

Sky Power for the People: A Sustainable Solar Solution

Introduction

This project is a perfect fit for Lowlander Institute, combining cutting-edge solar power innovation with community empowerment. Solar energy, which is limitless, sustainable, and renewable, addresses the needs of housing security and power resiliency, especially in areas prone to hurricanes and power outages. This initiative not only encourages the use of clean energy but also builds local skills through workshops, enhancing both resilience and equity.

The Problems....

Costs

Conventional 5k standalone solar with batteries costs between \$25,000 and \$35,000 for materials and installation. That is \$5-\$7 a watt! The average income in Louisiana is \$30,856 yearly. The average house price is ~\$205K.

Service & Maintenance

There is no one to service the equipment in our area (and many other rural areas).

Emergencies

This region is subject to power outages, hurricanes, and other disasters and their remote location makes them last in line for relief services.

Housing Insecurity

Climate change is leading to more frequent and severe weather events, displacing local populations. The investment in stationary solar is not feasible in temporary housing situations. Renters can use portable units.



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The Problem: Cost and Accessibility of Solar Energy

Although solar power is becoming more affordable, standalone solar systems with battery storage remain prohibitively expensive for many households. Currently, the average cost for materials and installation is between \$25,000 and \$35,000 for a 5-kilowatt (KW) system, a price far out of reach for many Louisiana residents, where the average income is just over \$30,000 a year. This is assuming a homeowner can even find someone to install and maintain the system.

For renters or those living in remote areas, the challenges are even greater. Housing insecurity due to climate emergencies like hurricanes and flooding further complicates long-term solar installations.

Modular

The objective is to make a modular system that will fit in the bed of a pickup truck or on a small trailer.

These systems are easier and faster to install, compared to permanent solar systems or even most mobile systems.

Scalable

The 5kW working units can be connected together to match a required load. They can be daisy-chained to match larger loads. They can also be dedicated to singular loads like air conditioning, refrigeration, etc. They can quickly be disassembled, transported, and reassembled for special events, emergencies, and disasters.

Homegrown

We're providing workshops to train locals to specify, order, assemble, transport, set up and maintain the units without needing extensive technical knowledge or permanent infrastructure.

Affordable

Our goal is \$1 per watt.

Sustainable & Renewable

Key Elements

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Sustainable and renewable energy offers a range of significant advantages, spanning environmental, economic, and social benefits including community resilience and equity.



The Solution: Portable, Modular Solar Systems

Our portable solar units offer a solution to these challenges by providing efficient, scalable, and mobile power. These units are not only more affordable but also easier to install and maintain than traditional systems. Built for flexibility, they can be transported for emergency situations, special events, or community needs. With modular designs, multiple units can be daisy-chained for additional power or dedicated to critical needs like refrigeration, air conditioning, or medical equipment.



Portable Units, \$30,000 and up (~\$10 per watt)

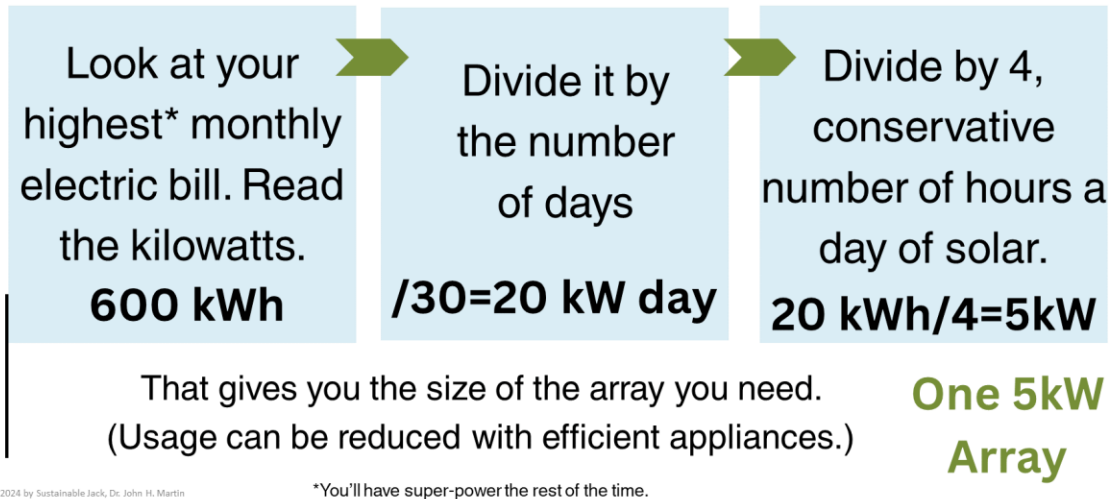


Current Market Options: Overpriced and Inaccessible

- A 4-kilowatt car-charged solar array costs \$40,000.
- Smaller 1.2-kilowatt systems range between \$15,000 and \$18,000.
- The typical 500-watt portable system, often seen in parking lots, costs \$10,000.

In contrast, our systems are designed to be far more cost-effective, with a goal of achieving a price point of \$2 per watt.

How many watts do I need?



*You'll have super-power the rest of the time.

Understanding Your Power Needs

When people hear "watts" and "kilowatts," they may not understand how much power they really need. Here's a breakdown:

- **100 watts = 1 old lightbulb** burning for an hour.
- **1,000 watts = 1 kilowatt (kW)**. So 10 100-watt light bulbs burning for an hour equal 1 kWh.

To calculate your needs, take your highest monthly electricity bill. For example, if your usage is 600 kilowatt-hours (kWh) per month, divide that by 30 days, and you need 20 kWh per day. With an average of 4 hours of sunlight per day, you'll need a 5-kilowatt system.



The Project: Phases and Progress

Phase 1: Lowlander Institute partnered with local tribes to develop a 2-kilowatt wind turbine workshop, followed by the introduction of Himcen units—portable systems providing 740 watts of electric power, ideal for small emergencies.

Phase 02

Developed and delivered 2-day workshop, 8/5/24

Day 1 AM: Build the racking for the BOS.
Day 1 PM: Assemble the frame.
Day 2 AM: Assemble the solar wings.
Day 2 PM: Complete the wiring, testing of unit, and packaging for shipment.



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Phase 2: We developed a 5-kilowatt prototype, utilizing reclaimed materials. Despite the challenges, this proof of concept has been operational for over a year, offering real-world solutions in emergency situations. Workshops in Louisiana have trained volunteers from the local community, who were able to build three 5-kilowatt systems in just two days.

Phase 02

Built 3 portable units



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Phase 3: We're upgrading to more powerful, smoother aluminum frames and expanding the capacity of the systems to 14.3 kWh. We're forming cooperatives and cohorts to allow communities to collaborate on building these units, fostering both self-sufficiency and job creation.

Financial Accessibility and Future Plans

We're working towards financial sustainability for this project through several means:

- **Government Tax Credits:** With a 30% federal tax credit, our systems can be even more affordable, bringing costs down significantly.
 - **Workshops and Co-ops:** Community workshops allow people to contribute labor in exchange for reduced system costs, making solar more accessible to low-income households.
 - **Rentals and Grants:** FEMA and other disaster agencies often rent emergency equipment, providing an additional revenue stream while addressing utility needs like heating, cooling, and refrigeration in emergencies.
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Future Phases

Phase
04

Upgrade 5 kWh BOS to 10kw (3)



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Phase 4: We will begin using bifacial solar panels, which generate power from both sides of the panel, increasing efficiency. Additionally, we'll introduce energy-efficient appliances such as heat pumps, water pumps, and solar-powered refrigerators, designed to reduce overall energy consumption.

Phase 5: We're looking at building disaster response systems using shipping containers filled with solar units and appliances. These can be dropped into disaster areas by agencies like the Civil Air Patrol and National Guard, offering instant relief.



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Phase 6: The financing phase will seek grants and additional funding sources. Used solar panels, still viable for years, will also be collected and re-purposed, lowering costs and extending the life of valuable equipment.

Conclusion: A Vision for the Future

solarpower
scalable
affordable
collaborative
accessible
renewable
modular
crisisready
integrable
portable
innovative
local
clean
limitless
homegrown
sustainable
democratic

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By providing affordable, portable solar power systems, we're offering a resilient, sustainable energy solution tailored to the needs of vulnerable communities. This project will not only provide immediate relief during emergencies but also build long-term community resilience. Through partnerships, workshops, and innovative design, we aim to democratize access to clean energy for everyone.

Thank you for considering our project, and remember—Sky Power for the People is the future!