

NREL releases new roadmap to reducing solar PV 'soft costs' by 2020

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The Energy Department's (DOE) National Renewable Energy Laboratory (NREL) recently issued a new report, "Non-Hardware ('Soft') Cost-Reduction Roadmap for Residential and Small Commercial Solar Photovoltaics, 2013," PDF funded by DOE's SunShot Initiative and written by NREL and Rocky Mountain Institute (RMI). The report builds off NREL's ongoing soft-cost benchmarking analysis and charts a path to achieve SunShot soft-cost targets of \$0.65/W for residential systems and \$0.44/W for commercial systems by 2020.

Non-hardware [costs](#)—also referred to as soft, balance of system, or business process costs—include permitting, inspection, interconnection, overhead, installation labor, [customer acquisition](#), and financing. The [report](#) also highlights that certain processes often categorized as soft costs, such as permitting and interconnection, may not appear significant when measured in terms of dollars-per-watt, but are costly in that they pose significant market barriers which slow PV deployment.

"Regardless of the specific path taken to achieve the SunShot targets, the concerted efforts of numerous photovoltaic (PV) market stakeholders will be required," NREL Solar Technology Markets and Policy Analyst Kristen Ardani said. "This report illustrates how the required participation of each type varies substantially by soft-cost-reduction category while noting that roles and responsibilities will be complementary and evolve over time."

"Soft costs are the majority of costs for residential solar and a large

minority for commercial PV projects. They have remained stubbornly high in recent years despite impressive hardware-costs reductions," said Jon Creyts, program director at Rocky Mountain Institute. "Aggressive soft-cost-reduction pathways must be developed to achieve the SunShot Initiative's PV price targets."

Soft costs account for more than 50 percent of total installed residential solar costs and more than 40 percent of commercial solar costs. The report covers strategies to overcoming market barriers and decreasing costs across four key areas: customer acquisition; permitting, inspection, and interconnection; installation labor; and financing. The report identifies residential installation labor, and permitting, inspection, and [interconnection](#) as facing the most uncertain near-term paths toward roadmap targets.

The roadmap also leverages proven methodologies adapted from the semiconductor and silicon PV industries, and offers comprehensive findings from market analysis and interviews with solar industry soft-cost experts—including financiers, analysts, utility representatives, residential and commercial PV installers, software engineers, and industry organizations—all to identify specific cost reduction opportunities.

"This report represents the first quantitative, national roadmap that targets soft-cost-reduction opportunities," said Minh Le, director of DOE's Solar Energy Technologies Office. "This [roadmap](#) and future refinements are necessary to determine the path forward to reduce the largest cost in residential solar installations. We need to be persistent in identifying the levers of change and where the big challenges persist."

For example, the report identifies ways to decrease residential customer acquisition expenditures by using software tools to reduce total time spent on site, designing templates to reduce system design costs, and

leveraging consumer-targeting strategies to increase the number of leads generated.

More information: Report: www.nrel.gov/docs/fy13osti/59155.pdf

Provided by National Renewable Energy Laboratory

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