly Ontario Energy Price (HOEP) Trends



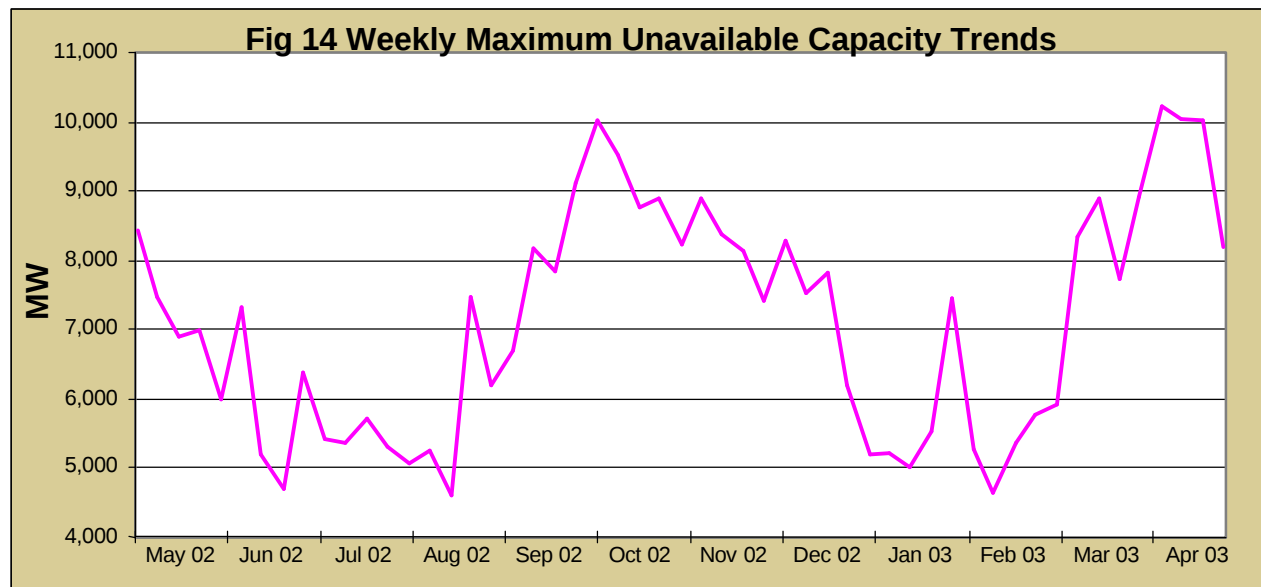
6.2 Weekly Market Demand Trends



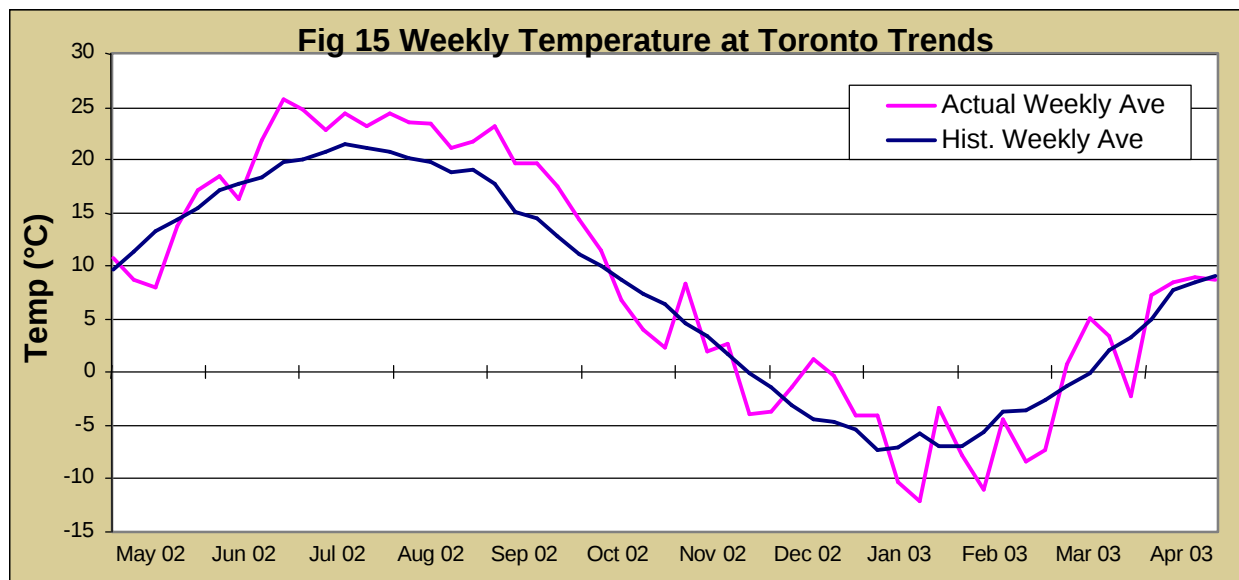
6.3 Weekly Average Hourly Uplift Charges Trends



6.4 Weekly Maximum Unavailable Capacity Trends



6.5 Weekly Temperature at Toronto Trends



7. Summary of Wholesale Market Electricity Charges in Ontario's Competitive Marketplace

In early July 2002, the IMO released "[A Guide to Electricity Charges in Ontario's Competitive Marketplace](#)". That guide shows how market charges flow from the wholesale market to the retail market, and how these charges may appear on a typical consumer's utility bill. The bar chart contained in this section is taken directly from that Guide. Also shown here, is a summary of this month's market results that correspond with the charge items indicated in the chart.

IMO Wholesale Market	Arithmetic Average		Weighted Average	
	Current Month	Year-to-Date	Current Month	Year-to-Date
Commodity Charge (varies)	\$58.88/MWh or 5.89 ¢/kWh	\$58.36/MWh or 5.84 ¢/kWh	\$61.61/MWh or 6.16 ¢/kWh	\$62.18/MWh or 6.22 ¢/kWh
Wholesale Market Services Charges	\$5.18/MWh or 0.52 ¢/kWh	\$6.39/MWh or 0.64 ¢/kWh	\$5.32/MWh or 0.53 ¢/kWh	\$6.98/MWh or 0.70 ¢/kWh
Wholesale Transmission Charge	\$8.42/MWh or 0.84 ¢/kWh	\$8.58/MWh or 0.86 ¢/kWh	\$8.42/MWh or 0.84 ¢/kWh	\$8.58/MWh or 0.86 ¢/kWh
Debt Retirement Charge	\$7.00/MWh or 0.70 ¢/kWh	\$7.00/MWh or 0.70 ¢/kWh	\$7.00/MWh or 0.70 ¢/kWh	\$7.00/MWh or 0.70 ¢/kWh
Totals	\$79.48/MWh or 7.95 ¢/kWh	\$80.33/MWh or 8.03 ¢/kWh	\$82.35/MWh or 8.24 ¢/kWh	\$84.74/MWh or 8.47 ¢/kWh

There are two commodity charges quoted above. The arithmetic average price would be representative of the average commodity charge for a customer whose electrical demand is relatively consistent throughout the day, the night and the weekends. The weighted average price would be applicable to a customer whose consumption mirrored that of the total system. The actual average commodity price paid by a wholesale customer will be very sensitive to their consumption pattern.

The Wholesale Transmission Charge listed above has been calculated by summing all transmission-related fees paid by all loads in the province, and dividing that sum by the total energy delivered to those loads. As such, this number is not representative of the fee paid by any particular customer. Rather, each customer's actual fee for transmission service will depend on many factors such as peak consumption pattern and the types of transmission services applicable to the customer.

Questions on any information contained in this report should be directed to:

IMO Help Centre
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helpcentre@theIMO.com
