



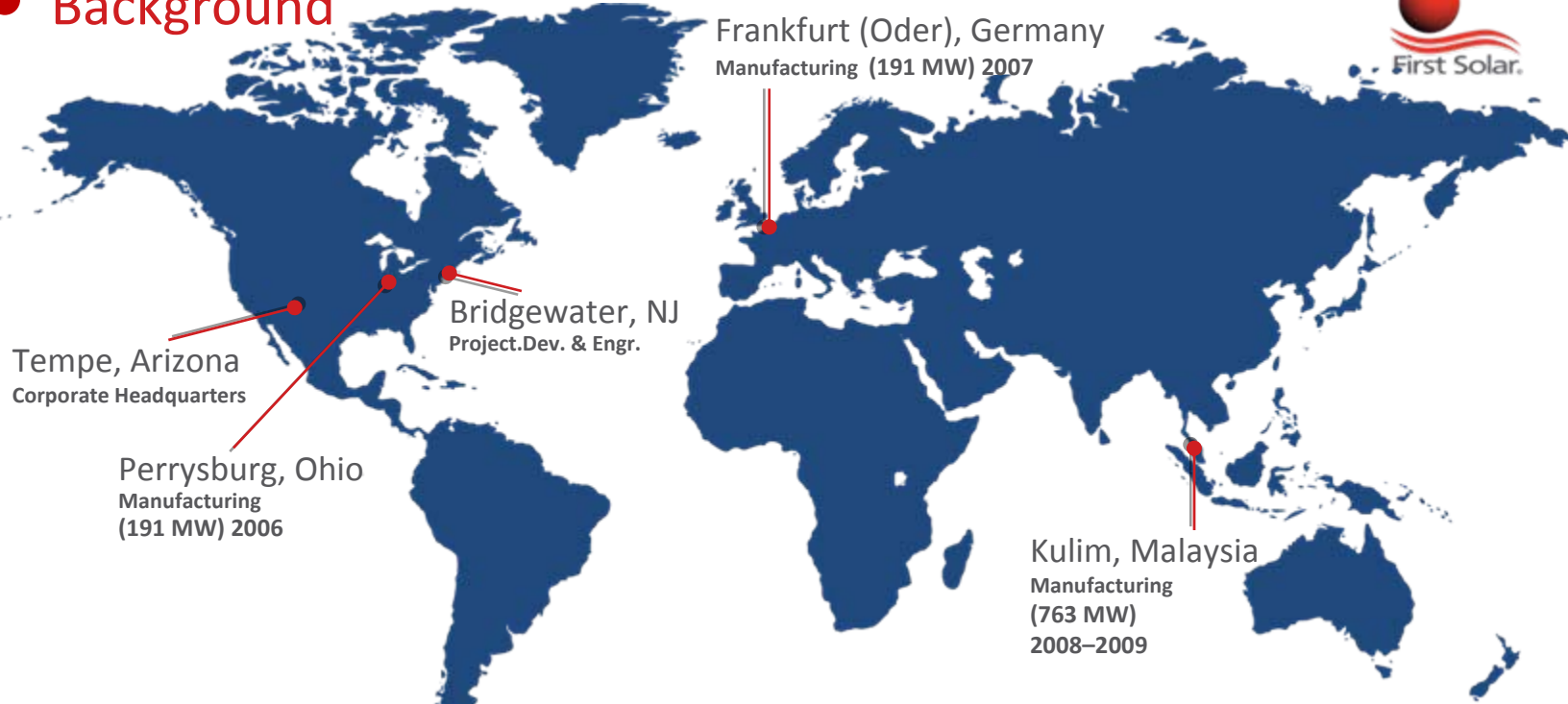
Tapfheim, Germany (770 kW); Gehrlicher Solar AG

***Leading Low-Carbon Technology in Italy and the U.S.:
Moving Research from the Laboratory to the Market***

May 26, 2009, Rome, Italy



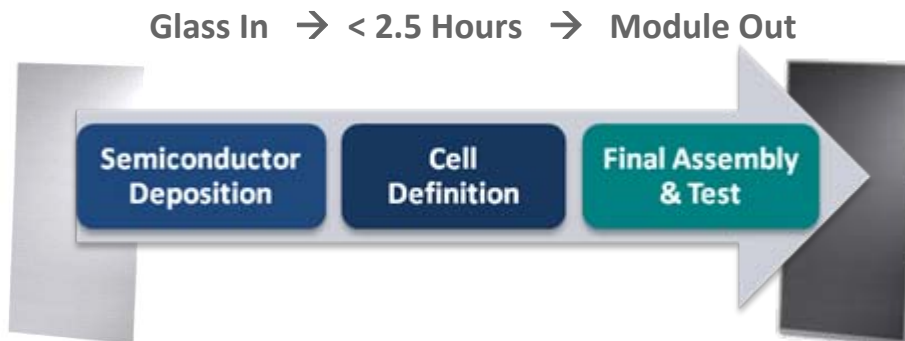
Background



- *Scaled from annual production of 20MW in 2005 to 500MW in 2008; doubling capacity to 1GW in 2009*
- *Invested over \$1.0 Billion in technology and manufacturing capacity*
- *In course of scaling, reduced manufacturing costs from \$3.00/W in Q4 2004 to \$0.98/W in Q4 2008*
- *Increased direct employment by over 4,000 full-time associates*

● Background

Module Manufacturing:

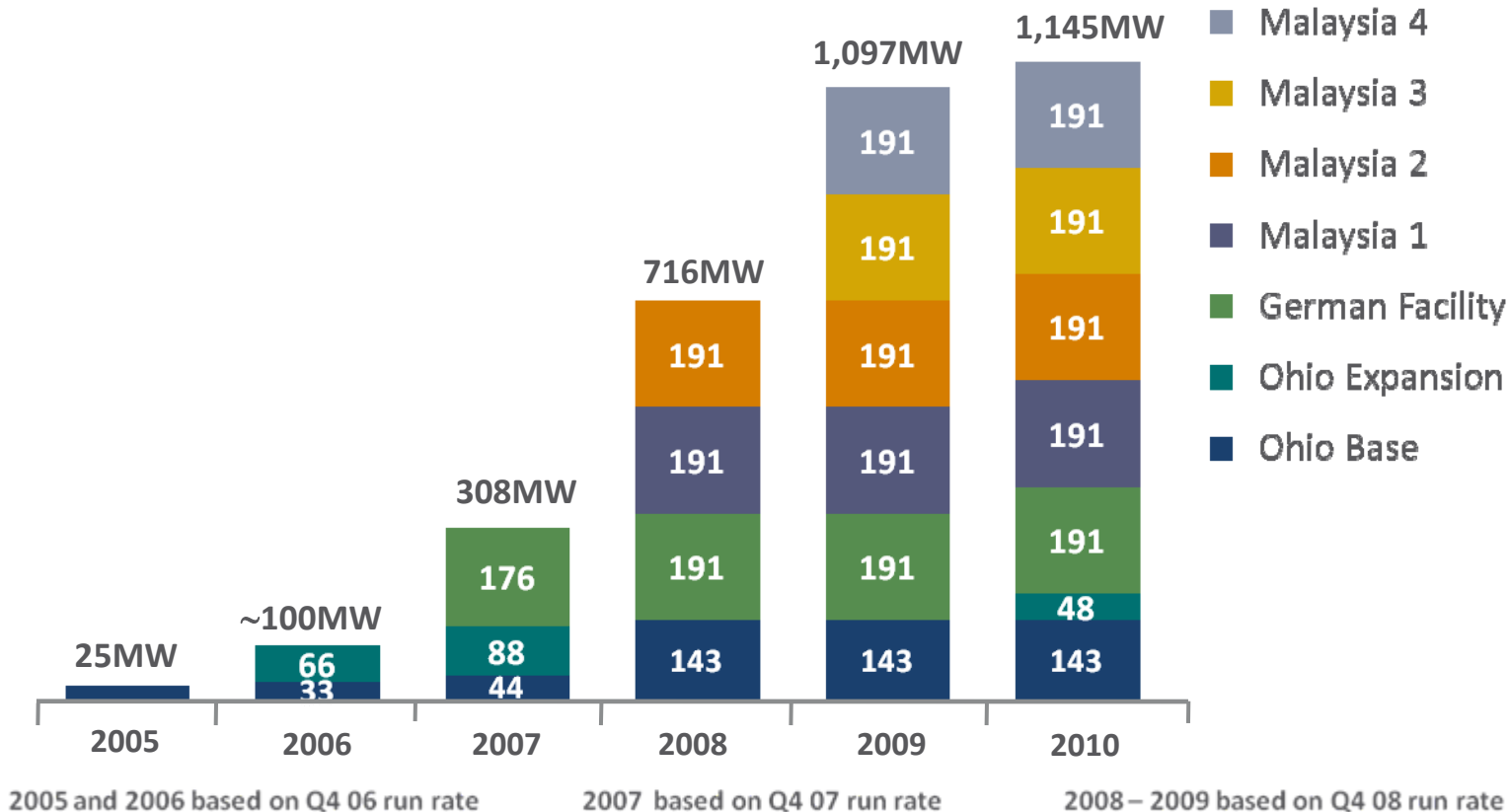


- Breakthrough thin film process technology
- 99% reduction in high-cost semiconductor material
- Fully integrated, continuous process vs. batch process
- Large (2'x4') substrate vs. 6" wafers
- Cost reduction trajectory driven by productivity and technology improvements

Improvement trajectories are continuing, leading to declining manufacturing and “balance of system” costs

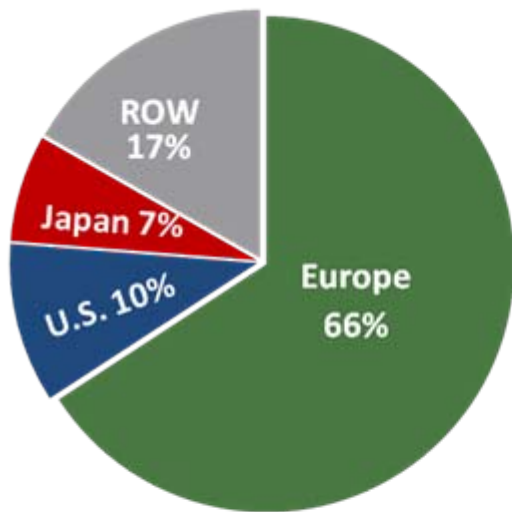
● Background

“Copy Smart Process”



● Background

Rapid scale-up and improvement trajectories have been enabled by well structured market demand incentive programs



5.6GW

Estimated Market 2009*

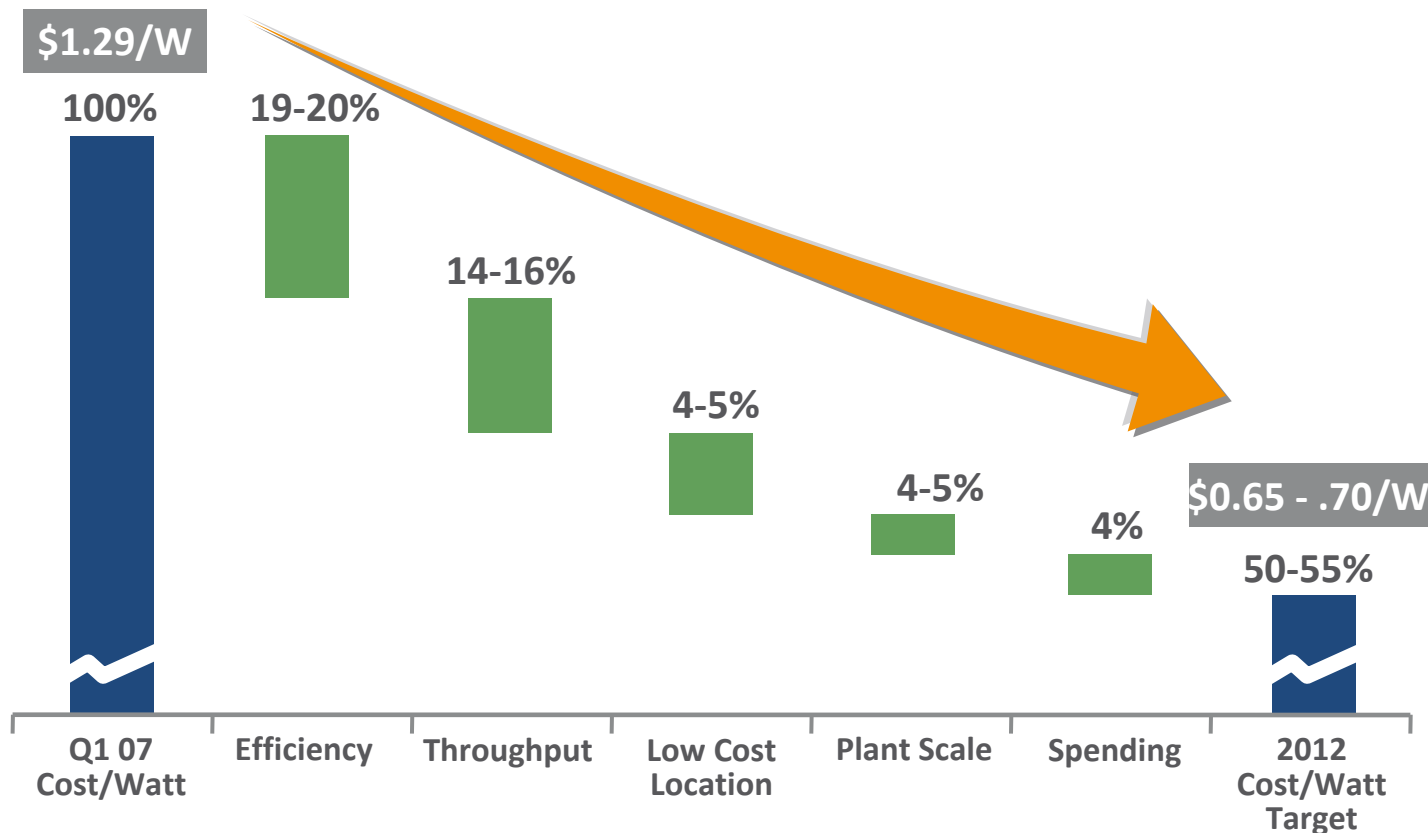
Why Feed-In Tariff Programs have worked:

- Guarantee access to the grid for RE
- Oblige grid operators to purchase RE
- Set RE price for long, fixed periods
- Establish multi-year, high volume markets
- Set rules for annual price degradation

* Source: Consensus of 10 street analysts covering solar sector as of 4/15/09

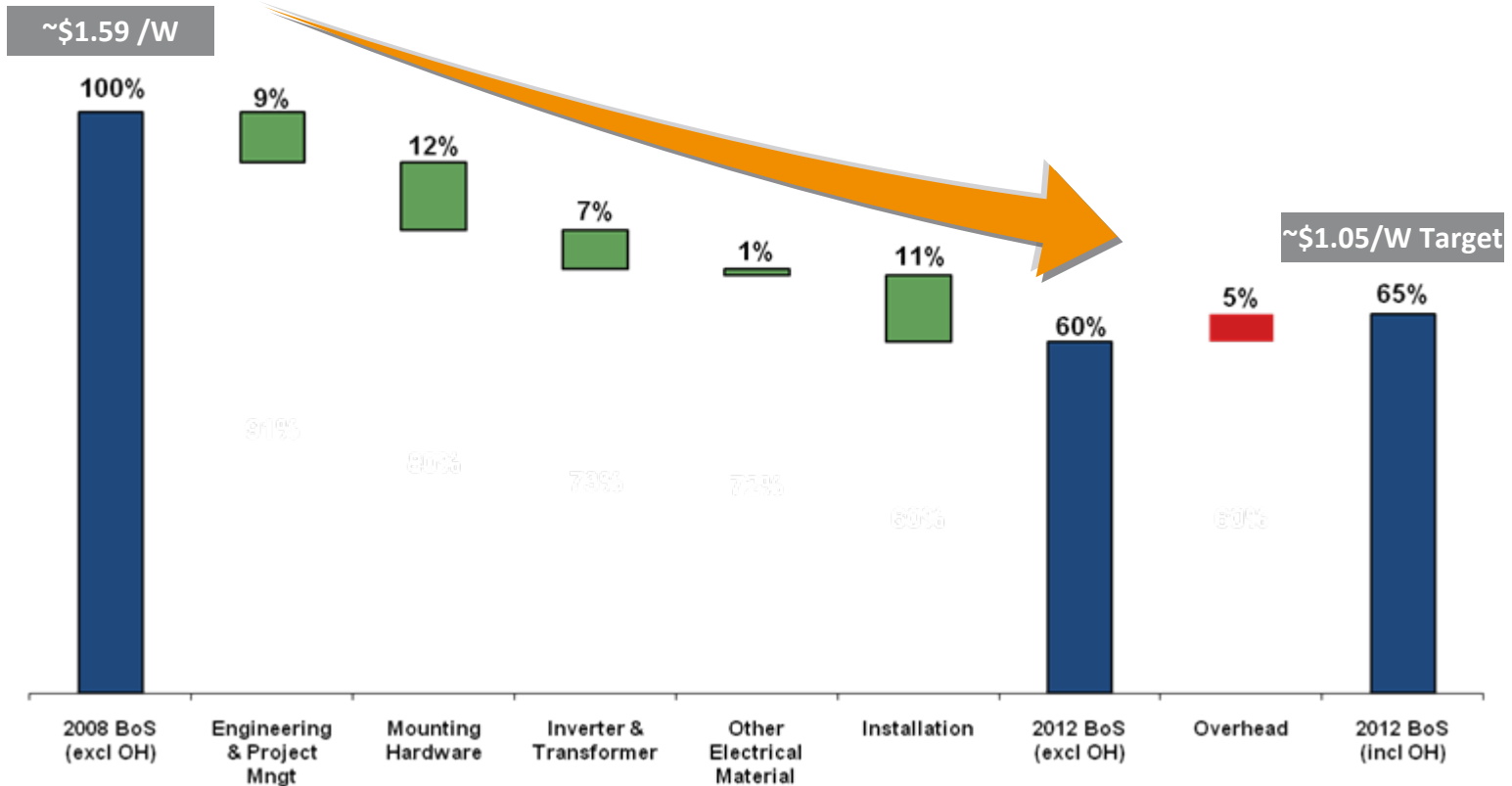
Background

Module MFG Cost Reduction Roadmap



Background

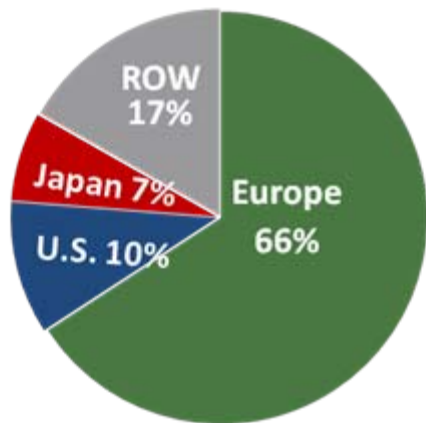
Balance of System* Cost Reduction Roadmap



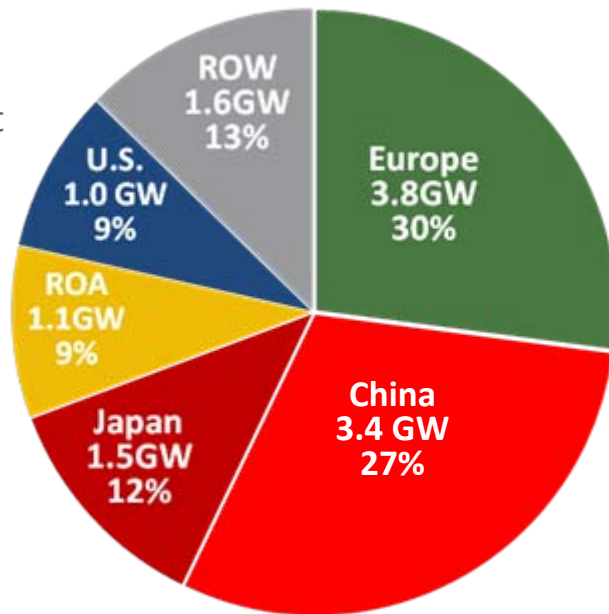
* Excludes sales tax, finance costs, ramp overhead and IPP project development costs

● Policy Considerations

- Global manufacturing capacity exceeds global demand
- Manufacturing locates either in large markets or low cost areas
- To develop a strong solar industry, the a country must start by developing a large solar market



Estimated Market 2009*
5.6GW



Existing and Announced Mfg
Capacity Year-end 2009*
12.3 GW, +43% Y/Y

* Source: Consensus of 10 street analysts covering solar sector as of 4/15/09

● Policy Considerations



Today's Issues – What does a Transparent and Attractive Market Opportunity Look Like?

- The EU Feed-In Tariff programs, such as that in Italy, have worked. If the US can design a program that accomplishes the functional equivalent, then the U.S. will also have growing solar markets and industries that will reduce costs by scaling and driving cycles of learning.

Program Attributes Should:

- Guarantee access to the grid for RE
- Motivate wholesale and retail consumers to purchase RE
- Set RE prices for long, fixed periods
- Establish multi-year, high volume markets
- Set rules for annual price degradation designed to phase out subsidies as commercial scale is achieved

These Program Attributes Signal that:

- A market exists if the technology can be successfully commercialized
- A successful company will have a market opportunity to scale rapidly and cost effectively
- The market rules for earning a return on investment are clear and certain

These Signals Cause:

- Technology, talent and funding to flow into the sector
- Businesses to develop focused and efficient business models for scaling successful technology



● Conclusions



- 1) Development of a strong solar industry (as with other clean technology) starts with the creation of a strong market.
- 2) Energy markets are heavily regulated and well entrenched by conventional incumbents. RE and other clean technology solutions are highly disruptive to the existing value chains.
- 3) For these reasons, and because national and global externalities are implicated, local utilities will not naturally take the actions needed to develop effective clean technology markets; strong government involvement is needed.
- 4) Government action should be guided by the long term goal of transforming to a low carbon energy infrastructure .
- 5) In the near term, one overriding objective should be to create the market conditions that enable solar energy providers to achieve commercial scale.
- 6) In Italy, this is being achieved through the Feed-in-Tariff program. In the US, a federal program that accomplishes the functional equivalent of such a feed-in tariff programs would result in significant new investment and job creation, rapidly declining solar electricity prices and a robust technology and innovation pipeline that leads to continuous improvement and a strong export capabilities.