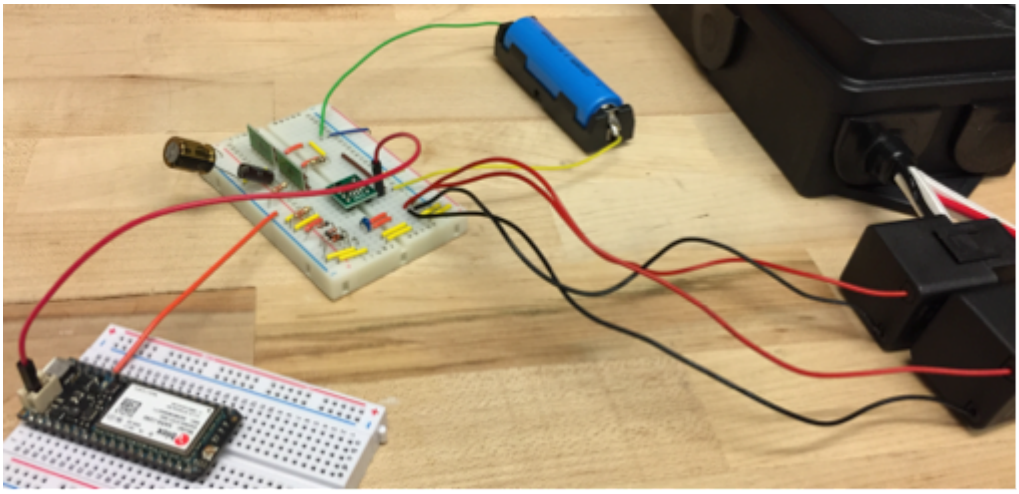
James D'Albora, james@verifyenergy.com
Daniel Gerber, daniel.l.gerber@gmail.com

Powerlfy: A Plug-and-Play Solar Monitoring Device
Technical Assistance Request

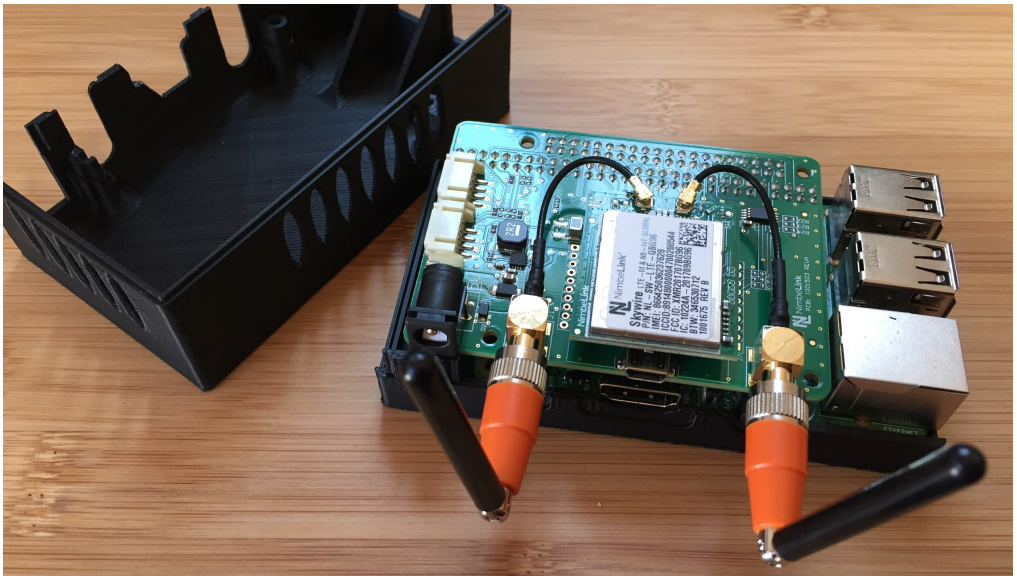
The Powerfly is a plug-and-play embedded device for solar monitoring. It is self powered through current transformers (CT) and integrated solar energy harvesting, and features a backup battery. The technology is currently in an early prototype stage, but we hope to transition to a viable beta product within one year. At this point, we have built a prototype, shown below, that demonstrates the CT harvesting to periodically power a cellular chip. We have also developed a cellular gateway that can transmit MODBUS data through a cellular chip. We would like to issue a request for assistance in the further technical and operational aspects of this project.

We will definitely need technical assistance in the design and development of our firmware. We need an engineer or team of engineers who have experience working with LINUX based microprocessors who can help with efficient firmware design. We also need to discuss some of our communication assumptions with experience network engineers who understand cellular communications and various RF protocols. It would also be valuable to connect with an expert in industrial controls and data acquisition systems so we can securely transmit the correct data. We also are in need of software development to help us create a cutting edge SaaS web app to allow for remote monitoring of the system. Finally, some mechanical engineering support will be needed when it comes to overall system design and physical characteristics.

We also see the need for operational assistance from the American-Made Network (AMN) and the national labs. We will require lab space to develop our prototypes and test our units with various power supply equipment. We may also need assistance and advice on the certification process for UL listing of the final device. In addition, we could use assistance in setting up the appropriate manufacturing channels in the later stages of development, and help in understanding supply chain management. To meet our marketing goals, we will need to make connections with solar installers and inverter companies to get feedback on refining our value proposition and presentaitons.



Proof of concept prototype for energy harvesting through CTs with a battery management system. The prototype has been demonstrated to periodically power a Ublox cellular chip.



Prototype of an ethernet cellular gateway on a Raspberry Pi with a 3D printed enclosure.