

Upscaling Mini Grids for Least Cost and Timely Access to Electricity Services
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Uncertainty about revenue generation from micro-grids for rural electrification

EDA (Energy Daily Allowance)

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CHALLENGE

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Typically in Green Mini-Grids (kW to MW scale) with high penetration of RE for rural electrification:

kWh "traditional" consumption/demand results into uncertainty on customer consumption → uncertainty on monthly income per customer for the operator → **UNCERTAINTY ON TOTAL MONTHLY INCOME GENERATION (CASH FLOWS)**

Sizing the demand becomes uncertain too (in particular instantaneous power demand) → sizing the power generation component with uncertainty on demand side → oversizing generation and/or service problems (load-shedding, service interruption, others)

SHARING THE AVAILABLE ENERGY WITHOUT CONFLICTS

HOW CHALLENGE WAS OVERCOME

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- In RE electricity – “user should pay for availability not only for the consumed energy”
- Creation of a tariff based on the **ENERGY DAILY ALLOWANCE** (EDA) which includes a fee for service
- **TAKE OR PAY** approach (flexible, user friendly, 3 EDA of “storage”)
- Clearer and easier financial planning for operator and for client
- It reduces invoicing costs and operational cost because of pre-paid flat fees 2/3 times a month: **FLAT SUBSCRIPTION**
- ✓ Pre-paid in our experience is not essential for a successful payment ratio

HOW CHALLENGE WAS OVERCOME

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EDA comparison to a water tank

Water drips into the tank at a rate proportional to the available contracted energy

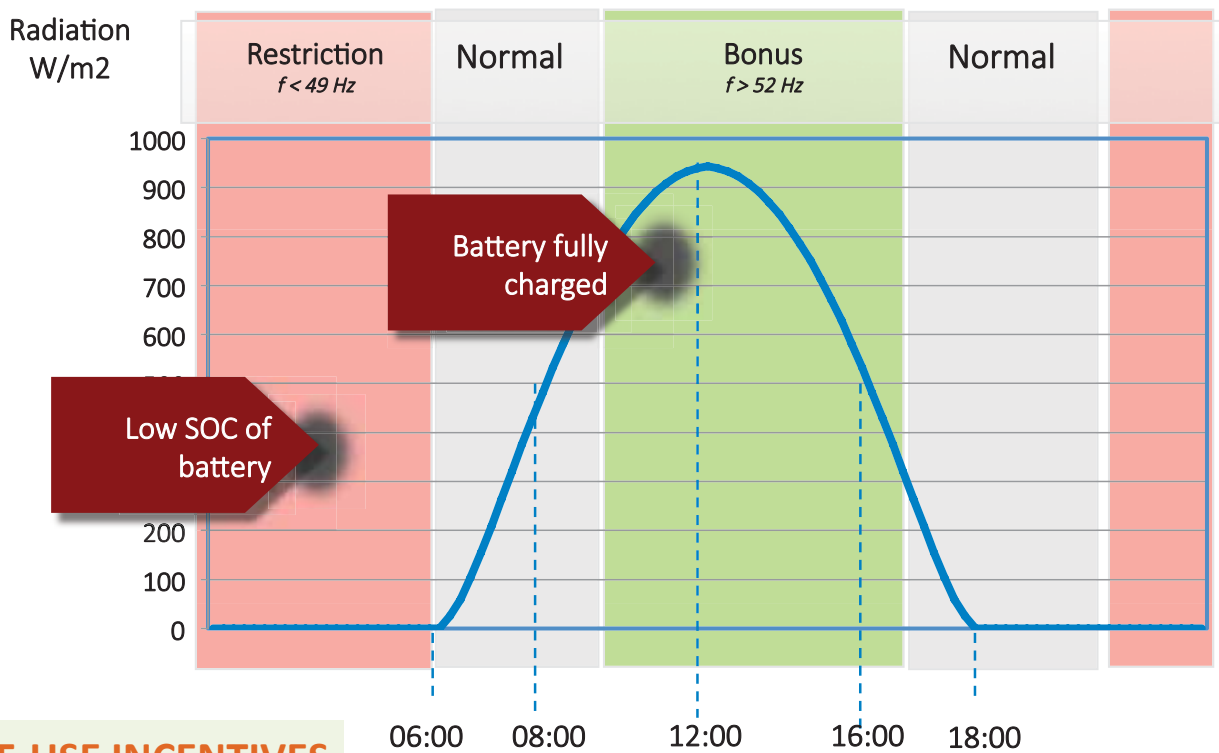
The tank size represents the maximum capacity: 1, 2 or 3 EDAs

The tank is emptied based on user demand and pricing at every moment

The level of water represents the remaining energy available of the user

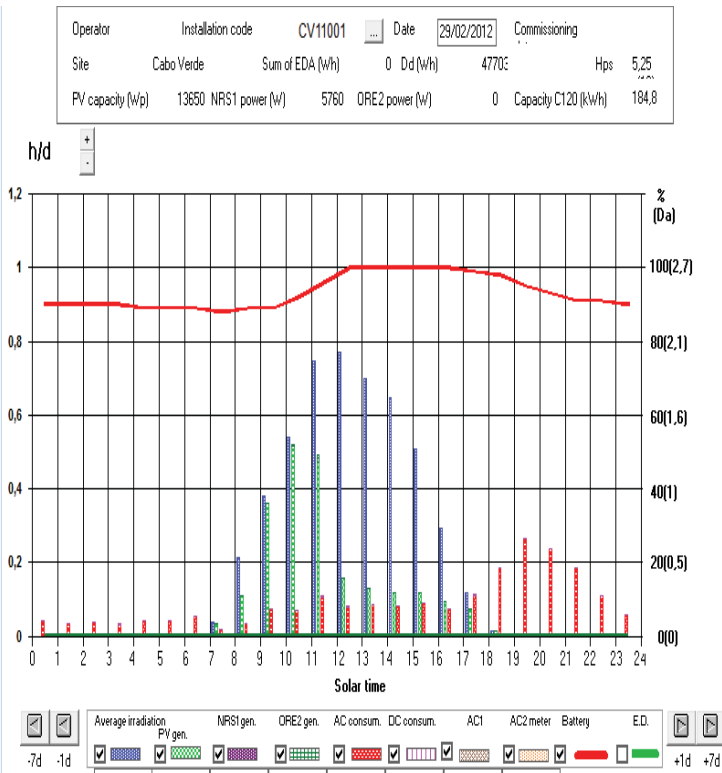


PRICING AND DEMAND SIDE MANAGEMENT

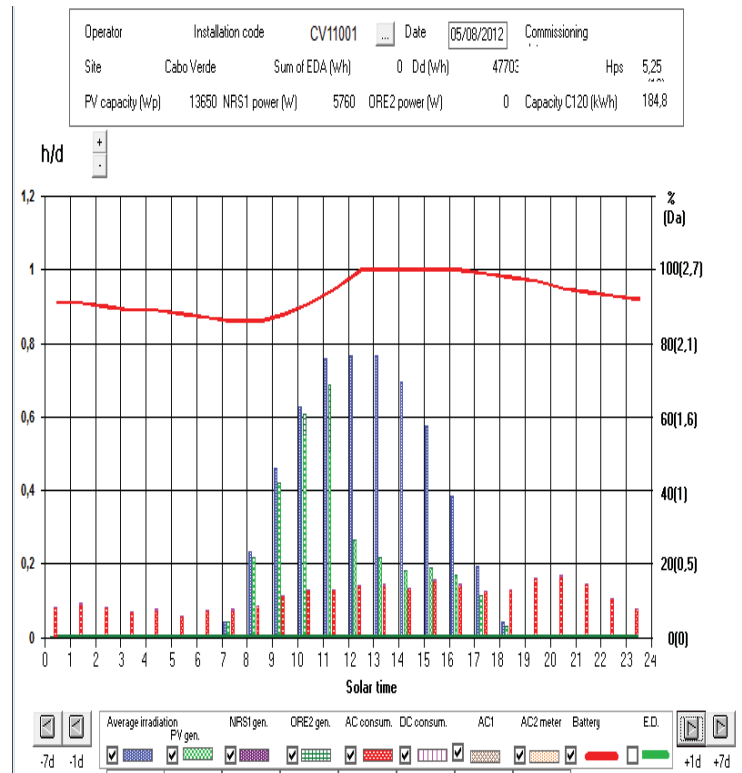


TIME-OF-USE INCENTIVES

RESULTS



February 2012

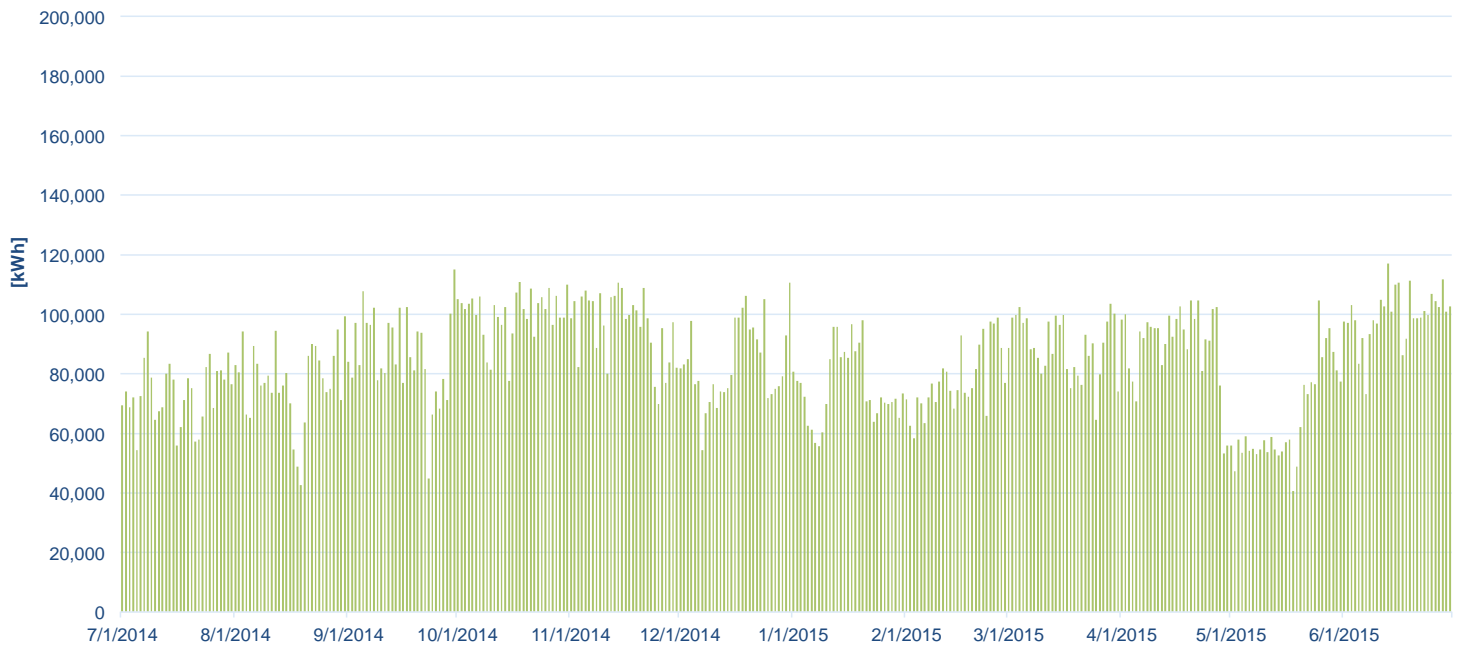


August 2012

RESULTS

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Annual energy consumption - Monte Trigo



WAY FORWARD

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Mini-grid operators to provide a holistic service; to provide energy efficient appliances and micro-finance as part as their business

- **PARTNERSHIPS ARE NEEDED**
- **IMPORTANT TO CONSIDER LESSONS LEARNED FROM PAST EXPERIENCE**
- **INNOVATION**

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