

Executive Summary

This study examines the financial and normative barriers to the use of “smart grid” technologies and the demand response (DR) programs they enable. It analyzes the DR programs of three utilities: Puget Sound Energy, Portland General Electric and PacifiCorp. The research question is as follows: What state policy, regulatory and utility action will cost-effectively increase the penetration of advanced metering infrastructure (AMI) and time of use (TOU) rates among residential customers of investor-owned utilities in the Pacific Northwest (PNW)?

The PNW is the focus of this study because of its history as a leader in energy efficiency policy and utility implementation, its leadership in energy technology development and its rapidly changing resource situation. Regulatory and utility leadership and innovation in AMI and TOU would be expected in the PNW given the region’s highly successful energy efficiency programs and policies. However, it is quite clear that innovation with respect to AMI and TOU rates has not been as prevalent or aggressive as it has been with energy efficiency.

The thesis of this study is that utilities and regulators should actively encourage the implementation of AMI among investor owned utilities in the PNW to capture operational benefits. Second, utilities and regulators should eliminate the service charge that is charged to TOU rate participants in order to reduce the cost of participating and therefore increase customer participation.

An in-depth case study methodology is employed. It integrates analysis of qualitative and quantitative facts about the chosen cases and the PNW and US electric systems. This study investigates the utilities as individual cases and also makes comparisons across them.