

Effective Pricing in Ontario's Hybrid Electricity Market

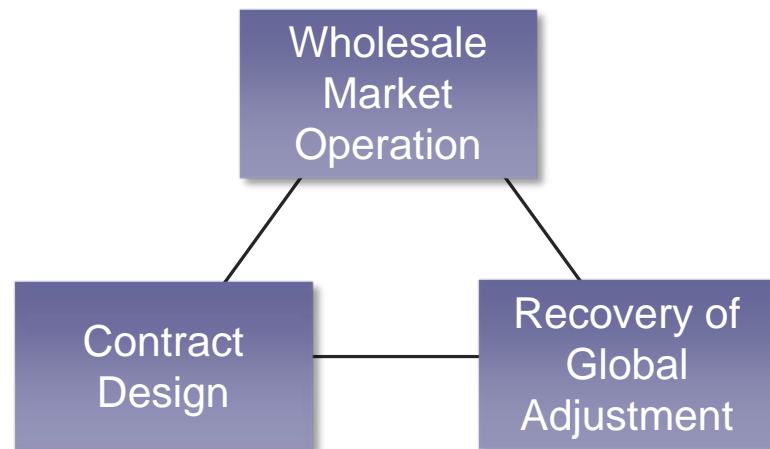
Presentation to SAC
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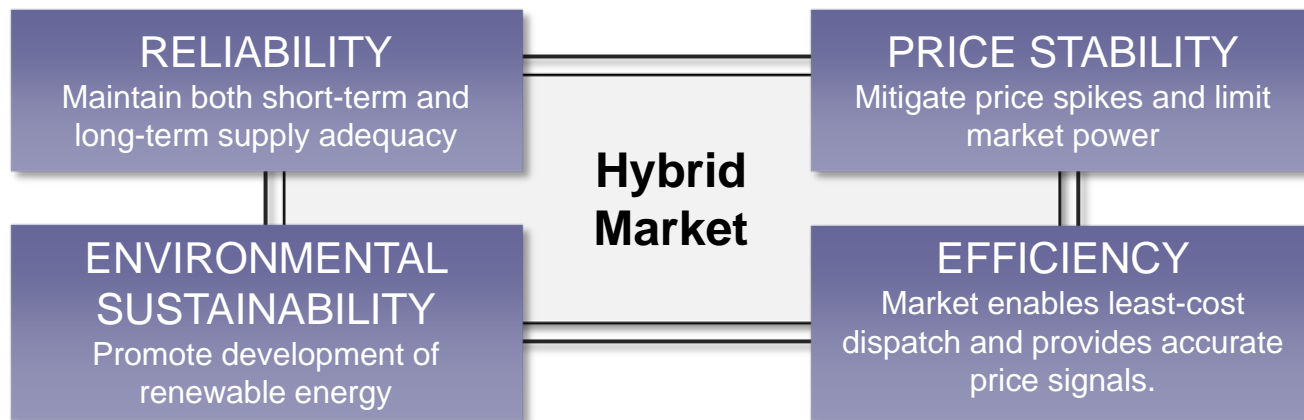
- Study Objective
- Ontario's Hybrid Electricity Market
- Recent Price Trends
- Identified Issues
 - Wholesale Market Price Fidelity
 - Incentive Design of Contracts or Regulations
 - GA Cost Recovery Impact on Future Electricity Costs and Economic Activity
- Feedback



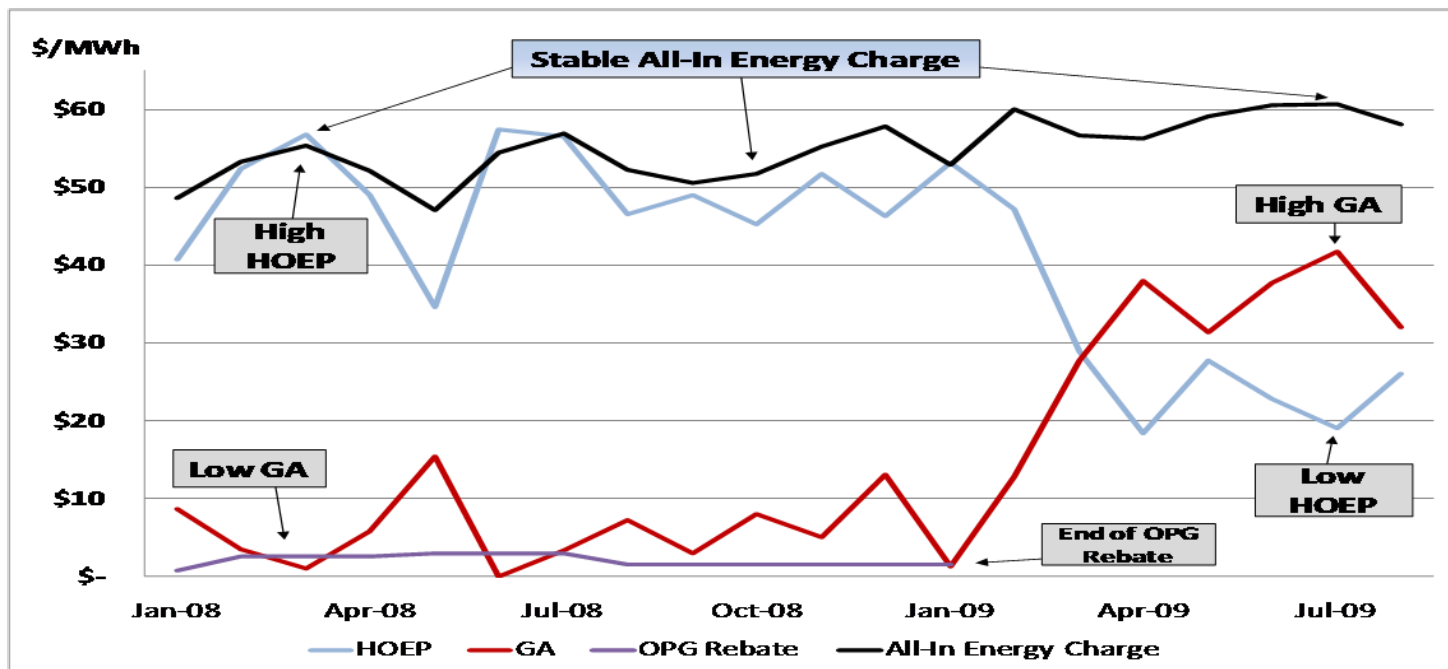
- IESO and OPA, have coordinated efforts to address electricity pricing issues in Ontario.
- This work reviews the effectiveness of the current hybrid structure, specifically the pricing and cost recovery mechanisms, in meeting the government's energy policy objectives.
- Identifies three fundamental aspects that are inter-related, thus requiring consideration as part of an integrated framework.
- Contemplates what, if any, incremental changes might be made to promote key policy objectives to the benefit of the Province.



- Ontario has a hybrid market structure, consisting of a competitive wholesale energy market and significant amounts of centrally procured or regulated supply.
 - The wholesale energy market is used to dispatch generation efficiently and to produce price signals that coordinate the actions of the many diverse participants.
 - Central procurement and regulated prices are used to ensure that key government energy policy objectives are achieved.



- Recent electricity prices have led commentators to question the “sensitivity” of electricity prices in Ontario.
 - The HOEP portion of the energy cost on the customer bill has decreased significantly, while the Global Adjustment (GA) charge has risen.



Recent changes in average monthly HOEP can be explained by changes in fundamental macro factors.

- HOEP has declined 37% from the year before*.

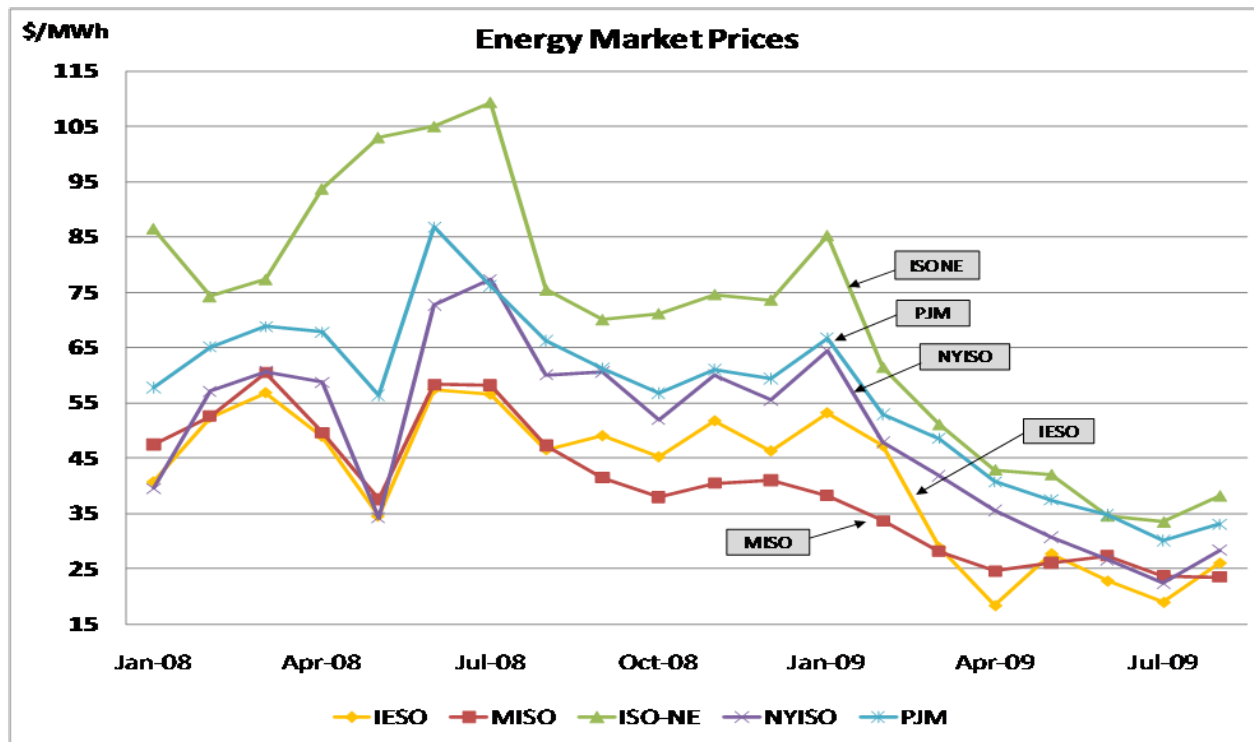
Lower Demand	7% decrease
Increased Supply	+ 3,700 MW new capacity
Lower Fuel Costs	48% decline in Natural Gas prices
Regional Trade	41% fall in price in competing markets**
Changing Supply Mix	More low marginal cost supply (i.e.: wind)

- All of these factors put downward pressure on the market price.

* Weighted HOEP for the period January to August 2009 compared to January to August 2008.

** Simple average of price in NYISO, MISO, PJM and ISO-NE

- Regional market prices have fallen considerably, driven by analogous supply and demand factors. Trade helps to stabilize prices and facilitates price convergence between markets.



- Negative prices can occur when demand is less than the supply of self-scheduling/intermittent generation and baseload generation.
- Off-peak demand has decreased, while off-peak supply has grown.
- Negative prices reflect an unwillingness or inability of generators to reduce their output, offering to pay to stay on-line.
 - *(i.e.: Nuclear or hydro units limited by operational or environmental constraints)*
- Exports play an important role in achieving an efficient outcome.
- Other jurisdictions have also experienced negative prices, though to a lesser degree.

The frequency of negative prices in Ontario has been aggravated by generators incented by their contract design to produce in all hours, regardless of market conditions.

- GA is the difference between the total payments made to certain contracted or regulated facilities and any offsetting market revenues.
 - There is an inverse relationship between GA and HOEP.
 - This creates a moderating effect on the volatility of the all-in energy price paid by consumers, providing price stability.
- GA costs have increased almost five-fold compared to last year*.
- Low market prices mean reduced wholesale market revenues, thereby increasing the need for revenue recovery through GA.
- Other factors (outside of HOEP) have also driven GA costs upwards.

Rates paid to OPG regulated nuclear and hydro assets increased by 11 %.

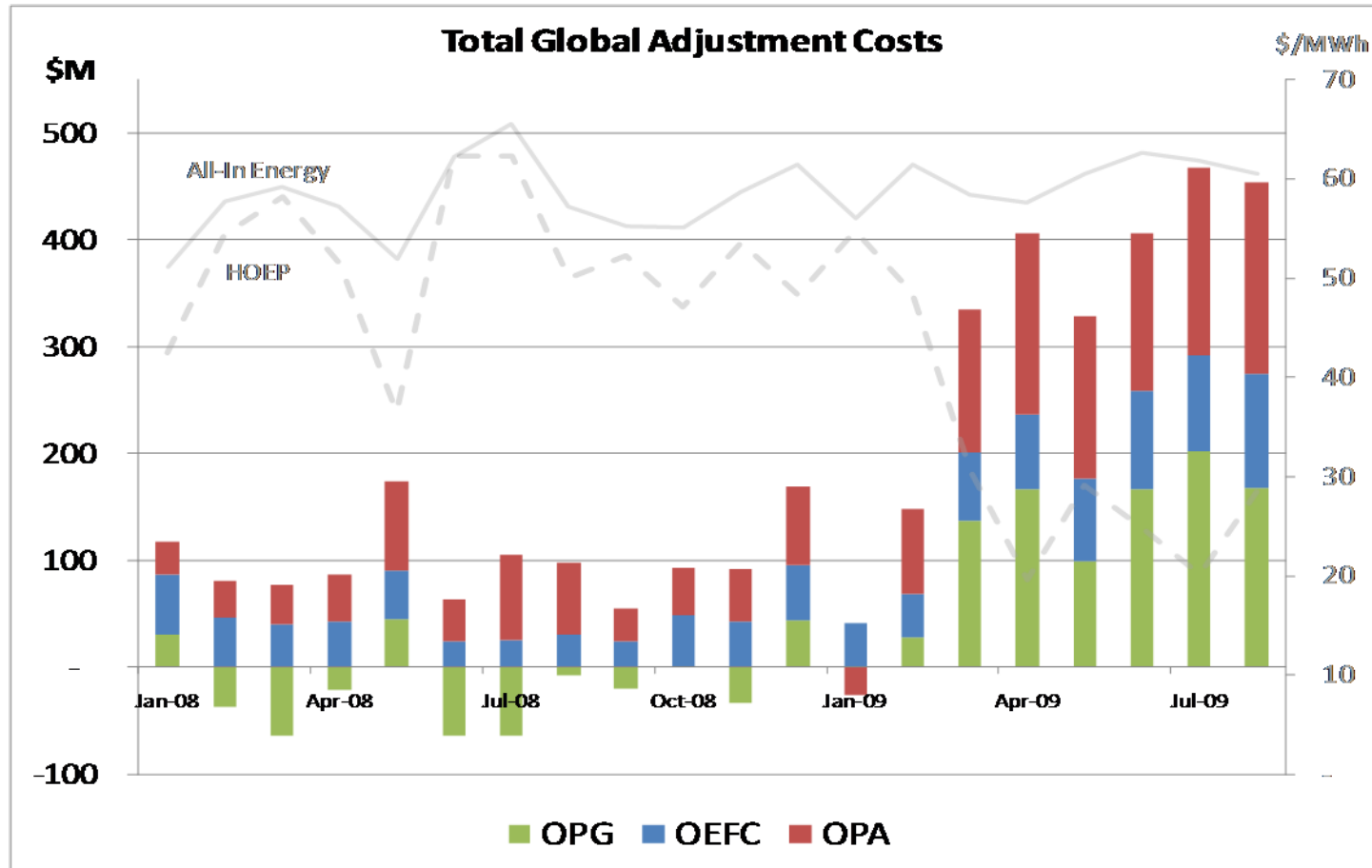
OEFC entered into a Contingency Support Agreement for Lambton and Nanticoke facilities as part of OPG's carbon dioxide reduction strategy **.

3,700 MW of OPA contracted supply has come online in the last 12 months.

* Jan – Aug 2008: \$545M, Jan – Aug 2009: \$2,562M

** Q1-2009: \$39M, Q2-2009: \$141M

Monthly GA Costs by Category



- Efficiency of Wholesale Market Prices and Price Fidelity
- Incentive Design of Contracts or Regulations
- GA Cost Recovery

- **Issue:** Are wholesale market prices efficient?
- Efficient pricing - price is equal to the marginal (opportunity) cost of the last increment of generating capacity used to balance supply and demand at any point in time.
- Prices that do not equal marginal cost at each point in time induce inefficient production and consumption decisions.

There are specific changes within the IESO administered wholesale market that would provide for a more efficient scheduling of resources. These changes will resolve current distortions in price formation and provide for more efficient pricing.

- **Issue:** Do supply contracts provide the incentives for suppliers to operate in the wholesale market when efficient to do so?

Well-designed contracts maintain the financial incentives for generators to offer their supply into the wholesale market at prices that reflect marginal costs. This helps to ensure efficient dispatch and efficient pricing.

- Clean Energy Supply contracts, using deemed dispatch, motivates units to offer at their marginal cost.
- NUG contracts pay a fixed price for output. While innovative at contract inception (pre-market), these contracts create distortions under our hybrid market structure. Contribute to SBG and inefficient pricing.

- **Issue:** Does the current approach to GA cost recovery encourage demand response that will reduce the need for costly new capacity?
- A large share of GA costs represent the fixed cost of capacity that was built to meet demand in a few peak hours.
- However, these fixed costs are currently recovered equally in all hours based on consumption.

Spreading these costs evenly across all hours is likely to induce too little consumption in the relatively low demand hours, and too much consumption in the hours when demand is at its peak.

- This means there may not be sufficient incentive to reduce our system peak demand and avoid the need to build new capacity.

- **Issue:** Is the current approach to GA cost recovery harmful to the province's industrial competitiveness?
- GA costs are fixed and largely sunk cost that must be recovered from consumers. These costs are sunk, as they have been contractually incurred and generally cannot be avoided.

The manner in which sunk costs are recovered is important. Too high of a cost burden may cause some of the more mobile consumers to stop consuming, leaving the same total costs to be recovered from a smaller pool of customers.

- Many of the more mobile consumers are businesses that create jobs. The exit of these consumers can lead to a reduction in economic activity and the loss of jobs in the province.

- The **Coincident Peak** allocation methodology - GA costs are allocated to consumers based upon their demand during the system peak hour(s) of demand in a given period (monthly, annually, etc.)
 - Consistent with methodology used by OEB for allocating transmission system costs.
- OEB 's **Time-of-use allocation** for RPP customers
 - GA payments made to different sources of generation allocated in different hours (off-peak, mid-peak and peak) according to when assets are most like to operate. Objective is to restore the 1:2:3 ratio for TOU prices.

- Have we properly characterized the issues?
- Are there other issues to be addressed?