



Advanced Distribution Planning:

A NEW APPROACH TO SYSTEM PLANNING

Utility system planners today stand at a crossroads. Tools that have served them well for decades cannot keep up with the dizzying pace of change within the industry including numerous advancements in technology.

Today's utility investments must stand the test of time in terms of traditional power delivery, while also addressing renewable energy, customer choice, electric vehicles, energy storage, smart grid technology, distributed generation, and energy efficiency. Traditional planning methods no longer provide the detailed information needed to make long-term capital investment decisions with confidence. The rapidly changing landscape of the energy industry brings greater risk for utilities and their investment decisions, as well as massive amounts of untapped data on which to base those decisions.

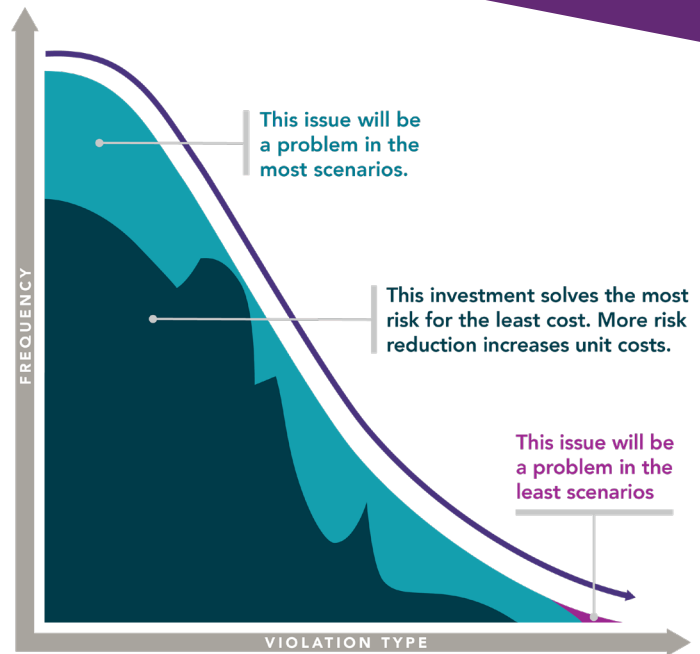
Leidos has developed a service solution that allows our system planners to dive deep into that data and use advanced analytics and automated processes to deliver fully informed, defensible, and data-driven decisions: Advanced Distribution Planning (ADP). Using advanced algorithms, ADP harnesses the unprecedented volumes of available data to assess both wires and non-wires alternatives and accelerate our clients' journey from discovery to deployment.

Leidos identified a forward-thinking utility partner to participate in a project using the ADP service solution. Nashville Electric Service (NES), a progressive utility serving more than 400,000 customers in Middle Tennessee, collaborated with Leidos to explore an area of their service territory with capacity and reliability concerns. Prior to evaluating their alternatives with the use of ADP, NES planners used traditional planning methods to recommend construction of a new substation to boost reliability in the area in question. Their planning methods included projecting 2027 annual peak feeder and substation loads by trending historic readings and analyzing the area at those projected loads.

Leidos used ADP to produce a 10-year system plan for this region of NES's service territory. The plan incorporated machine-learning methods on a high volume of time-series data to identify planning criteria issues, develop alternative project recommendations, and validate that NES's proposed capital projects would alleviate the capacity and reliability issues.

ADP automated the capital planning process, giving planners a deeper understanding of the planning criteria violations and risks posed – not just by the magnitude of the problem on the system, but also by the frequency and duration of the problem's occurrence. As illustrated in the figure below, ADP identified the issue that would be a problem in the most scenarios and the investment that solved the most risk for the least cost. It also identified low frequency issues that may not warrant significant investment. The ADP project validated NES's original plan to enhance reliability in the targeted area with a study that is defensible, repeatable, and scalable for the entire NES system.

By making data-driven investment decisions, utilities are better positioned to select and defend capital investment plans, whether traditional wired solutions like reconductoring, or non-wired solutions like battery storage or targeted energy efficiency approaches.



From customers and communities to board members and regulatory bodies, utilities serve a variety of stakeholders. The pressure is always on to make solid, cost-effective decisions backed by real data. By making data-driven investment decisions, utilities are better positioned to select and defend capital investment plans, whether traditional wired solutions like reconductoring, or non-wired solutions like battery storage or targeted energy efficiency approaches.

To make investments that stand the test of time, utilities must plan far into the future while standing on shifting sands. ADP puts utility planning on solid ground. To learn more about how Leidos uses Advanced Distribution Planning to provide defensible plans for the electric grid – both now and into the future – **contact our team for more information.**

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