First Solar®

Presentation on Thin Film PV

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Forward Looking Statements

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- PV – Historical Development and Outlook
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Sustainability is industry mandate

- Solar is a key component in addressing global climate change: all technologies are required
- Objective:lower worldwide carbon levels and improve security of supply
- Must evaluate total impact to the environment: supply, manufacturing, deployment, operations, recycling
- Module and Balance of Plant cost per watt driven by ongoing improvements in technology, manufacturing and system design



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Company Overview

First Solar Company Overview

Strategic Objective

To create enduring value by enabling a world powered by clean, affordable solar electricity.

- Reduce the cost of solar modules using thin film technology and automated, scalable production
- Migrate from subsidized markets to non-subsidized markets by leveraging economies of scale — become "subsidy independent"
- Reduce dependence on fossil fuels and curtail greenhouse gas emissions to improve our environment

First Solar: Clean, Affordable Solar Electricity

Founded in 1999, a market leader in utility scale commercial and industrial PV systems

World's lowest cost solar module manufacturer
- $0.85/W (as of Q3 09)
- Aggressive cost reduction roadmap
- Sustainable competitive advantage

Environmental leadership
- Lowest carbon footprint
- Fastest energy payback time of current PV technologies (<1 year)
- PV industry's first and only pre-funded collection and recycling program

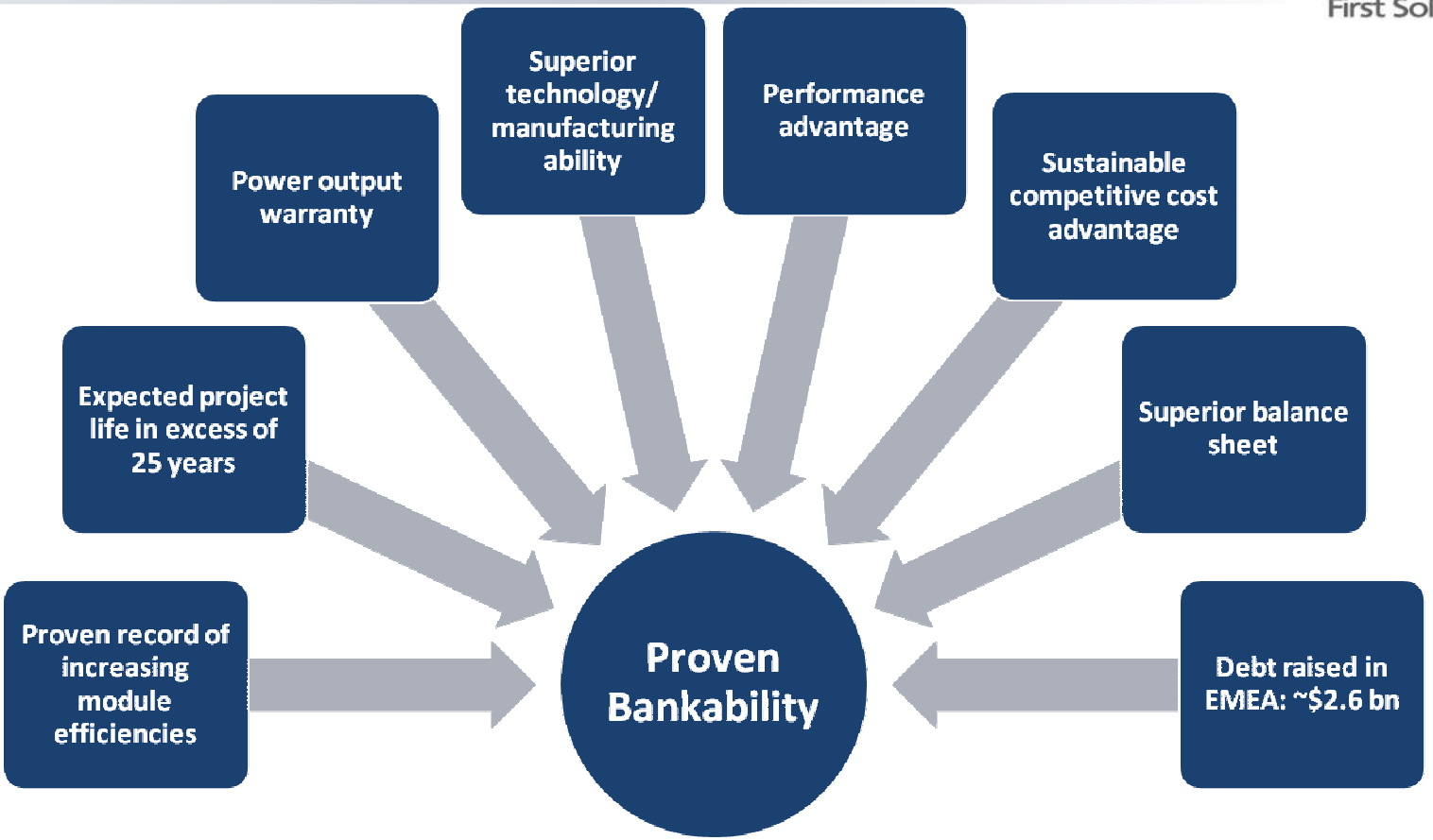
Proven performance and reliability
- 10 year track record
- >1 GW of annual production in 2009

Bankability of projects
- >1 Giga Watt (GW) of projects financed and in the ground
- Consistent performance and execution attract investment

Financial strength
- $12 billion market capitalization
- Added to S&P 500 in October 2009

Global Presence

Bankable Performance



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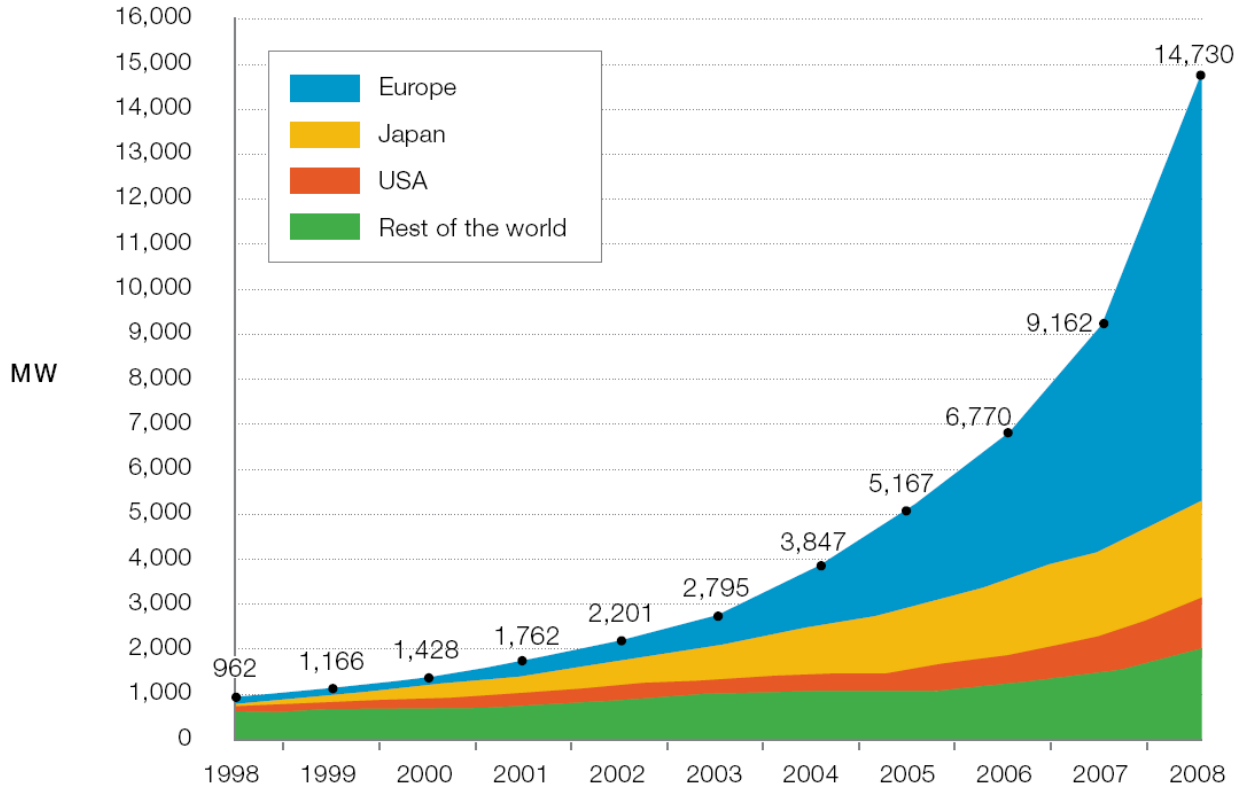
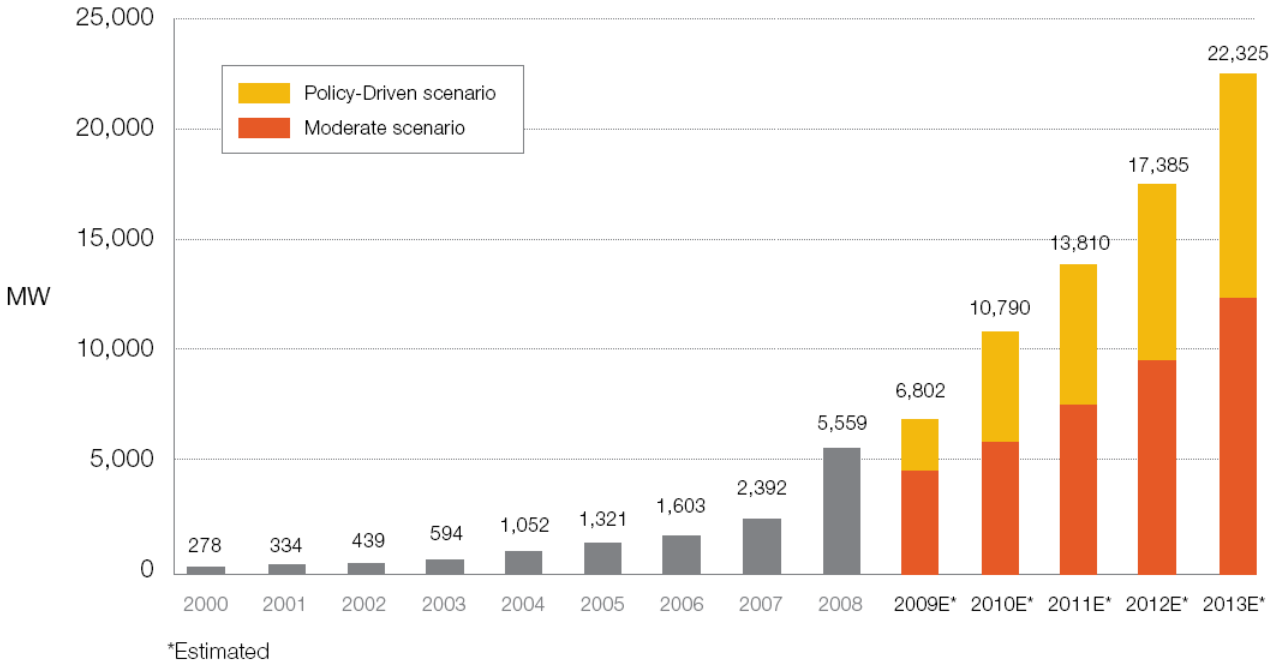
PV – Historical Development and Outlook

Historical development of global cumulative PV power installed per region



Source: EPIA Global Market Outlook 2013

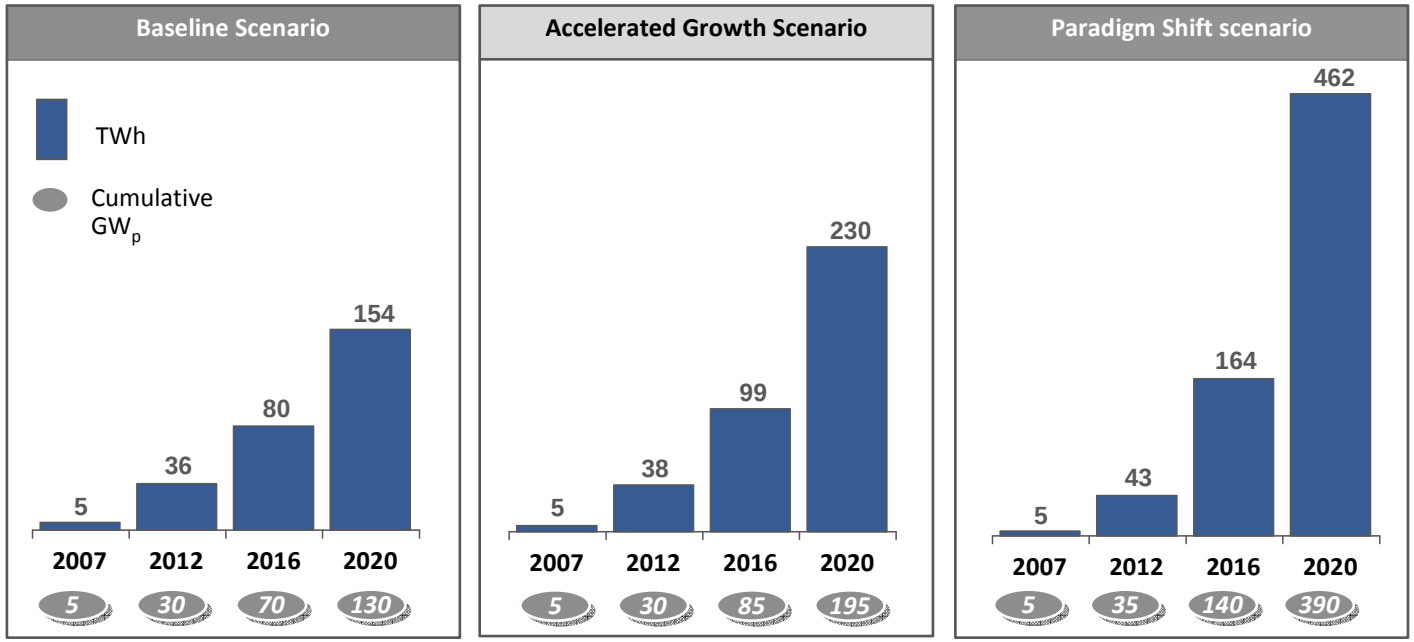
Global annual PV market Outlook until 2013



Source: EPIA Global Market Outlook 2013

EU installed capacity by 2020 will range from 130 GW_p Baseline to 390 GW_p Paradigm Shift scenario

PV deployment scenarios (TWh of electricity produced; GW_p installed[1])



~4% of PV penetration on electricity demand by 2020

~6% of PV penetration on electricity demand by 2020

~12% of PV penetration on electricity demand by 2020

1) The underlying geographical deployment results in an average European figure of 1,167 operating hours for scenarios 1 and 2 and 1,187 for scenario 3

Sources: EPIA, EU DG TREN "European Energy and Transport: trends to 2030, update 2007", EU JRC Photovoltaic Geographical Information System, Eurostat Data Portal, A.T. Kearney SET for 2020 analysis

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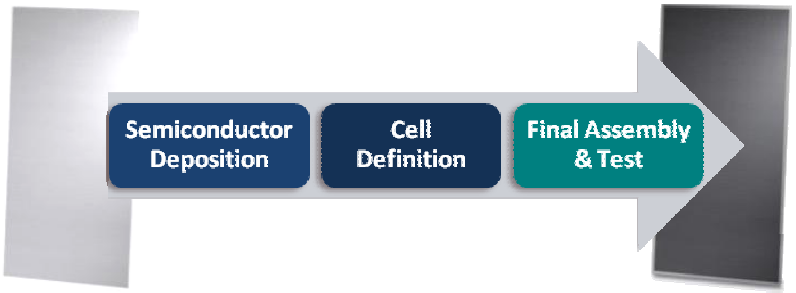
Technology & Product

The First Solar Solution

Module Manufacturing

Glass In → 2.5 Hours → Module Out



- Breakthrough thin film process technology
- 99% reduction in high-cost semiconductor material
- Fully integrated, continuous process vs. batch processing
- No shortages of semiconductor material
- Cost reduction trajectory driven by productivity and technology improvements
- Large (2'x4') substrate vs. 6" wafers

System Solutions (U.S.)

- First Solar specializes in utility-scale PV systems
- Engineering, procurement and construction capabilities provide turnkey solution
- Monitoring & Maintenance (M&M) Program
  - Fixed M&M pricing enables predictable annual expenses
  - First Solar monitors and maintains the PV system over its life

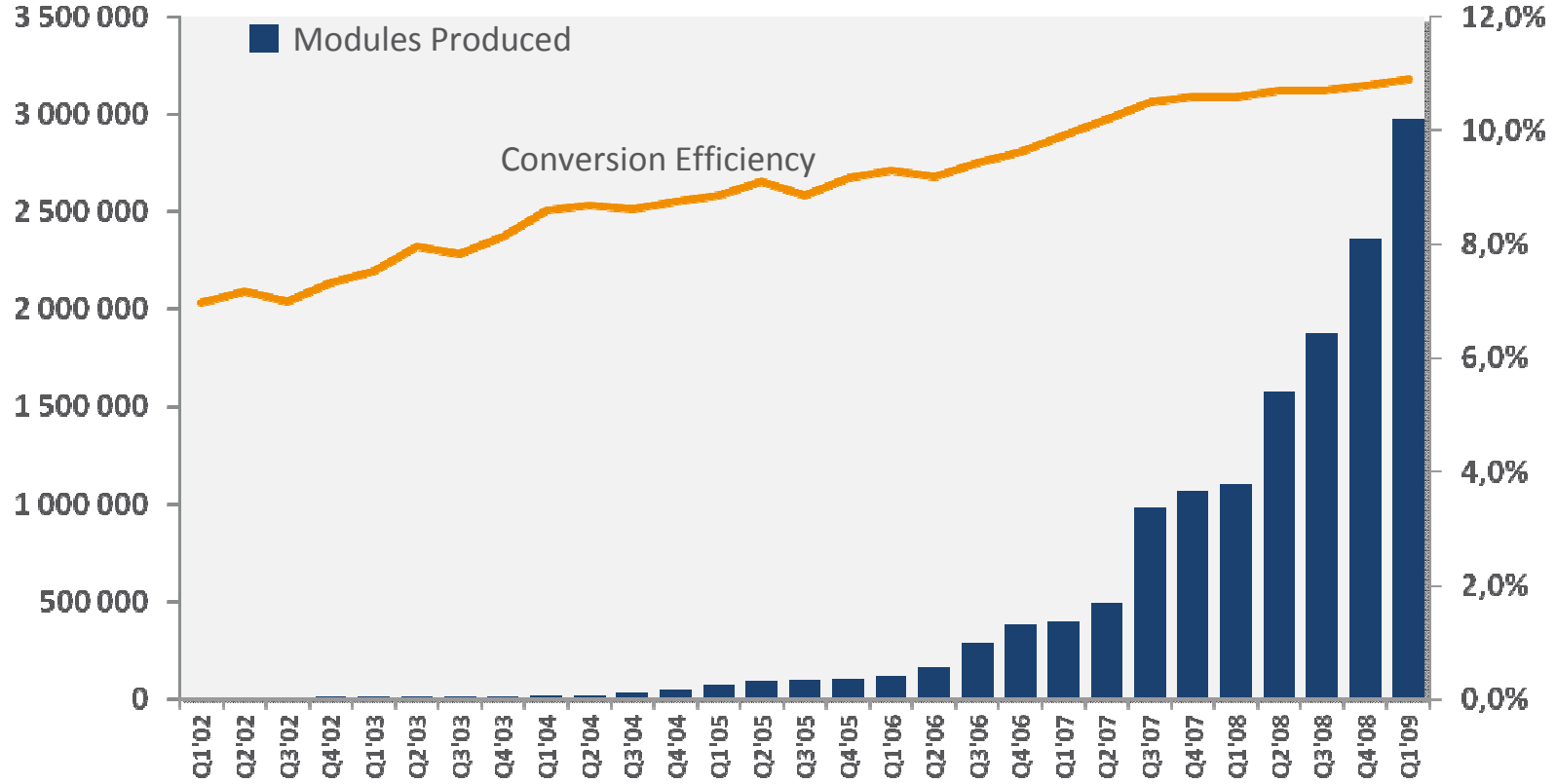
Superior Technology

First Solar's validated performance

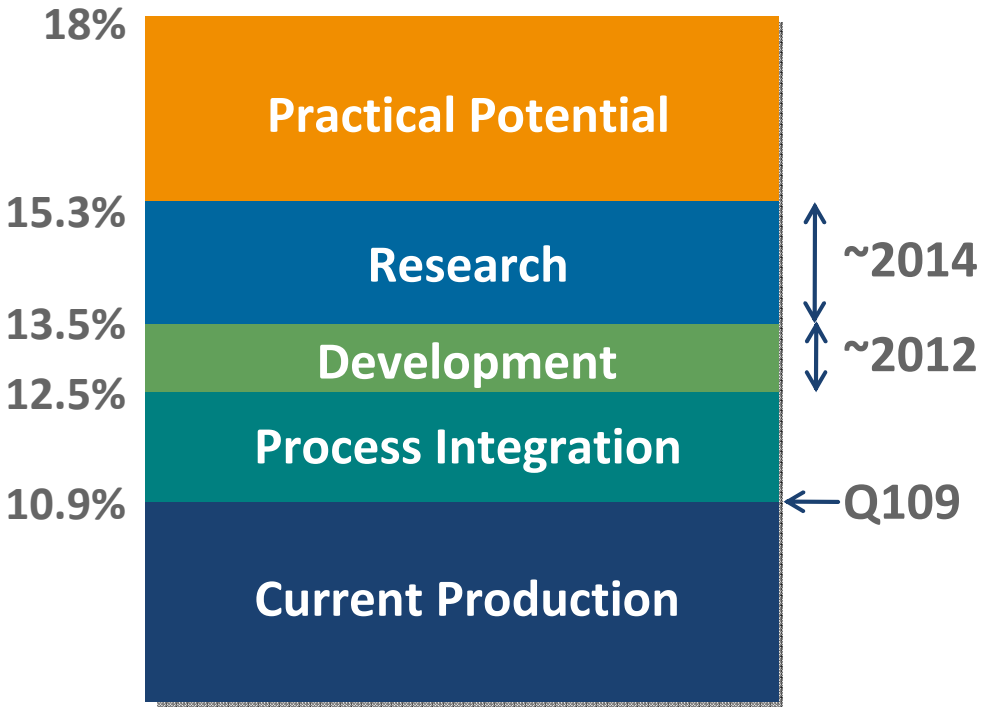
- Over 4.0 GW / $6.3 billion currently contracted with leading developers of large scale PV projects
- Extensive module testing and validation before commercial production
- Durable and recyclable frameless glass-glass laminate
- High energy yield in real operating conditions (PR>80%)
  - Low temperature coefficient (-0.25%/°C)
  - Excellent low light response
- Robust against shading in landscape orientation (perpendicular to cells)
- 25 year module power output warranty
- Minimal O&M expenses – no moving parts, fuel or water requirements

Products & Performance

Proven Record of Increasing Module Conversion Efficiencies

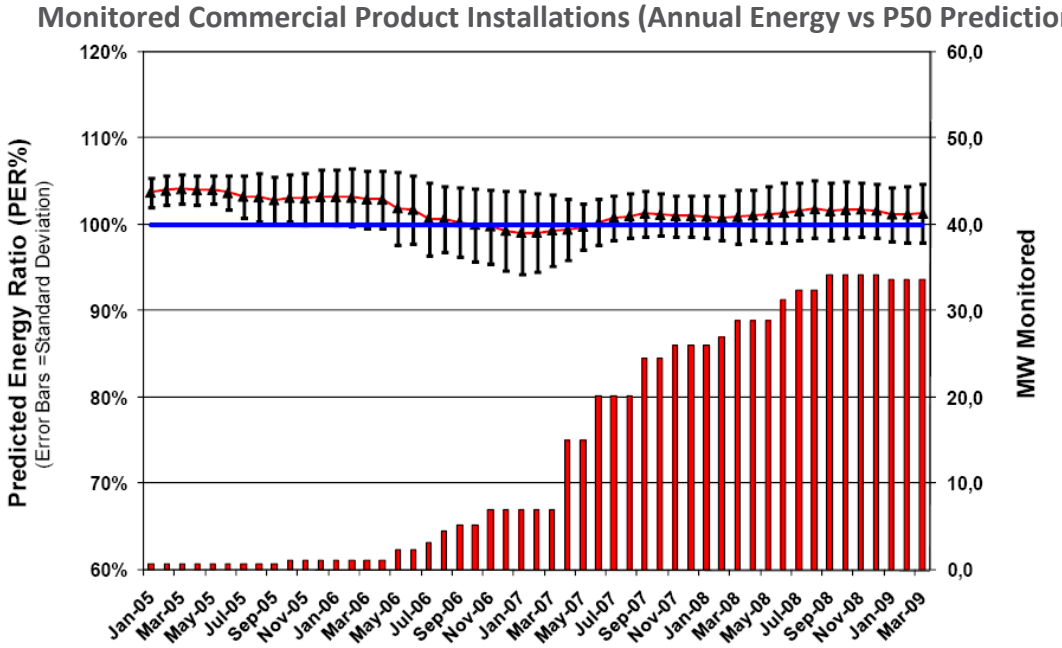


Conversion Efficiency Potential



Proven Field Performance

- First Solar provides energy yield predictions to establish system performance expectations
- First Solar monitors installed modules in a wide range of systems to ensure field performance continues to meet predicted expectations
- First Solar's monitored systems have demonstrated actual performance with a +/- 3.5% deviation from predicted performance



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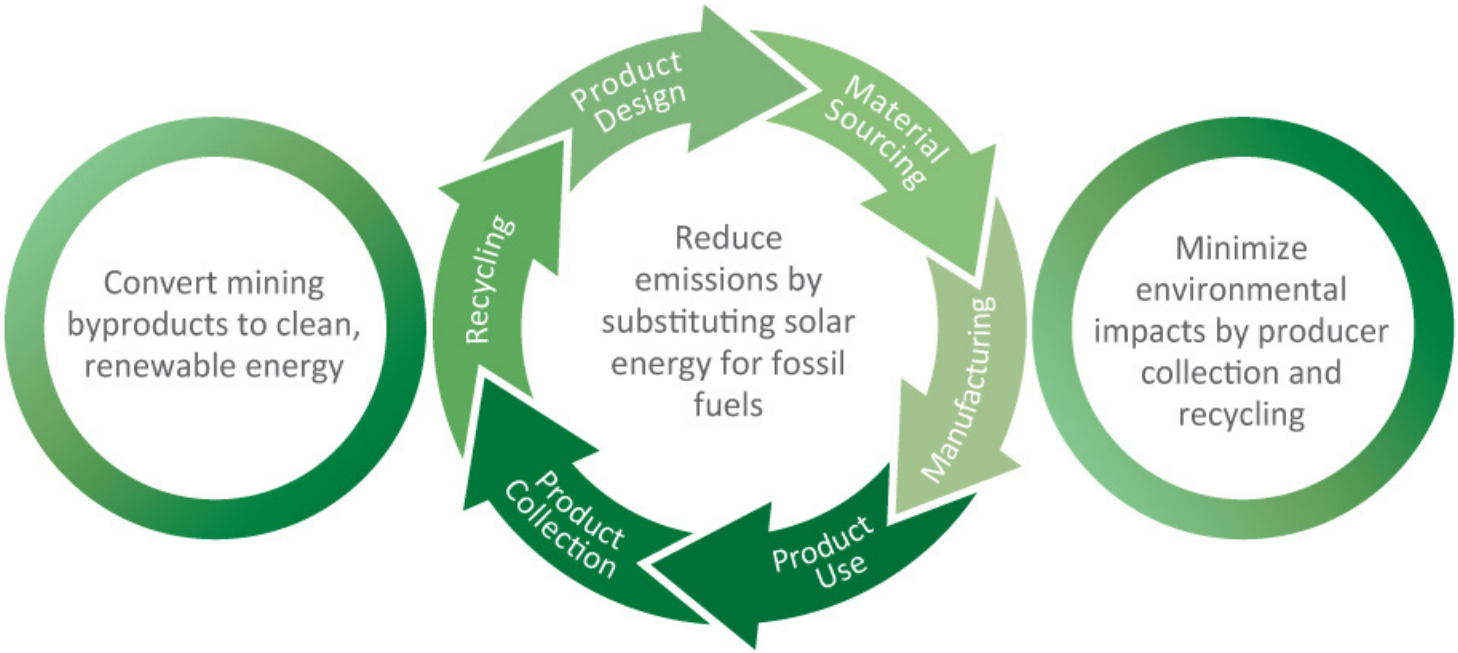
Environmental Responsibility

Environmental Responsibility

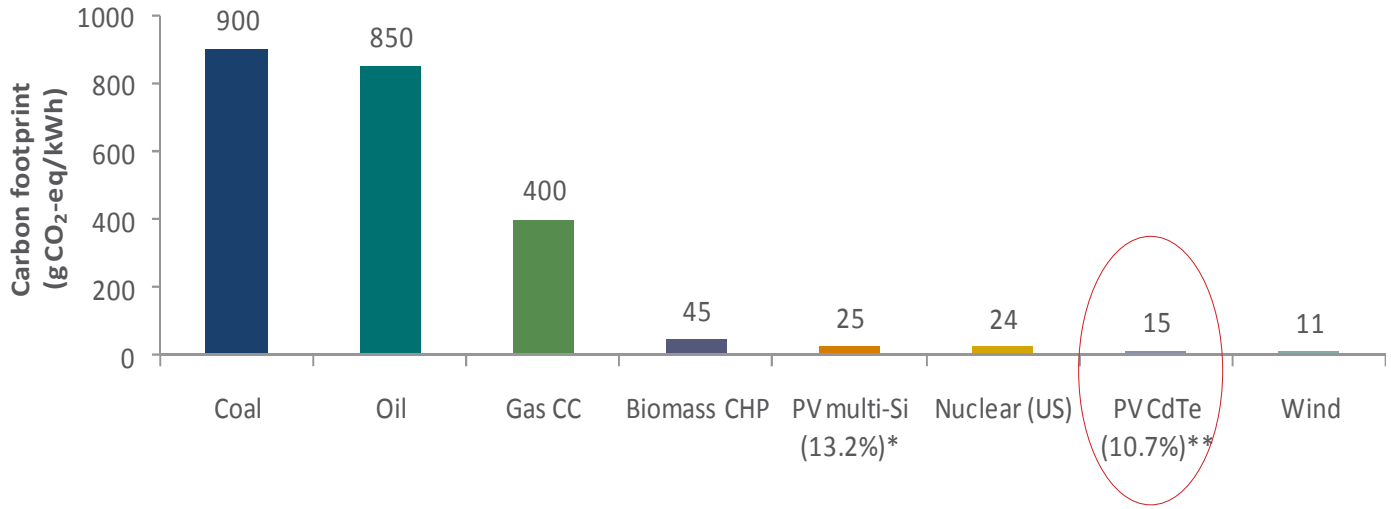
First Solar's Environmental Commitment



Clean. Affordable. Sustainable.

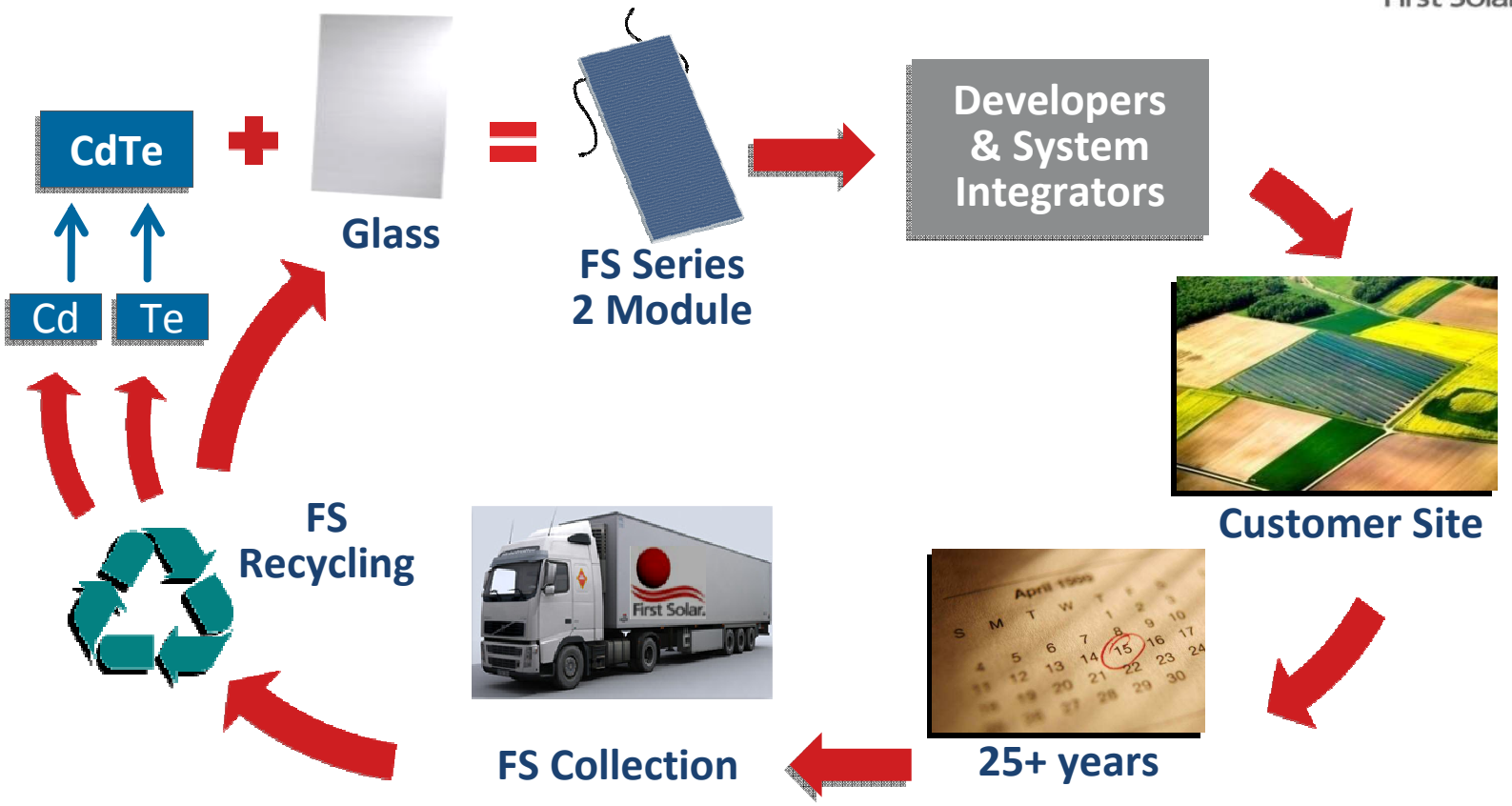
Life Cycle Assessment Benefits

Carbon Footprint – Comparison Across Technologies



Sources: *de Wild-Scholten, M., presented at CrystalClear Final Event in Munich on May 26, 2009. **de Wild-Scholten, M., 'Solar as an environmental product: Thin-film modules – production processes and their environmental assessment,' presented at the Thin Film Industry Forum, Berlin, April, 2009. Both PV technologies use insolation of 1700 kWh/m2. All other data from ExternE project, 2003; Kim and Dale, 2005; Fthenakis and Kim, 2006: Fthenakis and Alsema, 2006; Fthenakis and Kim, in press.

A Cradle-to-Cradle Technology



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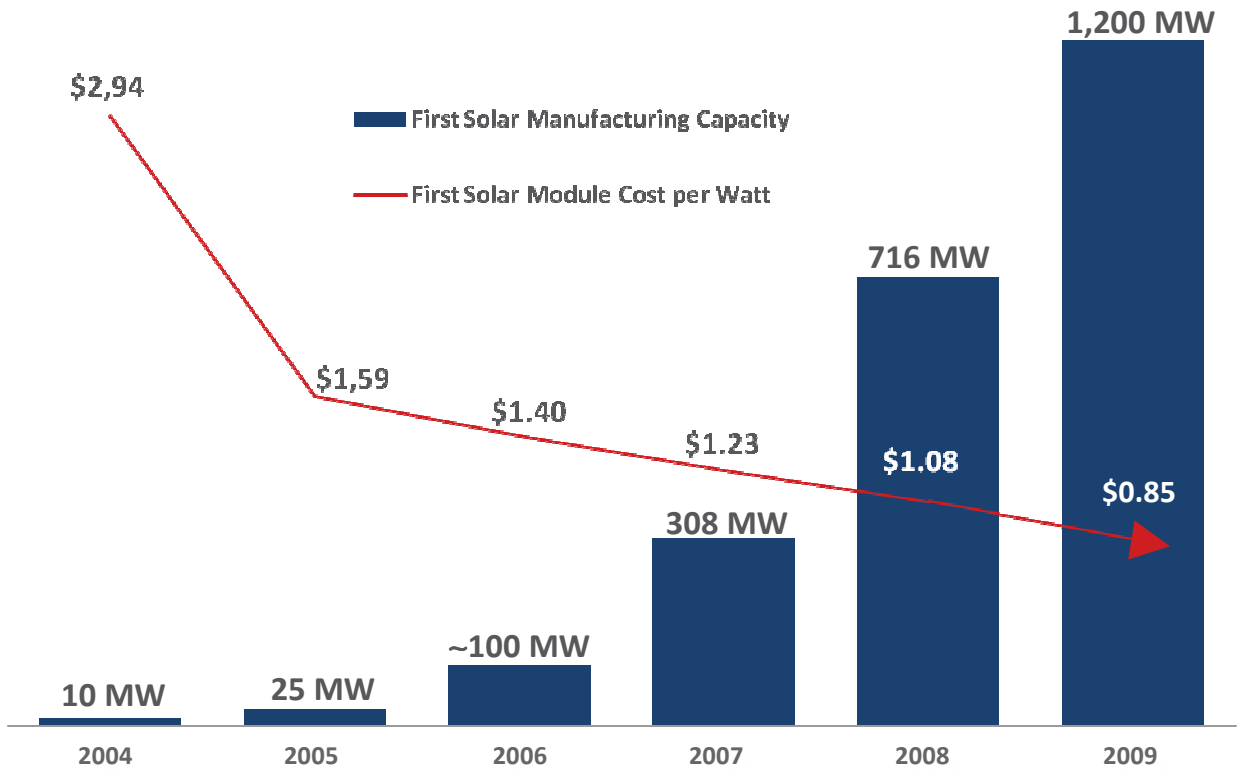
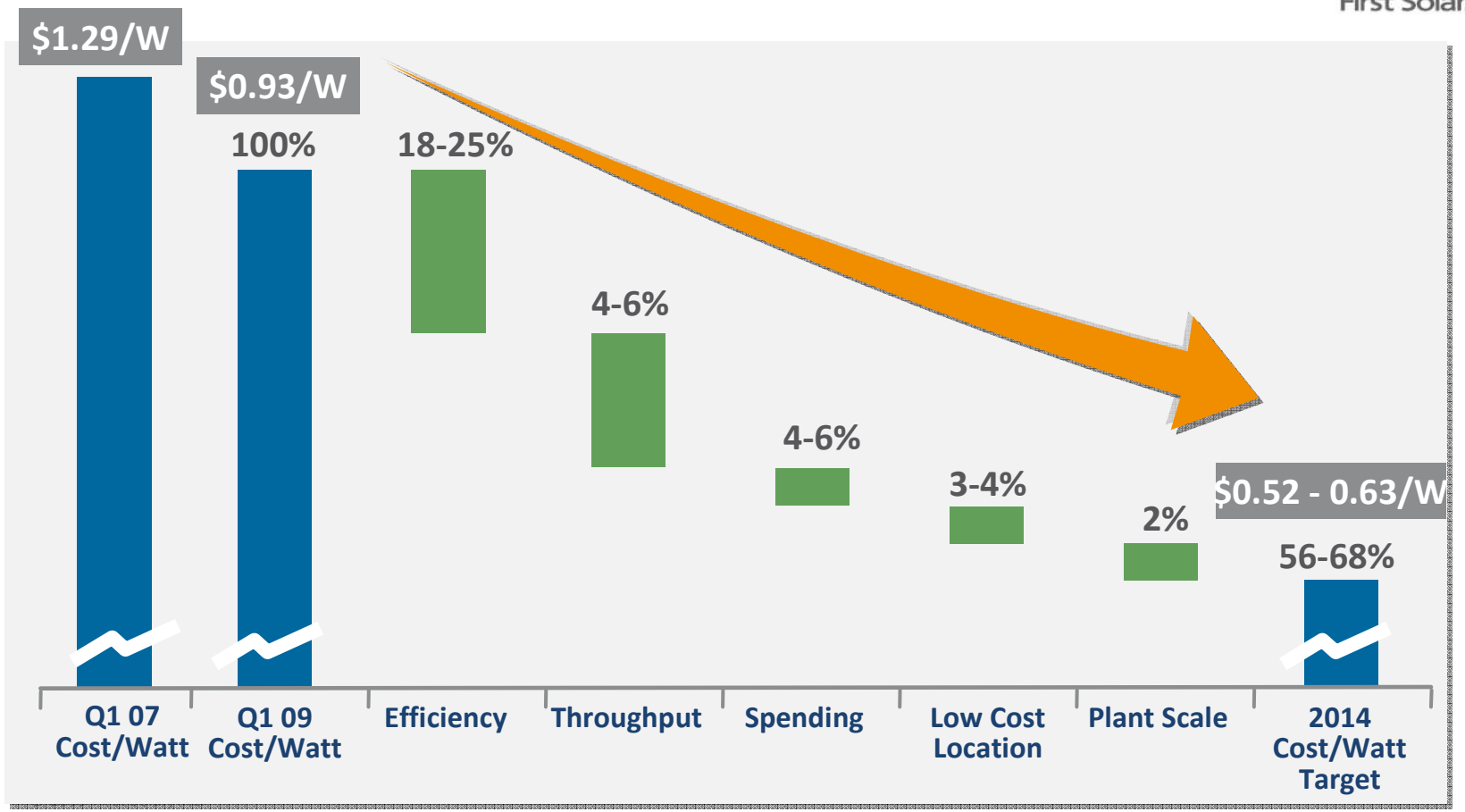
Cost and Cost Reduction

Cost Reductions Achieved Through Scale

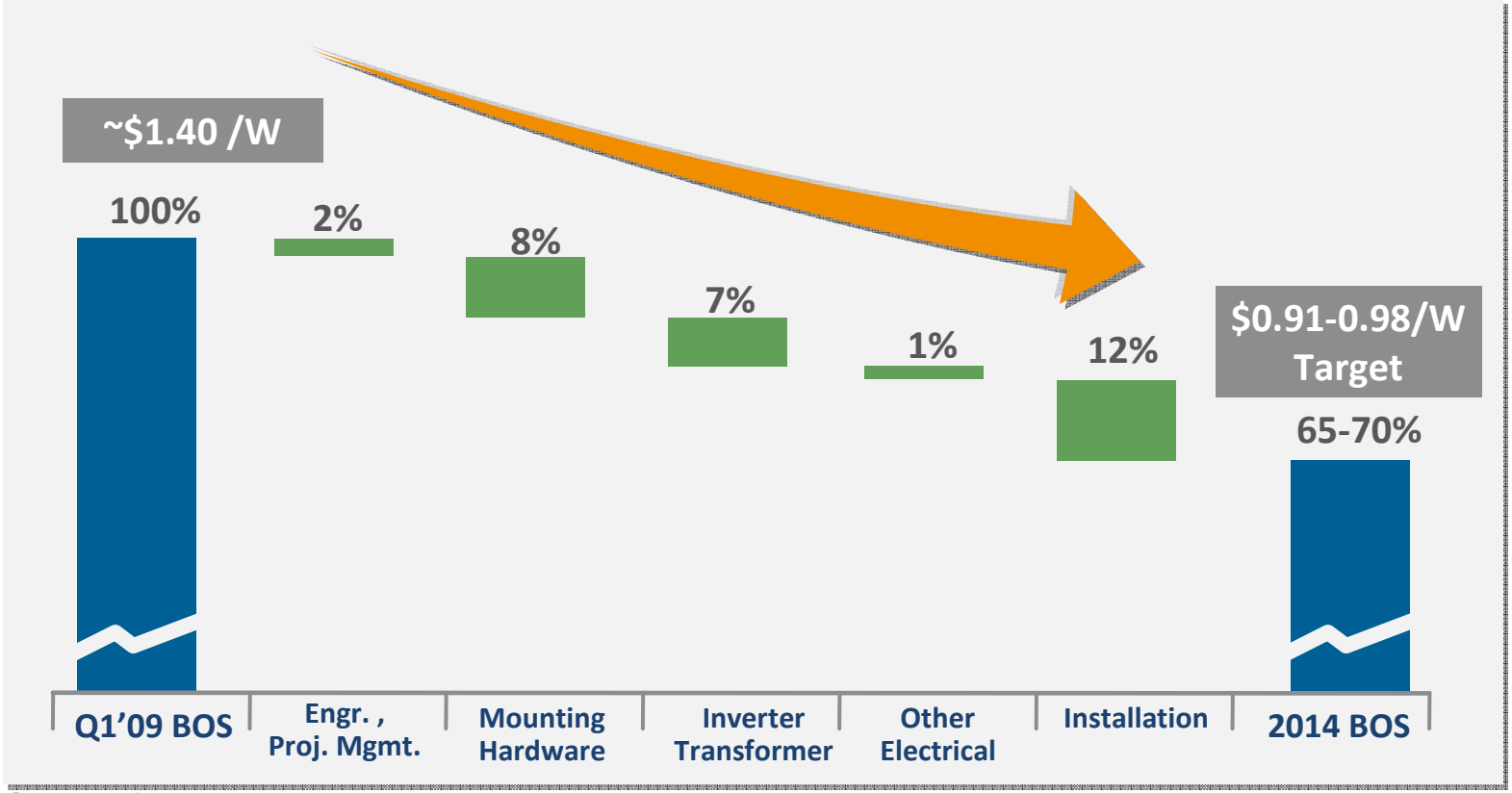


New Module MFG Cost Reduction Roadmap



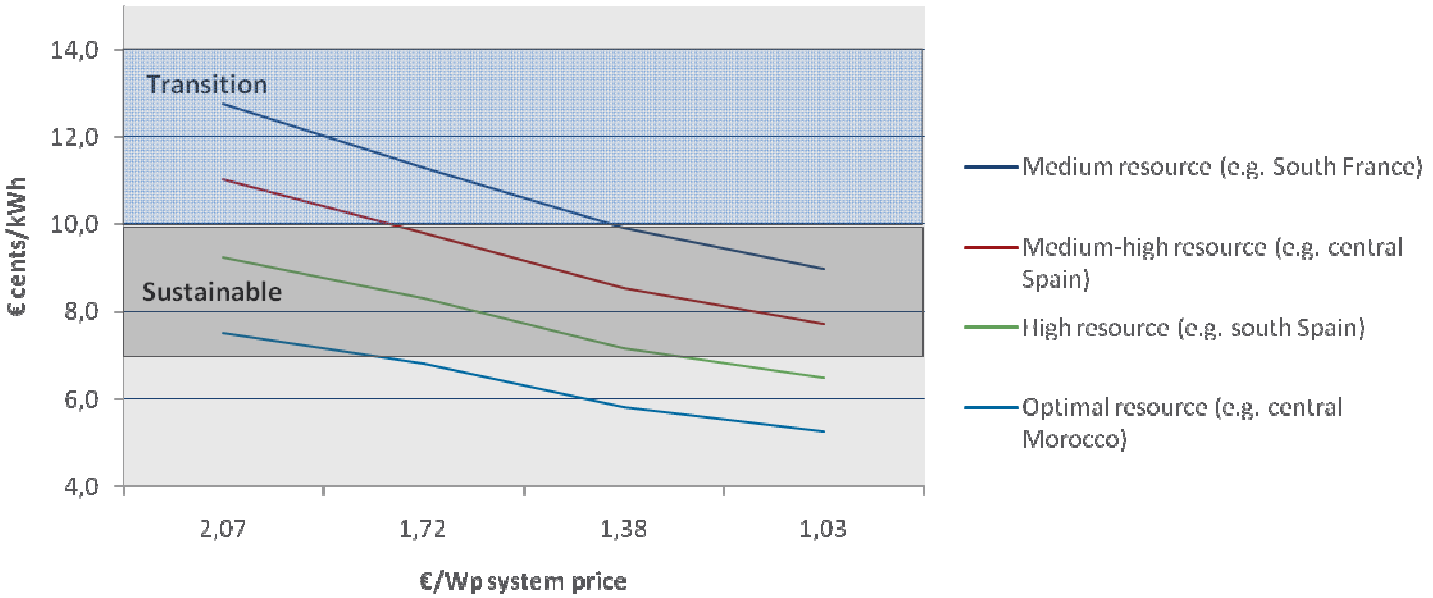
New Roadmap to Grid Parity

Balance of System* Cost Reduction Roadmap



* Excludes Site Specific costs, BOS profits, sales tax, finance costs, SG&A costs and project development costs and assumes optimal labor. costs

LCOE – Transition to Sustainable Markets



Note: Assumes 7.5% unlevered IRR, 10% ITC, 2.5% electricity power price escalator, FSLR panels, utility scale plant, install labor and site specific cost estimates. Includes owner development costs, financing costs and O&M. USD € rate 1,45

Attributes and Advantages of TF PV

Attributes and advantages of thin film PV

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Performance & sustainability

- No use of water, gas or oil during operations
- No concrete used
- (Nearly) maintenance free (no moving parts)
- No emissions or waste created during operation
- Low carbon footprint
- Low sensitivity to dust, humidity and strong winds
- No geographical restriction due to quality of radiation: can work with global radiation and has low sensitivity to diffuse light
- Highly reliable, simple system with few components
- Easy to recycle
- Recycling and reuse of 90% module weight and 95% of semiconductor (for FS)

Attributes and advantages of thin film PV

Project development and installation

- Short project development and construction time (1 MW/day)
- Highly modular and flexible construction:
  - Parallel development of several sub-plants possible
  - Flexibility of scaling and gradual expansion of system and transmission lines
  - Easier grid connection which can increase proximity to consumers
- Most topographies possible – does not require flat land
- Simple, fixed installation: no moving parts
- No gas pipelines nor water infrastructure required
- Little need for spare/wear parts and therefore no warehouse required

Attributes and advantages of thin film PV

Financing

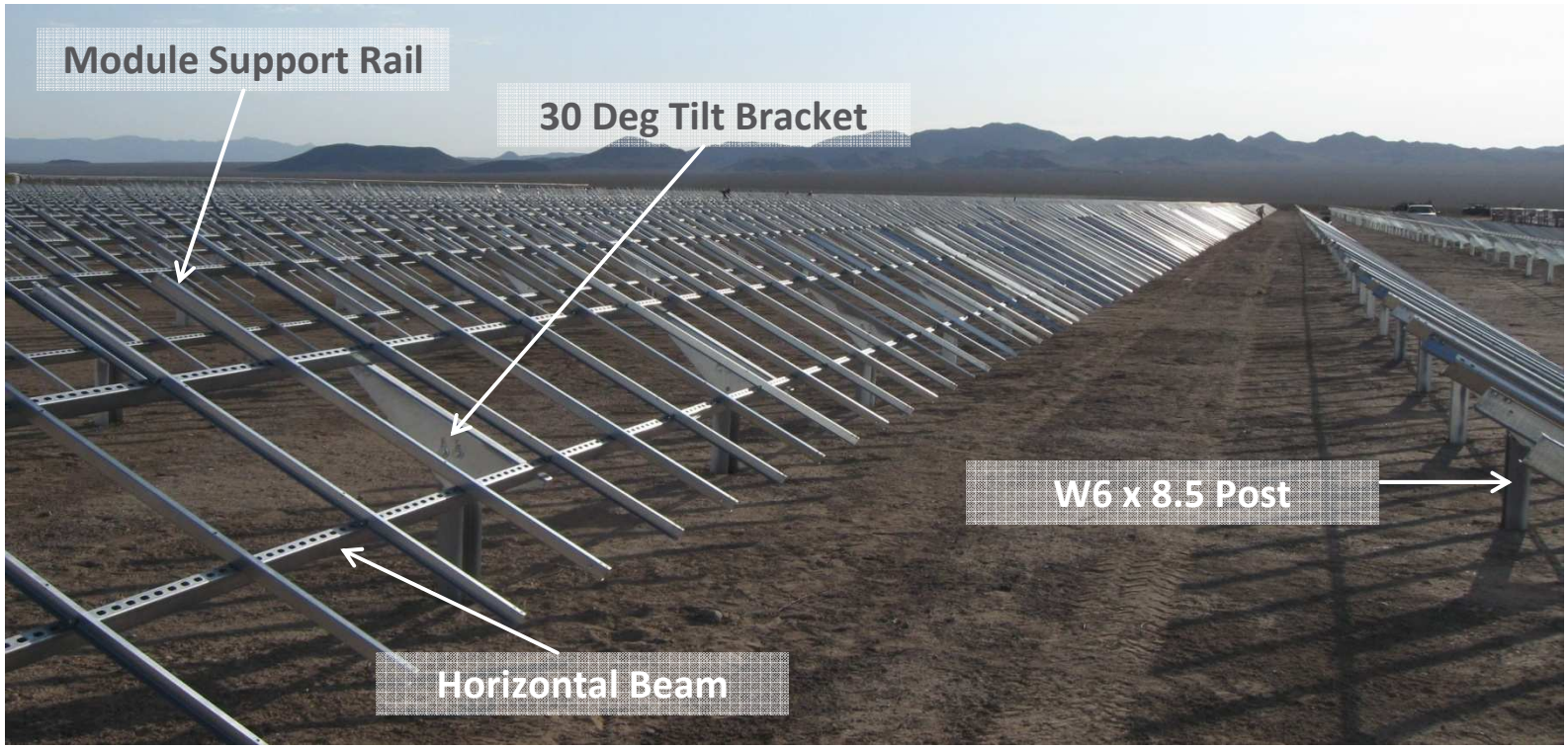
- Modularity allows incremental financing
- High fixed, low variable cost investment almost entirely capital related with very low operating and maintenance cost and a pre-funded end-of-life treatment (modules)
- Module costs decreasing rapidly
- No commodity price risks once the system operates (high hedging value and high life cycle cost predictability)

Example: Development and Construction of 20 MW Sarnia

Substantial completion in a couple of weeks

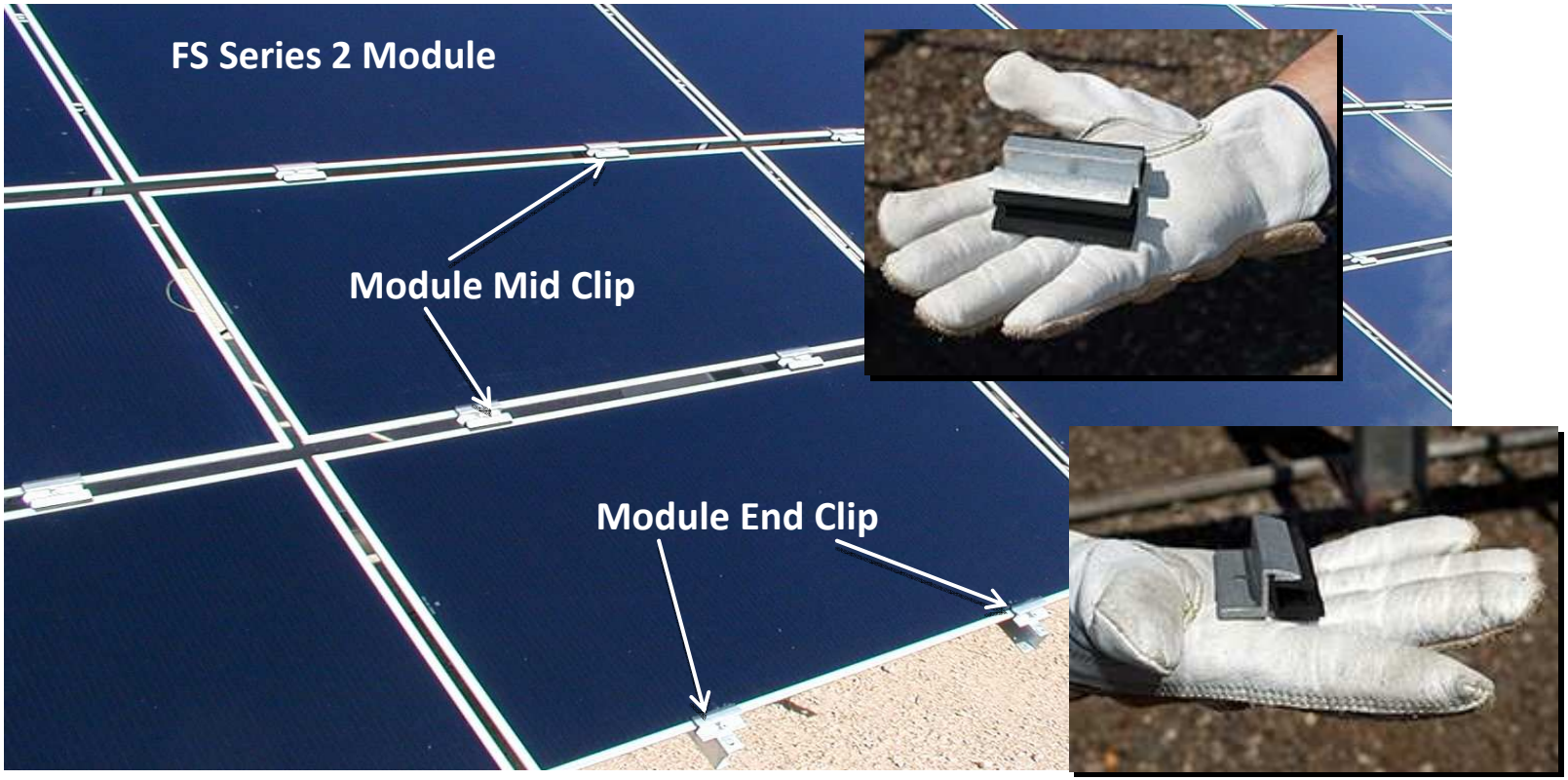
Array Structure

Component Descriptions – MOUNTING STRUCTURE



Array Structure

Component Descriptions – PV MODULES & CLIPS



Sarnia 20: August 21

Sarnia 20: September 9

Sarnia 20: October 5

Sarnia 20: October 16

Sarnia 20: November 16

Reference Projects in EU, MENA & US

El Dorado PV Power Plant

Engineering, Procurement, and Construction – Ground Mount

- Constructed next to existing natural gas plant
- Constructed in less than 5 months - 137 days
- 48 MW expansion to begin in 2009

Site:	Nevada, USA
System Size:	10 MW (AC)
Completed:	December 2008
System Purchaser:	Sempra Generation

Reference Projects

Ground Mounted

Site:	MASDAR , Abu Dhabi, UAE
System Size:	12 MW (DC)
Completed:	June 2009
System Developer:	Enviromena

Site:	El Dorado, NV, USA
System Size:	10 MW (AC)
Completed:	December 2008
System Purchaser:	Sempra Generation

Reference Projects

Ground Mounted

Performance Ratio:	82.5% (predicted)
Annual Energy Yield:	40 million kWh (predicted)

System Size:	40 MW
Site:	Brandis, Germany
Irradiance:	1020 kWh/m2
Date Commissioned:	December 2008
Project Developer:	Juwi
Operator:	Solar Fund
System Owner / Investor:	Solar Fund
Module Type:	FS-265, FS-267, FS-270
Inverter:	SMA SC1000 MV

Reference Projects

Ground Mounted

Site:	Lieberose *former military training area* *Turnow-Preilack, Germany*
System Size:	53MW
Annual Energy Yield:	approx. 52 million kWh (projected)
Project Developer:	Juwi Solar GmbH
Number of modules:	approx. 700,000
Module Type:	FS 272-277
Inverter:	SMA SC1250 MW SMA SC 900 MV

Project Profiles

Module Supply – Ground Mount

Site:	Rote Jahne, Germany
System Size:	6 MW
Project Developer:	juwi Solar

Site:	Narbonne, France
System Size:	7 MW
Project Developer:	EDF Energies Nouvelles

Site:	Bullas, Spain
System Size:	5 MW
Project Developer:	Gehrlicher Solar

Ordos City (China) MOU for 2 GW AC Solar PV Plant

Mike Ahearn welcomes Chairman Wu Bangguo of the Standing Committee of the National People's Congress of China to First Solar

Cao Zhichen, vice mayor of Ordos Municipal Government and Mike Ahearn sign MOU

- **Chinese government expanding use of renewable energy**
  - Potential goal of 20 GW by 2020
  - Feed-in-tariff expected
- **MOU signed in presence of Chairman Wu**
  - Agreement with Ordos City to provide 2 GW PV system

Phase 1: 30 MW starting June 1, 2010

Phase 2 and 3 : 100 MW and 870 MW by 2014

Phase 4: 1,000 MW by 2019

Site:	Ordos City, Inner Mongolia
Size:	2 GW (AC)

Thank you