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TECHNICAL STUDIES TO DESIGN TRANSMISSION EXPANSION FOR A CLEAN ELECTRICITY FUTURE

Reston, Va. – A massive expansion of the bulk transmission system is needed to support very high levels of clean electricity, a massive effort that requires rethinking our current approach to expanding the grid. A new report by the Energy Systems Integration Group, [*Design Study Requirements for a U.S. Macrogrid: A Path to Achieving the Nation’s Energy System Transformation Goals*](#), articulates a set of recommendations for the next stage of proactive transmission planning of a macrogrid.

“A future energy system that is affordable, reliable, and clean will require a tremendous expansion of our transmission system, and planning for transmission at a national level will deliver large efficiencies in siting, permitting, and cost,” said Debra Lew, associate director of the Energy Systems Integration Group. “This report discusses a national-scale HVDC macrogrid that could be built over and interconnected into the existing AC grid—infrastructure that would enable massive interconnection of clean energy resources, provide economic benefits by facilitating the use of the most economically attractive resources, and confer resilience to extreme events.”

To date, the many facets of design, construction, and operation of a macrogrid have received only cursory or qualitative attention. This report describes a cadre of studies to be launched to develop the next level of quantitative detail about how a properly designed macrogrid could transform the operation of the electrical infrastructure in the United States. Initial design studies will examine technology selection, macrogrid topology, circuit capacities, and performance evaluation. Work would then proceed to a reliability assessment (including stability analysis), a resilience analysis, an assessment of economics and feasibility, and an operations analysis.

“A dramatic re-thinking of bulk transmission expansion is needed,” said Bob Zavadil of EnerNex and a lead author on the report. “A properly designed macrogrid employing advanced HVDC concepts and technologies could completely transform how bulk electric energy is produced and transported across the U.S. and have positive impacts on system reliability and resilience for generations to come.”

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.

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

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