The Daily Dish

Biden's Climate Strategy and Electricity Distribution

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Eakinomics: Biden's Climate Strategy and Electricity Distribution

At the risk of being simplistic and/or unfair (and I am usually, I admit, both), the Biden climate agenda begins with making the electricity sector (25 percent of greenhouse gas [GHG] emissions) really, really green – a "renewables or bust" approach. It then makes the transportation sector (29 percent of GHG emissions) really, really green by making everyone drive a vehicle powered by really, really green electricity. With more than half the problem "solved," it then regulates industry (23 percent of GHG emissions) into submission and sweeps up the leftovers in the buildings (13 percent) and agriculture (10 percent).

But the linchpin is electricity. AAF's Ewelina Czapla has been breaking down the size of the challenge in getting to zero carbon emissions by 2035 in electricity generation ($2 trillion or so to generate the power), electricity transmission ($2-$2.5 trillion to move it around the country), and now has a new piece on electricity distribution (connecting the power to households). She notes that "upstream expansion and modification require changes to the distribution system," but also that "consumers' growing use of distributed energy resources (DERs) must be addressed through distribution upgrades to ensure reliability." One key DER is photovoltaic solar panels that can generate household electricity and sell to the grid (see, "leftovers," above).

To cut to the chase, she finds that "distribution investment would need to increase dramatically as distribution costs would increase by as much $1 trillion to support the adoption of electric vehicles (EV) and photovoltaic (PV) solar panels."

As with the previous analyses, she relied on the provisions of congressional Democrats' proposed Climate Leadership and Environmental Action for our Nation's (CLEAN) Future Act to illustrate potential policy pathways to achieve the Biden Administration's goal. The CLEAN Future Act aims to increase the adoption of DERs, such as PV solar panels and EVs. This is a challenge, however. "Distribution systems operated by local utilities were designed to deliver electricity to consumers. These systems could be described as unidirectional, delivering a centralized source of electricity to a passive consumer. Consumers are installing increasing numbers of DERs, however, changing the nature of the distribution system. DERs include solar photovoltaics (PV), battery storage, demand response systems, and energy efficiency systems. With these technologies, consumers can generate electricity, curb their demand, and send electricity to the grid."

Building a distribution system that accommodates these features, and does so without undermining reliability, is much more challenging than a traditional unidirectional distribution system. It is also much harder to anticipate which combination of PVs, EVs, energy efficiency, demand response and battery storage technologies will be present. As a result, a complete analysis is beyond feasibility at the moment. Czapla provides a useful feel for the magnitudes involved in by focusing on EVs and PVs, but the full cost will be north of these estimates.