

Régie de l'énergie - Dossier R-3603-2006

Option d'électricité interruptible du tarif L et d'utilisation des groupes électrogènes de secours par Hydro-Québec Distribution

C A N A D A

RÉGIE DE L'ÉNERGIE

PROVINCE DE QUÉBEC
DISTRICT DE MONTRÉAL

OPTION D'ÉLECTRICITÉ
INTERRUPTIBLE DU TARIF L ET
D'UTILISATION DES GROUPES
ÉLECTROGÈNES DE SECOURS PAR
HYDRO-QUÉBEC DISTRIBUTION

DOSSIER R-3603-2006

HYDRO-QUÉBEC, dans ses activités de
distribution

Demanderesse

-et-

STRATÉGIES ÉNERGÉTIQUES (S.É.)

-et-

L'ASSOCIATION QUÉBÉCOISE DE
LUTTE CONTRE LA POLLUTION
ATMOSPHÉRIQUE (AQLPA)

Intervenantes

NAVIGANT CONSULTING

***Blueprint for Demand Response in Ontario
Prepared for Independent Electricity Market Operator
Avril 2003***

Extraits

Pièce déposée par :
Stratégies Énergétiques
Association québécoise de lutte contre la pollution atmosphérique
(SÉ-AQLPA)

Le 30 août 2006

Pièce SÉ-AQLPA-3 - Document 2

Déposée par :

***Stratégies Énergétiques - Association québécoise de lutte contre la pollution atmosphérique
(SÉ-AQLPA)***

Régie de l'énergie - Dossier R-3603-2006
Option d'électricité interruptible du tarif L et d'utilisation des groupes électrogènes de secours
par Hydro-Québec Distribution

Pièce SÉ-AQLPA-3 - Document 2

Déposée par :

Stratégies Énergétiques - Association québécoise de lutte contre la pollution atmosphérique
(SÉ-AQLPA)

Blueprint for Demand Response in Ontario

prepared for

INDEPENDENT ELECTRICITY MARKET OPERATOR

by



*2 Bloor Street West, Suite 2005
Toronto ON M4W 3E2
(416) 927 1641*

April 2003

APPENDIX A: DETAILS OF OTHER ISO DR PROGRAMS

Navigant Consulting investigated the demand response programs in several jurisdictions. A summary of the various programs for New York, New England and PJM (deemed to be the most relevant to this study), is provided in this appendix.

Demand Response Programs in New York

NY ISO has three demand response programs currently in place:

- Day Ahead Demand Response Program (DADRP)
- Emergency Demand Response Program (EDRP)
- ICAP Special Case Resources Program (ICAP/SCR).

Each program is described in detail below.

Day Ahead Demand Response Program (DADRP)

In this program, demand response is bid into the Day-ahead market. The bid must include an LMP (min \$50/MWh) above which load would curtail and may include a curtailment initial cost. The bid must specify duration of curtailment as a contiguous strip of time of no more than 8 hours. A single customer can bid multiple strips in one day.

Position in Emergency Response Stack	<ul style="list-style-type: none"> ▪ Part of day-ahead scheduling. ▪ Before ICAP/SCR and EDRP.
Participant Requirements	<ul style="list-style-type: none"> ▪ Can be interruptible load or small on-site generation. ▪ 1 MW increments, can aggregate. ▪ Hourly Interval meter. Accuracy not specified (presumably +/- 2%, as for EDRP)
Notification Method and Lead Time	<ul style="list-style-type: none"> ▪ Bid required by 5am day-ahead, notice by noon (day ahead).
Minimum Duration	<ul style="list-style-type: none"> ▪ As bid.
Price Paid to Customer and Non-Compliance Penalty	<ul style="list-style-type: none"> ▪ Price paid to customer is greater of bid \$/MWh or Day ahead LMP. ▪ Bids can set Day ahead LMP ▪ An LSE/CSP with a Demand Side Resource that curtails Load will receive a rebate from the NYISO for the curtailed amount of Load priced at the Day-Ahead LMP (with the exceptions of Small Generators) as an Incentive. ▪ Non-compliance penalty is greater of Day ahead or Real-time LMP + 10% if incentives apply or greater of Day ahead or Real-time LMP if incentives don't apply (i.e. for generators).
Cost Recovery	<ul style="list-style-type: none"> ▪ Distributed among zones based on static probability that no constraint will occur or that a constraint will occur upstream or downstream of the zone. ▪ Recovered from all transmission customers in the zone based on their share of energy use in that zone in that month.
Participation	<ul style="list-style-type: none"> ▪ 24 participants in 2002.

Emergency Demand Response Program (EDRP)

In this program, the ISO calls for voluntary load reduction in an emergency situation. Participants who respond in time are paid for their actual curtailment.

Position in Emergency Response Stack	<ul style="list-style-type: none"> The NYISO will declare an Alert State, or Major Emergency for real-time shortage of Operating Reserve, and activate all available in-state generating resources to re-establish the Operating Reserve. If required levels of real-time Operating Reserves cannot be re-established, the NYISO will utilize the EDRP (after ICAP/SCR) to re-establish real-time Operating Reserves.
Participant Requirements	<ul style="list-style-type: none"> Retail end users can be accommodated through one of four types of Curtailment Service Providers (CSPs): LSEs; approved Curtailment Customer Aggregators; as a Direct Customer of the NYISO themselves, and As a NYISO-approved Curtailment Program End Use Customer Min 100 kW per zone, can aggregate. Aggregates of load must be min 0.5MW. Aggregators must accept full responsibility for payments to and penalties applied to members of aggregate. Up to 25MW of small retail load can be aggregated with curtailment measured under alternative methods Hourly Interval meter with accuracy of +/- 2%.
Notification Method and Lead Time	<ul style="list-style-type: none"> burst e-mail or phone call day-ahead or earlier in-day advisory given when possible (advisory does not activate program), 2 hour notice (if possible)
Minimum Duration	<ul style="list-style-type: none"> 4 hours. If curtailment is needed for less than 4 hours, CSP will be paid for at least 2 hours
Price Paid to Customer and Non-Compliance Penalty	<ul style="list-style-type: none"> Price paid to customer is greater of \$500/MWh or Real-time LMP. Min \$500/MWh price can set Real-Time LMP. No non-compliance penalty.
Cost Recovery	<ul style="list-style-type: none"> Recovered from all transmission customers in the affected zone(s) based on their share of energy use in that zone(s) in that month.
Participation	<ul style="list-style-type: none"> 1711 participants with 1481 MW in 2002. Average demand reduction during summer 2002 curtailment events was approximately 670 MW.

ICAP Special Case Resources Program (ICAP/SCR)

In New York, there is an Installed Capacity market where capacity providers receive ICAP payments for available capacity. In the ICAP Special Case Resources Program, Special Case Resources get ICAP payments, and are called on to provide energy (demand reduction) in emergencies. SCRs submit strike price offers that set the price at which they provide demand reduction.

Position in Emergency Response Stack	<ul style="list-style-type: none"> Called when there's an anticipated shortage in operating reserve, before EDRP
Participant Requirements	<ul style="list-style-type: none"> Min 100 kW demand reduction. ICAP credits can only be claimed in increments of 100 kW (599 kW is rounded down to 500 kW), can be aggregated. Must not be visible to ISO's market information system A resource interface party (RIP) can act as an intermediary between ISO and Special case resource. Hourly Interval meter. Accuracy not specified (presumably +/- 2%, as for EDRP)
Notification Method and Lead Time	<ul style="list-style-type: none"> burst e-mail or phone call to RIP (or SCR directly) RIP must confirm receipt of notification within 1 hour by internet or telephone RIP can communicate notice to SCR in any agreed upon manner Day ahead warning (21 hour if by 3PM or 24 hour), 2 hour notice
Minimum Duration	<ul style="list-style-type: none"> resource must be capable of providing 4 hours. Actual duration will be as needed (with SCR paid for at least 4 hours).
Price Paid to Customer and Non-Compliance Penalty	<ul style="list-style-type: none"> SCR paid \$/kW market value of ICAP up front Payment for energy reduction based on strike price (guaranteed their minimum bid up to EDRP value of \$500/MWh). Strike price can set Real-Time LMP if at least 1 MW of SCR Capacity is needed to satisfy the total reserve requirement Non-compliance has a UCAP impact and possible deficiency payments.
Cost Recovery	
Participation	

Other NY Demand Response Points

- LSEs have and/or are developing their own curtailment programs for managing their load and increasing reliability of the local electric system. The programs above have been designed to be compatible with these.
- Demand-side resources may no longer participate in both the ICAP and EDRP. Demand-side resources may participate in both the DADRP and EDRP. If bid accepted in DADRP, DADRP commitments are settled first, and any load reduction beyond DADRP required levels are paid at the EDRP rates.

Demand Response Programs in New England

NEPOOL has three demand response programs currently in place:

- Real-Time Demand Response Program
- Real-Time Price Response Program
- Interruptible Load

Real-Time Demand Response Program

The ISO instructs retail customer to reduce demand. Customer is paid if they comply with instruction. Essentially, this is an emergency demand response program. The program is only in place on non-holiday weekdays from 7:00 to 18:00.

Position in Emergency Response Stack	<ul style="list-style-type: none"> ▪ Activated at Action 12 of NEPOOL Operating Procedure No. 4. As part of Action 12, ISO initiates voltage reduction ▪ End of stack
Participant Requirements	<ul style="list-style-type: none"> ▪ Retail customers are enrolled in program through NEPOOL participants (participants get paid by ISO and pay to retail customers) ▪ Min 100 kW demand reduction. ▪ Interval metering required.
Notification Method and Lead Time	<ul style="list-style-type: none"> ▪ Participant must be willing and able to reduce demand within 30 min. of receiving direction from ISO.
Minimum Duration	
Price Paid to Customer and Non-Compliance Penalty	<ul style="list-style-type: none"> ▪ Enrolled retail customers paid a reservation fee based on 30min op res. hourly clearing price, and are eligible to receive an ICAP credit. ▪ For actual interruptions, price paid is Energy Clearing Price multiplied by congestion multiplier. This price can not exceed \$100US
Cost Recovery	<ul style="list-style-type: none"> ▪ MCP portion of interruption payments allocated to NEPOOL participants based on pro rata share of load ▪ Congestion multiplier portion of interruption payments collected from participants with Network Load distributed in same manner as congestion costs.
Participation	<ul style="list-style-type: none"> ▪ Load reductions not triggered in 2002.

Real-Time Price Response Program

The ISO opens a window for retail customers to voluntarily reduce demand. This program is only in place on non-holiday weekdays from 7:00 to 23:00

Position in Emergency Response Stack	<ul style="list-style-type: none"> ▪ Window for voluntary demand curtailments opened when results of unit commitment by ISO forecasts MCP greater than \$100 ▪ 2nd in stack
Participant Requirements	<ul style="list-style-type: none"> ▪ Retail customers are enrolled in program through NEPOOL participants (participants get paid by ISO and pay to retail customers) ▪ Min 100 kW demand reduction. ▪ Interval metering required.
Notification Method and Lead Time	<ul style="list-style-type: none"> ▪ Notification can be through Internet Based Communication System or through a “low tech” option which uses e-mail, fax, pager messaging and notification posted on ISO external web site
Minimum Duration	
Price Paid to Customer and Non-Compliance Penalty	<ul style="list-style-type: none"> ▪ Region-wide MCP (not LMP).
Cost Recovery	<ul style="list-style-type: none"> ▪ Recovered from all NEPOOL participants based on pro rata share of load.
Participation	

Interruptible Load

This is a standard interruptible rate program. Retail customers receive special interruptible rates from wholesale energy supplier.

Position in Emergency Response Stack	<ul style="list-style-type: none"> ▪ Activated in early Actions of NEPOOL Operating Procedure No. 4. ▪ 1st in stack
Participant Requirements	<ul style="list-style-type: none"> ▪ Hourly Interval meter.
Notification Method and Lead Time	<ul style="list-style-type: none"> ▪ Loads divided into three categories based on notification time prior to interruption. ▪ Maximum 12 hours
Minimum Duration	<ul style="list-style-type: none"> ▪ Depends on load category
Price Paid to Customer and Non-Compliance Penalty	<ul style="list-style-type: none"> ▪ No specific price paid for interruption, but these loads pay a special interruptible rate for all energy consumed.
Cost Recovery	
Participation	

Other New England Demand Response Points

- Interruptible Load program expected to be replaced with expanded DR programs for both day-ahead and real-time markets.
- ISO-NE believes that eventually, no payments will be required for DR, but in the interim, because of barriers to retail customers facing real-time price signals, DR programs need to pay for DR.
- ISO-NE has engaged in several steps to increase participation:
 - Improving and introducing new DR programs such as:
 - Day-ahead demand response (new)
 - Real-time 30-min demand response
 - Real-time 2 hour demand response (new)
 - Real-time price response
 - Real-time profile response (new)
 - Creation of separate department within ISO to focus on DR
 - Forums to educate industry stakeholders

Demand Response Programs in PJM

PJM has three demand response programs currently in place:

- Economic Load Response Program
- Emergency Load Response Program
- Active Load Management (ALM)

Economic Load Response Program

PJM provides an incentive (as a payment for load reduction) to end-use customers or curtailment service providers to enhance the ability and opportunity for reduction of consumption when PJM Locational Marginal Prices (“LMP”) prices are high. This program came into effect on June 1st 2002, and is scheduled to terminate on Dec 1st 2004 unless members vote to extend it. The program has both a Real-time and Day ahead option.

Day-Ahead

<p>Position in Emergency Response Stack</p>	<ul style="list-style-type: none"> ▪ End-use customers bid load reduction into Day ahead market. The demand reduction bid includes the day-ahead LMP above which the end-use customer would not consume, and could also include a start-up cost and/or a minimum number of contiguous hours for which the load reduction must be committed.
<p>Participant Requirements</p>	<ul style="list-style-type: none"> ▪ PJM Member, or any existing PJM Member may act as a third party for non-members, in which case the third party will be referred to as the Curtailment Service Provider (CSP). ▪ Bid must involve minimum increments of 100kW. ▪ End-use customers on LMP-based contracts with energy suppliers are ineligible to participate. ▪ Hourly Interval meter with accuracy of +/- 2%.
<p>Notification Method and Lead Time</p>	<ul style="list-style-type: none"> ▪ Bid submitted day ahead.
<p>Minimum Duration</p>	<ul style="list-style-type: none"> ▪ As bid.
<p>Price Paid to Customer and Non-Compliance Penalty</p>	<ul style="list-style-type: none"> ▪ Reimbursement for reducing load is based on kWh committed to in day-ahead market. ▪ If PJM accepts a bid when day ahead LMP <\$75/MWh, PJM will pay day ahead LMP less an amount equal to the applicable generation and transmission charges. If PJM accepts a bid when day ahead LMP >=\$75/MWh, PJM will pay day ahead LMP ▪ Total payments to end-use customers or their representatives (LSEs/CSPs) can not be less than the total value of the load response bid, including any submitted start-up cost. Any shortfall will be made up through normal, day-ahead operating reserves.
<p>Cost Recovery</p>	<ul style="list-style-type: none"> ▪ PJM recovers LMP less amount equal to generation and transmission charges from the LSE that otherwise would have the load that was reduced. The amount equal to the generation and transmission charges are recovered from all load within the zone in which the load was reduced. If an LSE has a full requirements and/or load-following contracts for generation supply, the obligation to pay flows to the generation supplier.
<p>Participation</p>	

Real-Time

Position in Emergency Response Stack	<ul style="list-style-type: none"> End-use customers participating in the Economic Load Response Program may choose to reduce load whenever their zonal LMP dictates that it is economically beneficial for them to do so or may choose to be dispatched by PJM.
Participant Requirements	<ul style="list-style-type: none"> PJM Member, or any existing PJM Member may act as a third party for non-members, in which case the third party will be referred to as the Curtailment Service Provider (CSP). Bid must involve minimum increments of 100kW. End-use customers on LMP-based contracts with energy suppliers are ineligible to participate. Hourly Interval meter with accuracy of +/- 2%.
Notification Method and Lead Time	<ul style="list-style-type: none"> The end use customer or its representative (LSE/CSP) shall send an email to PJM concurrent with or up to one hour immediately prior to beginning the reduction, and another concurrent with or up to one hour immediately prior to the end of their load reduction.
Minimum Duration	<ul style="list-style-type: none"> Determined by customer, or by PJM (based on customer bid) if customer is dispatched
Price Paid to Customer and Non-Compliance Penalty	<ul style="list-style-type: none"> Reimbursement for reducing load is based on the actual kWh relief provided in excess of committed day-ahead load reductions plus the adjustment for losses. If Real-time LMP <\$75/MWh PJM will pay real time LMP less an amount equal to the applicable generation and transmission charges. If Real-time LMP >=\$75/MWh PJM will pay real time LMP If PJM dispatches load reduction, payment will not be less than the total value of the load response bid, including any submitted start-up cost.
Cost Recovery	<ul style="list-style-type: none"> PJM shall recover LMP less amount equal to applicable generation and transmission charges from the LSE that otherwise would have the load that was reduced. The amount equal to the generation and transmission charges is recovered from all loads within the zone in which the load was reduced. If an LSE has a full requirements and/or load-following contracts for generation supply, the obligation to pay flows to the generation supplier.
Participation	

Emergency Load Response Program

In this program, end-use customers are compensated by PJM for voluntarily reducing load during an emergency event.

Position in Emergency Response Stack	<ul style="list-style-type: none"> ▪ After declaration of Maximum Emergency Generation and before ALM steps 1 and 2
Participant Requirements	<ul style="list-style-type: none"> ▪ PJM Member, or any existing PJM Member may act as a third party for non-members, in which case the third party will be referred to as the Curtailment Service Provider (CSP). ▪ Generators and Loads (> 100 kW). ▪ Must be capable of receiving PJM notification to participate during emergency conditions. ▪ Hourly Interval meter with accuracy of +/- 2%.
Notification Method and Lead Time	<ul style="list-style-type: none"> ▪ Notification through PJM web page, Edata, Burst e-mail, and All-call messages
Minimum Duration	<ul style="list-style-type: none"> ▪ 2 hours.
Price Paid to Customer and Non-Compliance Penalty	<ul style="list-style-type: none"> ▪ Price paid to customer is greater of \$500/MWh or zonal LMP. ▪ No non-compliance penalty.
Cost Recovery	<ul style="list-style-type: none"> ▪ All purchasers pay proportional to difference from day-ahead to real-time consumption
Participation	

Active Load Management (ALM)

LSEs or others act as ALM providers. They receive ALM credits daily for the amount of curtailment/ALM they can provide. Customers can be curtailed a maximum of 10 times in a planning period. ALM providers can contract with customers for interruptible/curtailable load however they wish. The program is only in place during the hours of 12PM to 8PM on weekdays, excluding holidays.

Position in Emergency Response Stack	<ul style="list-style-type: none"> After Emergency and economic load response, and after voltage reductions and maximum emergency generation.
Participant Requirements	<ul style="list-style-type: none"> ALM provider must be capable of reducing load of all ALM customers without additional approval All ALM customers must be metered, and the ALM provider must provide customer specific ALM credit information and compliance and verification info Can use direct load control, firm service level (down to) and guaranteed load drop (down by)
Notification Method and Lead Time	<ul style="list-style-type: none"> PJM notifies ALM provider, who is responsible for notifying customer 2 types of customer: short lead time is 1 hour or less, long lead time is 2 hours or less
Minimum Duration	<ul style="list-style-type: none"> None specified. 6 hour maximum.
Price Paid to Customer and Non-Compliance Penalty	<ul style="list-style-type: none"> No actual payment is made to LSE Each LSE is responsible for providing a certain amount of capacity under the UCAP system. ALM credits reduce this obligated quantity. Reducing obligation allows LSE to contract for less capacity, or to sell excess capacity at spot prices. What LSEs can offer customers for ALM is not determined by PJM. Any compliance deficiency penalty will be calculated as: Compliance Deficiency Value *Daily Capacity Deficiency Rate from RAA Schedule 11 * 365 / 10.
Cost Recovery	<ul style="list-style-type: none"> Penalties from compliance deficiency will be used to pay ALM providers that over-complied.
Participation	

Other PJM Demand Response Points

- The economic load reduction program purposefully incorporates incentives greater than strict economics would provide for the same curtailment. This is justified to overcome initial barriers to end-use customer load response. This program is not intended to be a permanent fix to the lack of load response seen in the PJM markets today. The designers of this program contemplate that when the existing market barriers are removed and end-use customers are better able to respond to real time prices, the need for this program and others like it will disappear.
- PJM will also consider customers without hourly metering for participation in a pilot program for up to two years per customer, provided the customers or their representatives propose an alternate method for measuring hourly load reductions. Alternate measurement mechanisms will be approved by PJM on a case-by-case basis. Participation in the non-hourly metered customer pilot will be limited to 25MW aggregate load reduction over the PJM region and across all load response programs, and with the sole exception of the requirement for hourly metering, will be subject to the same rules and procedures as the applicable load response program in which the customer has enrolled. Following the 2-year pilot period, each alternate method must be approved through the normal PJM stakeholder process in order to continue to be used.
- For the economic load reduction program, an end-use customer or its representative (LSE/CSP) will accumulate credits for energy reductions in those hours when the energy delivered to the end-use customer is less than the end-use customer's CBL at the corresponding hourly rate. In the event the end-use customer's hourly energy consumption is greater than then the CBL, the end-use customer or its representative (LSE/CSP) will accumulate debits at the corresponding hourly rate for the amount the end-use customer's hourly energy consumption is greater than the CBL. However, in no event will the end-use customer's (or its representative's) credit be reduced below zero on a daily basis.
- For the economic load reduction program, If the total amount of recoverable charges reflecting generation and transmission charges for the entire program exceeds \$17.5 million in a year, thereafter participants will receive LMP less an amount equal to the applicable generation and transmission charges regardless of the level of LMP.
- An ALM customer may participate in the Economic Load Response program during ALM events as long as the customer's ALM contract explicitly excludes payment or credit for energy not consumed during ALM events.
- In all cases, the applicable zonal or aggregate LMP is used as appropriate for the individual end-use customer.
- PJM staffing a new department within its market services division to deal exclusively with integrating demand side participation in the market.