

Purpose of the EDA's *The Power to Connect* vision paper:

The purpose of the EDA's *The Power to Connect* vision paper is to present a picture of the local electricity utilities of the future to enable its members to better prepare for the challenges and opportunities that are occurring in Ontario's rapidly transforming landscape and for changing consumer needs. The paper is intended to trigger and inform important conversations among stakeholders that lead to stronger plans for sector resiliency, sustainability and effectiveness. It espouses the value of partnerships whereby utilities assume a greater role in the local management of distributed energy resources (DER) while augmenting the bulk power system.

The EDA's vision:

The local utility of the future will be more than just a distributor of electricity. Over the next 15 years, utilities will also operate fully integrated energy networks with two-way power flows by enabling, owning or controlling small-scale power generation and storage technologies, known as DERs. Leveraging and integrating these technologies into local power systems will contribute to a more flexible and sustainable grid, while empowering customers to take on a more active role in the system. The vision builds on the existing structure, allowing it to evolve with suitable incentives.

The EDA's vision is validated through numerous sources including:

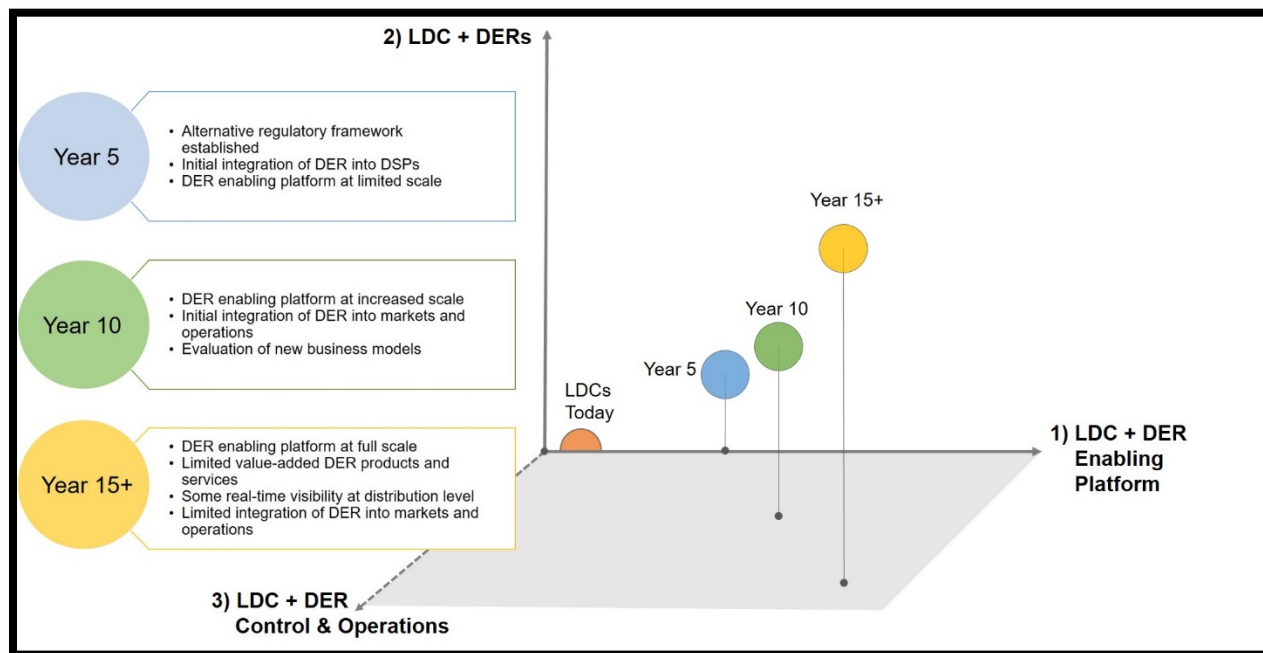
- academics and other experts in the field
- reinforced in almost all current reports that address the next generation of electricity distribution, including MIT's *Utility of the future* and KPMG's *The Agile Utility: A future-state industry model*.
- insights gathered from 80 per cent of the EDA's LDC-member CEOs
- other major jurisdictions such as New York and California, have implemented plans to support DER. New York released a comprehensive strategy, *Reforming the Energy Vision*, for building a clean, resilient and more affordable energy system. California now requires utilities to submit Distribution Resources Plans which indicate optimal locations for DER deployment.

What the future utility looks like:

What the future utility will look like depends on the degree to which local utilities:

- 1) provide an enabling, intelligent platform where DER providers and customers can "plug-n'-play".
- 2) own DER assets, such as microgrids, energy storage, demand response programs and electric vehicle charging infrastructure in their scope of business.
- 3) control and operate DER. In this scenario, the utility would coordinate the distribution market, be able to dispatch resources and send pricing signals to market participants to maximize the value of DER to the grid.

Below is a visual summary of the transformation of local utilities over the next 15 years:



This vision enables utilities to expand their scope of business and access new revenue opportunities. Utilities may be able to own DER, provide enabling platforms, operate as a virtual power plant aggregator or even as a full-scale network operator.

Through these new business activities, utilities would be able to access new revenue from a variety of sources such as platform transaction fees, electrical vehicle charging services, data management services and energy management services.

Benefits of pursuing the EDA vision:

Pursuing this vision will help:

- Contribute to a more affordable and equitable power system
- Maintain strong system performance and the delivery of safe, reliable power
- Improve customer service
- Maximize utility shareholder value
- Contribute to climate change action mitigation initiatives

What utilities are already doing:

Oshawa PUC, Alectra (formerly PowerStream) and Veridian Connections are working on micro-grid projects that integrate multiple sources of clean energy and leverage the latest in energy storage technologies to create connected, self-sufficient and energy-secure communities.

Hydro Ottawa and its partners are building North America's first-ever district utility called ZIBI, where future residents will benefit from living in a brand new, green and technologically advanced community.

Niagara Peninsula Energy and Alectra (formerly Horizon Utilities) have been using their customer data to develop targeted conservation programs that are achieving strong results.

Collus PowerStream is also using its abundance of data in its new SmartMAP tool, a comprehensive solution that allows the utility to complete all their tasks in one application. It is already improving power restoration, decreasing system expansion costs, reducing power theft, producing energy savings and improving customer service.

ENWIN Utilities is one of the first utilities in Canada to use drone technology to make power restoration work more cost-effective and safer for employees.

Entegrus was the first utility in Canada to install grid-edge voltage controls to help improve power flows over long distances. The technology has already delivered many benefits and two other utilities – London Hydro and ENWIN Utilities have also installed the technology.

What needs to happen to achieve the EDA’s vision:

- 1) Engage the Ministry of Energy and advocate for local utilities to play a critical role in Ontario’s 2017 Long-Term Energy Plan.
- 2) Organize a working group to develop a plan to guide the vision.
- 3) Collaborate with external stakeholders to achieve consensus on definitions, guiding principles and the essential regulatory shift to help navigate the process of achieving the vision.
- 4) Investigate an alternative regulatory framework that would incentivize local utilities to integrate DER, where doing so brings economic and/or system efficiencies.
- 5) Develop a benefit-cost analysis framework for evaluating DER and DER enabling technologies.
- 6) Facilitate collaboration among utilities, DER third-party providers and energy solutions vendors to accelerate efforts, and promote cost-effectiveness in the deployment of DER and enabling technologies.
- 7) Work with the Ontario Energy Board to develop a process that will monitor the responsiveness of the regulatory framework to grid transformation.