Gerry Runte
House District 146
York-Wells-Ogunquit
Phone: (207) 361-7143
Gerry.Runte@legislature.maine.gov

HOUSE OF REPRESENTATIVES
2 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0002
(207) 287-1400
TTY: MAINE RELAY 711

April 13, 2023

Testimony of Rep. Gerry Runte presenting

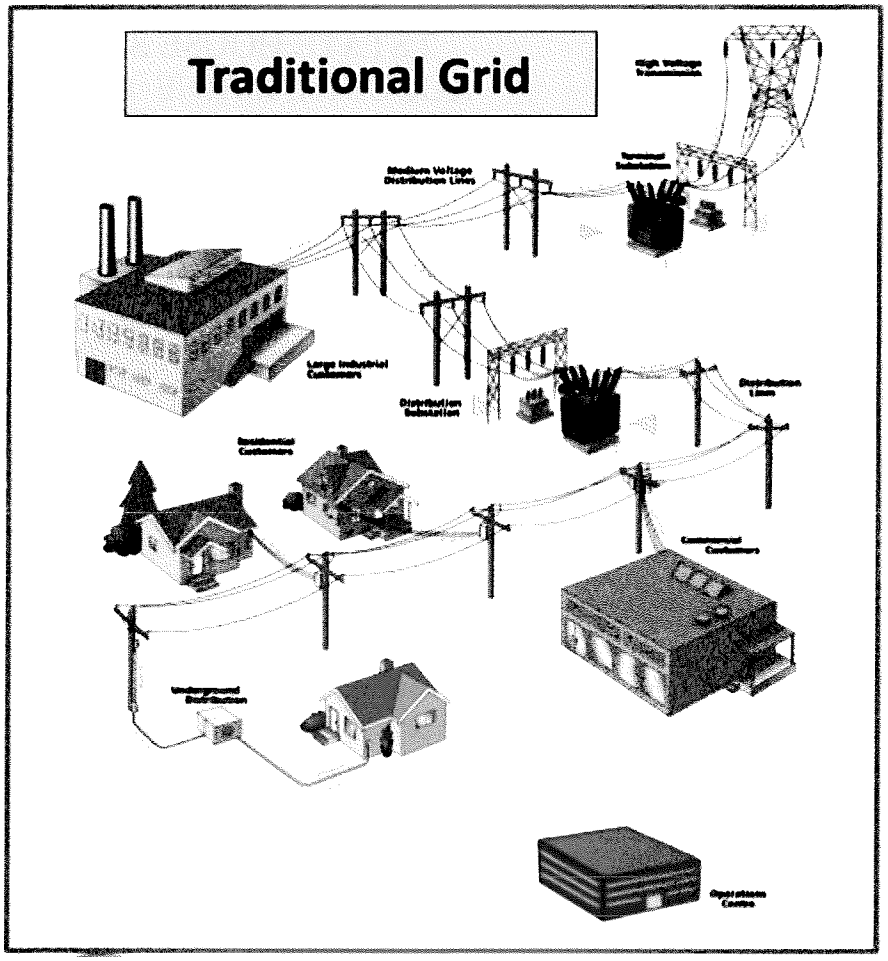
LD 952 Resolve, To Create a 21st-Century Electric Grid

before the Joint Standing Committee on Energy, Utilities and Technology

Senator Lawrence, Representative Ziegler and fellow members of the Joint Committee on Energy, Utilities and Technology, I am pleased to present to you LD 952, a bill that will design the architecture for the 21st-century electricity delivery system Maine will need to achieve its climate goals, while assuring the lowest cost and highest reliability for customers and the State's economy.

Before I describe this new architecture, we need to understand our current situation and how we got here.

From 1910 – 2000, electricity regulation created a set of rules governing how electricity would be priced and delivered to customers and how utilities would recover investments in the delivery system. Until 2000, these rules managed a one-way system where electric utilities generated electricity at large, centrally located power plants, transmitted that power over long distances and then distributed it to customers. This design used economies of scale to build the system rapidly and keep costs low. The following schematic illustrates this model.



It was very successful, assuring nearly everyone who wanted it could get affordable electricity, enhancing the State economy and the well-being of its citizens.

Since 2000, things have changed.

Utilities in Maine now only deliver electricity which is generated in an open, regional market. Local generation is becoming economic – a mature market in solar has emerged. New technologies, such as smart meters, automated substations, flexible AC transmission controls, and advanced mesh communications systems, are being introduced. Electric vehicles and heat pumps have been promoted; storage and other distributed energy resources are on the horizon.

But last century's grid design and its regulatory structure were never meant to accommodate these changes. Consider the current environment:

- Integrated distribution planning (IDP) identifies potential grid reliability and infrastructure problems, defines their solutions, and determines where distributed generation would best fit.
    - Significant distributed generation installed or planned, yet Maine's IDP process in its early stages.

    - Siting and interconnection of local generation has been, at times, less than optimum.
    - Unclear how much distributed generation can be accommodated without significant investments.
    - Conduct of the IDP process is the responsibility of the PUC, but two of the three tools in the IDP toolbox of solutions - load management and non-wire alternatives like distributed generation or storage - are not within the PUC's purview.
    - Nonwires options are limited to 69 KV transmission level and higher but are not being considered at the distribution level, where they could be a vital tool.
- Controversies exist regarding how distributed generators are compensated for their output and how and for which customers pay for this electricity.
- The State has had significant penetration of smart meters, but other than automated meter reading, their promises of smart home energy management, load control, budget billing, usage alerts and time-varying pricing remain untapped.
- Rate regulatory structure directly conflicts with several new initiatives.

This is not meant to be an indictment but rather an expression of where things have evolved to date. But is it any wonder that in this environment, the cost and reliability of the electric utilities are below expectations and that problems have arisen when attempting to connect distributed generation?

Real-time assessment, monitoring and precision control of the distribution grid would ensure reliability for beneficial electrification. The cost of both supply and delivery could be reduced through far more optimized operations of the grid, avoiding the cost of new transmission and distribution upgrades, reducing the power lost through line losses and reducing the overall need for power through precise load management, while displacing large central fossil-fired generation with local low to zero carbon sources and storage. These changes, along with other measures, if deployed in a comprehensive and integrated manner, offer considerable benefits to consumers and the State's economy.

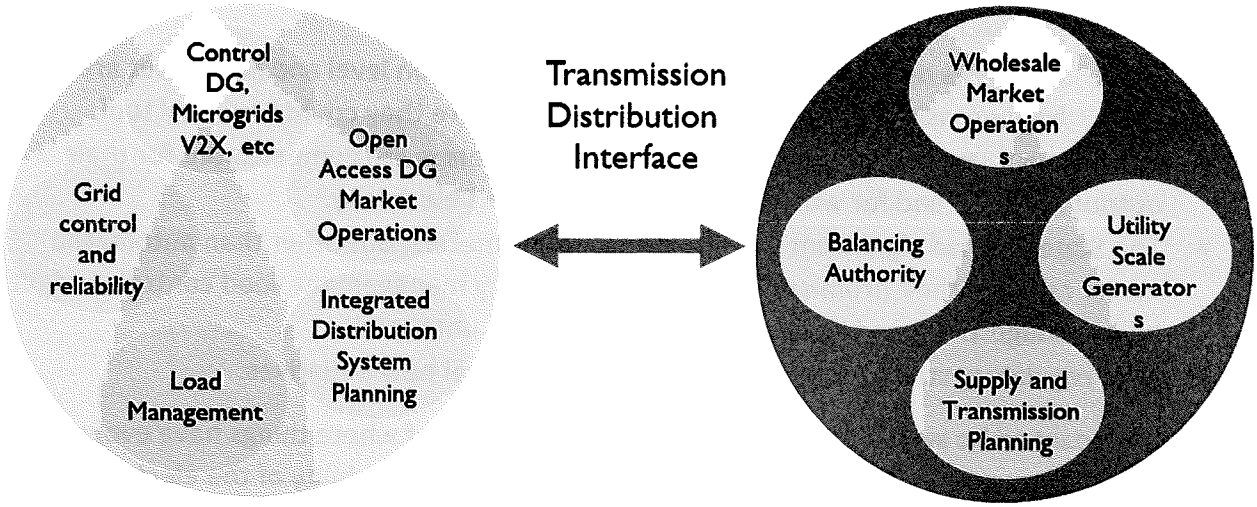
This is not some far-off vision- it is feasible with current technology.

The 21st-century grid we need is a multidirectional network optimized in real-time that facilitates transactions among suppliers and consumers for the lowest cost and highest efficiency. Many technologies are already installed to enable this grid, and the locally generated zero-carbon energy necessary is readily available.

A DSO is a distribution-level version of the Independent System Operator now control controlling our regional wholesale power systems and market. Like the ISO, the DSO would have four primary functions: real-time operational controls, resource scheduling and load management, and market operation.

New York, California, Australia, the UK, and the EU have all recognized the need to restructure their electricity systems from one-way delivery to multidirectional networks that allow more significant deployment of distributed energy resources, real-time, precise control and new transactional markets. They all develop local variations on the Distribution System Operator (DSO) model.

How might this look in Maine? Here is one possibility.



The scope of a Maine DSO might include the following:

- Be the sole interface with ISO-NE for all non-FERC-regulated actions.
- Control but not own all distribution grids in Maine – utilities would continue to own and maintain their assets.
- Operate an open access market for distributed generation, including microgrids V2X and storage, like ISO-NE's wholesale power market.
- Review and approve integrated distribution plans (IDPs) for all utilities through the lens of a statewide perspective to optimize operation, meet grid modernization goals, identify where issues exist and define optimum solutions (infrastructure, non-wires, load management). IDPs could then drive multiyear rate plans and inform performance-based rate-making goals.
- Acquire and share real-time data from smart systems to optimize operation, optimize demand management and optimize energy efficiency programs, using that data to inform earnings adjustment mechanisms for investor-owned utilities.
- Act as the distributed generation aggregator as a means of the ISO to comply with FERC Order 2222, which requires ISOs to allow distributed generators access to the wholesale markets.

These are all possibilities but are only that. Maine needs a DSO design custom-made for our unique situation, carefully vetted for costs and benefits. This bill envisions a two-step approach to accomplish that end.

In the first phase, the Governor's Energy Office would hire a 3rd party consultant who would:

- Define
    - Ideal scope of DSO responsibilities
    - Where a DSO best fits in State government
    - Regulatory authority
    - Rate regulatory reforms necessary to implement
    - Costs and benefits of creating the DSO
- Assess
    - Role in accelerating the achievement of Maine's climate action goals and growth in DER
    - Potential improvements in system reliability and performance
- Incorporate a system design that assures energy justice
- Include a staffing and budget estimate for its operation
- Provide a go-no-go recommendation, and if a "go" recommendation, define steps necessary for the implementation
- The go/no-go recommendation would be presented to this committee by January 1, 2025, although earlier if possible. The committee would then determine whether to proceed with the implementation steps developed by the consultant.

Developing this architecture will be a unique exercise. It will require a consultant, or team of consultants, with diverse qualifications that include market and rate regulatory design, distributed generation integration and distribution grid planning. The bill text offers specific recommendations on what those qualifications should be.

A recommendation regarding the budget for this analysis was cited in the amended language; however, I would ask the GEO to return at the work session with a better cost estimate.

In summary, if Maine wants to achieve its climate goals and ensure that its distribution grids are as economical and as reliable as they can be, if Maine wants its electric grid to serve its citizens and attract new business to the State, it needs to adopt a different perspective as to how its electricity delivery system operates, is controlled and regulated. The technologies to implement a multidirectional, interactive, transactional grid are readily available. What's needed is a solid plan, the will to execute it and the willingness to become a leader in grid modernization.

Thank you for your consideration.