Stakeholder Feedback and IESO Response

Distributed Energy Resources (DER) Market Vision and Design Project – June 22, 2022

Following the June 22, 2022 public webinar on the DER Market Vision and Design Project (MVDP), the Independent Electricity System Operator (IESO) received feedback from participants on the options to the Phase I Questions for the foundational DER model(s), and any key considerations for the IESO to take into account as options are assessed for the Phase 1 Questions.

The IESO received feedback from:

- Convergent Energy + Power
- Distributed Energy Resources Stakeholder Initiative (DERSI)
- Electricity Distributors Association (EDA)
- Energy Storage Canada (ESC)

The presentation materials and stakeholder feedback submissions have been posted on the DER Market Vision and Design Project webpage. Please reference the material for specific feedback as the below information provides excerpts and/or a summary only.

Notes on Feedback Summary

The IESO appreciates the feedback received from stakeholders. The IESO has provided a summary below, which outlines specific feedback or questions for which an IESO response was required at this time.

Phase I Questions

Three stakeholder feedback submissions included general comments on the Phase I questions, suggesting the options provide a very detailed approach to the work, and are appropriate and helpful in guiding development of the model. The feedback submission from EDA included a number of recommendations and considerations relative to each of the Phase I questions; the Convergent submission included a suggestion as well. These points are included in the following tables.

Phase I Questions: Participation and Aggregation

Question 1: What participation and aggregation models will be established for DERs? And why?

The EDA suggested that as DER participation and aggregation is reviewed and enhanced, the IESO should consider distributors' naturally positioned role to participate in all aspects of DER implementation as well as the existing infrastructure.

Feedback	**IESO Response**
EDA: • Dispatchability: If distributors can enable each resource DER(A) they are positioned well and closely to the customers to be able to aggregate either dispatchable or non-dispatchable resources. The dispatchable option provides flexibility to provide the needed capacity, while the future grid will also be benefited from non-dispatchable resources as long as LDCs are able to monitor, control, and settle DERs as per contracts between the Distribution System Operator (DSO) and DER(A). Distributors possess the local knowledge of each system to provide the expertise for each option based on customer mix, and availability. • Locational Requirements: To realize the full benefit of the market a combination of single and multi-nodal aggregation may yield benefits to the grid by providing flexibility as required throughout the system. LDCs acknowledge the single node option is simplistic and offers a manageable option while the multi-node requirement is explored further. • Aggregation Composition: We recommend a stepped approach to the aggregation composition for the foundational model and recommend aggregating homogenous resources based on distribution location as the contributor resources will be the same type and more simplistic profiles to model resources' impact on the bulk system. As profiles are developed within certain areas and processes are explored more thoroughly, we encourage expansive heterogeneous combinations to be implemented throughout the system. Heterogeneous combinations offer a mixture of dependability, with a mix of resources to rely on at the most optimal cost.	The IESO appreciates this feedback and will take it into consideration in the development of the final recommendations for the foundational models. The IESO is in agreement that a stepped approach for the design areas identified is an appropriate way forward.

Question 2: Which entity/entities represents the IESO market participant in the IESO-administered markets?

Feedback	IESO Response
EDA: • Owners, Aggregators, and Distributors: Distributors are optimally poised from an industry structure, regulatory, customer interface and oversight perspective in their distribution areas, and the total DSO model reduces the complexity of managing DERs. Distributors hold existing relationships with their customers in their regions and provide a natural fit for the point of contact and contracting to enable DER stacking value in both local and wholesale markets without risk of double counting. To do this successfully distributors will require visibility on the DER and their operations. Should there be successful movement for legislative changes to allow LDC participation in the markets, this would allow the natural progression of seamless operations in metering data and settlement verification.	The IESO appreciates this feedback. Distributor participation in wholesale markets and ancillary services will be subject to OEB interpretation of the legislation.

Question 3: Are maximum and minimum size thresholds needed for individual DERs or DER Aggregations (DERAs)?

Feedback	IESO Response
EDA: • Minimum Size / Maximum Size Thresholds: While distributors see the administrative and planning benefits of limiting the thresholds for participation in DERs and DER(A)s, we encourage the IESO take a stepped approach to its threshold determinations. The stepped approach should be rolled out by maintaining current minimum thresholds to ensure the ease of integration, and communication needs to be developed for customers of this plan and opportunity. No maximum size limitation will offer diversity of inclusion and better confidence in resources available. Distributors will have the resource knowledge to plan within their systems appropriately.	The IESO appreciates this feedback and will take it into consideration in the development of the final recommendations for the foundational models. The IESO is in agreement that a stepped approach for the design areas identified is an appropriate way forward.

Phase I Questions: Eligible Services

The EDA suggested the IESO take into its consideration a systematic and methodical approach to its project planning, noting that although these options are binary, they are interconnected, and one decision can impact the probability of choosing another and thus cannot be oversimplified.

Question 4: What products and services can DER(A)s provide?

Feedback	**IESO Response**
EDA: • Distributors currently do not see any strong limitations to any of the following Options: Capacity, Energy, Operating Reserve, Regulation Service, and Other Ancillary Services. DER(A) can provide for all products and services listed, albeit some safeguards may need to be built into licencing to ensure resource availability to support the grid.	The IESO appreciates this feedback and will take it into consideration in the development of the final recommendations for the foundational models.

Question 5: In what timeframes will DER(A)s be eligible to participate?

Feedback	**IESO Response**
EDA: • Distributors currently do not see any strong limitations to the timeframes that DER(A)s will be eligible to participate in Day-ahead Market, Pre-dispatch Unit Commitment Eligibility or Real Time Market. The ability to provide all services enables customer choice and increases flexibility available for meeting local or wholesale needs.	The IESO appreciates this feedback and will take it into consideration in the development of the final recommendations for the foundational models.

Question 6: What are appropriate visibility requirements for DER(A)s (i.e., telemetry)?

Feedback	IESO Response

EDA:
• The appropriate visibility requirements for DER(A) are:
  ○ Distributor level Resource Telemetry Points and Status: The need for individual resource telemetry points and statuses. Remote Monitoring and remote shutdown capability is required for the following situations: (1) Those connected in parallel equal to or greater than 100kW and closed transition (Load Displacement) and (2) Open transition and close transition projects that are equal or greater than 1MW. Distributors can provide an aggregated telemetry and status from the DER Owner/ Aggregator to the IESO. Individual resource telemetry is then not necessary.
  ○ Maximum and Minimum: All DER projects regardless of size will need to consider acceptable time latency; less latency is always the preferred approach.
  ○ Treatment of Variable Generation (VG): Requirements should remain consistent as the requirements currently in place. Technology exists to keep telemetry latency under one minute.
	The IESO appreciates this feedback and will take it into consideration in the development of the final recommendations for the foundational models.

Phase I Questions: IESO-Distributor Coordination

Question 7: What coordination protocol(s) will be used amongst the IESO-Distributors-Aggregators to enable reliable wholesale market participation?

Feedback	IESO Response
Convergent: • Suggestion to add as an additional sub-feature to define a process to ensure dual participation by DERs in multiple programs across the transmission and distribution systems. DERs represent existing infrastructure and supply solutions for both the IESO and distribution systems across Ontario, and to preserve the reliability those DERs offer the DER Market Participant Model should explicitly preserve dual-participation and establish a process by which this can be established on verified. EDA: • The IESO has noted that a few items are being examined as a part of the Transmission-Distribution Working Group (TDWG), and as major contributors in both projects it needs to be emphasized that the impact of this cross-sectional work on protocols and mechanisms between the TDWG and DER MVDP decisions will greatly impact the outcome of one another. The IESO should focus on leveraging LDCs' expertise compiled at the TDWG to discuss and provide advice on all items related to interoperability and coordination. It is imperative to the successful roll out of the DER MVDP that the coordination protocols be established by cross-section experts in the local markets and distribution service areas and be tested. Communication of overrides must be jointly reviewed and tested to ensure process effectiveness.	The IESO recognizes that DERs represents supply solutions for both the IESO and the local distribution system and as such, dual participation is being actively explored via the Transmission-Distribution Working Group (TDWG). The TDWG has committed to developing high-level transmission-distribution protocols by the end of Q1, 2023 (for implementation as part of the DER Market Design Project (MDP) by the summer of 2026). The IESO recognizes the interdependencies between both initiatives and therefore, staff members involved in the DER MVP decision making process are also actively involved in the TDWG decision making process and vice versa. The IESO also agrees that leveraging LDC expertise will be integral to the development of coordination protocols and that the eventual testing of the protocols will be beneficial prior to finalization in the Market Design Phase.

Phase I Questions: Metering and Settlement

The EDA noted that at each point of the cross-section distributors are naturally positioned to manage the metering and settlement of the DERs / DER(A), and suggested the IESO focus on leveraging LDCs' expertise.

Question 8: What revenue metering arrangements are appropriate for DER(A)s?

Feedback	**IESO Response**
EDA: • The Revenue Metering arrangements which are appropriate for DER(A) by distributors are aggregate metering constructs for the wholesale market. Distributors already have experience and expertise to provide aggregate telemetry and status from DER owners and aggregators to the IESO. • Individual metering directly to the IESO for settlement is not necessary and the existing rules are adequate to give valuation of services and leverage measurement and verification of DER(A) settlements. One area that could be considered for review is the size thresholds, flexibility and changes may be needed to enable the use of distributor owned resources and enable market participation at a lower cost.	The IESO appreciates this feedback and will take it into consideration in the development of the final recommendations for the foundational models.

Question 9: Will additional settlement arrangements need to be established for DER(A)s?

Feedback	**IESO Response**
EDA: • Currently there are no protocols to settle DER(A) with distributors and there would be a need for additional settlement considerations in the future planning of this project. DER(A) should be given compensation for satisfying the resource needs upstream through a cost sharing mechanism. This type of sharing ensures equity in stakeholder benefits from DERs and serves to compensate in the most valuable way. Similar benefits at the distribution system level are currently observed at the transmission level in various forms.	The IESO appreciates this feedback and will take it into consideration in the development of the final recommendations for the foundational models.

Phase I Questions: Key Considerations

Based on the criteria outlined in this presentation, are there any key considerations you would like the IESO to take into account as we assess options for the Phase I Questions?

All stakeholder submissions included key considerations to take into account as the options for Phase I Questions are assessed. These points are included in the table below.

Feedback	**IESO Response**
Convergent: • We are concerned the criteria IESO proposes to guide the development of a participant model (*June 22, 2022 DRMVP Design meeting materials slide 9*) does not properly capture all of the risks and benefits DERs provide the electric system in the near-term. Specifically, no identified criteria evaluate or capture the benefit of DER speed to market. There should be new criteria included with language something along the lines of *reduce time of attracting new resources* with the identified Benefit something along the lines of *Resource Planning Efficiency Extraction*. • Recommend to expand the scope of this design process to reflect the need for *interim "market participation" solutions* so the IESO can capture the near-term reliability benefits that greater control and visibility of DERs on the system provides.	Timelines for DER integration have been developed through the Enabling Resources Program (ERP). The ERP work plan reflects a number of key considerations including aligning DER integration with when system needs are expected to emerge as identified in the IESO's Annual Acquisition Report. Hybrid resources have been identified as the number one priority for enabling resources and the timing of the initiatives reflects this decision.

Feedback	IESO Response
Convergent: • The proposed out-of-scope items (*June 22, 2022 DRMVP Design meeting materials slide 13*) are also counter to the goal of interim near-term DER market access options. We propose the out-of-scope items be stricken. Similarly, we ask the IESO reconsider the following response to stakeholder feedback at the June 22 meeting "*Enhancements requiring changes to major tools such as the Dispatch Scheduling and Optimization (DSO) engine post-MRP will be considered for enhanced participation models rather than the foundational*"(slide 16). According to the IESO identified schedule, this broadly defined prohibition on changes until consideration of enhanced participation models delays meaningful participation of DERs in markets as solutions to supply needs *until 2026*. This unnecessarily strands existing assets during a time of supply shortfall and economic downturn. • We strongly believe the effort should be expanded to consider *interim market participation options for DERs*.	In regards to the out-of-scope items, the IESO views the demand response resource type and its associated participation requirements via the Capacity Auction as a separate product from what is trying to be achieved via the DER MVP, where the goal is creating opportunities for aggregations to provide additional wholesale services by becoming 5-minute dispatchable. In addition, the IESO has indicated that, while out-of-scope for the foundational models, dispatchable aggregations of residential or small consumer loads will be explored via enhanced models. Much like the other Enabling Resources Projects, once the foundational model has been implemented (i.e., processes have been development, market rules have been approved etc.), the model can be viewed as an interim model until such a time as the criteria to trigger the enhanced models has been met. In order to implement the foundational model within the timelines specified, major changes the tools such as the various calculation engines and related tools will need to be minimized.

Feedback	IESO Response
DERSI: • We are concerned about the proposed pace of DER implementation. The IESO is forecasting significant capacity needs this decade and the Market Vision and Design Project as outlined reduces the ability of clean, affordable DERs to contribute to meeting those needs in a timely manner. • The limited foundational model being proposed is tied to the resource needs associated with the Market Renewal Program (MRP). Further delays to the MRP schedule currently being considered by the IESO would further slow down the IESO's ability to fully enable DERs. We would encourage the IESO to address the need for additional support for DER implementation through its upcoming Business Plan and revenue submission to the Minister of Energy.	Presently, there is no indication the revised MRP schedule will have an impact on the Enabling Resources Program timelines which are continuing progress as planned. In addition, since foundational models are limiting tool changes, the IESO does not expect the recommendations to adversely impact established timelines.
EDA: • Suggested the strategic, reliability, market, and market participation criteria used to evaluate foundational model options and risks, should also have a cross section benefit which considers "distributor participation".	The IESO appreciates this feedback and notes the importance of effective coordination between the IESO-DER-Distributor. To that end, the DER MVP has carved out a dedicated section of the Phase I questions that uniquely deals with the issues pertaining to coordination, awareness and communications between these three parties.

Feedback	IESO Response
ESC: • We seek clarification with respect to how the IESO will apply these criteria; for example, will the assessment be qualitative only, or will there be a quantitative assessment.	The IESO is developing recommendations based on a largely qualitative assessment of which options can extract the most benefit while effectively limiting costs and risk. The IESO utilized subject-matter experts, lessons learned from past projects, jurisdictional scans, research and work with external partners to develop recommendations. Certain recommendations for the foundational models (i.e., minimum size threshold) and enhanced models will be made/refined based on quantitative inputs.

General Comments/Feedback

All stakeholder feedback submissions included general comments for consideration, which are summarized in the table below.

Feedback	IESO Response
Convergent: • Convergent sincerely appreciates the IESO efforts toward enhancing DER market participation and the opportunity to provide feedback.	The IESO appreciates this feedback.

Feedback	IESO Response
DERSI: • DERSI appreciates the efforts that the IESO is undertaking through the Market Vision and Design Project. • FERC Order 2222 is focused on enabling DERs in U.S. markets and the IESO's counterparts in the U.S. are complying with that order. As a result, and based on the IESO's current schedule, Ontario could find itself falling behind other markets in fully enabling DERs and risk losing needed DER investment to other jurisdictions. • Finally, DERSI is encouraged by the IESO's DER Achievable Potential Study presentation last month which spoke both to the potential of DERs to significantly contribute to meeting system needs and the actions needed to realize that potential.	The IESO notes that despite FERC order 2222, DER integration is proceeding on a variety of timelines at other system operators. As discussed at the January engagement session, New York has made significant progress in implementing DER participation models. Other jurisdictions are at various stages in the same process. For example, PJM, on February 1, 2022, submitted a compliance filing in response to FERC Order 2222, requesting an extended DER integration effective date (i.e., in-service date) of February 2, 2026 given the complexities associated with DER integration. The IESO is also encouraged by the results of the DER Potential Study and will be using these results to help inform the development of the enhanced participation models.

Feedback	IESO Response
EDA: • The IESO should leverage the expertise of distributors in the DER Market to the maximum of its abilities. More generally, enabling DERs connected to the distribution system to participate in IESO markets will require the necessary involvement of transmission and distribution systems. The IESO should also consider the engagement of the utilities more strongly beyond the monthly engagement sessions to ensure that the role of the distributors and potential impacts of the Market Vision and Design Plan on the distribution and transmission systems are understood. Phased, Regional, and Test approaches are encouraged by distributors to fully assess the options and impacts of each decision on another for the DER MVDP.	The IESO appreciates this feedback and anticipates that engagement will continue into the MDP phase. The IESO will consider this feedback in the development of engagement plan post Q1 of 2023.
ESC: • ESC is encouraged that the IESO continues to dedicate time and effort with respect to removing barriers for DERs and DER(A) participation in the IESO-Administered Market (IAM). We are supportive in principle of the options being evaluated and the general approach for evaluating options. • ESC members continue to be concerned with respect to the timeframes the IESO has established for this project, and we urge the IESO to explore all reasonable pathways for accelerating the removal of barriers for DERs and DER(A), which will enable increased participation in upcoming IESO RFPs and Capacity Auctions. • We are also concerned that the foundational design is assuming the completion of the IESO's Market Renewal Program (MRP). Given the announced delay of the MRP project, and current lack of clarity with respect to new implementation timelines, we recommend that the IESO plan for a contingency that would remove barriers for DERs and DER(A) participation in upcoming IESO RFPs and Capacity Auctions in the event of a delay that would impact the timelines for the implementation market rule changes that would be required to implement the DER Market Vision. • As a general observation, we observe that the IESO's plans for future changes to the IAM are complicated and multi-faceted.	Thank you for this feedback. Please see comments above regarding timelines and the Market Renewal Project and delivery of the DER MVDP. The IESO is pleased to share that we continue to expect that the foundational models developed through this project will be implemented in 2026. Through the Enabling Resources Program, the IESO has sought to provide clarity on timelines and prioritization of a number of projects focused on enabling new and emerging resources types. The implementation timelines can be found here. Having said that, the IESO appreciates your interest in additional clarity in relation to timing/prioritization of the

Feedback	IESO Response
For example, the following changes to the IAM are being contemplated by the IESO: ○ Implementation of the MRP which involves systemic changes to the IAM (i.e., locational prices, day-ahead market, market power mitigation, unit commitment, etc.) ○ Changes to the Capacity Auction – While the Technical Panel rejected IESO's recent market rule amendment proposal (June 14, 2022 MR-00469), the IESO now plans to move forward with a subset of the changes (i.e., generation-backed imports, administrative changes), and future changes to implement UCAP and adjust performance charges (or other potential changes) are now uncertain. ○ Implementation of a Foundational design for Hybrid Resources (and subsequently an Enhanced design) ○ Implementation of a Foundation design for DERs (and subsequently an Enhanced design) ○ Implementation of the Long-term design for energy storage per the Storage Design Project • ESC's members will be impacted by all these changes as they are considered and implemented. While the goal of many of these changes is to improve opportunities for resource participation, we are concerned that the volume of changes (and uncertainty with respect to their implementation) is creating significant market uncertainty for future investment. We recommend that the IESO lay out a comprehensive framework that will show how all these changes will be sequenced and prioritized in the coming years.	broader set of initiatives mentioned and will continue to endeavor to be as clear as possible about timelines for delivering these various initiatives.