

# Increasing Profits for Mobile Tower Operators Through Financed Renewable Energy Retrofits

David L. Ross and Associates, Inc  
Strategic Services International

# Overview

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- Our team
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# Our Understanding of the mobile tower business

- Mobile operators often have hundreds of fixed tower sites spread throughout various locations often with plans to grow the number of towers to meet demand and prevent a new entrants from gaining a foothold in the market
- Many of these towers are run by and dependent on diesel fuel and many are not tied to the country's electrical grid
- Many firms seek to replace diesel generators with renewable energy powered towers to lower costs, increase profitability, offer aggressive pricing to customers, and inexpensively grow their mobile services
- Moving from diesel to renewable energy powered towers can generate upwards of 100%+ return on investment.
- Although they are interested in doing so, many firms that own or operate mobile towers do not presently have the knowledge, resources, and/or capital to convert existing towers to renewable energy and/or establish new towers without power via diesel fuel.

# Our Team

- Renewable Energy Equipment and Install
  - Strategic Services International (SSI) is an industry leading renewable energy technology and project development firm focused on deploying comprehensive clean energy solutions. Our team is intent on meeting the energy challenges of emerging markets, through enabling access to a highly reliable and clean supply of electricity while providing the finance mechanisms necessary to rapidly deploy and scale these solutions. SSI manufactures, distributes, and installs renewable energy solutions in developing nations.
- Financing
  - David L. Ross and Associates, Inc., established in 2004, is a New York City, NY based advisory firm specializing in impact investments in developing nations. Our team consists of over a dozen experts in international project financing, trade financing, raising private equity, business development and marketing from government, development finance, and global investment banking sectors. Clients of DLR have included OPIC, USAID, HSBC, AIG, JPMC, Credit-Suisse, SunGard, Pfizer, Johnson & Johnson, as well as several large and small and medium enterprises throughout developing world. DLR specializes in sourcing and structuring sustainable technology projects and funding across borders and works throughout Africa, South Asia, Latin America and the Caribbean.

# Our Proposed Solution

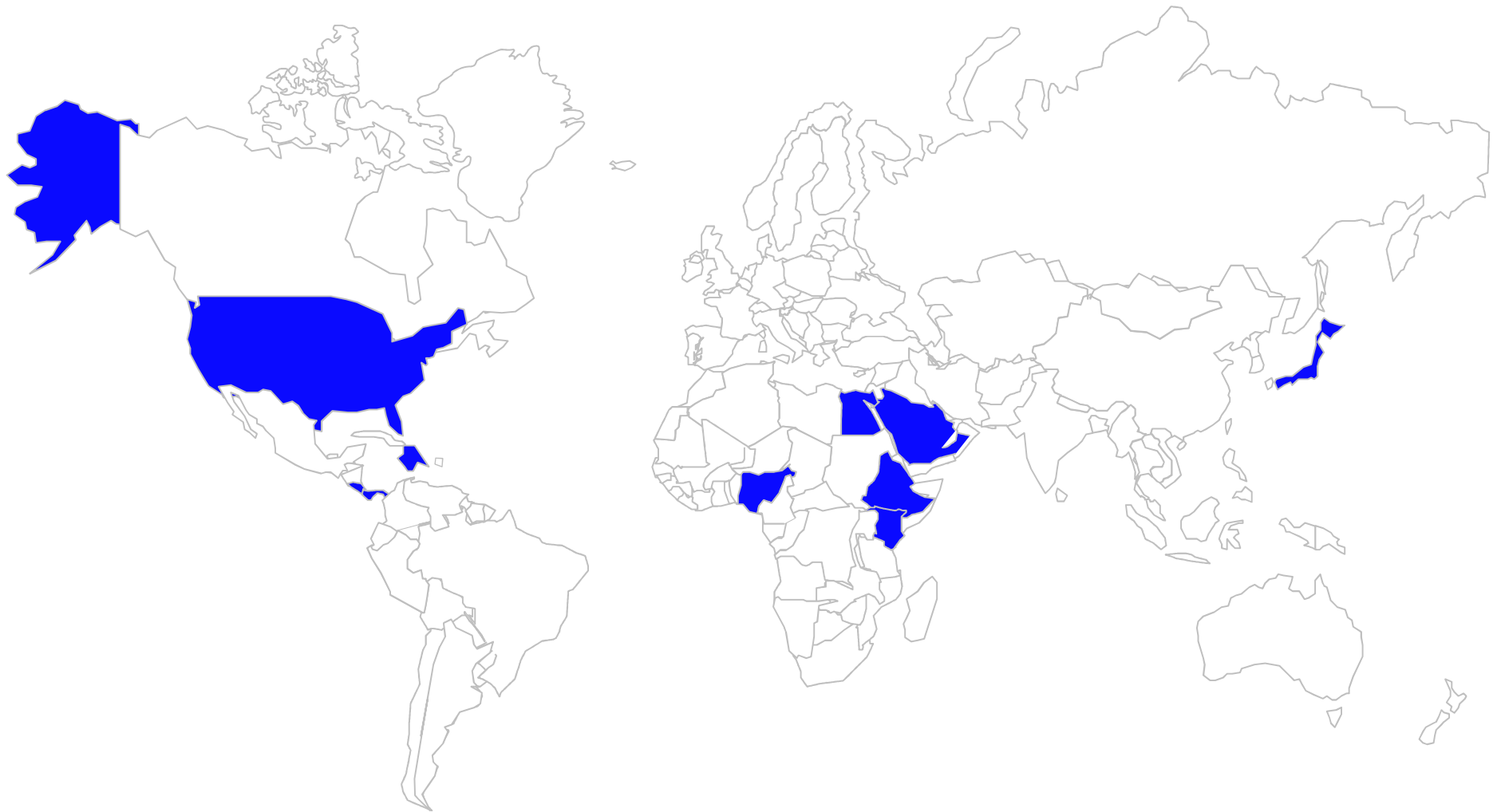
1) Provide significant cost savings through elimination of diesel fuel expenses by

- Retrofitting existing mobile phone towers with renewable technologies developed by SSI
  - For example, solar, wind, propane backed up by a 3 day battery
  - Customized to fit the needs of a tower operator
- Accessing rural areas with SSI's "mobile tower in a box" GSW7000
  - Video demonstration at <http://www.youtube.com/watch?v=exgzf6Rcpqc>
- Building new mobile towers with renewable technologies developed by SSI

2) Match the purchase of equipment and engineering services with low interest rate financing

- For purchases over \$1 million USD qualifying companies can receive financing for up to 85% of the equipment and services they purchase from US companies at interest rates at approximately 6% in USD for upwards of 5 years

# Worldwide Project Deployments



# Worldwide Project Deployments

## United States

- Regional Telecom: Replacement of propane mobile towers in remote environments.
- US Department of Interior: Placement of Solar/Wind powered mobile towers in US National Parks.

## Africa

- Kenya: Fixed tower conversions from diesel to renewables for telecoms.
- Ethiopia: Numerous deployments in telecoms, agriculture and military. SSI Ethiopia LTD to manufacture renewable mobile tower equipment in-country Q3 2011.
- Ethiopia Ministry of Defense: Border Surveillance.

## Latin America/Carib

- Dominican Republic-Ministry of Defense: Border Surveillance.
- Panama – Ministry of Defense: Remote Radar Installation Renewable Power Generation. Maritime Surveillance.

## Middle East

- Saudi Arabia: Pumping, Purification, and Irrigation in remote agricultural projects.
- Egypt: Ministry of Communications: Temporary to Permanent mobile tower deployment for cellular infrastructure build-outs.
- Egypt Ministry of Defense: Border Surveillance.

# GSW7000 – “Mobile Tower in a Box”

(Generation Solar & Wind 7000 Watts)

## Mobile solar and wind powered communication system

- FOB and remote applications for fuel displacement
- Rapidly deployable
- Remote command and control
- Towed or shipped in standard 40' container
- Temporary to permanent
- Self-erecting 106' tower
- Outrigger stability to 110 mph winds
- Autonomous stowage to protect assets

## Power

- Solar 4.6kW, Wind 2.4kW
- 48 hour battery storage
- 6kW hybrid utility grid tie inverter
- Fuel cell option
- Remote start genset option

Customized to meet the needs of a mobile operator



# The Business Case – Renewable Energy

<b>Telcelfaso Business Case - Renewable Energy Retrofit</b>	
<b><u>Current State Using Diesel Fuel</u></b>	
Number of towers	200
Cost of diesel fuel (liters)	\$1.25
Average tower fuel consumption (liters per year)	20000
Additional maintenance (labor, equipment, etc) per tower per year	\$5,000
Approximate fuel costs and maintenance per tower	\$30,000
Total fuel and maintenance costs per year	\$6,000,000
<b><u>Retrofitting With Renewable Energy</u></b>	
Number of towers	200
Average costs to retrofit a tower	\$75,000
Upfront costs per tower with financing included	\$11,250
Repayment on loan to retrofit (6%)	\$14,000
Additional maintenance on renewable energy towers	\$2,500
Total upfront costs to retrofit 200 towers	\$2,250,000
Total maintenance, and loan repayment per year	\$3,300,000
<b>Cost Savings Each Year</b>	<b>\$2,700,000</b>
<b>Cost Savings from Year 6 Onward</b>	<b>\$5,500,000</b>
<b>Payback period</b>	<b>Less than 1 year</b>
<b>Return on investment (IRR) over 10 years</b>	<b>122%</b>

**A relatively small upfront investment results in annual profit increase of \$2.7 million USD each year and a 122% return on investment over 10 years**

# Business Case Details

- We assume 200 towers are to be retrofitted in total
- On average we estimate each tower retrofitting to cost \$75,000 USD\*
  - With our financing, we estimate upfront expenses of \$11,500 USD per tower and loan repayment of \$14,500 per tower paid each year for 5 years
  - Paying debt on a loan has several advantages over paying diesel fuel and maintenance costs
- A similar model is possible for building new towers
- The business case does not include several other advantages to a tower operator
  - Using renewable energy prevents rising costs of diesel fuel
  - The Company can receive additional revenue from the sale of used diesel generators
  - The Company can receive additional revenue from the sale of excess energy generated from solar panels and wind turbines
  - The Company can receive additional revenue from the sale of carbon credits for retrofitting diesel into renewable energy
  - The Company may receive tax benefits from repayment of a loan that improve its profitability

\* This assumes up to a 2 Kwh load requirement from each tower

# How to get started

1. Mobile Operator issues a MOU to DLR to pilot the retrofit of 10 mobile towers (July 2011)
2. Mobile Operator and SSI collaborate to identify the most representative towers in Mobile Operator's network (July-August 2011)
3. Mobile Operator and SSI agree on an invoice for the pilot (August 2011)
4. DLR secures a loan term sheet for Mobile Operator to pay for the pilot (August 2011)
5. DLR and Lender conduct due diligence on Mobile Operator and the pilot business case (October 2011)
6. Mobile Operator agrees on loan terms and pays 15% down payment to SSI (November 2011)
7. Lender pays the remainder of the invoice amount to SSI (November 2011)
8. SSI completes the retrofitting process in collaboration with Mobile Operator engineers (March 2012)
9. Mobile Operator receives cost savings immediately following the renewable energy retrofit and makes regular loan payments from cost savings (March 2012)
10. Following successful completion of the pilot and payment on the loan received Mobile Operator, DLR and SSI collaborate on retrofitting additional towers as well as building new towers powered by renewable energy linked with low interest rate financing (ongoing)

# Contact Information

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