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Key Actions for Grid Planners and Other Stakeholders to Prepare Electric Distribution Systems for Rising Levels of Building Electrification

Reston, Va. – The Energy Systems Integration Group (ESIG) has released a new report, *Grid Planning for Building Electrification*, discussing new challenges for distribution systems under increased levels of building electrification and outlining key actions for planners and stakeholders to prepare the system for these new load impacts.

Buildings across the United States are becoming increasingly electrified, driven by technical advancements, cost reductions for some building technologies, consumer preferences, and policy goals for decarbonization. However, the effects of this load growth on the distribution system are often only a minor consideration in policymaking and long-term planning studies. Distribution planning decisions made today will need to support our society well into the 2060s and beyond. This new report discusses the steps that distribution planning stakeholders can take today to establish a grid foundation that captures and addresses the new challenges presented by building electrification.

"Building electrification gets a lot of attention in the industry, but little information is available about what grid planners should do about it today," said Sean Morash, chair of ESIG's Grid Planning for Building Electrification Task Force. "This report bridges the gap between building energy modelers and grid planners, providing insights that will shape the distribution and bulk power systems that support our energy transition."

Load impacts from building electrification—primarily from the electrification of space heating via the adoption of heat pumps in commercial and residential buildings—are expected to increase the seasonality and weather dependence of loads, particularly in the winter. In addition, building electrification requires the integration of traditionally independent planning processes for energy delivery systems (fossil fuel and electricity), which can change how planners weigh the pillars of reliability, resilience, affordability, and sustainability.

The Energy Systems Integration Group's Grid Planning for Building Electrification Task Force identified four priority areas to improve distribution system planning:

- Improve forecasting
- Holistically modernize planning approaches
- Avoid the largest impacts by managing demand
- Be proactive with grid upgrades

Debra Lew, executive director of ESIG, noted how "building electrification will increase electricity consumption and may increase peak demands on grid infrastructure, especially at the distribution level. However, energy efficiency measures may help mitigate and even reverse

increases in peak demand, highlighting the need to take a holistic view. This report provides practical guidance to help planners do that."

Robust planning will need to be informed by utility engagement with external parties. Distribution planning analysis can inform regulators and policymakers about the implications of certain electrification pathways. Distribution planners will also need help from technical colleagues, such as forecasters, program administrators, and natural gas network designers, as they wrangle new problems and identify new solutions. Open dialogue and honest assessments of feasibility, with rigorous and holistic benefit-cost analysis and distributional equity analysis, can reveal building electrification approaches that work for everyone.

ESIG is a nonprofit organization that marshals the expertise of the electricity industry's technical community to support grid transformation and energy systems integration and operation. The report and executive summary can be downloaded at https://www.esig.energy/grid-planning-for-building-electrification/.

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