

# Large-Scale Solar Generation Along Highway Rights of Way



**MegaWattSolar**

**NC Department of  
Transportation**

**10 December 2008**

---

# Mission

Solar ... no subsidies



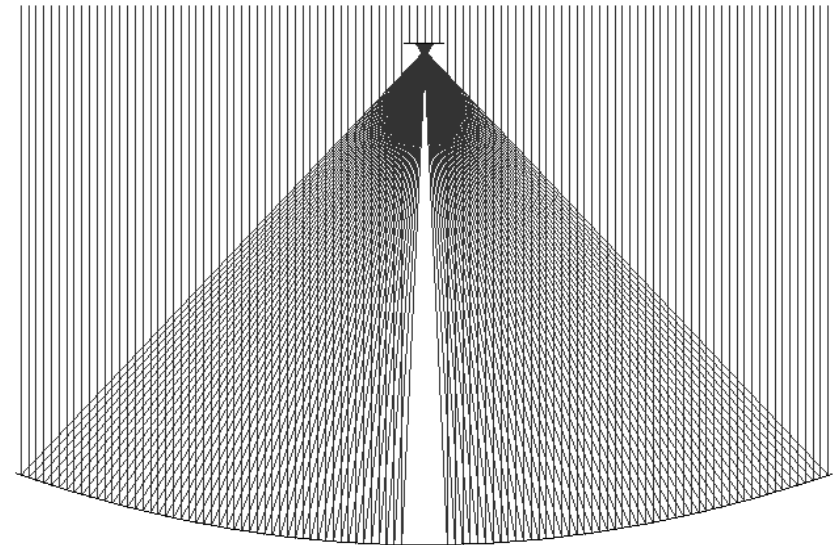
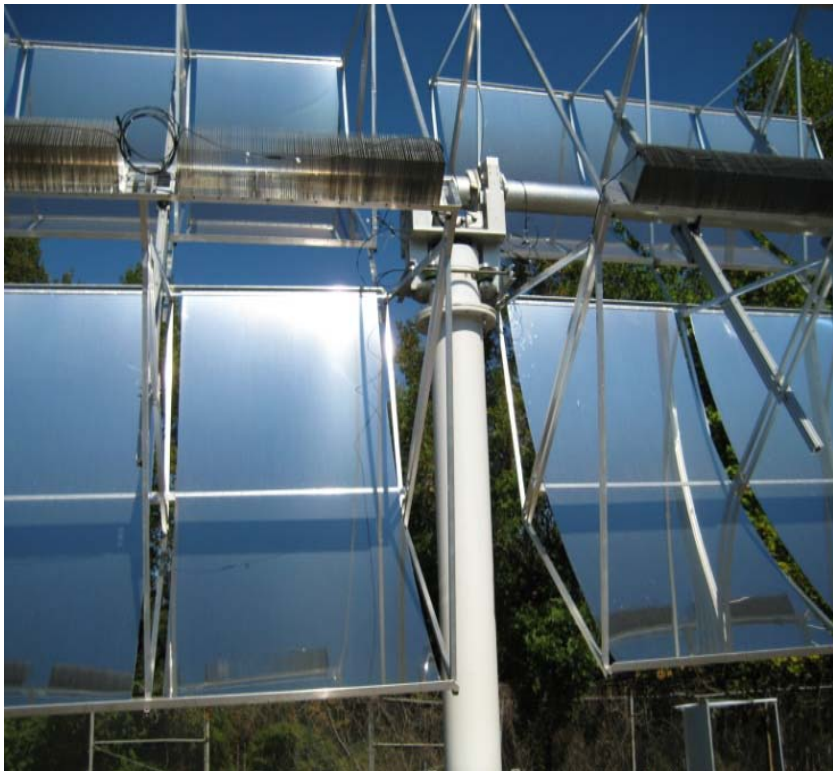
# Vision

---

Imagine an infinite supply of free fuel available to the entire world. Photons from the sun deliver as much as 1000 Watts per square meter to the earth's surface. MegaWatt Solar is determined to convert this gift to electricity for the world to enjoy. Cost, reliability, and ecological impact drive our design decisions. Conscience, customers, and competition drive our business decisions. Brilliance drives our future.

# Concentrated vs. Flat Panel

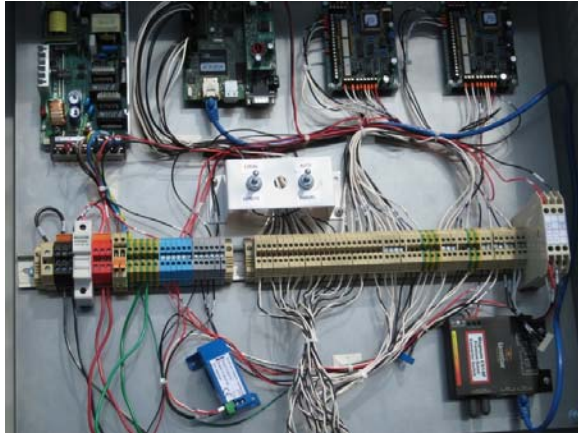
Composite mirrors concentrate  $\approx 20$  suns onto receivers, lowering silicon cell costs by 95%



4b

© Copyright 2007, 2008 MegaWatt Solar, Inc.

# Major Components



- Standards-compliant control system (patent pending)

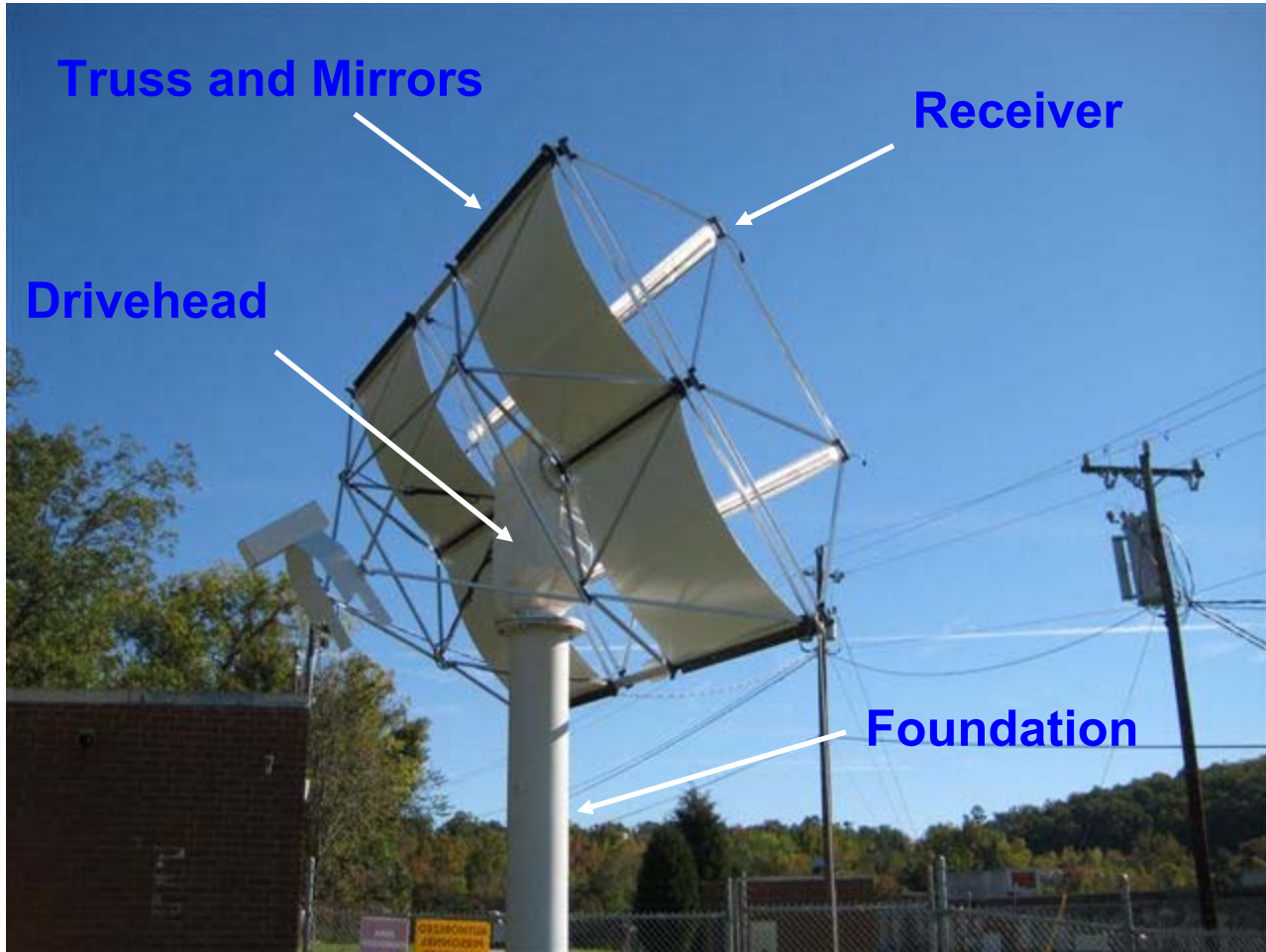


- Friction-drive dual-axis tracking system (patent pending)



- Proprietary CPV modules (patent pending)

# MegaWatt Solar Tree Components



# System Features

- Dual-tracking CPV with 20x concentration
- Patent pending lightweight composite mirror system
- 1MWe requires approximately 10 acres of land



# Competitive Advantages

- High availability design
  - 20-year mean-time-between-failure
  - 30-minute mean-time-to-repair
- Total power plant design
  - Protective relaying
  - SCADA (DNP3.0) and Metering
  - Grid interface
- 50-year+ service life
  - 80% reusable infrastructure
  - Receivers/PV cells  $\approx$  20% of cost
- Cost competitive concentrating photovoltaic (CPV) design
  - Low maintenance
  - Optimized for life cycle cost
  - Readily available mono-crystalline silicon cells
- Designed for ease of shipment and installation



# Projects

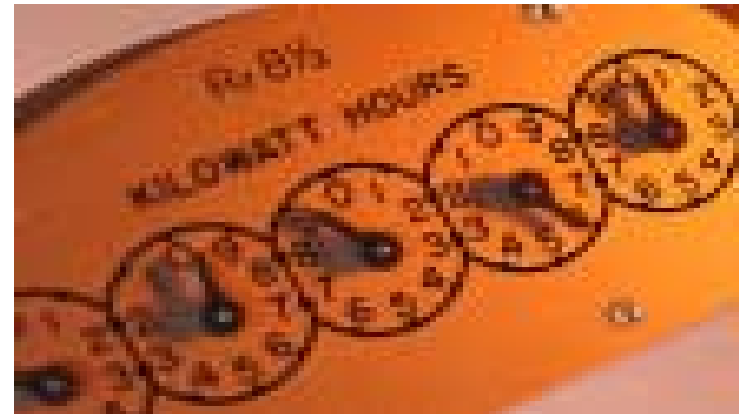
- Beta BPU
  - Project started April 2007
  - BPU commissioned August 2007
  - Nameplate rating 2.8 kW
  - Location: Hillsborough, NC USA
- Gamma BPU
  - Project started March 2008
  - BPU commissioned May 2008
  - Nameplate rating 3.2 kW
  - Location: Hillsborough, NC USA
- Pilot Plant
  - Piedmont Electric Cooperative
  - Project started April 2008
  - 50 kW plant beginning operations in early 2009
  - Location: Caswell County, NC USA
- FPL Demonstration Project
  - Project started December 2008
  - 4.5kW plant to be installed at FPL HQ
  - Location: Juno Beach, FL USA



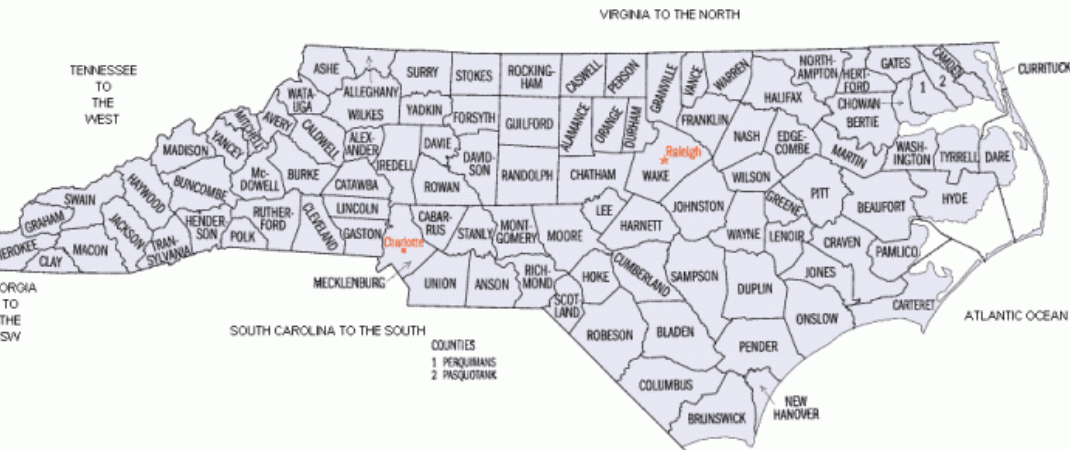
- Advanced Energy Demonstration Project
  - Project started November 2008
  - Single demonstration unit to be coupled to electric car charging station
  - Location: Raleigh, NC USA

# Why Solar?

- Volatile oil market
- Cleanliness issues with coal
- Electric vehicles will pose significant increase to electricity demand



# Where Solar in NC?



- Landfills (brown to green)
- Electric utility rights of way
- Highway rights of way

# Revenue from Solar Generation

- Direct sale of electricity
- Carbon Credits
- Renewable Energy Credits



# Questions?

