

Distributed Energy Resources (DER) Connections Review

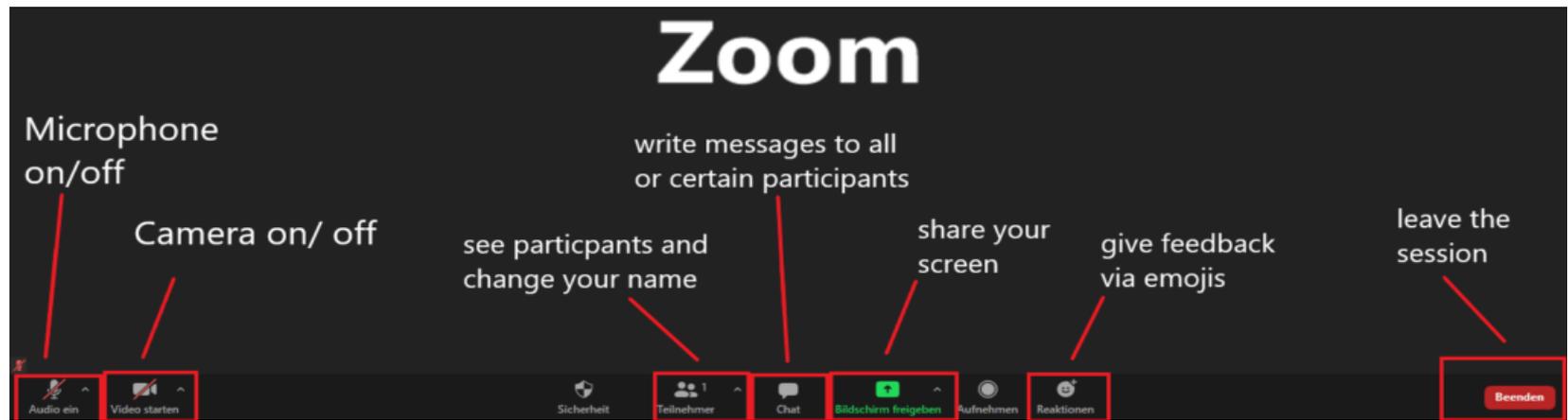
EB-2019-0207

Working Group Meeting #2

September 28, 2021

Introduction

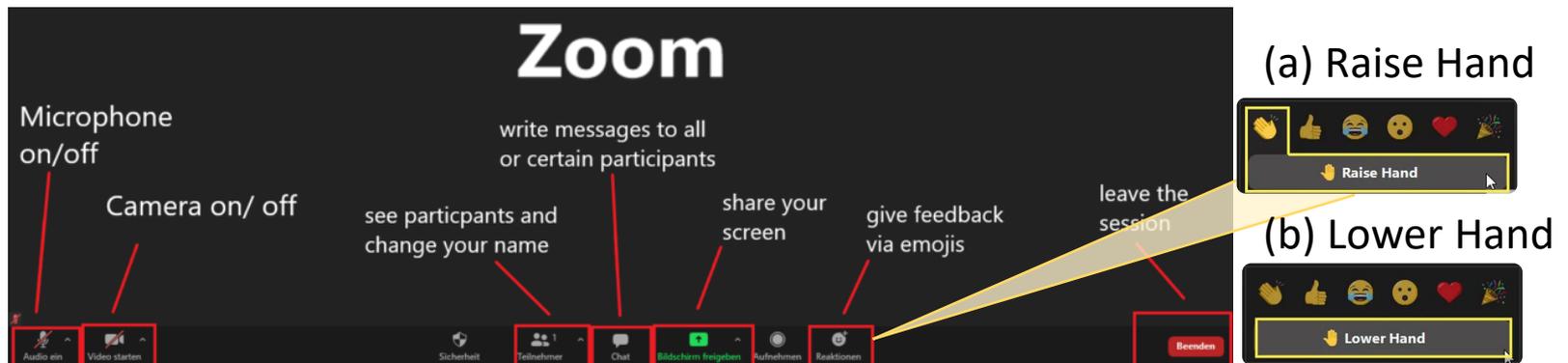
- Zoom Control bar (all options shown may not be available)



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- Please remember to identify yourself and organization when speaking.

Introduction

- Zoom has a “raise your hand” feature that notifies the host that you would like to speak
- Please use “raise your hand” to participate in the meeting.
 1. Click on the emoji icon on the Zoom control bar



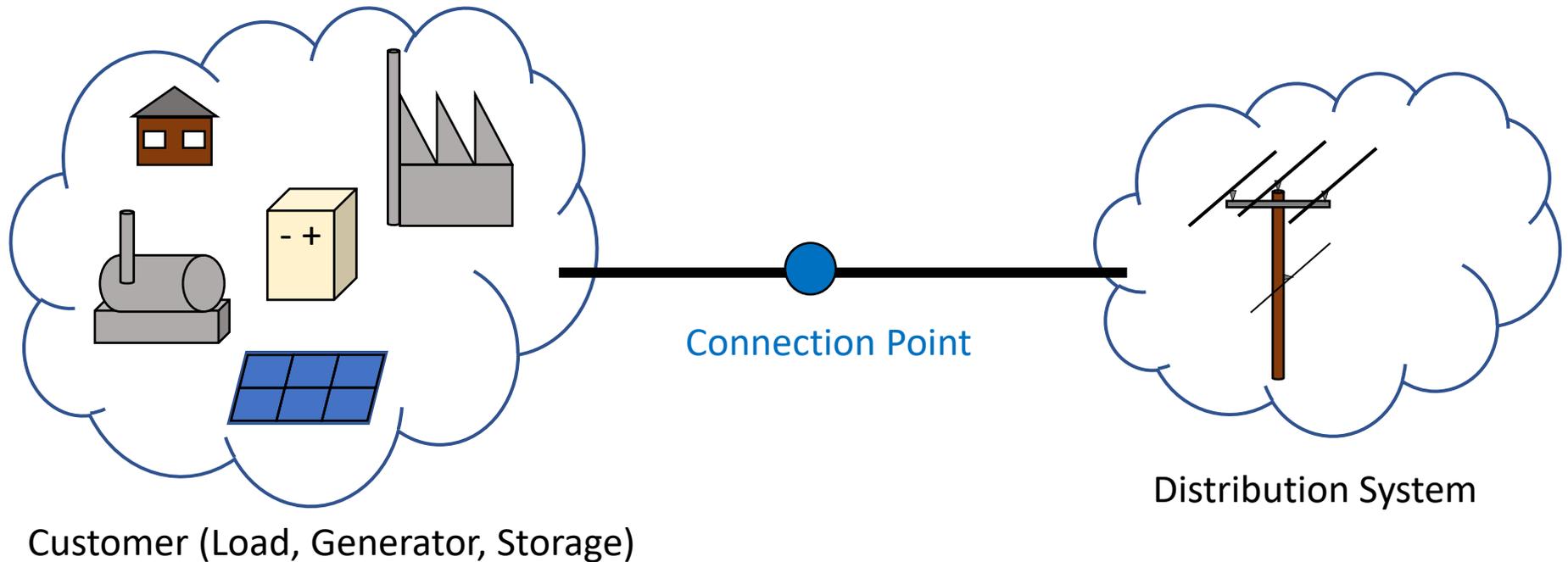
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Agenda

- | | Discussion Item(s) | |
|----|--|----------|
| 1. | Introduction | 9:30 am |
| 2. | Risk Framework Update <ul style="list-style-type: none">• Report from Risk Framework Small Group | 9:40 am |
| 3. | Tranche 3: Proposed Topics <ul style="list-style-type: none">• Top 3 Priorities for Tranche 3• Other Items for Discussion• Establish Tranche 3 Mandates for Technical and Process Subgroup | 9:50 am |
| 4. | Next Steps and Action Items | 11:30 am |

Any new agenda items for today?

Scope Recap



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

OEB Staff Update

- DSC Code Amendment Process in Progress
(No discussion until close of Code amendment process)
 - Issued Notice of Proposal
 - [EB-2019-0207](#)
 - [EB-2021-0117](#)
 - Comment Received
 - 18 Organizations
 - Recommendations for Tranche 3 topics

OEB Staff Update

- Next Steps – Non Code Related Items
 - *Risk Framework Recommendation -> Feeds into Tranche 3 Priorities*
 - *Continue 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*
 - Considering development of guidance based on Tranche 2 recommendations
 - i. Master Study Agreement between Hydro One and Local LDC
LDCs should move internally to delegate signing authority on study agreements, as deemed appropriate
 - ii. Standardization of Technical Requirements: HONI TIR identified as 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

WG update on Risk Framework

Update from WG

Risk Framework



Signaling early indications of cost and complexity of the connection.



Map to specific technical requirements.



Validate the risk grouping categories and risk factors.



Explore if the risk groupings can be used as a replacement for the existing DSC size categories.



Develop a new process gateway replacing DSC size categories

Current DSC DER Categorization

Generator Classification	Rating	# of CIA's
Micro	≤ 10 kW	None
Small	(a) ≤ 500 kW connected on distribution system voltage < 15 kV (b) ≤ 1 MW connected on distribution system voltage ≥ 15 kV	1
Mid-Sized	(a) ≤ 10 MW but > 500 kW connected on distribution system voltage < 15 kV (b) > 1 MW but ≤ 10 MW connected on distribution system voltage ≥ 15 kV	2 (+ host)
Large	> 10 MW	3 (+ host)

Risk Matrix

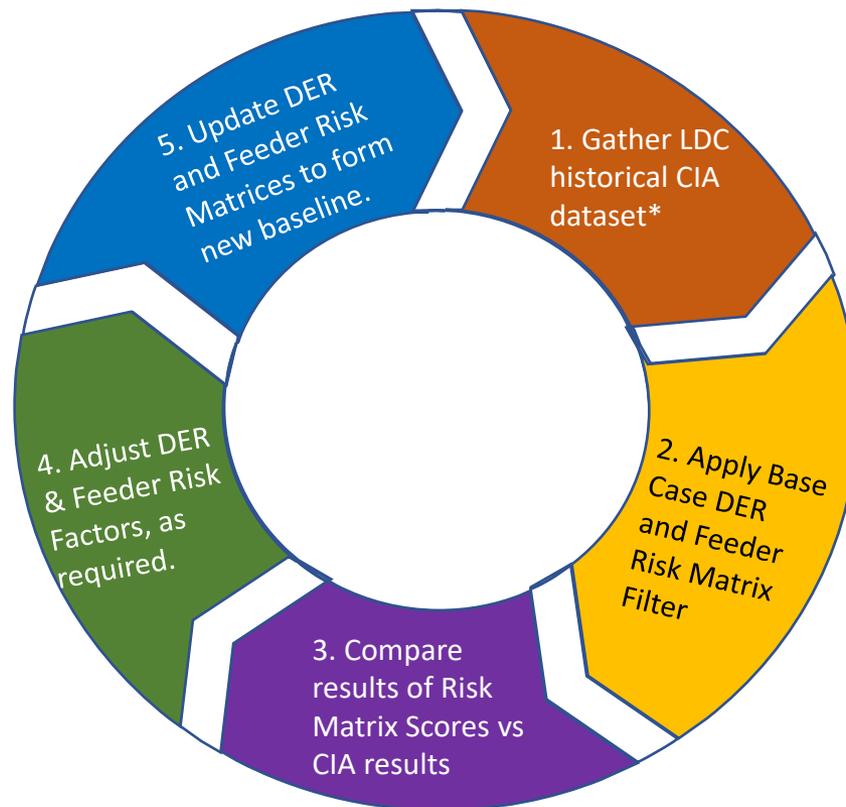
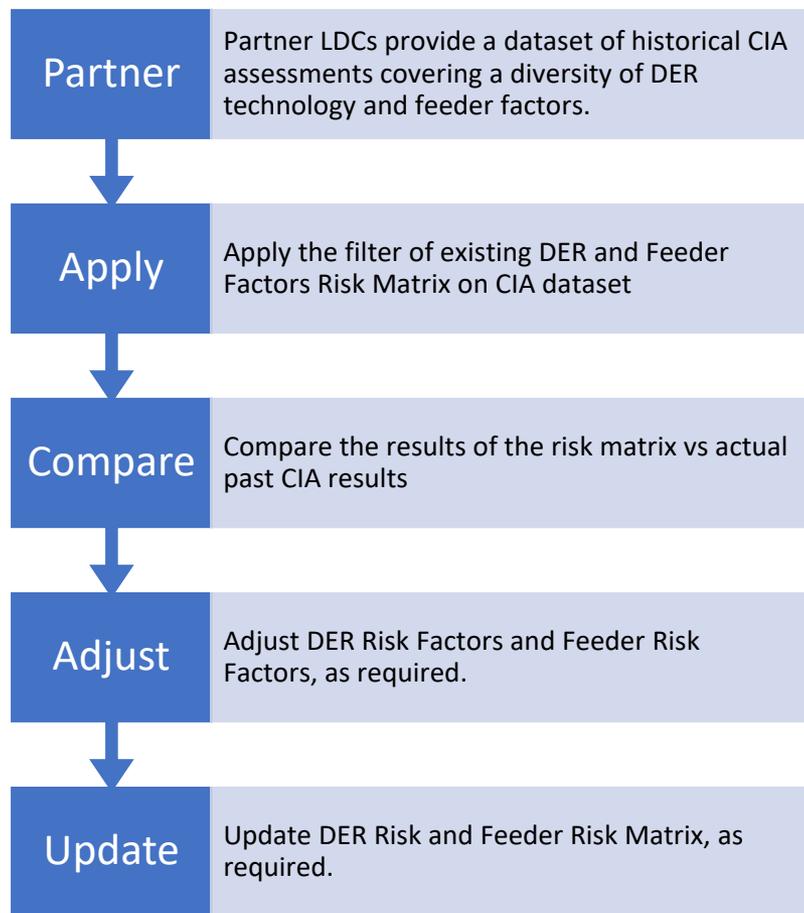
RISK SCORES, HEAT MAP & RISK-GROUPING											
DER Technology	DER Operational Profile										
	Exporting to Grid (injecting)							Non-exporting to Grid (non-injecting)			
	Renewable Generation (ZMC)	Net-Metering	Intermittent Surplus Supply	Merchant Generation	Cogeneration	Ancillary Services (IESO markets)	Non Wires Alternative (NWA T&D)	Load Displacement	Cogeneration	Peak Shaving	Emergency Backup Generation
Inverter- Solar PV	10.85	9.82	8.28			12.88		13.15			
Inverter - ES			8.28	12.62		12.88	11.88			6.52	
Inverter - Others (e.g. Microturbines)	10.85	9.82	8.28	12.62	16.95	12.88	11.88	13.15	16.95	6.52	
WTG - Type 1 Fixed Speed Squirrel Cage Induction Generator	13.18	12.15									
WTG - Type 2 Limited Variable Speed Wound Rotor Induction Generator	13.18	12.15									
WTG - Type 3 Variable Speed Doubly Fed Induction Generator	13.18	12.15									
WTG - Type 4 Variable Speed Full Conversion	10.85	9.82									
Synchronous Generator		13.12	11.58	15.92	20.25	16.18	15.18	16.45	20.25	9.82	9.55
Induction Generator		13.12	11.58	15.92		16.18	15.18	16.45		9.82	

Recommended Risk Grouping		
	From	To
DG-1	6.00	10.00
DG-2	10.00	14.00
DG-3	14.00	18.00
DG-4	18.00	21.00

Final Risk Matrix					
		DER Risk Group:			
		DG-1	DG-2	DG-3	DG-4
Feeder Risk Group:	FG-1	1	2	3	4
	FG-2	5	6	7	8
	FG-3	9	10	11	12
	FG-4	13	14	15	16

September 28, 2021

Risk Matrix Development Iterative Cycle



**Data should exhibit sufficient diversity of DER technology, DER operational profiles and Feeder Characteristics.*

*** The iterative cycle can be continued until results of Adjusted Risk Matrix and CIA results converge. We anticipate 2-3 iterative cycles should get us to a consensus Risk Matrix.*

Tranche 3 Priority Items

Tranche 3 Topics Discussion

Discussion: Potential Tranche 3 Topics

Subgroup

Technical

- Risk Framework Development (top priority)
- Electric Vehicles (EV) Connection (Bi-directional Chargers)
 - Logistics Plan: Combined SG meeting on EVs and then moving to Tech. SG or otherwise
 - *(EV rate class is out of scope)*
 - Finalize EV items as possible DER Use Case- for discussion (Kent)

Combined

Process ?

- Consistency & Predictability
 - Improved Cost Estimates
 - *Cost estimates from Hydro One (Class C +/- 50%)*
 - *Transparent' cost estimates, perhaps by 3rd parties?*
 - *Consistency of connection requirements across LDCs*
 - Application Fees
 - Should a fee be implemented to managing cyclical surges in applications

Process

- Benchmark Performance Reporting (Low priority)
 - *Oversight and reporting*

Combined

- Consensus on Dispute Resolution

- *Any other issues?*

Technical & Process SG

Focus Update

Mandate for Technical Subgroup

Review of Technical Requirements and related Cost Issues

Tranche 3 Technical Subgroup mandate focus

- Continue development of Risk Framework (Feeder Risk Factors, Feeder Risk Matrix, Data Verification)
- *Electric Vehicles (EV) Connections ?*

Mandate for Process Subgroup

Review of Connection Process and related cost issues

Tranche 3 Process Subgroup mandate focus

- Consistency & Predictability
 - Improved Cost Estimates
 - *Cost estimates from Hydro One (Class C +/- 50%)*
 - *Transparent' cost estimates, perhaps by 3rd parties?*
 - *Consistency of connection requirements across LDCs*
- Application Fees
 - Managing cyclical surges in applications
- Benchmark Performance Reporting
- Consensus on Dispute Resolution Process

EV Use Case

Update (Kent Elson)

EV Use Case

The potential capacity for bidirectional EV chargers to reduce peak demand from buildings and thus save on generation, transmission, and distribution costs is huge. When all cars are EVs their discharge capacity will be six times Ontario's peak electricity demand.

It is cheaper to install bi-directional charging now before millions of “dumb” and “one-directional” chargers are purchased.

Bi-directional chargers risk getting caught up in rules created with other technologies.

If bi-directional charges can only be exempt from the connection process with certain protective equipment being in place, it is best to know that ASAP so that manufacturers can adjust.

WG Report update

Update from WG



Next Steps

- Next Meeting – Week of October 25
- Action items
- Agenda items
 - OEB Staff update
 - SG Updates on Priority Items
 - Next Steps – date for next SG meetings



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Roadmap

DER Connections Review Strategic Roadmap (Tranche 3)

Working Group Deliverables:

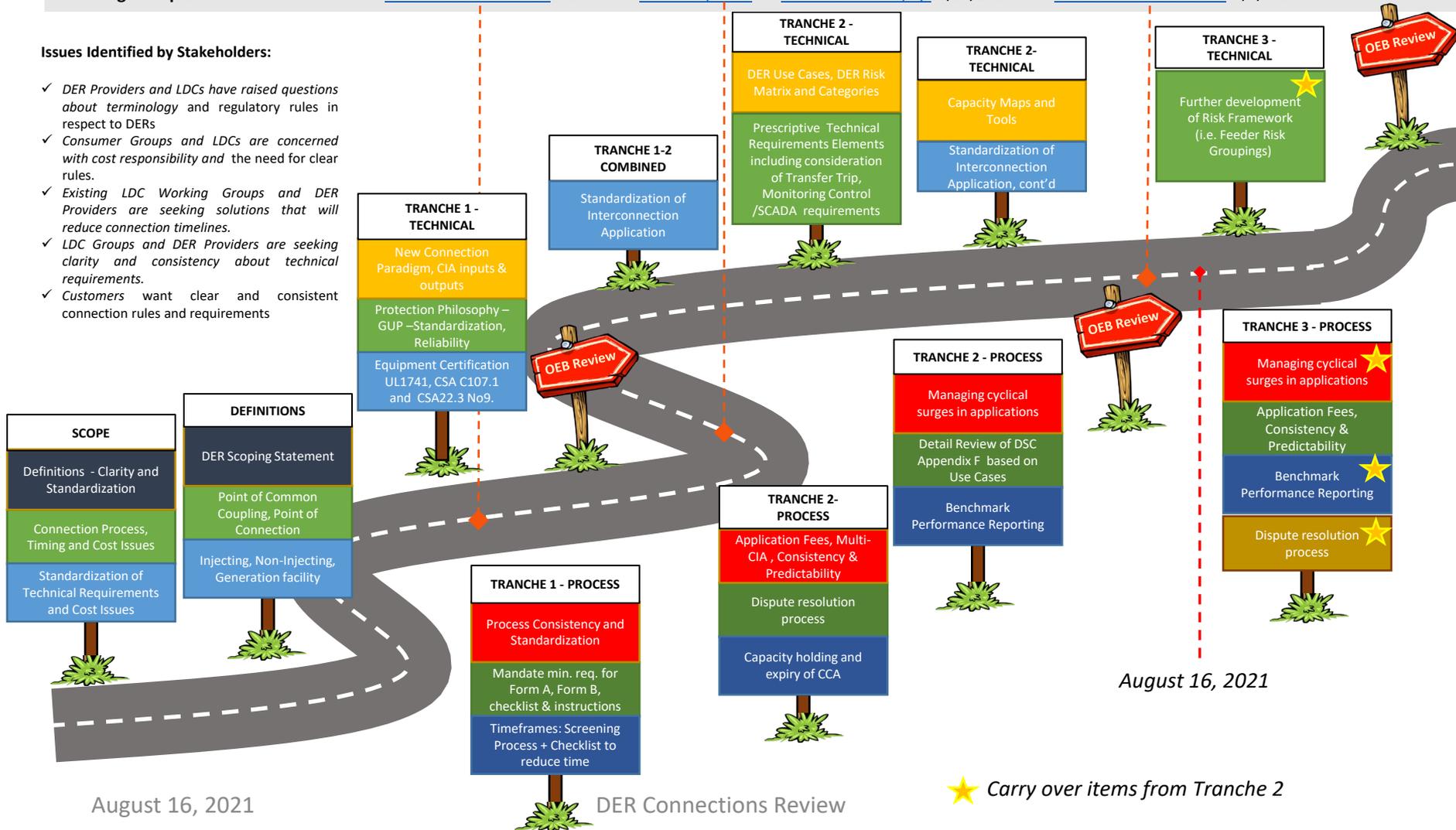
WG [Recommendation to ESA](#)

EB Letters [Form Templates](#) and [Protection Philosophy](#) 11/26/2020

[Notice to Amend the DSC](#) - 8/6/2021

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

Instrument

DSC Amendment

DSC Amendment

Guidance

Tranche 3

DSC Amendment

DSC Amendment

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

- ✓ 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

DSC Amendment

DSC Amendment

Guidance

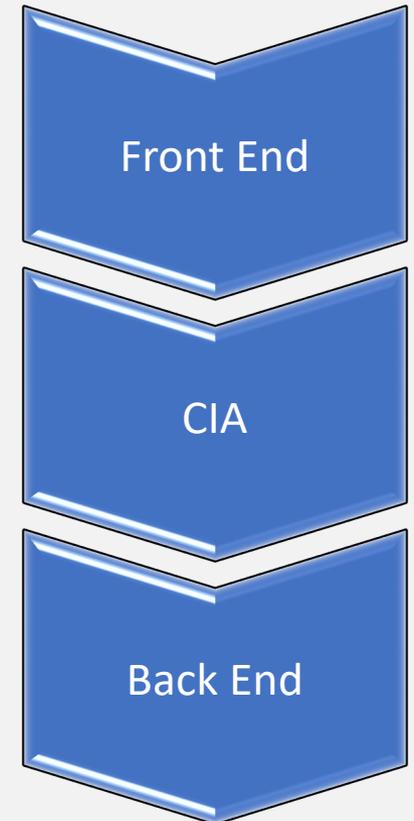
DSC Amendment

DSC Amendment

Tranche 3

New Connection Paradigm

Exporting & Non-exporting Connections



Legend

- ✓ WG Consensus Recommendation
- Item still under discussion/development

Issues Tracking Tool

Parking Lot List