Subject: Need for Participation Mechanisms for Small Storage in Ontario - Support and Recommendations for O.Reg. 429/04 Amendments and the Small Storage Capacity Program

Dear Ministry of Energy,

Attridge Transportation, a leading provider of student transportation services in Ontario, strongly supports amendments to Ontario Regulation 429/04. We commend the Government of Ontario's initiative to improve the Industrial Conservation Initiative (ICI) to be more inclusive and facilitate the integration of renewable generation facilities and energy storage systems, which should include small multi-use storage facilities.

As we prepare for the future transition of our bus fleet from internal combustion engines (ICE) to electric vehicles (EVs), starting in 2024, we recognize not only the environmental benefits but also the unique opportunity this presents for enhancing the resilience and sustainability of Ontario's electricity grid. Our forthcoming EV fleet, while serving the transportation needs of students, can also serve as a dynamic and flexible energy storage resource when not in transit, contributing to Ontario's capacity needs in the coming decade.

Barriers to Participation in IESO Wholesale Markets and Non-Wire Services

Under the current market design and electricity regulations, there are significant barriers preventing the participation of small storage and EV-based electricity storage systems in IESO Administered Markets (IAM) and in providing non-wire services to utilities. These barriers include restrictive definitions of storage within the IAM that restrict the multi-use capabilities of EVs and the difficulties utilities face in coordinating DERs as NWAs with planning and rate case processes. This prevents us from utilizing our future fleet's full potential as an energy storage solution, which will be capable of delivering valuable capacity and ancillary services to the grid.

Value of the Proposed ICI Amendment for Attridge Transportation

The proposed amendments to the ICI could be a transformative opportunity for Attridge Transportation and other EV fleet operators with medium and heavy duty EVs. By recognizing the capacity value of our future EV fleet, inclusion in the ICI amendment would allow us to contract directly with ICI participants. This would enable us to monetize the energy storage capabilities of our EV buses, providing a new revenue stream that can offset the significant costs of transitioning to a clean fuel fleet while supporting the broader grid during high-demand or supply constraint periods. With the ability to contribute capacity when it is needed most, our EVs can offer a cost-effective solution to increase grid stability, reduce overall system costs, aligning with Ontario's commitment to a more sustainable and efficient energy future.

Realizing Ontario's Intent and Addressing Concerns with Including Storage in the Amendment

As we understand it, the Ministry of Energy has developed this amendment proposal with the intent to support large electricity customers to buy clean energy from renewable generation facilities within the province, aiding them in achieving their Environmental, Social, and Governance (ESG) goals. This initiative is also aimed at creating an economic pathway for renewable energy projects nearing the end of their contracts, ensuring their continued operation. It should also be a pathway to enabling the integration and use of small and multi-purpose storage systems.

The Ministry's approach also seems aimed at limiting participation of suppliers and load customers using the amendment provision, to only entities that are transmission connected market participants settled by the IESO. While this approach might streamline the process by only allowing participants currently using IESO's settlement framework system and not increase the burden on Ontario utilities, it leaves a significant amount of potential small storage capacity that should be activated on the sidelines once again.

While we agree that large storage facilities should not participate in the ICI program and should participate in the IESO's Capacity Auction, capacity procurements, and other IAM services, there is an urgent need for participation mechanisms for small and multi-purpose storage systems like our EV storage systems. This gap needs to be closed so that small and multi-purpose storage systems can participate in serving Ontario through mechanisms that are low cost, have low barriers, are flexible for the participant and IESO and pay for performance.

Advocacy for Small and Multi-purpose Storage Participation Mechanism

Attridge Transportation strongly advocates for the opportunity to utilize its EV fleet storage systems to supply capacity to Ontario's grid. Inclusion in this ICI amendment would enable us to support ICI participants in reducing their loads in the ICI program and provide capacity to the grid.

We highlight that currently, there are no existing programs or mechanisms in Ontario for small storage to supply capacity which are low cost, have low barriers, are flexible for the participant and IESO and pay for performance. ***If small and multi-purpose storage systems are not included in this amendment, then Ontario should implement a new capacity program for these storage resources and allow them to provide capacity service without significant participation or economic barriers and to pay them for the value of their services.*** Attridge Transportation and EnerStrat Canada have developed the Small Storage Capacity Program (SSCP) as a pathway for these resources and would like the opportunity to discuss the need for this type of program with the Minister and his Staff.

The SSCP leverages existing Interruptible Rate Pilot infrastructure and would allow for a province-wide, scalable approach for small storage resources to supply capacity to the grid (beyond the top 5 hours of the year), providing a more inclusive market and fair compensation for resources like those Attridge Transportation plans to offer.

Medium and Heavy-Duty EV Adoption Forecast

EnerStrat Canada's Medium and Heavy-Duty EV Adoption Forecast projects robust growth in the deployment of medium and heavy-duty EVs in the later half of this decade. The forecast estimates there will be 45,000 medium and heavy duty EVs operating in Ontario by 2030, with an aggregated storage capacity of 3,000 MW and 12,000 MWh, a portion of which exceeds the current demand reduction provided by ICI participants. By 2030, we anticipate the integration of medium and heavy-duty EV assets will be crucial in meeting Ontario's growing capacity and energy needs.

Conclusion and Call to Action

In light of our planned investments, Attridge Transportation urges the Ontario Ministry of Energy to ensure that fleet EV energy storage systems are considered an eligible resource in the amended ICI regulation. We also call for the development of the SSCP, enabling small storage resources to participate effectively in Ontario's electricity system.

We are optimistic about the proposed amendments and the introduction of the SSCP, which together will facilitate the creation of a more resilient, cost-effective, and sustainable energy landscape in Ontario.

Thank you for considering our comments. We look forward to engaging with your team and other stakeholders in shaping these initiatives and contributing to Ontario's clean, cost effective and reliable energy future.

Sincerely,

James Attridge

Director of Operations

Attridge Transportation

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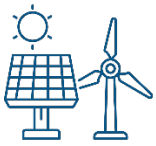


ENERSTRAT
CANADA

Small Storage Capacity Program

Value-Driven Solution for Ontario's Growing Capacity Needs and Commercial Transportation Electrification

CONFIDENTIAL

Prepared by EnerStrat Canada Inc.

Date: November 17, 2023

Executive Summary

Ontario is currently grappling with escalating capacity demands, with a key objective being the effective integration of Distributed Energy Resources (DERs) and Electric Vehicles (EVs). To unlock the full potential of these resources, Ontario requires a well-structured program and innovative tools that facilitate their seamless incorporation into the future grid.

The Independent Electricity System Operator (IESO) and the Ontario Energy Board (OEB) have acknowledged the urgency of increasing the value derived from DERs. This involves overcoming associated challenges and accelerating their adoption. However, the current landscape lacks efficient models within the IESO Administered Market (IAM) for smaller resources, nor is it feasible for Distributors to offer programs to enable small storage capacity resources. For instance, IESO's Capacity and DR auction, excludes multi-purpose storage assets from participating in IAMs based on the current market rule definition of storage, the inability for DR to supply energy and a lack of flexibility in participation. Consequently, there exists a growing pool of underutilized customer-sited or behind-the-meter storage capacity resources. It's estimated that the deployment of medium and heavy-duty EVs alone will represent new storage capacity of 3 GW and 14 GWh by the end of this decade. To unlock the potential of these resources' we must address the existing limitations and barriers urgently.

A novel participation model for small storage resources is the needed and can be enabled for 2025. Such a model should empower the IESO or Distributors to flexibly acquire high-value capacity services from underutilized small storage assets and duly compensate them for the value they provide. The focus should be on a simple, cost-effective approach that ensures a reliable supply during peak system hours.

Attridge Transportation and EnerStrat put forward the Small Storage Capacity Program (SSCP). The SSCP proposes a low-cost, flexible model that focuses on the reliable provision of system capacity by resources between 500 kW and 5 MW. By building upon existing processes and tools created for the Interruptible Rate Pilot (IRP), the SSCP simplifies the implementation process, resulting in efficient program execution. Using the IRP's established processes and tools, the IESO, as the program sponsor, will issue Capacity Event calls to participants, who voluntarily respond and supply system capacity.

The program encourages participation by offering bill credits that offset the customers' volumetric (kWh) and demand (kW) charges, with no penalties for non-participation during Call-Events. Unused credits at the end of the year are forfeit and their value is returned to the IESO, thus optimizing value to other rate payers, and ensuring that resources that can participate in other existing markets and programs do so.

The SSCP benefits include delivering low-cost, flexible system capacity, reducing the need for new peaking resources, through enabling effective utilization of existing resources, while aligning with the IESO and OEB's DER integration objectives, and Ontario's transportation electrification goals, thus enhancing the overall value for energy consumers.

A long-term commitment to enabling small storage capacity resources is essential. We propose piloting the SSCP for 2-3 years beginning in summer 2025, funded by the IESO's Grid Innovation Fund. This should be supported by a commitment from the Minister of Energy that the program will be made fully operational by 2027 or 2028 and will continue until an efficient participation model for small storage resources is made available in the IESO Administered Markets or through Ontario's electricity Distributors.

In conclusion, the SSCP presents a cost-effective, resource-efficient solution that helps meet Ontario's escalating capacity needs while facilitating the electrification of commercial transportation services and integration of DERs.

The Stage is Set for DER and EV Integration

DERs and EVs have established their performance capability in Ontario and North America. Policy objectives requiring efficient and cost-effective integration of DERs and EVs have been established. Now Ontario needs programs and tools to enable their participation in the grid of tomorrow.

IESO DER Integration Goal: "To maximize the value DERs can provide to Ontario's electricity system by addressing challenges and opportunities within the IESO's mandate."

OEB DER Integration Goal: "To facilitate DER deployment and adoption that enhances overall value to energy consumers."

The IESO-OEB Joint Study on DERs identifies program development for Tx and Dx connected DERs (NWAs) as a priority. This overlaps directly with IESO's need to acquire new system capacity resources as discussed below. Only a subset of DERs can provide capacity, the Small Storage Capacity Program (SSCP) is an important tool in meeting both sets of needs. Further, Ontario has established a goal to efficiently integrate EVs and other DER's into the grid as expressed in the Minister's Mandate Letter to the OEB in November 2021

> "The OEB should continue to prioritize its work facilitating and enabling innovation and adoption of new technologies where it makes sense for customers… Developing policies that support the adoption of non-wires and non-pipeline alternatives to traditional forms of capital investment, where cost effective, will be essential in maintaining an effective regulatory environment amidst the increasing adoption of Distributed Energy Resources.
>
> Increased adoption of electric vehicles (EVs) is expected to impact Ontario's electricity system in the coming years and the OEB must take steps to facilitate their efficient integration into the provincial electricity system, including providing guidance to Local Distribution Companies (LDCs) on system investments to prepare for EV adoption."

Capacity Needs are Growing, Enabling Customer Sited Capacity is Needed Now

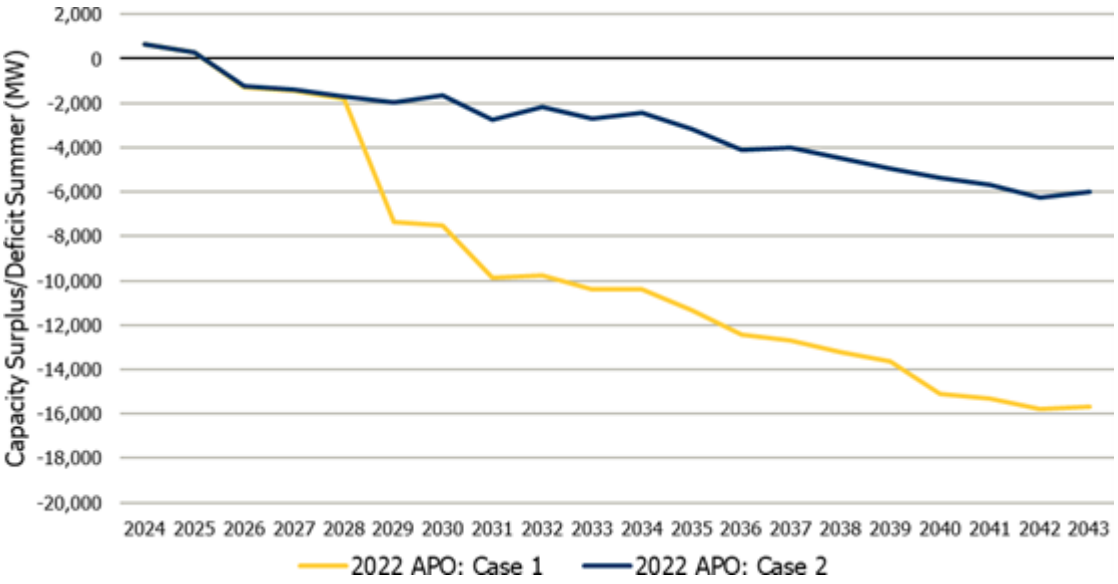
The IESO and OEB have jointly recognized the need for enabling and activating DERs (NWAs) to increase their role and value in Ontario's electricity system.

Ontario has a growing need for system supply capacity. These needs will grow to several thousand MW between 2025 and 2040. IESO is making commitments across all time horizons, without fully activating and utilizing existing and future customer capacity resources or behind the meter capacity resources.

The IESO states in its E-LT1 RFP (sec 1.2 (a,b), pg. 4). "After more than a decade of strong supply, **Ontario is entering a period of emerging electricity system needs**, driven by increasing demand, the retirement of the Pickering nuclear plant, the refurbishment of other nuclear generating units, as well as expiring contracts for existing facilities. Recognizing the **necessity to address these needs in a timely, cost-effective and flexible manner**, the IESO has engaged with stakeholders in the development of a Resource Adequacy Framework. **As Ontario's electricity system evolves to become more diverse and dynamic, procurement processes must evolve along with it.** The Resource Adequacy Framework

presents robust competitive processes that focus on cost-effective reliability, while more effectively balancing ratepayer and supplier risk in this changing environment."

Ontario's Growing Capacity Deficit



Source: IESO Annual Planning Outlook 2022

To meet this need, the IESO is acquiring capacity services through several resource acquisition processes including the Capacity Market Auction, medium and long-term capacity procurements (RFPs), The ICI and the Interruptible Rate Pilot (IRP). On a recurring annual basis and for the foreseeable future, the IESO is expected to acquire between 1,000 MW and 1,500 MW of supply capacity for summer and winter commitment periods through the Capacity Market Auction to meet short-term capacity needs. To meet emerging long-term needs, IESO has been directed by Ontario's Minister of Energy to acquire up to 4,000 MW of year-round capacity for up to 20 years (through the E-LT1 and LT1 RFPs). The IESO also relies on the Industrial Conservation Initiative (ICI) to provide ~1,300 MW of customer supplied demand reductions on the top 5 peak days and up to 650 MW on the second top five peak days. While ICI has its challenges that the IRP is attempting to overcome, it also provides value to both customers and the IESO because it offers low-cost of entry and participation, flexibility in performance, and compensation for value provided. However, ICI does not enable customers with excess supply capacity to provide this capacity to the system and it is available only to Class A customers.

While Ontario is acquiring new supply capacity, distribution customers represent a rapidly growing pool of capacity resources (BTM capacity resources) that can provide needed capacity (MW) during the highest need hours of the year. These capacity resources are primarily used for non-grid services including but not limited to transportation, back up power, power quality and demand management. However, these many customers are not able to provide needed services with these resources for the following reasons:

- No IAM model for small resources exists that mitigates high participation costs (SIA, metering, bidding and dispatch services, minimum demand thresholds, prudential security) which are barriers to <5 MW resources

- IESO's Capacity and DR market requires continuous availability throughout operating days and penalizes resources if not available (ICI does not), reducing customer flexibility and increasing financial risk
- Customers with available capacity, but without sufficient peak demand (coincident or not) do not qualify for ICI or the DR Auction
- ICI and DR Auction programs only measure demand reductions and can not compensate for net capacity supply to the grid, leaving available capacity unused
- Multipurpose storage systems do not meet the sole purpose requirement of the IAM definition of storage and are not eligible to participate in the IAM
- Distributors are unable or unwilling to identify capacity needs that can be served by customer capacity resources and prefer to deploy their own capacity through building traditional station and wires assets, which they can earn a rate of return on
- Ontario distributors do not have responsibility for generation (energy supply) capacity and thus have no ability nor incentive to aggregate distributed capacity in their systems and supply it to the IAMs. Ongoing DSO pilots could start to change this, but it is unlikely before 2030.

There is currently no ***efficient*** IESO Administered Market (IAM) model for small resources (<5 MW), or programs at the wholesale or distribution market level for small storage capacity resources. While the IESO's minimum threshold capacity for IAM participation is 1 MW, industry understands that the cost of market entry and participation requires a minimum resource scale of 3-5 MW. Further, the IESO does not currently allow the aggregation of physical resources on multiple sites into larger participating resource aggregations making it inefficient and/or uneconomic for small resources to participate in the IAMs. The IESO's recently stakeholdered foundational DER model (planned for delivery in 2027) should enable homogenous resource aggregations on single transmissions nodes, however, many potential participants would need to aggregate capacity across multiple resource types and/or larger regions making this infeasible.

The IESO's Capacity and DR auction is restrictive, requiring participants to be continuously available during business hours or face penalties for non-availability. Furthermore, multi-purpose storage systems, such as EV based storage, do not qualify as storage based on the current market rule definition and thus are not qualified to offer capacity (more detail provided below). The DR service is more flexible than capacity, however customers that are naturally able to minimize load during peak demand conditions are unable to participate as they have no baseline demand to reduce and they are not permitted to use capacity resources (generation or storage) to supply capacity to the system, loads cannot go below 0 MW.

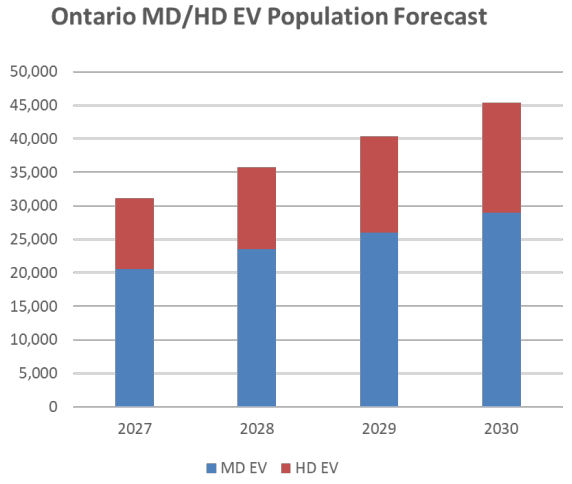
This ICI program currently provides ~1,300 MW of system capacity through customer demand reductions at a cost to non-participants of $285,000-$600,000/MW (in recent years) but is limited to meeting system needs for only the top 5 peak hours of the year. The program is not available to most customers with average monthly peak demand below 1 MW, regardless of the amount of supply capacity they may have available to meet system peak demand. For example, a customer that has 1.5 MW of available supply capacity, may be able to minimize utility demand charges by maintaining peak demand below 500 kW. This customer while being able to supply 1.5 MW in capacity is not eligible for ICI and can neither monetize the value of offsetting their load nor contribute to meeting Ontario's capacity needs. Were this customer able to participate in the DR auction, they would only be able to supply capacity up to their peak demand level of 500 kW.

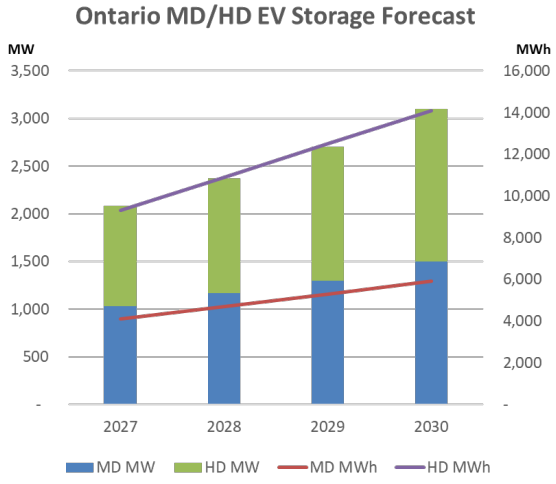
In addition to these program and market barriers, the IESO's definition of electricity storage limits the types of storage that can participate in its markets. The IESO market manual definition of an "electricity storage facility" is consistent with O. Reg. 429/04 and O. Reg. 516/17: ADJUSTMENTS UNDER SECTION 25.33 OF THE ELECTRICITY ACT: "electricity storage facility" which states that an electricity storage facility is:

> *"a facility that, (a) is a Class B market participant or a Class B consumer, (b) is only connected to the IESO controlled grid or the distribution system of a licensed distributor, and (c) withdraws electricity from the IESO-controlled grid or the distribution system of a licensed distributor* ***for the sole purpose of storing the electricity temporarily and then conveying that electricity or a portion of that electricity back into the IESO-controlled grid*** *or a distribution system of a licensed distributor"*

Due to this definitional limitation, multi-purpose storage assets (such as single site aggregated heavy-duty electric vehicle storage systems) are not eligible to participate in the IAMs even where the EVs can replicate a stationary storage system and meet the IAM's 1 MW minimum capacity threshold at a single location. This limitation may also apply to other stationary electricity storage systems that have other primary purposes such as back up power, because their primary purpose is not to supply grid services.

As a result of these limitations and barriers there is a growing pool of underutilized customer sited or BTM storage capacity resources that are available or will be available in the next few years. To illustrate, EnerStrat has forecast the deployment of medium-duty and he heavy-duty EVs in Ontario for the late 2020s. Among this relatively small group of fleet EVs, Ontario is expecting 3 GW and 14 GWh of new energy storage to become available by the end of this decade.





Addressing these limitations and barriers through creation of a participation model for small storage resources will enable the IESO and LDCs to flexibly acquire high value services from underused and undervalued storage assets and to pay them for the value they provide.

The York Region NWA Demonstration (funded by NRCan) showed that distribution connected, customer owned, clean generation and electricity storage resources can provide system capacity to the distribution and bulk electric systems when and where it is needed. Asset owners are willing to offer

services when participation is flexible, the costs and barriers to doing so are low and the financial incentives are reasonable. Proposed changes to the IAM's as described in the IESO's DER Vision Concepts (foundation and enhanced models) will reduce some barriers for DERs but will not close the gaps regarding participation costs and operational flexibility.

The OEB and IESO have recognized a need for greater customer choice and flexibility in choosing pricing plans and to ensure that system costs are more accurately allocated to customers that drive costs. The implementation of the ultra-low overnight price plan for RPP customers in the summer of 2023 will provide RPP customers with needed flexibility to manage costs and for the system to better recover costs from customers that are driving them. A similar approach is emerging with the development of the OEB's Dynamic Pricing Pilot for Non-RPP Class B Electricity Consumers. However, these pilots are focused on energy consumption and not the supply of capacity from customers to distributors and the IESO controlled grid.

Therefore, there is a need for a simple, low barrier and cost-effective participation model that will enable customer owned capacity resources to provide needed capacity services to distributors and the IESO. A model that allows for flexible participation of customer resources, pays for performance without complexity, has low participation costs and focuses participants on reliably supplying needed capacity during system peak hours.

Attridge and EnerStrat propose a program design that will increase cost effectiveness and supply of capacity, while maintaining participation flexibility, low participation costs and barriers and most importantly pay for performance without complex contractual requirements.

Small Storage Capacity Program Design Proposal

Introduction

Attridge Transportation and EnerStrat Canada propose to work with the IESO, OEB and Electricity Distributors to develop the Small Storage Capacity Program (SSCP). The SSCP is proposed to be a **flexible, cost effective, pay for performance** participation model for underutilized behind the meter capacity resources that should contribute to meeting Ontario's current and emerging system capacity needs. The purpose of and the approach for the SSCP supports The Government of Ontario, IESO and OEB goals of meeting capacity needs, enabling DERs (NWAs) and the efficient integration of EVs into the grid.

The SSCP focuses on enabling Non-RPP Class B customers with onsite electricity storage systems (which may be comprised of traditional stationary storage devices or fleet EV based electricity storage) to provide needed system capacity during distribution or bulk system peak events (Capacity Events). This design proposal draws on the IESO's Interruptible Rate Pilot (IRP) design and the tools that have been created for it, to streamline processes and minimize duplication. The SSCP concept could be likened to a capacity net-metering arrangement where customer benefits are accrued as a bill credit which would be applied against all volumetric (kWh) and demand based (kW) charges.

The SSCP Program Sponsor (IESO or Distributor) would periodically issue Capacity Event calls during which participants will have the opportunity, but not the obligation to provide system capacity through the delivery of energy to a distributor's distribution system for the benefit of the Sponsor.

We propose to use the Interruption Event determination and notice process contemplated in the IESO's IRP as a means for determining and calling Capacity Events. Given the context and purposes of the SSCP, these events would be called Capacity Events but will be the same in material aspects as the IRP Interruption Events. We propose that the IESO issue Event Notices to both IRP and SSCP participants simultaneously. IESO anticipates calling up to 15 Interruption (Capacity) Events per year for up to 60 Interruption (Capacity) Hours, the SSCP would adopt the same parameters.

Participant Eligibility:

a. Participants must be non-RPP Class B customers (commercial, industrial, and institutional entities) connected to an Ontario Electricity Distributor and not eligible to participate in the ICI program.
b. Participants and their small storage resources, must either not be eligible or be not economically viable to participate in the IESO's Capacity Auction [requires discussion and definition]
c. Participants must be able to supply a minimum of 500 kW of capacity and not more than 5,000 kW to an Ontario Distributor's distribution system at a single point of interconnection. The minimum capacity supplied must be net of any onsite load and measured as a delivery of energy through a bi-directional interval meter measured on an hourly basis.
d. Participants must have a controllable and bidirectional connection to the Distributor's distribution system, i.e. Participants must be authorized by their Distributor to supply energy to the distribution system.

Sponsor:

a. The Sponsor may be either the Independent Electricity System Operator or an Ontario Electricity Distributor.
b. If the Sponsor is a Distributor, then it may develop its own Capacity Event Dispatch Process or may adopt and use the IESO's Interruptible Rate Pilot Interruption Event Notice process.

Enrollment:

a. In February of each year, interested parties will complete an application form providing details about their electricity storage system, connection to the grid, load reduction plan (optional) and contact information.
b. Approved participants will be notified of their acceptance to participate in the program by the end of April and must execute the participation agreement outlining the terms and conditions of the program by the end of May.

Program Year:

a. The program year for the program will run annually from July 1 to June 30 of each year, consistent with the IRP.

Capacity Events:

a. Where the program is operated by either the IESO or a Distributor choosing to use the IESO's Capacity Event Determination and Notification process, Capacity Events will be determined consistent with IRP's Interruption Conditions, and Events called, and Notices issued as contemplated in Article 4 of the IRP Contract.
b. When Interruption Conditions are present and the IESO in turn declares an Interruption Event and issues an Interruption Notice, these will be treated by the program as Capacity Events, and Capacity Event Notices.
c. The Sponsor may declare up to 15 Capacity Events during per Program Year each for up to 4 hours in duration to a maximum of 60 Capacity Event Hours in each Program Year.

Capacity Event Notification Process:

a. Capacity Event Notices will be issued to Participants via email, SMS, or an automated call.
b. Using the IESO's IRP process for Interruption Event notifications, Participants will receive either long-notice (day ahead) notifications or short-notice (2 hours ahead) notifications.

Participation:

a. Participants have the opportunity, but not the obligation to supply capacity to a Distributor's distribution system during any full hour of a Capacity Event.
b. Participants may supply capacity to the distributor's distribution system for up to 4 contiguous hours during a Capacity Event, however, if supply of capacity is terminated before the end of the Capacity Event, the participant will be measured only on the energy supplied during each of the whole hours prior to termination of supply.
c. For participation in a Capacity Event to be counted, Participants must supply a minimum 500 kWh in each hour for at least 2 consecutive hours.
d. Participants must participate in at least 2/3 of Capacity Events and Capacity Event Hours to remain eligible for the program and for compensation to be paid.
e. Participants' Average Capacity Supplied at the end of the Program Year must be at least 500 kW.

Non-Participation During Call-Events:

a. Participation in any Call Event is voluntary and there will be no penalties for non-participation.
b. Participants have the flexibility to supply Capacity during a Capacity Event for fewer hours than the duration of the Capacity Event.
c. A participant's only loss will be the forgone benefit that participation would have earned it and potentially ongoing eligibility in the program.

Measurement of Supplied Capacity:

a. Supplied Capacity will be a combination of a participant's metered delivery of energy to a Distributor's distribution system plus measurable reduction in normal consumption both measured in kWh during each hour of the Capacity Event.
b. If a Participant chooses to make a load reduction in addition to supplying at least 500 kWh of energy in each hour, the sum of the energy supplied plus the amount of load reduction (kWh) will be counted in the Measurement of Supplied Capacity. To qualify for load reductions, Participants must provide to the Sponsor a Load Reduction Plan (similar to what is contemplated in the IESO's Interruptible Load Pilot), specifying the amount of load reduction to be taken and how the load reduction will be made and measured (equipment, activities affected, sum of load reduced, duration of reduction, etc.).
c. The Participant will authorize the Participant's Distributor to share its metering data with the Sponsor for purposes of measurement and settlement.
d. Sponsor will record the energy supplied and any load reduction taken by the Participant for each hour of each Capacity Event. Sponsor will calculate the Participant's Supplied Capacity for each Capacity Event. At the end of the Program Year the Sponsor will calculate the Participant's Average Capacity Supplied.

Calculation of Capacity Event Supplied Capacity

Capacity Event Supplied Capacity (kW)

$$= \frac{\sum \text{Energy supplied and reduced in each Capacity Event Hour (kWh)}}{\text{Count of Capacity Event Hours (h)}}$$

Calculation of Average Capacity Supplied

$$\text{Average Capacity Supplied (kW)} = \frac{\sum \text{Capacity Event Supplied Capacity (kW)}}{\text{Count of Capacity Events}}$$

Representative Example of a Participant's Participation in the Program

Capacity Event	Date	Start Time	End Time	Event Duration	Hour 1 Energy (kWh)	Hour 2 Energy (kWh)	Hour 3 Energy (kWh)	Hour 4 Energy (kWh)	Supplied Capacity (kW)	2 Hours >500 kW
1	03-06-2023	16:00:00	20:00:00	4	650	500	500	500	538	Yes
2	15-06-2023	17:00:00	21:00:00	4	650	500	500	500	538	Yes
3	21-06-2023	15:00:00	18:00:00	3	500	500	0	0	333	Yes
4	04-07-2023	16:00:00	20:00:00	4	1500	1500	1500	1500	1,500	Yes
5	12-07-2023	17:00:00	21:00:00	4	1500	1500	1500	1500	1,500	Yes
6	21-07-2023	15:00:00	18:00:00	3	1500	1500	1500	0	1,500	Yes
7	15-08-2023	16:00:00	20:00:00	4	1500	1500	1500	1500	1,500	Yes
8	16-08-2023	17:00:00	21:00:00	4	1500	1500	1500	1500	1,500	Yes
9	22-08-2023	15:00:00	18:00:00	3	1500	1500	1500	0	1,500	Yes
10	31-08-2023	16:00:00	20:00:00	4	1500	1500	1500	1500	1,500	Yes
11	05-09-2023	17:00:00	21:00:00	4	650	500	500	500	538	Yes
12	17-01-2024	15:00:00	18:00:00	3	700	700	700	0	700	Yes
13	19-01-2024	16:00:00	20:00:00	4	650	500	500	500	538	Yes
14	22-02-2024	17:00:00	21:00:00	4	0	0	0	0	-	No
15	24-02-2024	15:00:00	18:00:00	3	1500	1500	1500	0	1,500	Yes
		Total Event Hours		55		Average Capacity Supplied (kW)			1,012	
		Total Participation Hours		50						

Compensation Model:

a. Participants will be compensated at the end of the Program Year based on the Average Capacity Supplied during all Capacity Events during the Program Year.
b. Program compensation will be provided as a credit (Program Bill Credit) applied to the Participant's electricity bill from its Distributor. The amount of the Program Bill Credit will offset all volumetric (kWh) and demand (kW) based charges until the Program Bill Credit is used. The credit will not apply to fixed account charges.
c. The Program Credit Rate will be 80% of the Global Adjustment cost for the same year as the participant Supplied Capacity expressed as $/kW. For reference the Global Adjustment rate for 2022 was $287,898/MW, therefore the SSCP Credit Rate would be 80% X $287.90/kW for 2022.

Calculation of Program Bill Credit

Program Bill Credit ($) = Average Capacity Supplied (kW) X Program Credit Rate ($/kW)

Example: $233,084 = 1,012 (kW) X (2022 Global Adjustment Rate $287.90/kW X 80%)

In July following the Program Year, the Program Sponsor will place a credit on the Participant's utility bill worth $247,133, which will offset all volumetric (kWh) and demand (kW) based charges for the following 12-month period. Any unused Program Bill Credit not used in the 12-month period would be forfeit. This limitation serves as a natural limit on Participant investments in small capacity resources. Investing in capacity that exceeds their own needs would generally lead to excess credits that would be forfeit at the end of the year.

Program Evaluation:

The Sponsor will bi-annually evaluate the program's effectiveness in meeting system capacity needs and may make adjustments to the program as needed.

Benefits to IESO and the System

The Small Storage Capacity Program can deliver low cost and flexible system capacity at the times it is needed most at a compelling cost that is limited by the supplier's own delivered cost of electricity. The natural benefit limit designed into the SSCP program ensures that customers are providing capacity services from resources optimized for their own uses and not built solely to earn revenue outside of the IESO Administered Markets. This is an important factor as new resources designed to earn revenue should be participating in the IAM, whereas multi-purpose customer resources eligible for the SSCP are not typically eligible or cost effective to operate in the IAMs and thus an alternative participation pathway to enable their under-utilized capacity is required.

In comparison to the ICI program, SSCP Participants would provide up to 60 hours of system peaking capacity which is ~5X the number of hours as ICI participants, while earning a bill credit which at most would be 20% less than an ICI participation would earn. The SSCP therefore will provide excellent value for peaking capacity relative to ICI and the new IRP.

As with ICI and IRP, the benefits of the program to the IESO controlled grid are the supply of capacity to meet demand during peak system hours. In the short run SSCP would reduce the Hourly Ontario Energy Price (HOEP) due to reduced need for peaking resources to be dispatched to serve peak load. In the long-term, value is created by fully utilizing the capabilities of existing resources (no incremental land, line connection or other impacts), which in turn minimizes the amount of new generation and storage resources that would be required to meet Ontario's future capacity requirements.

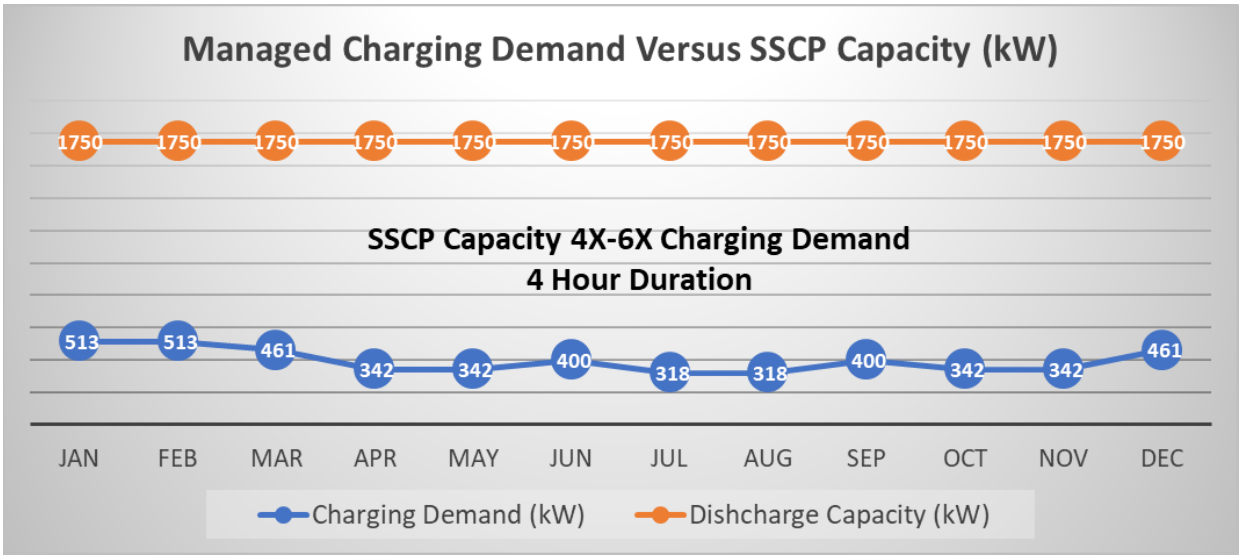
The SSCP will not incur additional charges or increase the total cost of the system. No additional revenue is proposed to be required or paid to SSCP participants.

Case Study – Attridge Transportation

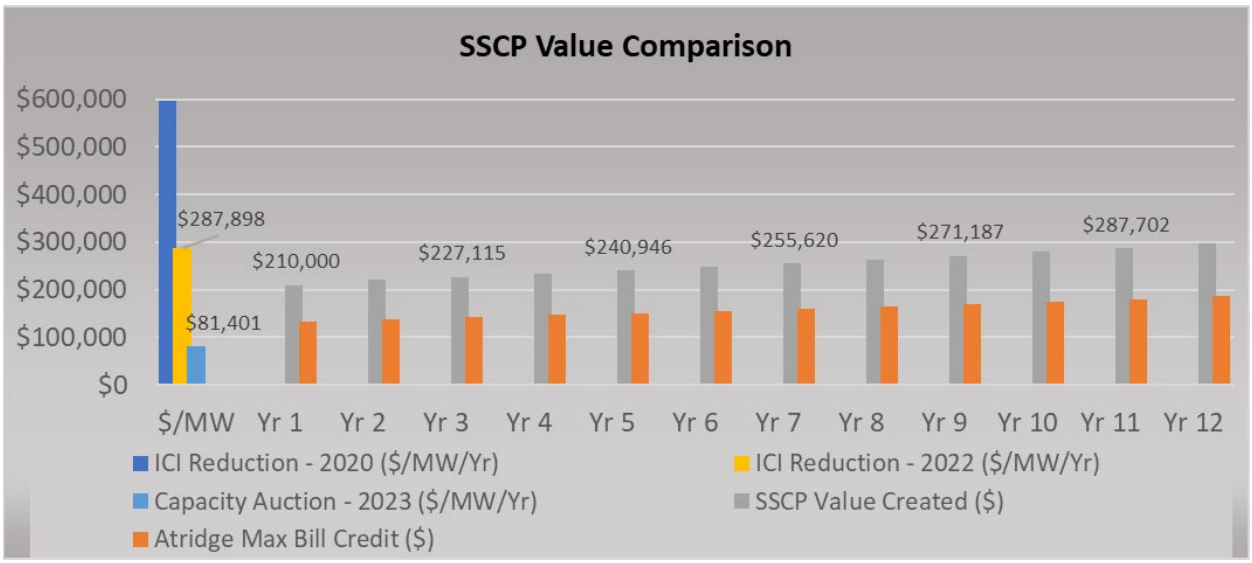
To provide a useful example of the opportunity created by SSCP, an example of a fleet of EV school buses is shown. Attridge Transportation is deploying 3 separate EV School Bus fleets in Toronto, Hamilton and Burlington for service to schools and students in those regions. The fleets are planned for to be in commercial operation in September 2024. Attridge plans to deploy ~35 buses at each location, each bus will be charged by a dedicated 60 kW bi-directional DC fast charger, we assume that the

standard discharge rate will be 50 kW. To minimize demand and energy charges Attridge will charge its EV fleet over a 10-hour period during off-peak hours (9 pm to 7 am). Depending on its daily energy consumption, which is temperature sensitive, Attridge will have a maximum charging demand that varies between 300 kW and 440 kW. The fleet will be able to sustain energy injections to the Distributor's system at up to 1,750 kW for up to 4 hours to meet system peak demand hours.

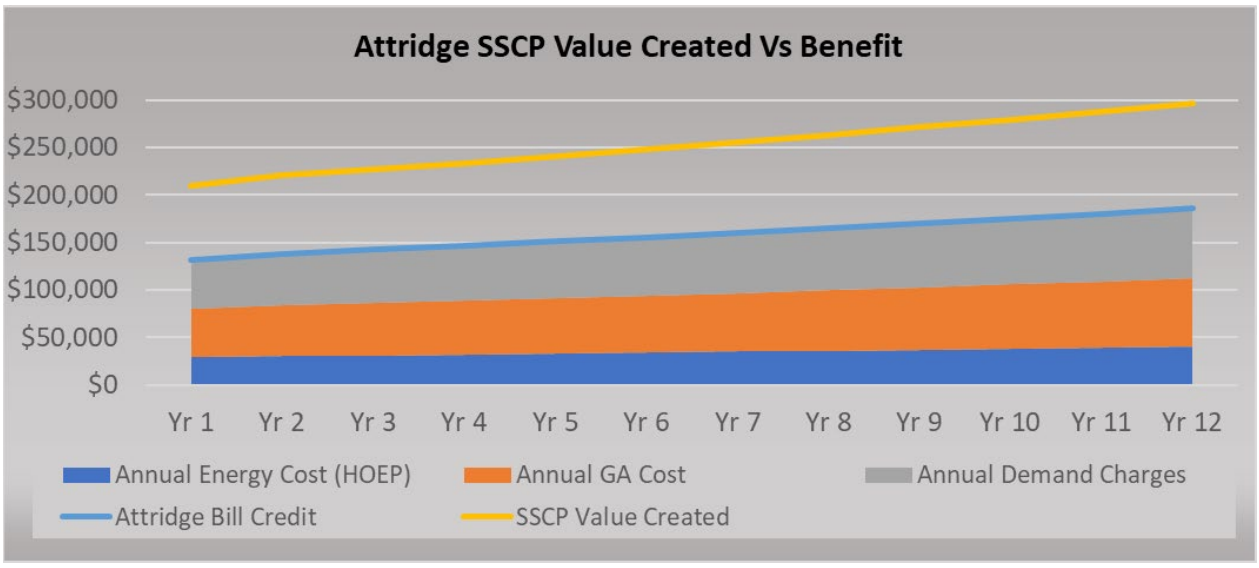
Based on this fleet configuration and demand management strategy, Attridge can offer capacity to the grid that is 3X-5X greater than its overnight charging demand. During July and August Attridge's EV school bus fleet will be idle and available 24/7 to serve electricity system needs.



As a result of this oversized capacity injection capability Attridge's fleet would create value for the IESO and Ontario's electricity system on par with ICI ($285,000 to $600,000 per MW), while receiving benefits that are forecast to be approximately $145,000/MW based on Attridge's forecast energy and delivery costs.



The scale of the system benefit that Attridge could create by participating in the SSCP (even if valued at 80% the of ICI rate) is significantly greater than the bill reduction which Attridge would receive through Program Bill Credits. Because the SSCP proposes to limit the Program Bill Credit to the maximum billed amount for energy (kWh), Global Adjustment (kWh) and delivery charges (kW), Attridge is expected to offset less than the credit it has earned. The balance of this value would be forfeit and accrue to the benefit of all other customers.



Cost of SSCP in the Context of the Recent E-LT1 Gas Procurement Results

On September 18, 2023, the IESO announced the results of the E-LT1 Procurement. Two gas generators were successful, and the average Fixed Capacity Payment was $1,093.22/MW Business Day. Based on 250 business days per year this shows that the fixed capacity payment will cost Ontario $273,305/MW/year for these resources to be available. In addition, operators will earn HOEP for energy delivered to the IAMs during 15 comparable Capacity Events. After reviewing Ontario's Hourly Demand and HOEP for 2022, we identified the top 15 4-hour blocks based on HOEP values. We assume this would be analogous to 15 Capacity Events as they indicated the most constrained periods. The weighted average HOEP for these 15 4-hour periods was $216/MWh. A fair comparison of the costs for these gas contracts would be to add the revenue earned during these 60 hours (60 hours x $216 MWh = $12,960) to the Annual Fixed Capacity Payment resulting in a total cost of $286,265/MW/year. This is 1/3 more than the maximum cost proposed for the SSCP and more that 2X the estimated cost that Attridge believes it can deliver capacity for.

Next Steps – Long-Term Commitment to Enabling Small Storage Capacity Resources

IESO DER Integration Goal: "To maximize the value DERs can provide to Ontario's electricity system by addressing challenges and opportunities within the IESO's mandate."

OEB DER Integration Goal: "To facilitate DER deployment and adoption that enhances overall value to energy consumers."

IESO and OEB have identified that "Investment in, and operation of, DERs can be incentivized by pricing (e.g., TOU pricing, critical peak pricing), procurements (e.g., RFPs, capacity auctions) and programs (e.g., Save on Energy)." **The SSCP is the opportunity to enable small storage capacity resources.**

EnerStrat and Attridge plan to socialize this proposal with IESO, ENERGY, OEB and interested LDCs for consideration.

We request a long-term commitment to enabling Small Storage Capacity Resources which will support Ontario's emerging capacity requirements. To support the effective design and deployment of SSCP (or similar program) we propose to pilot the SSCP for 2-3 years starting in July 2025, using funding from the IESO's Grid Innovation Fund (or other funding vehicle). The OEB's regulatory Sandbox should be involved, so that learnings can be obtained that would feed into the regulatory adjustment processes that may be required to enable sponsorship by Ontario Distributors if desirable. Prior to the completion of the pilot, regulatory changes should be made (if needed) and an interim program formally launched at completion of the pilot to be operated until such time as the IESO's market design and/or LDC barriers are eliminated so that Customer Capacity Resources are cost effectively enabled.