



Off-Grid Residential & Educational Facilities

To Rebuild a Nation, First Build an Infrastructure

“Reliability had to be our top priority and Morningstar is the gold standard for reliability in both product and service.”

Mega Solar

Summary

- Approximately 2 million Colombians do not have access to electricity
- Projects launched in region will introduce more solar power applications to alleviate “electrical poverty”
- Morningstar product selection based on brand’s reputation

Situation

In 2016, after nearly half a century of conflict, the government of Columbia brokered a peace deal with the Revolutionary Armed Forces of Colombia (FARC), bringing an end to a war that killed more than a quarter of a million people, and displaced millions more. As Columbia moves to rebuild, returning the country to peace and attaining prosperity will hinge on one crucial element: cheap and plentiful electricity for all.

Nearly 3% of Columbia’s population live in areas previously controlled by FARC rebels. These small, scattered villages are isolated from their country and the world, cut off by impenetrable jungles and mountain ranges. The men, women and children living there lack employment and education opportunities and few basic public services, leaving them vulnerable to more violence. So important is access to basic infrastructure, that the government of Columbia considers it the single greatest factor in achieving long-term peace.

Located in the equatorial zone, Colombia has significant solar power resources but it has struggled to grow the industry. The country sits in a complex region of the Andes mountain chain where climatic conditions vary. Geographically, the territory encompasses a vastly diverse landscape, from the Amazon rainforest and tropical grassland to Andean mountain peaks, as well as both two oceanic coastlines, the Caribbean in the Atlantic and the Pacific.

Project

As part of the peace deal with FARC, the Colombian government pledged to bring access to electricity to 100% of Colombians. In the regions of Cesar, La Guajira, Meta and Caquetá, the Institute of Planning and Promotion of Energy Solutions for Non-Connected Zones (IPSE) was tapped to oversee a project to provide electricity to 1086 homes and ten (10) schools. The complex geography and harsh climate made a traditional infrastructure infeasible; to achieve the reliable, inexpensive access to power required for rebuilding, IPSE turned to a solar solution proposed by Union Temporal de Mega Solar.



Solution

The varied scope, needs and risks for each installation meant that there was no one-size-fits all solution. Each project required its own system setup, not only would the installation project need to be scalable, but so would the components needed to build it.

For the solar home projects, Mega Solar created a solar application capable of powering four lightbulbs, one fan, one television and two electrical outlets in every home. Each home system consists of:

- 1 x ProStar MPPT 40 solar charger
- 3 x 250Wp modules (60 cells)
- 2 x 250Ah battery (24V)

Six school systems were built to power six light bulbs, six computers, one TV, one printer, one blender and one DVD player, with a system consisting of:

- 1 x Tristar MPPT 30 solar charger
- 6 x 250Wp modules (60 cells)
- 4 x 300Ah battery (48V)
- 1 x XTM-2600W inverter

Two larger capacity school systems, capable of powering twelve light bulbs, twelve computers, one TV, one printer, one blender and one DVD player were built with:

- 1 x Tristar MPPT 60 solar charger
- 12 x 250Wp modules (60 cells)
- 8 x 300Ah battery (48V)
- 1 x XTM-4000W inverter

For the largest project, two additional school systems with a power generation capacity of eighteen light bulbs, eighteen computers, one TV, one printer, one blender and one DVD player were built with:

- 2 x Tristar MPPT 45 solar charger
- 18 x 250Wp modules (60 cells)
- 12 x 300Ah battery (48V)
- 1 x XTM-4000W inverter

With access to modern communications and agricultural technologies within reach of much of the world, addressing the issue of electrical poverty is more important than ever to improve quality of life in those regions still in the developmental stage. Projects such as Mega Solar play an increasingly pivotal role in ensuring geo-political stability in places emerging from conditions of struggle and turmoil which the developed world can only imagine.

"For a project of this scale and significance, reliability had to be our top priority and Morningstar is the gold standard for reliability in both product and service. Morningstar's "no-fail" design standards mean our systems can withstand the severe weather conditions that are emblematic of our harsh climate. Their commitment to customer support means I can be on the phone with a world-class engineer any time I have a question or concern. They commit to the project the whole way through."

