

Community Solar Grids for Agriculture

A Vehicle for Private-Sector Investment in Distributed Energy in Guatemala

What are Community Accelerators?

Community Accelerators are low-cost distributed energy service providers based in individual low-income communities in frontier markets. Accelerators utilize an innovative and rapidly deployable 'utility-in-a-box' technology which provides communities with both the hard and soft infrastructure they require to:

- a) Support a 'turn-key' project to establish their own power-grid
- b) Manage their own energy supply company

By engaging the community as equity stakeholders in a partnership with Development Ventures, who will provide the initial project management and continued capacity support throughout the life of the investment, Community Accelerators overcome many of the cost and capacity problems associated with deploying solar assets in low-income areas. Development Ventures believes that with this approach we can use a multi-tiered debt and equity structure between all the stakeholders to facilitate the flow of private sector capital to rapidly scale development in off-grid community power while also generating a near risk-adjusted return for investors.

The Physical Infrastructure of Community Accelerators in Guatemala



As shown above, the physical Accelerators consist of a 100- 200 KWp photovoltaic mini-grid, a smart meter mobile pre-payment system, external agricultural infrastructure such as low-tech water capture/drip irrigation systems, and a prefabricated modular facility which integrates internal agricultural processing equipment with the Balance-of-System (BOS) for the grid.



Target Market:

The initial pilot project sites are low-income agricultural communities in the Central Plains and Highlands of Guatemala. These communities have been selected for the trial as they are located in a country where net-metering and distributed power generation regulations are firmly established. However, the Accelerator model is specifically designed to target rural communities in any country with high solar irradiance and governance structures that are favorable to supporting private investment in solar power. Specifically, accelerators have the greatest potential to target communities with extensive economic potential in agriculture, extractive industries, and/or tourism, but lack access to traditional utility power as the capital cost to connect them to the grid is too high (for the foreseeable future).

The Innovative Business Model

The business model of the each Accelerator is structured so that each one can be packaged as an individual standalone investment product with a predictable IRR and a defined and measurable social impact. To ensure that each Accelerator is attractive to industry investors, the business model has the following design considerations:

- a) A multi-revenue stream approach to ensure profitability and a predictable return on investment. This is achieved by averaging out fluctuations in power consumption by supplying power to multiple households across a community combined with a range of seasonal agricultural services.
- b) A low cost, flexible and incentives driven operating structure to minimize waste and maximize potential revenue. This includes the use of off-the-shelf systems to fully automate grid monitoring and pre-payment smart meters to remove manual meter reading, billing, and revenue collection.
- c) Using Accelerators as an accountable asset manager with strong technical backing to lower financing costs. By dealing directly with the community and by operating the grid and collecting financing repayments through the tariffs charged for power, the accelerator removes the need for investors to build costly structures to manage loans and/or conduct due-diligence on the credit worthiness of numerous potential clients in remote areas.
- d) Using the 'utility-in-a-box' structure to lower investment acquisition costs. As each individual Accelerator is a defined investment supported by a service company in the US market, these investments can be straightforwardly and cost effectively promoted to, and refinanced by, numerous investors, increasing the liquidity of the assets consequently lowering the overall cost of the initial finance.

Current State

To date, Development Ventures has secured funding from USAID Powering Agriculture and brought together a coalition of stakeholders that include Academic Institutions, NGOs, Private-Sector Solar Companies and Impact Investors preparing to establish the first pilot sites in Jan 2016.

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