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Solar securitization

A promising financing opportunity for solar developers

November 2013

pwc

A movement toward new solar financing vehicles

US residential and commercial PV capacity is expected to grow at a 22% compounded annual rate from 2010–2020, resulting in 15.9GW of cumulative capacity by the end of the decade.[1] Given this rapid growth, developers will require a variety of financing mechanisms to fund these projects. With the expiration of the Department of Treasury's cash grant program and the reduction of the Investment Tax Credit from 30% to 10% in 2016, there is less financing available from traditional players such as the US government, banks, and tax equity investors that realize tax benefits from financing solar projects. Additionally, the high cost of capital is currently a major barrier to overall market growth. The good news is that new vehicles of investment, which will be needed to meet the rising demand for financing and lower the cost of capital, are already taking shape.

Securitization: A promising opportunity

Residential and commercial solar developers have found success in third party leasing and Power Purchase Agreement (PPA) models, where home and business owners enter long term contracts with developers that install, own and operate solar equipment on the host site. In return, the host customer pays the developer for the solar system's electric output, similar to how they would pay a utility for their services.

Third party leasing and PPA models lend themselves to the securitization of solar assets, a financing technique that aggregates pools of underlying assets and transforms the future cash flows into a security. The benefits of securitization could be realized by solar developers, investors, and customers alike.

Potential benefits from securitization	
Developers	**Access to public markets:** • Lower cost of capital compared to traditional debt/equity • Broader and more diverse investor base • Market price discovery for illiquid assets • Balance sheet and cash flow management **Less reliance on tax equity:** Smaller players who cannot set up tax equity structures can access cost-competitive financing **Asset-linked cost of capital:** Cost of capital tied to asset performance rather than developer's credit rating
Investors	**Diversification of underlying assets**: Geographic and income diversity **Flexibility:** Fixed and variable rates, greater maturities, greater liquidity **Lower credit risk:** • Public securities offer more efficient risk pricing • Reduced bankruptcy risk through Special Purpose Vehicles (SPVs) **Transparency:** Public investments require more transparency **Attractive yields:** Potential excess returns on comparable assets with shorter term maturities than leases
Public	**Lower electricity prices:** Lower cost of capital from securitization could result in a 10% decrease in the levelized cost of energy[2]

[1] Bloomberg New Energy Finance, *Re-imagining US Solar Financing*, June 2012.
[2] "Financing U.S. Renewable Energy Projects Through Public Capital Vehicles: Qualitative and Quantitative Benefits," (April 2012) by Michael Mendelsohn and David Feldman, http://www.nrel.gov/docs/fy12osti/58315.pdf, Accessed May 8, 2013.

Potential benefits from securitization (continued)	
Government	**Reduced subsidies:** Less need for government subsidies **Alternative capital sources:** Accelerate R&D and technologies through increased investment
Rating agencies	**Rating opportunities:** Solar-backed securities provide an additional asset class for rating agencies to assess risk

Understanding the risks

Though the benefits of securitization may be attractive, no public securitization deals have been announced to date. The primary hurdle lies in the inability to comprehensively assess the riskiness of a pooled portfolio of solar leases. Public investors depend on credit rating agencies to quantify risk based on well-defined, industry standard risk metrics; however, solar-backed securities are a relatively new asset class, so credit rating agencies struggle to define key risk metrics and credit enhancement levels to issue investment grade ratings.

Rating agencies have stated concerns in at least three areas[3]:

- **Limited performance data:** Rooftop solar has been significantly operating for only the last three to four years, making it difficult to assess performance risks
- **Lack of widespread operations and maintenance providers:** Only a few providers have the geographical reach to maintain geographically diverse project loans to collateralize securitized pools
- **Declining solar panel prices and emerging technologies:** If solar panel prices continue to decrease[4] and technological innovation continues to rise, it is difficult to assess how consumers will behave if they are bound to costs of power that may be above market rates

Another concern is the lack of standardization in contracts. Investors are typically interested in standardized contracts with predictable cash flows to fund securitized bonds, yet solar contracts can have limited recourse provisions upon default and/or performance conditions that change borrower payments, making them vulnerable to uncertain revenue streams. The Solar Access to Public Capital (SAPC) working group, comprised of over 60 entities and set up by the National Renewable Energy Laboratory, is making significant progress in this area. SAPC will also work on creating performance datasets to accurately assess credit default risk.[5]

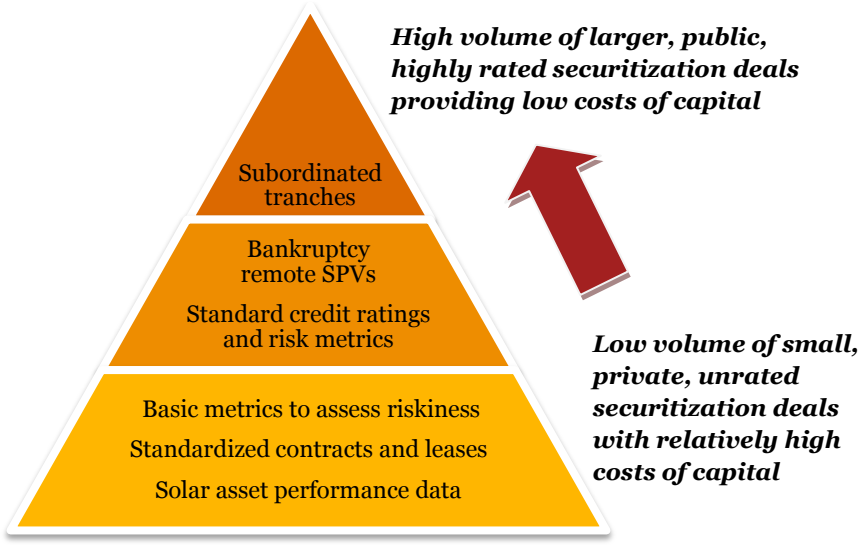
[3] Standard & Poor's, *Will Securitization Help Fuel The U.S. Solar Power Industry?*, January 2012
[4] Wile, Rob. "The Falling Cost Of Solar Energy Is Surprising Everyone." *Business Insider*. N.p., 2 May 2013. Web. 04 May 2013.
[5] "NREL Assembles Industry Working Group to Advance Solar Securitization." *NREL Newsroom.* N.p., 13 Mar. 2013. Web. 14 Apr. 2013.

Development of the industry

Our experience has shown that there is a clear need for standardized risk scoring mechanisms and uniform practices to evaluate PV projects, particularly on the commercial side. Our focus has been on collaborating with industry participants to develop screening, scoring, and selection methodologies to help non-participating banks or alternative funding sources understand key credit, project, and performance risks. The insights that we have developed by collaborating with solar developers, manufacturers, and financiers could provide the necessary tools and transparency needed for investors to gain confidence and to facilitate a potential securitization deal.

Initial securitization trusts will likely be 144-A private placement deals on the order of $50 million and may happen as early as this year.[6] Well understood risks, standardized contracts, and ample historical performance data are required to provide the foundation for more complex issuances.

Evolution of solar securitization



Complex asset-backed securities are generally issued through newly established companies called Special Purpose Vehicles (SPVs); such entities are legally separated from the solar developer, eliminating investor concerns that the developer or servicer could undergo bankruptcy and seek claims to cash flows. Issuers may eventually structure subordinated tranches, where investors in lower tiered tranches receive higher yields for higher risks, thus protecting investors in higher tranches. As collateral risks are better understood, investment grade solar-backed securitizations could reach greater than $150 million in size.[6]

[6] Credit Suisse, "US solar developers at the cusp of accessing lower cost capital", *Solar Snippet*, February 2013.

Conclusion

Securitization of solar assets could be instrumental in meeting the increasing demand for solar financing, particularly in an environment where traditional government sources of financing are diminishing. Developers would gain access to larger pools of investment from diverse public markets at lower costs of capital, making solar more affordable for consumers, thereby further ramping up demand.

To migrate and mature the industry towards lower risk, diversified, and more liquid securities, industry collaboration is required to educate market participants and to provide transparency regarding the associated risks. The result of such collaboration would benefit all stakeholders, from investors and developers to consumers.

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