Power Market Edge

Power Market Insight

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The Biden infrastructure bill aims to consolidate the North American grid

Key implications:

- Where the American Recovery and Reinvestment Act of 2009 kicked off a decade of unrestrained renewable development on the heels of the 2008 financial crisis, **the Infrastructure Investment and Jobs Act of 2021 endeavors to transition the US out of the pandemic and into an age of grid consolidation and security.**
- At nearly $25 billion, support for **clean firming technologies takes the plurality of funds allocated in Division D.**
- **Initiatives aimed at improving grid resiliency, reliability, demand-side management, and energy efficiency have been allocated just over $20 billion in funds.** Given the litany of recent climate-induced grid outages, it should come as little surprise that grid hardening is the biggest winner in this category with $11.5 billion being allocated.
- **Carbon capture, utilization, and sequestration is the final major winner within the legislation, with $12.8 billion in funding.** The primary focus of this segment is on capture technology with $3.5 billion being allocated to Direct Air Capture Hubs and an additional $3.5 billion being allocated to demonstration and pilots of traditional captured technologies.

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If ever there were an indicator of the zeitgeist of the energy industry, Division D of the imminent Infrastructure Investment and Jobs Act contains titles that play like a greatest hits album of all the buzzy zoom conference topics, from hydrogen hubs to weatherization. Whereas the American Recovery and Reinvestment Act of 2009 kicked off a decade of unrestrained renewable development on the heels of the 2008 financial crisis, the Infrastructure Investment and Jobs Act of

Energy-division allocations in the 2021 infrastructure bill

Source: IHS Markit

2021 endeavors to transition the US out of the pandemic and into an age of grid consolidation and security. Gone are any significant expansions of renewable energy subsidies and in their place are major incentives for energy storage, CCUS, nuclear, hydrogen, reliability, resiliency, and energy efficiency investments which collectively account for nearly 92% of spending in the energy division of the bill.

Clean firming

At nearly $25 billion, support for clean firming technologies (including hydrogen, nuclear, and energy storage) takes the plurality of funds allocated in Division D. In Small Modular Reactors and the Hunt for Clean Baseload, we highlighted the potential rivalries and synergies between hydrogen and nuclear as potential sources of long-duration clean baseload and the infrastructure bill appears to be splitting its bets between the two with $9 billion being allocated to advancing clean hydrogen and an additional $8.5 billion allocated to advanced nuclear reactor demonstrations and the nuclear civil credit program. Energy storage programs will receive $6.5 billion, however, much of that amount will be aimed at advancing materials and manufacturing of batteries as rising lithium prices and emissions released in the manufacturing process remain some of the biggest concerns with expanding battery deployments.

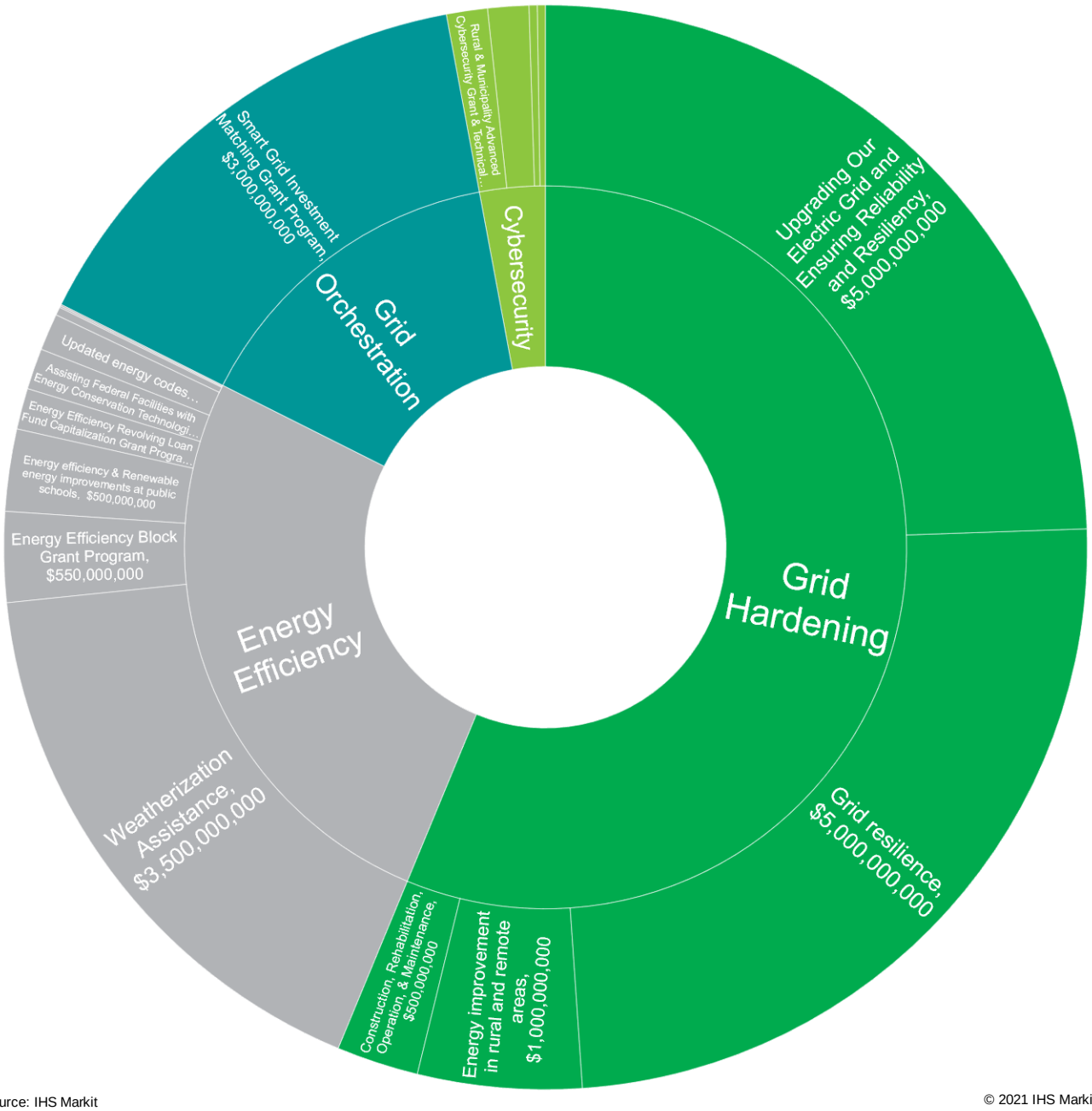
Clean firming allocations in the 2021 infrastructure bill

Source: IHS Markit

Reliability, resiliency, and efficiency

Next up, initiatives aimed at improving grid resiliency, reliability, demand-side management, and energy efficiency have been allocated just over $20 billion in funds. Given the litany of recent climate-induced grid outages, it should come as little surprise that grid hardening is the biggest winner in this category with $11.5 billion being allocated, $5 billion of which will be allocated to state and local governments and another $5 billion to owners and operators in the space. The legislation isn't overly prescriptive of what grid hardening measures qualify and generally leaves the door open so long as applicants for the funds provide thorough documentation of how their proposed measures will improve both local and regional grid resiliency. With that said, recipients will likely need to be very strategic in terms of how funds are allocated

Reliability, resiliency, and efficiency allocations in the 2021 infrastructure bill



Source: IHS Markit

as the cost of physical upgrades to grid infrastructure can inflate rapidly (PG&E's proposal to underground just 10% of their transmission and distribution system is expected to cost at least 30% more than the entirety of grid hardening funding in the infrastructure bill). On the energy efficiency front, weatherization assistance takes the lion's share of these funds. This concentration of funds towards weatherization reflects a larger climate adaptation theme in the bill.

Carbon capture, utilization, and sequestration

Carbon capture, utilization, and sequestration is the final major winner within the legislation with $12.8 billion in funding. Despite historical perceptions of being a lifeline to traditional fossil generation, CCUS's impressive showing in the bill might signal a warming to the technology considering the urgency of climate action. With that said, the heavy concentration of funds directed at CCUS might also be perceived as a political move aimed to appease the fossil fuel interests. The primary focus of this segment is on capture technology with $3.5 billion being allocated to Direct Air Capture Hubs and an additional $3.5 billion being allocated to demonstration and pilots of traditional captured technologies. After captured technologies, carbon logistics takes just over one-third of the total CCUS funding with $2.5 billion being allocated to carbon storage validation and testing and an additional $2.1 billion allocated to carbon transport infrastructure.

CCUS allocations in the 2021 infrastructure bill

Source: IHS Markit

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