

Capacity Exports

Technical Panel
March 6, 2018

Agenda

- Enabling Capacity Exports Project Overview
- Capacity Exports to Date
- Stakeholdering
- Exporting Capacity: Key Concepts
- High Level Capacity Export Processes
- IESO Capacity Export Review Process
- Next Steps
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Enabling Capacity Exports Project Overview

- Projections are that Ontario will have sufficient capacity to meet or exceed reliability planning needs in most periods until the early/mid 2020's
- Neighbouring or nearby jurisdictions have some method of securing capacity (i.e., auctions and/or contracting) which can include imports
- Creates an enduring framework for Ontario-based resources to export capacity

Capacity Export Project Overview

- The Enabling Capacity Exports project will create an enduring framework to enable Ontario based resources to export their capacity while ensuring that Ontario continues to meet planned reliability needs
- Enabling capacity exports:

Provides Ontario based resources an opportunity to monetize capacity not required for Ontario planned adequacy during certain periods

Offers an alternative to facilities that may otherwise choose to idle or shut down due to Ontario market conditions

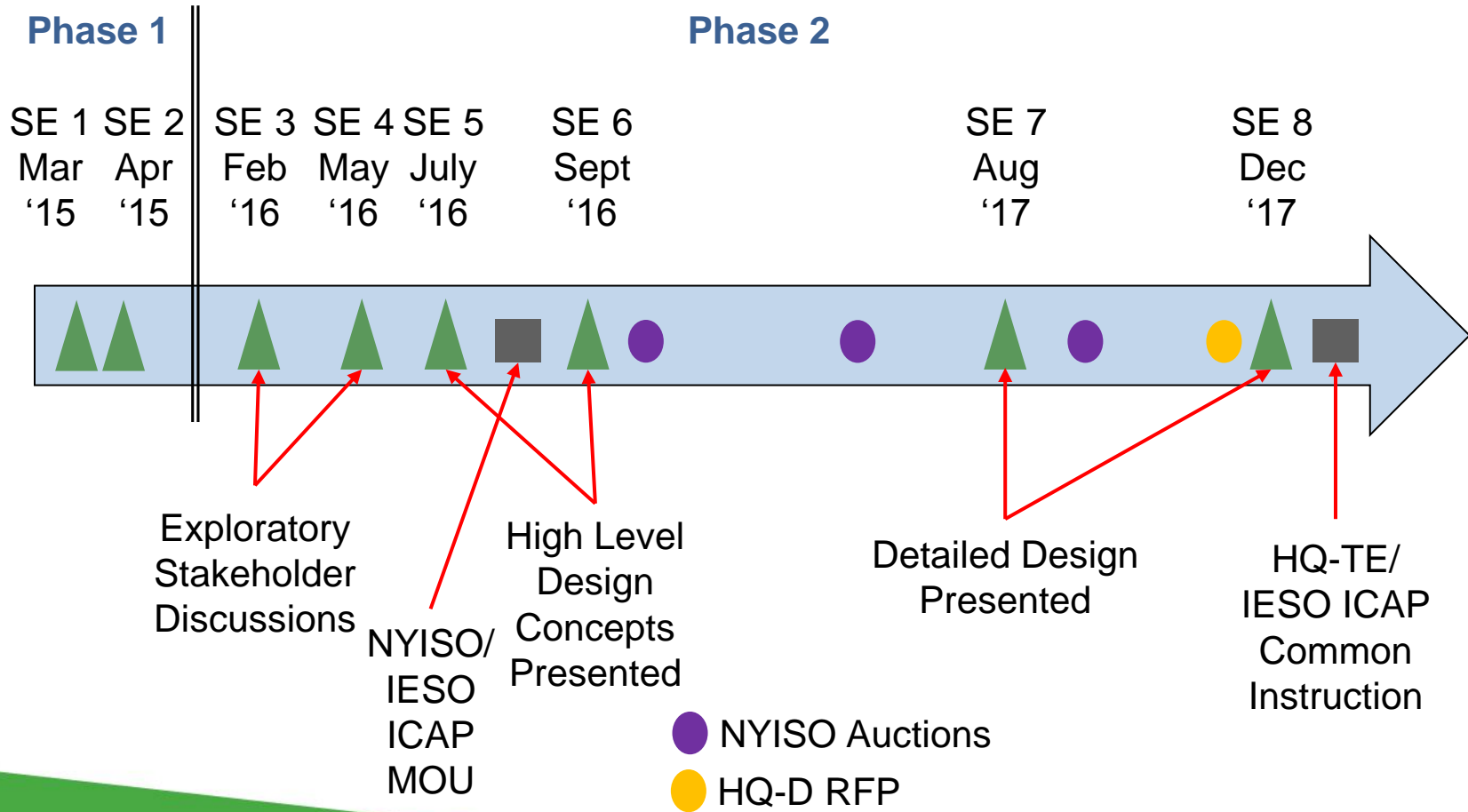
Improves the efficient utilisation of assets regionally

Capacity Exports and Market Renewal

Market Renewal consists of two distinct work streams:

Work Stream	Primary Objective	Initiatives
Energy	Reduce cost and gain efficiency of scheduling energy to meet provincial demand	<ul style="list-style-type: none">• Single Schedule Market• Day-Ahead Market• Enhanced Real-Time Unit Commitment
Capacity	Reduce cost of procuring incremental resources alongside contracted/regulated assets	<ul style="list-style-type: none">• Capacity Trade (imports and exports)• Incremental Capacity Auction

Capacity Exports to Date



Stakeholder Engagement

- Capacity exports were discussed at eight stakeholder engagement sessions
- Market design and the capacity export pilots have been discussed and stakeholder feedback has been received

Feedback Themes

- General support for capacity exports
- All forms of generation, regardless of contract/regulatory environment, should be eligible to export their capacity
- NYISO and HQ were initially the preferred markets. However, other markets should be facilitated as soon as possible
- Alignment of IESO and external jurisdiction rules and processes must be ensured
- Capacity export processes need to be as transparent as possible and aligned with Market Renewal

Feedback Themes

- Unit planned outage/local transmission outages should not influence approval as risk of non-delivery is on the MP
- Called capacity exports should receive the same treatment as other energy exports with regards to CMSC if schedule is changed to manage a limit
- The review of multi-year and forward commitments should be applied in the near term rather than during the implementation phase of Market Renewal. The limitation of one year for the commitment period will most likely prohibit participation in other markets except for NY
- Full responses to the feedback received can be found on the Stakeholder Engagement web page

Exporting Capacity: Key Concepts

Exporters remain Ontario market participants

The same capacity can only be committed to one jurisdiction at a time

When in an adequacy shortage, the buying jurisdiction has first call on the resource's energy

Exporting Capacity: Key Concepts

Capacity backed energy must be backed by operating capacity

No frequent or routine curtailment of capacity backed energy delivery due to transmission constraints

Called energy exports can't be curtailed to avoid voltage reductions or load shedding

Exporting Capacity: Key Concepts

Called energy exports can be curtailed to:

- prevent violation of a voltage, stability or thermal transmission limit
- if the resource is unavailable during an adequacy shortfall
- to prevent a threat to the safety of any person, damage to equipment, the environment or the violation of any applicable law
- if there is a market suspension such that the transaction can't be scheduled
- if the resource is under contract and is needed to provide Blackstart capability for Ontario
- if there is congestion on the interface caused by economic scheduling

High Level Capacity Export Processes

MP submits Capacity Export Request



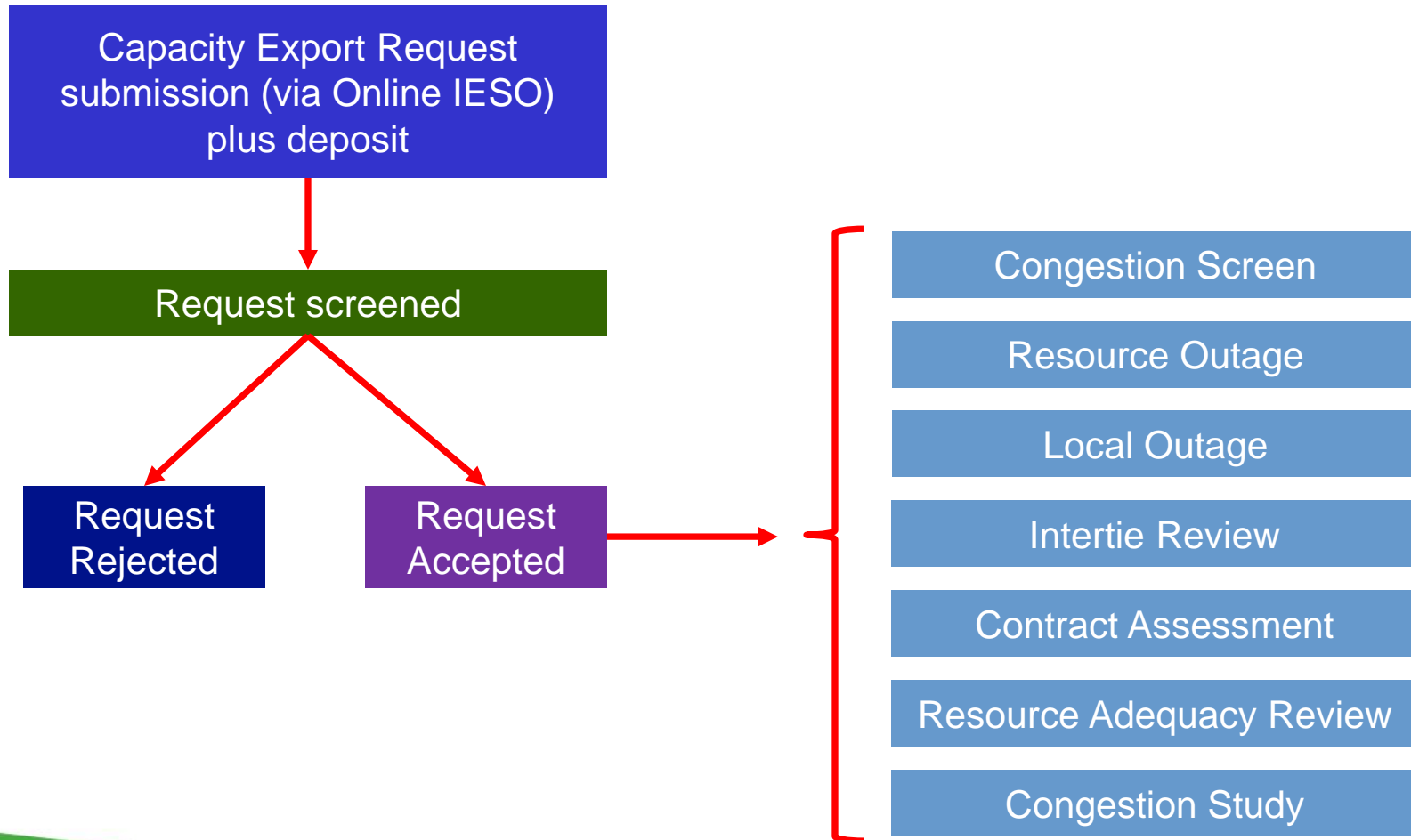
IESO Review



MP Submits Commitment Info

(if successful in external opportunity)

IESO Capacity Export Review Process



Market Rules and Manuals

- Market Rules will be proposed to implement design features not yet in place and to make explicit existing authorities
- Multiple Market Manuals will be updated to provide detailed information on participant and IESO processes related to capacity exports

Next Steps

- March SE session will include a high level summary of expected market rule and market manual changes
- Market rule amendment process (as early as Apr-June pending completion of stakeholdering):
 - April 17th TP: Vote to post amendment proposal for broader stakeholder comment
 - May 22nd TP: Vote to recommend for IESO Board approval
 - June 13th IESO Board: IESO Board approval

Appendix: Capacity Export Processes

Capacity Export Request Submission

- MPs will submit both auction and external capacity contract–related export requests

Via Online IESO

- Resource that will be exported
- Quantity of capacity
- Destination jurisdiction and counterparty
- Commitment period
- Closing date (for contracts)
- Whether the MP is willing to accept a partial approval

Direct Submission

- Processing cost recovery deposit

Resource to be Exported

- The total installed capacity that the MP wants to export by resource
 - Request conforms to how the resource is registered
 - That is, this can be an individual generator or an aggregate of two or more generators if they are registered as a single resource with the IESO

Destination and Counterparty

- To which jurisdiction is the capacity to be committed?
- Who is the buyer?
 - If an auction, the counterparty is the ISO running the auction
 - If a contract, the counterparty is the buyer, such as a Load Serving Entity
- In all cases, the energy associated with the capacity export can only be required to flow (i.e., 'called') by the responsible external system operator due to a shortfall in Operating Reserve or Energy
 - Request will be denied if counterparty does not have the ability/willingness to comply with this requirement

Commitment Period

- Commitment Period
 - Start and end date of the period during which the capacity will be unavailable to Ontario (i.e., committed to the other jurisdiction)
 - Can not start more than six months from the date of request submission
 - Can be for as little as one month
 - Cannot exceed one year

Willingness to Accept a Partial Approval

- IESO may determine that the request can only be approved for fewer MW or for fewer months than submitted
- The MP can indicate if they would want to accept a partial approval
 - If not, the request will be approved in full or not at all

Cost-Recovery Deposit

- Reviewing capacity export requests can involve significant effort
- Like a System Impact Assessment, it is appropriate that costs be recovered from the requestor
 - A cost-recovery deposit will be required
 - Funds will be returned from the deposit or additional funds requested to settle actual costs incurred

IESO Reviews

Congestion Screen	Is the resource in an historically congested area?
Unit Planned Outage	Can the resource provide the capacity?
Local Transmission Outage	Can the resource provide the capacity?
Intertie Capability Check	Can the interties transmit the sum of all capacity exports?
Contract Review	Any contract related issues?
Resource Adequacy Assessment	Can adequacy be maintained on a planning basis?
Congestion Study	What is the projected congestion on the path to the border?

Congestion Screen

- Congestion increases costs to the market
 - These costs are paid by all consumers through CMSC uplift
- An initial congestion screen will be conducted to determine if the resource is in an historically congested area
 - If so, the request will be denied

Unit Planned Outage/Local Tx Outage

- IESO will check
 - If planned outages exist for the resource
 - If local transmission outages would restrict the resource from the broader grid. E.g.,
 - Switches
 - Radial line
 - Step-up transformer
 - Voltage control device
- If any such outages exist for more than a short period during the proposed commitment period, the request will be denied or only partially approved

Intertie Capability Test

- The IESO must be able to transmit the sum of all capacity export commitments simultaneously to buying markets
- Need to ensure that the total MW committed externally do not exceed the reasonably projected ability of the system to transfer the associated energy to the buyer's jurisdiction when required
- If so, export requests may be denied or only partially approved

IESO Contract Review

- If the requested resource is under an IESO contract it will be determined if there are:
 - Any contract-related issues that would preclude participation
 - Other issues which need discussion/resolution
- All such discussions will be with the resource's Contract Manager

Resource Adequacy Assessment

- This review will determine if resource adequacy planning requirements can be expected to be satisfied without the subject capacity over the proposed commitment period
- Will be done using the 18-Month Outlook methodology
- If multiple submissions come in for the same capacity opportunity
 - Resource adequacy will be assessed using the lesser of
 - the total amount of capacity that MPs want to export; and
 - the maximum amount of capacity that the other jurisdiction will allow to be exported to them
 - Approvals will be based on date/time stamp order

Reserve Above Requirement

- The 'Reserve Above Requirement' (RAR) will be used to determine if planned adequacy is expected to be sufficient
- RAR is the difference between available resources and required resources
 - Required resources are expected demand plus a reserve amount

Resource Adequacy Assessment

- The projected supply in the evaluation will be reduced by any already approved capacity export requests that are for the same period
- Planned outages will not be modified to influence approval (i.e., by affecting the supply/demand balance)
 - Planned outages will not be re-scheduled by the IESO
 - MPs can't use replacement energy offers to support an outage so as to modify overall supply

Resource Scenarios

- When projecting the RAR, the 18 Month Outlook has two resource scenarios (firm and planned) and two weather scenarios (normal and extreme)
 - The Firm scenario includes all existing resources, except merchant
- IESO will use the firm resources/extreme weather scenario as the basis for the analysis

Congestion Study

- A study to determine the projected degree of congestion between the resource and the external jurisdiction
- It will involve two parts:
 - Power System Analysis to identify possible congestion
 - Production System Study to further analyze any identified congestion
- If congestion above a threshold is projected to exist on the path from the resource to the external jurisdiction, the capacity export request will be reduced or denied

Approval/Denial of a Capacity Export Request

Fully Approved

Request passes all reviews with no reduction required in the MW or commitment period

Partially Approved

MP accepts partial approval and is only approved for a reduced quantity of MW and/or commitment period

Denied

Request is denied if any of the reviews are not passed and/or it partially passes but MP does not accept partial approval

Submitting Commitment Information

- If the MP is successful in securing an external capacity commitment based on an approved capacity export request, they will submit information to the IESO so that the commitment can be recorded and administered
- Using Online IESO, MPs will submit commitment information:
 - Within three business days following the result publication date of an annual, NYISO six month Strip or Monthly auction;
 - Within three business days following the entered Closing Date of a capacity contract; or
 - By noon the day after NYISO Spot auction results are posted

Capacity Calls

- If an external jurisdiction is experiencing or anticipates experiencing an operating reserve or energy shortfall, it can require Ontario market participants that committed capacity to their jurisdiction to export energy to that jurisdiction for a specific period of time
 - This is referred to as ‘calling’ the energy

Called Energy

When?

From day ahead to 15 minutes before the mandatory window

What do
MPs do?

- Submit export
 - Bid at MMCP
 - For the hours called
 - Same MW as called
 - Special e-tag features
- Adjust OR offer (if applicable)
- Call IESO Control Room

Called Energy

What will the IESO do?

- If Ontario is not in shortfall
 - Export will be served economically as an export bid at MMCP unless a system issue requires a curtailment
- If Ontario is in shortfall
 - Will match export to the associated backing generator's schedule or output
 - If the backing generator supports the export, the export will not be cut for Ontario adequacy

Settlements – CMSC

- Called Capacity Exports will be ineligible for CMSC because bids submitted for called capacity exports are not reflective of participant costs
 - The form and content (including bid price) are proscribed to ensure fulfilment of a scheduling obligation with an external jurisdiction. As such, they are not aligned with the intent of CMSC
- Although all exports are ineligible for CMSC if they are constrained off in the last pre-dispatch run, Called Capacity Exports are also ineligible if they are adjusted by the IESO to match the output of the backing generator or to manage a transmission limit

Generator Guarantees

- Day-ahead and real-time guarantee programs were instituted to better incent generators with particular physical characteristics to be available to provide energy in real-time to support Ontario reliability
- There are times when a called resource can be reasonably assumed to have offered into the market in order to fulfill a requirement to the buying jurisdiction

Generator Guarantees

Capacity Called?	Eligibility for Guarantee	Why?
Not called	Eligible	Committed for Ontario's projected needs
Called after it was committed for a generator guarantee	Eligible unless Ontario becomes inadequate and export is allowed to flow due to backing generator schedule	<ol style="list-style-type: none"> 1) Was committed based on Ontario's projected needs 2) Export would normally have been constrained off. Therefore generator is no longer producing for Ontario need
Called before it was committed for a generator guarantee	Not eligible	Generator can be assumed to have offered to support the called export