

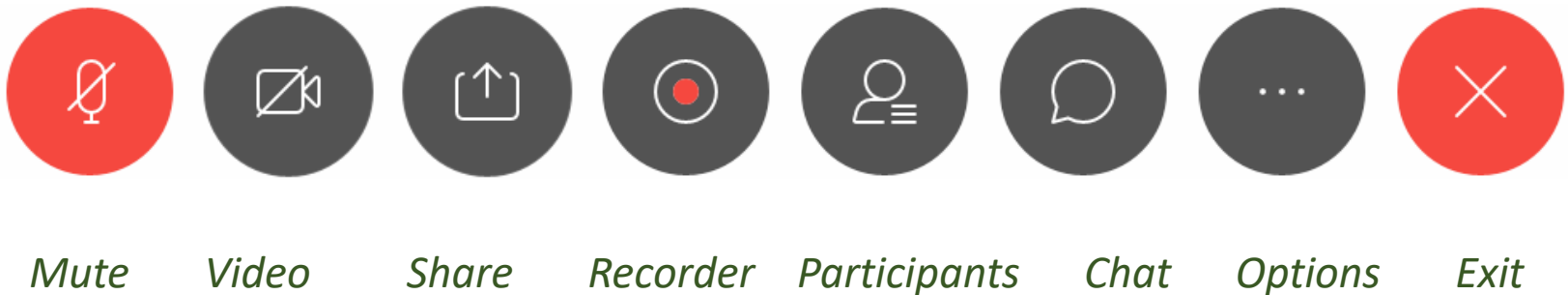
Distributed Energy Resources (DER) Connections Review

EB-2019-0207
Working Group

December 8, 2020

Introduction

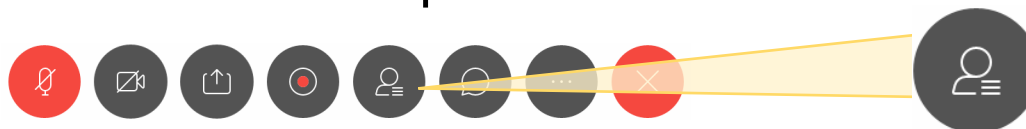
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Introduction

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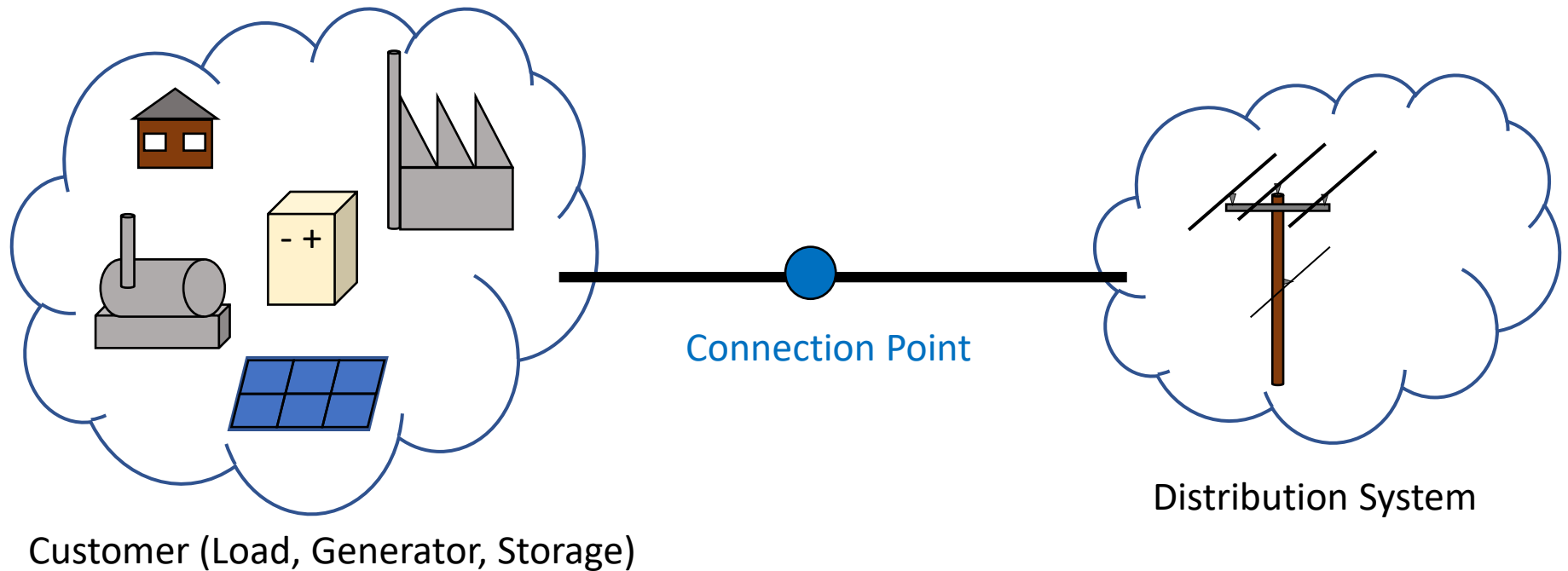


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- Please remember to identify yourself and organization when speaking

Scope Recap



- Working group to focus on the connection point of a generation or energy storage DER to a distribution system.

Proposed Agenda

New item: Tranche 1 Recommendations Review

2. Tranche 2: Priorities Review (Roadmap)
3. Tranche 2: Proposed Recommendations
4. Tranche 3:
5. Next steps and Action Items

Any new agenda items for today?

Tranche 1 Recommendations

The OEB has issued two letters providing guidance to distributors to support the efficient and timely connection of customers with Distributed Energy Resources (DER) projects. The letters reflect recommendations and advice from the DER Connections Review Working Group.

- One of the letters provides clarity on the **information that should be exchanged between DER proponents and distributors at the preliminary consultation stage of a DER connection project**. This information will assist proponents in determining if it is feasible to proceed to the connection impact assessment stage of their project.
- The second letter provides information for distributors to aid discussions with prospective DER proponents in relation to a **sample protection philosophy for use with connection projects intended for self-supply that use non-exporting, inverter-based technologies**.

Recommendation to ESA

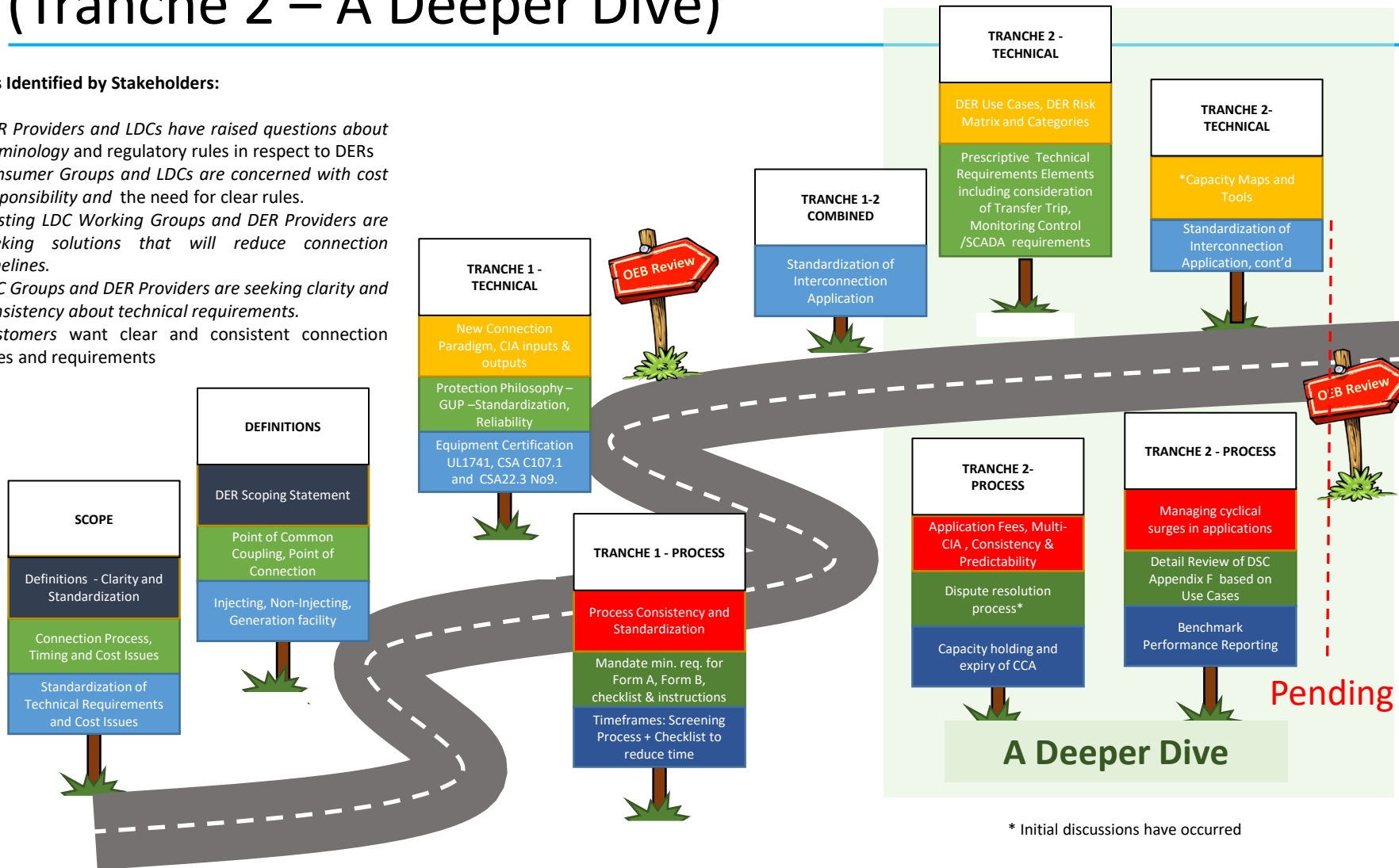
- ESA will accept inverters certified to UL standard, UL 1741 SA (2016 or any subsequent revisions) if a customer installs grid support inverters, as required by the Electrical Distributor. This permission will be effective October 1, 2020 and will be reviewed by ESA when a revised CSA standard for inverters, C22.2 No.107.1, is published.
 - ESA issued Bulletin to all Utilities
 - ESA informed all ESA Inspectors

Roadmap

DER Connections Review Strategic Plan Roadmap (Tranche 2 – A Deeper Dive)

Issues Identified by Stakeholders:

- ✓ DER Providers and LDCs have raised questions about terminology and regulatory rules in respect to DERs
- ✓ Consumer Groups and LDCs are concerned with cost responsibility and the need for clear rules.
- ✓ Existing LDC Working Groups and DER Providers are seeking solutions that will reduce connection timelines.
- ✓ LDC Groups and DER Providers are seeking clarity and consistency about technical requirements.
- ✓ Customers want clear and consistent connection rules and requirements



Standardization and Timing Improvements

Focus areas for process optimization

Subgroup

Process

Process

Process

Technical

Process/Technical

Technical

Technical

Technical

Process

Process/Technical

Process

Process

Process

Process Front End

- Remove exemption for Load Displacement Generation
- Screening Process / Application completeness check
- Master Study agreements
- Risk Framework
- Standardization of Connection Forms
- Feeder Tools

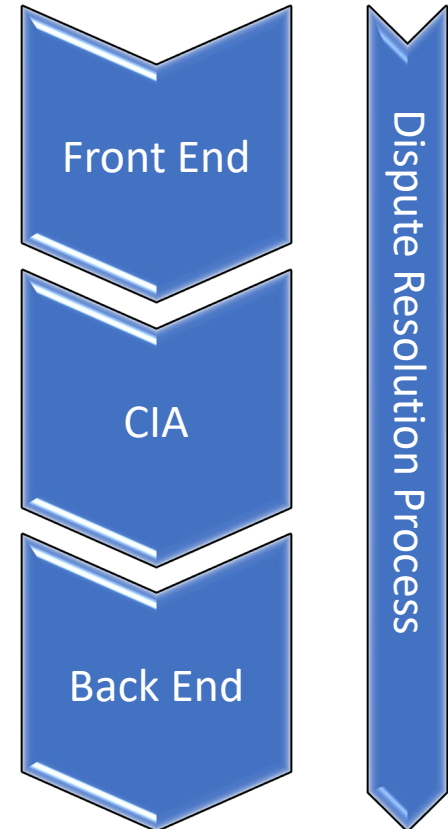
CIA Process

- Protection Philosophy
- Technical Requirements
- Concurrent processing for Dual and Multi-CIA
- Sample SLDs

Process Back End

- Capacity Allocation Term Length
- Connection Cost Agreements and Build Flowcharts

Dispute Resolution Process



Process Front End

- Process* Remove exemption for Load Displacement Generation
- Process* Screening Process / Application Completeness Check
- Process* Master Study Agreements
- Technical* Risk Framework
- Technical* Standardization of Connection Forms
- Technical* Feeder Tools

Non-Exporting Screen DSC 6.2.1 – LDG

(Process Subgroup)

The Working Group sees value in completing a Connection Impact Assessment for Load Displacement Generation (LDG) facility due to short circuit implications. Further screens and simplified assessment process can be tailored via the standardized CIA Form.

Recommendations draft

- The Working Group recommends removing the reference to Load Displacement Generation Facilities in section 6.2.1 of the DSC.
- In addition, the applicability of all requirements in Section 6.2 of the DSC to LDGs should be reviewed, as LDGs may need to be treated differently compared to embedded facilities in certain respects.
- LDCs may still adjust the level of scrutiny in the CIA based on the individual project.
- The Working Group recommends further improvement and clarity be provided in the definitions for LDG and Emergency Backup Generation (EBG) facilities.

New / Revised Definitions (TBD)

(Process Subgroup)

The Working Group members agreed that the current Distribution System Code definitions for Load Displacement Generation (LDG) and Emergency Backup Generation (EBG) Facilities lack clarity and that EBG should be treated differently from a LDG project because an EBG is designed to only operate when the grid supply is not available. However, distributors still need to be informed of the connection of EBGs within a load customer's facility and an EBG must still meet certain design requirements to avoid paralleling with grid. It is recommended that new definitions for Load Displacement Generation Facility and Emergency Backup Generation Facility be adopted for the connection process as the current definitions provided in the DSC lack clarity.

Load Displacement Generation Facility

Load displacement generation facility is the term used to describe a generation facility connected to the customer side of the point of common coupling (PCC) that is owned by an electricity customer and is used to supply part or all of the customer's electricity needs.

New / Revised Definitions (TBD)

(Process Subgroup)

Emergency Backup Generation Facility

An emergency backup generation (EBG) facility is a standby power system that is installed on a customer site to **provide electrical power** if the primary or grid power has been interrupted. It is a generation facility that has a transfer switch that isolates it from a distribution system.

The EBG facility shall meet the following requirements:

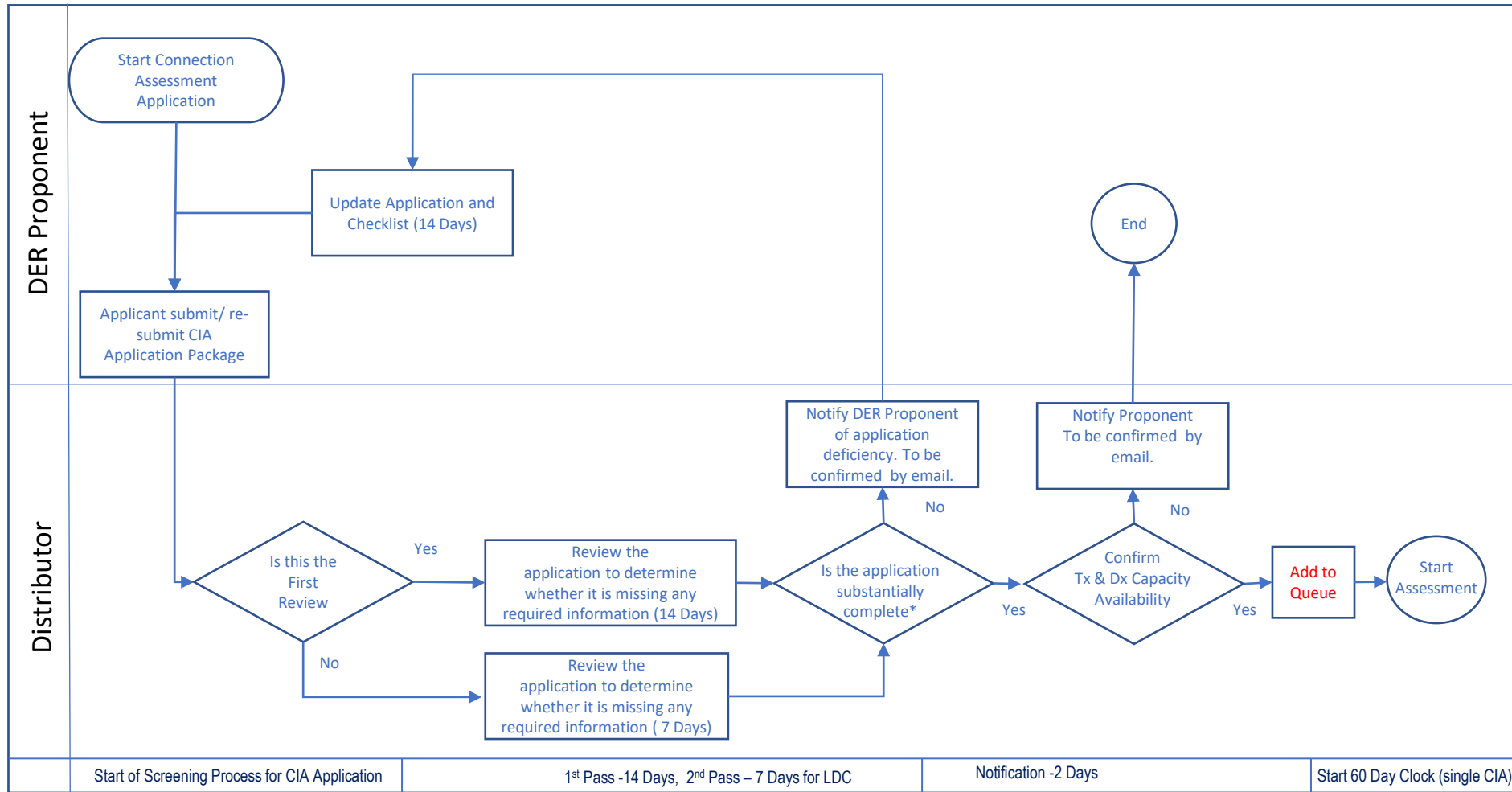
1. The system shall be used and operated only for the provision of electrical power during power outages or involuntary power reductions or for testing or performing maintenance on the system in accordance with subsection
2. For the purposes of testing or performing maintenance the system shall be used and operated for the purpose of testing or performing maintenance for a maximum of 60 hours in any 12-month period.
3. For the purposes of testing or performing maintenance the system shall be used and operated for the purpose of testing or performing maintenance only between the hours of 7 a.m. and 7 p.m.
4. If more the EBG facility include more than one generator unit as a part of the system, only one unit shall be used and operated at any time for the purpose of testing or performing maintenance.

Screening Process/Application Completeness Check (*Process Subgroup*)

- Tranche 1 Recommendation
 - OEB should ***make available*** a Screening Process and work toward mandating its use.
 - The group agreed that a substantially complete application is one that contains information sufficient to allow a distributor to carryout its connection assessment activities.
 - Process flow chart with responsibilities, steps, and timing
- Tranche 2 Recommendation
 - Implement the Process Flow Charts

Screening Process (Proposed Changes)

(Process Subgroup)



*An application for connection assessment is substantially complete

“when it contains information sufficient to allow a distributor to carry out its connection assessment activities.” O. Reg. 326/09, s. 2 (3)

Master Study Agreement between Hydro One and Local LDC *(Process Subgroup)*

A separate Study Agreement (SA) is prepared and executed for each Connection Impact Assessment (CIA) submitted by a local LDC to Hydro One. Securing the required signing authority within the LDC can possibly delay the CIA submission to the transmitter. The group discussed the possibility of a Master Study Agreement could be prepared and executed between Hydro One and an LDC outlining all the necessary terms and conditions and potentially assigning or delegating the signing authority required. The implementation of a master agreement is not feasible at this time.

Recommendation draft:

- There can be a time saving for an LDC to assign binding authority for study agreements within the organization to a lower-level manager if feasible.
- Allow electronic signatures for Study Agreements

Risk Framework *(Technical Subgroup)*

The risk framework has the potential to inform and influence the DER connection process. Whereas it is not expected to replace the connection impact assessment (CIA), the framework could result in

- Signaling early indications of cost and complexity of the connection,
- A new process gateway replacing DSC size categories, and/or
- Map to specific technical requirements.

Tranche 2 will include preparation of a risk template that can be customized by an LDC to meet the needs of their system.

Recommendation draft:

- Continuing the work from Tranche 2, validate the risk grouping categories for reasonableness. Explore if the risk groupings can be used as a replacement for the existing DSC size categories.

Standardization of Connection Forms (*Content*)

(*Technical Subgroup*)

Tranche 1 Recommendation:

OEB would mandate minimum requirements for the Preliminary Consultation Application, Preliminary Consultation Report, and the Connection Impact Assessment Application, and provide as guidance a template form that utilities may use¹. Utilities wishing to use an alternate form must file the alternative form with the OEB so that the OEB can, from time to time, monitor and evaluate its effectiveness for the goals of a consistent, transparent, and efficient process.

¹. Does not preclude the use of web-based versions of the PCA

Recommendation draft:

- Provide the templates and implement
 - Preliminary Consultation Application (definition consistency)
 - Preliminary Consultation Report (minor change)
 - Connection Impact Assessment Application (Form B) as developed by the HONI/LDC groups

Feeder tools *(Technical Subgroup)*

Many LDCs have feeders that are at capacity and can not accommodate the connection of a DER. These feeders would yield an automatic NO as a response to a preliminary consultation application because there is no capacity for additional projects. It would be beneficial for proponents to be able to quickly eliminate prospective projects that would be attached to those feeders. Most large customers know the designation of the feeder to which they are connected.

Recommendation draft:

- Require LDCs to publish a list of “restricted feeders” by name and feeder designation that they operated that are known to not have capacity to facilitate a DER connection. The list can be updated as necessary by system reconfiguration or expansions. An interactive resource like the HONI capacity tool should not be mandated at this time, however interactive resources should also not be precluded. The LDC should identify their restricted feeders even if the constraint is caused by an upstream asset that they do not own.

CIA Process

Technical Protection Philosophy

Technical Technical Requirements

Process Concurrent processing for Dual and Multi-CIA

Process Sample SLDs

Protection Philosophy *(Technical Subgroup)*

Tranche 1 Recommendation:

- Sample Protection Philosophy
 - The OEB to make the Sample Protection Philosophy available on the OEB website and for LDCs to provide as guidance to proponents.

Standardization of Technical Requirements

(Technical Subgroup)

HONI expects that in Jan/Feb 2021 it will release all or part of its revised Technical Interconnection Requirements (TIR) with new requirements on transfer trip, SCADA, and non-exporting generation. It is anticipated that the revised requirements will offer improved clarity as to when they are required. It is hoped that clarity around requirements will lead to enhanced consistency of application.

Recommendation draft:

- Replace DSC Appendix F.2 in favour of a reference to CSA C22.3 No 9 and a list of other useful resources
 - Including the HONI TIR is a guideline (or upper bound) for good utility practice for connection of DERs.
- Request LDCs to specify where they would differ from the HONI TIR for their system and build a repository of examples of projects and resulting technical requirements for their system.
- Require LDCs to provide specific, binding technical requirements for a project as an output of the CIA.

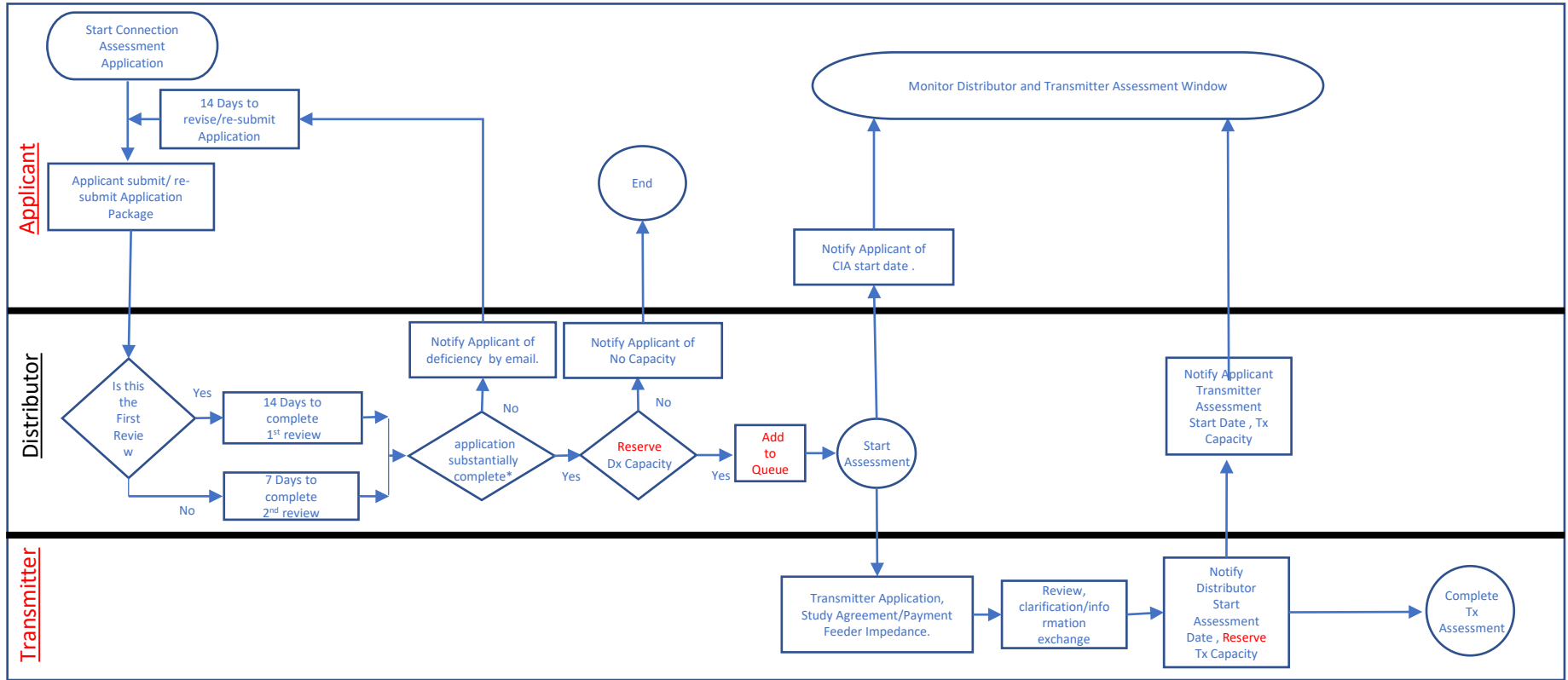
Concurrent CIAs Process: Distributor, Host Distributor and Transmitter (*Process Subgroup*)

CIA process timeframes have been extended when the Distributors have been processing multi-CIAs one after the other. There is an opportunity to optimize the CIA process cycle time if the CIAs are processed concurrently. It is important to convey that whenever possible the Distributor, Host Distributor and the Transmitter are to proceed with the CIA in a concurrent manner. This may result in significant process time savings.

Recommendation draft:

- Provide further clarity about the Distributor's, Host Distributor's and Transmitter's concurrent CIA processes
- Implement standardized Connection Assessment Application and CIA(also known as DTCA) – CCA/CCRA Processes' changes with recommendation to include the amended changes in the Distribution System Code (DSC)
- Proposing to continue working on standardized risk levels, use cases categories and time frames for connecting DERs to the distribution system and determine the need of potentially adopting the work to the process flows in the DSC as required.

DER Connection Assessment Application (Dual- CIAs) Flow Chart

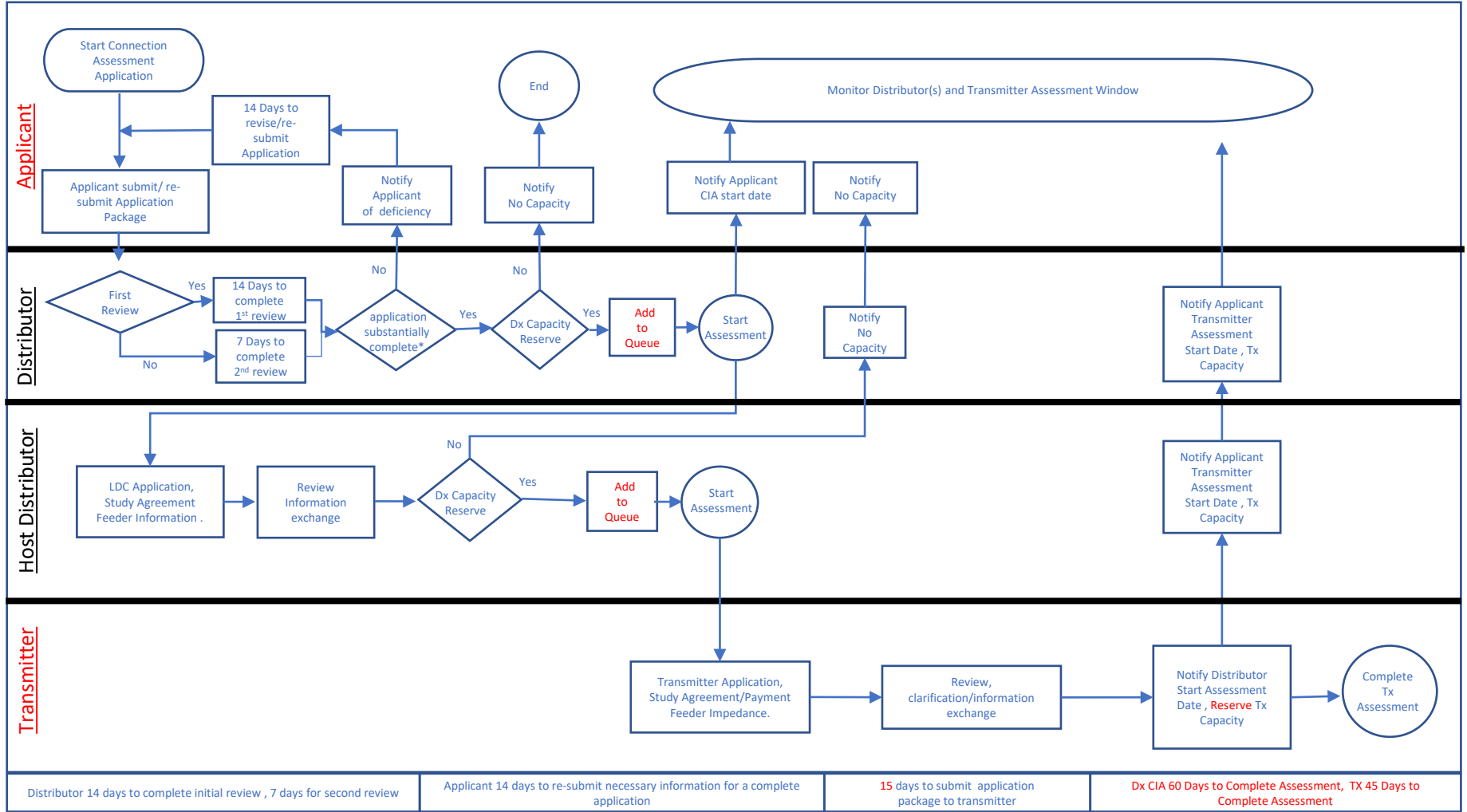


Distributor 14 days to complete initial review , 7 days for second review	Applicant 14 days to re-submit necessary information for a complete application	15 days to submit application package to transmitter	Dx CIA 60 Days to Complete Assessment, TX 45 Days to Complete Assessment
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2020/10/15 draft

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“when it contains information sufficient to allow a distributor to carry out its connection assessment activities.” O. Reg. 326/09, s. 2 (3)

DER Connection Assessment Application (Multi-CIAs) Flow Chart



Process Back End

Process Capacity Allocation Term Length

Process Connection Cost Agreements and Build Flowcharts

Capacity Allocation Term Length

(*Technical Subgroup*)

Queueing Process

Concerns expressed that the DSC does not prevent a proponent from delaying the proposed in-service date.

The current regulatory framework allows proponents to prolong the in-service date indefinitely, including that proponents could continue to hang onto their capacity allocation. The distributor has no real recourse to revoke capacity allocation.

Distributors normally approve change requests however this practice may prevent other proponents from connecting where feeder capacity is constrained (i.e. close to its limit)

In accordance with Section 6.2.15 of the DSC, the distributor is required to redo the CIA and if the results of the CIA differ “materially”, the capacity allocation can be voided. In many cases, the CIA results will not differ “materially” to remove the capacity allocation and a project is able to maintain its capacity allocation regardless if there are other projects in the queue. However, the changes can result in considerable project rework and the in-service date to be pushed forward significantly, which results in an ineffective process and commitment of resources.

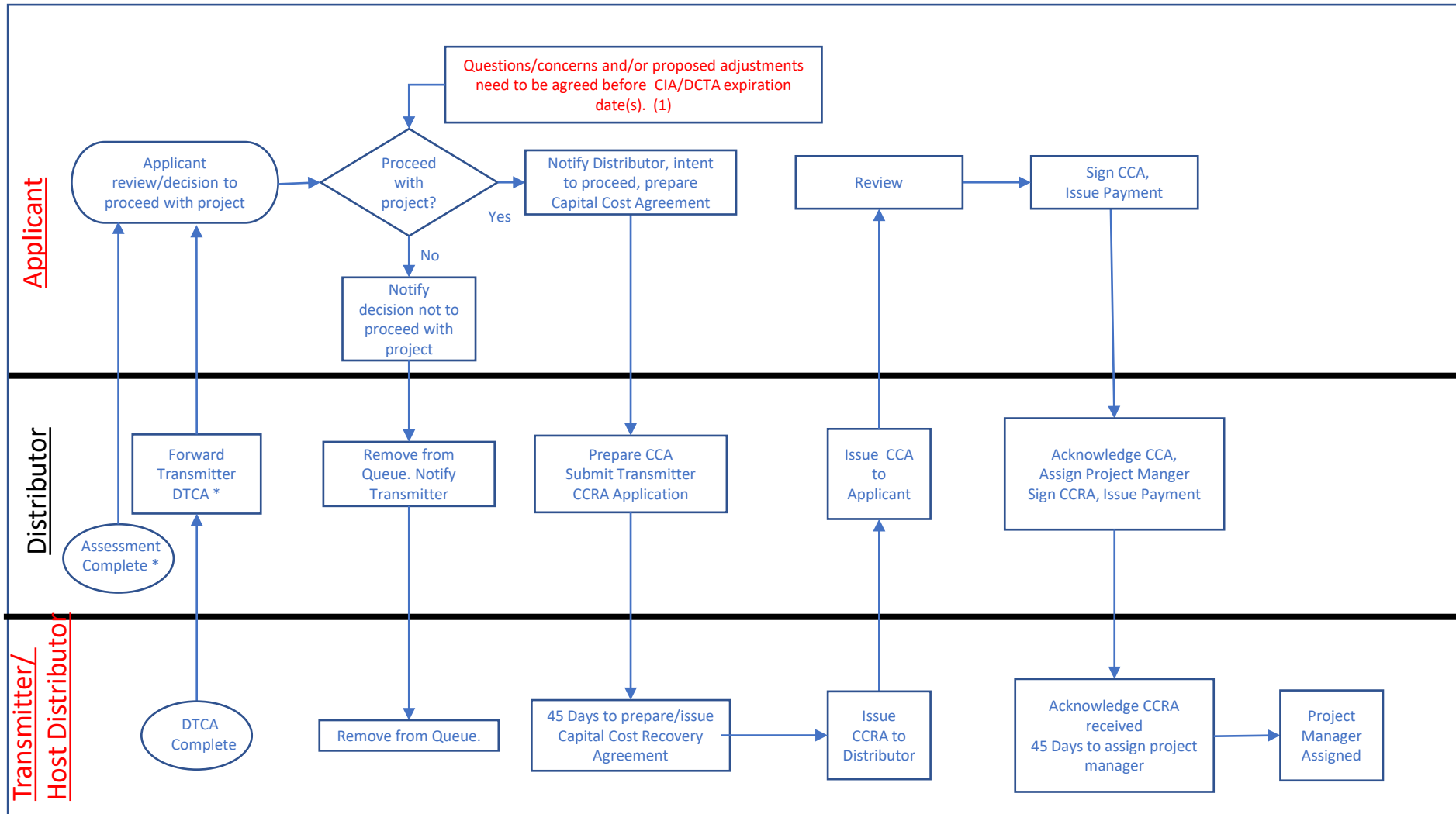
Recommendations:

- Develop additional code requirements to facilitate the understanding that the CIAs are valid for a specific time frame.
- At the discretion of the Distributor and or Transmitter an extension of the CIAs expiration date may be granted if deemed necessary

Connection Cost Agreements and Build Flowcharts

- Process* CCA Agreement (option to enter agreement after CIA Completion)
- Process* Clarity of Timeframes
- Process* Improved Estimates (*recommendation-continue into Tranche 3*)

DER CIA/DTCA – CCA/CCRA Flow Chart



CIA & DTCA both have expiration dates, typical 6 months

Transmitter 45 days to prepare/issue CCRA

HONI 45 days to assign PM from CCRA execution date

- Complete Connection Assessment & DTCA includes cost estimates for connection of DER
- (1) An extension may be granted by Distributor and/or Transmitter if deemed necessary

Construction Build Process

(Process Subgroup)

The current regulatory framework allows proponents to prolong the in-service date indefinitely, including that proponents could continue to hang onto their capacity allocation. The distributor has no real recourse to revoke capacity allocation.

Recommendation draft (TBD)

- Proponents should be encouraged to reach out and engage the LDCs regarding delays.
- A proponent should be able to delay their in-service date by more than 6 months only if there is a confirmation from the LDC
- Capacity should be made available not only on a first-come first-serve basis but should also be allocated to qualified proponents who are ready to connect within a reasonable time frame.
- Should a proponent rejoin the queue at a future date with the same project, it may be possible to mitigate some costs by leveraging the materials and assessment previously completed.
- Limit the ability of a project proponent to extend the agreed upon in-service date (at CCA execution), provided it is based on exceptional circumstances or project complexity, to one time only, unless mutually agreed with the LDC. If they can't connect within the extended time frame, they will be refunded their deposit (costs will be deducted), and their contract voided or their position in the queue should be reset at the discretion of the LDC. The group suggested that 6 months was a reasonable extension for smaller projects (e.g. under 2 MW).
- ***Additional consideration required: a reasonable timeframe for an extension for larger projects?***

Dispute Resolution Process

Process Group could not reach consensus

Dispute Resolution Process

(Process Subgroup)

Small group of proponents and LDCs agreed that the goals for a Dispute Resolution Process include:

- **Expediiousness:** Disputes are resolved as expeditiously as possible.
- **Efficiency:** The resources required to resolve disputes are not burdensome.
- **Fairness:** All parties are treated fairly in the process and the substantive outcome.
- **Comprehensiveness:** The full range of connection-related disputes can be addressed.
- **Transparency:** The procedural steps and the substantive criteria used to resolve disputes are clear.
- **Customer focus:** Customer needs are accommodated, noting that delay and the status quo are problematic for customers.

Utility and non-utility participants did not agree on the content of minimum standards for a dispute resolution process:

- Non-utility participants supported interconnection dispute resolution processes that involve a neutral third party to assist in resolving disputes, especially on technical issues.
- Utility participants did not support interconnection dispute resolution processes that involve a neutral third party

The participants did not reach consensus as between continuing with the status quo and recommending specific changes. Non-utility participants ask that the matter be dealt with in a future phase of this process that will involve the OEB deciding on the content of an interconnection dispute resolution process.

Tranche 3

Potential Tranche 3 Topics

Subgroup

Technical

Process

Process

Process

Process

Process/Technical

Process

Process/Technical

Process

- Further work on the Risk Framework
- Application Fees, Consistency & Predictability
- Benchmark Performance Reporting
- Improved Cost Estimates
- Consensus on Dispute Resolution
- Further CIA application improvements
 - Application instructions to help the applicant have a viable application
 - Application checklists for the applicant to ensure a complete application before submission
 - Examples of Single Line Diagrams

Action Items & Next Steps

- Action Items
- Next Steps
- Working Group meeting – January ?