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OBTAINING ELECTRIC POWER SYSTEM FLEXIBILITY FROM THE INDUSTRIAL SECTOR

Electrified Industrial Loads and Green Hydrogen Production Can Be Important Sources of Flexibility in Later Stages of Decarbonizing Our Electric Power System

Reston, Va. – The Energy Systems Integration Group has released a new report, [Increasing Electric Power System Flexibility: The Role of Industrial Electrification and Green Hydrogen Production](#), which lays out viable ways that industrial electrification and hydrogen production may provide flexibility and grid services in the future electric power system.

“Flexibility is increasingly seen as the critical tool for dealing with the increasing variability of power systems dominated by renewable energy sources in the future,” said Charlie Smith, executive director of the Energy Systems Integration Group. “Hydrogen will take on increased importance with the electrification of high-temperature industrial processes and will be a significant component of future system flexibility on time scales from seconds to months. This report reflects our first step in understanding its role in future system planning and operations.”

As we reach high levels of renewables in the future electric power system, the need to shift energy across time and space will mean that system flexibility from the typical sources today (conventional natural gas plants, batteries, renewables themselves) may need to be supplemented with new sources. Electrified industrial loads and the production of hydrogen could be important sources of demand-shifting: timing hydrogen production and other industrial processes to coincide with periods of low demand. These new sources of flexibility may also provide grid services; help to balance supply and demand over hours, days, and weeks; or, in the case of hydrogen production, directly provide capacity and energy.

“As power systems decarbonize, the electrification of industrial loads and the use of hydrogen will become more important factors in system planning,” said Aidan Tuohy of EPRI, chair of the ESIG System Operations and Market Design working group and a lead author on the report. “These resources have the potential to be large flexible loads, increasing the demand for clean energy, and we need to understand the potential implications for power system operations and planning.”

The report *Increasing Electric Power System Flexibility: The Role of Industrial Electrification and Green Hydrogen Production* outlines five key needs, including to: (1) more deeply integrate electrified industrial loads and hydrogen production into planning processes; (2) better understand the implications of new sources of flexibility for electricity system operations and market operations; (3) improve performance and lower costs in industrial electric technologies; (4) develop policies that support low-carbon and renewable heating in industry; and (5)

undertake pilot and demonstration projects to assess the impacts of electrification on process performance, cost, and output.

The Energy Systems Integration Group 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, particularly with respect to clean energy.

[Click here](#) to download the full report.

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

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