

SPWES LLC

(Sustainable Power and Water Engineering Solution LLC)
Energy storage solutions



SPWES

SUSTAINABLE POWER AND WATER
ENGINEERING SOLUTION LLC.

SPWES LLC

Energy Storage, Life Size Power!

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SPWES Energy Storage demo with Tiny House 1



Our Power Utility Can't be Trusted

- Society has Become Even More Dependent on Reliable Power
 - Economy relies on constant connections to the Cloud
 - Wide adoption of Electric Vehicle
 - Personal & hospital systems require constant power
- The 'Grid' is not up to the Challenge
 - Extreme weather power outage events have become more frequent ... and last longer
 - Old infrastructure will take decades to modernize
 - Renewable energy sources are distributed & weather dependent

Energy must be stored – Locally



Portland, OR Jan 2024, oregonlive.com



Thompson Fire burns ,Oroville, Calif., July 2, 2024.

nydailynews.com

Scalable Energy Storage Solution

Temporary / Alternative Sources



- Fossil fuel
- High-maintenance
- Noisy, toxic gas release



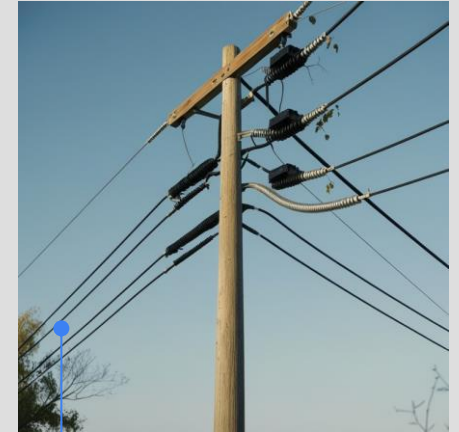
- Daytime only
- Requires inverters & expensive grid tie-in



Affordable Local Energy storage

- Only option for off-grid applications
- Modular & configurable
- Optimal harvesting of local electricity

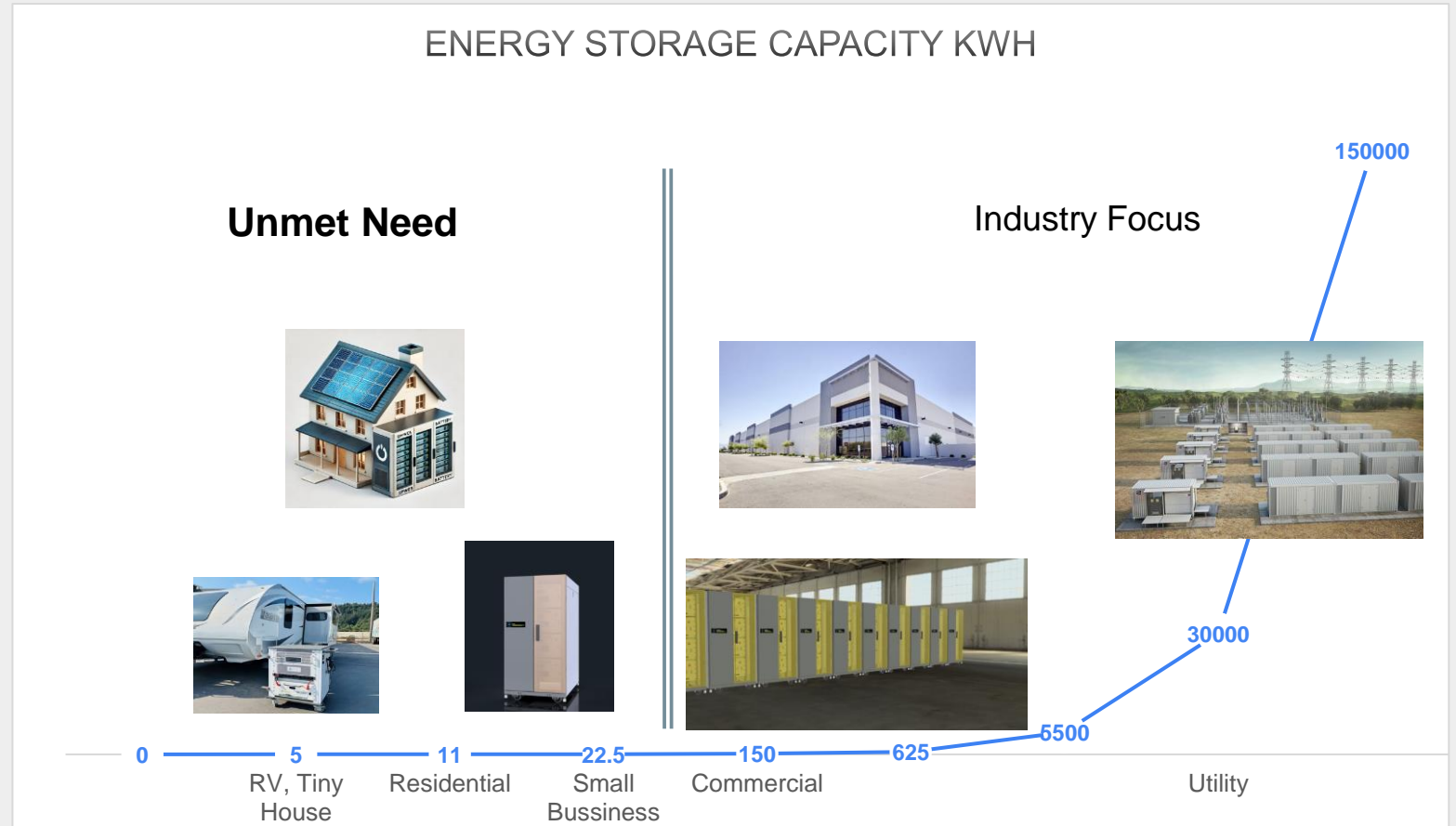
Not-to-be-trusted Grid Source



- Unpredictable outages
- Ancient infrastructure not capable of supporting modern loads

Deploying Energy Storage Systems

- Small-Scale Challenge:
 - Affordable for small / mobile
 - Easy to understand & install
 - Local control of local storage
- SPWES Energy Storage Solutions (Initial) Market Focus
 - Tiny House, RV & Mobile homes
 - Residential homes
 - Small & independent businesses



SPWES Local Energy Storage Solutions

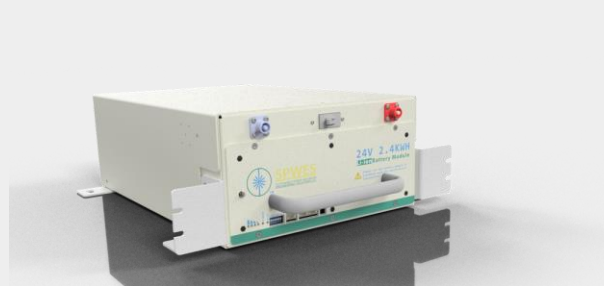
Scalable Hardware Products



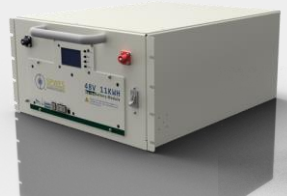
44KWH



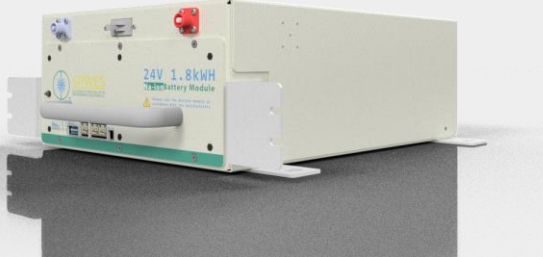
Li-Ion
11KWH
48V



Li-Ion
2.4KWH
24V

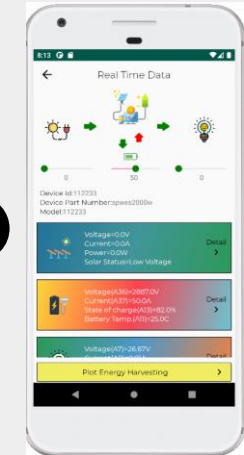


Na-Ion
11KWH
48V



Na-Ion
1.8KWH
24V

Software & Service Products



Smart Control & Access System

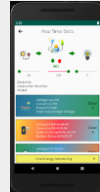
- Web-based &, Mobile App
- Wired industry standard protocol : CAN, MODBUS,RS-232
- Smart Algorithm for automatic transfer switch with priority setup
- Weather forecasting

Future-Ready SPWES Product Roadmap



Prototype Development
And Business set up

Production-Ready 44KWH
Base Model
Setting Application App Developed
Multiple / Modular Inverters
SPWES inverter design start



- Sodium Ion Battery Rack Released
- High voltage Battery Module
- Inverter completion and integration
- Marketing Team building

Solid State Battery
Prototype

2024

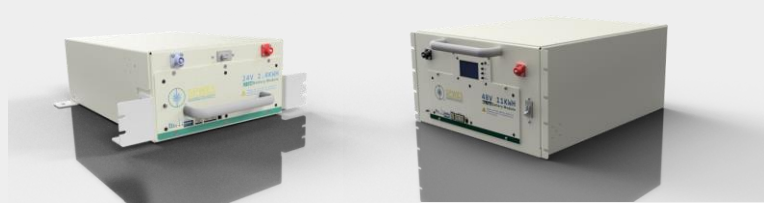
2025

2026

2027+

- Energy Management Software
- Integration with Building management
- Sodium-Ion Battery prototype completed
- 24V battery Module

- Multiple Rack System adaptation
- Adapt Commercial customers and Micro grid application
- Engineering team for scale up design will be added



Delivering Positive Social & Environmental Impact

- Social impact

- Reduced & understandable Energy costs
- Saved lives of people dependent on electronic medical device
- Continued social connections & commerce during extended power outages
- Reduced operating and maintenance cost
- Opportunities for low-income & under-represented community to participate in deploying better / safer / greener solutions

- Environmental Impact:

- Replacing fossil fuel alternatives (gas / diesel generators)
- Eliminate related toxic emissions & combustible fuel storage
- Reduce residential noise – especially at night

- Impact Greatest within Low-Income Communities

- Historically disadvantaged neighborhoods experience longer power-outages and depend on local services

Making Residential Energy Storage Affordable

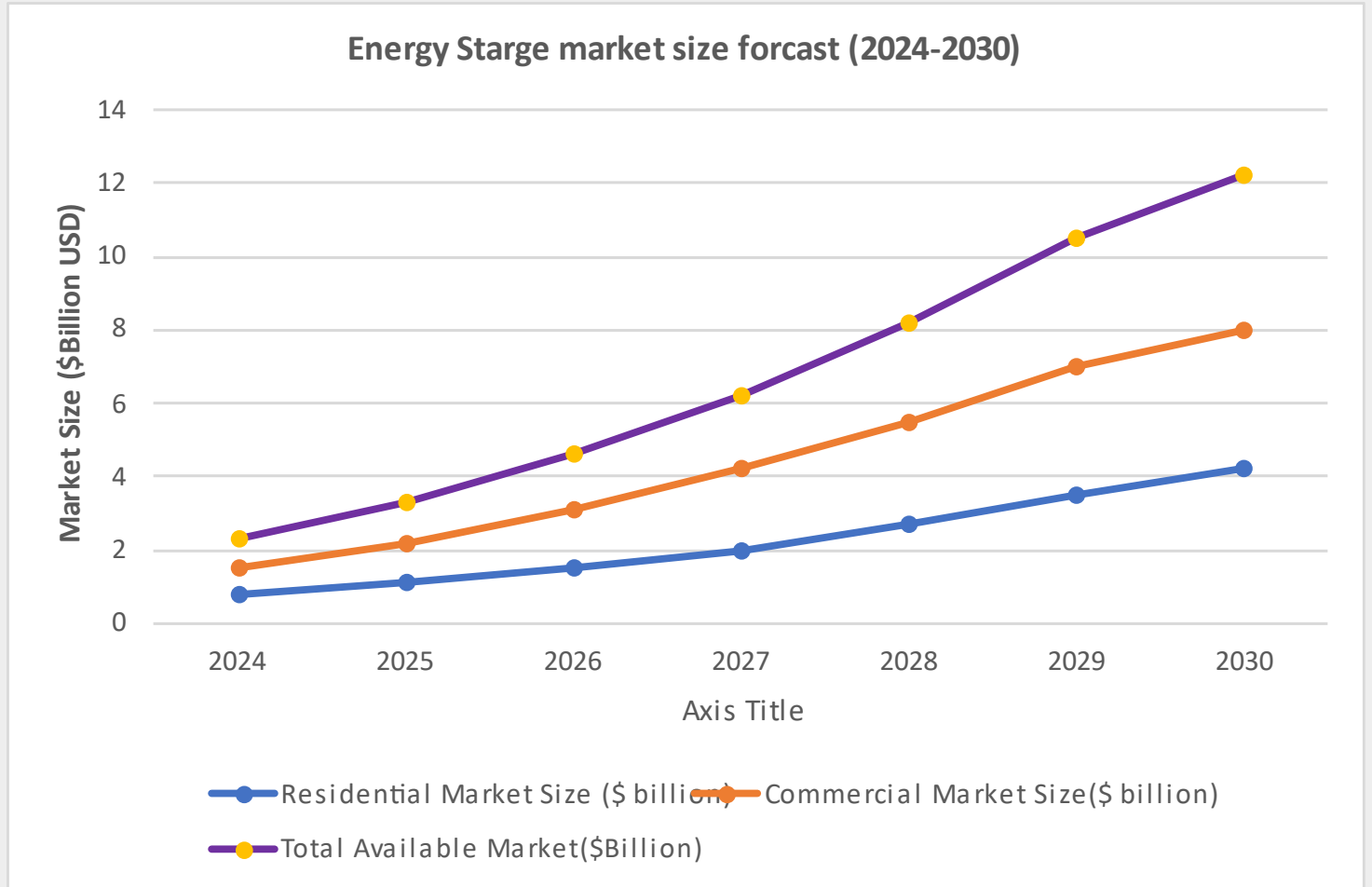
Company	Storage Capacity kWh	System Coupling Topology	Communication Support	Cost per kWh	Grid-Tie	Notes
SPWES	5 - 44	DC	Wi-Fi, Bluetooth, CANOpen, RS485 Modbus RTU SunSpec standard for DER,	\$568	No	Scalable System; Integrated solar inputs; Energy management software; Suitable for microgrids and solar farms; Smart weather forecasting integration for optimal emergency preparedness

Tesla	13.5 - 50	AC	Wi-Fi, Ethernet, Cellular RS485	\$1,037	Yes	Scalable; includes installation.
Enphase Energy	10	AC	Wi-Fi, Ethernet Cellular	\$1,289	Yes	Modular system; integrates with Enphase inverters.
SonnenCore	20	AC	Wi-Fi, Ethernet	\$2,000	Yes	Includes energy management system; premium pricing.
LG Energy Solution	9.8	DC	CAN, RS485	\$1,020	Yes	Compatible with various inverters; scalable.
Generac	18	DC	Wi-Fi, Ethernet	\$1,333	Yes	Scalable system; integrates with solar panels.
SunPower	13	AC	Wi-Fi, Ethernet	\$1,231	Yes	Part of a complete solar solution.



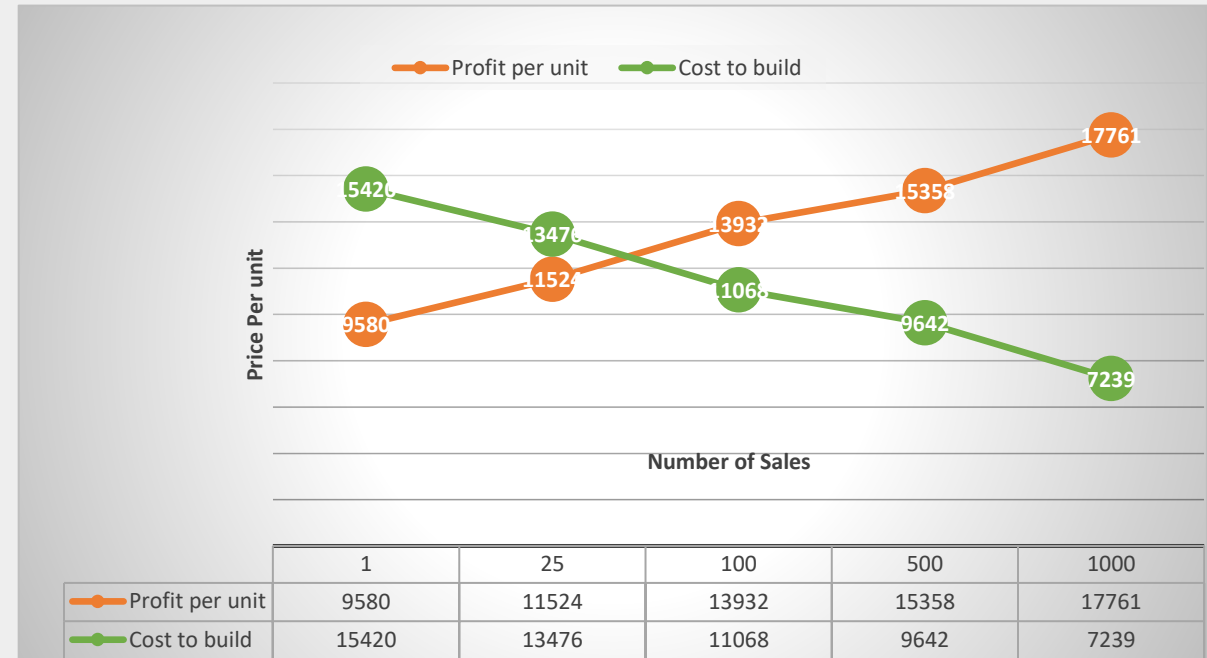
Market Size

- Potential customers
 - Tiny Home Builders
 - Small business owners
 - Residential homeowners
 - RV Owners
 - Customer who plan for disaster
 - Apartment and Commercial building operators
 - Energy Storage Developers
 - Microgrid Developers
 - Agrivoltaics farming owners
 - Farmers
- Market size :\$4.5Billion
- Segments; initial focus (Blue)
 - Tiny house manufacture, RV Owner
 - Residential Houses
 - Small Business
- Follow-on opportunities (Orange)
 - Off grid offices
 - Agrivoltaics (Farm application)
 - Energy storage Developers
 - Commercial building and apartment Complex Operators
- Total Available market (Purple) :\$10Billion



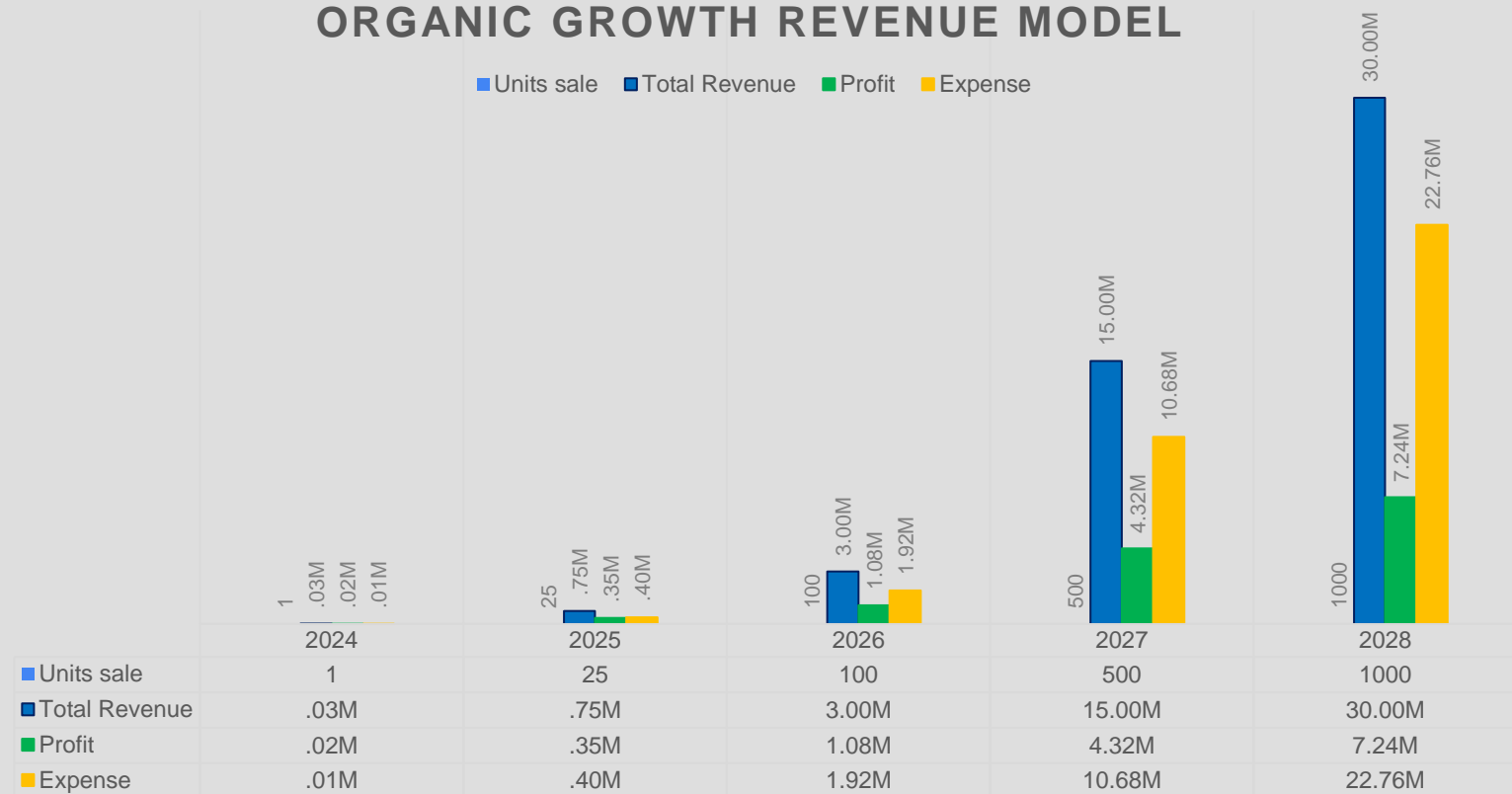
Product Margin and Profit forecast

- Two Revenue model options
 - Organic growth
 - \$3.3M Factory setup Investment model
- Financial margins
 - Cost to build reduced as sales volume increases
 - Profit margin increase over time as cost to reduced



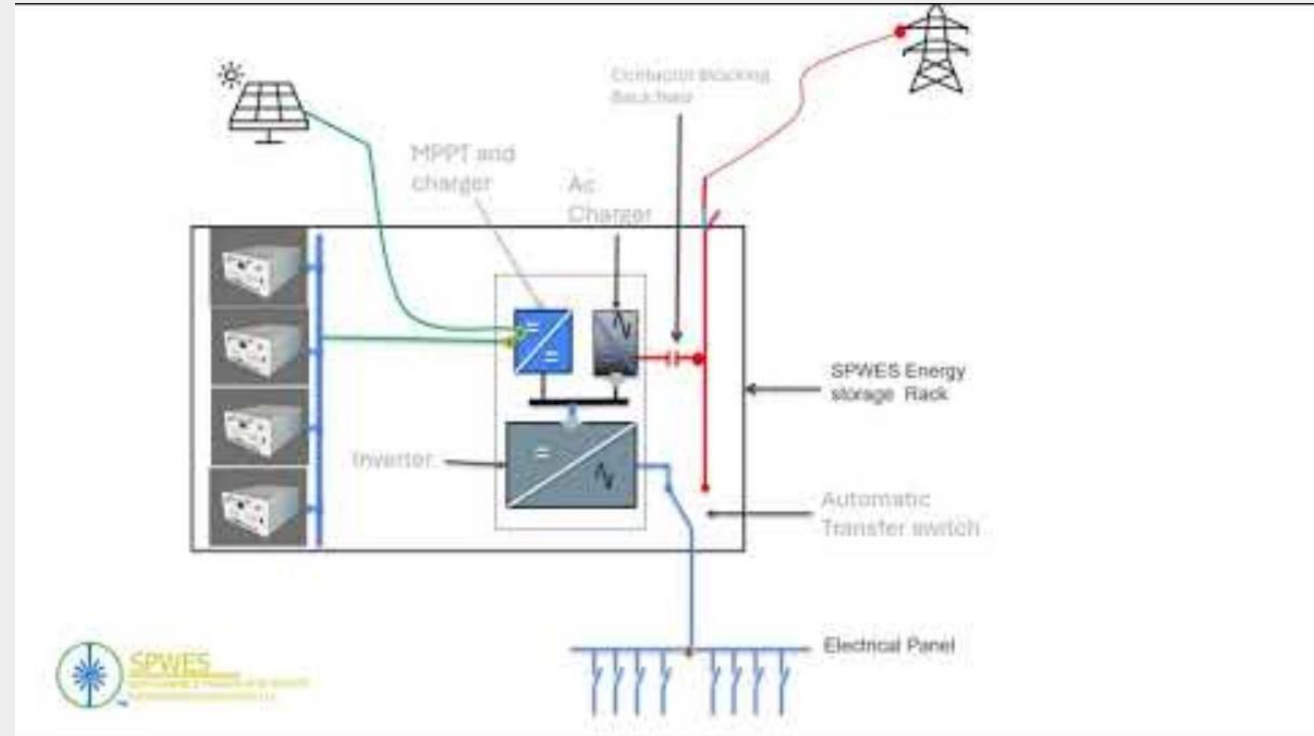
Forecast

ORGANIC GROWTH REVENUE MODEL



SPWES Competitive Advantage

- Better price per KWH
- Easy to install
 - Use local key manufacturing partners for better Climate change impact is significant on low-income communities' SPWES product helps to endure the challenge
 - Reduce toxic emissions, Carbon reduction ,low noise helps better quality life
 - Storage will help get prepared during disaster since power restoration takes longer
 - Reduce Energy bill and create job opportunity creating for low-income communities
 - Saves life for people use medically dependent device that use power
 - Reduce expansion of desertification and encourages people to adapt clear energy use that saves trees
- Secure Supply chain
- Design expertise
 - Design is house with hardware ,software and mechanical design
 - Have flexibility for design change and upgrade to meet customer needs
 - Custom build available



Positive SPWES Impact – Already!

- Functional Prototype
 - Reliable local power back-up
 - Significant progress on in-house inverter design (20%)
 - Completion of smart cloud-based software (50%) pending additional funding
- Chanel Partnership Development
 - Partnered with Solarcycle llc
 - Partnered with SHEBA Agrivoltaics llc
- Early Beta Customer Feedback
 - On-site testing with early customer
 - Initial customers identified & ready to buy!
 - Additional Interviews of over 20 prospects



Go To Market Plan

- Marketing:
 - Increase target market awareness through industry & social media influencers
 - Propagate demo, tutorial, and success story videos through social media & webinars
 - Informative website content supporting intuitive mobile app
- Expand Sales Channels:
 - Use business to business sale strategy – building on existing relationships
 - Website tools to make system sizing and ordering simple
 - Extend network of sales representatives
 - Ultimately ... drive direct-to-consumer channels (eBay, ... Amazon)
- Expand Customized Manufacturing:
 - Using local Manufacturing facilities to minimize logistic costs, improve quality control
 - Promote local and circular economy

Funding to Date

- Founder funds invested
 - 2020-2024=\$80K
- Friends and family
 - \$0
- Investor funds
 - \$0
- Grants : \$5,000 Tabor through VertueLab
- Software Tool grant Autodesk: \$20.5K
- Funds to build the Factory : Rent, Tools, Machinery, Hiring, Management cost: 3.3M
- Funding to complete production ready and UL certified prototype : \$115K



To Achieve Our Vision ...

- We would appreciate your help with ...
 - Developing a successful grant application
 - Access for workspace
 - Access to legal advice
 - Access to capital
 - Access to electrical testing facilities
- ... to enable our next 2 years of product & market development
 - Complete production-ready full prototype
 - Create industry partnership for Pilot demonstration
 - Deploy initial production (50 – 100 units)
 - Achieve product UL & local certification

Question?



SPWES LLC

Power and Water for all!

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