

MARCH 2021

IESO Project Valuation Framework

Background

- At the February 17 Stakeholder Advisory Committee (SAC) meeting, members requested additional information on how the IESO assesses unsolicited energy project proposals when requested by the Ministry of Energy, Northern Development and Mines
- The following outlines the project valuation framework the IESO has been consistently using for a number of years when there is a need to provide analysis on how proposed projects or changes to ongoing projects may impact the system and ratepayers
- An overview of the “unsolicited proposals” assessment process is presented in the [companion presentation](#)

IESO Project Valuation Framework Purpose

- IESO uses a structured approach to evaluate how a proposed electricity resource project may impact the system and ratepayers
- This approach was designed to provide a consistent evaluation across different types of projects and proposals at different points in time
- The methodology and the assumptions used are consistent and have been used for a broad range of analysis beyond unsolicited resource proposals, including energy efficiency program funding, alternatives to meet regional planning needs, changes in nuclear retirement or refurbishment schedules, and other assessments

How do we evaluate the potential for system benefit?

- Build a discounted cash flow (DCF) model with annual project costs and estimated electricity system benefits
- Project value is determined as the net present value (NPV) of benefits minus costs, using a social discount rate
- IESO does not consider benefits beyond electricity system benefits
- Costs are provided by the project proponent, IESO checks for reasonableness
- Benefits are evaluated for each product or service provided by the project such as energy, capacity, and ancillary services

How do we evaluate electricity resource projects?

Understand key input parameters: cost, capacity (MW), capability to provide energy or demand reduction (MWh), other capabilities

Develop project configurations for providing products and services considering operations and market rules and design

Perform system modelling to understand how project operates in electricity system given proposed configuration

Build the Discounted Cash Flow model considering the cost of the project and the benefits provided by each product and service

Electricity benefits determination

- Capacity benefits: the ability for the project to meet Ontario's resource adequacy needs
- Energy benefits: reduce system dispatch costs
- Operating reserve: increase competitiveness in operating reserve markets
- Locational needs: investment deferral

Capacity Product & Benefit

- To compare capacity contributions across different resources, the IESO considers a resource's deliverable unforced capacity (UCAP)*
- For all resources, considers forced outage rates, fuel availability, and deliverability of capacity
- For storage resources, this is currently the maximum dispatchable output that can be sustained for four hours, after accounting for forced outages

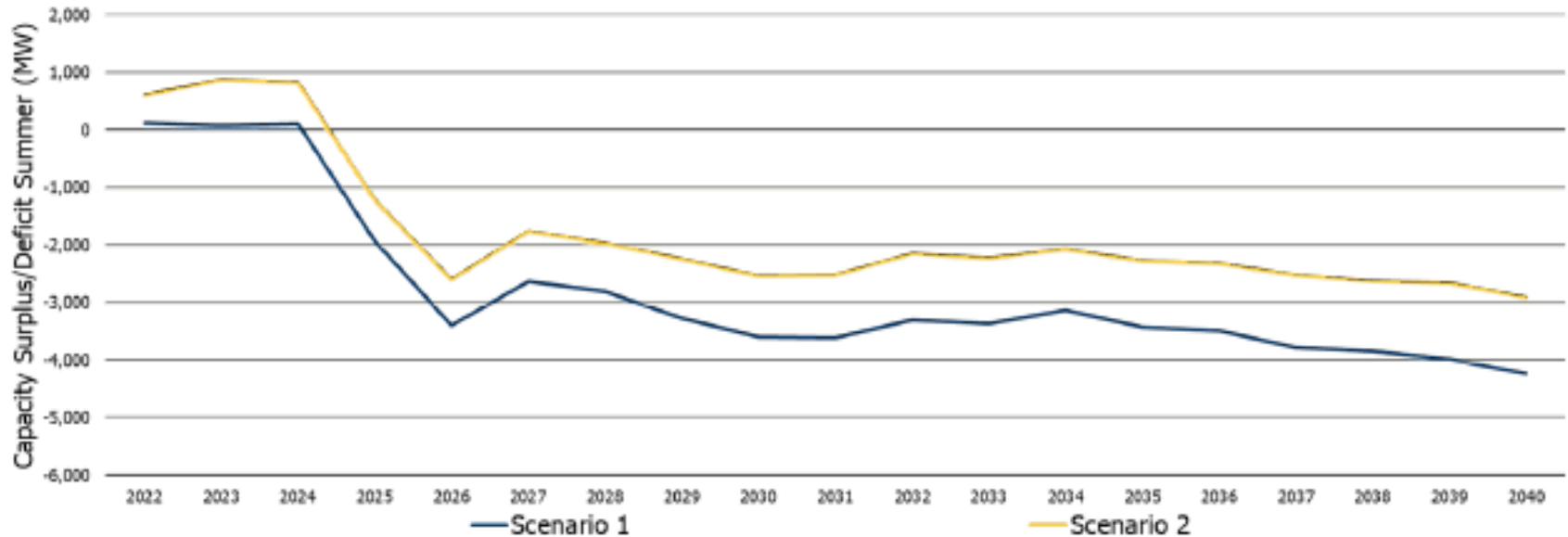
*UCAP is the capacity expected to actually be provided to the system and includes de-rates for forced outages and other circumstances outside the operator's control, such as seasonal fuel supply

Capacity Needs

- Benefits are provided by displacing the IESO's need to acquire incremental capacity by contributing to our resource adequacy
- Capacity benefit is the product of the resource's effective capacity and the cost of incremental effective capacity
- Emerging capacity needs are outlined in Annual Planning Outlook

Capacity Needs - Summer

Figure 33 | Summer Capacity Surplus/Deficit, with Continued Availability of Existing Resources



Energy Benefit

- Some resources provide a benefit to consumers by displacing higher marginal cost resources
- For large projects: economic dispatch simulations with and without the resource
- For smaller projects: spreadsheet analysis considering physical characteristics of resource and its marginal cost
- Includes benefit from reducing carbon costs, if applicable

Operating Reserve Services

- Some resources provide benefits by increasing competition in Operating Reserve (OR) markets and lowering the total cost of providing OR
- When developing the energy benefits analysis, we consider when the resource will be available to provide OR
- For those hours, we approximate the benefit from the project's participation in OR markets

Other Benefits

- Locational benefit could be provided by displacing or deferring need for transmission investment
- Non-electricity sector benefits outside scope of IESO analysis

Net Benefits Calculation

- In each year, the cost of the facility is compared to the benefits of each product and service as calculated by the alternative cost of the product and service
- An NPV is calculated to determine the net cost or benefit using a social discount rate
- Sensitivity analysis is conducted to determine if changes in key variables (ex: capacity value, discount rate, etc...) could result in a different outcome