



U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Solar Energy Technologies Program

PV Module Reliability Workshop

Golden, CO | February 18, 2010

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Solar Program Sub Elements



Photovoltaics

R&D across a broad range of technologies to increase efficiency and reduce system cost

- Wafer Silicon
- CIGS
- CdTe
- III-V/CPV
- OPV/DSSC
- Intermediate Band-Gap
- Nano PV
- Multi-Exciton

Concentrated Solar Power

R&D across major CSP system technologies to reduce system cost and support of key demonstration activities

- Troughs
- Power Tower
- Stirling Dish
- Thermal Storage

Cost Reduction → *Goal: Grid Parity*

Remove System and Market Barriers → *Goal: High Penetration*

System Integration

Address grid and other barriers required for large scale penetration

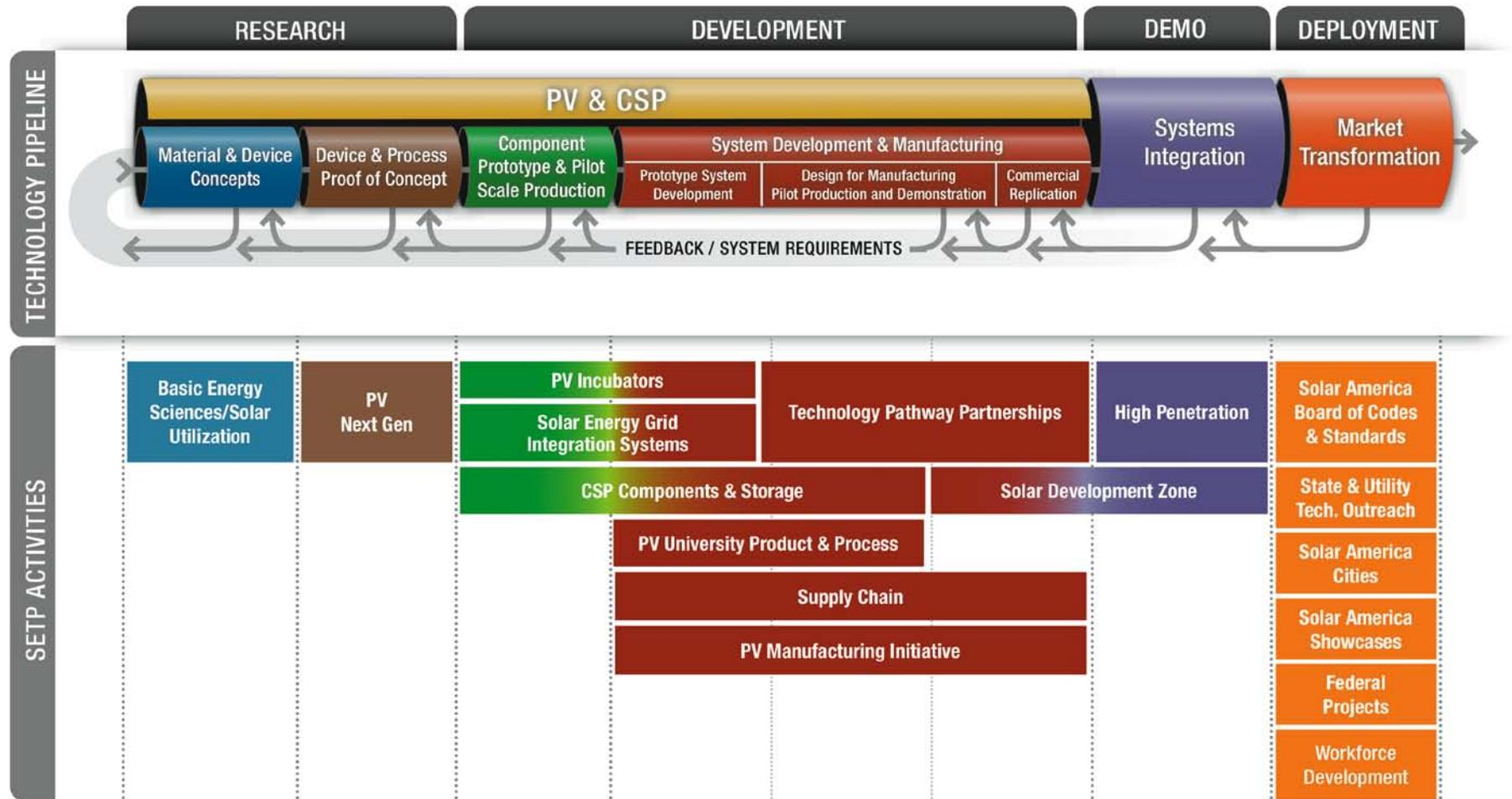
- Inverter Development
- High Penetration Demonstration
- System Modeling and Analysis
- Codes and Standards
- **Test and Evaluation**
- Measurement and Characterization

Market Transformation

Address key industry issues through dedicated initiatives, outreach and stakeholders

- Utilities
- State Government
- Solar America Cities
- High profile demonstrations
- Workforce Development

SETP Programs Cover All Parts of the RDD&D Pipeline



2015

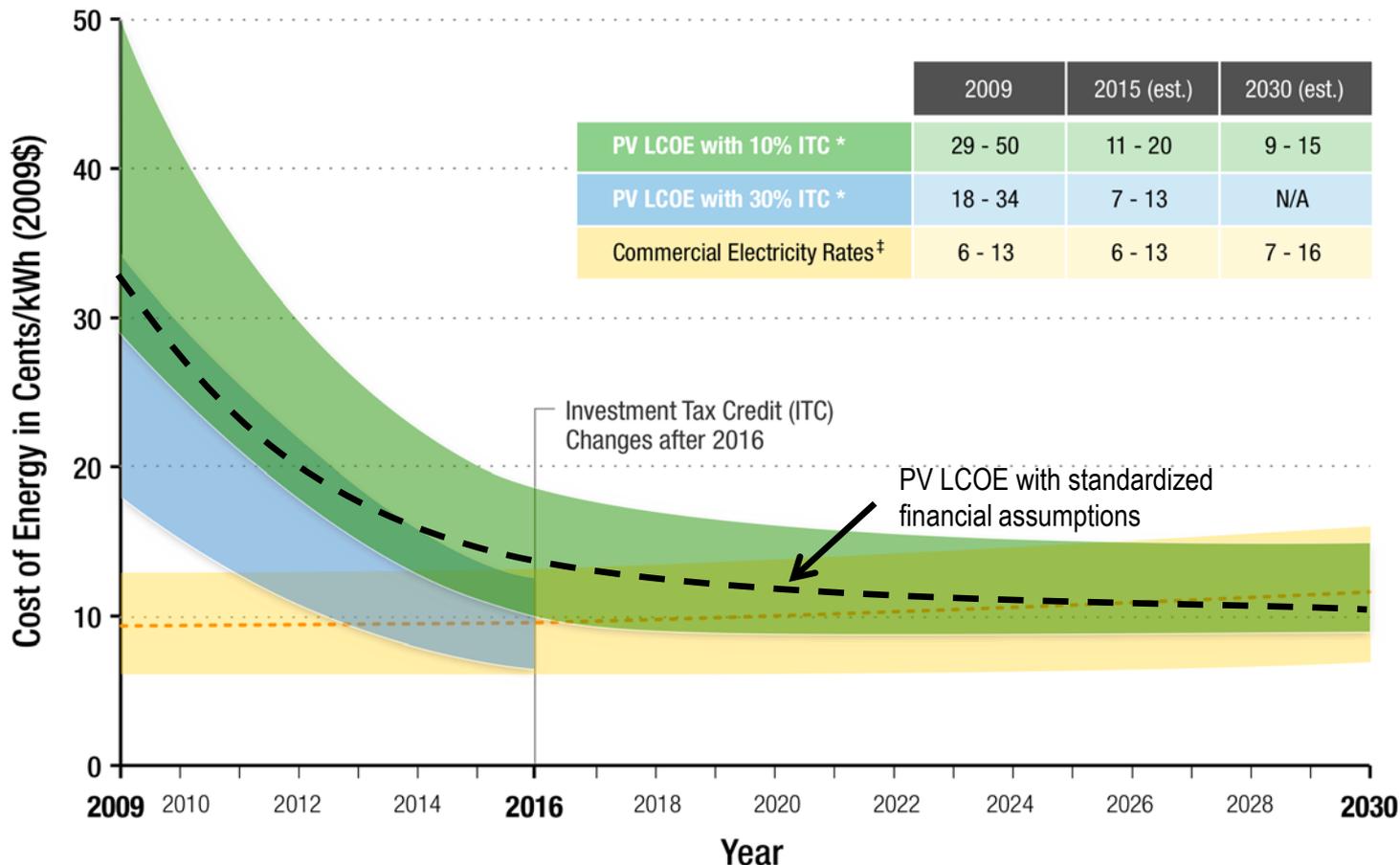
- With the 30% ITC, PV is broadly competitive with commercial electricity rates.
- With the 10% ITC, PV is competitive with high electricity rates under the best insolation and financing conditions

2030

- With the 10% ITC, PV is broadly competitive under all financing, insolation and orientation conditions.

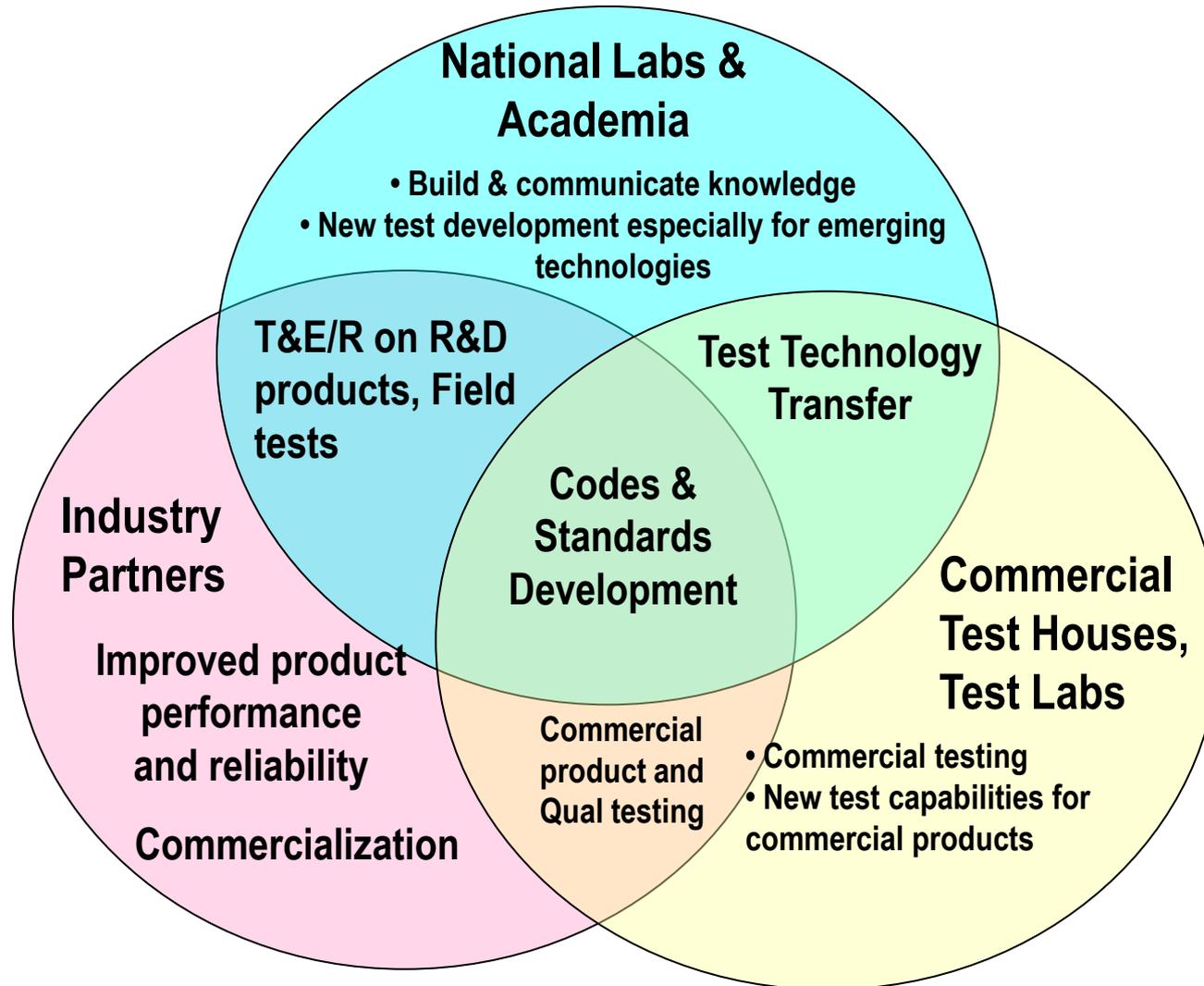
Standard financial assumptions yield LCOE estimates that are within the program's range of estimates due to similar cost of capital and mix of tax and financing period effects.

Commercial PV



* Assumes third-party ownership of PV, and thus the LCOE includes the taxes paid on electricity generated. Includes 5-year MACRS but not state, local or utility incentives. The range in commercial PV LCOE is due to different insolation, financing and orientation conditions. For a complete list of assumptions, see DOE Solar Cost Targets (2009 – 2030), in process.

‡ The electricity rate range represents one standard deviation below and above the mean U.S. commercial electricity prices.



Thank You



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