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Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, Suite 2700
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**Attention:** Board Secretary

**RE:** **Staff Report to the Board: Rate Design for Commercial and Industrial customers to support an evolving electricity sector**

EDF Distributed Solutions ('**EDF DS**') is grateful for the opportunity to submit comments to the Ontario Energy Board ('**OEB**') on the Staff Report to the Board: Rate Design for Commercial and Industrial customers to support an evolving electricity sector.

Electricity distribution rate design is an important component of Ontario's regulatory framework. Rapid adoption of Distributed Energy Resources ('**DERs**') is changing how customers consume electricity and interact with electricity networks. DERs are already having far reaching impact on the electricity sector and the regulatory framework should evolve to meet the challenges and support the opportunities that a decentralized electricity grid can offer to all participants.

EDF Renewables is a contributing member of the Canadian Solar Industry Association ('**CanSIA**') and Energy Storage Canada ('**ESC**'). EDF DS supports the submissions by both associations and intends its own submission to provide emphasis on aspects it considers particularly important.

## Introduction

On February 21st, 2019, the OEB released a Staff Report to the Board: Rate Design for Commercial and Industrial ('**C&I**') customers to support an evolving electricity sector[1] ('**Staff Report**'). The OEB launched the C&I rate design consultation in May 2015 following updates to the residential distribution rate design announced in April 2015. The C&I rate design consultation begin with a Staff Discussion Paper[2] published in March 2016 that outlined six high-level rate design options for four customer classes. The Staff Report provides OEB Staff's recommendations for a new rate design for electricity C&I customers. The OEB is seeking feedback from interested stakeholders on the proposed rate design.

## EDF Renewable Distributed Solutions (EDF DS)

EDF Renewables Inc. ('**EDFR**') is a world leader in renewable energy electricity. EDFR develops, builds and operates clean energy power plants in 22 countries. As of December 31st 2018 the company's gross

[1] Staff Report, Feb 2019 - https://www.oeb.ca/sites/default/files/OEB-Staff-Report-Rate-Design-20190221.pdf
[2] Staff Discussion Paper, Mar 2016 - http://www.ontarioenergyboard.ca/oeb/_Documents/EB-2015-0043/Staff_Discussion_Paper_RDCI_20160331.pdf

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installed generation capacity amounted to 12,890 MW worldwide, with net installed capacity standing at 8,296 MW and gross capacity under construction at 2,360 MW.

EDF Renewables Distributed Solutions ('**EDF DS**') is a subsidiary of EDF Renewables Inc. EDF DS originates, develops, builds, and operates customer-focused energy solutions that incorporate solar, storage, electric vehicle charging, and energy management. Our team of developers, engineers, construction managers and O&M, finance and legal professionals work with customers (i.e. utilities, MUSH, corporations, commercial and industrial) to provide solar, storage, EV charging, and storage management solutions that are accessible, affordable and responsive to the electricity consumption profile of the customer.

EDF DS manages the entire project life-cycle from development through design, finance, construction, and operations. We deploy our industry experience and affiliate relationships to help our customers navigate and benefit from the complex and ever-changing policy and market dynamics of the renewable energy sector. Our team approach to development and strong balance sheet enable us to bring each project to fruition.

Because of this approach, EDF DS has successfully developed and installed over 380 MW of solar projects throughout the United States and in Canada that range in size from 500 kW to 30 MW. At the same time, EDF DS, utilizing our Store and Forecast technology, operates more than 330 MW / 824 MWh of battery storage worldwide. In 2014, for example, EDF DS designed and built Stafford Hill Solar+Storage a 2.5 MW solar (+4 MWs of battery storage) located in Rutland, VT. According to the U.S. Department of Energy, the Stafford Hill Solar+Storage is the first project to establish a micro-grid powered solely by solar and battery storage, with no fossil fuels.

EDF DS is also active in leveraging the full potential of battery storage as an enabling technology. In the US market we are designing applications for stand-alone storage and storage-paired-with-renewables to maximize customer value behind the meter or in front of the meter. In Canada, our storage solutions help customers manage global adjustment charges while delivering improved capacity factors at the transmission level. We are also actively discussing the use of battery storage solutions to unlock capacity constraints at the distribution level. EDF is currently building 4MW/12MWh of storage and has a pipeline of over 50MW/120MWh of storage projects in Ontario.

## Overview of OEB Objectives

In the cover letter for the Staff Report, the OEB listed four objectives for the proposed C&I rate design:

1. Facilitate customer adoption of technology to manage energy use and costs, including the installation of distributed energy resources;
2. Increase efficiency of the system by encouraging cost effective investment in distributed energy resources;

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3. Maintain fairness in the recovery of costs of maintaining a reliable and flexible distribution system and ensure that customers who install distributed energy resources do not shift costs to other customers;
4. Facilitate investments to modernize the grid in a paced and prioritized manner that will support customer choice and efficiency

EDF DS generally agrees with the objectives used by the OEB for the development of a new C&I rate design in Ontario with one exception. **Objective #3** seeks to ensure that customers who install DERs do not shift costs to other customers; however, that statement does not include consideration for the benefits that DERs can offer. Specifically, EDF DS believes that objective #3 should "…ensure that customers who install distributed energy resources do not shift costs, **net of benefits**, to other customers".

There are many net benefits DERs can offer grid operators and other customers including:

- Avoided or deferred upstream transmission costs and local distribution costs
- Loss reduction (e.g., transmission losses, transformation losses, distribution system losses)
- Reliability products in support of Distribution System Plans (DSPs) and/or Integrated Regional Resource Plans (IRRPs)
- Increased efficiency of the distribution system by expanding the ability to serve more load customers with existing distribution assets
- Ancillary services to the distribution system (e.g., voltage support, voltage stability, reactive power / power factor correction, improved power quality), etc.)
- Ability to serve certain customers where conventional wires expansion isn't feasible

## Recommendations to Board on the Staff Report

EDF DS review and analysis of the proposed rate design outlined in the Staff Report has concluded that further consultation is required.

The rapid adoption of emerging and innovative Distributed Energy Resources (DERs) are changing the way customers consume electricity. The changes to customer consumption patterns and their growing ability to respond to price signals requires a broad re-think on how Ontario's power system is planned, financed, operated and maintained. The re-thinking should include consideration for the following broad components of Ontario's electricity regulatory framework:

- **Cost allocation**: which customers pay for what investments;
- **Rate design**: how are customers charged for system costs;
- **Utility renumeration**: how network owners receive revenue and returns for efficient operation and investment in their networks; and

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- **Compensation for DER benefits**: how DERs should be measured and compensated for services they provide to network operators.

Due to growing economic and technological pressures for change to the electricity system, there is a sense of urgency. The OEB has launched two additional consultations (i.e., Utility Renumeration (EB-2018-0287) and Responding to Distributed Energy Resources (DERS) (EB-2018-288)) that are strongly intertwined with C&I rate design and all three should be addressed all together. To optimally achieve the OEB objectives, the OEB and stakeholders should assess the impact of changes to one component on the other components. Furthermore, not considering all components concurrently risks missing important coordinated policy directives where customers and distributors collaborate for the most effective solutions. In short, to ensure Ontario's regulatory framework evolves to meet the challenges facing the electricity sector, potential changes should be assessed broadly for optimal outcomes.

Rate design influences customer and distributor investment decisions today and the OEB should develop a progressive rate design that will send the right signals to the market, while achieving the stated objectives. Further staff consultation should proceed under a fixed timeline that includes allocation of time and resources for:

i. a jurisdictional review of best practices in progressive rate design that aligns customer and distributor investment drivers;
ii. coordination with other recently launched OEB consultations on Utility Renumeration and Responding to DERs;
iii. adequate and meaningful stakeholder engagement to ensure feedback and analysis is appropriately integrated; and
iv. a formal process to present, review and finalizes new rate design options before presentation to the Board, including a finite timeline for implementing a cost and benefit estimation methodology.

## Feedback on Staff Report

EDF DS has reviewed the proposed rate design in the Staff Report and offers the following comments for consideration by the Board. EDF DS comments are derived from an assessment of whether the proposed rate design will achieve the objectives outlined by the OEB. Further, EDF DS believes that rate design should be determined based on cost causality principles. Cost causality principle means that rates charged to customers reflect, to some degree, the costs caused by the customer should pay for them. In other words, if a customer action results in continued or new costs for distributor, then that customer should pay for those costs. Alternatively, if a customer action results in deferment or reduction in costs, that customer should benefit from lower costs. In our opinion, the proposed rate design in the Staff Report is not aligned with cost causality principles. EDF DS encourages the OEB to establish a transparent and logical rate design linked system costs facilitates customer adoption of technology to manage energy use in response to those costs.

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## Fully Fixed Charges Does Not Align with OEB Objectives

In seeking alignment of rate design options with the OEB's stated objectives, we note that fully fixed charges for the new customer class of General Service (GS) < 10 kW:

- Do not incent/reward conservation at peak (or at anytime).
- Do not enable customers to leverage self-generation technologies using renewable resources or support innovation/enable access to energy options.
- Do not vary by time of day.
- Do not allow customers to take actions to respond to price signals that would benefit all distribution customers and as a result are unable to reduce their distribution costs.
- Does not send strong economic signals to the distributor as to the required level of distribution investment its customers will need in the future, or where investment should be made or could be avoided.

The Board has emphasized the importance of a distribution rate design that focuses on aligning customer and distributor interests. The Board staff paper seems to narrowly interpret this desire for alignment to mean that distributors revenues will not be reduced because of customers decisions. A fully fixed charge favours revenue certainty of the distributor over the customer's ability to reduce their costs and utilize technologies such as solar and or storage in a net metering configuration or energy management strategies that could shrink overall distribution costs in the future and share these benefits with the participating customer.

While a fully fixed charge may be the simplest to understand for consumers, simplicity should not be the most important factor for distribution rate design for commercial and industrial customers who have a greater willingness/ability to manage their energy consumption for the purposes of responding to price signals. Furthermore, fixed charges do not send appropriate signals to distributors under changing market conditions (for example capacity requirements as the transportation electrification trend accelerates). While fixed charges have been increasingly considered by US regulators and distributors, more thoughtful rate design processes have begun to take their place which recognize the time-based value of electricity and seek to create price signals that recognize that value through some aspect of volumetric pricing.[3]

EDF DS does not support the creation of a new rate class for GS ≤ 10 kW customers that is based on a fully fixed cost in the absence of the introduction of a benefits methodology.

[3] Gavin Bade, The Future of Rate Design: Why the Utility Industry may Shift Away from Fixed Charges, Utility Dive, http://www.utilitydive.com/news/the-future-of-rate-design-why-the-utility-industry-may-shift-away-from-fix/409504/.

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## Rate Design Should be Focused on System Peak Demand

A majority of distribution system costs are caused by investments to resolve capacity constraints during the system peak demand hours (i.e., when the sum of all customer demand is the highest). System peak demand not only triggers when network expansion may be required, but also determines the capacity requirements when existing infrastructure has reached its end-of-life and should be replaced (i.e., should the asset replacement be at a higher or lower capacity).

Most distribution system investments are derived from system peak needs. As noted in the Staff Discussion Paper, distribution systems are rarely influenced by energy flows and instead driven by peak demand requirements. The Staff Discussion Paper stated "Actions that customers take to reduce their bills will lower long term investments by distributors and help contain future distribution system costs"[4]. In other words, **system demand charges result in efficient use of the electricity system by customers and distributors which reduce costs for all consumers**. Reductions in peak demand can defer unnecessary capital investment.

The proposed rate design continues to use customer peak demand charges (i.e., $/kW), however customer peak demand charges do not provide a direct cost causal price signal for distribution system costs to customers. In the 2016 discussion paper, the OEB Staff's own analysis showed how NCP charges are not an appropriate signal for customers to react appropriately to system peak demand. **Figure 1** below from the Staff 2016 discussion paper demonstrates when customers are charged on-peak rates for off-peak use. In the Staff's words, "when the blue line is below the red line, the customer is charged peak rates for off-peak use"[5]. The continued use of customer peak demand charges does not facility customer adoption of technology to manage energy use in response to potential future system costs.

[4] EB-2015-0043, Staff Discussion Paper, March 31, 2016, p. 2.
[5] EB-2015-0043, Staff Discussion Paper, March 31, 2016, p. 6.

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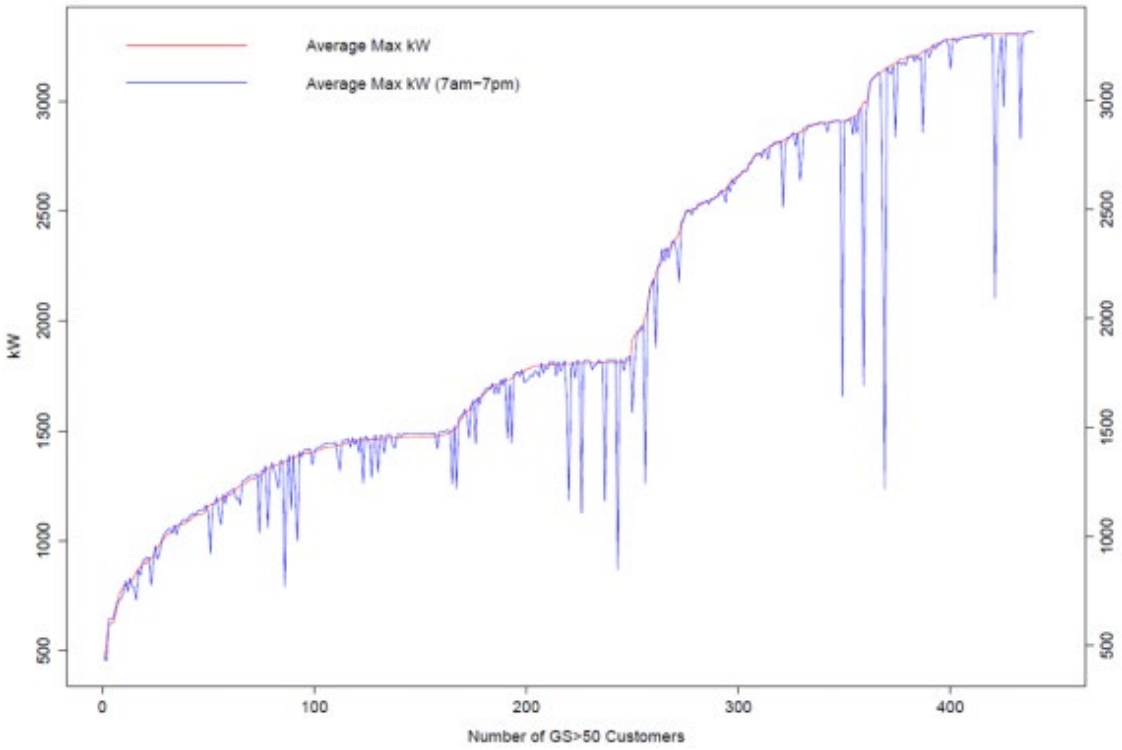


**Figure 1: GS>50 customers billed demand compared to peak demand (7am to 7pm)**[6]

## Risk of Cost Shifting to Other Customers is Narrowly Focused on DER Adoptions

The Staff paper raises the concern of potential cost shifting:

> *The current rate design of fixed and volumetric charges does not align well with the changing use, expectations and value to some customers. It can lead to uneconomic decisions by the customer and shifting of costs to more traditional customers who are either unable to,* **or choose not to***, adopt new technologies.*[7]

While there is a potential for cost shifting due to uneconomic decisions by some customers, there is a not an appropriate price signal for the cost of maintaining and expanding the system ensures that there is cost shifting. Customers that are not informed of the higher cost of consumption during constrained hours will not adjust their consumption patterns or seek out potential net benefit investments. Instead, the distribution system should be expanded that burdens all customers with higher costs. Effectively, system peak charges dissuade inefficient behaviour, in this case leaning on the system or free riding while other customers are not rewarded for economically efficient decisions that are beneficial to them

[6] EB-2015-0043, Staff Discussion Paper, March 31, 2016, p. 7.
[7] Staff Report, Feb 21, 2019, p. 3.

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and all customers as a whole (see Figure 2) below for an illustrated example). **In short, rejecting system peak charges will increase system costs for all customers.**

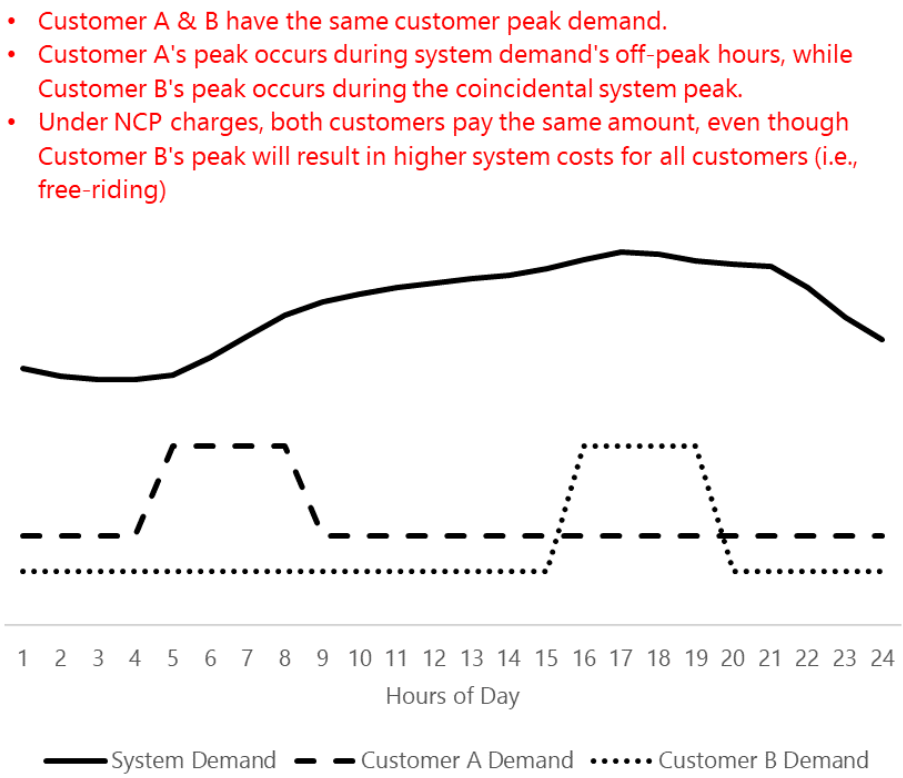


**Figure 2: Example of cost shifting under NCP rate design**

Looking at the issue another way, DERs (such as energy storage) may result in a gross cost shifting to customers that choose to take no action, but there are benefits that the DER offers all customers (e.g., deferred system investments). Therefore, when considering the impact of shifted costs, the assessment should be complete an appropriate net cost-benefit analysis. If DER delays spending for benefit of all customers, there is no cost shifting.

## Previous Feedback from Stakeholders was Widely Supportive of System Peak Charges

## System Peak Charges in Other Jurisdictions

The use of system peak charges in other jurisdictions is common (see table below). There are different rate designs options available for Ontario to appropriately signal to customers the time periods when a distribution system is constrained. The price signal for higher value consumption time periods is not a new concept for Ontario customers – a large majority of residential customers in Ontario have time-of-use (TOU) rates for their supply costs.

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| Jurisdiction | Utility | Rate Classes | System Peak Rate Design |
|---|---|---|---|
| **CAISO** | Pacific Gas & Electric | E-19 & E-20 | Three sequential time periods (i.e., three distinct time periods) in summer (Peak, Partial-Peak & Off-Peak) and two sequential time periods in winter (Partial-Peak & Off-Peak) |
| **NYISO** | ConEdison | General -Large - Rate II - Time-of-Day | Three stacked (i.e., time periods overlap) demand charges in summer (Peak hours, daytime business hours, & all hours) and two stacked demand charges in winter (Daytime business hours, & all hours) |
| **Arizona** | APS | E32 | On-peak demand charges (M-F 3pm to 8pm) and Off-peak demand charges |
| **PJM** | Public Service Electric & Gas Company | Large Power and Lighting Service | On-peak demand charges on business days and off-peak demand charge for all other hours |

## No Justification for Capacity Reserve Charge Has Been Provided

Board staff introduce a new standby charge but have not supported the rationale for the inclusion of the Capacity Reserve Charge ('**CRC**'). A CRC may make sense in the appropriate allocation of costs and benefits to DERs but should be considered and justified in the context of an assessment and introduction of a methodology quantifying the costs and benefits that DERs can offer to the distribution system.

The staff report states that average annual technology specific capacity factors will be used to calculate the expected DER technology output as a function of installed nameplate capacity for different resource types. Capacity factors for many technologies will have little correlation with peak demand reduction in every hour of billing period. This is particularly true for variable output renewable resources such as solar energy. An average annual capacity factor is very different from a probability of monthly reductions in peak demand in every hour and demand charges that a customer can forecast. For example, solar generation output differs depending location (sites in the north have different production profiles than sites in the south), determining a province wide CRC will significantly disadvantage many customers.

As designed, it appears that the staff report significantly underestimates LDC over-collection of distribution charges from customers that install DER technologies, and customers installing variable output renewable technologies like solar energy are likely to be most negatively impacted and penalized under the proposed methodology.

## Bypass Charges Creates Ad-Hoc Exit Fees That Contradict the OEB Objectives

The proposed rate design for CRC includes the concept of bypass fees, which are essentially exit fees at full book value of existing assets. The bypass concept provides no consideration for ongoing value of

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grid connection and will firmly reduce the incentive for investment in DERs. Exit fees send the incorrect economic signal for use of the existing distribution networks, they ensure that new and innovative uses of existing assets are rejected for the sake of maintaining the status quo. In effect, the bypass fee in the CRC design will damage the ability of distributors and distribution networks to adapt to future conditions. Customers are always better off when investment in economic new technology proceeds and when regulatory conditions are not weighted against such investment.

## Economic and Technological Pressure Requires Proactive Steps on Rate Design

The fourth objective states that modernization should occur in a paced and prioritized manner. The Staff report believes that change cannot be quick for the following reason:

> *We also heard very strongly in consultation that these customers were already dealing with many changes, both in general business conditions and the electricity bill. These customers also pointed out that they had often made previous business decisions for investments and operations based on managing their bill, including to participate in the Industrial Conservation Initiative peak demand reduction program. Changes to the rate design could undermine those decisions.*[8]

The Staff's conclusion to not adopt more appropriate rate design tied to cost causality principles (i.e., system peak demand) in the proposed rate design is backwards and short-sighted. The feedback clearly states that customers are investing to manage energy uses based on the existing rate design. To achieve the key objective of modernizing the grid and increasing efficiency of the system, the new rate design should align customer investment decisions with cost drivers of the system. Further, there is an urgency to making these changes since leaving the rate design in its current form supports inefficient and potentially wrong investment decisions by customers and distributors. While a paced and prioritized manner is beneficial to managing change, delaying appropriate rate design supports the wrong investment drivers for customers. For example, energy storage systems that can help customers manage their energy use and provide services to grid operators should be supported by suitable rate design to reflects the net benefit the system can offer customers and grid operators. Without a suitable rate design, energy storage investments may be abandoned or improperly designed. In other words, change is of the essence since customers and service providers are acting on the existing rate design which will result in inefficient investment decisions by customers and distributors.

Other jurisdictions are recognizing the need to move forward expediently to address the evolution of the electricity sector. For example, the Alberta Utility Commission (AUC) launched a distribution system inquiry to address similar issues the C&I rate design is attempting to address. Some stakeholders requested that the AUC delay the inquiry because of the many significant changes underway in the Alberta electricity market. The AUC responded correctly to continue the inquiry **"because of the growing economic and technological pressure for change to the distribution system"**[9].

[8] Staff Report, Feb 21, 2019, p. 36.
[9] AUC Proceeding 24116, Scope and Process for the Distribution System Inquiry, March 29, 2019, pg 3.

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## Energy Storage Can Offer Customers Mutual Exclusive Ability to Manage Energy Use

Behind-the-meter energy storage systems can offer the capability for customers to actively respond to distribution system price signal (i.e., system peak demand charges) without having to change their consumption pattern. The Staff report notes:

> *Most small businesses suggested that they could not shift use because of their business hours. E.g. a retail outlet that is open from 10am to 6pm regardless of electricity prices.*[10]

However, the OEB does not consider the option that energy storage systems can perform the consumption shifting without impacting the customers business hours. Energy storage is truly a game changer that the Staff Report has not properly comprehended.

[10] Staff report, Feb 21, 2019, p. 16.