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ESIG RELEASES NEW REPORT, TITLED FORECASTING FOR LARGE LOADS: CURRENT PRACTICES AND RECOMMENDATIONS

Load forecasters face significant uncertainty as emerging large loads are poised to drive power demand—this report offers recommendations for load forecasts for more efficient power systems planning

RESTON, Va. – The Energy Systems Integration Group (ESIG) has released a new report, *Forecasting for Large Loads: Current Practices and Recommendations*, reviewing utilities' and system operators' approaches to forecasting large loads—including from data centers, oil and gas, emerging industries, and manufacturing—and providing recommendations for improving forecast accuracy.

After two decades of relatively flat demand, utilities are now forecasting that the U.S. electricity system will grow at its fastest pace since the 1960s. Data centers are expected to account for roughly half of this growth and other emerging large loads accounting for most of the rest. However, the pace and scale of this change are uncertain, making it difficult for utilities and system operators to accurately forecast these loads to better inform resource and transmission planning.

"Forecasting the extent to which new loads will emerge and grow is extremely challenging because of the complex characteristics of new loads," said Trieu Mai, visiting fellow at ESIG. "The sheer number of requests, rapid advancements in AI technologies, and evolving business practices are examples of challenges utilities need to consider."

Inaccuracies in load forecasts have important consequences—for consumers' costs as well as for grid reliability. Load forecasts that under-estimate actual demand can lead to resource adequacy risks and a risk of under-serving customers due to insufficient infrastructure. Conversely, load forecasts that over-estimate demand could result in higher electricity prices to utility customers because infrastructure could be built but not ultimately needed. Utilities need accurate forecasts in order to efficiently plan and construct the necessary generation, transmission, and other facilities needed to serve new large loads together with other loads.

"Large load forecasting is rapidly developing," said John D. Wilson, of Grid Strategies LLC and project team lead. "The study and recommendations benefited from the active

engagement of about two dozen utilities and many other experts. Everyone is eager to learn and improve."

The report recommends that the industry adopt clear definitions for five core metrics that large load forecasts can use to characterize and evaluate new loads: (1) project realization (the rate at which projects included in the load forecast are placed in service), (2) energization date (the schedule for when a load will be placed into commercial operation), (3) load realization (the forecast peak load once new load projects fully ramp up to maximum operation), (4) load ramping (the monthly or annual forecast of demand from initial project energization to full forecast peak load), and (5) load factor (actual energy use as a proportion of peak demand) and load shape (more detailed energy use information such as an hourly schedule). Together, these describe whether, when, and how completely large load projects materialize and how they use electricity over time.

"The consistent application of these metrics across forecasts will improve comparability and allow for more effective validation of large load forecasting practices and assumptions," said Sophie Meyer, of Grid Strategies, who assisted with leadership of the project team.

The report includes ten recommendations to help more accurately measure—and reduce—load forecast uncertainty. The better a utility understands its load forecast, the more efficient and effective its transmission and generation resource planning can be. The recommendations also consider the needed steps and data to improve consistency across utilities, and address the potential for load flexibility for new large load customers.

The report was previewed in Wednesday's pre-release webinar briefing attended by nearly 300 industry experts and others with an interest in the topic. A recording and copy of the webinar presentation can be found at https://www.esig.energy/event/webinar-large-load-forecasting-practices/ .

For more information on ESIG, visit www.esig.energy .

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About Energy Systems Integration Group

ESIG began in 1989 as the Utility Wind Interest Group, an organization created to educate utilities about wind power. Within ten years, it developed into a significant technical educational organization and convener of peer-to-peer workshops to assist utilities, system operators, project developers and equipment manufacturers from around the world with the integration of wind power, and then by 2011, also with the

integration of solar power. With renewables becoming the mainstream sources of new generation and reliability services, the organization expanded its mission, branding and international participation in 2018 through a merger with the International Institute of Energy Systems Integration (IIESI) to become the Energy Systems Integration Group (ESIG), taking on not just the planning and operations of electricity systems and power markets, but also the growing issues for other energy vectors, including the electrification of transportation, buildings and industry for decarbonizing the entire energy supply.

ESIG now serves as a resource for a broad cross-section of the global energy industry, including utilities, ISOs, independent power producers, project developers, manufacturers, forecasters, consultants, educational institutions, and government agencies, including regulatory bodies.

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