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Class B Pilot Program

Development of a non-RPP Class B Pricing Pilot Program

July 28, 2022

Summary

The stakeholder meeting on the **development of a non-RPP Class B pricing pilot program** will cover the following topics:

Purpose & background

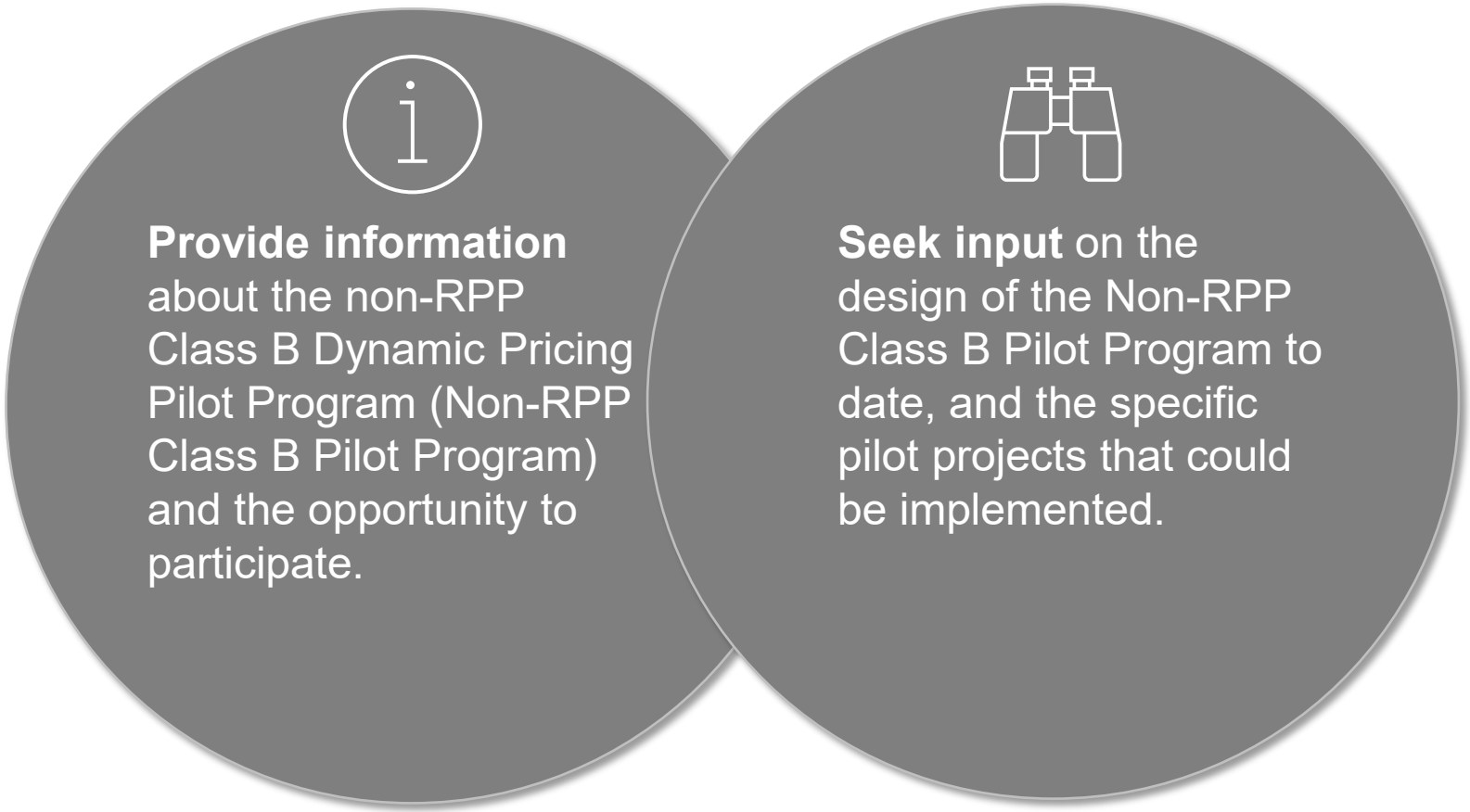
Research & engagement on non-RPP Class B pricing

The initial design of the non-RPP Class B Pilot Program

Examples of Non-RPP Class B Price designs

Purpose

The purpose of this meeting is to:



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Background

The OEB has done extensive work **studying pricing plans** for non-RPP Class B customers including:

A 2019 staff **research paper** on alternative price designs for non-RPP Class B consumers.

In 2021, OEB staff **consulted with 17 stakeholder groups** in small individual meetings to discuss alternative price designs for non-RPP Class B consumers.

Background

The following has been completed in the development of the Non-RPP Class B Pilot Program:

November 2021

In the OEB's mandate letter, the Minister of Energy stated, **"I ask that the OEB work with the IESO to develop a plan to design and implement a dynamic pricing pilot to assess the benefits for non-RPP Class B customers"**

January - April 2022

OEB worked with the IESO to develop a plan for a Non-RPP Class B Pilot Program and posted the initial plan and timeline on the OEB website

April 2022

The Minister of Energy sent a letter to stakeholders indicating his support for the OEB's initial plan for the Non-RPP Class B Pilot Program and the associated timeline

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Non-RPP Class B Pricing: Research and Engagement

Current Pricing for Class B Consumers

Class B Consumers				
Pricing Plan	**Regulated Price Plan**		**Retail Contract**	**Non-RPP Class B**
	Time-of-use (TOU)	**Tiered**		
Criteria for pricing plan	Residential consumer or average monthly maximum demand < 50 kW		Consumer's choice	Average monthly maximum demand ≥ 50 kW and not participating in the Industrial Conservation Initiative
	Functional smart meter in use	Opt out of TOU or no functional smart meter in use		
Current electricity price charged to consumers	Off, mid and on peak prices at defined periods each day; defined by OEB	Lower price for consumption up to a monthly threshold; higher price for consumption above threshold; defined by OEB	Retail contract price (set by retailer) + flat $/MWh Global Adjustment (GA) charge (set by OEB)	Hourly Ontario Energy Price (HOEP) plus a flat $/MWh GA price set each month by IESO

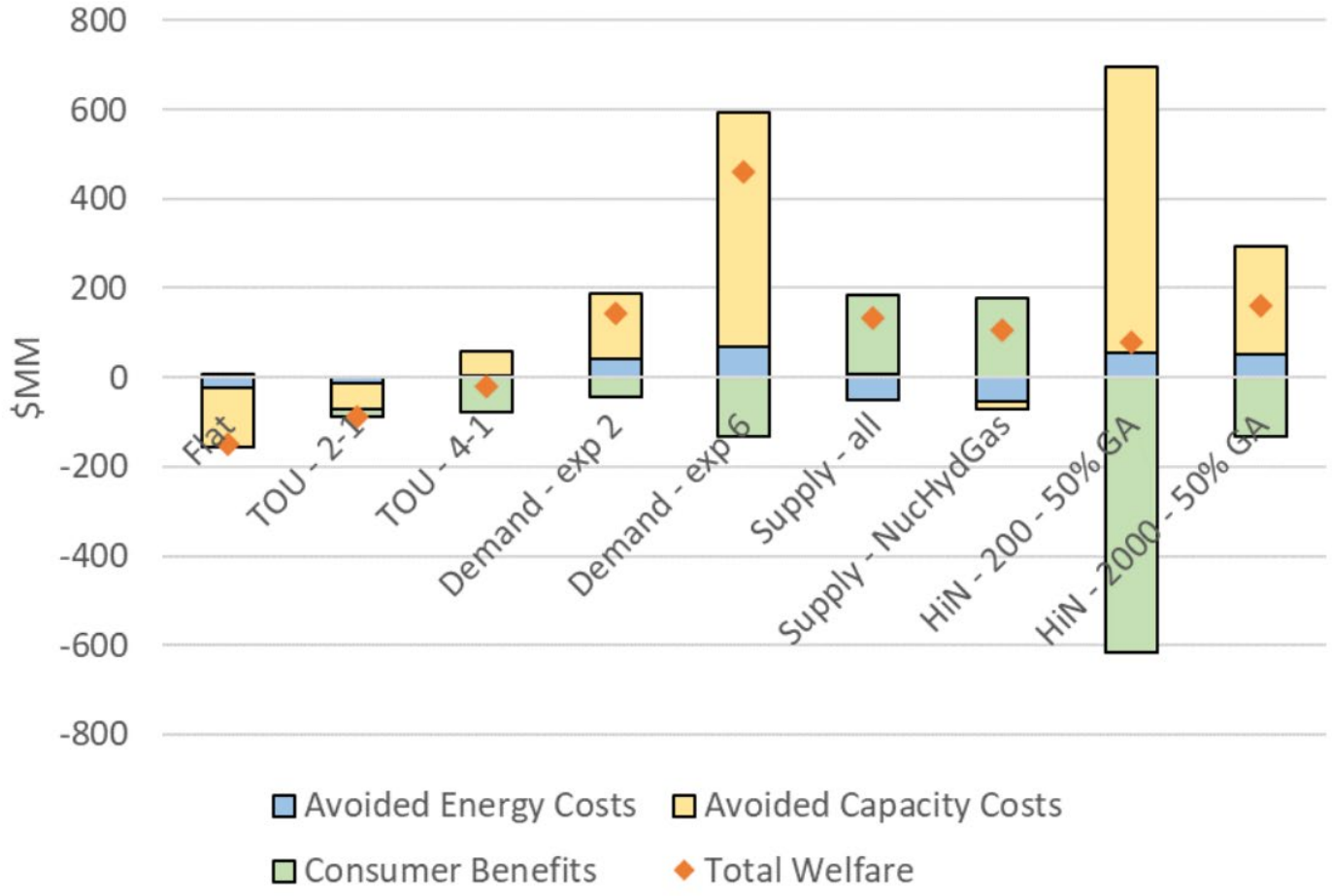
Pilots will apply to these consumers

OEB 2019 Staff Research Paper

- OEB Staff Research Paper: Examination of Alternative Price Designs for the Recovery of Global Adjustment Costs from Class B Consumers in Ontario analyzed the economic efficiency and consumer cost impact of several broad **options for how Global Adjustment** (GA) can be more **efficiently recovered** from Class B consumers.
- Analysis highlights the need to **balance electricity system savings with consumer benefits** of electricity consumption.
    - Prices that induce a strong consumer response may **defer electricity system infrastructure** needs and **lower cost** over the long term but run the **risk of decreasing the benefits** consumers gain from electricity consumption.
- Of alternatives studied, a GA price that is directly correlated with hourly Ontario electricity demand (what we called the **"demand-shaped" price**) yields the greatest net positive economic efficiency results.
    - Such a price is effective at inducing demand response **when it is most valuable to the system** over the long term **without inducing overly costly curtailment** in hours where consumer response is not as valuable.

OEB 2019 Staff Research Paper

Figure 1: Avoided cost, consumer benefit and net benefit in forecast year 2030.



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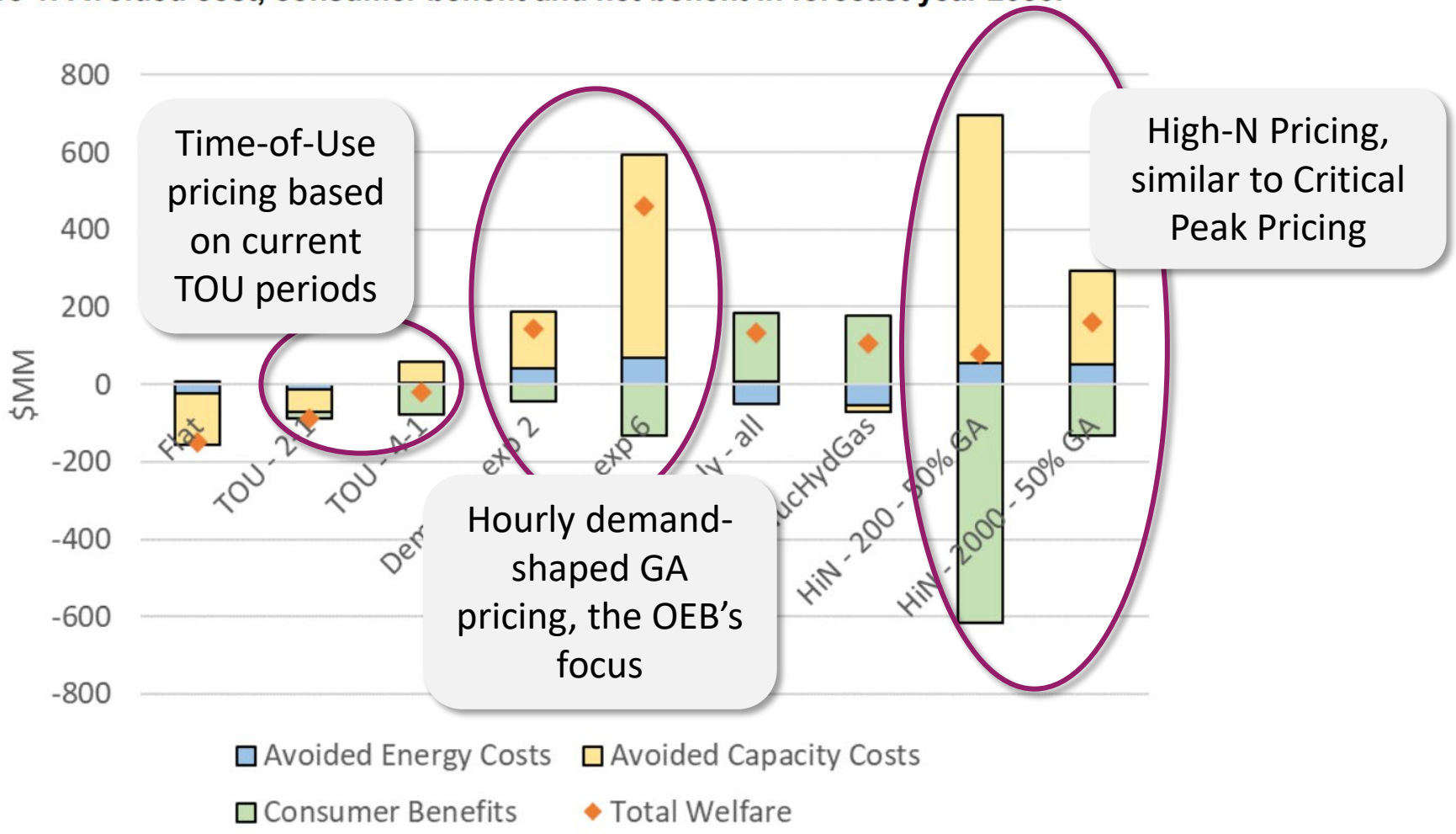
OEB 2019 Staff Research Paper

Figure 1: Avoided cost, consumer benefit and net benefit in forecast year 2030.



Time-of-Use pricing based on current TOU periods

Hourly demand-shaped GA pricing, the OEB's focus

High-N Pricing, similar to Critical Peak Pricing

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Stakeholder Engagement

The **major themes** that arose from the stakeholder engagement include:

Broad support

Broad support among non-RPP Class B consumers for more dynamic prices

No best option

No one-size-fits-all dynamic pricing plan that will be optimal for all non-RPP Class B consumers

Predictable

Predictable & consistent electricity is very important to non-RPP Class B consumers

Cost shifting

Concern how costs will shift among consumers in response to dynamic pricing

Managing load

Many non-RPP Class B consumers don't want to respond to prices but are willing to work with third parties

Duration

Periods of high prices are easier to manage if they are short in duration

Implement-ation

Stakeholders are concerned that LDC implementa-tion would be a challenge for any province-wide rollout

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Initial Design for Class B Pilot Program

Design Elements

The **elements of the design** of the Non-RPP Class B Pilot Program for discussion include:

Objectives

Implementation Process

Pilot Design

Timing

Roles & Responsibilities

Funding

Objectives

The **proposed objectives** of the Non-RPP Class B Pilot Program are:

OEB

Evaluate price and price plans to:

- ✓ Support efficient electricity system operation and investment.
- ✓ Provide non-RPP Class B consumers opportunities to reduce their electricity bills by shifting their usage.

Pilot Proponent

Test the implications of different price plans on:

- ✓ The ability of Non-RPP Class B consumers to manage energy costs.
- ✓ The energy management measures consumers can take to optimize the different price structures.

IESO

Evaluate implications of different price plans on:

- ✓ Transmission system reliability.
- ✓ Electricity demand.
- ✓ Load flexibility, including CDM/DER measures.
- ✓ Wholesale market efficiency.

IESO Learning Objectives Expanded

- ✓ **Transmission reliability**: investigate what load and price plan information the IESO requires to have sufficient data to accurately forecast and ensure the transmission system is adequate and operating securely.
- ✓ **Electricity demand**: given demand is forecasted to rise and medium-term capacity needs are expected, understand how load flexibility incentivized through different price plans can reduce system needs and how demand forecasts can be improved.
- ✓ **Load flexibility**: explore how dynamic prices incentivize load flexibility, including investment in CDM/Distributed Energy Resources (DER) and operation of DER in response to system conditions.
- ✓ **Market efficiency**: investigate how behavior of flexible loads incentivized by dynamic prices aligns with signals from the wholesale market, and develop capabilities among participants as a step towards potential future wholesale market participation.

Objectives

1. What additional objectives, if any, would you like to see as part of the Non-RPP Class B Pilot Program?

2. Do the objectives of the Non-RPP Class B Pilot Program need to be considered from any other perspectives?

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Implementation Process

The proposed **process for implementing** the Non-RPP Class B Pilot Program is as follows:

Application

- ✓ Call for pilot proposals with application guidelines.
- ✓ Review & approval of proposals.

Design & Recruitment

- ✓ Successful proponents finalize pilot design, including EM&V plan, and recruit participants.

Testing

- ✓ Proponents conduct 18 months of in-field testing.

Reporting

Proponents submit:

- ✓ Interim results based on 9 months of data.
- ✓ Final report based on 18 months of data.

Evaluation

- ✓ Evaluation of all pilots by OEB & recommended next steps on implementing non-RPP Class B pricing options.

Implementation Process

1. What, if any, modifications would you make to the proposed delivery model for the Non-RPP Class B Pilot Program?

2. What are the barriers and risks to implementing the Non-RPP Class B Pilot Program as presented?

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Pilot Design

The specific design of a pilot will be developed **through the application process**:

Application

- ✓ Proponents will be asked to **submit a proposal** presenting their pilot designs, according to the **application guidelines.**
- ✓ The application process will aim to strike a **balance between testing the preferred pricing plans** identified in the application guidelines and **bringing forward their own unique pricing plan designs.**

Evaluation

- ✓ Proposals will be evaluated to ensure that pilot designs meet the needs of the OEB, IESO & stakeholders.
- ✓ **Evaluation criteria** may include:
  - Meets pilot objectives
  - Pricing plans tested
  - Coverage (sample size & sectors)
  - Potential impacts (consumer & system)

Pilot Design

1. What level & type of guidance would you like from the OEB regarding the design of the pilots?
2. In your opinion, which price plan would offer the greatest benefit to Non-RPP Class B consumers?
3. What criteria should be considered when evaluating a proposed pilot design?

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Timing

The proposed **timing for implementing** the Program for the Non-RPP Class B Pilots is as follows:

The OEB is proposing to **cap in-field testing at 18 months** to:

- ✓ Provide a **sufficient measurement period** allowing for two summers of measurement.
- ✓ Allow broader **roll out** of dynamic prices for Class B customers **within a reasonable timeframe.**

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Timeline

1. What is a reasonable timeline for the Non-RPP Class B Pilot Program?

2. What do you see as the greatest risk to the timelines?

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Roles & Responsibilities

The specific **roles and responsibilities** will depend on the design of the individual pilots.

Pilot Proponents

- ✓ Submit pilot proposal.
- ✓ Recruit participants.
- ✓ Implement pilot.
- ✓ Report on-going progress and final results to OEB.

Consumers

- ✓ Participate in pilot by responding to price plans and paying bills.
- ✓ The number, size & types of consumers will depend on the pilot design.

LDCs

- ✓ Bill the pilot participant for the appropriate price plan.
- ✓ Role of LDCs may vary depending on proposal.
- ✓ Could be a proponent.

Consultants

- ✓ Proponents encouraged to retain technical partners to aid with pricing & experimental design and EM&V.

Roles & Responsibilities

1. What other entities, if any, may have a role to play in the Non-RPP Class B Pilot Program?
2. Who are the potential proponents?
3. What are the barriers to participation for Non-RPP Class B consumers?
4. In you opinion, what role do LDCs need to play in a Non-RPP Class B pricing pilot?

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Funding

Funding for the Non-RPP Class B Pilot Program is expected to be funded through the **rate base.**

Eligible costs may include:

- ✓ Costs to fund reduction in pilot participants **bills**
- ✓ **Other** costs of the pilots including:
  - ✓ **Recruitment** costs
  - ✓ **Consultant** costs
  - ✓ **LDC administration** costs

A **detailed budget** breakdown on eligible costs will be required.

Per pilot **funding caps** may be set and **in-kind or cash contributions** required.

Funding

1. What would you estimate it would cost to implement a pilot under this program, including the cost associated with bill savings?
2. What aspects of the pilot costs would you like to see covered?
3. What resources (staff, capital for equipment) would pilot participants need to provide in order to achieve savings from participating in the pilot?

Example Non-RPP Class B Price Designs

Example Non-RPP Class B Price Designs

- Examples of price designs that have been **studied by the OEB** and have identified as **promising candidates to pilot** for non-RPP Class B consumers include:
- Applicants are encouraged to consider these examples along with any other price designs that they wish to submit. More information about these designs will be provided in the application guidelines for the pilot program.

Hourly Demand-Shaped GA Price

HOEP + an hourly GA price that is correlated with Ontario demand

Critical Peak Pricing

HOEP + a high GA price during "critical peak events" (1-4 hours in duration), lower GA price in all other hours

Enhanced Time-of-Use

Guaranteed electricity price depending on period of the day, set in advance on a forecast basis

Example Non-RPP Class B Price Designs

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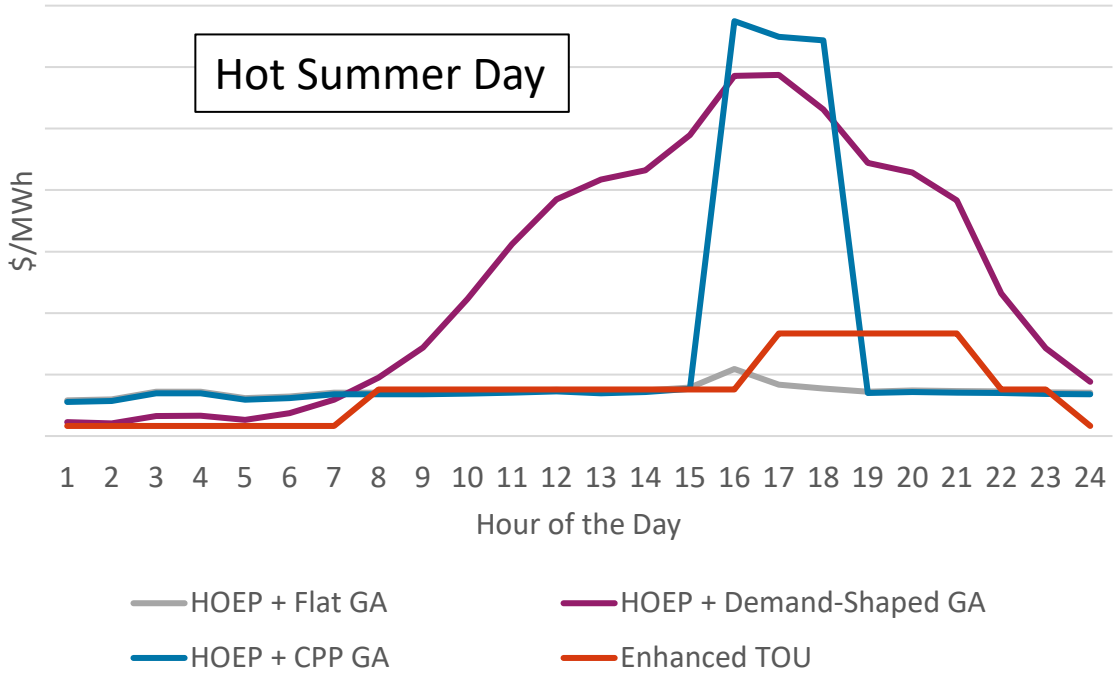

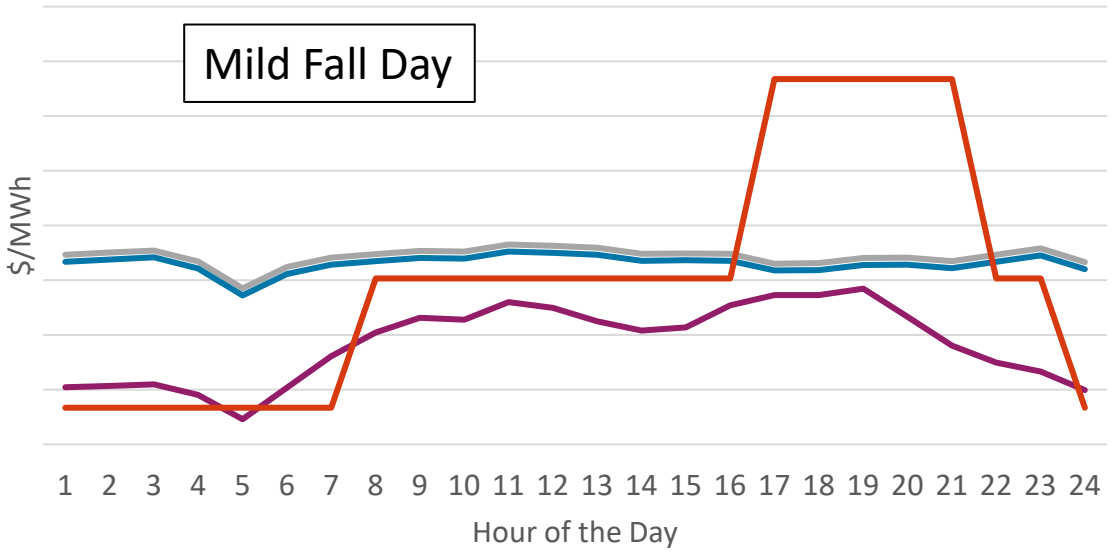

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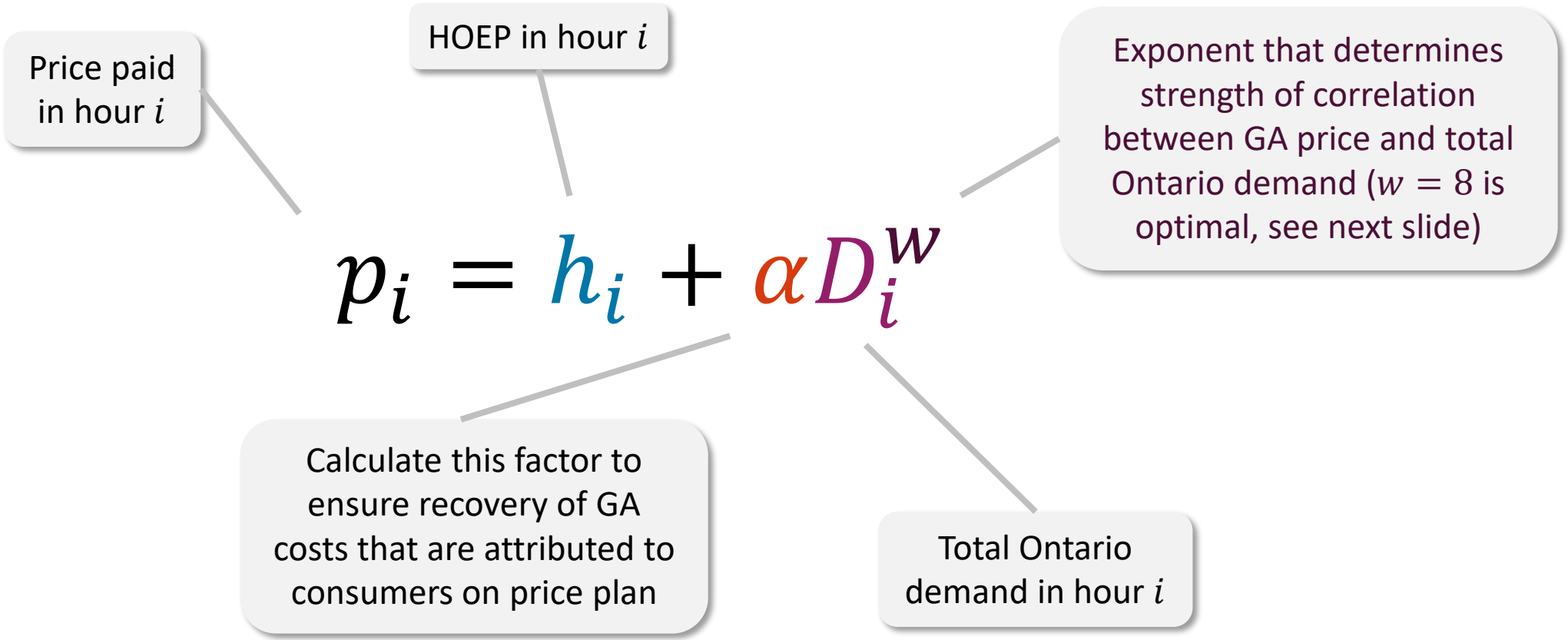
Hourly Demand-Shaped GA Price

HOEP + an hourly GA price that is correlated with Ontario demand



See 2019 Staff Research Paper for more information on Demand-Shaped Price

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Hourly Demand-Shaped GA Price

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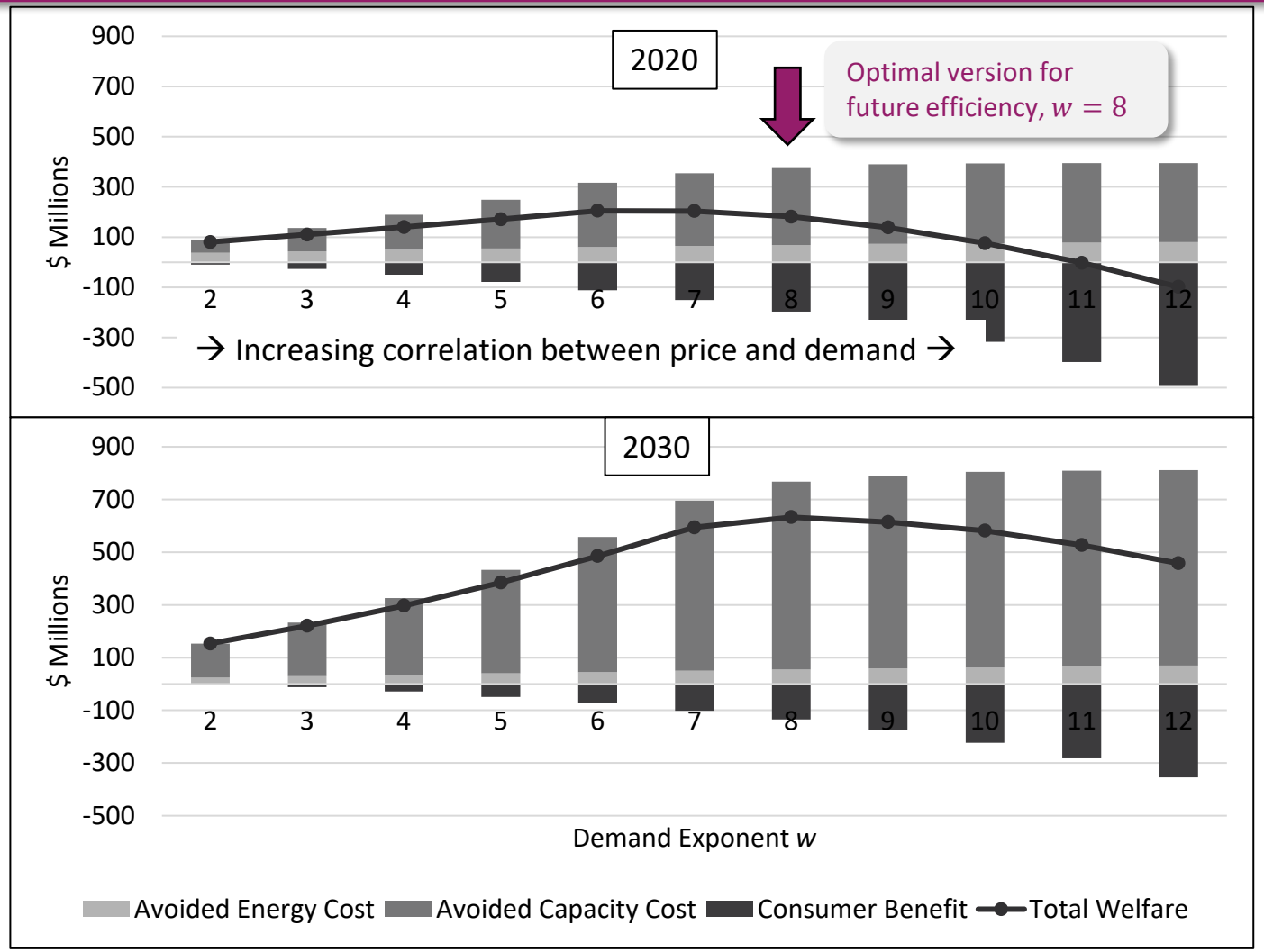


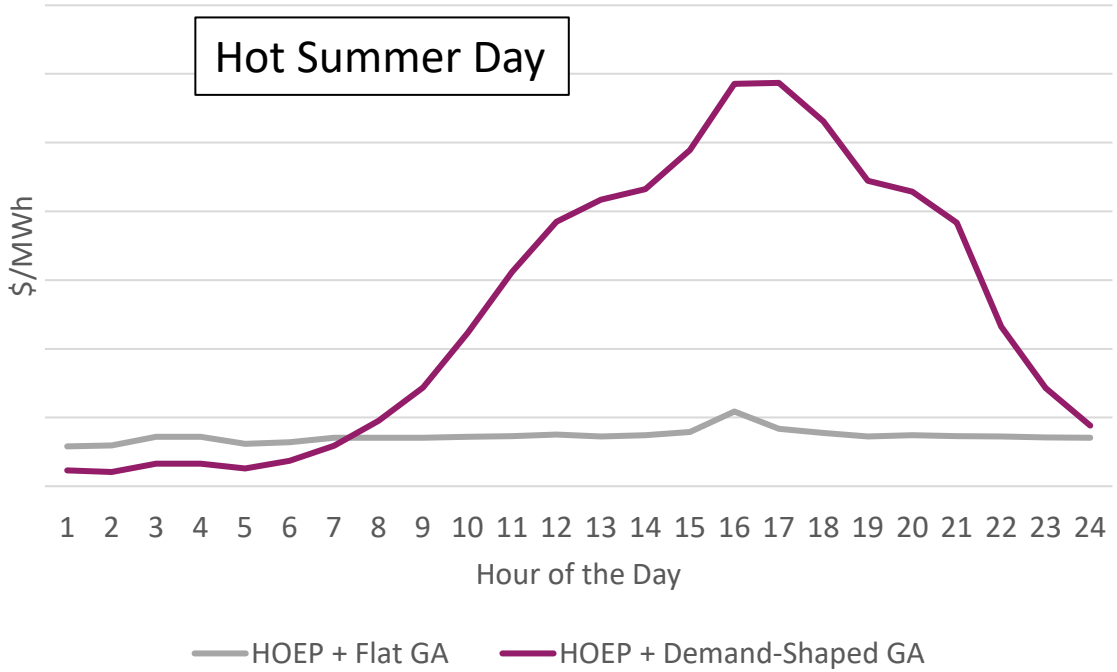
Hourly Demand-Shaped GA Price

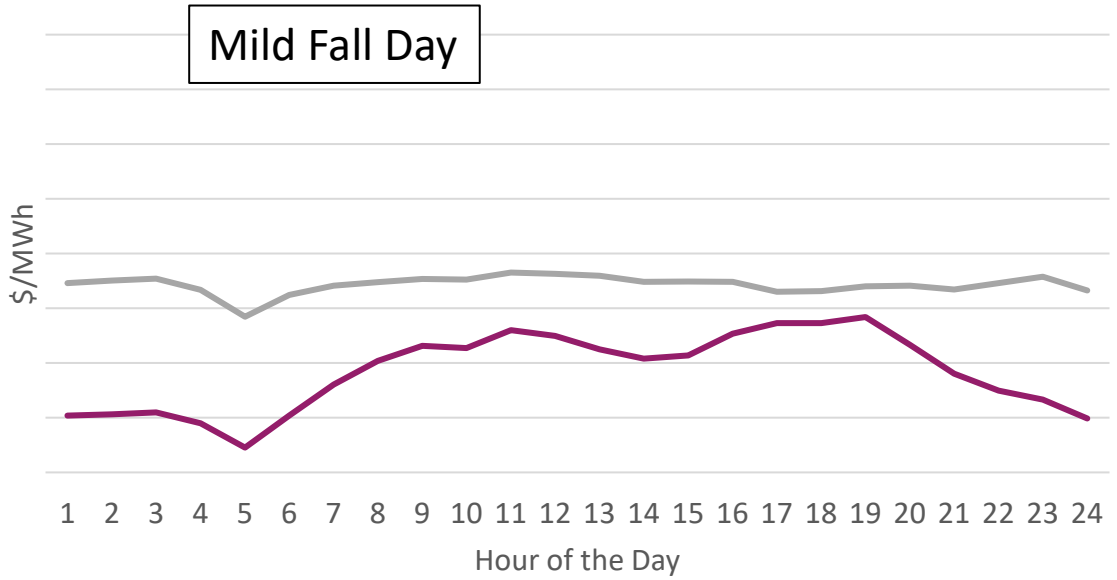
Opportunities

- Most economically efficient price plan
- Responsive to changes in electricity demand
- Large difference between high/low prices allows for significant savings for consumers who can shift demand

Considerations

- Lack of foresight could make cost recovery difficult without employing a variance account
- Prices could be set based on forecast demand for consumer certainty or based on real-time demand for accurate price signals





Critical Peak Pricing

HOEP + a high GA price during "critical peak events", lower GA price in all other hours. CPP can be added as an element to an existing or new price design (e.g., flat GA, TOU, etc.).

Summary of RPP Pilot Results for CPP

- Delivers **statistically significant demand response** (13-39% on average).
- Response **persists over time** and is more impactful in **summer months**.
- Events should be **longer than one hour** to improve cost-reflectiveness.
- **Technology-enabled** CPP yields the greatest avoided cost benefits of the plans reviewed.

3 RPP Pilots that Deployed CPP			
Price Plan Characteristic	**Alectra - Dynamic**	**Oshawa PUC - Seasonal TOU with CPP**	**London Hydro - CPP and CPP/RT**
CPP Price ($/MWh)	498	263	595
First Notification of Event	Minimum 2 hours' notice	2pm, day prior	15 minutes' notice
Event Length	4 hours	4 hours	1 hour
# Events Per RPP Season (Summer/Winter)	6	10	18
Enabling Technology	Smart thermostat automatic set-point adjustment.	None	Panel-mounted load switch. Smart plug.

See the RPP Pilot Meta-Analysis Final Report for more information on the pilot results for CPP

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RPP Pilot: London Hydro Critical Peak Pricing (CPP)

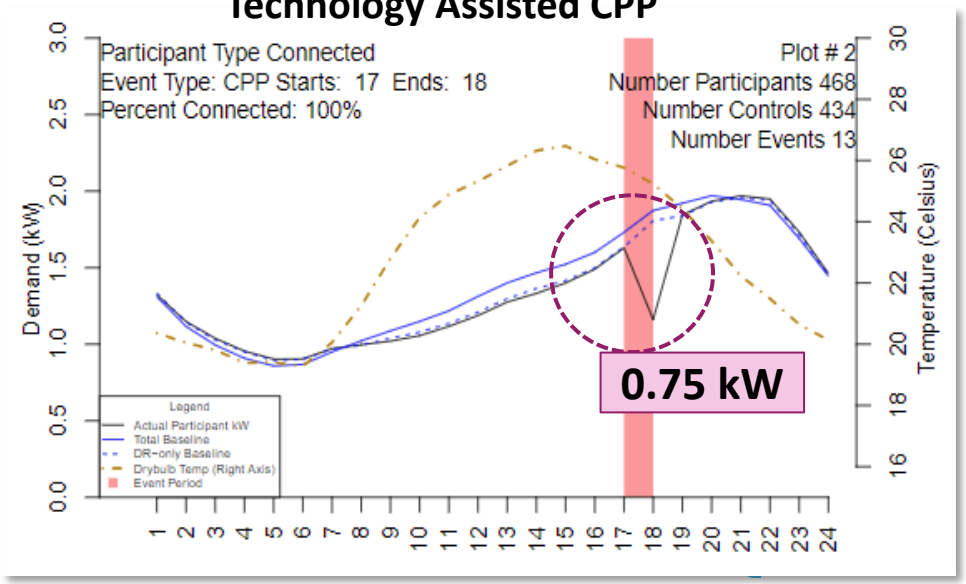
An example of a CPP pilot is the CPP pilot implemented by London Hydro in 2018-2019:

RPP Season and Weekday Combination	Hour Ending
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Summer Weekdays (May 1 to Oct 31)	Off-peak: 1–6, 7–8; Mid-peak: 9–12; On-peak: 13–18; CPP: 19–20; Off-peak: 21–24
Winter Weekdays (Nov 1 to Apr 30)	Off-peak: 1–6, 7–8; On-peak: 9–12; Mid-peak: 13–18; CPP: 19–20; Off-peak: 21–24
Weekends and Statutory Holidays	Off-peak: 1–18; CPP: 19–20; Off-peak: 21–24

Off-peak
Mid-peak
On-peak
CPP

Enrollment type:	Opt-in
Enrollment:	658
Experimental design:	Randomized Control Trail
Results achieved:	• Delivered a statistically significant demand response (34% on average in summer). • CPP events should be longer than one hour to improve cost-reflectiveness. • Technology-enabled CPP yields the greatest avoided cost benefits.

Technology Assisted CPP



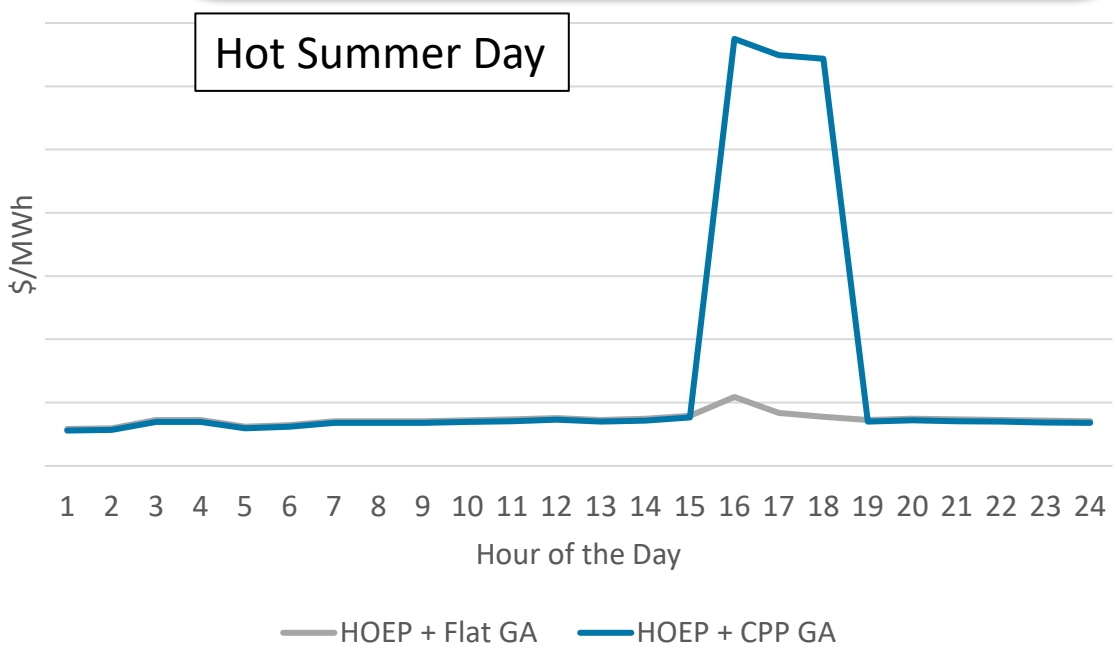
Critical Peak Pricing

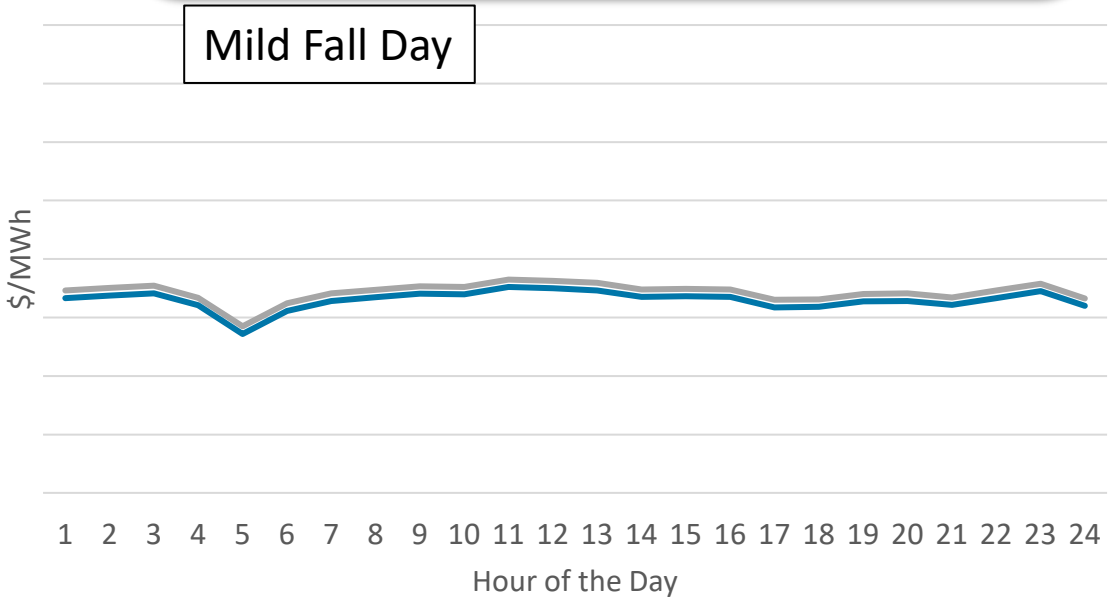
Opportunities

- Greater consumer certainty/predictability than High-N model but similar peak demand reduction/avoided capacity costs
- Improved consumer benefit compared to High-N model
- Significant peak reductions were observed in RPP pilots that tested CPP

Considerations

- CPP is most effective in summer months (June-September) when peak demand tends to occur
- Shorter CPP periods (e.g., 1 hour) are less reflective of the cost of generation/capacity but longer CPP periods (e.g., 4+ hours) are harder for consumers to respond to





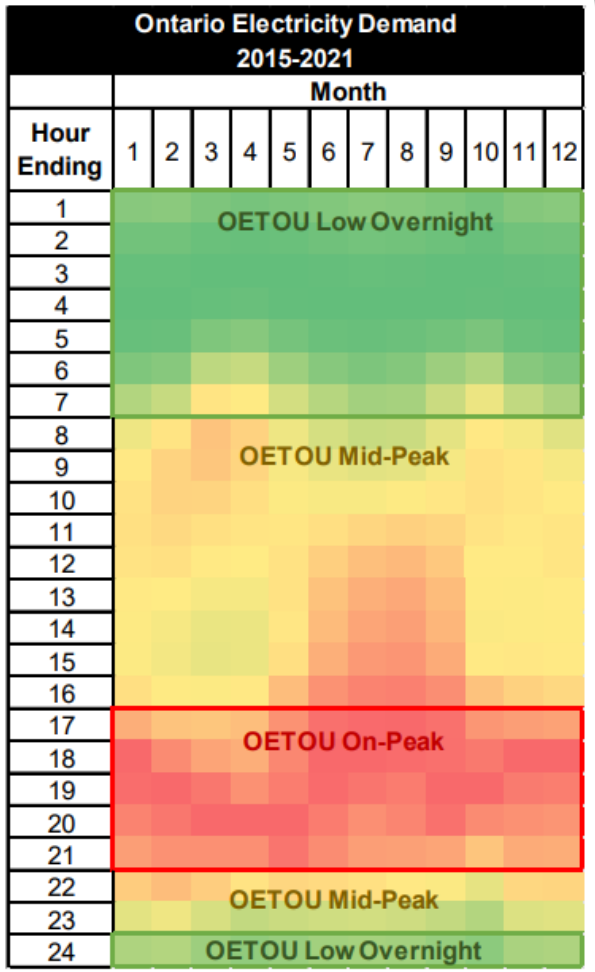
Enhanced Time-of-Use

Guaranteed electricity price depending on period of the day, set in advance on a forecast basis

Example: RPP Optional Enhanced TOU Price Design

- New TOU periods that match Ontario electricity demand patterns.
- Enhanced price ratios between periods of high and low demand (e.g., 10:1 price ratio between OETOU On-Peak and OETOU Low Overnight periods).
- The same price periods all year long (no seasonality) to match annual demand patterns.

See the OEB Report to the Minister of Energy: Design of an Optional Enhanced Time-of-Use Price for more information on this example TOU price plan.



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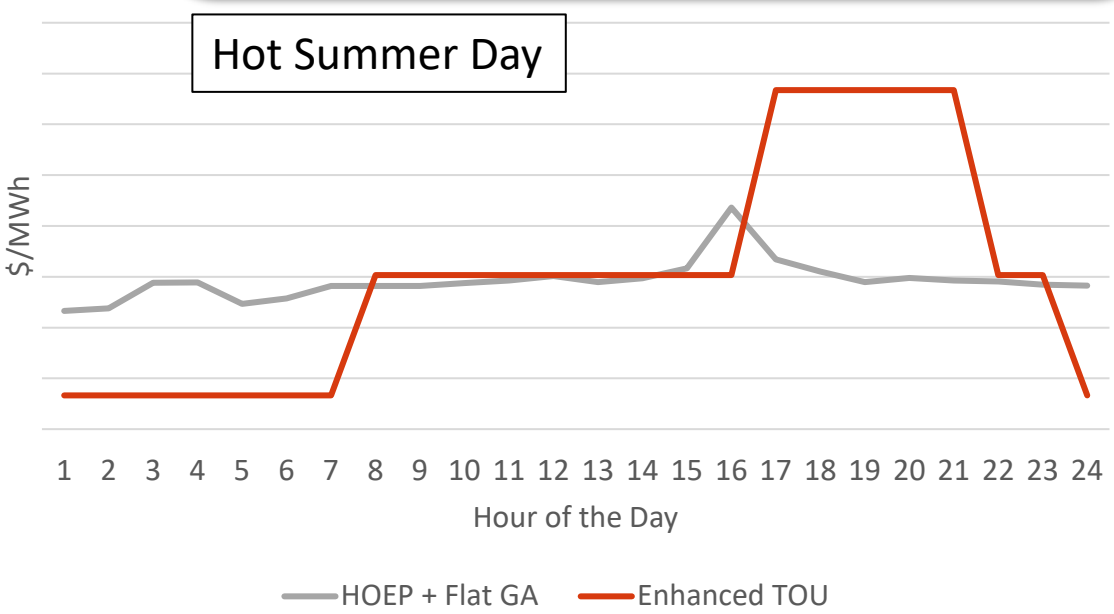
Enhanced Time-of-Use

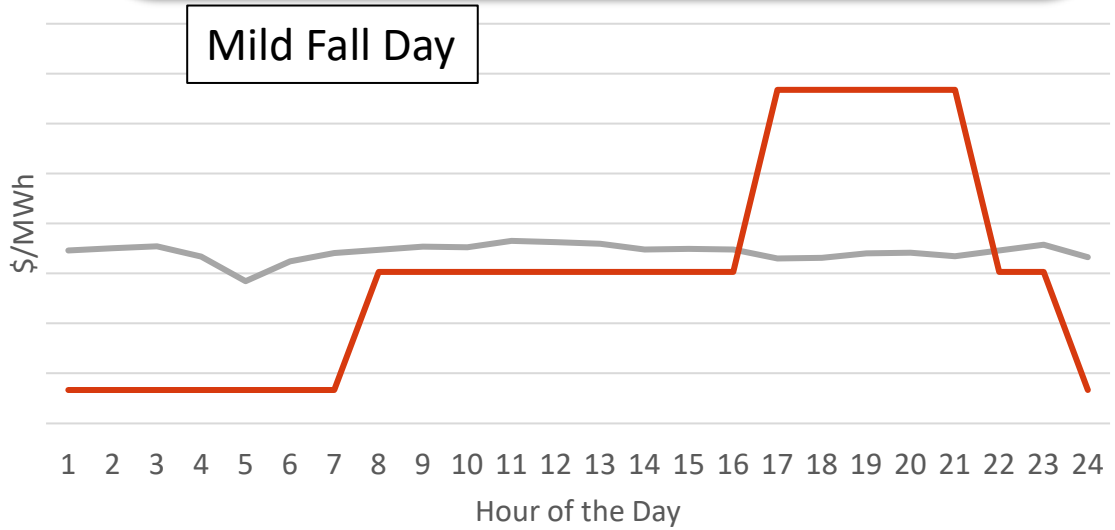
Opportunities

- Aligns higher prices with periods of higher demand (on average)
- Guaranteed prices provide certainty to consumers
- Predictable price periods allow for scheduling of programmable loads

Considerations

- Calculation of TOU prices requires forecast of supply costs and consumer demand
- May want to consider adjusting prices seasonally to avoid charging unnecessarily high prices during seasons of low peak demand (i.e., spring, fall).





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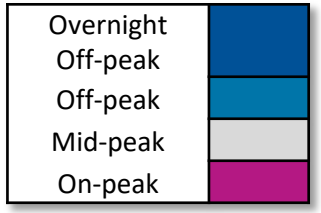
RPP Pilot: Alectra Overnight Pilot

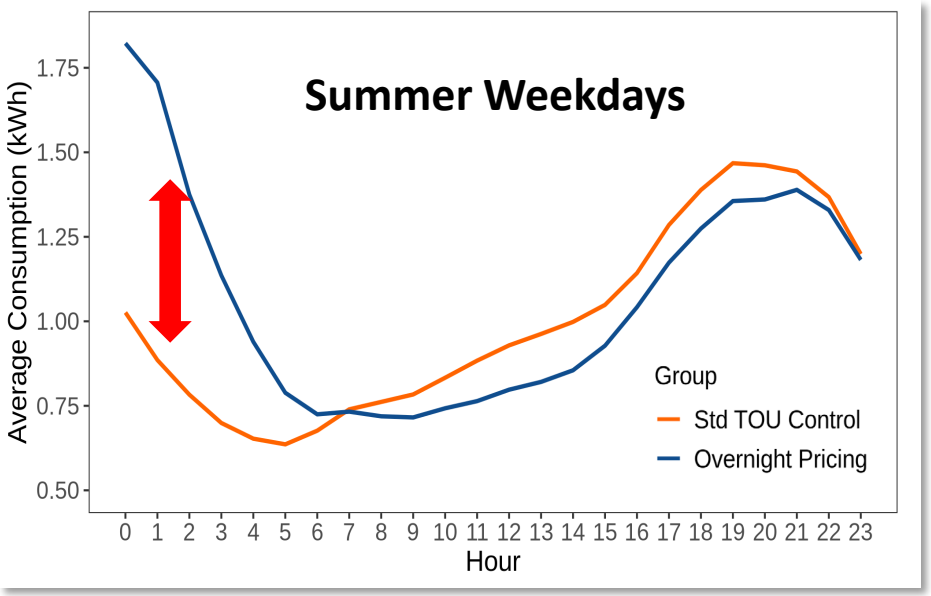
An example of an Enhanced TOU price pilot is the Overnight price pilot implemented by Alectra in 2018-2019:

RPP Season and Weekday Combination	Hour Ending
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Summer Weekdays (May 1 to Oct 31)	
Winter Weekdays (Nov 1 to Apr 30)	
Weekends and Statutory Holidays	



Enrollment type:	Opt-in
Enrollment:	440
Experimental design:	Matched Control

Results achieved:	• Delivered a significant behavioural response including:
	  • 30% increase in Off-peak consumption
	  • 10% increase in overall consumption



Example Non-RPP Class B Price Designs

1. Which of the pricing plans examples would you most like to see tested?

2. Which of the example pricing plans do you think would be of the greatest benefit to Non-RPP Class B consumers? To the electricity system? Why?

3. What other price plans or pricing elements should be considered for a pilot?

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Next Steps

The **next steps** in the development of the Class B Pilot Program are as follows:

Submission of written comments on the Non-RPP Class B Pilot Program

Detailed design of the Class B Pilot Program

Release of application materials (e.g., guidelines) by the OEB & a stakeholder information session

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