

From: Grant Bishop, Blake Shaffer and Mariam Ragab

To: Greg Rickford, Ontario Minister of Energy

Date: November 3, 2020

Re: **OTHER OPTIONS FOR TIME-OF-USE ELECTRICITY PRICING IN ONTARIO**

Starting November 1, Ontario consumers gained the [option](#) to pay for electricity at a fixed price regardless of the time of day. Ontario's government [eliminated](#) time-of-use pricing from June 1 to the end of October, and this new move solidifies the direction Ontario is taking to shift away from time-of-use pricing.

Time-of-use pricing has been a focus of some consumer blowback and political opposition. The reality is the cost of generating power varies depending on supply and demand at any given time. However, even with smart metering and widespread penetration of smart home technologies, households find it a pain-point to plan power usage around peak and off-peak times.

Timing of Demand and Costs of Generation

Ontario is so far unique among provinces in charging time-of-use rates for energy to residential and small business customers, although a BC review of electricity rates is shortly due to report, and the province may yet implement some form of time-varying pricing for residential consumers.

As discussed in our recent [Commentary](#), the extent of demand in Ontario significantly varies hour-by-hour (see Figure 1). Correspondingly, as loads place greater demand on the system, higher cost generation must be dispatched to meet the total load, increasing the marginal cost for the system and the market price of electricity.

The Ontario Energy Board sets time-of-use rates based on its estimate of the cost of supply for the regulated consumers during those periods. In its annual [Regulated Price Plan Supply Cost Report](#), the board estimates costs for specific classes of contracted generation, and, in turn, applies these estimated costs to estimate the total cost of supply during the time-of-use periods for regulated consumers based on when those classes supply to the market.

Figure 2 shows Ontario's 2019 time-of-use rates for the winter season along with the average hourly prices for the wholesale Hourly Ontario Energy Price (HOEP) plus the average Global Adjustment (GA) for the period. As the figures show, the timing of the three time-of-use rates corresponds with the timing of periods with peaks in the HOEP. Notably, while the HOEP varies by hour, reflecting the dispatch of blocks of power offered to meet demand, the Global Adjustment charge per kWh is calculated monthly (i.e., based on the costs for contracted generation in the given month) and does not vary by hour of the day.

Pros and Cons of Time-of-Use Pricing

The rationale for time-of-use rates is to align consumer prices with the cost to provide power at different times of the day. Such alignment promotes the economically efficient use of any commodity. A proper price signal can encourage a shift in consumption from times of scarcity to times of plenty.

The reality, however, is not always the same as the intent. Ontario's time-of-use rate schedule is but a proxy of the true time-varying cost to supply electricity. Its rigid, three-level structure doesn't allow for a true dynamic price signal, re-setting continuously with changing conditions.

Further, while some consumers will pay attention to both their rates structures and their hourly usage and respond accordingly, many will not. The reality is many consumers are, understandably, [confused by complexity](#) in electricity rate design. Well intended designs may not result in desired outcomes.

Alternatives

None of this is to say we support throwing in the towel on time-varying pricing. Quite the opposite. The need to better align consumer price signals with system costs will only increase through the combination of higher shares of renewable energy producing, time-varying supply, as well as increases in large – but flexible – electric loads in the form of electric vehicle charging.

Critical peak pricing and direct load control are two promising compromises of simplicity and impact.

Critical peak pricing imposes higher charges during infrequent peak events. That is, during high-stress market conditions, a (significantly) higher charge encourages an economically efficient reduction in consumption to avoid the high cost of dispatching more expensive sources of generation and maintaining reserve capacity. Study after study has shown critical peak pricing has [large](#) and [lasting](#) conservation impacts.

Direct load control is a departure from the price signal approach. Rather than sending price signals to consumers and seeking a decentralized response, direct load control – as the name suggests – is a centralized mechanism whereby the utility directly controls part of a household load. This may, for example, involve controls on certain flexible devices in the home, such as electric vehicle chargers or air conditioning. As a trade-off for this inconvenience, consumers receive a discount on their bill. The benefit is simplicity, as well as the ability to tackle some local coordination problems that prices simply can't touch, such as charging multiple electric vehicles on the same city block in sequence to avoid distribution equipment upgrades.

The Path Forward

Given some of the opposition to time-of-use pricing from consumers/voters, it is unsurprising that the Ontario government is exploring other options for pricing. However, providing flat rates means consumers do not face incentives to conserve power usage during peak periods.

Rather than only offer a fixed-rate option, Ontario's electricity system should offer critical peak pricing and direct load control as options. Such features could improve the responsiveness of demand to prices. Given Ontario's challenges with ever-expanding electricity costs, we ought to be seeking cost-saving solutions everywhere they can be found – demand response is one such area.

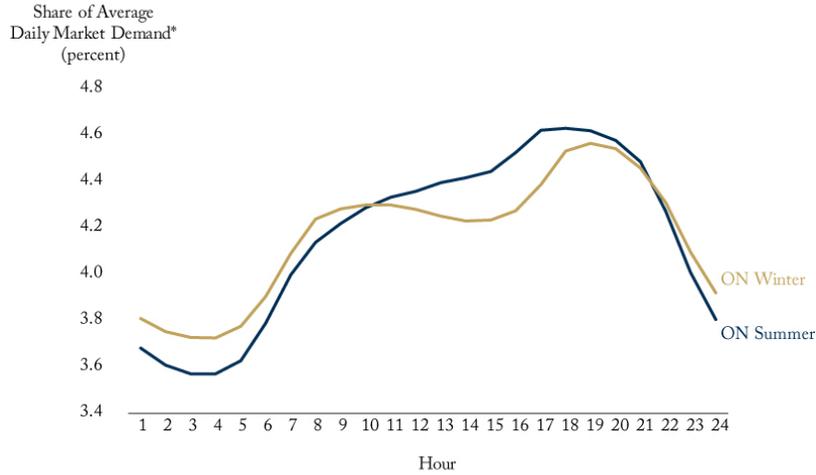
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Figure 1

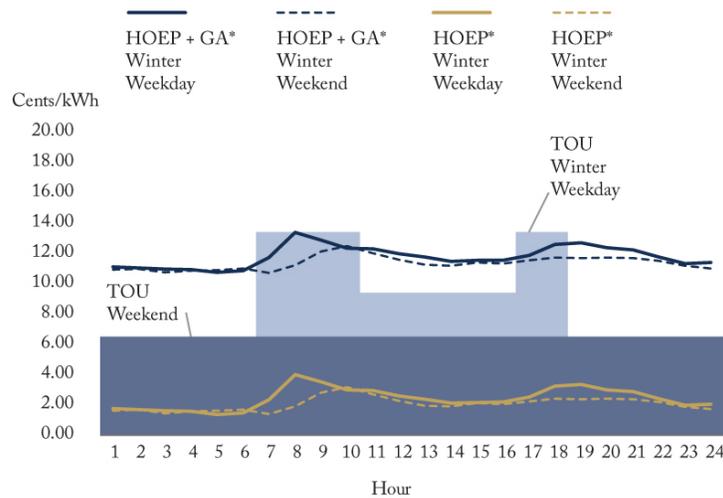
Hourly Share of Average Daily Consumption in Ontario for 2019



Source: Ontario Independent Electricity System Operator (IESO).
 Summer from May 1 to October 31; Winter from November 1 to April 30
 (based on Ontario dates for time-of-use rates).
 * Market Demand includes exports from markets.

Figure 2

Weighted Average Ontario Energy Price (HOEP) and Global Adjustment (GA) with Time-of-Use Pricing (TOU) for Winter 2019



Note: Summer from May 1 to October 31; Winter from November 1 to April 30.
 * Weighted average computed based on HOEP and GA weighted by Market Demand for given hour.
 Sources: Ontario Independent Electricity System Operator (IESO), Ontario Energy Board (OEB).