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Energy Outsourcing-ESCO Case

GSMA GPM Working Group
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Distributed beats Centralized.

It happened with Telecom.

It will happen with energy.

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Off.Grid:Electric

Overview

- Based in Tanzania, Seychelles, California
- Outsourced energy services for off-grid and poor grid areas
- Technology integrator, not developer.
- Compete on recipe of OPEX reduction, energy reliability, specialization and value added services
- Community energy provider, raising ARPU, MNO community status, customer base.
- Currently Piloting ESCO model and CPM Vodacom TZ.

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Off-Grid Energy:

A huge nascent market

- **Mobile Phone Industry:** 650,000 off-grid mobile phone towers. $25,000/year per tower. $14 Billion in diesel spend.
- **Commercial:** In developing countries, 150Gw of diesel generator capacity under 500Kw.
- **Consumers:** My neighbor spends $30/month on kerosene for lanterns. 700M people near the equator spend >$1/L for kerosene and diesel.

Our Approach

To Energy as a service

- **Telecoms:**
  - Invest in lowest 10 year system cost.
  - Invest in simplicity and today's best technology.
  - Share the savings
- **Communities:**
  - Integrate and aggregate today's best technology.
  - Focus on distribution/financing/service IP.
  - Respect for the energy poor (Marketing 101, segmentation, value proposition, price sensitivity etc)

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ESCO's for Mobile Networks Fundamentals

- **Managed Services for Energy**- Specialized companies take assets on their books, offer managed energy services

- **Various Pricing Models** – Power Purchase Agreements (PPA's), Energy Savings Agreements (ESA's), Blended, Fixed Fee.

- **Company Profiles** –Managed Services firms, Technology Vendors, Start-Ups and Infrastructure companies.

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ESCO's for Mobile Networks
Benefits For Stakeholders

- **MNO's and Tower Companies**-
    - Low to no CAPEX
    - OPEX savings
    - Power systems off balance sheet
    - ESCo vendor vested in savings
    - Insulation against fuel cost inflation
    - Innovation without risk

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ESCO's for Mobile Networks
Benefits For Stakeholders

- **Vendors**
- Potential JV projects (Revenue and risk share)
- ESCO by nature driven by innovation
- Vested in long term savings/reliability
- Knowledge transfer

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Pricing Models

Based on MNO priorities

- **No CAPEX** – Pure Energy as a Service model. Target 10%-30% OPEX.
- **Hybrid Capex** – MNO/Tower Co. shares in Capex. Target OPEX savings 40%-50%.
- **PPA**–KWh with minimum demand, Fixed fee schedule
- **ESA** – Shared savings, performance based approach.

Barriers
To ESCo model success

- **Change is Hard**– MNO's having varying levels of risk sensitivity. Internal buy in must be cross discipline (CFO, CTO, and Regional mgmt.).

- **Regional Variations**– Each region has unique issues (fuel costs, security, bureaucracy, renewable energy resources, local talent**)

- **Technician Syndrome-**Some ESCO's are really good technicians, lousy sales people, and visa versa.

- **Big Dog Syndrome** – Start-up ESCO's may have best solution, but can't get traction.

Energy in Emerging Markets:

Where the sidewalk ends, ESCo's drive Land Cruisers.



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Our Philosophy on E-Technology
Chase Simplicity

- **Reduce!** – Points of connection=Points of failure

- **Conversions** – DC systems reduce energy conversions=efficiency and reduced points of failure.

- **Modularity** – Hot swappable components, easy assembly, limited maintenance on site

- **Segregation** – Clear demarcation of E-system from load center.

- **Renewables**– Apply where appropriate until 5 year cost reaches DG hybrid parity.

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Philosophy in action

Hybrid DC

- 3 Cylinder Engine with DC alternator And generator controller (10Kw load)
- Variable Speed Output based on load and SOC
- 600 AH pure LA/VRLA battery
- LifePo4 with hybrid BMS option
- Remote monitoring/controls
- Inverter (optional)
- Military spec enclosure for entire system
- 1.5-3kw Array (optional)
- Free cooling (6 fan redundancy)
- 600L integrated fuel tank
- DC cooling (optional)





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Tech Summary

Beware of Inaction

- There are many good solutions, don’t get paralyzed deciding
- Technology is evolving rapidly
- Don’t let that stop you from deploying todays solution!
- ESCO’s financial partners must be patient, see cash flow model.
- Look for MNO and Tower Co. partners that see the win-win.

Community Power =

Competitive Advantage

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In an country where 80% of people have mobile phones but only 20% have electricity,

we can't wait for the grid to catch up.

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Community Power
The next leapfrog story

- Maximize benefit for MNO partners
- Mobile money=cashless transactions
- Technology providers service BOP and upward.
- RFID/Keypad/GSM tech makes pay as you energy go possible.
- Treat the energy poor as the real market it is.

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Community Power
A perfect storm

- Desire for mobile communication created energy access imperative (can't charge your phone with charcoal)
- Impact Investment focused on energy access
- Mobile money/pre-payment tech offers sophisticated payment mechanisms to BOP.
- Revolution in Energy Storage tech
- Solar< $1/W

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Community Power
mPower energy hub

- Offer pay-for-service and lease models to reduce risk and up front cost to lower end of the energy ladder.

- Offer marketing, payment, service and necessary support through local vendors

- Integrate the best tech, focused on reliability and value (theirs not ours)

- Provide a modular, scalable turnkey business (energy store in a box) with training, software, payment and inventory systems.

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Community Power
mPower services

Service Offered	Cost to Customer	Rental Payback Period	Level of Service Provided
Simple Solar LED light.	$2/month per light	3 months	Home lighting.
d.light solar lantern + phone charging.	$5/month	5 months	Bright home lighting + mobile phone charging
Fosera Home Energy System	$10/month	8 months	Basic home electricity: radio, lights, mobile phone
200 Watt Pre-paid Solar Home System	$25/month, + down payment	18 months	Home or light business power: TV, radio, lights, mobile phone.

Thank You.

