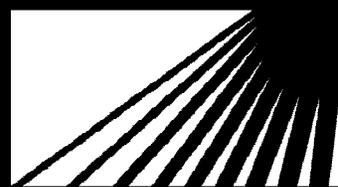# Differentiating Quality PV Workshop
March 6, 2012, San Francisco, CA

SunShot
U.S. Department of Energy

Overview

- The **SunShot** Initiative
- Systems Integration / Technology Validation Activities

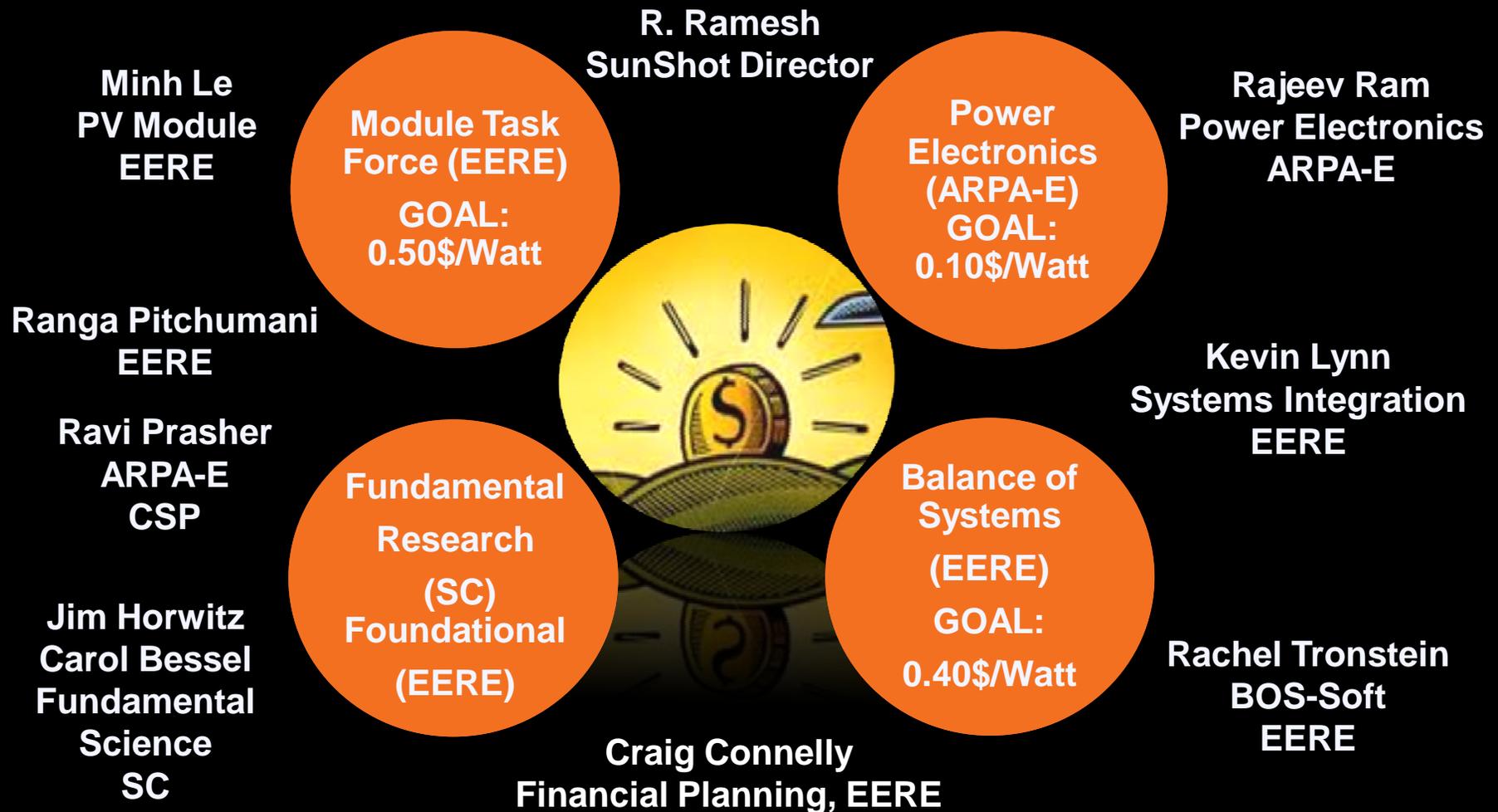SunShot
U.S. Department of Energy

SunShot Initiative

"The SunShot Initiative will spur American innovations to reduce life costs of solar energy and re-establish U.S. global leadership in this growing industry."

U.S. Energy Secretary Steven Chu

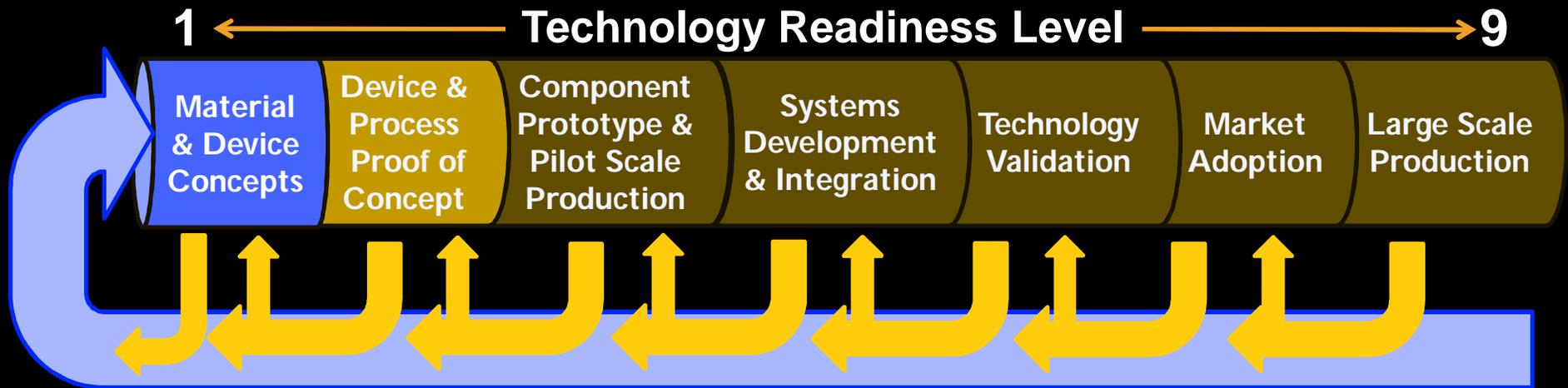- DOE's **SunShot** Initiative aims to make solar electricity cost-competitive with conventional forms of energy before 2020.

- What is SunShot?
  - Subsidy-free solar electricity
  - 75% cost reduction by end of the decade
  - 5-6 cents/kWh at utility-scale
  - Global Competitiveness

- Coordination among DOE Solar Program, Office of Science, and ARPA-E.

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Taking a Team Approach

R. Ramesh
SunShot Director

Minh Le
PV Module
EERE

Module Task Force (EERE)

GOAL: 0.50$/Watt

Power Electronics (ARPA-E)
GOAL: 0.10$/Watt

Rajeev Ram
Power Electronics
ARPA-E

Ranga Pitchumani
EERE

Ravi Prasher
ARPA-E
CSP

Fundamental Research (SC) Foundational (EERE)

Kevin Lynn
Systems Integration
EERE

Balance of Systems (EERE)

GOAL: 0.40$/Watt

Jim Horwitz
Carol Bessel
Fundamental Science
SC

Rachel Tronstein
BOS-Soft
EERE

Craig Connelly
Financial Planning, EERE

Advisory Board: Bill Brinkman (SC); Arun Majumdar (ARPA-E); Henry Kelly(EERE)

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SunShot Program Framework

Technology Readiness Level

1 ← → **9**

| Material & Device Concepts | Device & Process Proof of Concept | Component Prototype & Pilot Scale Production | Systems Development & Integration | Technology Validation | Market Adoption | Large Scale Production |

Basic Energy Sciences

MURI

Next Gen PV

Program to Advance Cell Efficiency (PACE)

SunShot Fellowships

SunShot Incubator

PV Supply Chain

Balance of Systems-Hardware

PV Manufacturing Initiative I

Solar ADEPT

SEGIS

CSP SunShot FOA

Thermal Storage: HEATS

High Penetration

Incubator – Soft Costs

PVMI II: SUNPATH

Rooftop Solar Challenge

Non-Hardware BOS

SunShot - Systems Integration

Goals

- **Grid Integration:** Establishing a timely process for integrating high penetrations of solar technologies into the grid in a safe, reliable, and cost-effective manner while providing value to the system owner and the utility grid.

- **BOS Costs:** Reducing the costs of power electronics and balance of system hardware

- **Solar Resource:** Dramatically reduce the uncertainty in solar system performance due to solar radiation measurements, and provide grid operators and others the information necessary to cost-effectively and reliably integrate solar technologies into the grid.

- **Bankability:** Reducing the risk associated with the use of new technologies

Grid Integration
- Distributed Generation
- Transmission
- High Penetration Solar Deployment
- SEGIS-AC

Balance of Systems
- BOS-X

SI

Technology Validation
- Testing & Evaluation
- Reliability
- Analysis
- Codes and Standards

Solar Resource
- Forecasting
- Mapping
- Radiometry
- NOAA & Wind Collaborative

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SunShot – Technology Validation

Mission / Vision:

- To reduce the cost of PV by improving confidence in the expected performance, reliability, and safety of PV components and systems.
- Understanding of performance and reliability leads to reduction of risk and will lead to a greater investment in the technology.

Activities:

- Test & Evaluation
- Reliability & Safety
- Regional Test Centers (RTC's)

- Modeling & Analysis
- Codes & Standards

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