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## Distributed Renewable Energy: Summary and Key Recommendations

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# Chapter 19: Distributed Renewable Energy

by K.K. DuVivier

For individuals, the heating and cooling of buildings is the second largest source of U.S. CO<sub>2</sub> emissions after transportation. The chapter suggests pathways to help deploy the two most promising categories of U.S. distributed renewable energy resources to reduce these emissions—photovoltaic solar matched with storage and thermal sources for hot water and for heating and cooling buildings. DG is probably the energy source most impacted by different levels of government and nongovernmental actors. However, DG is also most immediate to consumers, especially with new technologies or rate structures that give them feedback about their own individual generation and consumption patterns. This, along with exciting new leaps in DG technologies, suggests there are opportunities for DG to play an increasing role in significantly decarbonizing U.S. energy.

## Key Recommendations:

- Congress should give residential solar installations the same tax credits as they give to commercial or utility installations.
- States should include in their RPS mandates (1) solar energy, specifically from DG sources, (2) energy storage and microgrid capacity, and (3) thermal energy systems that can contribute to decarbonization.
- States should enact statewide building mandates for ZNE buildings and include the self-generation portion of ZNE buildings in the mandates.
- State public utilities commissions (PUCs) should require utilities to expand the options for using grid-connected photovoltaic (PV) systems along with distributed battery storage to provide the benefits of resilience and emergency backup to their services with strategies such as (1) maintaining net metering until an alternative rate that measures the true value of solar generation is established, (2) requiring time-of-use rates, or transactive rates if possible, and (3) allowing non-utilities to sell excess power to neighbors.

- States should help reduce the soft costs of installing DG solar by simplifying and standardizing the permitting processes and installation requirements for rooftop PV, storage, and solar thermal.
- Nongovernmental organizations should set ambitious goals, such as the 100% renewable energy goal, to maintain pressure on governments and corporations to make efforts to promote DG resources.
- State governments should provide incentives for planned communities to install district heating infrastructure in newly built or remodeled mixed-use zones so that residential construction could take advantage of waste heat.
- Congress or state legislatures should enact laws to recognize and protect the right of landowners to install and operate solar technologies on their properties without significant physical or financial restrictions.
- Utilities, local governments, or nongovernmental organizations should educate those involved in their tree planting campaigns about the impacts tree shadows can have on DG solar energy systems and provide guidance about how to pick tree species (e.g., those with lower maturation heights or those with less sun-blocking foliage or branches) and where to place them to minimize their negative impacts.
- State legislatures should facilitate the deployment of solar installations through third-party ownership (TPO) models and community solar ownership legislation, such as virtual net metering, for all customers.