



Powering a cleaner future—Saint John Energy's bold path to net zero by 2030



We are building the utility of the future

Founded in 1922, Saint John is a progressive and innovative utility that puts its customers and community first.



Our purpose

To power a sustainable future for the communities we serve.



Our vision

To be a national utility leader in the energy transition to Net Zero.



Our mission

Our customer-focused team employs creativity and innovation to deliver safe, reliable and affordable energy solutions.

The Numbers

Powering a cleaner future—Saint John Energy's bold path to net zero by 2030

36,000

Saint John Energy
Customers

22,000

Utility Poles

750

Overhead, underground
distribution lines

115

Employees

5

Products: Heat pumps, Water
Heater, EV Chargers, E-bikes loans

2

Suppliers: NB Power &
Burchill Windfarm





Saint John Energy's Regulatory and Energy Context

Policymakers and New Brunswick's electricity system participants are coordinating to achieve a more emission free electricity supply while maintaining reliability and cost effectiveness



Government of Canada

Clean Electricity Regulation aims for a net zero electricity grid.

NRCAN Provided funding



Sets energy policy and the legislative framework that guides Crown entities, municipalities, and utilities to ensure a reliable, affordable, and sustainable energy system



City of Saint John

The City owns SJE and appoints its independent board. Its ActSJ: Pathway to Net Zero outlines the municipal strategy for decarbonization



NEW BRUNSWICK
ENERGY & UTILITIES BOARD

The NBEUB is the independent regulator ensuring safe, reliable energy services at fair rates in New Brunswick



Énergie NB Power

NB Power, the province's main generator and transmitter.



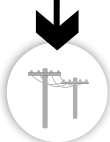
SJE is a municipally owned and independently operated distribution utility Serving to the City of Saint John.



Regulates and approves the wholesale rate charged by New Brunswick Power to customers such as SJE.



Sells wholesale electricity to SJE under a supply agreement. The majority of SJE's electricity supply is currently provided by NB Power.



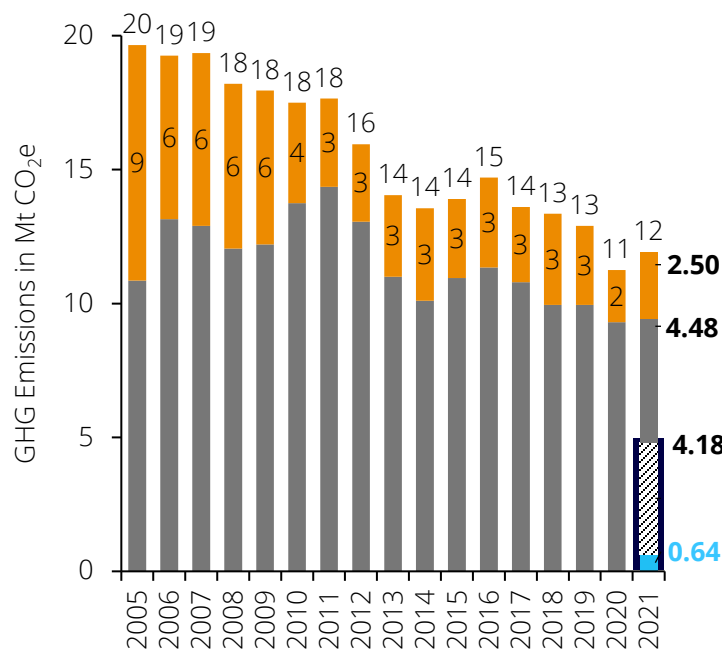
Delivers electricity and pursues innovative projects that support Saint John's sustainability goals

Supporting New Brunswick's Net Zero Targets

A large portion of New Brunswick's total greenhouse gas (GHG) emissions are produced within the City of Saint John. SJE recognizes the opportunity it has to support provincial and municipal emission reduction targets

Total Emissions in New Brunswick
(Mt CO₂e; 2005-2021)

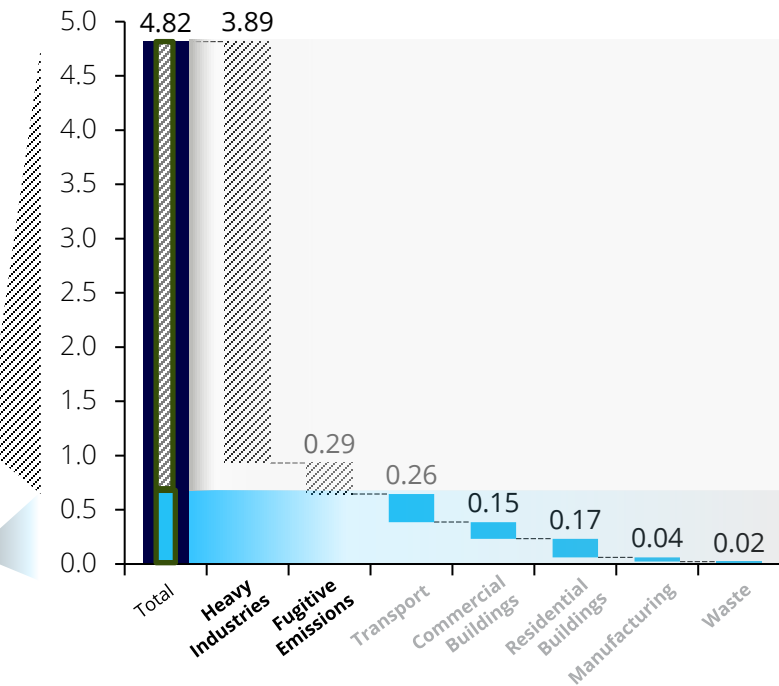
The City of Saint John and its associated industrial activity account for 41% of the total emissions in New Brunswick.



■ NB Power
 ■ Rest of NB
 ■ SJE Customers
 ■ Rest of Saint John

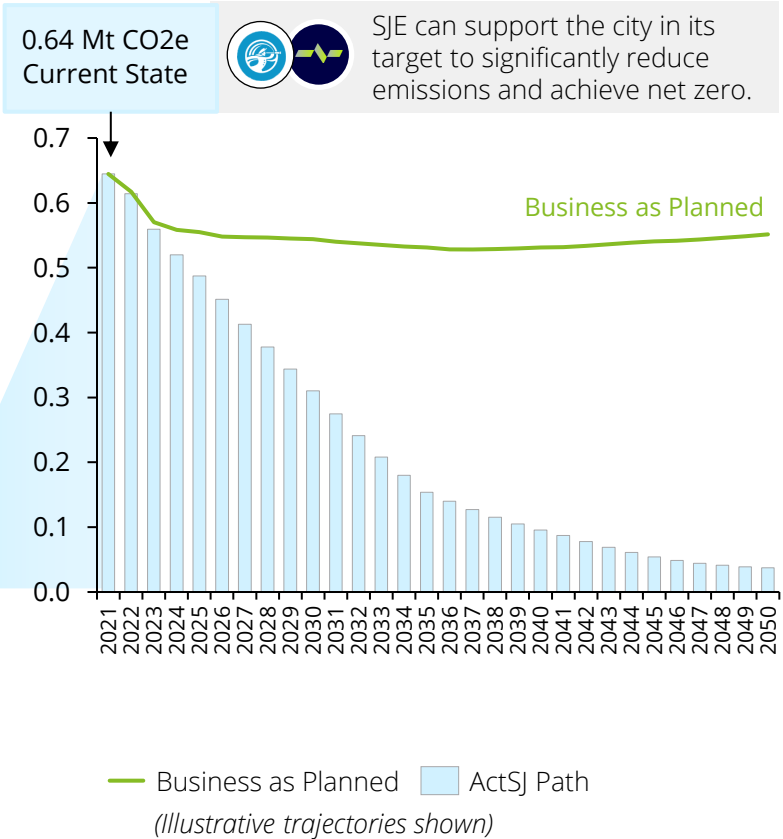
Emissions Breakdown for the City of Saint John
(Mt CO₂e; 2021 Snapshot)

However, SJE's customers only produce 14% of the City of Saint John's 4.82 Mt of GHGs. This is because heavy industries, including Irving Oil's operations, are served by NB Power's transmission system.



SJE's Role in Driving Down Emissions
(Mt CO₂e; 2021-2050 Emissions Projections)

SJE can support the city in taking steps to reduce emissions related to both electricity supply as well as customer consumption (e.g. energy efficiency programs and distributed generation).



The road ahead in key numbers by 2030 and beyond

To reach Zero30 targets, Saint John Energy will reduce 440 kilotons of CO₂e emissions while increasing its infrastructure to deliver an estimated 995 to 1,161 GWh of energy to its customers by 2030.

POWER CONSUMPTION



995 to 1,161 GWh

The expected energy consumption in Saint John by 2030 that needs to be generated sustainably. This is a 11 – 30% increase from today.

Based on Deloitte current trends, low flexibility scenario and SSG high technology adoption, low flexibility

GHG REDUCTION



440 kilotons of CO₂e

GHG reduction goal for SJE to **reach net-zero by 2030 and maintain net-zero ambitions beyond.**

Estimated 2030 emissions from Optimal Supply Mix modelling

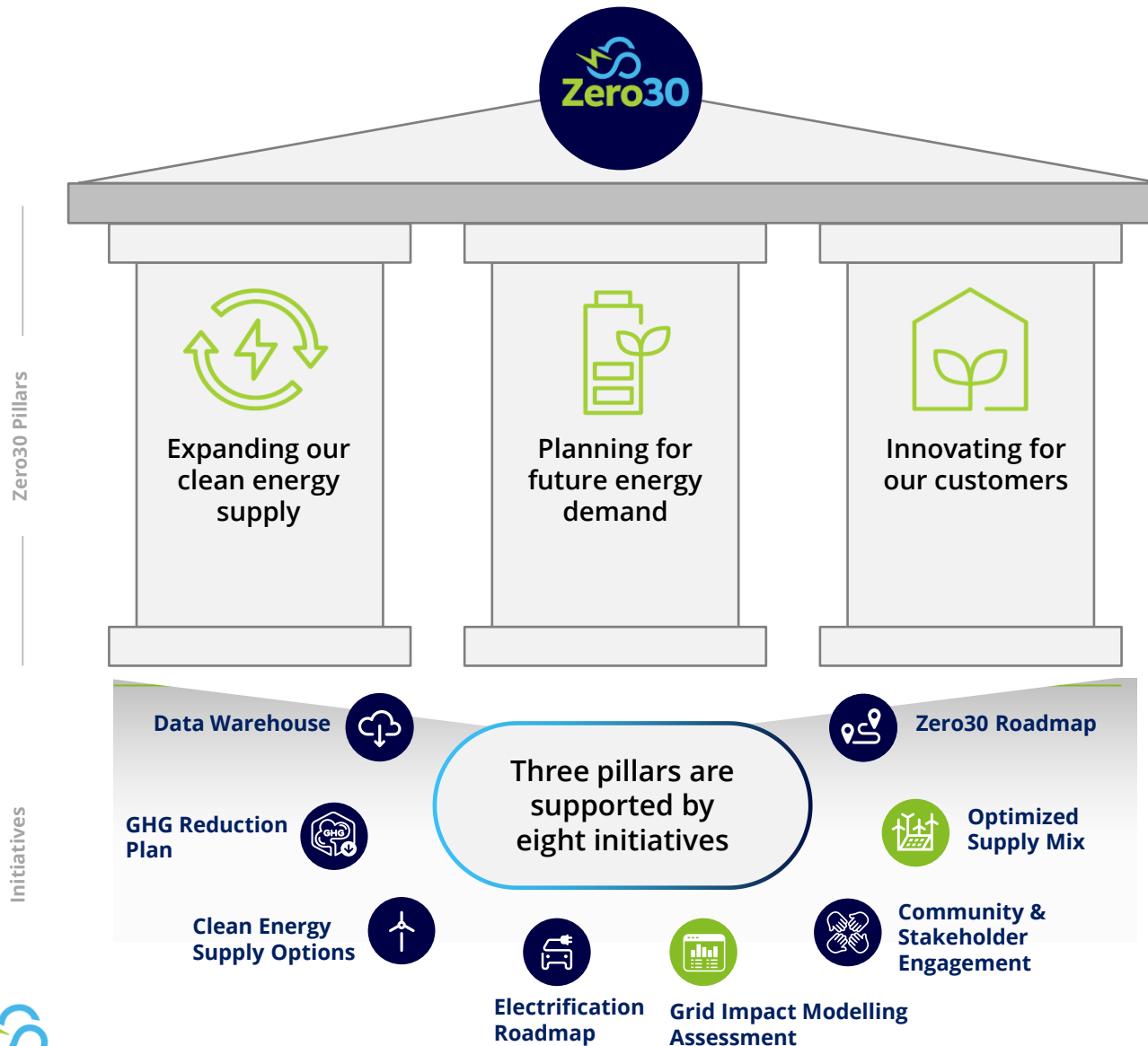
TIMELINE



5 years

The amount of years SJE has to execute on its Zero30 roadmap.

Saint John Energy | Zero 30 Program Overview



Prospective Benefits



Create new job opportunities and develop new opportunities



Provide reliable energy from diverse sources at stable rates



Reduce energy costs for households and businesses



Solidify the city and province's reputation as leaders in modern energy practices



Program Pillars

How Advanced Modelling Helped

Benefits



Innovate with customers

How to support increased adoption of electric technologies?

- Developed hourly load curves for each emerging technology
- Assessed the propensity of users to adopt emerging technologies

- ✓ Supports customer electrification to accelerate the energy transition



Plan for future energy demand

How to prepare for the volume of electrification?

- Merged existing and emerging technology loads into bottom-up forecast
- Simulated forecasted loads in power flow simulation to assess impacts on assets

- ✓ Enhanced SJE's visibility on incoming congestion to better prepare the infrastructure for an electrified future



Expanding our clean energy supply

How to meet increased demand while reducing emissions intensity?

- Modelled multiple pathways to meet growing demand
- Evaluated the cost and impact of non-wires alternatives

- ✓ Imagined multiple pathways for accelerated, lower cost zero-carbon electricity



Assumptions and
Limitations

Demand
Scenarios

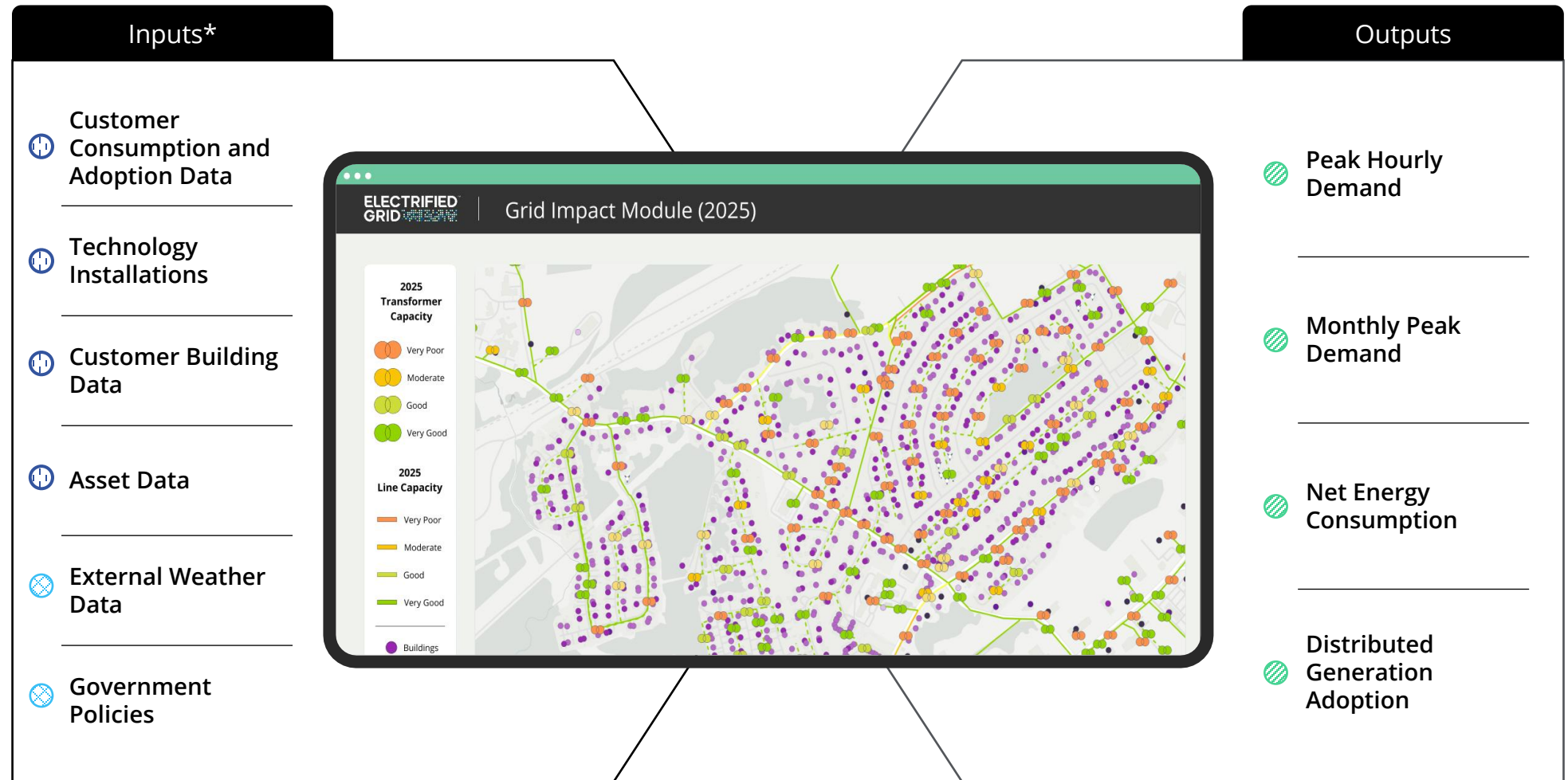
Model
Framework

Model Input

Model Output

Model Framework | Grid Impact

The following framework was utilized for the demand model



DATA INPUTS /
OUTPUTS LEGEND



Local utility data source

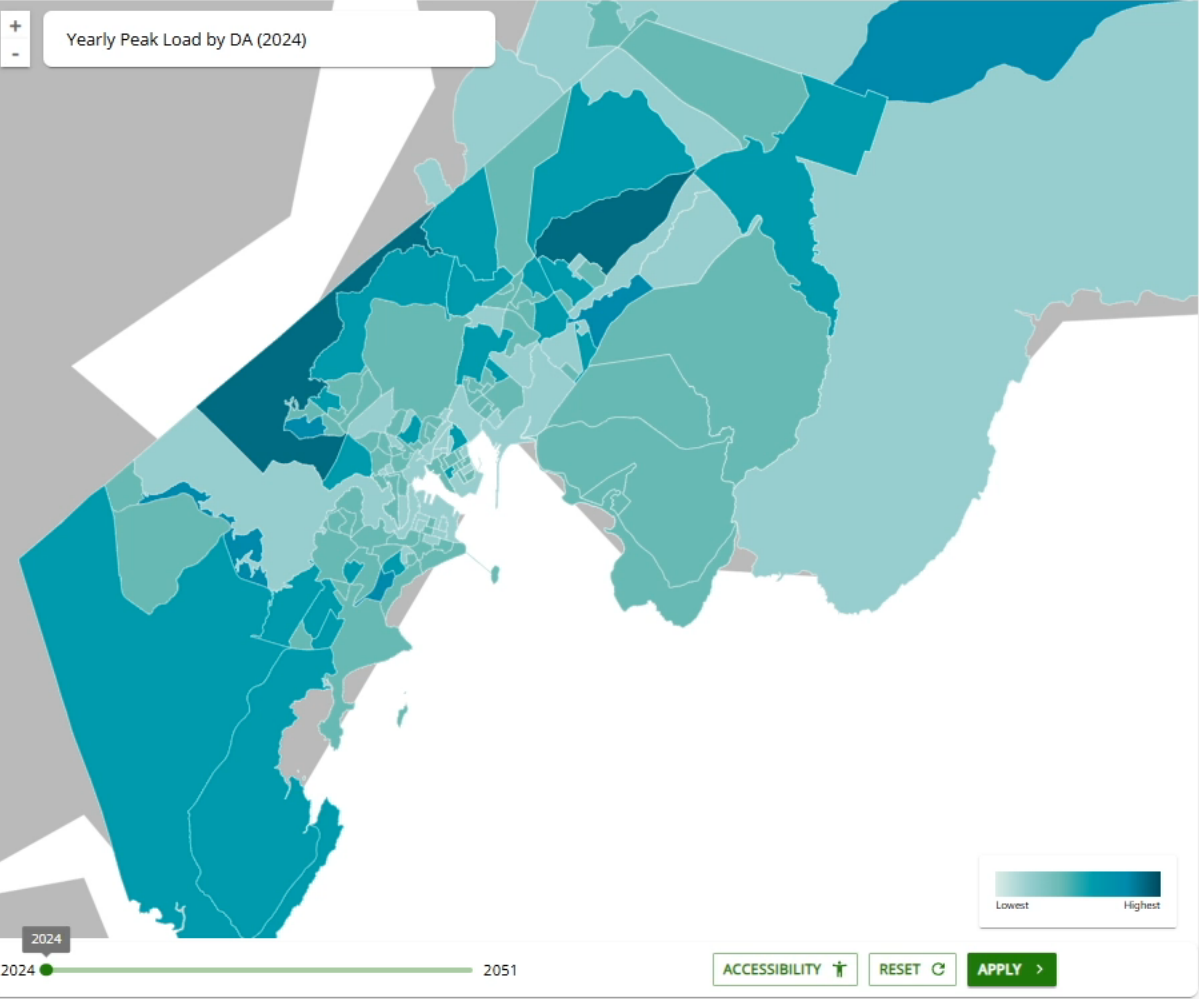


Modelled output data source

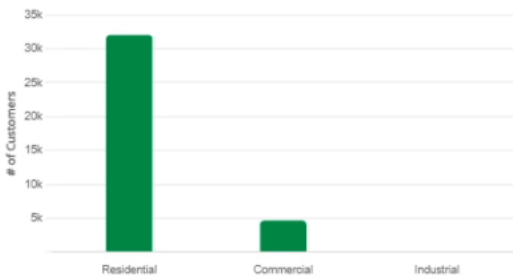


Global data sources adapted to local context

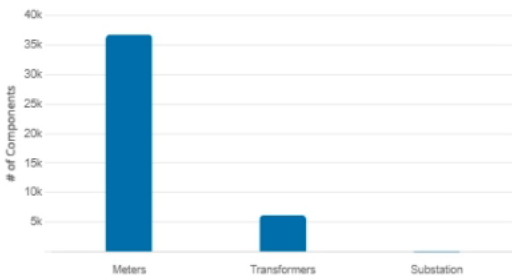
FSA: Multiple DA: Multiple



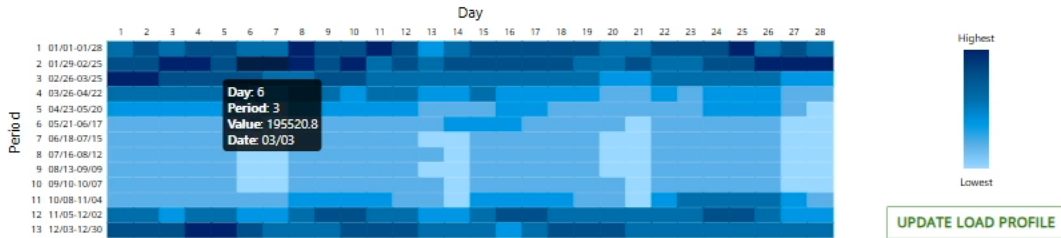
Customer Breakdown(2024)



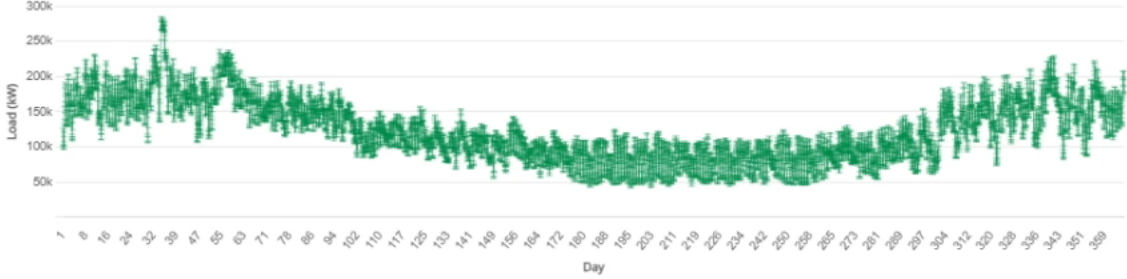
Component Breakdown(2024)



Daily Peak Load Forecast(2024)

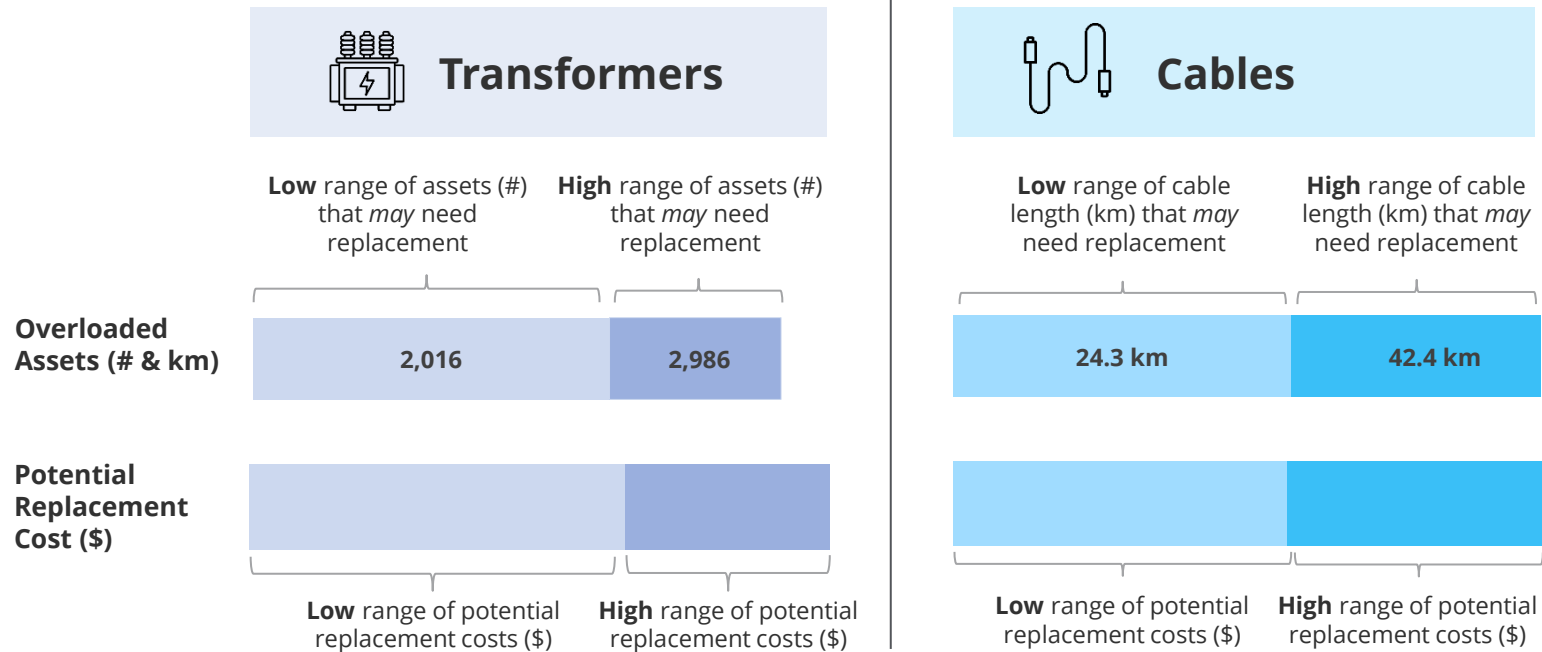


Annual Load Profile(2024)



Grid resiliency and modernization Insights

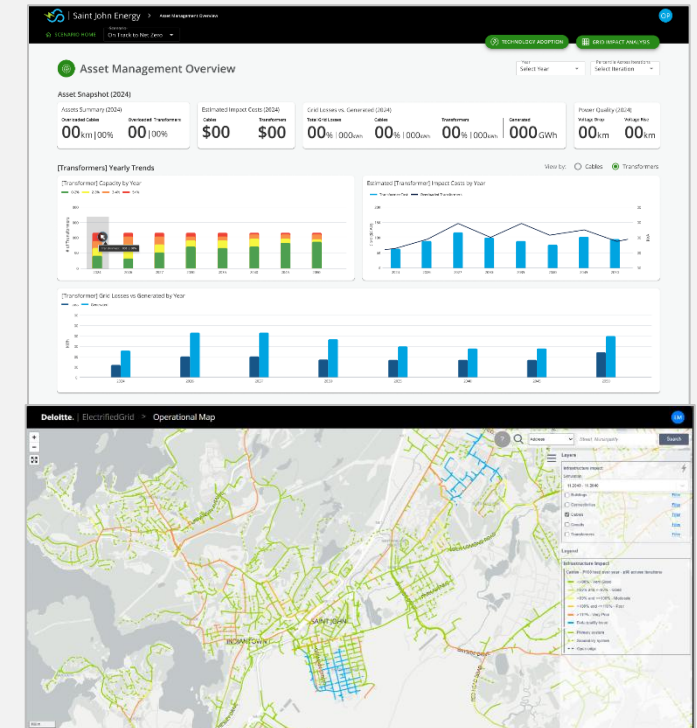
Assets that may need to be replaced by 2030



Note: The above information is based on scenarios approved SJE grid impact scenarios. Based on P50 values. In the reference year (2023), the cold snap causes short transformer overloads., this may need to be replaced

NEXT STEPS

- **Prioritize Assets** – Assess assets by severity and impact using the ElectrifiedGrid dashboards
- **Build an actionable capital plan** using AMI and SCADA data to refine long-term resiliency planning aimed at specific assets and with specific costs



Grid Impact dashboards will be used to identify and prioritize overloaded assets for resiliency



Assumptions and
Limitations

Supply Mix
Scenarios

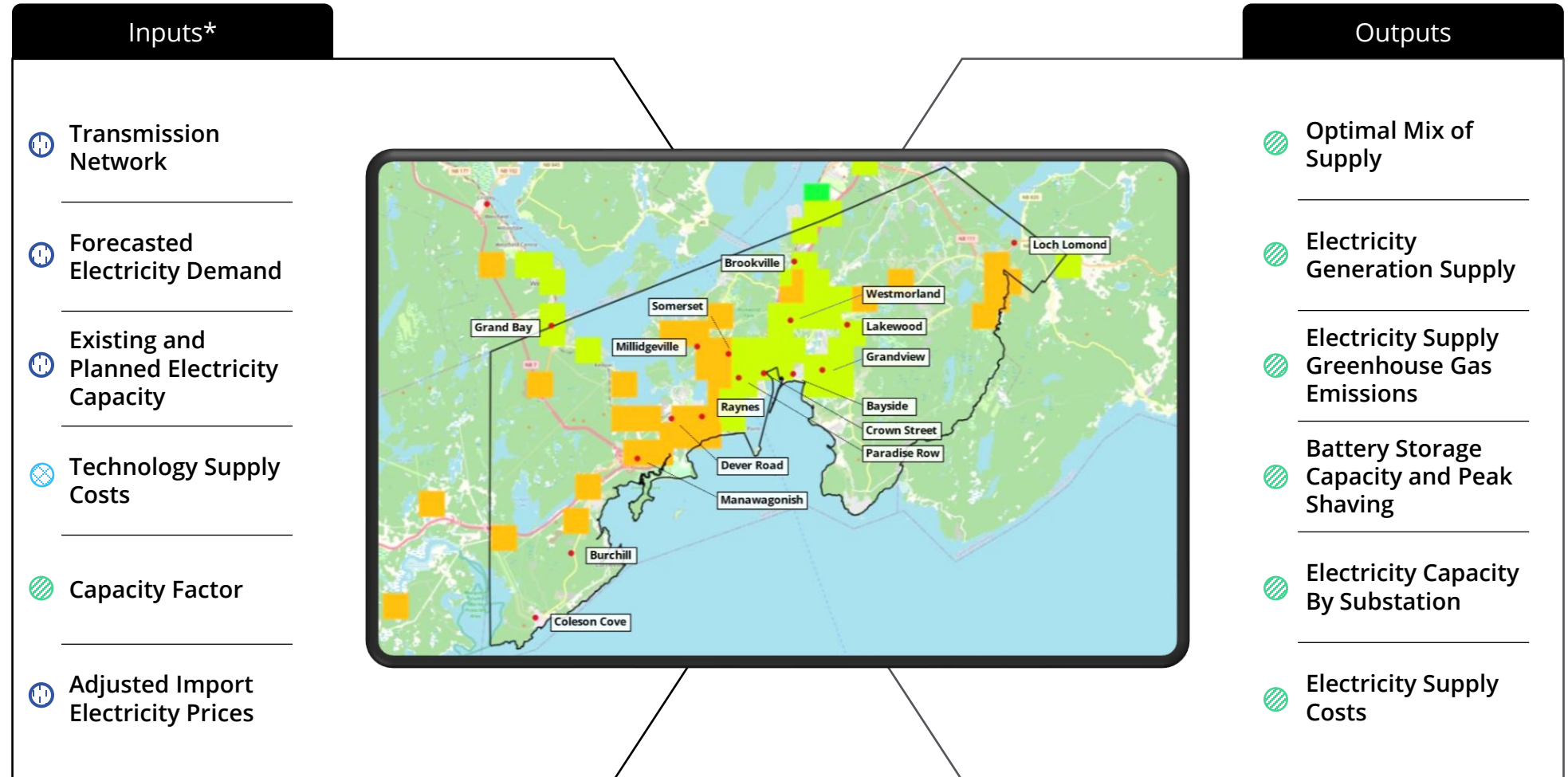
Model
Framework

Model Input

Model Output

Model Framework | Optimal Supply Mix

The capacity dispatch model has been developed using the following analysis framework



*See Appendix for more exhaustive list and explanations

DATA INPUTS /
OUTPUTS LEGEND



Local utility data source



Modelled output data source

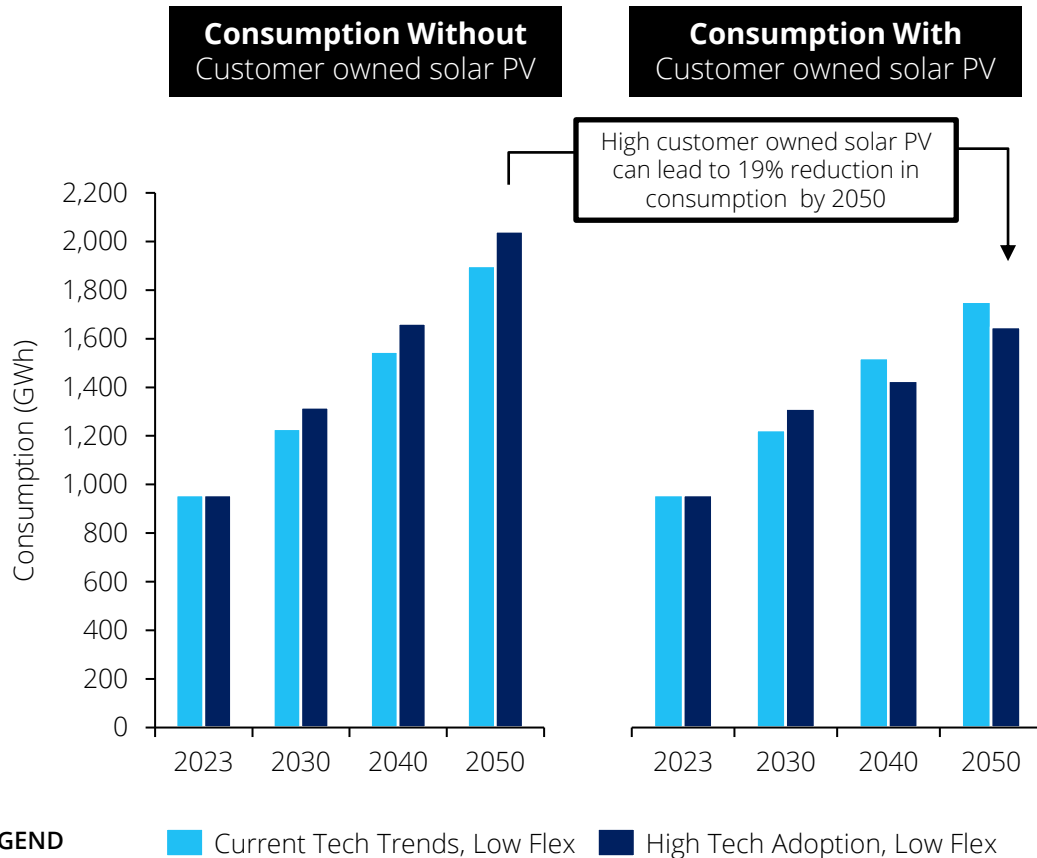


Global data sources adapted to local context

Optimized Supply Mix Insights | Customer Enablement

IMPACT OF TECHNOLOGY ADOPTION – CUSTOMER OWNED SOLAR PV

Demand Model Consumption Projections, (GWh, 2023-2050)



Customer owned solar PV adoption could reduce supply costs by 2040

Customer owned solar PV adoption rates are expected to decrease electricity consumption.

High tech adoption, customer owned solar PV, lead to lower electricity supply costs starting in 2040, when compared to low tech adoption.

This can help save:

-4%

In 2030

11%

in 2040

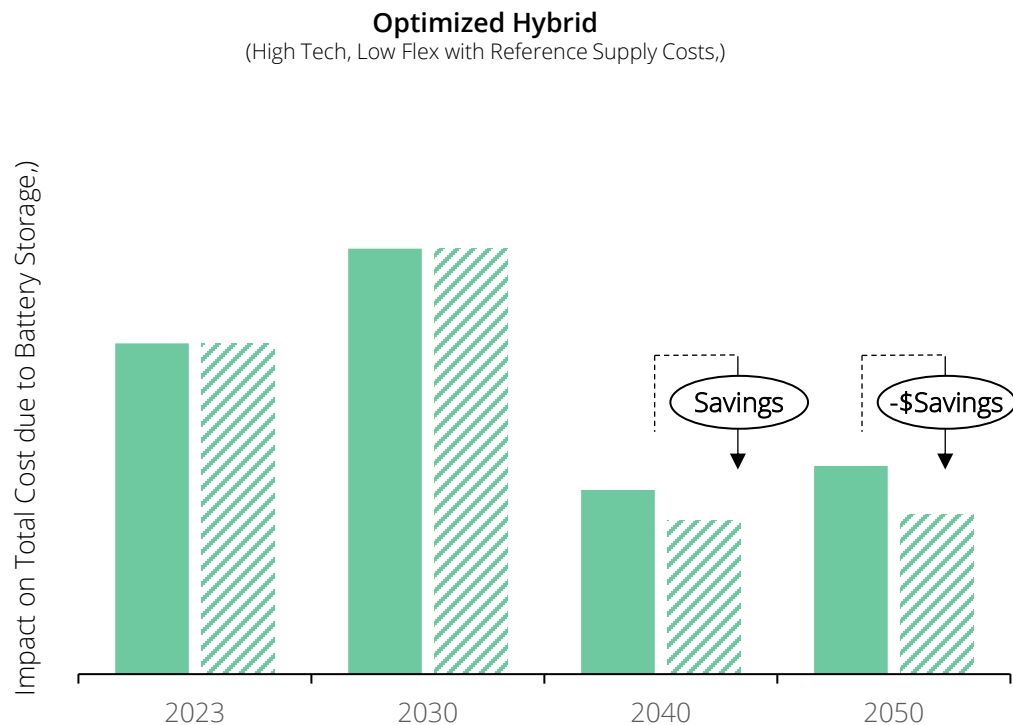
13%

in 2050

Optimized Supply Mix Key Insights | Investing in Battery Storage

Rising peaks and higher anticipated import rates strengthen the case for investing in battery storage to shave peaks.

Impact on Total Cost due to Battery Storage, 2023-2050)



LEGEND

- Cost of Import Charges
- ▨ Total Cost of Import Accounting for Battery Storage Savings

Key Insight

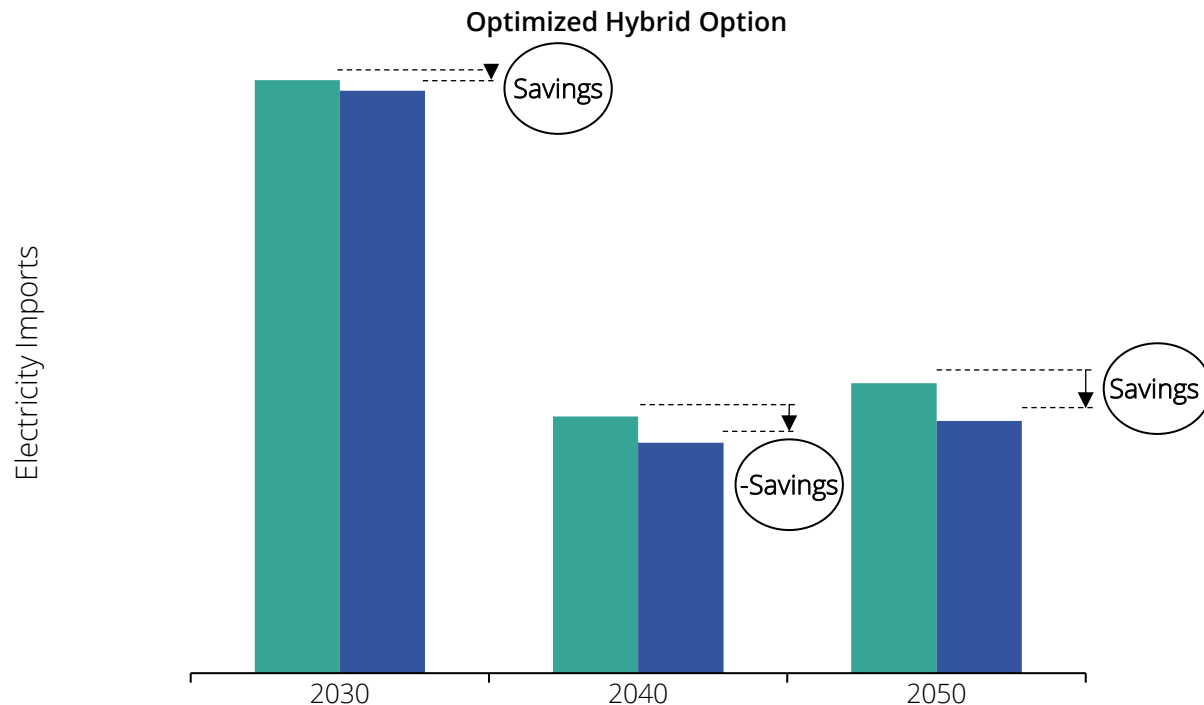
- Battery storage can help shave peak and reduce import costs
- SJE has sufficient battery storage until 2030 but by 2040, it may be economical to invest in more

Note: This analysis is under the assumption that NB Power's rate structure will remain unchanged.

Optimized Supply Mix Insights | Potential Impact of Flexibility Programs

Implementation of load management programs in the SJE territory can lead to a reduction in total consumption, emissions and lead to lower costs.

Load Management Programs Lead to Lower Electricity Costs, 2030-2050)



LEGEND



Key Insight

- Introduction of load management programs can reduce total consumption by 5% by 2050.
- Load management programs can result in significant **savings** for SJE under the Optimized Hybrid option through peak demand shaving by 2050.
- Load management programs can also help reduce emissions:

-9 kt CO ₂ e	-19 kt CO ₂ e	-21 kt CO ₂ e
in 2030	in 2040	in 2050



What is next?

- Scoping out projects as part of the action plan
 - Begin defining and prioritizing projects aligned with the Zero30 Roadmap
 - Use data insights from the roadmap to drive decisions and future project announcements
- Integrate roadmap outcomes and customer feedback into SJE's Strategic Plan
- Update the model as new information becomes available or as policies is updated
- Stay informed — **subscribe to Zero30.ca** for updates and opportunities to engage

Saint John Energy