

Green Charge Networks

2012 Great Lakes Symposium on Smart Grid And
The New Energy Economy

Ron Prosser

Chief Executive Officer
Green Charge Networks

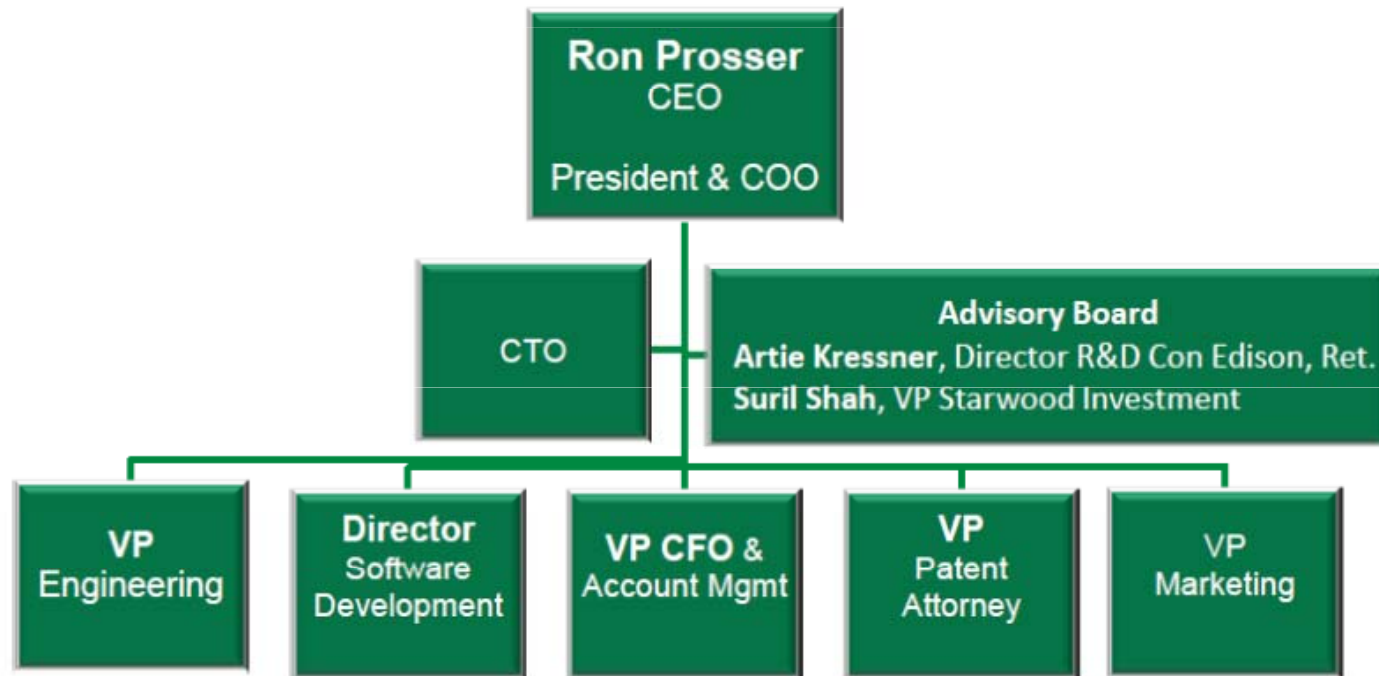


About Green Charge Networks

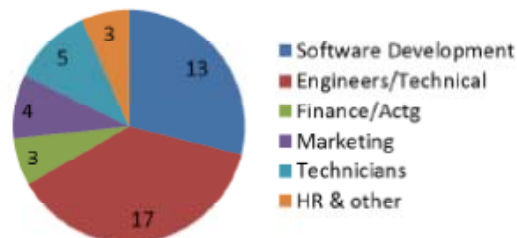
- ▶ GCN provides smart energy optimization systems
 - Software Solutions
 - Systems Integration
- ▶ CEO & Founder former President Boeing Services
- ▶ Revenue 2011- \$5m, 2012 - \$7.4m, 2013 FCST \$9.5m - \$0 Debt
- ▶ 100% employee owned
- ▶ 37 Patents filed - 26 full /11 provisional - 2 Co owned w Con Ed
- ▶ We are under contract to install 9 retailer solutions and have submitted a proposal to install another 24 in 2012/2013.
- ▶ Our system applies well to DoD Smart Grid activities



GCN: Strength in People



Employee Breakdown by Job Type



Employee Breakdown by Location



DOE's 1303 Smart Grid Project

Unique Technology Success

Key enabler for EV charging at 8 NYC load constrained retail outlets

- GCN Controller Harmonizes Facility Loads w Solar, Battery, EV Charging, & Grid
- First controllable 20-50KW Level 3 Fast Charger



100KW/100KWH
Grid tied Bi Directional Sys



L3 Charger

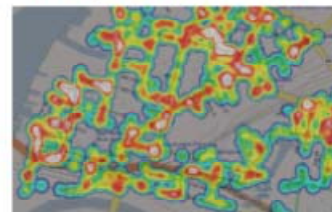
GCN Controller



Key enabler for utilities to manage electrically congested grids

- Enables utilities to reduce peak load both locally & across city
- Ability to reach out and touch retail establishments w surgical precision
- Enables use of 50 KW EV chargers at load constrained retail locations

Utility Control Center



GCN NOC
Network Operations Center

California Energy Commission

Leveraging Technology from DOE 1304

LA Basin

- **Most polluted air mass in country**
 - Largely from auto emissions
 - Need more EV's less ICEs
- **EV adoption stymied by lack of Level 3's**
 - Level 3's drive electric demand charges thru roof
 - 2012 summer Brown outs
 - GCN technology allows charging within facility & grid constraints

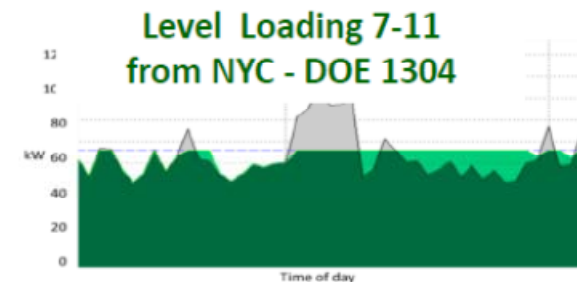
GCN Won 70% of funding using Next Gen Sys

- GCN smart energy storage system
- **Smaller Battery/Inverters - less brawn more brain from GCN DOE 1304**
- **US teammates**
 - Saft Battery production efficiencies
 - EATON Fast Charger technology
 - Princeton Power Inverter

No conventional EV charging company won any awards

Initial Announcement 8 Sites

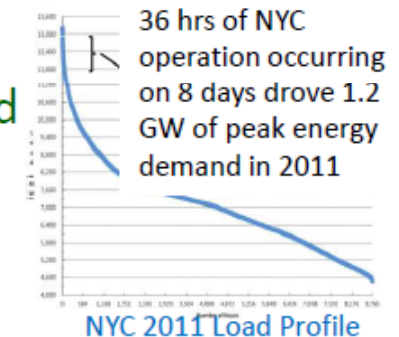
- 8 Additional sites qualified as "top" if funding available



Environmental Gains

Carbon Footprint Reduction 1.5 million ton/yr

- ▶ 38% of CA CO₂ emissions come from transportation
 - GCN technology enables early and broad EV adoption
 - NRDC: Replacement of all ICE vehicles w EVs could reduce LA air pollution 37% - 99% in most categories of transportation related pollutants
 - Of the 12 million cars driving in LA basin daily converting the first 500,000 by 2017 to EVs will **reduce carbon footprint by nearly 1 million metric tons**
- ▶ GCN technology enables broad renewable use & peak shaving
 - Avoid “direst” energy sources and Lower ratepayer cost
 - Solar reduces KWH use but can leave facility with high demand charges due to periodic cloud cover – can double electric bill
 - GCN preferentially recharges batteries when renewables are available enabling a further greening of energy mix
 - GCN technology can **reduce CA carbon footprint by 500k metric tons/yr** by 2017 thru making solar more economic & effective



Two Risk Must Be Retired Adoption

Reliable Operation & Cost

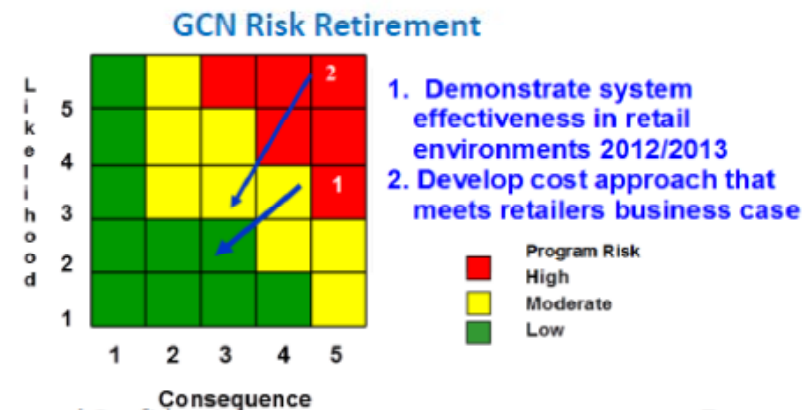
GCN levels loads and reduces demand charges

- Ideal in applications having spikes in loads
- Convenience Stores – want fast charging to draw new customers
- Hotels – Have high 7-8 am spikes in load as customers get up
- Grocery Stores – want multiple fast chargers to draw customers
- Car rental agencies want to rent EV's & have other load spikes

NYC partners: 7-11, Hilton, Wholefoods, & Avis to test markets

All require a payback period of 3-5 yrs for broad adoption

- Retailers want to see system work in NYC
- Reliability, effective & low labor
- Will support 5-8 yr payback for an initial roll out of up to 100 units
- DOE 1304 and CEC will be test beds to retire operational and cost risks



The GridSynergy™ Difference

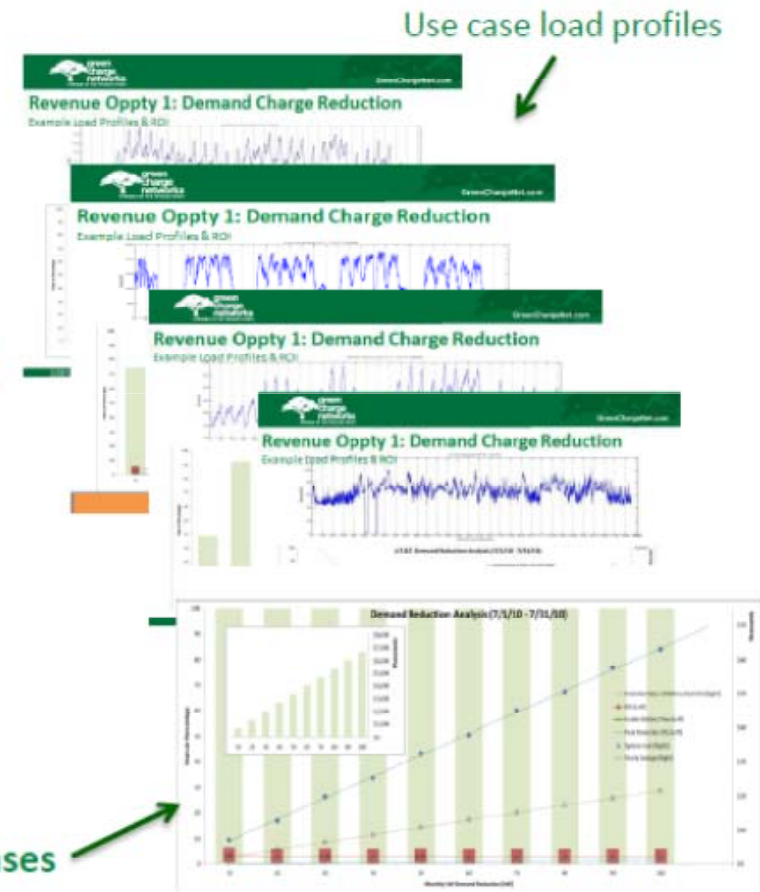
- ▶ 4 years R&D with Con Edison developing sophisticated peak power optimization algorithms with validated end-to-end value proposition
- ▶ Increases efficiency at commercial facilities and at utilities
- ▶ End to end platform for peak demand detection, treatment, & acknowledgement saving both commercial and utilities money
- ▶ Integrates RT monitoring & control of energy storage, EVSE, renewable energy, & building automation w utility control center.
- ▶ Network Operations Center
 - Smart System health management
 - Leverage background in Control Centers and Call centers
 - Utilize local contracts to provide on site capability

Targeting Markets that are Profitable

Leverage Insight from NYC to California & North East

- ▶ Energy Storage is economic in selected use cases (5,000 use cases reviewed)
 - In 5-10% of use cases - business case closed based on Demand Charge Reduction
 - Smart system curtailment, ADR and Infrastructure Replacement Avoidance further improve business case
- ▶ Focus on use cases that payback in < 5 yr

Automated ROI calculator for individual use cases



Plug-in 2011, Raleigh, NC

with customers Con Edison and AAA

