CHALLENGE STATEMENT #1

Incentivizing the optimization of existing electricity assets and infrastructure

What is the systemic barrier?

We define **optimizing** as transforming the electricity system by first leveraging what already exists. This includes measures to reduce electricity demand and consumption and increase the efficiency of the overall system (not just the efficiency of individual assets), in order to reduce energy costs. Where economically and operationally feasible, optimizing will maximize value of existing investments, minimize stranding infrastructure and reduce electricity costs for customers.

Alberta's transmission and distribution companies (i.e., utilities) play a critical role in deploying infrastructure and assets to deliver electricity to citizens, Rights and Title holders, communities and businesses. While incentives are in place to encourage utilities to find operating efficiencies, few drivers exist to encourage them to optimize existing electricity system assets and infrastructure, or explore solutions that are not seen as capital investments. This results in a preference for new capital expenditures, on which utilities earn a rate of return, over operating costs, which are typically needed for optimization and for which there is no rate of return for utilities. This can lead to underutilized assets and under-realization of broader environmental and social benefits that may come from non-asset based investments.

Factors currently working against optimization include:

- Utilities earn revenue by the amount of electricity they deliver to customers so they have no incentive to encourage solutions, such as energy efficiency and conservation, demand side management, etc., to reduce electricity consumption as part of optimizing the system.
- There is minimal opportunity to earn revenue by using operational solutions when they are equally or more cost-effective than viable capital solutions with similar benefits/outcomes.
- Transmission regulations focused on zero-congestion and cost-allocation to load customers do not encourage generators to connect to the grid in places with excess capacity.

Not enabling more optimization increases the risk of an overbuilt, underutilized and high cost system at a time when the province is facing increasing electrification driven, in part, by a greater emphasis globally on sustainability.

Why is this critical to achieving our vision?

Within Alberta's Electricity Future vision, we have identified affordable, abundant and emissions-free electricity as being critical to maintaining and strengthening Alberta's competitive advantage. A net-zero electricity grid is a key enabler for decarbonizing Alberta's economy and attracting new businesses and industries. Through optimization, we can lower capital investment needs, decrease GHG emissions and other environmental impacts while also expanding supply, and reducing the near- and long-term costs to ratepayers.

Unlocking this barrier moves us towards a system that "delivers more than just electrons" by investing in technologies and services that optimize the existing grid.

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 that are the result of a system where utilities are largely incented to invest in new infrastructure, not to optimize.

- **Limited availability of demand-side management programs in Alberta**
- **Utilities, retailers and generators' growth in sales is tied to growth in consumer consumption**
- **Non-wires solutions are allowed only to relieve congestion and under specific circumstances**
- **New generation is not strongly incented to connect in areas with existing transmission or distribution capacity**
- **Utilities are not incented to invest in innovative technology solutions**
- **Customers have little ability to reduce their electricity bills through changes in their electricity consumption**
- **There is no distribution policy or direction to optimize**