Ontario DSO Roadmap

Prepared by Capgemini Canada for the Ontario Energy Association

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Ontario Energy Association

Together, we are working to build a stronger energy future for Ontario.

Executive Summary

Ontario's electricity system is entering a period of profound change. Electrification of transportation, buildings, and industry, along with rising peak demand, municipal climate commitments, and the rapid growth of DERs, is fundamentally changing how the grid must be planned and operated. Local Distribution Companies (LDCs) increasingly face operational and investment decisions that the current regulatory framework, system tools, and market structure were not designed to support at scale.

Recognizing this shift, the Ontario Energy Board (OEB) has been exploring different Distribution System Operator (DSO) models for Ontario. This concept envisions an entity playing a more active role in coordinating DERs and local flexibility services in a way that is integrated with the bulk system and aligned with provincial policy objectives. Given the number of parallel DSO-related initiatives already underway across the sector, it is critical that the OEB make a timely decision on the DSO model and assign the mandate to the appropriate entity. Clear determination is necessary to ensure these activities remain aligned rather than fragmented, and to prevent delays or duplication that could hinder Ontario's DSO transition for years to come.

This report offers a practical, readiness-based roadmap to move from the current state to a future in which a DSO enables safe, efficient and customer-centered coordination of distributed resources. This roadmap demonstrates that while there is strong alignment across the sector on the importance of advancing DSO capabilities, each LDC's readiness level is unique. Progress will depend on clear, regulatory guidance, coordinated investment, and a realistic phased approach grounded in the current sector's capabilities.

LDCs are central to this transformation; their position closest to customers and local system needs makes them the natural entities to lead and coordinate the transition. Given the recognition that distribution-level activities should remain primarily with LDCs (or an entity that prioritizes local reliability), the Market-Facilitator Distribution System Operator (MF-DSO) is the preferred end state DSO model for the sector. The pace with which LDCs modernize their systems, adopt DSO functions and enable DER participation will directly shape the province's ability to unlock local flexibility, support customer choice and integrate growing volumes of distributed resources.

A Roadmap Grounded in Current State

This report reflects an assessment of the readiness of sector stakeholders across multiple domains to advance the DSO transition in Ontario. These domains include governance, technology, operations, workforce, market-facing capabilities, data and cybersecurity. Through surveys, interviews, and workshops, Capgemini and the OEA examined not only what capabilities exist today, but also what constraints and dependencies must be solved before more advanced DSO functions can be prudently deployed.

The findings show a sector that is engaged and motivated, but unevenly prepared for the MF-DSO end state:

- Governance and internal accountability for DER and flexibility coordination are not consistently defined or formalized across LDCs.
- Foundational systems such as Supervisory Control and Data Acquisition (SCADA) and Advanced Metering Infrastructure (AMI) are widely deployed, but advanced tools such as Advanced Distribution Management System (ADMS), DER Management System (DERMS), and integrated planning and forecasting platforms are at varying stages of maturity.
- Operational processes for DER visibility, limits management, dispatch coordination, and settlement are still largely in pilot or concept form.
- Market-facing capabilities (i.e., standardized registration, telemetry, measurement and verification, and settlement processes) are not yet available on a province-wide basis.

- Workforce and skills gaps are material, particularly in areas such as DER operations, flexibility market facilitation, advanced analytics, and cybersecurity.

These readiness findings are central to the design of the roadmap. They highlight that Ontario cannot "switch on" a fully realized MF-DSO model in a single step. Instead, it must sequence regulatory decisions, investments, and capability-building in a way that is aligned with what LDCs, and other sector participants can realistically deliver over time. The roadmap presented in this report is, therefore, not aspirational in isolation; it is explicitly calibrated to the current starting point of the sector.

The MF-DSO Target State

The report adopts the MF-DSO as the preferred target model for Ontario. Under this model, LDCs act as neutral market facilitators at the distribution level, responsible for coordinating DERs and local flexibility services to support both local needs and the bulk power system, while maintaining safety, reliability, and fairness.

In the MF-DSO target state:

- LDCs have the tools, data, and governance frameworks to manage local constraints, define and communicate operating limits, and enable DER participation in local flexibility mechanisms.
- The OEB provides clear regulatory direction on roles, responsibilities, neutrality safeguards, cost recovery, and performance expectations.
- Shared, interoperable digital platforms support DER registration, data exchange, telemetry, measurement and verification, and settlement, reducing duplication and enabling consistent experiences for customers and market participants.
- The Independent Electricity System Operator (IESO) continues to manage wholesale markets and system operations, while coordinating with LDCs through clearly defined interfaces, standards, and information flows.
- DER providers and aggregators have transparent, consistent pathways to participate in local and wholesale markets, subject to robust governance and consumer protection.

The report does not prescribe a single organizational model for every LDC. Instead, it recognizes that shared services and "DSO-as-a-Service" concepts will be essential for smaller and resource-constrained LDCs to access MF-DSO capabilities efficiently, while larger LDCs may take on more extensive roles directly.

A Three-Phase Roadmap

Guided by the readiness findings and MF-DSO target state, the report proposes a three-phase roadmap:

Phase I – Decision and Enablement (2026-2028)

Phase 1 focuses on establishing the conditions under which MF-DSO capabilities can be developed safely and coherently. Key objectives include:

- Achieving regulatory clarity on the MF-DSO model, including roles and responsibilities of LDCs, the OEB, the IESO, and third parties, and the guardrails required for neutrality and customer protection.
- Advancing DER valuation frameworks so that non-wires and flexibility solutions can be planned, procured, and compensated in a transparent and robust manner.
- Clarifying cost recovery mechanisms and produce expectations for foundational grid modernization investments required to enable MF-DSO functions.
- Strengthening the governance, internal accountability, and decision-making structures within LDCs to support expanded DSO roles.

- Initiating or scaling foundational technology investments (e.g., ADMS, DERMS, enhanced telemetry and data management) where justified by system needs.
- Expanding and harmonizing pilots and innovation programs under clearer interoperability and data standards.
- Beginning structured workforce development and training initiatives aligned with the capabilities required in later phases.

By the end of Phase 1, Ontario should have a shared understanding of the MF-DSO model, a defined set of minimum capabilities and expectations, and a clearer regulatory and investment environment that enables LDCs and other actors to plan for subsequent phases.

Phase II – Building and Scaling (2029-2034)

Phase 2 translates early progress into scaled capabilities. Its focus is on building and standardizing the infrastructure and processes required for MF-DSO operation:

- Implementing shared digital platforms and services that provide standardized DER registration, telemetry, limits management, measurement and verification, and settlement across participating LDCs.
- Embedding governance frameworks, neutrality safeguards, and performance metrics into regular operations, supported by reporting and compliance processes.
- Developing and standardizing local flexibility products and procurement mechanisms suitable for Ontario's context.
- Expanding DSO-as-a-Service and shared services models that allow smaller LDCs to access MF-DSO capabilities without duplicating complex systems.
- Integrating DER and flexibility considerations into planning and operational practices in a more systematic way.
- Continuing to deepen workforce capabilities and operational readiness.

At the end of Phase 2, Ontario should have operational MF-DSO capabilities at scale, supported by shared platforms and more mature governance, even if not all functionalities are fully integrated with wholesale markets.

Phase III - Full Market Integration (2035+)

Phase 3 focuses on integration and optimization. Building on the capabilities developed in the previous phases, the sector moves toward:

- Coordinated operation between local and wholesale markets, including clear rules for participation in both local and wholesale markets and revenue stacking for DERs.
- More advanced, potentially locational price signals and products that better reflect local system conditions and value.
- Automated and streamlined settlement, measurement and verification, and reporting processes.
- Ongoing refinement of Codes, Market Rules, and performance frameworks to reflect lessons learned and evolving technologies.
- Continued workforce and governance development to support an increasingly data-driven, market-integrated distribution system.

By the conclusion of Phase 3, Ontario should have a stable, interoperable MF-DSO ecosystem that can adapt to future changes in technology, policy, and customer expectations.

Report Context

This report was developed by Capgemini in collaboration with the OEA and participating representatives from Ontario-based Local Distribution Companies (LDCs) and Distributed Energy Resource (DER) providers.

Capgemini researched Distribution System Operator (DSO) models, concepts, and capabilities, drawing on its global practice. Capgemini conducted a readiness assessment of DSO capabilities and consolidated the inputs provided by the participating representatives through questionnaires and interviews. Based on the gaps identified in the readiness assessment, a sector-informed roadmap was developed to advance DSO capabilities in Ontario.

The roadmap is intended solely to inform and guide the Ontario Energy Board's (OEB's) DSO consultation process. This document offers a high-level framework aligned with provincial energy policy objectives to support a phased transition to DSO capabilities across Ontario.

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Glossary

ACRONYM	DESCRIPTION	ACRONYM	DESCRIPTION
ADMS	Advanced Distribution Management System	**IT**	Information Technology
AMI	Advanced Metering Infrastructure	**KPI**	Key Performance Indicator
API	Application Programming Interface	**LDC**	Local Distribution Company
CCIM	Centralized Capacity Information Map	**M&V**	Measurement and Verification
CDM	Conservation and Demand Management	**MDMS**	Meter Data Management System
CIR	Custom Incentive Rate	**MEM**	Ministry of Energy & Mines
CSF	Cybersecurity Framework	**MF-DSO**	Market Facilitator DSO
DER	Distributed Energy Resources	**MoP**	Margin on Payments
DERMS	Distributed Energy Resource Management System	**MW**	Megawatt
DOE	Dynamic Operating Envelopes	**NIST**	The National Institute of Standards and Technology
DR	Demand Response	**NWS**	Non-Wires Solution
DSO	Distribution System Operator	**OEA**	Ontario Energy Association
DSP	Distribution Service Plan	**OEB**	Ontario Energy Board
EV	Electric Vehicle	**OMS**	Outage Management System
eDSM	Electricity Demand Side Management	**OT**	Operational Technology
FEI	Framework for Energy Innovation	**PULSE**	Panel for Utility Leadership and Service Excellence
GIS	Geographic Information System	**SCADA**	Supervisory Control and Data Acquisition
ICI	Industrial Conservation Initiative	**SLA**	Service-Level Agreement
IEP	Integrated Energy Planning	**SOP**	Standard Operating Procedures
IEC	International Electrotechnical Commission	**T-D**	Transmission-Distribution
IERP	Integrated Energy Resource Plan	**TDWG**	Transmission-Distribution Coordination Working Group
IESO	Independent Electricity System Operator	**TOM**	Target Operating Model

Introduction

1 Introduction

Ontario's electricity sector is undergoing a profound transformation. Driven by rapid electrification, economic growth, and the increasing frequency of extreme weather events, electricity demand in the province is projected to rise by 75% by 2050[1]. At the same time, the province is committed to maintaining its clean energy advantage, with over 90%[2] of its grid already being emissions-free. Meeting future demand reliably, affordably, and sustainably will require a fundamental shift in how the distribution system is planned, operated, and optimized.

Distributed Energy Resources (DERs) such as rooftop solar, battery storage, electric vehicles, and flexible loads are proliferating across Ontario. These resources offer significant potential to enhance grid flexibility, defer costly infrastructure investments, and empower customers to participate in energy markets. However, realizing these benefits at scale requires new capabilities at the distribution level.

The Distribution System Operator (DSO) model has emerged as a leading framework to address these challenges. A DSO is an entity that actively manages a decentralized, two-way electricity grid, coordinating DERs in real time to meet local and system-wide needs. DSOs can facilitate local energy markets, improve grid visibility, and support the integration of Non-Wires Solutions (NWSs), all while maintaining reliability and customer choice.

Importantly, the transition to DSO functionality is not the responsibility of a single actor. It requires coordinated action across a diverse set of stakeholders including Local Distribution Companies (LDCs), the Independent Electricity System Operator (IESO), DER aggregators, technology providers, regulators, and policymakers. Each plays a distinct role in enabling the technical, organizational, and regulatory capabilities needed for DSOs to succeed.

The findings presented in this report describe the current state of DSO readiness across Ontario's electricity sector, identify key hurdles to implementation, and outline a phased roadmap to guide the province's transition toward full DSO functionality. The roadmap is intended to inform and support the Ontario Energy Board's (OEB's) DSO Capabilities Consultation (EB-2025-0060)[3] and contribute to the development of a regulatory framework that enables Ontario's electricity system to evolve in a coordinated, inclusive, and future-ready manner.

1.1 Background

In November 2023, the Minister of Energy and Mines[4] (MEM) issued a Letter of Direction[5] outlining the government's priorities and expectations for the upcoming three-year business planning period. While the letter addressed a broad range of topics, its most significant implications were for the DSO concept related to DERs and the Future Utility Business Models initiative.

In response, the Ontario Energy Association (OEA) initiated a dedicated DSO study[6] to align the perspectives of its member utilities and stakeholders and to support informed engagement with the OEB as policy and regulatory work on DSO evolution advanced.

By December 2024, the Minister released a second Letter of Direction[7], reinforcing expectations for continued progress and defining more specific areas of focus for the coming years. The letter was structured around three major policy themes each containing targeted expectations for the OEB:

[1] Ontario Energy Board. (2025). Regional and Bulk Planning Review (EB-2025-0248) - Link
[2] Ontario Energy Board. (2024). Ontario's Electricity Supply Mix - Link
[3] Ontario Energy Association. (2025). Submission on DSO Capabilities Consultation - Link
[4] 'Ministry of Energy and Electrification' name has been changed to 'Ministry of Energy and Mines'
[5] MOE – Letter of Direction - Link
[6] OEA – DSO Study - Link
[7] Ministry of Energy and Electrification Letter of Direction - Link

- **Planning for Growth** – including Ontario's First Integrated Energy Plan and Last Mile Connections initiatives.
- **Affordability, Customer Choice and Modernization** – emphasizing on Keeping Energy Costs Down Act implementation, Electricity and Natural Gas Energy Efficiency Programs, and progress on Advancing Non-Wires Solutions (NWS), Customer-Enabled Solutions and Future Utility Business Models alongside continued improvement in Grid Reliability and Resilience.
- **Regulatory Support to Implement Ontario's Affordable Energy Vision** – focused on Regulatory Efficiency to Enable Growth.

The letter concluded with an expectation that the OEB will identify barriers to meaningful progress and propose practical solutions to the Ministry. In direct response, the OEB launched its Consultation on DSO Capabilities[8] to assess Ontario's current readiness to implement section 2 of the Minister's Direction "Affordability, Customer Choice, and Modernization", particularly subsection 3 "Advancing NWA, Customer-Enabled Solutions, and Future Utility Business Models" with the DSO model identified as the core framework for enabling this transition.

Building on these developments, this section summarizes key (non-exhaustive) provincial consultations and initiatives that have shaped Ontario's transition toward DSO functionality. Table 1 provides an overview of these engagements, highlighting their objectives, key deliverables, and status.

Table 1 DER & DSO Engagements/ Initiatives Completed or Active to Date

Engagements / Initiatives / Consultation	Purpose / Objective in DSO Context	Key Deliverables
OEB DSO Capabilities **Status: Ongoing**	To develop a comprehensive policy framework and publish a formal DSO Roadmap by December 2025. This initiative establishes the regulatory foundation for the DSO transition, outlining clear expectations for roles, responsibilities, and performance standards for DSO operators and stakeholders[8].	Staff Discussion Paper, DNV Energy Insights Report, Stakeholder Symposium, Final Roadmap
PULSE (Panel for Utility Leadership and Service Excellence) **Status: Ongoing**	To advise the MEM on strategies for modernizing Ontario's LDCs, including infrastructure investment, innovation, and readiness for DSO functionality. It supports policy alignment and funding prioritization.	Recommendations to the Minister
DER Valuation Review **Status: Ongoing**	To establish a standardized framework for valuing DERs, including locational and temporal benefits. This is critical for enabling fair compensation, cost recovery, and market participation in both local and wholesale markets.[9]	Regulatory framework for DER valuation
Regional and Bulk Electricity System Planning Process Review **Status: Ongoing**	To align regional and bulk electricity planning processes with local needs and DER integration. It ensures that planning frameworks support DSO objectives, including non-wires solutions and localized flexibility.[10]	Updated planning framework

[8] OEB DSO Capabilities Consultation - Link
[9] DER Valuation Review (EB-2025-0268) - Link
[10] Regional and Bulk Electricity System Planning Process Review (EB-2025-0248) - Link

Engagements / Initiatives / Consultation	Purpose / Objective in DSO Context	Key Deliverables
DER Connections Review **Status: Ongoing**	To improve efficiency, transparency, and customer experience of connecting to the distribution grid. This is essential for enabling DER deployment and supporting customer participation in DSO-enabled markets.[11]	New service standards and performance metrics
OEB Benefit-Cost Analysis (BCA) Framework – Phase 2 **Status: Ongoing**	To refine the Energy System Test (EST) and integrating societal impacts such as emissions reduction and equity into cost-effectiveness assessments, while aligning with local Electricity Demand Side Management (eDSM) Stream 2 programs[12].	Updated EST methodology and guidance on societal impact integration
eDSM Framework – Stream 2 **Status: Ongoing**	To establish a regulatory framework for funding and approving local eDSM programs delivered by LDCs that provide both local distribution benefits and system-wide value. Stream 2 programs are designed to complement NWS and align with DSO objectives by reducing peak demand, deferring infrastructure investments, and improving reliability. This initiative builds on the OEB's NWS Guidelines and Benefit Cost Analysis (BCA) Framework, incorporating the Distribution System Test (DST) to ensure cost-effectiveness at the local level[13].	Proposed framework for Implementation of Local eDSM and integration of DST methodology into program design
GridSmartCity DSO Strategy **Status: Ongoing**	To develop a shared services platform and phased roadmap for DSO implementation among member LDCs. It enables smaller utilities to access DSO capabilities through collaborative models, reducing cost and complexity.[14]	DSO readiness strategy and implementation roadmap
Integrated Energy Resource Plan (IERP) **Status: Completed (Jun. 2025)**	To create a long-term, integrated strategy for Ontario's energy system across electricity, natural gas, and fuels. It sets the broader policy context for DSO development, emphasizing decarbonization, electrification, and system optimization.[15]	Energy for Generations Plan
IESO Transmission-Distribution Coordination Working Group (TDWG) **Status: Completed (May 2025)**	To establish standardized protocols for real-time coordination between transmission and distribution systems, enabling DER participation in both local and wholesale markets without operational conflicts. TDWG addresses interoperability, sequential dispatch logic, and shared platform concepts to support stacked services and ensure system reliability[16].	Transmission-Distribution coordination protocols for day-ahead and real-time scheduling, functional and communication assessment, shared platform concept paper for DER registration and telemetry exchange, and user journey

[11] DER Connections Review (EB-2025-0204) - Link
[12] OEB's Benefit-Cost Analysis (BCA) Framework for Addressing Electricity System Needs: Phase 2 - Link
[13] OEB Consultation on Regulatory Framework for Local Energy Efficiency Programs - Link
[14] GridSmartCity DSO Strategy - Link
[15] Energy for Generations Plan - Link
[16] IESO's Transmission-Distribution Coordination Working Group - Link

Engagements / Initiatives / Consultation	Purpose / Objective in DSO Context	Key Deliverables
		comparisons for DER participation models.
BCA Framework – Phase 1 **Status: Completed (May 2024)**	To provide a standardized approach for evaluating Non-Wires Solutions (NWS) and DERs, introducing the Distribution System Test (DST) for local impacts and the optional Energy System Test (EST) for broader system impacts, along with guidance on qualitative factors.[17].	BCA framework document and DST and EST methodologies for local eDSM & NWS screening.
OEB NWS Guidelines for Electricity Distributors **Status: Completed (Mar. 2024)**	To mandate the evaluation of non-wires solutions in system planning and rate applications, ensuring DERs and flexibility services are considered alongside traditional wires investments. This supports cost-effective grid modernization and aligns with DSO objectives for deferring capital projects and enhancing local flexibility[18].	NWS guidelines outlining screening requirements for Distribution Service Plan (DSP) and Custom Incentive Rate (CIR) filings and filing requirements for large capital investments (> $2M) incorporating NWS evaluation
OEA DSO Study **Status: Completed (Dec. 2023)**	To evaluate different DSO models (e.g., Total DSO, Dual Participation) and quantify their potential benefits for customers and the system. It provides strategic insights and supports advocacy for a preferred DSO model.[19]	Comparative study of Total DSO vs. Dual Participation models
IESO DER Market Vision & Design Project **Status: Completed (Feb 2023)**	To define the future state design for DER participation in wholesale markets, including interoperability with local flexibility markets. This initiative establishes protocols for participation in both local and wholesale markets, revenue stacking, and coordination between DSOs and the IESO, ensuring DERs can provide services across both market layers without conflicting dispatch signals[20].	DER Market Vision Document outlining design principles and participation models

1.2 Market Facilitator DSO Model Rationale

Given the breadth of DSO-related activity underway in Ontario, the rationale for adopting a Market Facilitator DSO model becomes increasingly clear. An MF-DSO model positions LDCs as neutral coordinators of DERs. They manage local flexibility markets, ensure grid reliability, and enable DER participation in both local and wholesale markets without taking commercial positions. The MF-DSO plays a pivotal role in enabling the integration and optimization of DERs within Ontario's electricity system. It is responsible for accepting and reviewing offers from eligible DERs and clearing its market based on the distribution system's operational needs and the availability of resources. A key function of the MF-DSO is to act as a neutral intermediary between DERs and the IESO. When DER offers are not utilized in the local market, the MF-DSO forwards these offers to the IESO for potential

[17] OEB's Benefit-Cost Analysis (BCA) Framework for Addressing Electricity System Needs: Phase 1 - Link
[18] OEB's Non-Wires Solutions Guidelines for Electricity Distributors - Link
[19] OEA DSO Study - Link
[20] IESO's Distributed Energy Resources (DER) Market Vision and Design Project - Link

inclusion in the wholesale market dispatch. Additionally, the MF-DSO relays dispatch instructions from the IESO back to the DERs connected to its system.

The MF-DSO does not modify the bids or take on commercial risk associated with DER performance. Instead, it facilitates the flow of bid information such as price and quantity pairs between DERs and the IESO. This model emphasizes functional separation within the distributor's organization to ensure transparency and fairness avoiding conflicts of interest.

1.2.1 Benefits of the MF-DSO Model to Ontario

The MF-DSO model advances provincial objectives for electrification, decarbonization, and affordability. By empowering customers to participate in emerging flexibility markets, it fosters innovation and inclusivity while providing meaningful choice. It enhances efficiency by unlocking the full value of DERs, enabling revenue stacking, reducing system costs, deferring traditional infrastructure investments, and improving hosting capacity. MF-DSO is the preferred end state model as distribution-level activities should remain primarily with LDCs—or an entity that prioritizes local reliability—ensuring local protection and coordinated investment before broader system use. The model also promotes fairness and transparency by positioning LDCs as impartial market facilitators, separating market operations from commercial interests. Integration with IESO wholesale markets through standardized protocols and shared platforms allows for coordinated optimization of both local and bulk system needs, ensuring adaptability to evolving technologies and market structures. Finally, the MF-DSO model supports scalability across Ontario's diverse utility landscape, allowing smaller LDCs to leverage shared services and "DSO-as-a-Service" models, while larger utilities can take on advanced roles, preventing fragmentation and ensuring equitable access to flexibility markets.

1.2.2 Risks of Inaction

If Ontario does not adopt a DSO model, the province risks delaying and fragmenting existing DER initiatives, leaving these resources underutilized and increasing long-term system costs as reliance on wire-based upgrades and bulk system expansion persists.

Opportunities for DER integration could be missed due to a lack of transparent market access, and limitations on revenue stacking could discourage investment, slow innovation, and reduce system flexibility. Without real-time coordination between local and wholesale markets, operational and reliability risks would increase, potentially resulting in conflicting dispatch signals, outages, and lower overall system reliability.

Customers could face limited choice and higher bills, as they would be unable to participate fully in emerging flexibility markets or benefit from DER value stacking. Fragmented approaches may emerge, with LDCs pursuing inconsistent, ad hoc solutions that create interoperability challenges and greater complexity for aggregators and DER providers. Finally, smaller LDCs lacking shared services could fall behind, leaving customers in these territories without equitable access to advanced programs, widening service disparities across the province.

Current State Readiness Assessment

2 Current State Readiness Assessment

A current state readiness assessment was completed to provide a comprehensive and evidence-based evaluation of the sector's readiness to evolve towards DSO, as envisioned by the Ministry of Energy and Mines and informed by the OEB's ongoing consultation on DSO Capabilities. This readiness assessment was developed to:

- Identify the current state of Ontario's electricity distribution sector including LDCs and third-party DER participants against the key functional pillars of a mature DSO model.
- Identify capability strengths and gaps that may impact utilities' and third-party operators' ability to operationalize DSO functions.

Ultimately, this assessment aims to inform decision making and guide coordinated action across regulators, utilities, and market participants, and to ensure that LDC's transition to a Market Facilitator Distribution System Operator (MF-DSO) framework advances in a measured, inclusive, and operationally grounded manner. Refer to the Appendix for the detailed assessment methodology and full current state readiness results. The following section provides a summary of the key findings.

2.1 Overall Sector Readiness Summary

The current state readiness assessment examined the existing strategic, operational, technical, market, data, and workforce dimensions of DSO capability and maturity across the sector. Input was gathered through structured interviews, surveys, and targeted workshops, ensuring that both utility and third-party perspectives were represented. As a result, the findings reflect on-the-ground realities, regional diversity, and varying utility scales.

The roadmap presented in the following section is directly grounded in the results of this assessment. The recommendations are not aspirational in isolation, but rather are anchored in demonstrated strengths, practical constraints, and clearly identified gaps across the distribution sector and its ecosystem. This ensures that the proposed pathway to DSO implementation is both credible and achievable.

Across Ontario, LDCs are demonstrating strong strategic alignment with the province's electrification, reliability, and decarbonization objectives, and there is clear recognition of the importance of the DSO evolution. Many utilities—particularly larger LDCs—have articulated forward-looking visions through formal roadmaps and have launched pilots related to flexibility markets, DER aggregation, demand response, and non-wires solutions. These early initiatives signal both readiness and intent to evolve. While the pace and depth of execution naturally vary by utility size and local context, the sector overall is progressing from vision-setting toward increasingly tangible implementation.

LDC engagement with the OEB and the IESO further reflects this commitment. Active participation in regulatory consultations, pilots, and joint forums has become standard practice, demonstrating a shared interest in shaping the future operational and market framework for DER integration. In many cases, governance structures supporting these efforts continue to evolve organically within organizations. As DSO responsibilities become more formalized over time, there is a growing opportunity to strengthen internal alignment through clearer role definition, decision-making authorities, and accountability frameworks that support both operational efficiency and regulatory confidence.

From an operational and technical standpoint, LDCs are entering the DSO transition with a strong systems foundation already in place. Core platforms—including SCADA, OMS, GIS, and AMI—are widely deployed across the province, and many utilities are actively upgrading or enhancing their ADMS environments. These investments provide a critical backbone for future DSO functions. While real-time DER dispatch and structured DER planning are still emerging capabilities, utilities are actively building toward these functions through staged system enhancements and test environments that balance innovation with operational risk management.

Workforce capabilities across the sector also reflect a solid starting point. Expertise in areas such as traditional distribution operations, DER interconnection, and ADMS operations is well established. As the DSO role expands, new skill sets—such as DERMS operations, market design and settlement, advanced analytics, cybersecurity, and regulatory market compliance—are becoming priority areas for growth. While formalized workforce development programs remain limited today, there is increasing recognition that people, not just platforms, are central to successful DSO implementation, and utilities are beginning to plan accordingly.

Progress is also evident in customer and market-facing initiatives. Pilots for demand response and DER integration are widespread, and many LDCs have invested in digital customer engagement platforms to support evolving relationships with prosumers. The next stage of evolution will focus on connecting these customer-facing tools with scalable market platforms for bidding, dispatch, settlement, and aggregator participation. As these market mechanisms mature, they will enable utilities to move beyond pilots toward more repeatable, transparent, and efficient market-based procurement of flexibility services.

Data and digital capabilities continue to advance in parallel. Foundational data governance practices exist within many organizations, and utilities are steadily improving the integration of operational, planning, and customer data systems. While DER data remains fragmented across platforms in some cases, progress is underway toward stronger real-time integration, automated validation, and enhanced forecasting. Improved consistency in external data ingestion from aggregators and third-party providers will further strengthen situational awareness and operational coordination at both the local and bulk system levels.

Third-party participants—including aggregators and technology providers—are already contributing meaningful innovation, customer engagement expertise, and digital agility to the sector. While challenges remain around standardized governance, interoperable platforms, and scalable integration with LDC systems, these are increasingly understood as shared transition issues rather than structural barriers. With continued coordination and clear technical standards, these partnerships can become an even more effective extension of LDC capabilities within a future DSO-enabled framework.

Overall, Ontario's LDCs enter the DSO transition from a position of strength. Core infrastructure, operational expertise, regulatory engagement, and early market experimentation are already well established. The path forward is less about starting from scratch and more about systematically building on this existing capacity—deepening integration, formalizing governance, scaling markets, and strengthening digital and workforce capabilities to support the next phase of evolution.

DSO Roadmap

3 DSO Roadmap

This section provides a strategic roadmap to support Ontario's transition toward DSO functionality. Its primary objective is to consolidate sector insights into a coherent roadmap that informs regulatory development, investment planning, and stakeholder alignment. By integrating insights from consultations, the readiness assessment conducted, and sector-wide initiatives, the roadmap aims to support a coordinated, inclusive, and future-ready transition to DSO capabilities in Ontario.

3.1 DER and DSO Enablement Overview in Ontario

In Ontario, the MEM and the OEB have taken important steps to establish a regulatory environment that supports LDCs in integrating DERs and advancing toward DSO functionality. These developments reflect a broader policy commitment to grid modernization, deeper DER integration, and more cost-effective approaches to meeting system needs. Key regulatory enablers are summarized in Table 2.

Table 2 Current Regulatory Environment

Current Regulatory Environment	
1. Non-Wires Solutions Guidelines - formerly Conservation and Demand Management (CDM) Guidelines	▪ NWS Guidelines[21] require LDCs to evaluate non-wires solutions in system planning and rate applications. This is supported by the BCA Framework[22], which ensures DERs are considered on equal footing with traditional infrastructure investments. ▪ Another notable development is eDSM Stream 2[23]; a proposed framework for funding and implementing eDSM programs in Ontario that both target local distribution needs and support provincial bulk system benefits in a coordinated, cost-effective manner. Stream 2 programs are designed to complement NWS and align with DSO objectives by reducing peak demand, deferring infrastructure investments, and improving reliability.
2. Framework for Energy Innovation (FEI)	▪ The FEI[24] introduced incentive mechanisms, such as Shared Savings and Margin on Payments (MoP) to encourage utilities to use third-party DERs as NWS. The MoP allows LDCs to earn up to 25% of payments made to DER providers, provided projects deliver net benefits. This framework also clarifies cost recovery pathways for DER integration investments.
3. Filing Requirements for Large Capital Investments	▪ LDCs must demonstrate consideration of NWS for any capital investment exceeding $2 million[25]. This aligns with the OEB's planning and cost-effectiveness requirements and reinforces the integration of DERs into core investment decisions.
4. Distribution System Code Amendments – Flexible Hosting Capacity	▪ These amendments[26] enable LDCs to offer flexible hosting capacity arrangements, allowing DER connections beyond traditional limits under agreed curtailment conditions. This supports greater DER adoption and

[21] OEB's Non-Wires Solutions Guidelines for Electricity Distributors - Link
[22] OEB's Benefit-Cost Analysis Framework for Addressing Electricity System Needs: Phase 2 - Link
[23] eDSM Stream 2 - Link
[24] Framework for Energy Innovation – Link
[25] OEB's Non-Wires Solutions Guidelines for Electricity Distributors - Link
[26] OEB amendment to Flexible Hosting Capacity - Link

Current Regulatory Environment	
	improves system utilization while creating a foundation for local flexibility dispatch and dynamic operating envelopes in the future.
5. Innovation Sandbox	▪ The Sandbox[27] provides regulatory flexibility for pilot projects testing DER integration, market facilitation, and cybersecurity. It has supported dozens of projects and informed regulatory changes, including exemptions and tailored guidance for emerging business models. *Note: Lately, the Sandbox has focused on non-DER based Indigenous-led projects.*
6. DER Valuation Review (EB-2025-0268)	▪ This initiative[28] seeks to review DER compensation frameworks, aimed at embedding locational and temporal value into rates and market structures. This includes exploring distributor-led procurement to better reflect grid services such as peak shaving, voltage support, and congestion relief. These efforts are foundational to enabling value stacking and creating bankable revenue streams for DERs, critical for boosting investment confidence, expanding participation, and scaling non-wires solutions across the province.
7. DER Connections Review (EB-2025-0204) & Centralized Capacity Information Map (CCIM)	▪ The DER Connections Review[29] and the launch of the CCIM are improving hosting capacity transparency and streamlining DER and electric vehicle (EV) connection processes. Complementing this, the Distribution Customer Connections Review aims to reduce friction for DER-rich loads and aggregator portfolios by enhancing service level agreements (SLAs) and connection procedures. Together, these initiatives reflect Ontario's commitment to enabling efficient, scalable DER integration.

While Ontario has put forward several regulatory measures to support the transition toward DSO functionality important gaps remain. These gaps continue to create uncertainty for LDCs and can constrain the pace and scale of DSO adoption, as highlighted in Table 3 below.

Table 3 Regulatory Gaps and Barriers

Regulatory Gaps and Barriers to DSO Enablement	
1. Lack of Formal Mandate for DSO Roles	▪ Current regulations provide tools for DER integration but stop short of formally defining DSO roles and responsibilities. Without a clear mandate, LDCs face ambiguity in planning investments and operational changes. Stakeholders have emphasized the need for a clear mandate to avoid fragmentation across DER related efforts in the sector.
2. Absence of Market Design for Local Flexibility	▪ Although pilots and innovation programs have tested DER participation, Ontario lacks a regulatory framework for local flexibility markets. There are no standardized procurement rules, settlement processes, or neutrality safeguards to ensure fair competition. This gap limits the ability to scale DERs as reliable grid resources.
3. Limited Cost Recovery Certainty	▪ While the FEI introduced incentive mechanisms, cost recovery for foundational DSO investments (e.g., ADMS, DERMS, telemetry) remains unclear. Current filing guidelines require consideration of non-wires solutions for large projects but do not provide outcomes-based prudence

[27] OEB Innovation Sandbox Annual Report (January 2024 – December 2024) – Link
[28] DER Valuation Review (EB-2025-0268) - Link
[29] DER Connections Review (EB-2025-0204) - Link

Regulatory Gaps and Barriers to DSO Enablement	
	tests or explicit treatment for shared platforms and market facilitation tools. This uncertainty discourages proactive investment.
4. Incomplete DER Valuation Framework	▪ The DER Valuation Review (EB-2025-0268) is still in progress, which will provide critical guiding framework for valuing locational and temporal benefits of DERs. Without this, LDCs cannot reliably incorporate DERs into planning or justify procurement decisions. This gap also affects tariff design and customer compensation models.
5. Cybersecurity and Interoperability in T-D Coordination Not Codified	▪ Cybersecurity and data governance standards remain underdeveloped, particularly in the context of T-D coordination. The lack of standardized protocols and interoperable systems limit secure, real-time data exchange between LDCs and the IESO, creating risks for telemetry, control, and automated settlement. Strengthening cybersecurity frameworks (CSFs) and establishing enterprise-grade interoperability standards are essential to enable trusted, scalable DSO operations. This could include testing and then adopting some of key recommendations on interoperability coming from IESO's TDWG.
6. Fragmented Approach to Shared Services	▪ While flexible connection rules and pilots exist, there is no regulatory model for DSO-as-a-Service or shared platforms. Smaller LDCs risk being left behind without access to common infrastructure, creating inequities in customer participation and DER integration.
7. Lack of Clarity for Value-Stacking and Revenue Models	▪ DERs have the potential to provide multiple services across distribution and wholesale markets, but current regulations lack clear mechanisms for value stacking. The absence of participation (in both local and wholesale markets) frameworks, compensation models, and performance validation discourages customer and aggregator investment. This limits DER scalability and undermines the business case for flexible resources.
8. Misalignment Between IESO-Led Programs and Local Distribution Conditions	▪ Existing IESO-led programs such as the Industrial Conservation Initiative (ICI), Hourly Demand response, Peak Perks, and the eDSM framework are designed with system-wide objectives that may not reflect local distribution system conditions. This misalignment can lead to operational conflicts when DERs are activated without coordination with LDCs, undermining local reliability and optimization efforts. Greater integration of LDCs into program design and activation protocols is needed to ensure alignment with DSO functionality and local grid realities. ▪ Stream 2 of the Local eDSM framework, as outlined in the DSM Working Group's Proposed Framework for Implementation of Local eDSM (EB-2025-0156)[30], is expected to address this gap through the Distribution System Test (DST). The DST explicitly considers local distribution needs when designing eDSM programs led by LDCs, ensuring that cost-effectiveness assessments reflect both local and bulk system benefits. This approach ties closely to LDCs assuming the DSO function, enabling programs that defer infrastructure investments, improve reliability, and support non-wires solutions in a manner consistent with provincial policy objectives.

[30] OEB Consultation on Regulatory Framework for Local Energy Efficiency Programs - Link

Regulatory Gaps and Barriers to DSO Enablement	
9. No Performance Management or Neutrality Assurance	▪ Ontario lacks a province-wide key performance indicators (KPI) framework and neutrality audit regime for DSO operations. Without these, regulators cannot monitor fairness in dispatch or market facilitation, and stakeholders cannot benchmark progress. This gap undermines trust and transparency in emerging flexibility markets.

3.2 DSO Roadmap Guiding Principles

Building on extensive consultations, readiness assessments, and stakeholder engagement, the following guiding principles form the foundation of a phased, inclusive roadmap to enable DSO capabilities across the province. A fundamental consideration to note when reviewing this report is the OEA's recognition of varying maturity and readiness levels pertaining to their members. For simplicity, this report outlines activities to be undertaken by the sector across various standardized timelines that may require adjustment to meet each individual member's maturity level and budgetary constraints.

1. Affordability and Value: The DSO model should enable value stacking across multiple services to maximize the economic and operational benefits of DERs. This approach ensures affordability for customers while delivering system-wide efficiencies and reducing long-term costs.

2. Customer Empowerment and Choice: Customers must be empowered to actively participate in energy markets through transparent, fair compensation mechanisms. The DSO framework should foster inclusivity, enabling prosumers and aggregators to contribute to grid flexibility and resilience.

3. Innovation and Efficiency: Ontario's electricity system must embrace advanced technologies and market-based tools to optimize planning, operations, and resource utilization. Innovation will drive efficiency, enabling the grid to meet growing demand while maintaining reliability and sustainability.

4. Flexible (Non-Wires) Solutions: The future grid will increasingly depend on distributed energy resources (DERs) and other non-wires solutions to address system constraints. Leveraging these solutions will reduce reliance on traditional infrastructure and unlock cost-effective pathways for modernization.

5. Regulatory Clarity and Alignment: Clear roles, responsibilities, and cost recovery pathways are essential for successful DSO implementation. Regulatory frameworks must align with provincial energy policy objectives, providing certainty for stakeholders and supporting coordinated investment decisions.

3.3 DSO Roadmap Overview

The roadmap is organized into three progressive phases each tailored to reflect the diverse readiness levels of LDCs and DER providers across the province. It should be noted that within each phase of the DSO roadmap, recommendations are grouped into three domains:

- **Technical Domain – Systems, Infrastructure, and Technology:** This category focuses on the physical and digital systems required to support DSO functionality. It includes recommendations related to grid modernization (e.g., ADMS, DERMS), telemetry and data exchange platforms, cybersecurity protocols, interoperability standards for Transmission-Distribution (T-D) coordination, and scalable IT infrastructure to support real-time visibility, control, and settlement of DERs.
- **Organizational Domain – People, Skills, and Governance:** These recommendations address the internal capabilities of LDCs, including workforce development, change management, and governance structures. Key areas include building DSO-specific competencies (e.g., DER forecasting, flexibility dispatch), establishing cross-functional teams, updating operational procedures, and aligning leadership and accountability frameworks to support new roles and responsibilities.

- **External Domain – Customer, Market Design, and Regulatory Alignment:** This category covers the broader ecosystem in which LDCs operate. It includes recommendations for engaging customers and aggregators, designing local flexibility markets, aligning with IESO-led programs, addressing regulatory gaps. It also emphasizes the need for coordinated policy development and stakeholder collaboration to ensure consistent and equitable implementation across the province.

The DSO roadmap phases are summarized below. It should be noted that the timelines outlined are indicative and reflective of early adopters with higher DSO readiness levels and may vary for each individual OEA member.

- **Phase I: Decision and Enablement (2026 – 2028):** Mandate Ontario's future target-state MF-DSO model and begin enabling stakeholders to access funding and incentives to advance the DSO narrative. This phase establishes regulatory clarity on MF-DSO roles, neutrality safeguards, and governance principles.
- **Phase II: Building and Scaling (2029 – 2034):** Fully unlock and incentivize the shift to DSO by providing clear objectives and guidance to stakeholders depending on their maturity level. This includes moving beyond pilots to institutionalize MF-DSO capabilities.
- **Phase III: Full Market Integration (2035+):** Achieve the future target-state MF-DSO model where stakeholders effectively function in a neutral, interoperable DSO ecosystem. At this stage, success metrics for MF-DSO operations are monitored to drive continuous improvement and whole-system optimization.

The DSO roadmap was developed in alignment with the four workstreams proposed by the OEB in its DSO Capabilities Consultation, namely: (a) Workstream 1 – Define DSO Capabilities, (b) Workstream 2 – Define Flexibility Services, (c) Workstream 3 – Mandatory Assessment, and (d) Workstream 4 – Enduring Policy. Section 3.4.1.4 illustrates this alignment through mapping the DSO recommendations to these workstreams.

3.4 DSO Roadmap Recommendations

The recommendations outlined in this roadmap are organized by phase and domain. This roadmap is designed for a broad and diverse stakeholder audience. As such, not all recommendations or their sequencing will be uniformly applicable. Variations in organizational scale, resource availability, and infrastructure maturity mean that stakeholders may adopt different approaches and timelines.

It's recognized that LDCs vary in terms of scale, operational complexity, and readiness for DSO transition. These differences will influence the specific actions, timing, and resource requirements needed to reach the target end state. Recommendations that depend on the MF-DSO model mandate are highlighted in the Focus Area column in the tables below.

3.4.1 Phase I- Decision and Enablement (2026–2028)

3.4.1.1 Technical Domain

Table 4 presents the recommendation for Phase I across technical domain.

Table 4 Phase 1 Technical Domain Recommendations

Focus Area	Recommendation	Value for DSO Transition
Utility Investments for DER Visibility and Grid Modernization	▪ Embed investments in ADMS, DERMS, advanced telemetry, and feeder automation into DSP and CIR filings as mandatory, not discretionary. ▪ Invest in robust integration of these technologies with SCADA, GIS, and customer	▪ Provides situational awareness for safe DER dispatch, congestion management, and flexibility market participation. Improves reliability under high DER penetration and supports

Focus Area	Recommendation	Value for DSO Transition
	systems, and simultaneously deploy advanced telemetry and feeder automation. These steps enable two-way power flows and real-time DER visibility and control. These investments align with Workstream 1 of OEB's DSO consultation, which focuses on defining and enabling core DSO capabilities.	electrification by increasing hosting capacity.
Cybersecurity and Data Governance	▪ Embed cybersecurity and data governance into all grid modernization initiatives to ensure secure, resilient, and interoperable DSO operations. Apply recognized standards (e.g., NIST CSF, IEC 62443) across OT and IT systems to protect critical infrastructure and customer data. ▪ Implement encryption, authentication, and role-based access for the DER, DSO, and IESO interfaces. Cybersecurity must be integrated into DERMS, ADMS, and shared platforms with continuous monitoring and vendor certification. Cybersecurity and data governance are foundational elements under Workstream 1 of OEB's DSO consultation, ensuring that DSO capabilities are secure, resilient, and interoperable.	▪ Protects system integrity and customer trust, reduces risk of cyber incidents disrupting dispatch or settlement, and ensures compliance with privacy regulations.
T-D Coordination Protocols, Shared Platform and Pilot Integration	▪ Scale pilots into interoperable platforms for DER registration, telemetry, and settlement-grade data exchange. ▪ Test IESO's TDWG protocols for day-ahead and real-time coordination, including sequential dispatch logic prioritizing distribution needs. This recommendation supports Workstream 2 of OEB's DSO consultation, by scaling pilots into standardized flexibility service platforms and implementing TDWG protocols for real-time coordination.	▪ Enables real-time coordination across local and wholesale markets, reduces curtailment, and validates interoperability before full-scale rollout. ▪ Establishes the technical and market infrastructure required for MF-DSO operations and local flexibility procurement.
M&V Settlement Framework	▪ Develop standardized protocols for settlement-grade data validation, performance tracking, and dispute resolution. ▪ Integrate AMI, synchronized telemetry, and analytics with DERMS and ADMS for automated settlement workflows. Developing standardized M&V protocols aligns with Workstream 2 of OEB's DSO consultation,	▪ Creates reliable revenue streams for DER providers, builds market confidence, and supports cost recovery for LDCs.

Focus Area	Recommendation	Value for DSO Transition
	objectives to define flexibility services and associated settlement processes.	
Holistic Planning for Non-Wires Solutions	▪ Consider adopting a more holistic approach by integrating advanced planning tools (e.g., probabilistic forecasting, scenario analysis), cross-functional teams (planning, operations, regulatory), and business processes that evaluate NWS alongside traditional wires options. This includes embedding locational and temporal DER valuation into planning and aligning procurement with system needs.	▪ Improves cost-effectiveness and reduces overbuild risk by leveraging DER flexibility. ▪ Enhances planning agility, supports electrification goals, and ensures NWS adoption becomes a core part of investment decisions.

3.4.1.2 Organizational Domain

Table 5 presents the Phase I recommendations for the organizational domain.

Table 5 Phase 1 Organizational Domain Recommendations

Recommendation Area	Recommendation	Value for DSO Readiness
Stakeholder Engagement and Market Education	▪ Lead coordinated engagement programs targeting aggregators, municipalities, and customers to explain DER opportunities, market participation pathways, and the benefits of DSO functionality. These programs must be designed to improve market literacy, build trust, and accelerate DER adoption. This recommendation advances Workstream 2 of OEB's DSO consultation by building market literacy and trust, both of which are critical to enabling standardized flexibility services and expanding participation in local markets.	▪ Improves stakeholder participation and accelerates DER adoption across diverse customer segments.
DSO Governance Charter	▪ Formalize governance frameworks defining neutrality, roles, and compliance mechanisms. Include safeguards to separate market facilitation from commercial interests and embed reporting obligations for transparency. Formalizing governance frameworks supports Workstream 3 of OEB's DSO consultation by preparing LDCs for mandatory readiness assessments and ensuring neutrality and compliance mechanisms are embedded in organizational structures.	▪ Builds trust among market participants and ensures regulatory alignment.

Recommendation Area	Recommendation	Value for DSO Readiness
Target Operating Model (TOM) and Standard Operating Procedures (SOP)	▪ Create a TOM outlining core DSO functions (dispatch, settlement, dispute resolution) and develop SOPs for coordination with the IESO and DER aggregators. Align TOM with technology investments and embed in DSP/CIR filings. Developing a TOM and SOPs aligns with Workstream 3 of OEB's DSO consultation by providing the operational blueprint required for LDCs to demonstrate readiness and capability during mandatory assessments.	▪ Provides a structured roadmap for transitioning from fragmented processes to a fully integrated MF- DSO model. ▪ Supports readiness for scaled flexibility markets and wholesale coordination, enabling DER value stacking.
Workforce Upskilling Programs	▪ Implement structured training covering DER dispatch, flexibility market facilitation, advanced analytics, and cybersecurity. ▪ Create specialized to support real-time DER control, market operations, and coordination with the IESO. Workforce planning can be integrated into DSPs and CIR filings to ensure long-term sustainability and regulatory alignment. Workforce training in DER dispatch, flexibility market facilitation, and cybersecurity supports Workstream 1 of OEB's DSO consultation by building the human capabilities necessary to operate advanced DSO systems and technologies.	▪ Closes critical skills gaps identified in readiness assessments and stakeholder consultations. ▪ Ensures operational competence for real-time DER control, market facilitation, and data governance.
Neutrality and Data-Sharing Policies	▪ Establish formal policies that ensure non-discriminatory access to flexibility markets and secure data-sharing protocols. These policies should define transparency standards, market rules, and technical safeguards to prevent conflicts of interest and promote trust among aggregators and customers. Durable neutrality safeguards and transparent market rules are foundational to achieving OEB Workstream 4's objective of creating a stable regulatory environment for competitive flexibility markets.	▪ Builds aggregator and customer confidence in the fairness and transparency of market operations. Mitigates conflict-of-interest concerns and supports open, competitive flexibility markets. ▪ Enables secure and standardized data exchange across DSO interfaces, supporting interoperability and settlement.

3.4.1.3 External Domain

Table 6 presents the Phase I recommendations for the external domain.

Table 6 Phase 1 External Domain Recommendations

Recommendation Area	Recommendation	Value for DSO Readiness
Affirm the MF-DSO Model **(MF-DSO Specific)**	▪ Provide guidance on Ontario's end-state MF-DSO model to support greater clarity and consistency, particularly in relation to interim approaches that may lack objectivity or scalability. Such guidance would also help define the roles and responsibilities of LDCs acting as DSOs, including their responsibilities as neutral market facilitators. Establishing enduring regulatory guidance on Ontario's MF-DSO model aligns with OEB Workstream 4's objective of ensuring market fairness, scalability, and clear distributor roles as market facilitators.	▪ This will provide a stable foundation for regulatory alignment, investment planning, and stakeholder coordination. It must be accompanied by guidance on neutrality, governance, and performance expectations.
Issue Grid Modernization Investment Guidance	▪ Provide guidance on outcome-based approaches to cost recovery and prudence assessments for grid modernization investments would support greater consistency and regulatory clarity. Such guidance could encompass foundational DSO-enabling technologies, including ADMS, DERMS, telemetry systems, and shared platforms. ▪ Provide clearer direction on rate treatment to help reduce uncertainty for LDCs and support more timely and coordinated investment in the infrastructure required to enable DSO functionality. Establishing enduring guidance on cost recovery and prudence aligns with OEB Workstream 4's objective of providing long-term regulatory certainty for grid modernization investments and supporting the scalable deployment of DSO-enabling technologies.	▪ Unlocks capital for critical infrastructure upgrades and accelerates DER integration. ▪ Reduces regulatory uncertainty for LDCs planning multi-year modernization programs.
Enable Local Flexibility Markets	▪ Support the establishment of regulatory guardrails for local flexibility markets. This would include rules for DER procurement, dispute resolution, and performance assurance. Interoperability standards should also be addressed to ensure coordination between local and wholesale markets. Establishing regulatory guardrails for local flexibility markets aligns with Workstream 2 by	▪ These guardrails will enable LDCs to transition from pilots to scalable flexibility programs and support the development of competitive and transparent market structures.

Recommendation Area	Recommendation	Value for DSO Readiness
	defining standardized flexibility services and with Workstream 4 by embedding enduring market rules and interoperability standards	
Advance DER Valuation and Planning Reforms	▪ Finalize the DER valuation review (EB-2025-0268) to integrate its outcomes into relevant codes, tariffs, and planning processes. Providing clear guidance on quantifying the value of DERs to a distributor would support greater clarity and consistency. Furthermore, updating planning frameworks to incorporate temporal and locational value signals is essential for enabling more cost-effective and targeted DER deployment. Completing DER valuation reforms and integrating locational and temporal signals into planning aligns with Workstream 4 by supporting enduring policy frameworks that enable cost-effective DER deployment and fair compensation.	▪ Ensures fair compensation for DER services and supports cost-effective grid planning. ▪ Aligns investment decisions with system needs, locational constraints, and DER capabilities.
Code Amendments for Market Activation	▪ Consider amending the Distribution System Code and related regulations to permit LDC-led market facilitation and DER procurement. These amendments must also enable shared platform governance and interoperability requirements to support MF-DSO operations. Amending codes and regulations to permit LDC-led market facilitation aligns with Workstream 4 by removing structural barriers and formalizing the DSO mandate, enabling scalable flexibility markets and shared platform governance.	▪ Removes structural barriers and formalizes the DSO mandate, enabling utilities to scale flexibility markets. ▪ Provides legal certainty for investments in market platforms and coordination systems.
International Benchmarking	▪ Ontario should consider establishing a recurring international benchmarking to monitor industry best practices in flexibility markets and grid modernization. This initiative would focus on learning from leading jurisdictions, promoting alignment with proven approaches, and ensuring Ontario's frameworks remain competitive and transparent. The program should involve collaboration among key stakeholders, including the OEB, IESO, and LDCs, to share insights and maintain consistency across the province.	▪ Leverages global experience to accelerate Ontario's learning curve. ▪ Supports continuous improvement in market design and operational practices. ▪ Enhances transparency and fosters innovation through adoption of proven concepts.

3.4.1.4 OEB Workstream Alignment for Phase I

Table 7 presents the Phase I recommendation areas and their relevancy to the four OEB Workstreams.

Table 7 OEB Workstream Alignment

Domain	Recommendation Area	OEB Workstream
Technical	*Utility Investments for DER Visibility and Grid Modernization*	**1**
	Cybersecurity and Data Governance	
	T-D Coordination Protocols, Shared Platform and Pilot Integration	**2**
	M&V Settlement Framework	
Organizational	*Stakeholder Engagement and Market Education*	**2**
	DSO Governance Charter	**3**
	Target Operating Model (TOM) and Standard Operating Procedures (SOP)	
	Workforce Upskilling Programs	**1**
	Neutrality and Data-Sharing Policies	**4**
External	*Affirm the MF-DSO Model*	**4**
	Issue Grid Modernization Investment Guidance	
	Advance DER Valuation and Planning Reforms	
	Code Amendments for Market Activation	
	Enable Local Flexibility Markets	**2 & 4**

3.4.2 Phase II- Building and Scaling (2029–2034)

3.4.2.1 Technical Domain

Table 8 presents the Phase II recommendations for the technical domain.

Table 8 Phase 2 Technical Domain Recommendations

Recommendation Area	Recommendation	Value for DSO Readiness
Shared Platform for Data Exchange and Market Facilitation (MF-DSO Specific)	▪ Deploy a shared platform to standardize registration, bid and offer routing, dissemination of IESO schedules and DSO limits or overrides, event telemetry, and M&V and settlement data. This platform should reduce reliance on bespoke point-to-point integrations and support scalable, secure, and transparent market operations.	▪ Reduces integration complexity, accelerates onboarding for LDCs and aggregators, and ensures transparent, scalable market operations with automated data flows. ▪ Enables automated settlement and performance tracking through standardized data exchange.

Recommendation Area	Recommendation	Value for DSO Readiness
DERMS/ADMS Scale-Up and Feeder Automation	▪ Complete DERMS-ADMS integration and expand real-time telemetry on priority feeders; implement feeder automation with DER-ready protection settings for reverse flows and voltage control. ▪ Implement standardized device onboarding and control interfaces to enable seamless multi-aggregator operations and minimize integration complexity	▪ Enables reliable, real-time DER dispatch, improves voltage stability, and provides the technical foundation for flexibility markets and interoperability with bulk systems.
Transmission-Distribution Coordination	▪ Operationalize TDWG protocols for sequential dispatch, DSO limits, and automated outage messaging; integrate DER resource plans with pricing and availability data.	▪ Prevents dispatch conflicts, maintains system reliability, and supports seamless coordination between local and wholesale markets.
Local Flexibility Markets	▪ Launch standardized flexibility products (capacity, congestion relief, voltage support) with clear qualification and M&V standards; publish procurement schedules and need maps to guide DER investment.	▪ Creates transparent, bankable markets that attract DER participation, institutionalize non-wires solutions, and improve grid reliability at lower cost.
Settlement-Grade M&V and Automated Settlement	▪ Implement province-wide standards for M&V including time-synchronized metering, baseline methodologies tailored to each product, and automated validation processes.	▪ Builds trust and bankability for DER providers, ensures cost recovery integrity for LDCs, and enables scalable, auditable settlement processes.
Cybersecurity and Data Governance	▪ Move beyond baseline compliance to continuous monitoring, vendor certification, and secure, role-based data sharing across all DSO systems.	▪ Protects system integrity, ensures privacy compliance, and mitigates cyber risks in market operations.
DSO-as-a-Service	▪ Offer guidance to enable large LDCs or sector consortia to efficiently deploy a DSO-as-a-Service model utilizing a multi-tenant capability stack. This model would encompass critical functions such as market operations, dispatch coordination, measurement and verification (M&V), and settlement. ▪ Define qualification criteria for DSO-as-a-Service providers, including technical capabilities (shared platform integration, secure communications, interoperability standards), governance safeguards (neutrality audits, ring-fencing, data partitioning), and SLA-based performance commitments.	▪ Enables smaller LDCs to access advanced DSO capabilities without heavy upfront investment, accelerating province-wide readiness. ▪ Ensures interoperability and neutrality under OEB oversight, while reducing cost and complexity through shared services. ▪ Creates a clear roadmap for both providers and recipients, ensuring consistent standards for communications, infrastructure, and market settlement processes.

Recommendation Area	Recommendation	Value for DSO Readiness
	▪ Establish minimum readiness thresholds for recipient LDCs, such as reliable telecom infrastructure, basic DER telemetry, dispatch coordination capability, and integration with financial systems for settlement facilitation.	
Communications and Telecom	▪ Deploy hybrid telecom networks (fiber, microwave, cellular, satellite) sized for transmission & distribution interoperability traffic and low-latency dispatch windows.	▪ Enables reliable, timely data exchange for safe dispatch and real-time market coordination, preventing missed bids and operational risks.
Planning - Operations Pipeline for Non-Wires Solutions	▪ Integrate DER valuation and locational needs and constraints into planning tools (such as CYME and DERMS) to accurately determine the value of Non-Wires Solutions (NWS). Establish feedback loops between planning and operations to measure the value created during real-time operations and incorporate those insights into future planning analyses.	▪ Improves DER targeting, defers wires at least cost, and enables adaptive planning based on actual performance and market outcomes.

3.4.2.2 Organizational Domain

Table 9 presents the Phase II recommendations for the organizational domain.

Table 9 Phase 2 Organizational Domain Recommendations

Recommendation Area	Recommendation	Value for DSO Readiness
Stakeholder Engagement and Market Education	▪ Scale province-wide engagement programs with aggregator onboarding guides, municipal/customer education, and regional hubs led by large LDCs for consistent messaging.	▪ Builds trust and transparency with customers, municipalities, and aggregators. ▪ Supports equitable access to market opportunities and enhances public understanding of DSO functions.
DSO Governance Framework	▪ Transition to a formal governance framework with neutrality audits, compliance reporting, and dispute resolution embedded in shared service models.	▪ Enables uniform neutrality and transparency, which are critical for aggregator confidence, regulatory trust, and fair market access. ▪ Enables consistent oversight and dispute resolution across diverse LDC operating models which enable multi-area participation for DER providers
TOM at Scale	▪ Roll out a standardized Target Operating Model for DSO across all	▪ Provides a structured roadmap for scaling operations, reducing risk,

Recommendation Area	Recommendation	Value for DSO Readiness
	LDCs, including gap analysis, process alignment, and standardized procedures supported by change management.	and ensuring consistency across LDCs. ▪ Enables interoperability and readiness for multi-LDC flexibility markets.
Workforce Scale-Up and Certification	▪ Develop training and certification programs for DER operations, market facilitation, and cybersecurity. Programs must be aligned with evolving DSO roles and include hands-on training, mentorship, and continuing education pathways.	▪ Closes critical skills gaps, builds a sustainable talent pipeline, and ensures operational readiness for advanced DSO functions.
Neutrality and Data-Sharing Policies at Scale	▪ Move from policy direction to operationalized neutrality and secure data-sharing protocols with automated compliance checks embedded in shared platforms.	▪ Ensures fair dispatch, protects data integrity, and builds confidence among aggregators and market participants.
Performance Management and Public KPIs	▪ Establish KPIs for neutrality, reliability, curtailment, flexible capacity procured, and settlement timelines; publish dashboards for transparency and benchmarking.	▪ Creates accountability, supports performance-based regulation, and builds trust through transparent reporting.

3.4.2.3 External Domain

Table 10 presents the Phase II recommendations for the external domain.

Table 10 Phase 2 External Domain Recommendations

Recommendation Area	Recommendation	Value for DSO Readiness
Codify the Target DSO Model **(MF-DSO Specific)**	▪ Formalize MF-DSO roles & responsibilities for the LDCs and update IESO Market Rules to clarify transmission & distribution coordination protocols and DER participation models.	▪ Provides regulatory certainty, prevents fragmentation, and aligns roles across distribution and wholesale markets.
Outcomes-Based Grid Modernization Cost Recovery Framework	▪ Introduce outcomes-based cost recovery guidance for DSO-enabling investments tied to measurable operational and market benefits.	▪ Unlocks capital to complete province-wide digital grid scale-up. ▪ Protects affordability through clear outcome metrics and performance-based justification.
Local Flexibility Market Guardrails and Settlement/M&V Standard	▪ Provide guidance regarding the necessity of a binding framework for local flexibility markets would provide LDCs and the market with greater clarity and consistency. Such guidance could encompass essential components like product definitions,	▪ Creates transparent, bankable markets that attract capital and DER investment.

Recommendation Area	Recommendation	Value for DSO Readiness
	qualification criteria, neutrality safeguards, performance assurance, and conduct standards, aligning with the broader objective of market fairness and scalability. ▪ Province-wide M&V and settlement standards can be implemented, covering baseline methodologies by product type, dispute resolution timelines, and auditability requirements.	▪ Ensures consumer protection and regulatory confidence in market outcomes.
Implement DER Valuation Outcomes in Tariffs, Codes, and Planning	▪ Translate the findings of the DER Valuation Review into delivery rate and tariff changes and update regulatory codes to reflect locational and temporal DER value. ▪ Embed valuation outcomes in procurement and settlement processes and required for NWS screening and target setting in DSPs.	▪ Sends accurate price signals, aligns procurement with system needs, and improves cost-effectiveness.
Connection Reforms: T-D Standards, SLAs, and Reporting	▪ Implement the outcomes of the Distribution Customer Connections Review (EB-2025-0204) and Streamlining Transmission Connections (EB-2025-0216). This includes codifying SLAs, improving transparency around connection queues and cost estimates, and publishing standardized KPIs. Where applicable, transmitter performance standards should be introduced to ensure accountability and alignment with distribution-level reforms.	▪ Cuts connection timelines, improves transparency, and supports scaling DER and high-load connections.
Regional and Bulk Planning Modernization Embedded in Practice	▪ Apply recommendations from the Regional and Bulk Planning Process Review (EB-2025-0248). This includes shortening planning cycles, improving alignment with load growth, and formalizing bulk planning processes. DER and NWS visibility must be integrated into planning data sets and used to inform DSO procurement schedules and dispatch logic.	▪ Ensures planning keeps pace with system growth and electrification. ▪ Systematically integrates NWAs into investment decisions and procurement pipelines.
DSO-as-a-Service: Governance, Interoperability, and Legal/Code Enablers	▪ Codify the ability of large LDCs or consortia to provide DSO-as-a-Service, supported by neutrality safeguards, ring-fencing, and strict data partitioning. ▪ Formalize shared platform governance with roles, SLAs, and interoperability standards for core functions (registration, resource plans, dispatch, limits, MandV, settlement). ▪ Define qualification criteria for providers (platform infrastructure, secure connectivity, SLA compliance) and readiness thresholds for recipients (reliable telecom,	▪ Ensure providers meet technical and neutrality standards for fair service delivery. ▪ Gives smaller LDCs a clear roadmap for minimum infrastructure and operational readiness. ▪ Accelerates province-wide DSO capability at lower cost while maintaining

Recommendation Area	Recommendation	Value for DSO Readiness
	DER telemetry, dispatch coordination, settlement integration).	interoperability and regulatory confidence.
Data Governance, Privacy, and Cyber Compliance Uplift	▪ Move to assurance-grade cybersecurity and privacy controls, including continuous monitoring and zero-trust architecture.	▪ Protects system integrity, mitigates risk, and supports secure multi-party data exchange.
Market Monitoring and Oversight for Local Flexibility	▪ Establish monitoring for local flexibility markets, including conduct surveillance and dispute resolution aligned with IESO compliance.	▪ Ensures fair competition, prevents market power, and builds confidence in DSO-led procurement.
Revenue Stacking and Participation in Both Local and Wholesale Markets **(MF-DSO Specific)**	▪ Establish a framework to enable DERs and aggregators to participate in both local flexibility markets and IESO wholesale markets. This framework should include clear priority and sequencing rules using TDWG's "sequential coordination" model, DSO limits and overrides, and floor price offers to honor local commitments. It must prevent double counting of capacity or energy, define resource plan requirements, and harmonize M&V and settlement protocols. Must clarify payments during overlapping schedules or curtailments, and standard contracts should be adopted to reduce friction across territories.	▪ Creates a bankable, predictable revenue stack for DER providers, driving scale, liquidity, and competition. ▪ Improves dispatch efficiency and reduces curtailment through clarified precedence and performance obligations. ▪ Supports interoperability and fairness across local and wholesale market participation.
International Benchmarking	▪ Establishing recurring international benchmarking to monitor industry's best practices in flexibility markets and grid modernization. This initiative would focus on learning from leading jurisdictions, promoting alignment with proven approaches, and ensuring Ontario's frameworks remain competitive and transparent. The program should involve collaboration among key stakeholders, including the OEB, IESO, and LDCs, to share insights and maintain consistency across the province.	▪ Leverages global experience to accelerate Ontario's learning curve. ▪ Supports continuous improvement in market design and operational practices. ▪ Enhances transparency and fosters innovation through adoption of proven concepts.

3.4.3 Phase III- Full Market Integration (2035+)

3.4.3.1 Technical Domain

Table 11 presents the Phase III recommendations for the technical domain.

Table 11 Phase 3 Technical Domain Recommendations

Recommendation Area	Recommendation	Value for DSO Readiness
End-to-End Co-Optimization of Local and Wholesale Markets	▪ Implement an automated co-optimization layer that exchanges schedules and limits with IESO's day-ahead and real-time markets. This layer must honor DSO network constraints (thermal and voltage) while maximizing DER participation. The Resource Plan should be extended to capture multi-service commitments, curtailment logic, priority rules, and price/quantity sensitivities to support stacked services and dispatch coordination.	▪ Delivers the right Megawatt (MW) at the right node and time, improving system efficiency while minimizing curtailment. ▪ Strengthens revenue predictability for DER aggregators, driving liquidity and lowering total system cost.
Distribution-Level Locational Signals	▪ Publish locational and time-varying signals (e.g., tariff adders or product pricing) based on feeder and substation constraints and DER valuation results. These signals should be aligned with multi-year flexibility procurement schedules and public need maps to guide DER siting and bidding behavior.	▪ Guides DER siting and bids toward highest-value locations. ▪ Enables cost-effective non-wires solutions and reduces reinforcement capex.
Shared Platform	▪ Establish a continuous Application Programming Interface (API) certification program for key interfaces including registration, resource Plans, dispatch, limits, telemetry, and settlement. Maintain a "green list" of conformant gateways and enforce tenancy isolation patterns to support DSO-as-a-Service models for small and mid-sized LDCs.	▪ Reduces integration time and risk for new market participants. ▪ Keeps markets open, interoperable, and secure across all LDCs. ▪ Enables large LDCs' to host shared services safely and consistently.
Predictive Flexibility and DOEs at Scale	▪ Deploy advanced forecasting tools with time-series optimal power flow to generate Dynamic Operation Envelopes (DOE) at feeder and transformer granularity. Expose machine-readable DOEs to aggregators to enable real-time adjustment of bids and control profiles based on network conditions.	▪ Safely maximizes hosting capacity and reduces curtailment. ▪ Improves deliverability of contracted flexibility without costly reinforcement.
Advanced M&V and Automated Split Settlement for Stacked Services (MF-DSO Specific)	▪ Operate a standardized, event-level M&V library with baseline methodologies by product type and deploy an automated settlement engine that splits compensation between local flexibility and IESO wholesale services. The system must support pay-for-	▪ Creates bankable, low friction cashflows for DER providers.

Recommendation Area	Recommendation	Value for DSO Readiness
	performance logic, curtailment and priority rules, penalties, and dispute resolution timers.	▪ Lowers administrative burden and supports longer-tenor contracts.

3.4.3.2 Organizational Domain

Table 12 presents the Phase III recommendations for the organizational domain.

Table 12 Phase 3 Organizational Domain Recommendations

Recommendation Area	Recommendation	Value for DSO Readiness
Market and System Operations	▪ Develop a unified set of market operations SOPs for limits setting, curtailment, event validation, and dispute triage. Establish mutual aid protocols among LDCs to support cross-territory events and shared service execution. These playbooks must be aligned with IESO procedures and support 24/7 operational coverage.	▪ Reduces operational variance and ensures fairness and auditability. ▪ Enables multi-LDC tenders and shared service execution. ▪ Supports real-time coordination and reliability across jurisdictions.
TOM to "Evergreen"	▪ Institutionalize the continuous update of their TOM, including capability definitions, performance KPIs, and technology stack roadmaps. These updates should be embedded in annual DSP and CIR filings and reflected in investment plans to ensure alignment with evolving market structures, regulatory expectations, and platform interoperability.	▪ Keeps operations and technology aligned with market evolution. ▪ Minimizes stranded asset risk and ensures interoperability with shared platforms. ▪ Supports adaptive planning and regulatory transparency.
Neutrality and Transparency	▪ Establish a province-wide neutrality and transparency assurance regime. This includes annual neutrality audits, public market operations reports (e.g., accepted bids, curtailment statistics, price dispersion), and standardized incident disclosures across all LDCs, including those using shared services. These measures must be embedded in compliance programs and platform governance.	▪ Reinforces market confidence and mitigates conflict-of-interest perceptions. ▪ Supports fair access and transparency as flexibility volumes grow. ▪ Enables consistent oversight and dispute resolution across jurisdictions.
Workforce Certification and Specialization	▪ Launch standardized certification pathways for key DSO functions including DER dispatch, flexibility trading, settlement analytics, and cybersecurity. Large LDCs can host shared academies and training hubs to support smaller LDCs under a DSO Ops-as-a-Service model. Certification programs	▪ Ensures a steady pipeline of qualified operators and analysts. ▪ Underpins safe scaling of shared services and market operations.

Recommendation Area	Recommendation	Value for DSO Readiness
	must be aligned with operational standards and regulatory expectations.	▪ Supports workforce mobility and professional development across the sector.
Customer/Aggregator Experience at Scale	▪ Standardize the customer and aggregator experience across Ontario by implementing onboard SLAs, self-service portals, and a province-wide Aggregator Playbook. The playbook should cover resource plans, curtailment rules, settlement timelines, and dispute resolution paths, and be aligned with shared platform processes and TDWG interfaces.	▪ Grows market liquidity and lowers entry barriers for DER providers. ▪ Improves revenue predictability and onboarding efficiency. ▪ Enhances transparency and trust in market operations.
Performance Management and Public KPIs	▪ Publish province-wide KPIs for DSO operations, including flexibility MW procured, $/MW deferral value, curtailment rate, connection cycle time, settlement cycle time, and cybersecurity posture. Year-over-year targets should be established to support benchmarking, continuous improvement, and potential transition to performance-based regulation.	▪ Drives continuous improvement and accountability across LDCs. ▪ Supports consumer value outcomes and regulatory transparency. ▪ Enables benchmarking and readiness for performance-based regulation.
Organizational Shared Services for Small LDCs (DSO Ops-as-a-Service)	▪ Provide managed organizational services including market operations, compliance, settlement, and training to small and mid-sized LDCs under regulated SLAs. These services must align with shared platform governance, data partitioning rules, and neutrality safeguards to ensure consistent delivery and participant experience across Ontario.	▪ Guarantees province-wide minimum organizational capability without duplicating overhead. ▪ Maintains consistent governance and participant experience across territories. ▪ Supports cost-effective scaling of DSO functions for smaller LDCs.

3.4.3.3 External Domain

Table 13 presents the Phase III recommendations for the external domain.

Table 13 Phase 3 External Domain Recommendations

Recommendation Area	Recommendation	Value for DSO Readiness
MF DSO "Steady State" Codification and IESO Market Rules Alignment **(MF-DSO Specific)**	▪ Refresh codes and guidance on a recurring cadence to keep the MF-DSO role current. This includes neutral market facilitation, data exchange, dispatch validation, and dispute handling. Companion updates to IESO Market Rules and Manuals must support aggregated DER participation and	▪ Provides long-term regulatory certainty for operating models and platform investments. ▪ Prevents stranded assets and ensures compatibility

Recommendation Area	Recommendation	Value for DSO Readiness
	T-D coordination in IESO's both day-ahead and real-time markets. Regulatory alignment must be maintained as flexibility volumes and product complexity increase.	with evolving market structures. ▪ Supports consistent roles and responsibilities across LDCs and IESO interfaces.
Revenue Stacking and Participation in Both Local and Wholesale Markets **(MF-DSO Specific)**	▪ Maintain a clear framework for stacked services that includes sequencing and priority rules (TDWG "sequential coordination"), no double counting, pay-for-performance logic, curtailment allocation, standardized contracts, and harmonized M&V and settlement protocols across local and wholesale markets. This framework must support predictable, bankable revenue streams for DERs.	▪ Unlocks capital by giving DERs stable revenue stacks. ▪ Protects distribution reliability and reduces curtailment risk. ▪ Supports efficient dispatch and market interoperability.
Outcomes-Based Cost Recovery Becomes "Business as Usual"	▪ Outcome-based prudence tests should become the default approach for cost recovery of DSO-enabling investments, including ADMS, DERMS, telemetry, shared platforms, and cybersecurity. These investments must be tied to measurable KPIs such as $/MW deferral value, curtailment reduction, and settlement cycle time, and embedded in DSP and CIR filings.	▪ Sustains capital for digital grid capabilities that underpin market scale. ▪ Protects affordability through demonstrable performance outcomes. ▪ Aligns investment planning with system value and regulatory expectations.
Local Flexibility Guardrails and Market Monitoring at Maturity	▪ Building and Scaling Phase guardrails (3. Local Flexibility Market Guardrails and Settlement/M&V Standard) for local flexibility markets must be evolved to include standardized products, conduct rules, dispute resolution protocols, and performance assurance mechanisms. The implementation of a dedicated market monitoring function by the OEB for distribution-level services would be valuable. To manage aggregated or stacked services effectively, this function should be structured in coordination with IESO oversight.	▪ Protects competition and consumer interests as market liquidity deepens. ▪ Supports longer-tenor contracts through confidence in price integrity. ▪ Enables proactive enforcement and transparency across local markets.
DER Valuation Embedded Across Tariffs, Products, and Planning	▪ DER Valuation outcomes must be kept current and embedded across tariffs, local product pricing, and planning processes. Valuation must be used in NWS screening and regional/bulk plans, and transparent locational need maps should be published via the shared platform to guide procurement and siting decisions.	▪ Delivers accurate price signals for DER siting and bidding. ▪ Makes flexibility procurement reliably cheaper than or complementary to wires.

Recommendation Area	Recommendation	Value for DSO Readiness
		▪ Improves planning transparency and investor confidence.
Distribution and Transmission Connection Performance Standards at Enforcement Level	▪ Building and Scaling Phase connection reforms (5. Connection Reforms: T-D Standards, SLAs, and Reporting) must be operationalized as permanent SLAs and KPIs, including queue transparency, standardized process steps, and public dashboards. Performance must be monitored and escalated to corrective action if targets are not met, ensuring accountability across transmission and distribution interfaces.	▪ Ensures fast, predictable connections for DERs and large loads. ▪ Supports market liquidity and economic growth. ▪ Builds trust in connection processes and regulatory oversight.
DSO-as-a-Service: Legal Certainty, Platform Governance, and Interoperability Certification	▪ Codify cross-utility shared services under neutrality, ring-fencing, and data partitioning rules. Shared platform governance must include defined roles, SLAs, change control, and oversight mechanisms. A province-wide API certification regime must be established to ensure interoperability and conformance for DSO-as-a-Service interfaces.	▪ Delivers province-wide minimum capability at lower unit cost. ▪ Ensures a uniform participant experience across territories. ▪ Enables aggregator scaling and consistent service delivery.
Data Governance, Privacy, and Cybersecurity	▪ Evolve from compliance-based cybersecurity and privacy practices to an assurance-grade regime. This includes third-party attestations, continuous monitoring, role-based access controls, zero-trust APIs and telemetry, breach reporting SLAs, and privacy-by-design principles for customer and DER data across shared platforms and LDC systems.	▪ Protects system integrity and public trust as interfaces and data volumes scale. ▪ Reduces operational and regulatory risk in market operations and settlement. ▪ Supports secure multi-party coordination and compliance with privacy regulations.
Planning and Market Coupling and Locational Transparency Requirements	▪ Provide direction to ensure tight coupling between planning outputs and market procurement. Locational needs must be published with sufficient lead time for developer response. LDCs and IESO should map planning outputs to tenders and dispatch schedules, and maintain current open data (e.g., hosting capacity, constraints) on the shared platform.	▪ Ensures procurements target real constraints and DERs respond where they create the most system value. ▪ Improves investor confidence and planning transparency. ▪ Supports efficient market design and procurement alignment.

Recommendation Area	Recommendation	Value for DSO Readiness
International Benchmarking	▪ Consider establishing a recurring international benchmarking to monitor industry best practices in flexibility markets and grid modernization. This initiative would focus on learning from leading jurisdictions, promoting alignment with proven approaches, and ensuring Ontario's frameworks remain competitive and transparent. The program should involve collaboration among key stakeholders, including the OEB, IESO, and LDCs, to share insights and maintain consistency across the province.	▪ Leverages global experience to accelerate Ontario's learning curve. ▪ Supports continuous improvement in market design and operational practices. ▪ Enhances transparency and fosters innovation through adoption of proven concepts.

3.5 Key Takeaways

The transition to the MF-DSO model represents a foundational shift in Ontario's electricity sector. Success will require more than technology, it demands coordinated action across governance, market design, operational readiness, and stakeholder engagement. In this section, we provide targeted takeaways for the OEB, LDCs, and third-party market participants, outlining their respective roles in enabling clear regulatory direction, scalable platforms, robust cybersecurity, and structured planning and workforce development. Together, these actions will ensure flexibility markets operate transparently, efficiently, and at scale.

3.5.1 The OEB's Role in a Future State DSO Transition

To enable Ontario's transition to the MF-DSO model, the OEB can consider leading regulatory evolution through four strategic pillars: (1) Regulatory Clarity, (2) Investment Certainty, (3) Trust and Neutrality, and (4) Governance and Performance. These pillars establish the foundation for clear roles, predictable cost recovery, market integrity, and accountability, which are critical elements for scaling flexibility markets and modernizing grid operations. Key recommendations for the OEB are presented in Table 14.

Table 14 Summary of Key Recommendations for the OEB

Summary of Key Recommendations for the OEB	
1. Create Regulatory Clarity	**1. Affirm Target DSO Model** ▪ Formally designate the MF-DSO model as Ontario's end-state model. This provides regulatory clarity and ensures all LDCs can scale DSO capabilities in a neutral and inclusive way. **2. Codify Roles and Responsibilities** ▪ Define the specific functions LDCs will perform as DSOs, including DER coordination, market facilitation, and grid services. This helps avoid ambiguity and supports consistent implementation across the province. **3. Amend Codes to Permit Market Facilitation** ▪ Update the Distribution System Code and related regulations alongside LDCs to allow LDCs to facilitate local markets and operate shared platforms. In addition, any underlying structural barriers in the Electricity Act or the

Summary of Key Recommendations for the OEB	
	OEB Act would need to be first removed by the Government to provide the necessary legal authority for these amendments to take effect.
2. Build Trust and Neutrality	**4. Establish Regulatory Guardrails for Local Flexibility Markets** ▪ Create rules for DER procurement, neutrality, dispute resolution, and performance assurance. These guardrails will support transparent, competitive local markets and protect consumer interests. **5. Create Market Monitoring and Oversight Functions** ▪ Establish a market monitoring function for local flexibility services to oversee conduct, neutrality, and performance. This ensures fair competition and protects consumers as markets scale.
3. Enable Investment Certainty	**6. Enable Cost Recovery for Grid Modernization** ▪ Develop an outcomes-based framework for approving DSO-related investments like ADMS, DERMS, and telemetry. This ensures LDCs can recover costs while aligning with performance and affordability goals. **7. Advance DER Valuation and Planning Reforms** ▪ Complete the DER Valuation Review (EB-2025-0268) and embed its outcomes into tariffs, Codes, and planning processes. This ensures DERs are compensated fairly and are integrated into system planning. **8. Support Shared Services and DSO-as-a-Service** ▪ Codify the ability for large LDCs to offer DSO services to smaller utilities under regulated SLAs. This ensures province-wide capability without duplicating infrastructure or resources.
4. Institutionalize Governance and Performance	**9. Define Cybersecurity and Data Governance Standards** ▪ Establish minimum cybersecurity and data governance standards for DSO systems, including interoperability and privacy protections. Provide cost recovery mechanisms to support compliance and resilience. **10. Implement Performance Management and Public KPIs** ▪ Create a standardized KPI framework for DSO operations, including metrics like DER capacity procured and settlement cycle times. Public dashboards will support transparency, benchmarking, and regulatory oversight.

3.5.2 LDCs' Role in Future State DSO Transition

Key recommendations for LDCs are presented in Table 15.

Table 15 Summary of Key Recommendations for LDCs

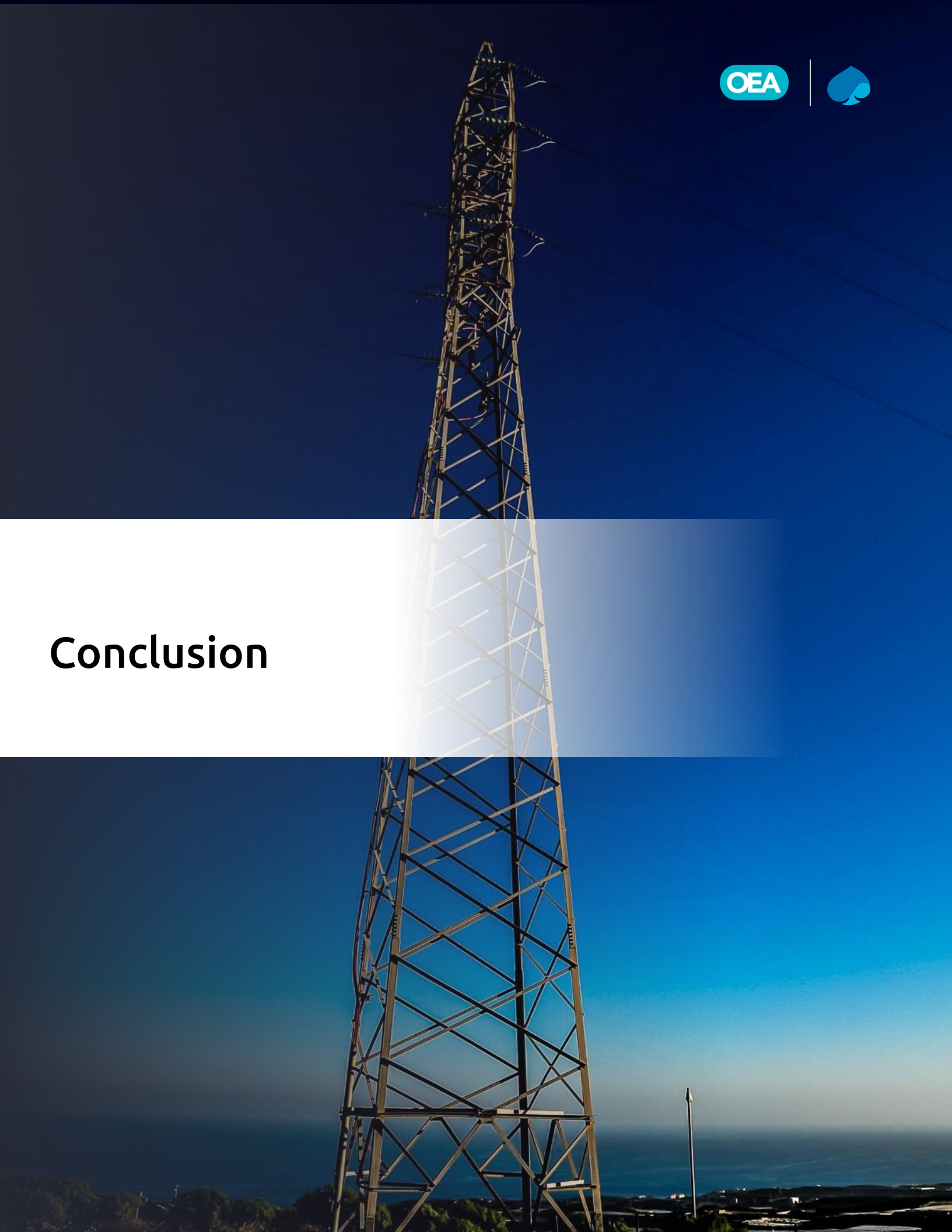
Summary of Key Recommendations for LDCs	
1. Invest in Grid Modernization	▪ Deploy technologies like ADMS, DERMS, telemetry, and automation to enable real-time DER visibility and control. These investments must be embedded in DSP and CIR filings.
2. Scale Pilot Programs and Shared Platforms	▪ Expand pilots across service territories and contribute to shared platforms for secure data exchange and flexibility market operations.
3. Implement Settlement and Measurement Frameworks	▪ Develop protocols for DER performance tracking, validation, and settlement, integrating AMI and analytics systems.
4. Embed Cybersecurity and Data Governance	▪ Apply standards like NIST CSF and IEC 62443 across all DSO systems and ensure secure data-sharing protocols are in place.
5. Adopt Governance Charters	▪ Formalize a governance framework that ensures neutrality, transparency, and separation of market facilitation from commercial interests.
6. Develop TOMs	▪ Define core DSO functions and implement SOPs for dispatch, settlement, and coordination with IESO and aggregators.
7. Launch Workforce Development Programs	▪ Train staff in DER operations, market facilitation, analytics, and cybersecurity, and include these costs in regulatory filings.
8. Establish Neutrality and Data-Sharing Policies	▪ Implement automated compliance checks and standardized APIs to ensure fair access and secure data exchange.
9. Lead Stakeholder Engagement and Education	▪ Educate customers, aggregators, and municipalities about DER opportunities and market participation.
10. Implement Performance Management and KPIs	▪ Track and report standardized KPIs such as DER capacity procured, curtailment rates, and settlement cycle times.

3.5.3 Third Party Role in Future State DSO Transition

Key recommendations for Third Parties are presented in Table 16.

Table 16 Summary of Key Recommendations for Third Parties

Summary of Key Recommendations for Third Parties	
1. Enable Value Stacking and Market Access	▪ Design offerings to participate in both local and wholesale markets, leveraging multiple revenue streams. This includes aligning with dispatch protocols and telemetry standards.
2. Simplify Interconnection and Metering	▪ Work with LDCs and regulators to streamline DER interconnection processes and ensure metering infrastructure supports settlement-grade data.
3. Participate in Pilot Projects	▪ Engage in pilot programs to validate coordination protocols, DER telemetry, and market-based procurement processes.
4. Support Shared Platform Integration	▪ Build systems that conform to shared platform APIs and interoperability standards, enabling secure data exchange and market facilitation.
5. Collaborate on Standard Products and Procurement	▪ Help define and respond to standardized flexibility products (e.g., capacity, voltage support) and participate in joint tenders based on published need maps.
6. Contribute to M&V and Settlement Standards	▪ Adopt province-wide measurement and verification protocols and participate in automated settlement workflows to ensure transparency and bankability.
7. Engage in Stakeholder Education	▪ Support LDC-led outreach efforts by contributing to onboarding materials, playbooks, and community engagement to improve market literacy.
8. Adopt Certification and Compliance Practices	▪ Conform to cybersecurity, privacy, and neutrality standards, including third-party attestation and role-based access controls.
9. Provide Feedback on Platform Usability	▪ Participate in conformance testing and provide input on shared platform performance, onboarding experience, and data governance.
10. Align with Resource Plan and Dispatch Protocols	▪ Ensure systems and operations comply with the required resource offer requirements, dispatch protocols (as defined in TDWG), and outage messaging requirements.



Conclusion

4 Conclusion

Ontario's electricity sector stands at an important moment of transition. The current state readiness assessment confirms strong strategic alignment with the DSO vision across LDCs and third-party participants, supported by broad recognition of the role DERs will play in delivering a reliable, affordable, and decarbonized electricity system.

Findings from the Current State Readiness Assessment show that strategic intent for DSO is well established, but enterprise integration is still needed to fully operationalize functions. Governance frameworks remain informal, creating opportunities to strengthen accountability and neutrality. Core systems such as SCADA, OMS, and AMI are in place, while ADMS upgrades and emerging DERMS capabilities continue to advance; however, gaps persist in interoperability, real-time DER visibility, and advanced forecasting. Workforce readiness is strong but requires targeted development in DER operations, market facilitation, analytics, and cybersecurity. Early flexibility and non-wires pilots have proven the concept, yet scalable platforms for bidding, settlement, and aggregator onboarding are still developing, and market structures continue to evolve toward value stacking and multi-service participation.

Guided by these findings, the report proposes a three-phase roadmap: Phase I – Decision and Enablement, which focuses on establishing the conditions under which MF-DSO capabilities can be developed safely and coherently; Phase II – Building and Scaling, which translates early progress into scalable capabilities; and Phase III – Full Market Integration, which concentrates on comprehensive integration and optimization.

The roadmap emphasizes the need for a clear target DSO model that defines roles, neutrality safeguards, and governance standards to provide regulatory certainty and investment confidence for the MF-DSO transition. It calls for embedding foundational investments in DSP/CIR filings to accelerate the deployment of ADMS, DERMS, telemetry, and cybersecurity. It also highlights the importance of shared platforms and interoperability standards, including province-wide solutions for DER registration, bid routing, telemetry, and settlement. Advancing regulatory reforms—completing DER valuation efforts, enabling cost recovery for modernization, and establishing guardrails for local flexibility markets—is equally critical. Strengthening institutional discipline through robust governance and performance management, supported by neutrality audits, KPI frameworks, and clear dispute-resolution mechanisms, is also essential. Additional recommendations include launching workforce-development programs that provide structured training and certification for DER operations, market facilitation, and cybersecurity, and enabling value stacking and participation across both local and wholesale markets through harmonized dispatch and settlement frameworks.

These actions position Ontario to transition from early experimentation to a scalable, coordinated, and market-integrated DSO model—laying the foundation for a more flexible and resilient electricity system.

Appendix

Appendix

A. Current State Assessment Approach and Framework Overview

This assessment represents the first phase in the development of a comprehensive DSO Roadmap. It delivers an integrated view of readiness across the sector including Ontario's LDCs and third-party market participants such as DER aggregators, technology providers and energy service companies. The evaluation was conducted using a structured, evidence-based approach built on a seven-pillar readiness framework that spans organizational, operational, technical and digital capabilities. These pillars collectively define the maturity required to enable coordinated, market-based, and data-driven distribution system operations.

1. **Organizational Strategy & Vision:** Clarity of vision for MF-DSO role—neutral market facilitator, local flexibility operator, and wholesale market coordinator—aligned with decarbonization and DER integration goals, and embedded within its corporate objectives for grid modernization, customer-centric innovation, and regulatory compliance.
2. **Governance & Regulatory Alignment:** Strength of governance and compliance for MF-DSO transition. Includes structured coordination with DER/A participants, OEB, IESO, and other LDCs for DER planning, market design, dispatch, and market facilitation.
3. **Market & Customer Readiness:** Ability to enable local flexibility markets and customer participation. Covers pilots for DER aggregation, demand response, and transparent, equitable engagement models.
4. **People & Skills:** Workforce readiness for MF-DSO operations—assesses capability in advanced planning (stochastic), coordinated operations and market-based dispatch, including program design, execution, and settlement processes.
5. **Operational Readiness:** Capability to manage real-time grid and DER operations for market facilitation. Focus on forecasting, dispatch, and integration of DER flexibility into system operations.
6. **Technology & Systems:** Integration of IT/OT systems such as SCADA, ADMS, DERMS, AMI and market platforms to support MF-DSO functions. Includes upgrades for interoperability, automation, and advanced analytics.
7. **Data & Digital Capabilities:** Centralized, secure data architecture enabling real-time DER visibility, forecasting, and market settlement. Strong data governance and analytics for managing DER data and performing scenario analysis.

To enable meaningful comparison, stakeholders were grouped into two primary categories, LDCs and Third-Party Participants (DER aggregators and technology providers). Within the LDC category, organizations were further segmented into large and small-to-medium utilities based on customer base, network scale, and organizational and technology maturity required to manage complexity and DER integration:

- **Large LDCs** – operating larger customer bases (approximately 1 million customers) and extensive networks with higher DER potential, requiring significant investment in advanced grid technologies and integrated systems to manage real-time flexibility and market operations.
- **Small-to-Medium LDCs** – serving relatively smaller customer bases (less than 500K customers) and operating networks with proportionally lower DER penetration, resulting in limited capital and resource capacity compared to larger peers.
- **Third-Party Participants** – including DER aggregators, energy service providers, and technology companies that play an increasingly critical role in enabling DER participation and customer-side flexibility.

The assessment leveraged a 21-question information request (IR) distributed to LDCs and DER providers, with each question mapped to the seven pillars. Responses were analysed and validated through conducting one-on-one sessions with stakeholder representatives and aggregated to form a consolidated view of readiness across LDCs and third-party entities. This approach ensures a holistic understanding of sector-wide strengths, gaps and priorities that will feed into the DSO Roadmap.

Participants were assessed individually and then aggregated along a readiness spectrum for each of the seven framework pillars. A low-medium-high scale was used to categorize the level of readiness as detailed in Figure 1.

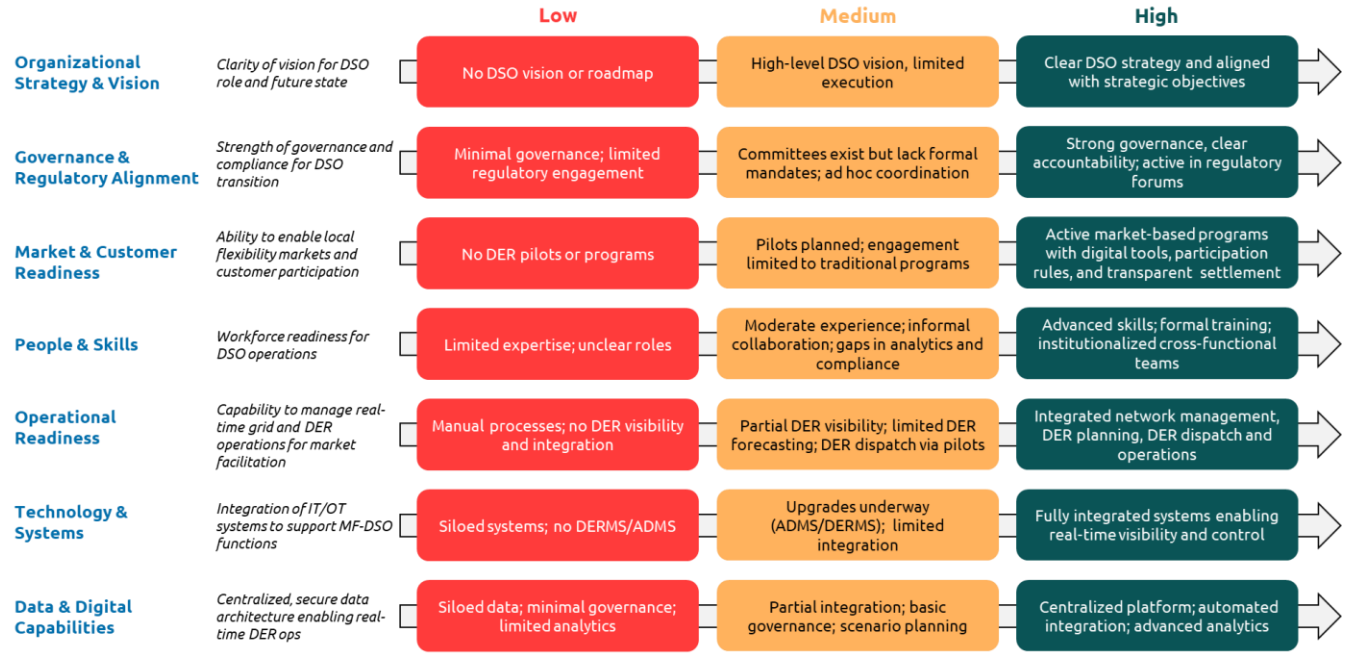


Figure 1 Readiness Assessment Framework Evaluating Criteria

B. Current State Readiness Assessment Results by Stakeholder Category

The readiness assessment reveals that while the sector is strategically aligned with the DSO vision, execution maturity varies. Progress is evident through strong intent and successful pilots/demonstrations, building a strong foundation to move forward and address governance, technical, and data capabilities gaps required to successfully function as a DSO.

- **Strategic Alignment but Uneven Execution:** Most LDCs recognize the importance of the DSO transition and have articulated high-level visions aligned with provincial decarbonization and electrification goals. Large utilities have published roadmaps and/or initiated pilots for flexibility markets, Distributed Energy Resource (DER) aggregation and non-wires solutions. However, execution maturity remains inconsistent, and strategies are not fully embedded in corporate planning.
- **Ad-Hoc Governance and Regulatory Engagement:** Active participation by LDCs in OEB and Independent Electricity System Operator (IESO)-led forums demonstrates a strong commitment to the DSO transition. However, internal governance structures remain largely ad hoc with limited formalization of roles, responsibilities and decision-making processes. To address this gap a minimum standard accountability framework is recommended to ensure consistent, transparent, and effective governance across the sector.
- **Market and Customer Readiness Lack Market Platforms:** Pilots for Demand Response (DR) and DER integration are common, yet scalable market platforms for bidding, settlement and aggregator onboarding are absent. Customer engagement tools exist but lack integration with market processes.
- **People and Skills Gaps:** Technical expertise in DER integration and Advanced Distribution Management System (ADMS) operations is moderate but significant gaps persist in DER Management System (DERMS) operation, market design including economic based dispatch & market settlement, advanced analytics, and regulatory compliance. Workforce development programs are rare.
- **Operational and Technical Limitations:** Core systems like Supervisory Control and Data Acquisition (SCADA), Outage Management System (OMS), Geographic Information System (GIS), Advanced Metering Infrastructure (AMI) are widely deployed, and ADMS upgrades are underway. However, DERMS functionality and interoperability between Information Technology (IT) and Operational Technology (OT) systems remain limited. Real-time DER dispatch and structured DER planning are largely absent.
- **Data and Digital Fragmentation:** Foundational data governance exists in some organizations, but DER data is fragmented across platforms. Real-time integration, automated validation, and advanced forecasting capabilities are still developing. External aggregator data ingestion is inconsistent.
- **Third-Party Participants Lack Interoperability:** Aggregators and technology providers bring agility, customer engagement expertise and innovative tools. However, they lack standardized governance, scalable technology platforms, and interoperability with LDC systems, creating dependencies and integration challenges.

If these gaps persist, the province risks delaying the DSO transition and missing opportunities for efficient DER integration, cost optimization, stronger customer engagement, and faster decarbonization. Persistent operational inefficiencies and lack of market readiness could erode confidence among DER providers and slow the regulatory evolution required to transform DERs from passive assets into active, value-creating participants in the electricity system. In the section below, key observations and path to high readiness is captured for all stakeholder categories which include large LDCs, small to medium LDCs and third-party participants.

B1. Large LDCs

Large LDCs have the technical foundations, scale, and regulatory engagement to act as first movers in implementing DSO capabilities. However, significant gaps remain in scaling operational integration, driving

workforce transformation, and enabling cross-sector interoperability. These challenges are further influenced by each LDC's position in its rebasing schedule, which affects the timing and scope of foundational investments.

Figure 2 shows key strengths and challenges across Large LDCs.

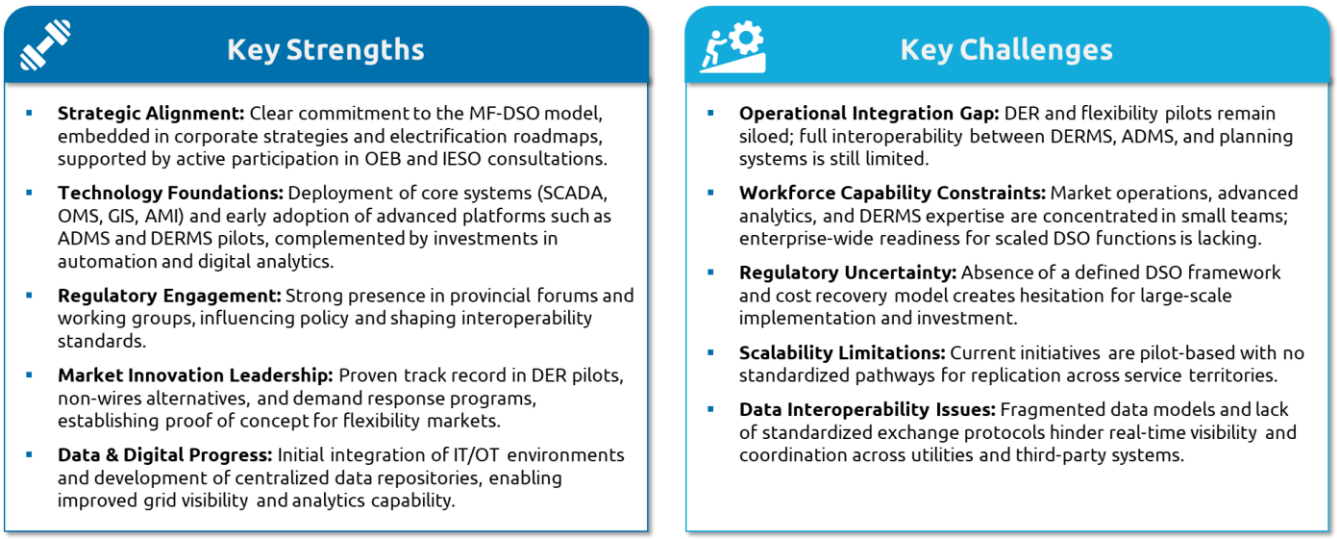


Figure 2 Key Strengths and Challenges- Large LDC

B2. Small-to-Medium LDCs

Small and medium LDCs are critical to equitable DSO transition but face resource, scale and capability constraints. Their progress depends on collaboration, standardization and shared investments. While these utilities provide a strong foundation for community-based DER initiatives, they require targeted regulatory support, shared infrastructure models and workforce development to move beyond baseline readiness and achieve scalable DSO functionality. Figure 3 shows key strengths and challenges across small-to-medium LDCs.

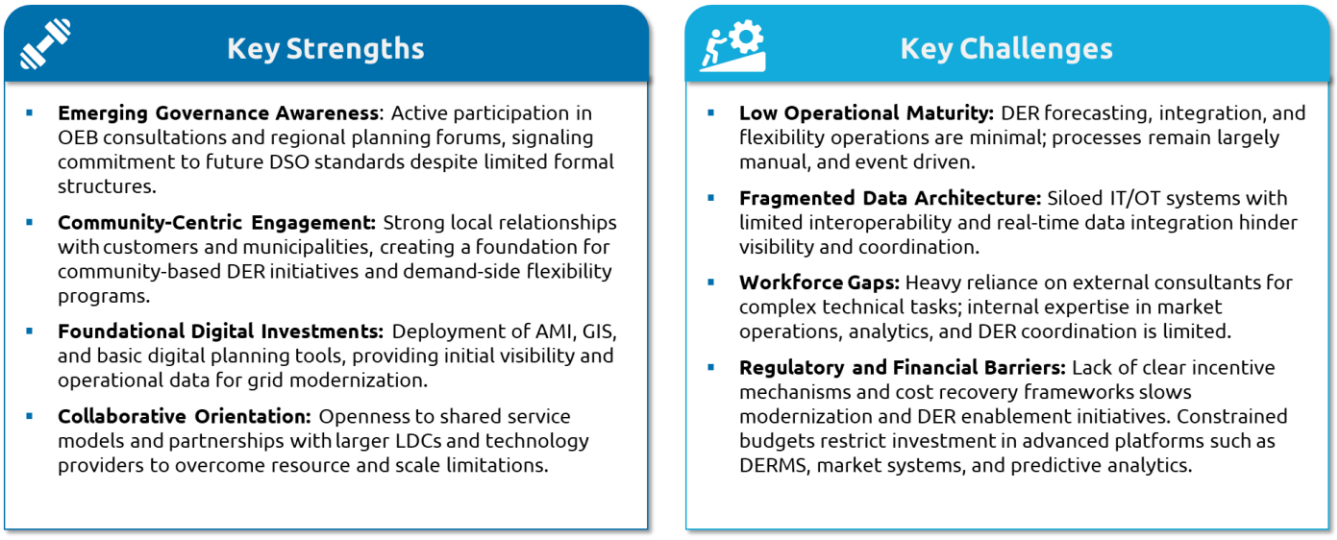


Figure 3 Key Strengths and Challenges- Small-to- & Medium LDCs

B3. Third Party Readiness

Third-party aggregators bring strong market participation experience, proven customer engagement, and advanced digital capabilities including demand response, virtual power plants, and scalable commercial models. They excel in agility and innovation, rapidly deploying pilots and adapting business models to evolving conditions. However, readiness is constrained by governance gaps, reliance on LDC/IESO frameworks, and lack of standardized operating protocols. System interoperability remains minimal, with fragmented data models and absence of enterprise-grade APIs, creating barriers to real-time telemetry exchange and automated settlement. Additionally, limited value-stacking opportunities for DERs hinder customer investment, as current market structures restrict the ability to monetize multiple services, posing a significant barrier to broader DER adoption and the realization of DSO capabilities. Figure 4 shows key strengths and challenges across third party participants.

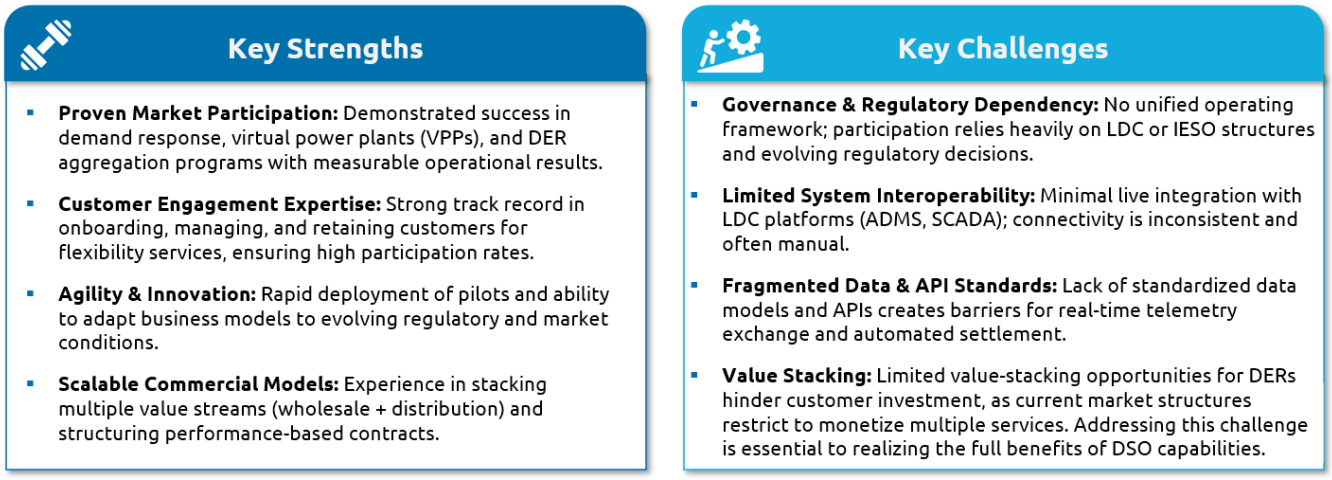


Figure 4 Key Strengths and Challenges- Third Party Participants

C. Current State Readiness Assessment Results by Assessment Pillar

This section consolidates the key observations emerging from the DSO readiness assessment and outlines the potential pathways required to advance stakeholder capabilities across the sector who are key stakeholders in driving the DSO readiness in the province of Ontario. It summarizes the comparative maturity levels identified across **Large LDCs, Small to Medium LDCs and Third-Party participants**.

C1. Organizational Strategy & Vision

Table 17 outlines how each stakeholder category has defined and aligned its strategic direction toward a DSO future, highlighting current maturity and the actions required to translate intent into enterprise-level transformation.

Table 17 Organizational strategy & Vision - observation and path to high readiness

Stakeholder Category	Key Observations	Path to High Readiness
Large LDCs **Medium**	▪ Formal DSO commitments appear in strategic plans but lack clear milestones and detailed execution roadmaps. ▪ Transition strategies are positioned as high-level "directional readiness" rather than actionable implementation blueprints. ▪ For some LDCs, the DSO responsibilities remain delegated to pilots or innovation teams instead of being embedded as enterprise-wide mandates.	▪ Formalize an enterprise-wide DSO roadmap with measurable milestones. ▪ Embed DSO transformation goals into corporate strategy, investment planning, and KPIs. ▪ Align internal initiatives under a unified strategic program rather than isolated pilots.
Small-to-Medium LDCs **Medium**	▪ DSO evolution is acknowledged within broader grid modernization plans but lacks detailed articulation. ▪ Strategic priorities remain focused on reliability and asset renewal. ▪ Limited DSO transition activity, with some initiatives pursued under grid modernization programs.	▪ Develop shared or regional DSO transition plans supported by common tools and frameworks. ▪ Link DER initiatives to long-term corporate and regulatory planning. ▪ Utilize collaboration models or partnerships to overcome scale and resource barriers.
Third-Party Participants **Medium**	▪ Strategies prioritize customer engagement and technology innovation with a strong commercial focus. ▪ No formal integration plans with LDCs or regulatory bodies to align with DSO frameworks. ▪ Business models remain highly dependent on regulatory decisions and data-sharing policies.	▪ Align commercial strategies with regulated DSO frameworks. ▪ Define standardized participation models and operational roles. ▪ Demonstrate measurable contributions to system-level flexibility and reliability outcomes.

C2. Governance & Regulatory Alignment

This section presents the governance and regulatory readiness of each stakeholder category emphasizing how existing coordination structures and compliance mechanisms must evolve to support consistent province-wide DSO implementation.

Table 18 Governance & Regulatory Alignment - observation and path to high readiness

Stakeholder Category	Key Observations	Path to High Readiness
Large LDCs **Medium**	▪ Cross-functional steering committees and regulatory engagement channels are in place, supporting coordination and external alignment. ▪ Internal DSO accountability and decision-making remain fragmented and limited across most utilities. ▪ Governance maturity is uneven, some utilities demonstrate proactive coordination, while others rely on compliance-driven, reactive approaches.	▪ Establish formal DSO governance bodies with defined accountability and oversight. ▪ Create internal policies linking DER operations and regulatory compliance. ▪ Adopt standardized governance templates consistent across utilities.
Small-to-Medium LDCs **Medium**	▪ Engagement in OEB consultations is largely informational, with limited strategic influence. ▪ Internal oversight for DSO capability development not formalized. ▪ Responsibility for DSO initiatives is fragmented across departments and primarily driven by grid modernization programs.	▪ Institutionalize governance for DER integration through shared or regional structures. ▪ Define clear internal ownership for DSO-related decisions and regulatory coordination. ▪ Leverage joint working groups to amplify representation and policy influence.
Third-Party Participants **Medium**	▪ Governance remains fragmented with limited accountability mechanisms. ▪ Lack of formal licensing or operational integration requirements for aggregators. ▪ Collaborative pilots exist but lack standardized frameworks.	▪ Collaborate with regulators and LDCs to define aggregator participation frameworks. ▪ Establish transparent compliance and performance validation mechanisms. ▪ Engage proactively in regulatory design processes rather than reactively responding to consultations.

C2. Market & Customer Readiness

The section captures how effectively LDCs and third parties are enabling customer and market participation in flexibility and DER services, as well as the steps required to progress from pilot initiatives to scalable, standardized market operations.

Table 19 Market & Customer Readiness - observation and path to high readiness

Stakeholder Category	Key Observations	Path to High Readiness
Large LDCs **Medium**	▪ Early market pilots and aggregator collaborations are underway, including flexibility markets, revenue stacking, Demand Response (DR) and DER aggregation. ▪ Strong digital engagement through Advanced Metering Infrastructure (AMI) portals and customer platforms is evident, but participation remains pilot heavy. ▪ Core market operation functions, such as settlement, validation, and pricing mechanisms are absent, with no production-grade platforms yet in place.	▪ Deploy standardized market platforms for automated bidding and settlement. ▪ Formalize aggregator onboarding and customer participation processes. ▪ Integrate customer engagement tools into operational and market workflows.
Small-to-Medium LDCs **Low**	▪ Active pilots or demonstration projects are limited, with most still in planning or yet to be initiated. ▪ Integration between DER customers and core operational systems remains minimal. ▪ Customer engagement in non-wires solutions is very limited, impacting overall readiness for DSO.	▪ Participate in shared flexibility or NWA platforms through regional collaborations. ▪ Enhance digital interfaces for transparent customer engagement. ▪ Leverage centralized market or aggregator services to compensate for resource limitations.
Third-Party Participants **Medium**	▪ Proven customer participation in demand response and NWS pilots. ▪ Limited scalability due to lack of standardized contracts or settlement models. ▪ Customer trust and participation remain strong enablers.	▪ Integrate DER aggregation platforms with LDC and IESO systems via standardized Application Programming Interface (APIs). ▪ Enable continuous participation and scalable operations across multiple DSOs. ▪ Expand customer programs beyond pilots through standardized market access models

C3. People & Skills

This section examines workforce readiness and institutional capability across stakeholder categories identifying current skill gaps and outlining the targeted development measures necessary to support sustained DSO operation and market facilitation.

Table 20 People & Skills - observation and path to high readiness

Stakeholder Category	Key Observations	Path to High Readiness
Large LDCs **Low**	▪ Workforce expertise remains concentrated within traditional engineering domains, with moderate capability in DER integration and DSO operations. ▪ Few structured programs exist for DSO-specific training or cross-functional capability building; formal upskilling initiatives are limited. ▪ For some LDCs, the internal awareness of market facilitation, flexibility operations, and Distributed Energy Resource Management System (DERMS) functionality is low, leaving critical gaps in market design and advanced analytics.	▪ Launch structured DSO workforce development and transition programs. ▪ Provide cross-functional training in DER operations, markets, and analytics. ▪ Build internal capability in digital systems, forecasting, and market operations.
Small-to-Medium LDCs **low**	▪ Skill development remains focused on traditional operating practices and applications, with very limited structured training or formal upskilling programs for DSO competencies. ▪ Limited experience in market operations and settlement, with significant gaps in DSO solutions, including DERMS functionality and advanced analytics expertise.	▪ Partner with larger LDCs or industry bodies for shared training programs. ▪ Utilize regional centers of excellence to develop critical DSO skillsets. ▪ Encourage cross-utility secondments to accelerate learning and skill transfer.
Third-Party Participants **Medium**	▪ Strong practical expertise in data science, software development, and customer engagement, with proven capability in dispatch and settlement. ▪ Limited understanding of grid operations, and large-scale market coordination evolution in Ontario. ▪ Innovation culture is strong, but formal training in interoperability and DSO market processes is limited.	▪ Develop regulatory and operational literacy to complement technical expertise. ▪ Train teams in settlement processes, compliance, and coordination with utilities. ▪ Formalize career pathways for DSO-related market and operational roles.

C4. Operational Readiness

This section assesses each stakeholder category's operational maturity in managing and coordinating DERs, focusing on the transition from manual or pilot-based processes to real-time, system-wide DSO functionality.

Table 21 Operational Readiness- observation and path to high readiness

Stakeholder Category	Key Observations	Path to High Readiness
Large LDCs **Medium**	▪ Advanced Distribution Management System (ADMS) and Outage Management System (OMS) widely deployed, providing foundational capabilities for enhanced situational awareness and grid operations. ▪ For some LDCs, DERMS pilots are underway; however, these remain in early-stage deployment with limited integration into core operational workflows and real-time grid management processes. ▪ Coordination between Transmission Distribution (T–D) layers remain limited to system events, and real-time interoperability and coordination protocols not yet institutionalized.	▪ Transition from pilot-based DER management to continuous, real-time operations. ▪ Implement formal operating procedures and standardized event validation workflows. ▪ Fully integrate DERMS for dynamic coordination and dispatch of DERs.
Small-to-Medium LDCs **Low**	▪ Supervisory Control and Data Acquisition (SCADA) and OMS are deployed but lack integration and optimization for DER flexibility operations. ▪ Limited investment in advanced DSO tools (e.g., DERMS, market platforms, forecasting analytics, scenario planning, and optimized dispatch). ▪ Operational decisions remain manual and event-driven; DER utilization is minimal and restricted to pilot programs.	▪ Modernize network operations through shared DERMS or hosted operational tools. ▪ Establish basic DER visibility and monitoring capabilities. ▪ Standardize workflows for outage response, planning, and DER coordination.
Third-Party Participants **Medium**	▪ Strong DER portfolio optimization; no direct grid dispatch. ▪ LDC integration limited to pilots; no standardized frameworks. ▪ Missing real-time protocols for coordination and settlement.	▪ Create standardized operational runbooks for flexibility dispatch and event management. ▪ Establish real-time coordination protocols with LDCs and IESO. ▪ Adopt uniform performance validation and settlement processes across programs.

C5. Technology & Systems

This section highlights the current state of Information Technology (IT)/Operational Technology (OT) integration and system interoperability across different stakeholder categories outlining the technological advancements required to enable continuous, automated and scalable DSO operations.

Table 22 Technology & Systems - observation and path to high readiness

Stakeholder Category	Key Observations	Path to High Readiness
Large LDCs **Medium**	▪ Mature Operational Technology (OT) and Information Technology (IT) infrastructure established across most large LDCs, with core systems like SCADA, OMS, Geographic Information System (GIS), Meter Data Management System (MDMS), AMI deployed or planned. ▪ Digital transformation initiatives, including DERMS, grid automation, and AMI 2.0 are actively underway. ▪ Interoperability remains limited, with incomplete integration between ADMS, DERMS, and market platforms due to non-standardized protocols.	▪ Achieve enterprise-wide integration of operational and market systems. ▪ Adopt common data models and open interoperability protocols. ▪ Deploy fully interoperable platforms supporting automated DSO operations at scale.
Small-to-Medium LDCs **Low**	▪ Core systems like AMI and OMS are in place, but advanced platforms such as ADMS and DERMS are largely absent, limiting real-time DER visibility and control. ▪ Legacy, siloed platforms constrain interoperability and automation, creating operational inefficiencies and hindering scalability. ▪ Overall digital maturity remains low compared to sector leaders, with limited integration, automation, and advanced analytics capabilities.	▪ Prioritize IT/OT modernization and cloud-based shared systems. ▪ Utilize regional or provincial platforms for cost-effective access to ADMS/DERMS tools. ▪ Phase out legacy systems and adopt modular, interoperable technology solutions.
Third-Party Participants **Low**	▪ Advanced DER management platforms exist but lack grid-level interoperability. ▪ No unified orchestration layer or standardized APIs for secure integration. ▪ Custom, manual interfaces and cybersecurity constraints limit scalability and adoption.	▪ Align with open/industry-based interoperability and cybersecurity standards for secure integration. ▪ Standardize architectures to support multiple DSO interfaces. ▪ Enable scalable orchestration and coordination through platform standardization.

C6. Data & Digital Capabilities

This section summarizes each stakeholders' data management and digital enablement maturity towards secure, standardized, analytics-driven data ecosystems critical for DSO coordination.

Table 23 Data & Digital Capabilities - observation and path to high readiness

Stakeholder Category	Key Observations	Path to High Readiness
Large LDCs **Medium**	▪ Centralized data repositories are emerging but lack standardization. ▪ Real-time integration of DER telemetry remains limited. ▪ Common frameworks for data sharing and analytics are absent across the sector.	▪ Build centralized data platforms integrating DER telemetry and analytics. ▪ Implement unified data models aligned with IESO/OEB interoperability standards. ▪ Develop real-time data-sharing governance frameworks across market actors.
Small-to-Medium LDCs **Medium**	▪ AMI and GIS data support system planning but lack integration across platforms. ▪ No centralized data platform or cross-functional data sharing exists. ▪ Analytics are limited to reliability use cases, with minimal application for DER optimization or forecasting.	▪ Adopt shared or provincial data platforms to enhance visibility and analytics. ▪ Standardize data governance, privacy, and security protocols. ▪ Expand automation of data flows across planning, operations & customer systems
Third-Party Participants **Medium**	▪ Advanced analytics and internal digital capabilities. ▪ No unified data governance or standardized exchange protocols. ▪ Fragmented telemetry and lack of enterprise-grade APIs impede coordination, trust, and automated settlement across DSOs.	▪ Implement automated measurement and verification (M&V) frameworks. ▪ Develop enterprise-grade APIs for secure data exchange. ▪ Align data governance and interoperability with DSO and utility standards.

End of Report

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