

EXECUTIVE SUMMARY

DISTRIBUTED ENERGY RESOURCES: Policy Implications of Decentralization

James Newcomb, Virginia Lacy, Lena Hansen and Mathias Bell *with Rocky Mountain Institute*

With smart thermostats, efficient refrigerators, and solar panels all available at the local hardware store, the role of distributed energy resources is growing. Distributed energy resources can deliver clean electricity on site, reduce electricity demand and provide much-needed grid flexibility. Ensuring that policies and markets adequately support distributed resources to keep costs low, enhance reliability, and support clean energy integration, however, will require special attention to:

1. Measure the full range of costs and benefits for distributed energy resources.

Consistent and comprehensive methods for measuring the costs and benefits of all available resources will create transparency, help deliver reliability, and provide a foundation for designing effective incentives, pricing structures, and markets.

2. Analyze tradeoffs between centralized and distributed resource portfolios.

New studies at national, regional, and local levels can help to shed light on how to optimize the mix of centralized and distributed renewables.

3. Integrate distributed energy resources into resource planning processes. Planning processes at all levels—federal, regional, state, and utility—can be adapted to provide greater visibility into distributed resource options and their implications.

4. Create new electric utility business models for a distributed-resource future. New utility business models can be devised that ensure the stability and health of the grid and incentivize integration of distributed resources.

5. Adapt wholesale markets to allow distributed resources to compete fully and fairly. With evolved market rules, all kinds of distributed resources could compete to provide a wide range of energy and ancillary services in competitive markets.

6. Enable microgrids and virtual power plants to support integration and aggregation of distributed resources.

Microgrid control systems enable better integration of local renewable resources and provide greater capabilities to manage these resources in response to grid conditions.

7. Drive down “soft costs” for solar by streamlining permitting and interconnection procedures.

Regulators and policymakers can help to reduce the costs of permitting, inspection, and interconnection to significantly reduce the costs of distributed solar.

8. Encourage smart electric vehicle charging. Smart charging of electric vehicles can help to support the integration of high levels of variable renewable generation into the grid and provide efficiency and environmental benefits in the transportation sector.

Creating a level playing field for centralized and distributed resources will require significant changes in electric utility business models and electricity markets, as well as other changes in regulation and policy to adapt to rapidly evolving technology.