

# Banking on Solar: New Opportunities for Lending

## Value Proposition

The U.S. solar industry was a \$13.7 billion market in 2013, with roughly 450,000 cumulative systems in place by year-end.<sup>1</sup> Bank and credit union lending for solar system deployment represents a valuable new opportunity for lenders to expand their consumer and commercial customer relationships, bring on new relationships, and diversify their loan portfolios.

## Background

Every two hours, more energy falls on the planet—in the form of sunshine—than global use of all energy sources over an *entire year*.<sup>2</sup>

The ability to convert solar energy into cost-effective electricity via photovoltaic (PV) technology has been refined over the last 50 years and advances are likely to continue.<sup>4</sup> Since 2000, the cost of installing a PV system has declined by 6-7% per year due to improving conversion efficiencies, manufacturing economies of scale, and other advancements adopted by the industry.<sup>5</sup>

Over that same time period, annual deployment grew dramatically from roughly 700 to 140,000 installations per year by 2013,<sup>6</sup> when the industry was installing one PV system roughly every four minutes.<sup>7</sup>

Installation growth is projected to continue at roughly 25% per year<sup>8</sup> due in part to the U.S. Department of Energy’s (DOE) Sunshot Initiative, which has targeted an additional two-thirds cost reduction by 2020.<sup>9</sup>

## Lending Opportunity

Historically, PV systems were primarily capitalized by third-party owners and repaid through a lease or power purchase agreement (PPA) contract. However, direct lending opportunities provide distinct economic benefits to a residential or commercial end-user. These benefits may increase relative to lease / PPA structures due to shifting policy environments.

Solar loans provide roughly 6-8% yields and have very strong repayment history. They can be offered unsecured, secured by the solar property, secured by the full property value, or secured by a tax lien (via a Property-Assessed Clean Energy, or PACE, loan).

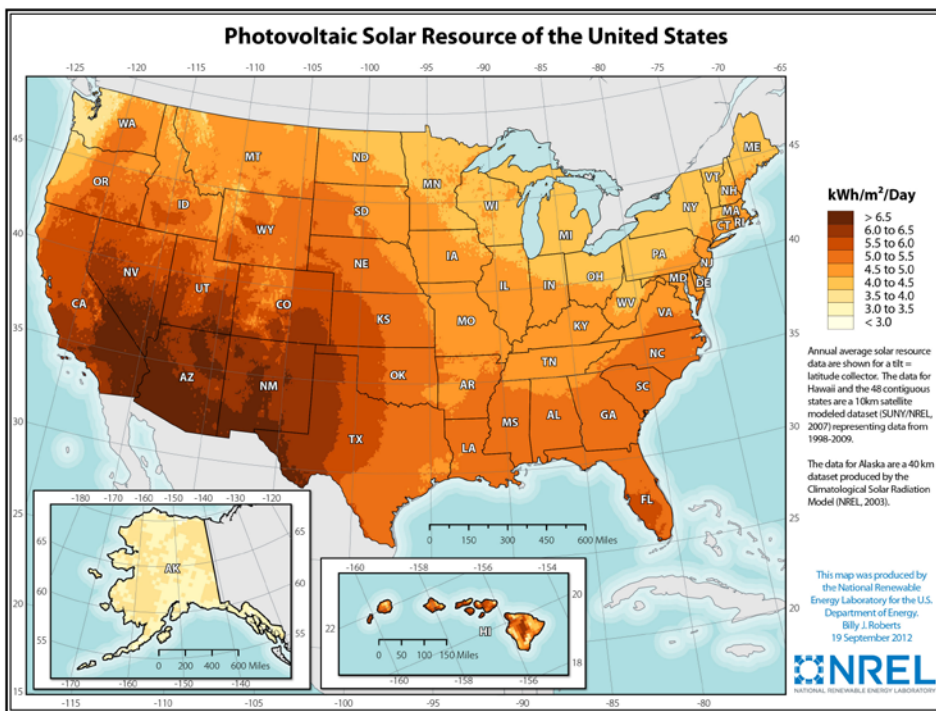


Figure 1. U.S. solar energy intensity<sup>3</sup>

In addition, several states have or are developing “green banks” that offer credit enhancements, conduit structures, or other mechanisms to mitigate private sector risk factors.

## Opening the Lending Environment

The solar asset class does present some challenges. Most lenders and regulators are unfamiliar with technical and credit performance. To overcome these and other challenges, the National Renewable Energy Laboratory (NREL) has created the *Banking on Solar* working group funded under DOE’s Sunshot Initiative.<sup>10</sup> The effort includes over 100 members of the industry—including leading banks, credit unions, regulators, state green banks, developers, and analytic entities—all engaged to facilitate a more conducive lending environment.

*Banking on Solar* is building consensus on appropriate underwriting principles, and developing the information support structure necessary for widespread industry adoption. This work is expected to lower lender transaction costs, increase deal flow, and facilitate lender-regulator dialogue and comprehension of the asset class.

Affiliated industry activities to engage both lending and institutional investment include:

- Developing best practices in system installation and maintenance for consistency in build quality, operating performance, and cash flow
- Constructing performance datasets to comprehend and enable mitigation of production risk
- Engaging the rating agencies to further the industry’s understanding of investor risk perception and facilitate secondary market sales or securitization of solar loans.

For additional information on *Banking on Solar* activities and solar industry deployment and cost reductions, please contact: [travis.lowder@nrel.gov](mailto:travis.lowder@nrel.gov).

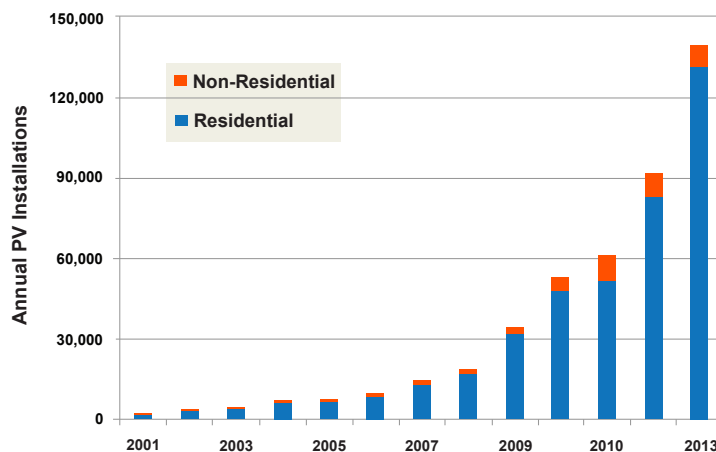


Figure 2. Distributed solar systems installed (2001–2013)

<sup>1</sup> Solar Energy Industries Association (SEIA). “U.S. Solar Market Insight 2013 Year in Review.” Washington, DC: SEIA, accessed May 2014.

<sup>2</sup> Sandia National Laboratory. Solar FAQs, 2006, [http://www.sandia.gov/~jytsao/Solar\\_20FAQs.pdf](http://www.sandia.gov/~jytsao/Solar_20FAQs.pdf); U.S. Energy Information Administration, International Energy Outlook 2013, <http://www.eia.gov/forecasts/ieo/world.cfm>.

<sup>3</sup> “Solar Maps.” NREL. Accessed September 2013: <http://www.nrel.gov/gis/solar.html>.

<sup>4</sup> See history of photovoltaics at <http://inventors.about.com/od/timelines/a/Photovoltaics.html>.

<sup>5</sup> Feldman et al. (2013), Photovoltaic System Pricing Trends: Historical, Recent, and Near-Term Projections - 2013 Edition; LBNL

<sup>6</sup> Solar Energy Industries Association (SEIA). “U.S. Solar Market Insight 2012 Year in Review.” Washington, DC: SEIA, 2013.

<sup>7</sup> Greentech Media. “A Solar System Is Installed in the U.S. Every 4 Minutes.” Boston, MA: Greentech Media, August 2013.

<sup>8</sup> Solar Energy Industries Association (SEIA). “U.S. Solar Market Insight 2012 Year in Review.” Washington, DC: SEIA, 2013.

<sup>9</sup> See SunShot Initiative website: <http://www1.eere.energy.gov/solar/sunshot/index.html>.

<sup>10</sup> See Banking on Solar description and materials at: [https://financere.nrel.gov/finance/solar\\_securitization\\_public\\_capital\\_finance](https://financere.nrel.gov/finance/solar_securitization_public_capital_finance). (need new page for BoS)

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NREL/FS-6A20-62016 • August 2014

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