

Stirling Energy Systems

ASES Solar Conference –May 2010

Solar Technology Landscape

SOLAR TECHNOLOGY LANDSCAPE

Photovoltaic

TRADITIONAL PV



PV cells (usually silicon based) convert solar energy directly into electrical energy

<10kW to 10MW

CPV



Mirrors or lenses focus sunlight onto multi-junction PV cell

100kW to 100MW

DISH ENGINE



Dual axis radial concentrator collector made of curved mirrors tracks and focuses sunlight onto Stirling Engine.*

100kW to >100MW

Solar Thermal

TROUGH



Rows of trough shaped mirrors direct concentrated radiation onto receiver tube

50kW to >100MW

TOWER



Sun tracking mirrors focus sunlight onto a central receiver (usually tower mounted)

500kW to >100MW

FRESNEL REFLECTOR



Similar to trough but uses flat (Fresnel) mirrors to concentrate light

50kW to >100MW

———— The SES SunCatcher™ Solar Dish-Stirling System Technology is Superior in Efficiency, Reliability and Overall Performance. ————

SES: Commercializing The Technology



Formed 1996 in Phoenix, SES acquires dish system technology previously developed by McDonnell Douglas, Southern California Edison, the Dept. of Energy and Sandia National Laboratories

Signs Power Purchase Agreements with each of San Diego Gas & Electric (900 MW) and Southern California Edison (850 MW)

May '08 - NTR plc (renewable energy operator and developer) completes a \$100m investment in May to take a controlling interest in SES



Focus on developing and commercialising the SunCatcher™ technology for solar thermal applications

- Integration well underway - headcount triples in first six months
- 2 x AFCs submissions (key permitting filing in CA) filed with the CEC

Dec, 09 Maricopa Site U.S. First Commercial Site goes on-line



NTR's \$150 million investment in the last 18 months has positioned the company for high rate manufacturing and large-scale system deployment



Power of Progress

“Technology”



Starting Point

- 20 Year History
- Development units
 - HB, NV, SA, SNL
- Model Power Plant
 - 6 Systems
 - SES Supply Chain

World-class leadership appointed

Design for High Volume & Low Cost

Supply Chain Development

Reliability / Performance Validation

“Deployment”



Today

- US & International Markets
- Supply Chain—US Based with Global Reach
- Low Cost Systems
- High Volume Manufacturing

Commercialization pathway to deployment

Maricopa Solar – Commercial Deployment Validation



- The on-time launch of the 60 unit power plant allowed teams to
 - Deploy a 1.5 MW “generator group” installation – the primary building block for a full scale plant – to act as an intermediate step before launching into High Volume Production
 - Employ manufacturing, installation and commissioning processes at scale to identify gaps
 - Validate O&M metrics and evaluate system performance/reliability
 - Generate live power curve data to measure availability and power output

Maricopa’s success demonstrates validates: the viability of the SunCatcher’s™ technology, SES ability to successfully manufacturer large-scale projects, and Tessera Solar’s ability to build large-scale projects

Tessera Solar SunCatcher™ Projects

Calico Solar

- Capacity: 850 MW
- 20-Year Power Purchase Agreement with Southern California Edison
- Sited in the Mojave Desert near Barstow, CA

Imperial Valley Solar

- Capacity: 750 MW
- 20-Year Power Purchase Agreement with San Diego Gas & Electric
- Sited in Imperial Valley near El Centro, CA



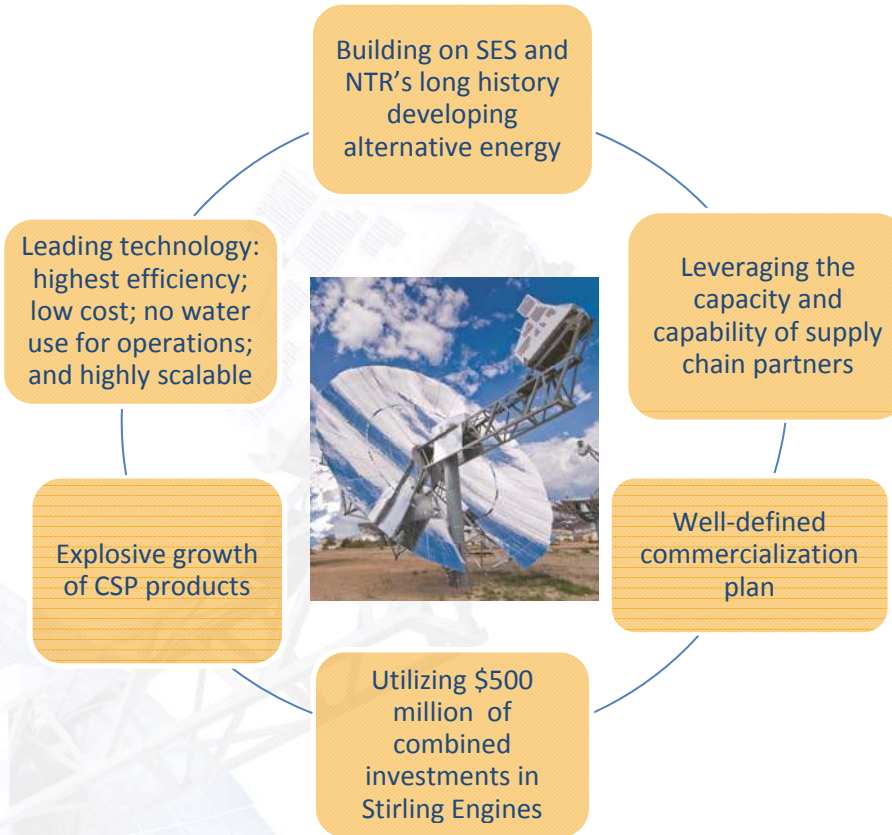
Maricopa Solar

- Capacity: 1.5 MW
- 10-Year Agreement with Salt River Project (SRP)
- Located in Metro Phoenix in Peoria, AZ
- Began operations in January 2010

Western Ranch Solar

- Capacity: 27MW with Expansion up to 90MW
- 20 -Year Power Purchase Agreement with CPS Energy
- Sited in West Texas near Marfa

Key Takeaways



Thank you for this opportunity