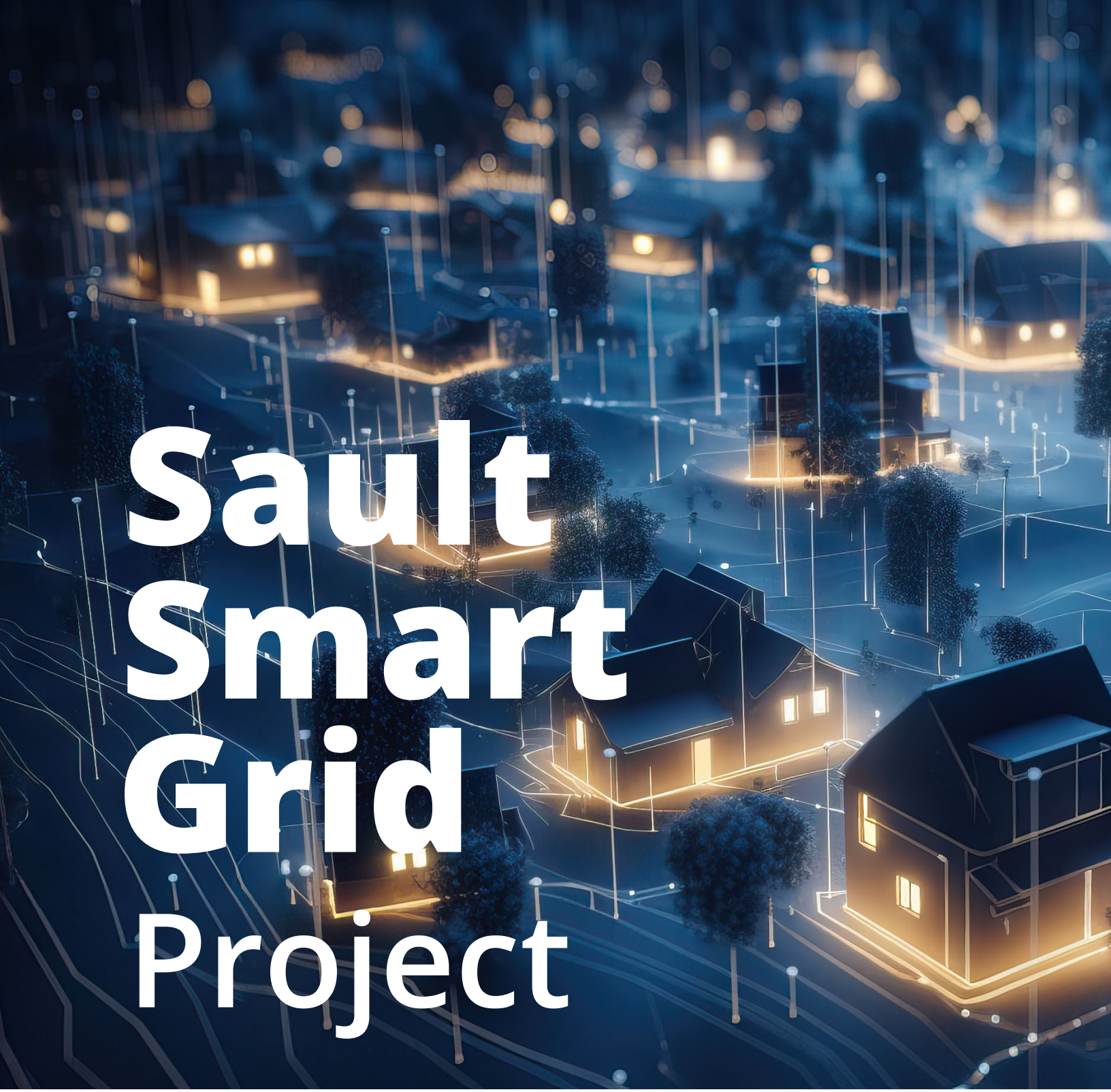

Sault Smart Grid Project

Annual Performance Report – 2025

Created by: PUC Distribution inc.

April 2026

Project Overview

The Sault Smart Grid (SSG) Project represents a transformative modernization of PUC Distribution Inc.'s electrical distribution infrastructure. Designed to enhance reliability, resiliency, improve outage management, reduce energy consumption, and provide increased real time operational awareness and control of the distribution system for improved operations and asset utilization efficiency without increasing the customer bill. Reduced energy consumption will directly result in reduced greenhouse gas emissions from reduced provincial grid generation requirements.

The SSG project included upgrades to the legacy SCADA system to the Survalent Advanced Distribution Management System (ADMS) and integration of existing systems including Advanced Meter Information (AMI/smart meters), Geographic Information System (GIS) and the Customer Information System (CIS).

Key ADMS applications include:

- **FLISR (Fault Location, Isolation & Service Restoration)** Enables distribution automation through SCADA-enabled stations and line equipment such as breakers, reclosers, switches, and faulted circuit indicators (FCIs),
- **VVO/DVR - (Volt-VAR/ Dynamic Voltage Regulation)** Provides voltage management and control through SCADA-enabled equipment on substations and feeders, and
- **OMS – (Outage Management System)** Enhances outage tracking and customer communication capabilities.

The SSG project also required application and development of communications technologies for required new equipment through PUC Services utility communication networks that include fibre and cellular technologies, for data access and control.

Together, these technologies form a comprehensive smart grid platform that positions PUC to support distributed energy resources (DERs) such as photovoltaics, energy storage (batteries), cogeneration, and electric vehicles (EVs) as well as support smart city and other community growth initiatives.

The SSG project reached substantial completion in November 2023 with total project costs of $33 million.

Project Execution and System Benefits

The successful completion of this transformational SSG project demanded extensive collaboration across skilled internal teams and external partners. The SSG project safely and effectively retrofitted 12 substations to incorporate voltage regulation with real time control, installed smart switches and monitoring devices, and deployed one of the industry's leading ADMS platforms.

The collective installation of these components has modernized PUC's electrical distribution system increasing reliability and resiliency and reducing greenhouse gas emissions. Increasing our insight into the electrical distribution system through smart devices assists PUC's decision making to optimize assets and provide real time outage information to our customers. With FLISR and DVR fully functional in the electrical distribution system, customers benefit from increased system reliability with decreased GHG emissions, improving the quality of the local electrical grid and increasing interest for commercial and industrial customers to develop in the area.

Platform for the Future

Though the SSG is now operational, it remains a dynamic, evolving system. Ongoing analysis of performance data, system studies, and field experience will provide further valuable insight into further optimization opportunities. With its enhanced real-time monitoring and control capabilities, PUC is well-positioned to proactively respond to the evolving demands of electrification – including the growing presence of EVs, DERs and other technological changes.

The ability to anticipate and manage the system needs in real-time not only maximizes asset value and enhances customer experience but also helps mitigate long-term cost impacts to end users.

As Canada's first community-wide smart grid installation, PUC's Sault Smart Grid project sets a benchmark for the utility industry—showcasing what is possible through smart, energy-efficient innovation. This project marks a significant step forward in transforming how electrical distribution systems operate and support sustainable community growth.

Ontario Energy Board (OEB) Reporting Requirements

As part of its 2023 Cost of Service application, PUC committed to a series of regulatory and performance-related measures to support the implementation and long-term operation of the SSG Project. These commitments were formalized and approved by the Ontario Energy Board (OEB) through a Settlement Proposal and Decision and Rate Order EB-2022-0059 on April 6, 2023.

The following tables provide an update of the actual benefits of the SSG Project.

Table 1 – Customer Annual Net Benefit Summary Comparison

Annual Net Benefit to Customers	2023 COS	2024	2025
Cost of Power	$ 69,302,488	$ 70,989,952	$ 71,301,057
Projected energy savings with SSG implementation	2.70%	2.86%	2.34%
Projected customer energy savings through SSG	$ 1,871,167	$ 2,030,313	$ 1,668,445
Projected system loss energy savings through SSG	$ 79,664	$ 59,777	$ 39,977
Total purchased power savings	**$ 1,950,831**	**$ 2,090,089**	**$ 1,708,422**
Additional revenue from increased SSG asset base	$ 1,755,460	$ 1,853,560	$ 2,089,133
Benefit of reduced capital expenditures with SSG	($ 304,390)	($ 433,923)	($ 448,767)
Additional O & M expenses due to SSG implementation	$ 296,400	$ 350,311	$ 352,339
Operating efficiency benefits due to SSG implementation	($ 30,816)	($ 13,390)	($ 6,359)
Change In Revenue Requirement	**$ 1,716,654**	**$ 1,756,559**	**$ 1,986,437**
Annual net benefit to customers	**$ 234,177**	**$ 333,530**	**($ 278,015)**
Cumulative net benefit to customers			**$ 70,770**

Table 2 – Customer Annual Net Benefit by Class

Annual net benefit by Customer Class	2023 COS	2024	2025
Residential	$ 111,353	$ 158,597	($ 133,999)
GS < 50	$ 38,090	$ 54,251	($ 45,335)
GS > 50 to 4,999	$ 83,277	$ 118,609	($ 97,014)
Street Lighting	$ 1,025	$ 1,460	($ 90)
Sentinel Lighting	$ 79	$ 112	($ 1,173)
USL	$ 352	$ 502	($ 404)
Annual net benefit to customers by Customer Class	**$ 234,177**	**$ 333,530**	**($ 278,015)**

Table 3 – SSG Project Performance Metrics

Area	Metric	Description	Target	2024	2025
GHG emissions reductions	Reduction in GHG Emissions	GHG emissions reduction from provincial generation sources achieved through the SSG VVO reduction in kWh energy use/purchase.	785 (tCO2e) (revised)	614.86 tCO2e	517.35 tCO2e
	Reduced energy losses from GHG emitting supply (kWh) (but not calculated directly)	Energy reduction of lower power purchase/supply by PUC applied to average provincial transmission grid loss factor means less energy production from provincial generation sources and additional GHG reduction.	Is Included in above GHG calculation	16,906,087 kWh savings annually	14,225,076 kWh savings annually
Area	**Metric**	**Description**	**Target**	**2024**	**2025**
Improved Asset Utilization and increased energy efficiency	Reduction in peak demand on utility assets (kW)	Demand reduction (kW on station assets) will be measured as part of the VVO performance measurements.	Trending KPI's (kW and %)	3,248kW reduction at peak demand (113MW Peak)	2,732kW reduction at peak demand (117MW Peak)
	Reduction in energy losses (% of PP kWh)	The energy reduction achieved with the SSG VVO solution will reduce system losses in relation to the reduced energy delivery.	NA	$59,777	$39,977
	$ savings from deferred system upgrades	This measure requires further research on methodology and data collection and will be part of future asset management programs. The measure and associated target will be evaluated with asset management planning systems over the 2023-2027 DSP period.	Trending KPI	$97,002	$102,696
	$ energy savings to customers (& kWh)	The VVO energy savings (kWh) and a total system average energy price (P_{AVG}) calculation.	2.7% kWh and $'s (calc)	16,609,192 kWh $0.1204	14,035,715 kWh $0.1165

Area	Metric	Description	Target	2024	2025
Increased reliability and resiliency	# events Fault Location, Isolation and Restoration (FLISR) responded to	Utilize data captured in the Outage Management System (OMS) combined with data from SCADA report an event count and trending KPI.	FLISR Event Trending KPI	17 FLISR Events	14 FLISR Events
	$ revenue loss avoided from outages avoided	Calculation/estimate from the customer minute reliability improvement metric multiplied by an average customer revenue value.	Calculated $'s	$8,420	$12,378
	Reduced customer minutes of interruption (CMI)	Utilize the new OMS and SCADA system to calculate the difference in customer minutes of interruption (CMI) on feeders with DA deployed and an estimate of CMI that would have occurred without DA.	~10% CMI	638,000 Customer Minutes	906,201 Customer Minutes

Sault Smart Grid Project
Annual Performance Report – 2025
April 2026
PUC Distribution Inc.