Alberta's Electricity Future

energyfutureslab

CHALLENGE STATEMENT #9

Evolving traditional business and delivery models to accommodate DERs

What is the systemic barrier?

Electricity customers are increasingly choosing to install distributed energy resources (DERs) to reduce their carbon footprint, insulate against rising electricity costs, and provide greater resiliency. Generators also see economic opportunities in utilizing the technology, and its potential to provide services to the grid. The addition of DERs creates two unique challenges that will require utilities to adapt their business and delivery models: two-way electricity flow on the distribution system and appropriate cost allocation.

First - two-way electricity flow now requires distribution utilities to have a level of visibility and control into their system never before required. This may increase both the utilities' expenses and customer costs by requiring system upgrades, the installation of new equipment and the development of new skill sets and processes. Two-way flow may also enable DERs to provide support to the operation of the grid and help optimize the use of existing infrastructure.

Second - customers leveraging DERs rely less on traditional grid-supplied electricity, reducing their contributions to maintaining grid infrastructure. To account for this loss in revenue, this may result in utilities redistributing their costs among the fewer remaining customers, further increasing customer bills and encouraging more customers to invest in self-supply through DERs. To ensure customers who cannot install DERs are not left footing the bill for those that can, and potentially increasing inequity, new cost allocation models and pricing structures need to be considered.

Why is this critical to achieving our vision?

Alberta's Electricity Future's vision imagines a system where DERs play a key role, and where utilities have evolved their business and service models to offer a vastly expanded set of products and services. These products and services will enable customers to produce, use, monitor, direct and store electricity in a simple and automated fashion while ensuring the grid infrastructure is there when needed and the utility maintains a viable revenue model. The introduction of a broader spectrum of electricity options, which could be

enabled by DERs, is a key pathway for minimizing the risk that low income customers are left supporting the operation and maintenance of the grid—a key to creating an equitable system. DERs that enhance customer control may drive service-oriented design of utility delivery models and programs, and nurture new entrepreneurship and business models. This has the potential to create new efficiencies and even new income streams for customers.

What surface-level barriers are related to this systemic barrier?

Surface level barriers are often what actors see or experience as a result of a systemic barrier. Such barriers provide insights into areas that can be improved should the systemic barrier be resolved.

The following are examples of surface level-barriers to transforming traditional business and delivery models to accommodate increased integration of DERs.

- **DER integration raises reliability, data sharing and privacy concerns**
- **There is insufficient data to model/forecast greater DER integration and its impact, or to inform where DERs may complement / benefit the system**
- **There is limited clarity on how the costs of DER integration will be allocated among different stakeholders (e.g. ratepayers, taxpayers, utilities, consumers)**
- **High volumes of DER integration may require system upgrades / investments in capacity and infrastructure to enable efficient two way power flows**
- **Current regulatory and market structures have limited mechanisms for attributing value and system benefits to DERs, including demand-side flexibility**
- **Mistrust between utilities and customers creates a challenging environment for negotiation and partnership in the creation of better services to benefit both the utility and customer**
- **Some communities and individuals lack the financial and planning resources and expertise to operate and maintain DERs throughout the asset's life span**
- **There is limited visibility and communications within the distribution system to coordinate and dispatch DERs.**
- **Customers experience high costs and a lengthy process to connect DERs to the grid**