Demand Response in Ontario

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COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Outline

- Electricity Sector in Canada and Ontario
- Ontario's electricity market
- Wholesale demand response
  - IESO programs and DR contract(s)
- Retail demand response
  - smart meters
  - the Regulated Price Plan
- Next steps

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Electricity in Canada

- Canadian electric sector is provincially-based:
  - Minimal federal role
  - Mainly provincially-owned (except Alberta, Nova Scotia, PEI)
  - Cheap hydropower in some provinces (BC, Manitoba, Quebec, Newfoundland)
  - Markets in some jurisdictions (Alberta, New Brunswick, Ontario)

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Electricity Market in Ontario

- A set of provincially-owned companies/agencies
  - Ontario Power Generation (70% of generation)
  - Hydro One (97% of transmission + 30% of distribution)
  - Independent Electricity System Operator
  - Ontario Power Authority
    - Responsible for planning, power plant procurement, conservation
- Other players
  - Municipally-owned distribution companies
  - Some private generators (mostly under contract to the province)
  - Ontario Energy Board
    - Regulate IESO, T&D
    - Policy development (when asked by government)

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What happened to Ontario's Electricity Market

- Launched in May 2002
- But tight supply + hot summer led to 20% increase in retail price of electricity (and 30% increase in bills) for small consumers (default supply was market price)
- This led to certain political problems…

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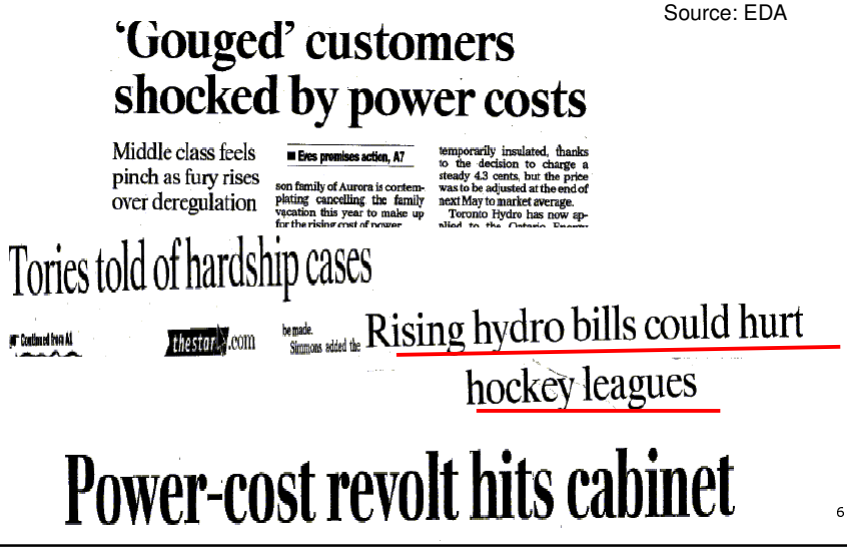
Source: EDA



'Gouged' customers shocked by power costs

Middle class feels pinch as fury rises over deregulation

■ Eves promises action, A7

son family of Aurora is contemplating cancelling the family vacation this year to make up

temporarily insulated, thanks to the decision to charge a steady 4.3 cents, but the price was to be adjusted at the end of next May to market average.

Toronto Hydro has now ap-

Tories told of hardship cases

Continued from A1

thestar.com

be made. Simmons added the

Rising hydro bills could hurt hockey leagues

Power-cost revolt hits cabinet

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Electricity Market today

- Smaller customers (about 50% of load) have been under regulated prices ever since – originally below cost, but since corrected.
- New government has taken action
  - Continued price regulation for smaller customers (RPP) for "stable prices"
  - Regulated prices for most of OPG's generation
  - Actively acquiring new generating capacity (OPG investments, gas-fired generation, renewables, hydropower from Manitoba/Newfoundland) to compensate for planned closure of 7.5 GW of coal-fired capacity
  - Created Ontario Power Authority (OPA)
  - But has retained the wholesale market and has seen the light on demand response!

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Wholesale Demand Response

- IESO programmes:
  - Dispatchable loads/demand side bidding (449 MW)
  - Hour Ahead Dispatchable Load (242 MW)
  - Emergency Demand Response (418 MW)
  - Transitional Demand Response (for loads under 5 MW, 58 MW)
- DR part of IESO customer education programs
- Recent government RfP for capacity included demand response:
  - CAD 350/MWh strike price (plus callable)
  - 10 MW contract awarded (grocery chain)
- OPA can "facilitate … load management"

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Retail Demand Response: Policy Background

- Government objective – manage electricity demand to:
  - make more efficient use of the current supply
  - reduce reliance on external sources
- "Smart meter" infrastructure needed for demand response:
  - 800,000 smart electricity meters by 2007
  - All Ontario customers by 2010 (about 4.5 million)
- Government asked OEB to develop a plan– considered several alternative options with stakeholders

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Key Elements of Proposed Plan

1. Open interfaces
2. 2-way communication
3. Distributors responsible for meters and last mile
4. Capital and operating costs to be included in delivery rates
5. Large utilities first
6. Regulated Price Plan

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Proposed Smart Meter System

Key requirements

- Capable of two-way communication
- Hourly consumption data without the need to remove the meter or visit the site
- Daily feedback to customers
- Open communication and data standards

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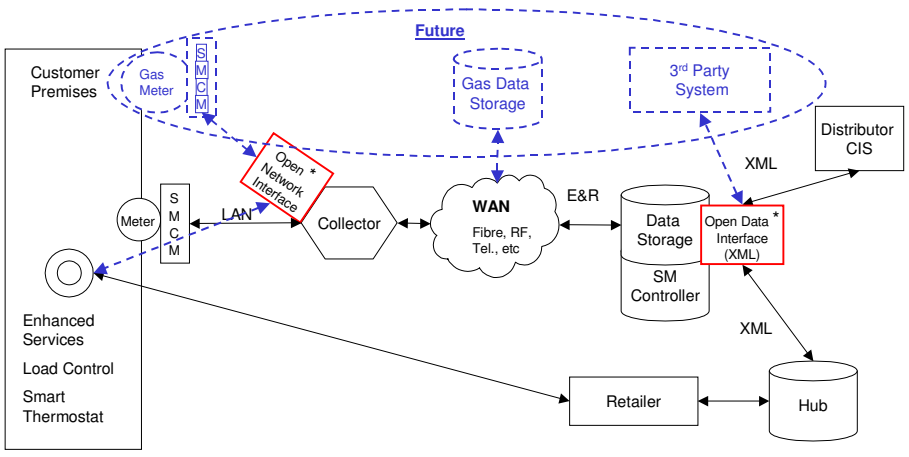
Two-way System with Open Access



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Roles

- **Ministry of Energy** retains responsibility for policy decisions
- **OEB** responsible for setting up a regulatory framework for meters (and Regulated Price Plan for small customers with smart meters)
- **Distributors** responsible for selecting appropriate system + installation, servicing and reading, load control services
- **Program Coordinator** to push for progress needed to meet provincial targets
- **IESO** to identify areas for priority installation; monitor power system and initiate formal critical peak calls
- **Meter Vendors** to complete Measurement Canada approval process and acquire appropriate licence permissions
- **Retailers** to provide competitive services

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Cost

$1 billion (est.) – $3 or $4 a month (capital and operating) per customer by 2010

- New Costs: To be included in delivery rates to customers in a particular rate class
- Multi-Utility Applications: Distributors to investigate mitigating smart meter costs by cooperating with water and gas utilities
- Stranded Costs: Equipment and systems displaced by smart metering

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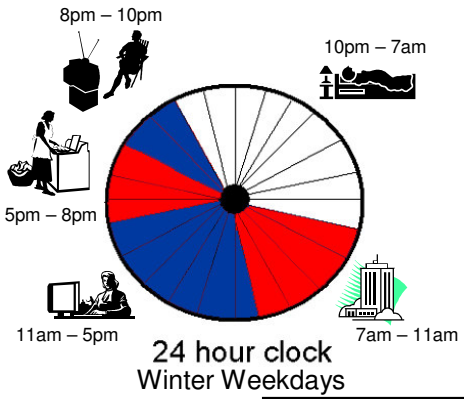
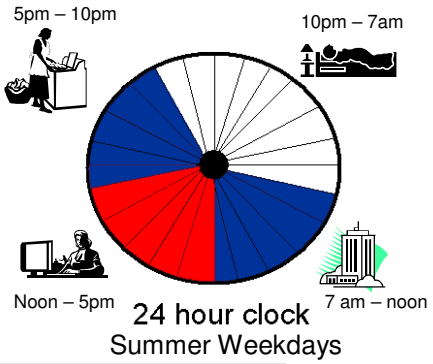
Time of Use RPP Pricing



24 hour clock
Winter Weekdays



24 hour clock
Summer Weekdays

Red = Peak pricing = 9.3¢

Blue = Mid-peak pricing = 6.5¢

White = Off-peak pricing = 2.9¢

All weekends = Off peak pricing

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Challenges

- Economies of scale – 95 utilities / 95 solutions?
- Sub-metering
  - Multi-unit dwellings not separately metered
  - At discretion of building owners
  - Focus on customers with direct LDC relationship
- Competitive Retail Market

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Customer Impact

- Electricity pricing that varies by time of use
- Daily access to consumption data
- Smart meter and RPP – incentive & ability to control energy costs by:
  - moving use to off-peak periods (i.e. running dishwasher at night)
  - lowering energy use during peak periods (i.e. setting air conditioning a few degrees warmer during the afternoon)
- Tools to understand energy use and the ability to change patterns
- Enabling technology, catalyst for change

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Demand Response – current status

- Smart meter plan to Minister January 2005
  - Awaiting government announcement of "Plan B"
- Hydro One proceeding with series of pilot projects
- OEB looking at changes to RPP for 2006 (introduction of Critical Peak Pricing?)
- Demand response as contributor to resource adequacy
  - IESO has draft proposal for Resource Adequacy Market
- Ontario Power Authority role not yet clarified

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Conclusions

- The situation is improving
  - Wholesale demand response already exists
  - Smart meters are moving ahead
  - TOU pricing implemented for small customers on smart meters (when they get them)
  - CPP is under development
  - Ontario Power Authority may "facilitate"
  - Prices are going up
- But political risk remains
  - Higher prices increases risks of political reaction
    - "Customers are paying over double for electricity this summer"
  - Capacity costs will be recovered outside the market, reducing market prices
  - Administered pricing with carrots rather than sticks is a lower risk approach
- OEB is in a good position to address these questions

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Questions?

- Reports on smart meters and on the regulated price plan can be found at:

www.oeb.gov.on.ca

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