



Insight

Potential for an Energy Package

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Executive Summary

- An energy package that would boost funding for myriad clean-energy initiatives may be incorporated in the fiscal year 2021 omnibus spending bill.
- The package is the culmination of a various bills and energy packages from both chambers of Congress, and includes provisions that would support the development and deployment of innovative technologies necessary for transitioning away from carbon-intensive energy production and reducing emissions.
- While the package would serve as meaningful climate legislation, it does not address more controversial issues such as emissions targets, environmental justice, or a carbon price.

Introduction

Congress this week released the language of a compromise [energy package](#) that may be attached to the fiscal year 2021 omnibus spending bill.^[1] The package would be the most significant energy legislation passed in years and would serve as some of the first meaningful climate legislation. While it fails to address controversial issues, its provisions target sectors and industries where meaningful change could have an impact in combating climate change.

The package is over 500 pages long and includes a variety of programs and policies, such as:

- Energy efficiency,
- Nuclear energy,

- Renewable energy and storage,
- Carbon management,
- Carbon removal,
- Industrial and manufacturing technologies,
- Critical minerals,
- Grid modernization,
- Department of Energy innovation, and
- ARPA-E amendments.

The package's provisions support increased research and development as well as pilot and demonstration projects across different technical domains. It also contains grants, rebate programs, and mandates for existing government facilities. It does not, however, include more controversial provisions such as emissions targets, wind or solar tax credits, or environmental justice programs. Nor does it include many of the provisions proposed in predecessor energy packages earlier this year.

The package is comprised of energy bills proposed in the House of Representatives and Senate, although it does not include every provision from the previous bills. The American Energy Innovation Act, introduced in the Senate in February,^[2] included provisions regarding workforce development, vehicles research, and liquefied natural gas that are not in the current energy package. The Clean Economy Jobs and Innovation Act, passed by the House in September,^[3] addressed additional topics, including electric vehicle infrastructure, transportation, cybersecurity, and environmental justice, that are also not included in the current package.

Innovation

The energy package proposes many research and development programs to bolster innovation. This is important as the International Panel on Climate Change (IPCC) has found that "multiple communities around the world are demonstrating the possibility of implementation consistent with 1.5°C pathways" to reduce global warming but "innovation capabilities currently fall short of implementing far-reaching measures at scale."^[4] In other words, continued innovation is necessary to further develop existing technologies as well as new ones to tackle climate change.

Pilot projects, demonstration projects, and commercialization programs aid companies by determining how technologies that have undergone research and development can be made

into saleable products and services. Novel technologies may fail to make it to market because companies find it difficult to provide proof of concept to potential investors. Alongside these government-run programs, the package seeks to bolster existing public-private partnerships as well as create new ones. These programs may help bridge the commercialization gap but do run the risk of choosing winners and losers at the expense of taxpayers and competitors.

Addressing Supply

Electricity generation is the second-largest contributor of greenhouse gas emissions in the United States.[5] The package supports research into various forms of power generation, including nuclear, wind, solar, hydroelectric, and lesser-known [geothermal](#) and marine energy, rather than seeking to promote some over others. Each of these clean energy technologies may prove useful during the energy transition away from carbon-intensive sources.

In addition, the package includes provisions that expand research into new grid and storage technology. While it is clear that aging infrastructure will require updates, identifying the most effective means of providing an adaptive but reliable grid that is capable of consistently delivering power is critical. These updates must also be made with the choices of consumers and generators in mind. The grid is impacted by the choices of consumers to install renewables resources, battery storage, or other efficiency measures in their homes or businesses while simultaneously being impacted by the choices made by generators and developers as they site new generation and storage facilities.

The industrials sector is the third-largest contributor of carbon emissions. In 2018, 22 percent of emissions in the United States came from the industrial sector, created as a result of burning fossil fuels to power industrial facilities along with the greenhouse gases emitted from chemical reactions necessary to process raw materials.[6] Industrial emissions present a complex problem as there are various types of chemical reactions that contribute to the production of many products, meaning there is no singular solution to reducing emissions from the sector. As a result, the package proposes a “crosscutting” industrial emissions-reduction technology-development program to achieve reductions while maintaining competitiveness.

Addressing Demand

Reductions in emissions cannot be achieved solely by generating cleaner power; it must also reduce demand for power. Increased energy efficiency can reduce emissions in every sector. In some sectors, reductions have already demonstrated the value of continued innovation.

For example, residential power consumption has declined from 2009 to 2019 by 2.8 percent in part due to the increased adoption of rooftop solar, efficient appliances and lighting, and smarter energy-saving devices.[7] A majority of the efficiency provisions in the package specifically apply to federal facilities, however. These provisions include various mandates for federal agency buildings and information technology and data centers procurements. The package also establishes the Smart Energy and Water Efficiency Pilot Program, which would issue grants to utilities and municipalities that install technology that reduces energy and water consumption.

An increasing number of hybrid and electric vehicles are likely to be on the road in coming decades. These vehicles are expected to increase demand for electricity as they will no longer rely on gasoline. Included in the package is support for research on integrating electric vehicles onto the grid to determine not only the additional generation required to offset gasoline consumption but also the additional strain on the grid.

The energy package also includes support for research on the impact of implementing demand response and other technologies and techniques that allow utilities to alter consumption of power as demand changes throughout the day. These technologies will prove important as an increasing number of intermittent energy sources, batteries, and smart appliances are connected to the grid.

Resource Management

The package also addresses some longstanding issues regarding the lack of comprehensive policies for emissions and nuclear waste.

Programming to research the potential to capture and store emissions is included among the provisions of the energy package. Carbon capture technologies will prove useful in capturing greenhouse gas emissions from existing producers on site or directly from the air. According to the IPCC's research, removal of carbon dioxide from the atmosphere is necessary in every scenario developed to restrict global warming to 1.5 degrees Celsius above pre-industrial levels.[8] While some direct capture facilities exist around the world, and one is currently under development in the United States, demonstrations of the technology at a large scale are necessary to determine its value in combating climate change.[9]

The energy package also creates programming to support the domestic demand for nuclear fuel. Advanced nuclear concepts that are currently seeking licenses depend on access to a new fuel, high assay low enriched uranium, that is not commercially available in the United States. Before these new designs can be made operational, a supply chain to meet a new

generation's needs of facilities will be necessary.[10] The package includes programming to support the development of this supply chain.

Conclusion

While the energy package provides support for further technological development and the study of systemic improvements necessary to transition to cleaner power generation and transportation sectors, it does not contain any policies that directly address the issue of emissions. The contents of the energy package suggest that more controversial measures to address climate change will be difficult to pass in the future.

[1] <https://subscriber.politicopro.com/article/2020/12/congress-reaches-agreement-on-sprawling-energy-package-2024626>

[2] <https://www.energy.senate.gov/2020/2/murkowski-manchin-introduce-american-energy-innovation-act>

[3] <https://www.congress.gov/116/bills/hr4447/BILLS-116hr4447rfs.pdf>

[4] <https://www.ipcc.ch/sr15/>

[5] <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

[6] <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

[7] <https://www.eia.gov/todayinenergy/detail.php?id=46276>

[8] <https://www.ipcc.ch/sr15/>

[9] <https://www.iea.org/reports/direct-air-capture>

[10] <https://www.nrc.gov/reactors/new-reactors.html> ;
<https://www.energy.gov/ne/articles/what-high-assay-low-enriched-uranium-haleu>