

WWC Hackaton 2019

Sustainable Homes

Solar Energy Management



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The Problem

**"Energy cannot be created nor destroyed
only transformed"**

**Energy created by photovoltaic cells not being used is lost,
this surplus can be used to reduce grid energy bills.**

**We need a way to know when is the right time to connect to
the grid, send energy back to it or use our own energy.**

Desired

Energy Produced = Energy Consumed

Reality

**Energy Produced > Energy Consumed
= Energy Lost**

**Energy Produced < Energy Consumed
= Energy need**

Solution

Solar energy management , monitors the production and consumption of energy to allow a more efficient use decreasing percentage of loss

Based on the percentage of energy status, the monitoring of the energy will allow us to remotely choose to switch our house to the grid or P cell and also send the overproduction back to the grid

Grid

P Cell

Visual Studio 2017
Azure Sphere SDK
Software Arduino IDE

Azure IoT - Telemetry

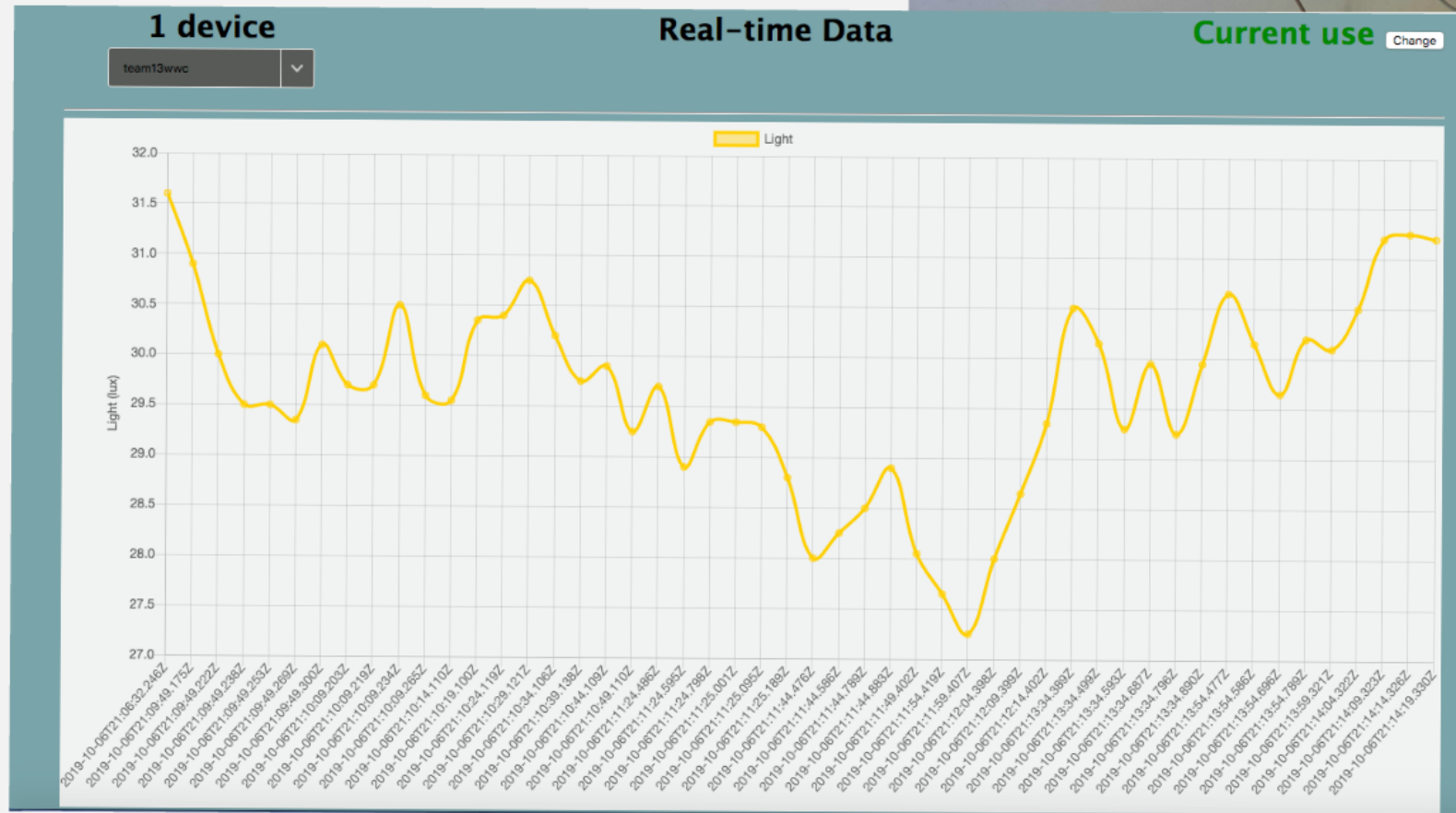
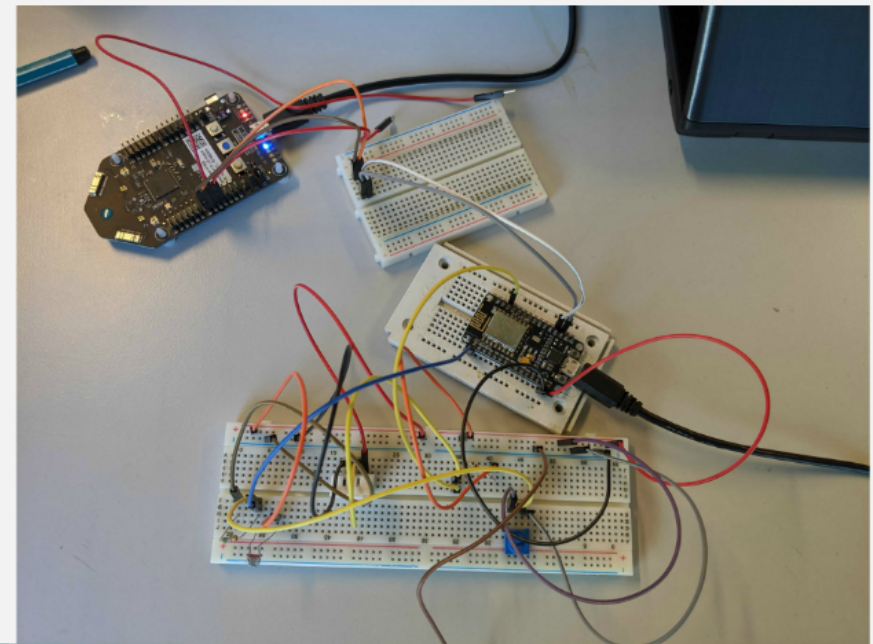
ESP8266 12 E

MT3620

Sensors:

Foto resistor - ambient light - to simulate photovoltaic cell

Potentiometer - Simulate energy usage



Future development

- Alarm Automated Grid/PCell Switch
- Critical energy distribution - refrigeration
- EV station charging
- Mobile