

# Alternative Time-of-Use Price Design

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Stakeholder Engagement Meeting  
February 17, 2022

## Purpose

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- Present to stakeholders the proposed alternative, optional Time-of-Use (TOU) price design that is being prepared in response to the Minister of Energy's request to the OEB.
- Present the data and analytical support for the proposed price design.
- Discuss the cost recovery issues that arise when multiple price plans are offered to Regulated Price Plan (RPP) consumers.
- Receive feedback from stakeholders on the proposed price design, supporting data and related cost recovery issues.

## Minister of Energy Request

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- In November 2021, the Minister of Energy sent a letter requiring the OEB, under Section 35 of the OEB Act, to report back and advise on the design(s) of an optional enhanced TOU rate to further incent demand-shifting away from peak periods to lower demand periods.
- The OEB has been asked to include the following:
  - Defining the price ratios, price periods and seasons that apply to the rate design option(s).
  - Estimating the average revenue to be recovered by the rate design option(s), bill impacts, and expected shift in peak demand under different enrollment assumptions.
  - Assessing the risks of under-recovery and options to address.
  - Engage with IESO to ensure designs consider system reliability and adequacy.
- Report back is due **April 1, 2022**.

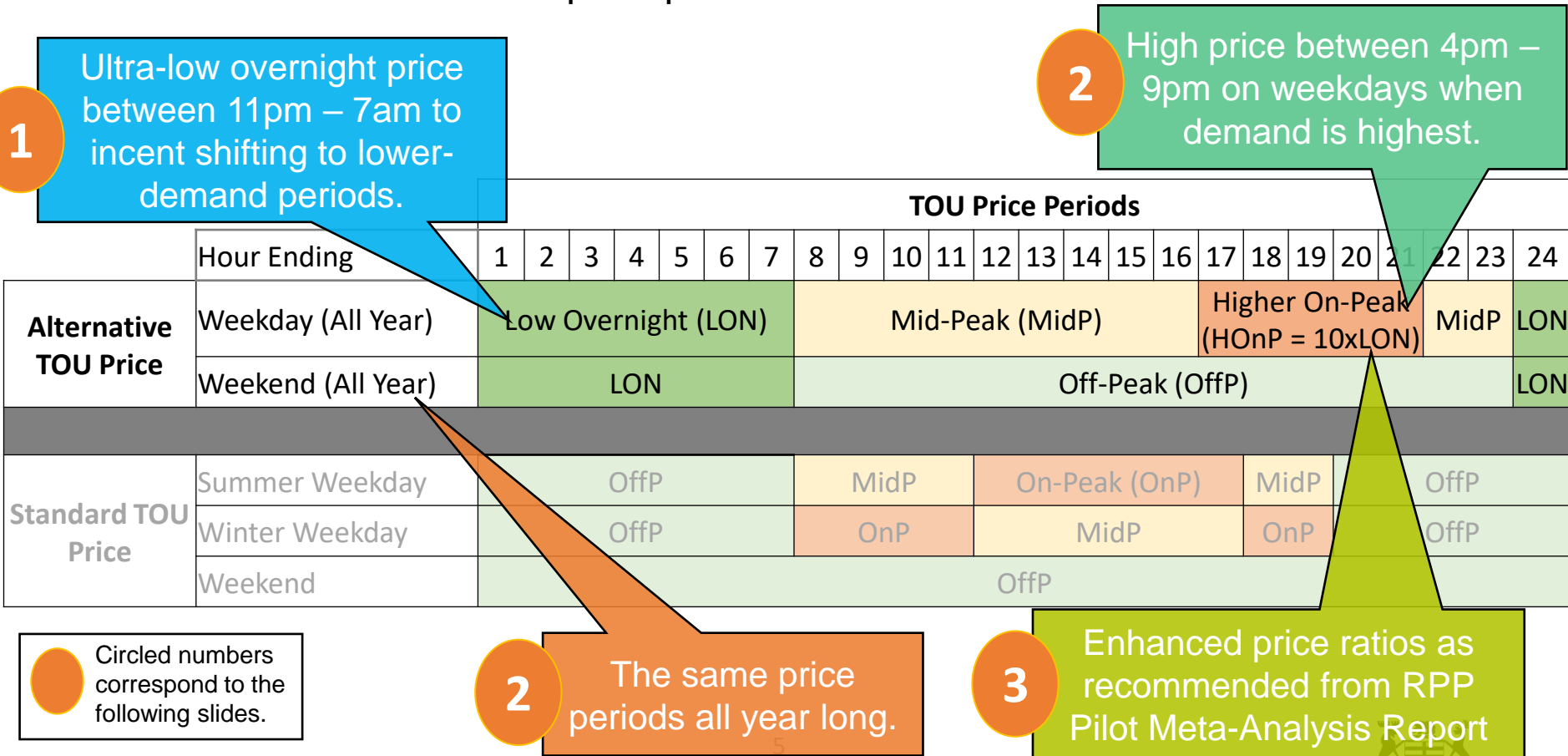
## Value of Dynamic Pricing

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- The cost of electricity supply tends to be highest during periods of high demand.
- Price plans that charge higher prices during periods of higher demand can incent customers to reduce or shift their consumption during these periods thereby reducing energy and capacity costs for all consumers.
- Consumers on such price plans who reduce/shift demand to save money can lead to an under-recovery of the total cost to supply electricity.
- These costs are often recovered in subsequent periods from a broader class of consumers, rather than from those who reduced/shifted their demand, since all consumers benefit from lower energy and capacity costs.
- The OEB has tested and evaluated 10 different price plans which have been evaluated in the [RPP Pilot Meta-Analysis Final Report](#).

## Proposed Alternative TOU Price Design

An **optional** price plan available to all RPP customers in addition to the standard TOU and Tiered price plans.



## Proposed Alternative Price Design – Ultra-low Overnight Price

### Rationale for Ultra-Low Overnight Price

Proposed new TOU price is similar to Alectra's Overnight Price Pilot which saw **significant reduction** in demand during summer **mid- and on-peak periods** (10% reduction). See appendix for further information on the OEB's RPP Pilots.

Greater opportunity for **bill savings** for customers who can shift load to overnight periods when generation is least expensive.

Shiftable loads include:

- home EV charging,
- public EV charging (shifted to home),
- heating across fuels (e.g. shifting to electric heating overnight),
- overnight pre-cooling in summer.

Additional **incentive** for consumers to adopt **decarbonization technologies** such as EVs or electric thermal storage.

Estimation of **additional benefits** of Overnight Price Pilot is underway.

## Proposed Alternative Price Design – Later On-Peak Period

### Rationale for Later On-Peak Period On-Peak: Weekdays 4pm-9pm (All Year)

Recommendation and evidence from RPP Pilot meta-analysis to **delay the start** of weekday **off-peak pricing** from 7pm to **9pm**.\*

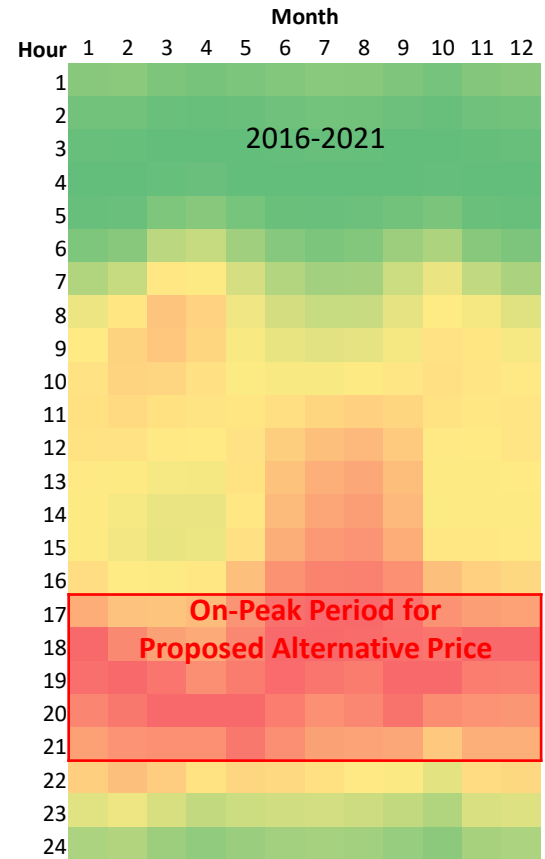
OEB staff analysis shows **Ontario peak demand typically occurs 4pm-9pm in all seasons**.

OEB staff and expert analysis show that **aligning high prices** with periods of high Ontario demand **increases economic efficiency**. (Results described in [2019 Staff Research Paper](#))

RPP Pilots showed limited incremental value in seasonal price plans. Maintaining the same price periods all year long is significantly simpler than current summer/winter TOU price periods.

\*For example, significant reduction in peak demand (4-13%) was observed in Alectra's Dynamic price plan with on-peak period weekdays 3pm-9pm.

Concentration of Ontario Consumption



## Proposed Alternative Price Design – Increased Price Ratios

### Rationale for Increased Price Ratios Higher On-Peak Price = 10 times Low Overnight Price

Recommendation from pilot meta-analysis to **increase on- and mid-peak prices** relative to **off-peak** prices.

In several pilot treatments (dynamic pricing, super-peak pricing, critical peak pricing and overnight pricing), customer **demand response increased** the closer the ratio between the highest and lowest price was to **10:1**.

**Limited demand response** has been observed in pilot treatments or existing TOU prices where the ratio between the highest and lowest prices is **less than 4:1**.



## Cost Recovery in the Overnight Price Pilot

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- The Overnight Price Pilot experienced significant under-recovery of costs (15%) from participants.
  - **Rate-Structural Under-Recovery (6%)** – Due to rate setting method based on average RPP load profile and not on load profile of customers who opted-in to the overnight price pilot (**to be avoided**).
  - **Behavioural Under-Recovery (9%)** – Due to participants shifting consumption to off-peak times to take advantage of the low overnight rate which provides system benefit (**to be encouraged**).
- The price-setting methodology of multiple price plans should **balance** the need to **fairly recover** all supply costs incurred by RPP customers with any **financial incentives** for customers to shift load to low-demand periods and thus provide system benefits for all.

## Current Price Setting and Cost Recovery Methodology

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- The OEB sets RPP prices for each price plan every 12 months to recover the forecasted supply costs attributed to all RPP consumers collectively.
- Under-recovered costs are collected from *all* RPP consumers across all price plans in subsequent price-setting periods.
- The OEB uses **up-to-date load profile data** of customers on each price plan (tiered and TOU) to set prices to recover the same forecasted supply costs. This method **protects against rate-structural under-recovery**.
  - All else being equal, any collective shift in demand among customers on a given price plan that leads to an under-recovery of supply costs on average will result in an **increase in prices** for customers on that price plan so as to avoid such under-recovery in the future.
- In this way, average **cost savings** for customers who shift demand to low-cost periods are **temporary** and prices will be set to reduce such cost savings in subsequent periods.

## Proposed Update to Price Setting Methodology

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- **Use a *baseline* load profile when setting prices.**
  - When setting prices, utilize a *baseline* load profile of customers who adopt the new price rather than using the most recent load profile as in the current price-setting process discussed on the previous slide.
    - The baseline load profile would be based on historical rather than recent load patterns of customers who have adopted the new price (e.g. load patterns from before they opted into the new price plan or from 2-3 years prior).
  - This method would avoid the increase in prices for participating consumers discussed on the previous slide, while still avoiding rate-structural under-recovery by using participating customer load data.
- The resulting behavioural under-recovery amounts are expected to be small in the short-term relative to typical RPP variance and can be monitored by OEB staff.

## Questions for Discussion and Feedback – Price Design

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1. Will the proposed price design be effective at achieving the following goals described in the letter from the Minister of Energy?
  - a) Incenting electricity usage behaviour that will benefit the electricity system under anticipated increased electrification.
  - b) Providing value for customers with consideration for overall ratepayer impacts.
2. Do you have any recommendations for improving the price design to achieve the goals listed above?
3. Does the proposed price plan pose any risks not already considered?
4. Which types of consumers will be interested in choosing the proposed price plan?

## Questions for Discussion and Feedback – Cost Recovery

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5. Should consumer cost savings (i.e., under-recovery) from shifting consumption be recovered from all RPP consumers in subsequent price-setting periods? If not, how should those costs be recovered?
6. Under the OEB's current price-setting methodology, everything else being equal, alternative TOU prices are expected to increase in response to consumers shifting demand to lower-cost periods (see slide 10).
  - a) Will this price increase pose a risk to achieving the goals described in the letter from the Minister of Energy?
  - b) Should the OEB consider changes to its price-setting methodology to provide longer-lasting financial incentive for consumers to shift demand?

## Questions for Discussion and Feedback – Cost Recovery

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7. The OEB has proposed the use of historical/baseline load profiles to set alternative TOU prices to avoid/delay price increases and provide a longer-term financial incentive (see slide 11).
  - a) Will this proposal help in achieving the goals described in the letter from the Minister of Energy?
  - b) What are some potential risks with implementing this proposal?
8. What other ways might the OEB modify its price-setting procedure for the proposed alternative TOU price to provide meaningful financial incentive to shift consumption for customers on the price plan, while fairly recovering supply costs from all RPP consumers?

## Next Steps

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- Stakeholders are invited to submit written feedback on the proposed price design by **February 25, 2022**.
  - For instructions on how to submit written comments, see the [invitation letter](#) posted on the [OEB's policy initiative website](#).
- Stakeholder feedback will be included in OEB's report back to the Minister of Energy by April 1, 2022.

# Appendix

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## Select Results from RPP Pilots



## RPP Pilots

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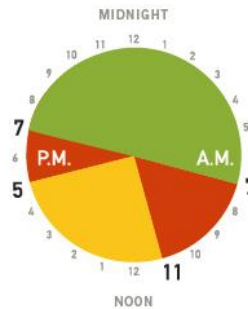
**4**

Pilots across  
Ontario



**10**

Tested plans



Approximately

**15K**





residential  
customers



Pilots focused on price and non-price  
(communication & technology) applications

Full pilot results are described in the [RPP Pilot Meta-Analysis Final Report](#).

## Summary of Pilot Features

LDC	Treatment Group	Mobile App	Enhanced TOU Ratios	Alternative TOU Structure	Variable Peak Pricing	Critical Peak Pricing	DR Enabling Technology	Enrolment Type	Sample Size
 <p>Discover the possibilities</p>	Enhanced TOU		•					Opt-Out	5400
	Dynamic				•	•	+	Opt-In	700
	Overnight			•				Opt-In	400
	Enhanced TOU		•					Opt-In	600
	Seasonal TOU			•				Opt-In	450
	Fast-Ramp CPP and CPP/RT	+				•	•	Opt-In	600
	RT-Only	•						Opt-In	1100
	Super-Peak			•				Opt-Out	1600
	Seasonal TOU with CPP			•		•		Opt-In	450
	Information Only	•						Opt-In	500

## Overnight Price Pilot

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)	Blue	Blue	Blue	Blue	Blue	Blue	Green	Yellow	Yellow	Yellow	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Yellow	Yellow	Green	Green	Green	Green
Winter Weekdays (Nov 1 to Apr 30)	Blue	Blue	Blue	Blue	Blue	Blue	Green	Orange	Orange	Orange	Orange	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Orange	Orange	Green	Green	Green	Green	Green
Weekends and Statutory Holidays	Blue	Blue	Blue	Blue	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green

Overnight	Blue
Off-peak	Green
Off-peak	Yellow
Mid-peak	Orange
On-peak	Orange

- Delivered the **most substantial behavioural response** (30% ↑ in Off-peak consumption, & 10% ↑ in overall consumption).
- This net increase may be due to changes in behaviours not captured by meter data (e.g., shifting EV charging activities from public stations to home).
- Participants achieved **bill savings**, therefore **under-collected costs**.
- **Recruitment was an issue** - expected to improve in a non-experimental environment and over time.