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Contact: Jamie Wimberly
Phone: (202) 255-2860

The Looming Challenge of Solar Waste

Solar IQ Research Points to Increasing Risks to Customers and Society Associated with the Removal and Disposal of Residential Solar Systems

Washington, DC ... DEFG, a research and advisory firm focused on customer strategy and experience in the utility sector, (www.defgllc.com) released today, "Solar End Stage: Planning and Risk Scenarios for Removal of Solar." The research was developed as part of Solar IQ, combining research with customer-facing content aligned to the solar customer journey. The research clearly points to a growing problem of what to do with solar when it is time to remove the systems from a customer's property.

"As consumer investment in solar grows, so does the question of what will happen when those systems reach the end of life," stated Jamie Wimberly, CEO of DEFG. "Our research revealed there are many challenges that will face customers, communities and utilities as the first generation of solar panels reach their end of life."

There is approximately 375 MW of installed residential solar that will reach the end of life within the next 5–10 years. This translates to 1,500,000 rooftop solar panels which, ultimately, will equate to 30,000 tons of solar waste sometime in the future. There are only 7 existing facilities in the United States that can recycle the solar waste. And that's today. The projected exponential growth of residential solar is expected to result in even more solar waste that will need to be removed, transported, recycled, or stored.

"Customers, particularly those that were early adopters of solar energy, want confidence that the disposal process adheres to the philosophy of reduce, reuse, recycle," said Karen Lefkowitz, lead analyst of the research and CEO of Sunset Energy. "However, there are obstacles that must be overcome before there is a process ready for the impending volume of panels. And there really isn't the capability to handle even a fraction of the projected solar waste today."

The primary findings from the Solar IQ research:

- With only seven existing facilities that can handle solar waste, the United States is currently not capable of processing 30,000 tons of projected solar waste from the installed residential solar base today. The newest and best facilities in the world today can only handle 1,000 tons annually. None of those facilities exist in the United States.
- Increasing growth in residential solar adoption will only increase the recycling burden and costs.
- Solar panels have a projected lifespan of 20 years (the time a normal warranty covers); however, there are many possible reasons for early removal and disposal, including damage (fire, weather or other anomalies), reduced efficiencies of panels over time or changing customer preferences

(e.g., a customer wants to remove the panels to sell the home). Assuming that some percentage of installed solar will need to be removed sooner, the challenge becomes even more pressing.

- There are many components to a solar panel. Some of those components are toxic and must be treated differently than other components.
- A growing percentage of solar systems will also incorporate batteries, adding to the problems of removal and disposal of hazardous materials.
- Removal and disposal of solar waste will be costly, including costs associated with removal from the customer's property, any repairs to the roof or property, transportation to recycling facility, extraction of usable parts or materials, transportation of unsalvageable parts or components to landfill, and long-term storage of waste.
- The cost burden will be shared by customers, solar providers, utilities and municipal governments. But many uncertainties exist on who is contractually responsible and who pays the costs. This is especially true of customer-owned solar systems.
- It must also be assumed that some percentage of the original solar providers will no longer be in the market when it is time to remove the rooftop solar. This will shift the costs and burden to other parties.

"We want the solar market to continue to grow and succeed," concluded Jamie Wimberly, CEO of DEFG LLC. "However, for customers and society to fully benefit, some serious thought needs to be put towards what to do with all the projected solar waste in the future."

For a free copy of the report, go to: www.defgllc.com.

DEFG is a research and advisory firm specializing in consumers and consumer-facing offerings in the utility sector. We believe that customers are the future of energy. Since 2003, we have helped clients create value in a commodity marketplace. Solar IQ is a joint DEFG offering with Questline to provide ongoing research and customer-facing content aligned with the solar customer journey.

Sunset Energy is a management consulting firm specializing in the development of strategies to improve the integration of distributed renewable energy, electric vehicle charging infrastructure and other aspects of the Smart Grid and believe the future of energy requires all stakeholders to work towards common goals that will ultimately improve business processes, reliability, customer service environmentally responsible programs.