

# EVERGREEN IRP UPDATED MODELING SCENARIO DESCRIPTIONS

JUNE 1, 2023

# EVERGREEN IRP MODELING SCENARIOS LIST

The scenarios in **purple** reflect additional scenarios included in the Final Modeling Results:

Scenarios	Clean Energy Policy	Electrification	Resource Strategy	Sensitivities
CE1-E1-R1 CE1-E1-R1-DH CE1-E1-R1-LFPP CE1-E1-R1-HFPP CE1-E1-R1-MMDSM CE1-E1-R1-BPDSM CE1-E1-R1-HDER CE1-E1-R1-AAT <b>CE1-E1-R1-WI</b> <b>CE1-E1-R1-DACC</b> <b>CE1-E1-R1-BD</b>	NZ2035	Current Policy and Trends	AtlanticLoop	- Domestic Hydrogen Fuel and PP - Low Fuel and PP - High Modified Mid DSM Base+ DSM High Distributed Energy Resources Adjusted Atlantic Loop Timing Wind Integration Constraints Removed Direct Air Carbon Capture – 2035+ Bidirectional Transaction – Atlantic Loop
CE1-E1-R2 <b>CE1-E1-R2-DACC</b> CE1-E1-R2-DH CE1-E1-R2-MMDSM CE1-E1-R2-HDER	NZ2035	Current Policy and Trends	No Atlantic Loop	- Direct Air Carbon Capture – 2035+ Domestic Hydrogen Modified Mid DSM High Distributed Energy Resources
CE1-E2-R2 <b>CE1-E2-R2-HB/HR</b> CE1-E2-R2-MMDSM	NZ2035	Hybrid Peak Mitigation	No Atlantic Loop	- High-Cost Battery Storage/High-Cost Renewables Modified Mid DSM
<b>CE1-E3-R1</b> <b>CE1-E3-R2</b>	NZ2035	Accelerated Electrification	Atlantic Loop No Atlantic Loop	- -
CE2-E1-R1	NZ2050	Current Policy and Trends	Atlantic Loop	-
CE2-E1-R2 CE2-E1-R2-DH	NZ2050	Current Policy and Trends	No Atlantic Loop	- Domestic Hydrogen

# EVERGREEN IRP MODELING SCENARIOS

## KEY DRIVERS AND SENSITIVITIES

### Carbon Policy

- Net Zero Scenarios – achieve net zero electricity production by 2035 or 2050; net zero allows for limited emissions with the ability to offset emissions via credit mechanisms

### Electrification

- Load profiles reflective of electrification adoption toward the economy-wide net zero 2050 target (e.g. heating, transportation)
- Testing Three Scenarios:
  - Current Policy and Trends - reflects heat pump adoption based on current policy and trends
  - Hybrid Peak Mitigation – reflects a mix of heat pump adoption and retaining back up fuel heating for peak (cold weather) conditions; has the impact of reducing peak load requirements
  - Accelerated Electrification – increase in load beyond the current forecast

Key Drivers	Notation
Carbon Policy	
Net Zero 2035	CE1
Net Zero 2050	CE2
Electrification	
Current Policy and Trends	E1
Hybrid Peak Mitigation	E2
Accelerated Electrification	E3
Resource Strategy	
Atlantic Loop	R1
No Atlantic Loop	R2
Sensitivities	
Domestic Hydrogen Production	DH
High Distributed Energy Resources	HDER
Direct Air Carbon Capture	DACC
Modified Mid DSM	MMDSM
Base+ DSM	BPDSM
Low Fuel and Power Prices	LFPP
High Fuel and Power Prices	HFPP
High-Cost Battery Storage/Renewables	HB/HR
Bi-Directional Transaction – Atlantic Loop	BD
Adjusted Available Timing – Atlantic Loop	AAT
Wind Integration Constraint Relaxation	WI

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## KEY DRIVERS AND SENSITIVITIES

### Resource Strategies

- R1 – with Atlantic Loop
- R2 – without the Atlantic Loop

### Sensitivities:

- Domestic Hydrogen Production – additional flexible load (domestic hydrogen plant) and domestic hydrogen pricing
- High Distributed Energy Resources – assume high value of installed rooftop solar (1500MW by 2050)
- Direct Air Carbon Capture – assume DACC pricing (\$500/tonne) to reduce emissions to zero starting in 2035
- Modified Mid DSM – Adjusted Mid DSM scenario, gradual increase from settlement plan to Mid DSM Profile
- Base+ DSM – scenario between Base and Modified Mid
- Low/High Fuel and Power Prices
- High Cost Battery Storage and High Cost Renewables (Wind and Solar)
- Bi-Directional Transaction – Atlantic Loop - bidirectional energy exchange over the Atlantic Loop where 2.5TWh of wind energy is exported and 2TWh of dispatchable energy is re-imported on an annual basis.
- Adjusted Available Timing – Atlantic Loop – Atlantic Loop is made available in 2035
- Wind Integration Constraint Relaxation – remove instantaneous penetration constraints

Key Drivers	Notation
Carbon Policy	
Net Zero 2035	CE1
Net Zero 2050	CE2
Electrification	
Current Policy and Trends	E1
Hybrid Peak Mitigation	E2
Accelerated Electrification	E3
Resource Strategy	
Atlantic Loop	R1
No Atlantic Loop	R2
Sensitivities	
Domestic Hydrogen Production	DH
High Distributed Energy Resources	HDER
Direct Air Carbon Capture	DACC
Modified Mid DSM	MMDSM
Base+ DSM	BPDSM
Low Fuel and Power Prices	LFPP
High Fuel and Power Prices	HFPP
High-Cost Battery Storage/Renewables	HB/HR
Bi-Directional Transaction – Atlantic Loop	BD
Adjusted Available Timing – Atlantic Loop	AAT
Wind Integration Constraint Relaxation	WI