

TO: State and Local Policy Officials
FROM: Schneider Electric State Government Affairs
SUBJECT: Futureproofing Energy Infrastructure & Fully Unlocking Infrastructure Dollars
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In 2022, State and local officials will be charged with directing unprecedented investments in infrastructure that will impact their community's ability to thrive, modernize and compete for generations to come. It is more vital now that those state and local officials think about infrastructure differently than they have in the past. Particularly, states must fully leverage the technological advances that have been developed since the last major investment of this magnitude.

With heightened attention to modernizing critical infrastructure and the recent passage of the *Infrastructure Investment and Jobs Act*, there has never been a more important time to ensure that funding dollars are spent wisely on *digitized infrastructure* that leverages:

- connected devices,
- cutting edge software and data analytics,
- Artificial Intelligence (AI),
- Internet of Things (IOT),
- Industrial Internet of Things (IIoT).

To support these generational decisions, we are pleased to present the following memo outlining how to futureproof your energy and infrastructure investments. However, **deploying these readily available digital solutions will require critical policy changes** to fully realize the vision of a modern digital economy.

What Do We Mean by Digital Solutions? Transitioning our country's infrastructure from analog to automation can dramatically improve efficiency, resiliency, and sustainability. Incorporating technology and software solutions enables you to track and remotely monitor critical infrastructure operations in the community, predict failures before they occur, and deploy real-time fixes that protect your investment and people. These are the changes and upgrades that define "digital."

What Is the Value Proposition to the State and Community? Investing in smarter infrastructure can save taxpayers money in the long run and create a safer community for your citizens.

What Is the Current State of Play? The first step in transforming outdated infrastructure is updating government procurement practices, which **currently reinforce entrenched analog build-out**. Short-timeline, lowest initial cost capital expenditures are not futureproofed and therefore preclude resiliency and sustainability improvements. By changing procurement decisions to level the playing field between lower cost analogue capital expenditures (CAPEX) and higher initial CAPEX digital infrastructure that has lower operating expenditures (OPEX), our states and cities can **reduce high maintenance costs** over time while delivering **best in class infrastructure** to citizens. These dueling outcomes can be seen in housing policy where the lower CAPEX can make initial housing ownership more affordable but the cost of living in housing that is not energy efficient makes the month-to-month occupancy cost prohibitive.

Further, digital improvements encompass many life cycle improvements. For example, installing sensors and communication networks allow the collection of real time data to feed software with machine-based learning—resulting in operational efficiencies and cost-savings. The higher upfront capital investment not

only provides superior technology and energy efficiency, but also saves operating costs over the lifetime of the infrastructure.

Analog systems are limited. A simple example of the difference between an analog and digital system is looking at how water leaks are fixed. In an analog system, you may only become aware of a growing pipe leak much too late. The situation may have already escalated to an emergency level that costs time, resources, and personnel. In contrast, a digital water system *immediately* recognizes the smallest drop in pressure, pinpoints at an exact leak location, and allows for **planned, predictive and preventive decisions** to be made regarding the water distribution system.

Three Policy Proposals to Unleash Digital Solutions:

- 1) **Pass a law that requires all new infrastructure to be digitized or digitally transformed.** Here are two alternative definitions worth considering:
 - a. *“Digital infrastructure” means joint fiber-optic and wireless-based advanced information and communication technology (IoT – option 1) platforms with embedded multi-functional advisor services that facilitate 24/7 online real-time connectivity between nodes (IoT – option 2) in the operational network to allow remote monitoring, control and automation of assets and/or the outsourcing of advisor services to service providers.*
 - b. *“Digital transformation” is a continuous process of multi-model adoption of a fully integrated suite of digital technologies to fundamentally change the way government infrastructure or services are ideated, planned, designed, deployed, and operated. This transformation enables the collaboration of teams and enrichment (not duplication) of models, such that designs are optimized, while costs, schedules, and embodied carbon are tracked and controlled, resulting in the most efficient and sustainable buildings possible.*
- 2) **Adopt a budget provision that requires all infrastructure to be digital infrastructure in your capital budget using the definitions above.**
- 3) **Change your state’s procurement process from deceptive “lowest cost” to “lowest lifecycle cost.”** This considers cradle-to-grave costs that include the operating expense over the lifetime of that infrastructure as well as decommissioning.

Three Policy Changes to Unleash a Resilient, Modernized Grid:

- 1) **Any money spent or directed to be spent by regulatory bodies for electric grid modernization should focus on distribution utilities that are digitizing circuits between distribution substations and customers.**

When creating the optimal energy efficiency systems by deploying microgrids, installing building energy management systems (BEMS), or developing optimized fleet EV charging networks, these systems must be fully digitized, safe electrical environments connecting to an analog distribution circuit on the other side of the meter.

Because utilities are unable “see” what is happening in real time, they are unable to take advantage of the optimization that can be extended by customers to other ratepayers on that same utility distribution circuit.

- 2) **Direct regulated and public utilities to develop technology-neutral retail rate signals to work with microgrids, BEMS, EV charging, and other customer-owned distribution energy resources (DERS) initially in the top 200 annual hours (five days) of utilities needing capacity, offloading capacity, or ancillary services on distribution circuits.**

Automated demand response is a critical component of a modern-day electric system and provides the flexibility needed to mitigate unplanned events that tax an electric distribution system.

The most efficient, economic, and resilient energy transaction happens when supply and demand can meet at the closest point possible. Having a retail value for DERs in State Sovereignty to work with federally created wholesale markets represents a complete marketplace where just values can be found for ratepayers. Today's market represents only half a market signal, that being wholesale.

3) Direct the PUC to adopt performance-based regulations for distribution utilities to earn a return.

The 1800's rate-of-return, or cost-of-service, monopoly regulatory model prevents grid modernization, resiliency, and transformation. As opposed to cost-of-service regulation, where utilities have an opportunity to earn a return on capital investments, performance-based regulation (PBR) allows utilities to earn a return based on their achievement of specific metrics.

PBR recognizes the efficiency digital technology can deliver today. It also reflects what customers in a rate class want from their distribution utility—reliability, better customer service, lower rates, or many other values that they can articulate in outcomes measured by PBR.

Call to Action: Our team is here to serve as a resource as you consider how best to implement digitally enabling legislation. We hope to work with you in developing full proposals in bill form from the recommendations outlined above.

Reference: Please see attached as a reference to recent reports on grid modernization, energy storage, and DERs from the bi-partisan Energy Supply Task Force convened by the National Conference of State Legislatures (NCSL) that offer a menu of policy solutions to consider.