- The evolution of capital markets' access to businesses that leverage the dynamics outlined above to support a for-profit business model. Examples include tax equity financing, project finance lending, residential PV leasing models (i.e., "no money down" for customers), and public equity markets for pure play renewable resource providers and owners. As an illustration, U.S. tax equity investment is running at $7.5 billion annualized for 2012.[4] Add other sources of capital, including traditional equity, and this suggests the potential to fund a large and growing industry.

Bloomberg New Energy Finance (BNEF) projects that distributed solar capacity will grow rapidly as a result of the competitive dynamics highlighted. BNEF projects 22-percent compound annual growth in PV installations through 2020, resulting in 30 gigawatts (GW) of capacity overall (and approximately 4.5 GW coming from distributed PV). This would account for 10 percent of capacity in key markets coming from distributed resources and even a larger share of year-round energy generated.

Assuming a decline in load, and possibly customers served, of 10 percent due to DER with full subsidization of DER participants, the average impact on base electricity prices for non-DER participants will be a 20 percent or more increase in rates, and the ongoing rate of growth in electricity prices will double for non-DER participants (before accounting for the impact of the increased cost of serving distributed resources). The fundamental drivers previously highlighted could suggest even further erosion of utility market share if public policy is not addressed to normalize this competitive threat.

While the immediate threat from solar PV is location dependent, if the cost curve of PV continues to bend and electricity rates continue to increase, it will open up the opportunity for PV to viably expand into more regions of the country. According to ThinkEquity, a boutique investment bank, as the installed cost of PV declines from $5/watt to $3.5/watt (a 30-percent decline), the targeted addressable market increases by 500 percent, including 18 states and 20 million homes, and customer demand for PV increases by 14 times. If PV system costs decline even further, the market opportunity grows exponentially. In addition, other DER technologies being developed may also pose additional viable alternatives to the centralized utility model.

Due to the variable nature of renewable DER, there is a perception that customers will always need to remain on the grid. While we would expect customers to remain on the grid until a fully viable and economic distributed non-variable resource is available, one can imagine a day when battery storage technology or micro turbines could allow customers to be electric grid independent. To put this into perspective, who would have believed 10 years ago that traditional wire line telephone customers could economically "cut the cord?"

The cost of providing interconnection and back-up supply for variable resources will add to the utility cost burden. If not properly addressed in the tariff structure, the provision of these services will create additional lost revenues and will further challenge non-DER participants in terms of being allocated costs incurred to serve others.

Another outcome of the trend of rising electricity prices is the potential growth in the market for energy efficiency solutions. Combining electricity price trends, customer sustainability objectives, and ratemaking incentives via cross-subsidies, it is estimated that spending on energy efficiency programs will increase by as much as 300 percent from 2010 to 2025, within a projected range of $6 to $16 billion per year[5]. This level of

[4] Source: Bloomberg New Energy Finance, *Renewable Energy-Research Note*, July 18, 2012

[5] Source: Lawrence Berkeley National Laboratory, *The Future of Utility Funded Energy Efficiency Programs in the United States: Projected Spending and Savings 2010 to 2025*, January 2013