Americans for a Clean Energy Grid

June 8, 2021

ACEG Presents Transmission Time

Transmission and the Future of Electric Power

A Conversation with the Authors of the New National Academies Report

ABOUT ACEG

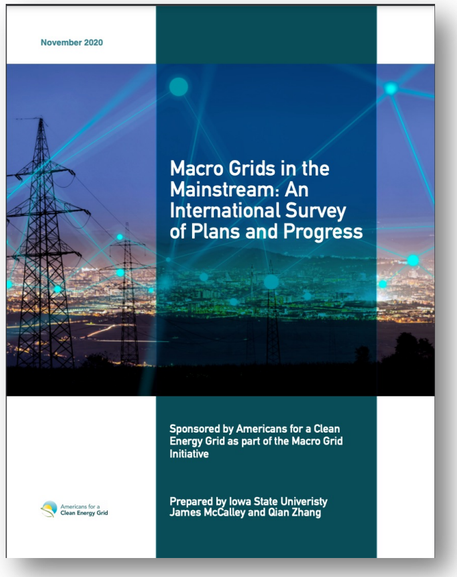
Americans for a Clean Energy Grid (ACEG) is the only non-profit broad-based public interest advocacy coalition focused on the need to expand, integrate, and modernize the North American high-voltage grid.

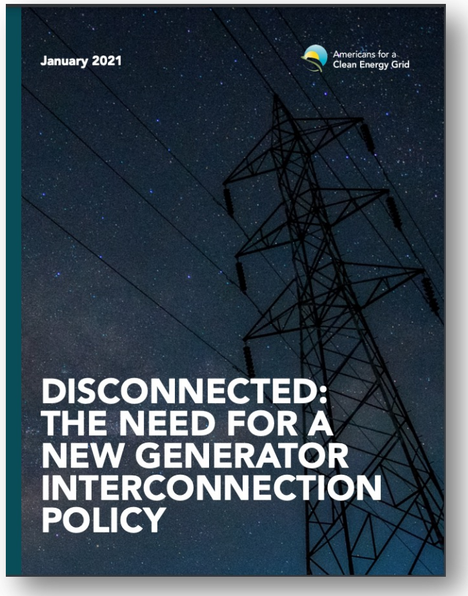
ABOUT ACEG

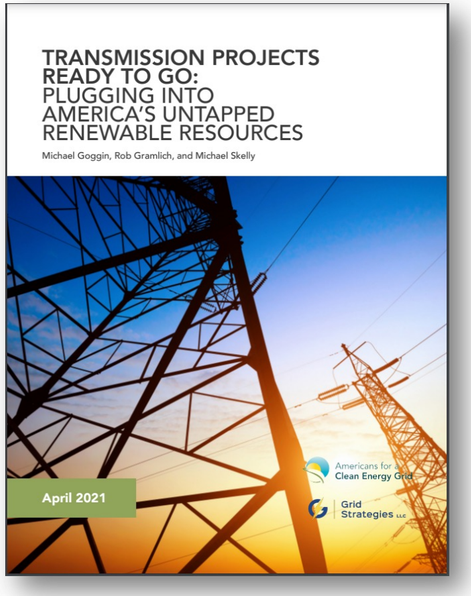
Macro Grid Initiative

An **ACORE** Program

Breakthrough Energy







SPEAKERS

KAREN PALMER

SUSAN TIERNEY

The Future of Electric Power in the U.S.

Briefing for the Americans for a Clean Energy Grid | June 8, 2021

The National Academies of SCIENCES ENGINEERING MEDICINE

Download the report at nap.edu/25968

The Committee

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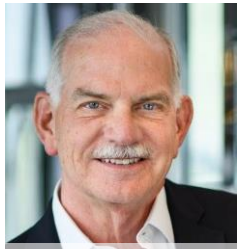

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*Committee Member, *Enhancing the Resilience of the Nation's Electricity System* (2017)

Several were also part of the previous NASEM study on resilience

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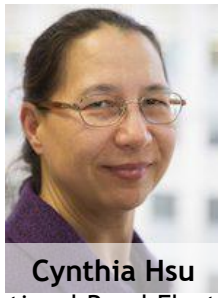

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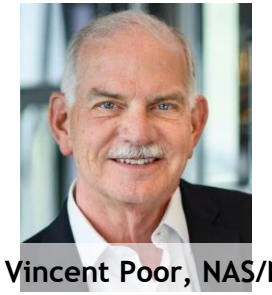

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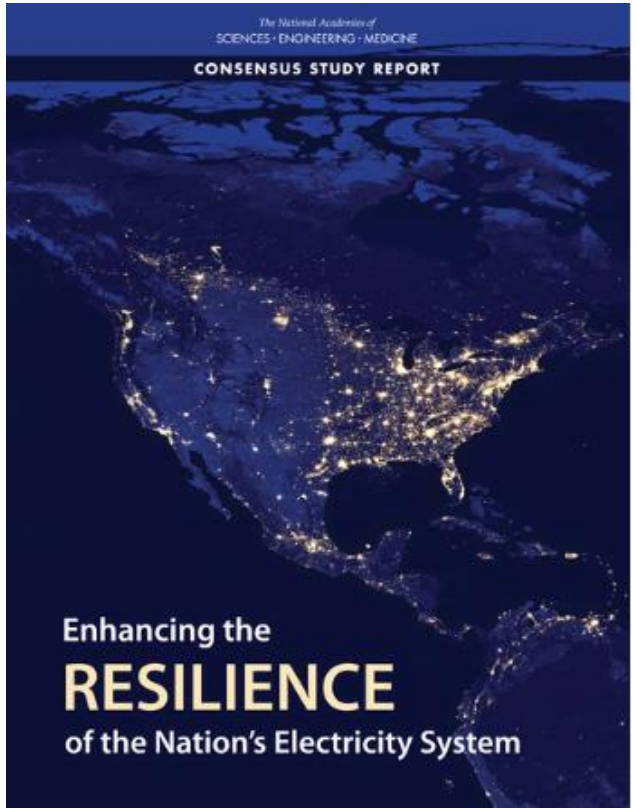
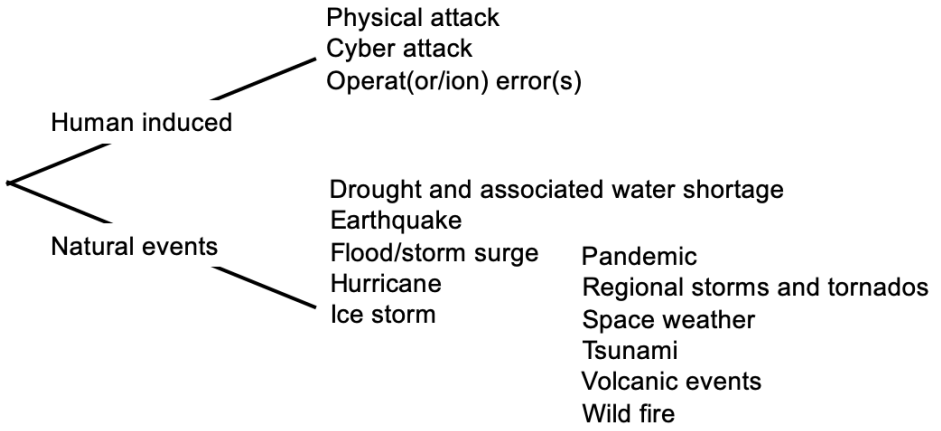
In light of recent events in Texas...

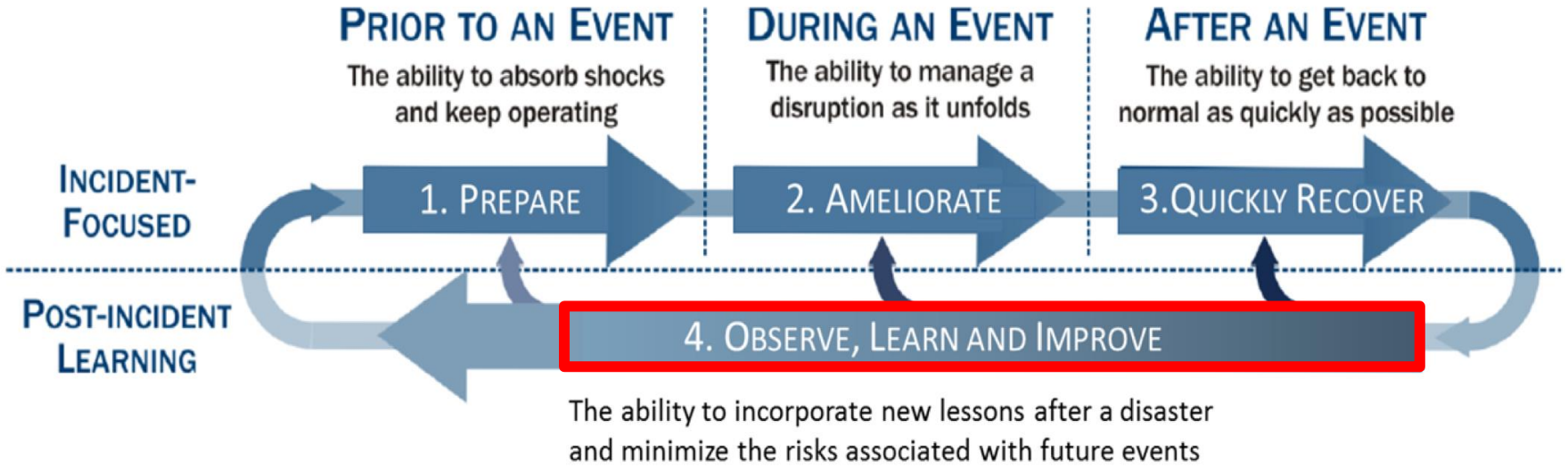
Reminder of the prior NAS grid study

National Academies, 2017
Download report at **nap.edu**



The report considered a variety of causal events *including extreme weather*.





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Future of the Power System Study

At the request of Congress, the Department of Energy asked the NASEM to evaluate the medium- to long-term evolution of the electric grid, with particular consideration to:

- *Technologies* – for generation, storage, power electronics, sensing and measuring, controls systems, cyber security, and loads
- *Planning and Operations* – evolution of current practices in response to changing generation, technologies, and end use
- *Business Models* – cost and benefits to modernization; potential changes to oversight and market operations
- *Grid Architectures* – technical and jurisdictional challenges to implementation

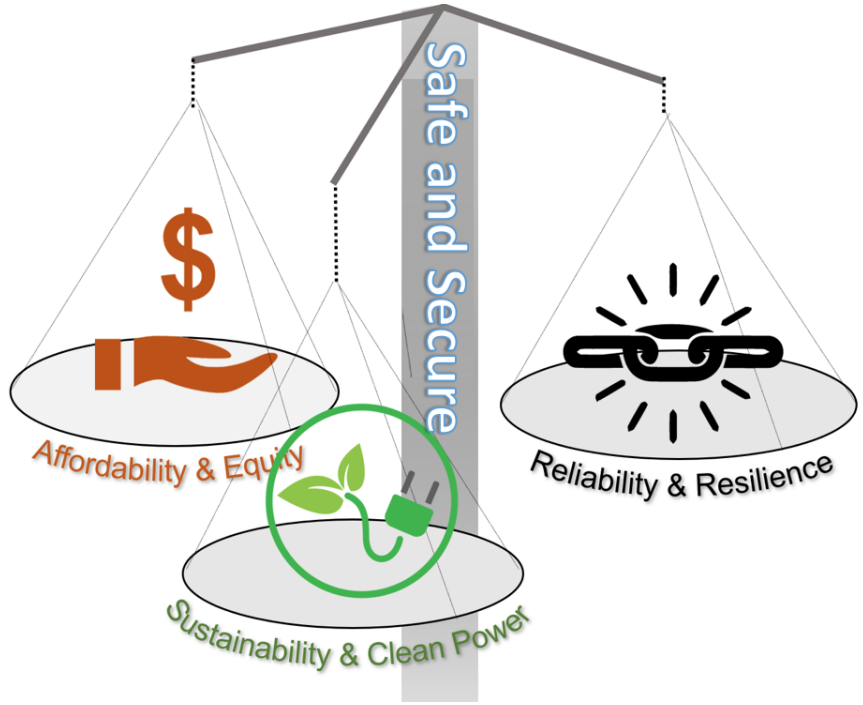
In this report...

We ***do not*** say how the grid ***will*** evolve.

We ***do*** lay out ways in which it ***might*** evolve.

A core value must be *assuring continued safe and secure operations*. Around this central pillar these other attributes should be balanced:

- affordability and equity
- sustainability and clean power
- reliability and resilience



Structure of the Report

1. Introduction: Framing the Issues
2. Drivers of Change
3. Legal and Regulatory Issues That Shape the Electric System
4. The Persistent Underinvestment in Electric Power Innovation
5. Technologies and Tools to Enable a Range of Future Power Systems
6. Creating a More Secure and Resilient Power System
7. High Level Needs and Specific Recommendations

The report includes 40 recommendations – to Congress, federal executive-branch agencies, the states, and industry stakeholders.

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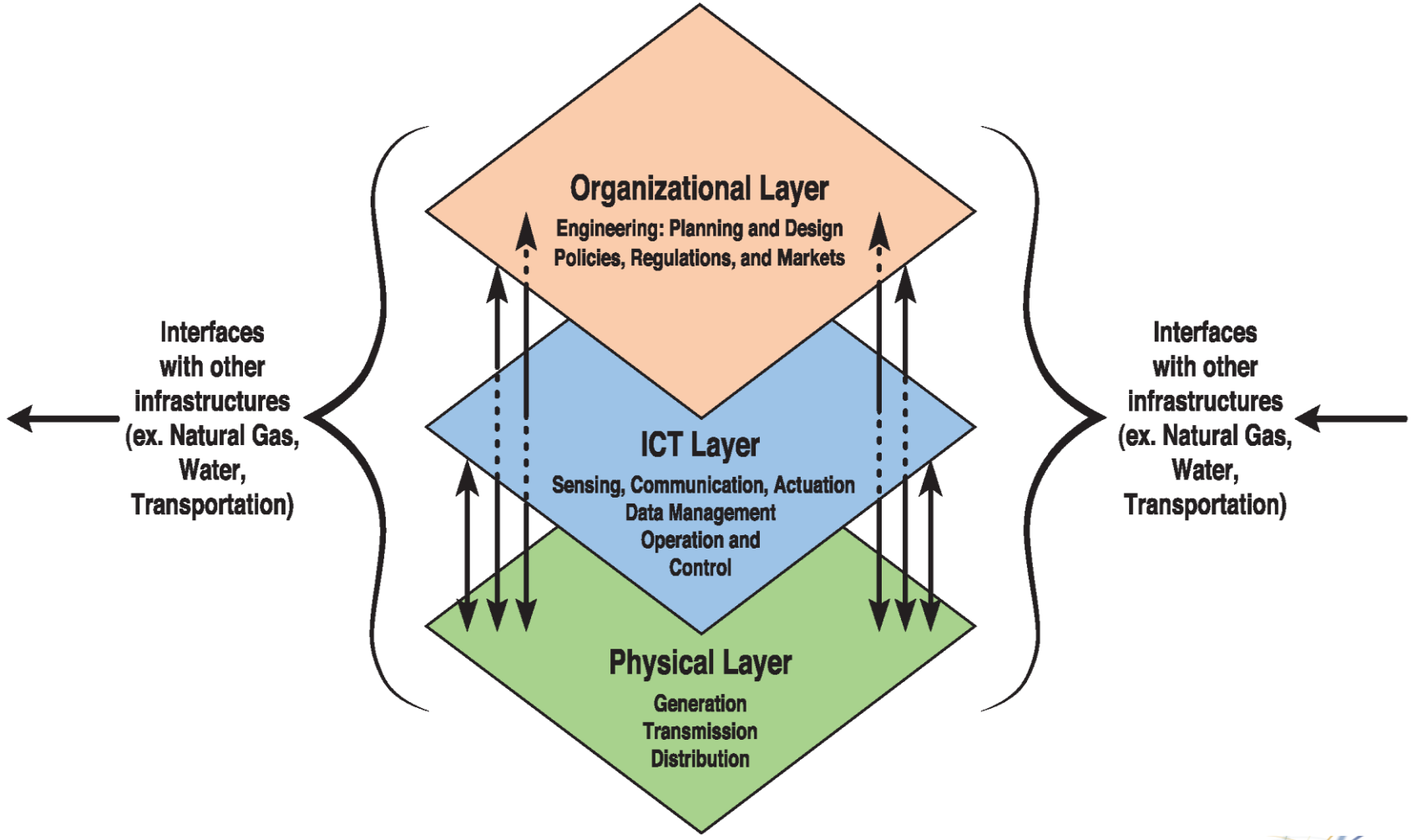
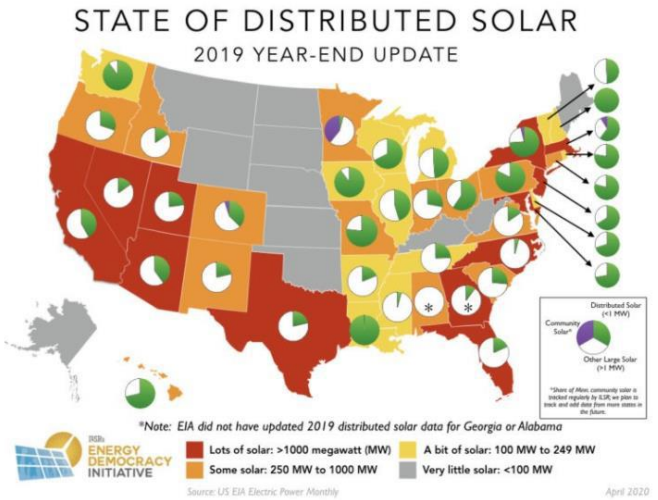
Framing the Issues

The electric system's architecture has multiple layers – all of which are evolving and each of which needs to work for the system to satisfy its multiple goals.



Chapter 2: Drivers of Change

1. Evolving demand for electricity.
2. Efforts to decarbonize the U.S. economy and eliminate conventional pollutants.
3. The changing grid edge.
4. The rise of non-dispatchable wind and solar.
5. A desire to reduce social inequities.
6. Concerns about the impact of the energy transition on employment.
7. The globalization of supply chains.



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Chapter 3: Legal and Regulatory Issues

- The traditional lines that define jurisdiction of federal versus state regulation have shown signs of increasing tension in recent years.
- The generation segment is evolving rapidly and will likely continue to do so.
- **Transmission planning & expansion have not kept up with the operational and regional delivery needs anticipated in a low-carbon, resilient electric system.**
  - **NIETC approach has been ineffective at addressing state/federal tensions.**
  - **Transmission proposals to deal with congestion, promote public policy goals and/or that cross multiple states often don't get approved.**
  - **Transmission planning efforts pay insufficient attention to non-wires alternative and existing rights of way.**
- Policy innovation at all levels is critical to enable the changes needed to assure a low-carbon, reliable, resilient, and accessible power system for the future.

Transmission Planning and Siting

Recommendation 3.3: Regarding Transmission Siting: in light of the fundamental ways in which interstate commerce is enabled by the high-voltage, multi-state transmission networks in the Eastern and Western Interconnections of the United States and in which transitions in the nation's electric system to increase reliance on remote renewable resources, **Congress and the states should support the evolution of planning for and siting of regional transmission facilities in the United States.**

Establish National Transmission Policy

Recommendation 3.3: Congress and the states should support the evolution of planning for and siting of regional transmission facilities in the United States.

Congress should enact legislation to:

- Establish that the United States has **a National Transmission Policy** to rely on the high-voltage transmission system to support energy diversity, energy security, and the nation's equitable transitions to lower carbon energy economy.

Require Multi-Objective Transmission Plans

Recommendation 3.3: Congress and the states should support the evolution of planning for and siting of regional transmission facilities in the United States.
Congress should enact legislation to:

- Direct FERC to require **transmission companies and regional transmission organizations to analyze and plan for** all of the following objectives: electric system reliability; efficient dispatch of the bulk power electric system, taking into account economics, environment, and equity; and economical opportunities to expand the interstate electric system to open up access to and development of renewable resources and to connect these regions with areas of high electricity demand.

FERC to Designate NIETCs Henceforth

Recommendation 3.3: Congress and the states should support the evolution of planning for and siting of regional transmission facilities in the United States.
Congress should enact legislation to:

- Assign to **FERC the responsibility to designate any new National Interest Electric Transmission Corridors**, consistent with the goals of the National Transmission Policy.

FERC Authority to Authorize Interstate Transmission

Recommendation 3.3: Congress and the states should support the evolution of planning for and siting of regional transmission facilities in the United States.

Congress should enact legislation to:

- Authorize **FERC to issue CPCNs for interstate transmission lines in a designated NIETC,** with need determinations reflecting consideration of:
  - non-wires alternatives,
  - expanding the capacity of existing transmission rights of way,
  - state policies,
  - community and state impacts,
  - cost, reliability,
  - the location of renewable and other zero-carbon resources.

  Such CPCNs should broadly allocate the costs of transmission designed to expand regional energy systems in support of decarbonization goals

DOE Support for Intervenors

Recommendation 3.3: Congress and the states should support the evolution of planning for and siting of regional transmission facilities in the United States.
Congress should enact legislation to:

- Direct DOE to provide support for **technical assistance and planning grants** to states, communities, and tribes to enable meaningful participation in regional transmission planning and siting activities.

Standards, Regulations, Incentives, Research

Recommendation 3.1: Investigation of outages: Creating a federal task force to identify whether any new legislative authority is needed so that the industry and its regulators can understand in a timely manner why a significant physical and/or cyber disruption occurred in the electric power grid.

Recommendation 3.2: Gas-system reliability: Authorizing FERC to designate a central entity to establish standards for and otherwise oversee the reliability of the nation's natural gas delivery system.

Recommendation 3.6: Social Science Research and Policy Analysis: Urges federal and state governments and private foundations to support social science research and regulatory/policy analysis of regulatory and business models and emissions impacts of infrastructure investments.

Recommendation 3.10: Grid modernization resources: Providing federal funding (e.g., loans, grants) to encourage publicly owned utilities (e.g., municipal electric utilities, cooperatives, tribal utility authorities) to invest in grid modernization.

Americans for a
Clean Energy Grid

Thank you for listening.

Questions?