FIVE WAYS CONGRESS CAN IMPROVE THE U.S. ELECTRIC POWER SYSTEM

Ideas for federal action to accelerate advanced energy investment and innovation, drive economic growth, and reduce costs to consumers

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EXECUTIVE SUMMARY

Access to affordable and reliable electricity has been a hallmark of economic growth in the American economy. Numerous factors are causing our energy system to modernize rapidly, including evolving consumer preferences, dynamic new technologies, and aging infrastructure. These changes also present an opportunity to drive economic growth and grid modernization, providing electric power that is affordable, reliable, and resilient to all Americans.

Advanced energy resources are already modernizing our economy and energy system. Today, the industry stands at $200 billion in annual revenue supporting 3.4 million jobs across the United States. Without counting ethanol revenue, which has been in decline in recent years, the U.S. advanced energy market grew 5% percent in 2016, three times the growth of U.S. GDP. Growth is expected to continue as costs decline rapidly in renewable energy, energy storage systems, and electric vehicles, among other technologies.

As the laboratories of democracy, dozens of states have taken notice of the advanced energy opportunity – and taken advantage. Just since 2015, states like Michigan, North Carolina, and Virginia have recommitted to energy innovation by passing comprehensive legislation to provide certainty to the advanced energy business community. Texas, Pennsylvania, and New York continue to explore new regulatory mechanisms to ensure that new technologies do not face unnecessary barriers and that consumers have full access to these new options for meeting energy needs.

Now is the time for Congress to pick up the torch.

That is why Advanced Energy Economy (AEE) and Citizens for Responsible Energy Solutions (CRES Forum) teamed up to offer, for Congress's consideration, five ways to improve the electric power system and accelerate growth from energy innovation. These ideas would benefit various technologies, but all represent opportunities to embrace innovation and make the power grid our economy relies on secure, clean, and affordable. Congress should consider taking action to:

1. Streamline Federal Permitting for Advanced Energy Projects
2. Encourage Grid Planners to Consider Alternatives to Transmission Investment
3. Allow Energy Storage and Energy Efficiency to Compete with Additional Generation
4. Allow Large Customers to Choose their Electricity Sources
5. Allow Utilities and Consumers to Benefit from Cloud Computing Software

These options are incremental steps that Congress can take, but can unleash increased modernization across every state leading to lower energy costs and increased choice for consumers, while spurring investment and job creation for all advanced energy resources across communities in the U.S.

1. STREAMLINE FEDERAL PERMITTING FOR ADVANCED ENERGY PROJECTS

Cutting red tape for domestic energy development

Problem: Advanced energy resources such as wind, solar, geothermal, nuclear, and fuel cells as well as high voltage transmission typically require extensive permitting by federal and state agencies. At the federal level, this includes environmental reviews under a variety of laws involving numerous federal agencies. Permitting these projects can take years, leading to delays and significantly higher costs for projects that ultimately reduce the environmental impact of U.S. energy use. Currently, advanced energy projects and enabling technologies represent more than one-third of projects stuck in federal environmental review[1], which can sometimes take almost a decade before completion, with projects receiving necessary approvals from all agencies.

Solution: Congress should prioritize reform to improve the process and reduce the time of environmental review and permitting for advanced energy projects to 24 months from the current average of 70 months. Better coordination at the federal, state, and local level can accelerate deployment of advanced energy projects in the United States. These projects help modernize the power grid, encouraging investment in innovative and flexible technologies that will bring jobs to all parts of the country while building a more dynamic and responsive electric power system. At the same time, no project should be allowed to avoid necessary review for environmental impact on a timely basis.

Congress should require the federal government to conduct environmental reviews and the authorization processes in a coordinated, consistent, predictable, and timely manner.

This will ensure that the federal government speaks with one voice and makes decisions within a reasonable timeframe. The goal should be to complete all environmental reviews and permitting decisions for major advanced energy projects within two years. Some recent proposals have attempted to roll back the National Environmental Protection Act (NEPA) significantly. In contrast, this proposal seeks to improve federal coordination for energy resources with environmental benefits while maintaining the strength and purpose of this longstanding federal law to protect natural resources from avoidable harm.

[1] https://www.americanactionforum.org/research/energy-infrastructure-plans-should-reform-federal-approval-process/#_edn1

2. ENCOURAGE GRID PLANNERS TO CONSIDER ALTERNATIVES TO TRANSMISSION INVESTMENT

Reducing ratepayer costs by allowing fair competition among technology solutions

Problem: Cost-effective transmission is an essential part of a secure, clean, affordable energy future. Investment in transmission infrastructure is necessary to maintain reliability, connect new generation resources, including advanced energy resources, and relieve congestion chokepoints that can disrupt electric service to customers and raise costs.

Grid operators currently have available to them a diverse set of options that help to improve the overall reliability, flexibility, and efficiency of the grid, but all too often additional transmission investment is favored over other options. Alternatives to traditional transmission ("non-transmission alternatives," or NTAs) can frequently meet the needs of customers and the utility system at lower cost, but processes for selecting solutions to system needs often do not adequately consider NTAs. Transmission planning entities, which are responsible for ensuring that there is sufficient capacity to deliver electricity from power plants to load centers, should consider alternative technologies or approaches that can address grid congestion and reliability at lower cost.

Solution: Existing or new transmission can be made more effective by expanding the use of advanced grid technologies such as advanced power flow control, dynamic line rating, advanced conductors, or topology control. Similarly, NTAs can save consumers billions in avoided costs by deploying technologies such as energy storage, microgrids, combined heat and power equipment, distributed generation, energy efficiency, demand response, advanced distribution management systems, and smart inverters and transformers. The recent FERC Order 841 and continued work on aggregated distributed energy resources is one important step forward. Investments in these advanced energy technologies can improve delivery of electricity to consumers and reduce costly buildout of transmission.

The Energy Policy Act of 2005 encouraged the deployment of advanced transmission system technologies, but to date, these technologies have faced market barriers to adoption, including regulatory incentives that favor large capital investments over low-cost technologies with operational benefits. Collecting data and report metrics on how frequently advanced grid technologies and NTAs are chosen in grid planning would provide market transparency into how these technologies compete against traditional investments.

Congress should encourage greater consideration of advanced transmission and non-transmission alternatives by requiring FERC to collect data and report metrics regarding the use of NTAs and other advanced energy technologies in transmission planning.

3. ALLOW ENERGY STORAGE AND ENERGY EFFICIENCY TO COMPETE WITH ADDITIONAL GENERATION

Leveling the playing field and encouraging least-cost grid solutions

Problem: States face many challenges and opportunities over their future energy resource mix. Ratepayers currently face significant risk and uncertainty from relying on large central station power plants based on older technologies that require decades to pay back and have high operating and maintenance costs. This risk and uncertainty can be mitigated by providing full consideration of all energy technologies during grid planning and resource selection – including advanced energy options such as stand-alone storage, renewable energy projects paired with storage, fuel cells, energy efficiency, and demand response. Full consideration of all energy technologies can diversify resources and pay dividends to ratepayers over the long-term.

Today, many grid planning and procurement processes do not allow all technologies to compete fully on price and performance. Resource planning in many jurisdictions focuses exclusively on traditional resource categories such as new central plant generation, new transmission lines, and upgrading distribution assets. In these cases, planning processes do not adequately consider advanced energy options, particularly energy efficiency and storage, and the consumer benefits these technologies offer.

Solution: Affordable advanced energy technologies can provide grid and consumer benefits if they are fully considered in resource and grid planning. Energy storage technologies have advanced significantly in recent years, and costs have fallen dramatically. In some jurisdictions, energy storage is already providing benefits including capacity, ancillary services, peak shaving, and deferral of transmission and distribution investment. Energy efficiency is often the lowest cost and most readily available resource to meet energy demand. Both energy efficiency (reducing energy waste) and demand response (targeted reductions in energy use during periods of peak demand) can save money for residents and businesses, help meet grid needs, and create jobs across the United States.

States are starting to lead the way in ensuring these resources can compete on a level playing field. For example, the New Mexico Public Regulation Commission recently required[2] utilities to consider all energy options – including supply-side, energy storage, and demand resources – in order to cost effectively

[2] https://powersuite.aee.net/dockets/nm-17-00022-ut?docket_search_id=272741

meet the state's energy needs. This example provides a path for other states to maximize benefits for ratepayers and the state at large.

Congress should develop legislation that ensures consideration of investments in energy storage and demand-side resources in resource planning, recognizing that these technologies may be cost-effective alternatives to traditional generation, transmission, or distribution investments. This legislation does not have to mandate standards for states but can allow for varying approaches for states and utilities.

4. ALLOW LARGE CUSTOMERS TO CHOOSE THEIR ENERGY SOURCES

Ensuring that Electricity Supply Meets 21st Century Consumer Preferences

Problem: For many companies, the ability to control energy costs and choose their sources of energy is a key factor when deciding where to locate or expand their operations. In addition to seeking competitive prices, companies are increasingly looking for opportunities to purchase advanced energy—a choice often backed by corporate goals. For example, 71 of Fortune 100 companies and 43% of Fortune 500 firms have set renewable energy or sustainability targets.

Large companies sourcing just a small portion of their energy needs from renewable energy would support development of thousands of megawatts of renewable energy capacity — and billions of dollars in new investment. Local governments across the country are also following the trend of seeking to procure more advanced energy. In many states, however, companies and local governments face regulatory hurdles that make fulfilling these commitments difficult or impossible.

Solution: Recognizing the strong consumer demand for more renewable energy choice, several states – including Virginia, North Carolina, and Utah – have moved toward providing more opportunities with meeting this demand from large energy users. For example, utilities are increasingly offering voluntary renewable energy programs for large customers. These can take different forms, often collectively referred to as "Renewable Energy Tariffs" or "Green Tariffs," which allow large consumers to choose to source their energy needs from large-scale, offsite renewable energy projects developed to meet these corporate commitments. Other states, such as California and Nevada, are contemplating opening the market either partially or completely to retail choice, which would unlock opportunities for customers to have more control over their energy decisions. As consumers continue to seek more choice for energy options, additional states will likely enact supportive policies.

Congress should consider legislation that enables large commercial and industrial consumers to procure electricity from renewable generation resources either from their local utility or other suppliers. This legislation does not have to mandate uniform standards but can allow for varying approaches for states and utilities.

5. ALLOW UTILITIES AND CONSUMERS TO BENEFIT FROM CLOUD COMPUTING SOFTWARE

Aligning Incentives to Bring Modern Software Solutions to the Grid

Problem: Radical changes in software have now touched nearly every aspect of our lives, from the way we communicate with each other to the way we get around. Businesses are taking advantage of the changes to deliver better customer experiences. Given the pace of technology change, it would be impossible to keep up with the pace of innovation without the ability to update software from anywhere you can access the internet. These changes are enabled by "the cloud." Businesses are no longer limited to the software that has been installed on computers in their office. Instead, they are using the internet to access software that lives on remote servers, giving them access to more software, computing power, and information, and in more flexible ways. Cloud-based software is also known as Software as a Service, or SaaS.

Despite utility interest in cloud computing, the shift has been slower and less complete than it could be. This is because traditional utility regulation discourages utilities from procuring software as a service. When a utility decides to use cloud-based software, they typically sign a license with the software provider. The license grants the utility access to the software. Utilities typically must treat this license as an operating expense because the payment cycle is often annual. This is in contrast to legacy software systems, where the utility purchases servers and then buys software to install on those servers. This is known as "on-premise software," and it is typically treated as a capital expenditure. Since utilities earn a rate of return on capital expenditures but not operating expenses, the regulatory framework that prevails today guides them towards on-premise solutions, even when could-based solutions offer costs savings for customers and provide superior capabilities and security.

Solution: Regulation should encourage utilities to make investment decisions that are in the public interest. However, existing regulations steer utilities toward an outdated and more expensive solution. Regulators have recognized this issue and started to take action. In a recent order in its Reforming the Energy Vision (REV) proceeding, the New York Public Service Commission ruled that utilities can earn a rate of return on prepaid cloud-based software licenses. Similarly, the Illinois Commerce Commission issued a proposed rule improving the regulatory treatment of cloud-

based software. Regulators should follow New York and Illinois's lead and find ways to give utilities the flexibility to adopt technology based on the value it delivers to the system and to customers, rather than whether or not it is a capital asset.

Congress should consider legislation that encourages states to update their regulatory structures to allow for cloud-based software to be treated as a prudent utility investment. This legislation does not have to mandate uniform standards, but can allow for varying approaches for states and utilities.

CONCLUSION

Access to affordable and reliable electricity has been a hallmark of economic growth in the American economy. The electrification of America during the 20th century enabled this growth, and energy innovation still presents an opportunity today. States are taking advantage of the opportunities from investments in advanced energy, including energy cost savings, grid modernization, and job creation. Congress can amplify this work.

These five policy ideas from AEE and CRES Forum represent opportunities to continue the grid's transformation toward a secure, clean, and affordable energy future. These policies can drive economic growth by unleashing advanced energy investment, encouraging innovation, and providing affordable options to all consumers. As a $200 billion industry supporting more than 3 million jobs across the United States, AEE and CRES Forum encourage Congress to consider these opportunities to promote a modern, customer-focused electric power system.

For more information on AEE and CRES Forum, please visit:

AEE – www.aee.net

CRES Forum – www.cresforum.org