

IEEE Foundation



Community Empowerment & Technology Developments

*Presentation for GHTC 2015 Smart Village Workshop,
Seattle WA, October 8, 2015
Ray Larsen, IEEE Smart Village Co-Chair*



Community Empowerment and Technology Developments

Topics:

- IEEE Smart Village Goals: Community Empowerment
- Definition of Empowerment
- Smart Village Empowerment Plan
- Empowering Products: Electricity, Education & Partnerships
- Summary

1. IEEE Smart Village Goals

Our Mission

IEEE Smart Village *empowers* off-grid communities through education and the creation of sustainable, affordable, locally owned entrepreneurial energy businesses.

Our Vision

To bring basic electrical and educational services to more than 50 million people by 2025.



What does Empowerment Mean?

- Empowerment means enlarging opportunities to restore jobs, education, security, freedom and dignity by just and sustainable development.
- Causes of poverty stem from a long history of marginalization from slave trade, wars, colonialism, despotism, loss of natural resource wealth and access to fair markets for goods produced

Empowerment 2

- What does not work?
 - Massive aid programs demonstrably cannot solve poverty unless they enable communities to become self-sufficient, not just a target of the *charitable aid business that leads only to dependency*.
- Large global aid agencies do not empower communities because they fail to relate to poor communities as *critical partners* in their own empowerment

Empowerment 3

- What Can Work?
 - New technology, education and business skills can be captured to move communities forward to sustainability / empowerment
 - Community human energy once tapped and directed toward self-empowerment can far exceed our own energy capacity
 - Communities must own new initiatives in every respect for them to take root and succeed

Smart Village Empowerment Plan

- Commit to working with villages directly to seed community owned initiatives, not massive aid programs
- Develop respectful relationships, as demonstrated by current programs in Haiti, Cameroon, Nigeria, South Sudan, Zambia etc.
- Directly remove two important obstacles, lack of Electricity and lack of Education, in an empowering just and sustainable relationship.

SV Empowerment Plan 2

- Work with communities as a stimulus to bring out communities own capabilities to learn and grow
- Introduce partner organizations supporting the Smart Village empowerment goals to stimulate community enterprise in Education, Sanitation, Agriculture, Interconnected community learning centers, for a holistic approach to community empowerment and poverty elimination

SV Empowerment Plan 3

- Continue assisting with technology open source development for sustainable community solutions
- Continue helping new startups if requested to achieve sustainability and growth with new funding sources, management advice, volunteer help in training, new education module developments
- Continue promoting global learning between communities worldwide, learning from and supporting one another in all development fields.

Empowering Products: Electricity, Education & Partnerships

Existing Open Source Products

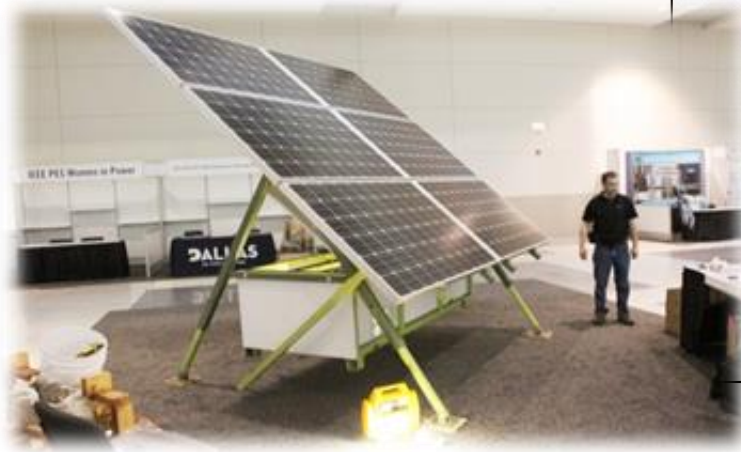
- SunBlazers I, II and Lite
- Haiti Portable Battery & Light Kits
- New Universal PBK with Remote Monitoring

SunBlazer I & Portable Lighting Kit (2011-12, Haiti)



SunBlazer II – 2014 (Africa)

- Simpler panel frame
- Lower cost
- Kit form with reusable wheels



SunBlazer II System

Unit breaks down into kit to fit in back of standard pickup truck

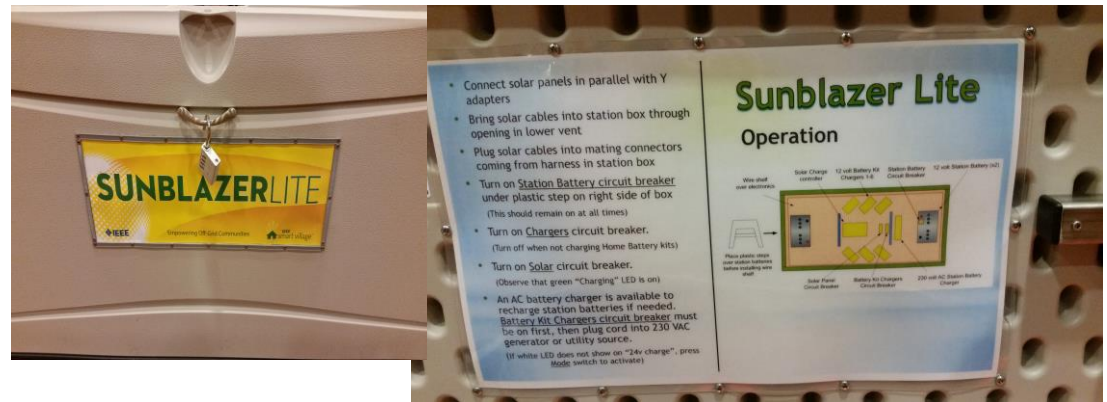
Courtesy W. Gutschow, R. Parigoris (Nextek) P. Lacourciere, (Sirona Haiti)

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--Prototypes in Cameroon, Malawi

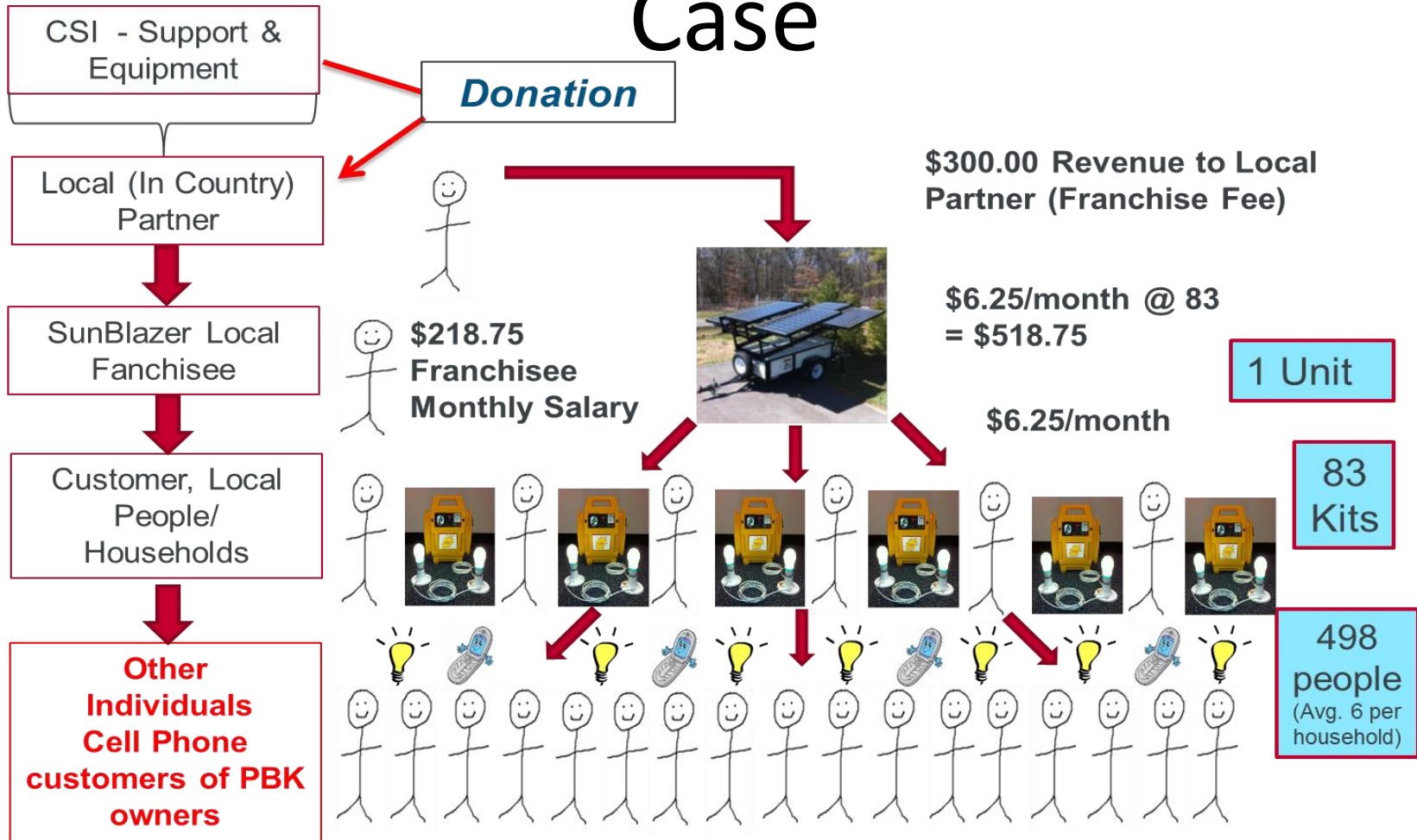
SunBlazer Lite & PBK (July 2015)



Standard Business Model-Haiti

Business plan financials-haiti

Case



Model sustainability demonstrated

15 units deployed across Haiti



Do more with your energy™



Trailer Charging Bay & Bank of 20 Chargers



SunBlazer Staging & Training Area, Mission on Hope Schoolyard and Orphanage

Products in Development/Deployment

- Solar Home Systems (SHS) in Cameroon (TBF)
- 230V Microgrid Pilot in Cameroon (TBF)
- 25kW Solar Plants in Nigeria (GVEP)
- 230V home, shop distribution system Nigeria (GVEP)
- Standard Micro Grid 230VAC, 48VDC products
- 12-18Ah versions of UPBK
- SLA, FLA and LiFe batteries for PBKs and Stations

Other SV Configurations

- See scheduled talk by Robin Podmore
- In general, Smart Village strategy engages partners to examine total electrical needs for communities, work with communities to develop total electrical plan, business model

CBOC* Education

- *Community Based Online Curricula/Courses
 - Designed to leverage expert resources among communities globally with online delivery system
 - Online interactive groups and small “pod” groups
 - Heavily dependent on *community* inputs, interaction for *Development Practice (DP)* certificate
 - Pilot in progress @IEEE Global Classroom, Denver
 - Plan includes technical/vocational, business, lower school thru DP Masters degree US accredited
 - ESL a critical component all levels; class underway

Education

- See scheduled talk by Dan Wessner.

Partnerships

- Goal: Grow Holistic partnerships
 - Begin with Communities-driven needs, goals
 - Major Partner Sources:
 - Community-grown entrepreneurs
 - NGOs already in community sustainable development
 - 80+ NGOs @Posner Center for International Development
 - Support Role IEEE Volunteers:
 - Active In all phases esp. open-source product development, technical/business support, in-field and CBOC mentoring
 - SIGHT Groups

Seed Funding under IEEE Foundation

- As *IEEE Foundation Signature Project*, goal to acquire seed funds to launch up to 10 new startups/ partners per year through 2025
- Each new business strives to serve 1M people
- Total seed Investment \$2M per year starting 2017
- Current budget 2015 ~ \$1M mainly from PES, NPSS, other Societies, IEEE Foundation advance

Summary 1 Electrical

- Proven feasibility of lighting products, business plan works in many areas; not in others
- Lighting is highly competitive, low income stream
- New surveys in India examining total load needs, not just lighting,
- Future Plan: provide wider range of power levels with more profitable customers; meet needs at both ends of affordability spectrum
- See talk by Robin Podmore

Summary 2 Education

- CBOC global education well into pilot demonstration phase at Masters certificate level
 - Scheduled for 2+ years development
 - Needs continuing new teaching module developments, interconnectivity availability
- See talks by D. Wessner

Summary 3: Partnerships

- Ideas on partnerships lean heavily toward community empowerment via a franchise energy supply business model
 - Details will vary by community size, homogeneity of population , range of products, affordability, sustainability
- Partner must be already in partnership with communities or home-grown to be successful
- Partner development is critical path for schedule