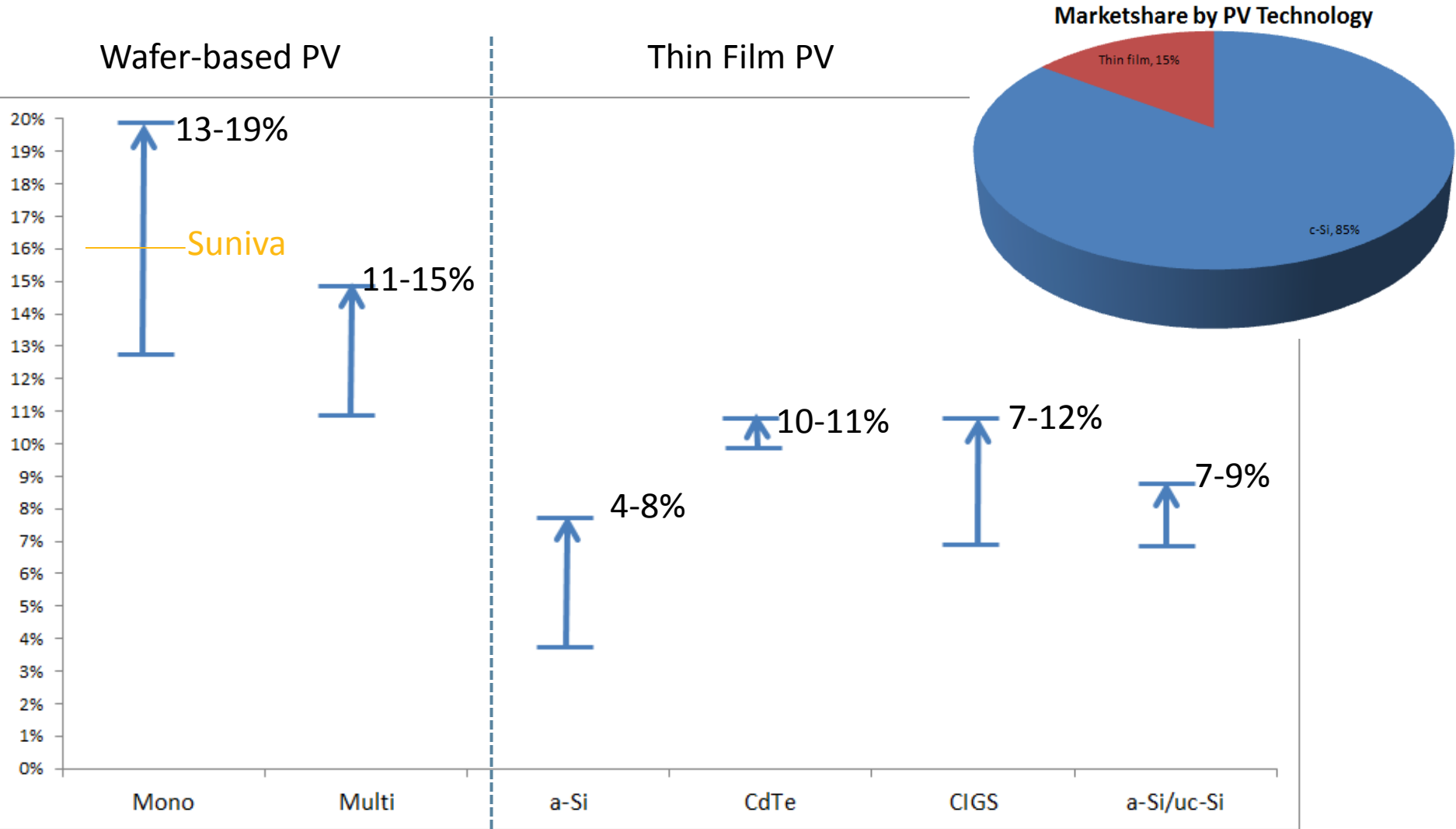


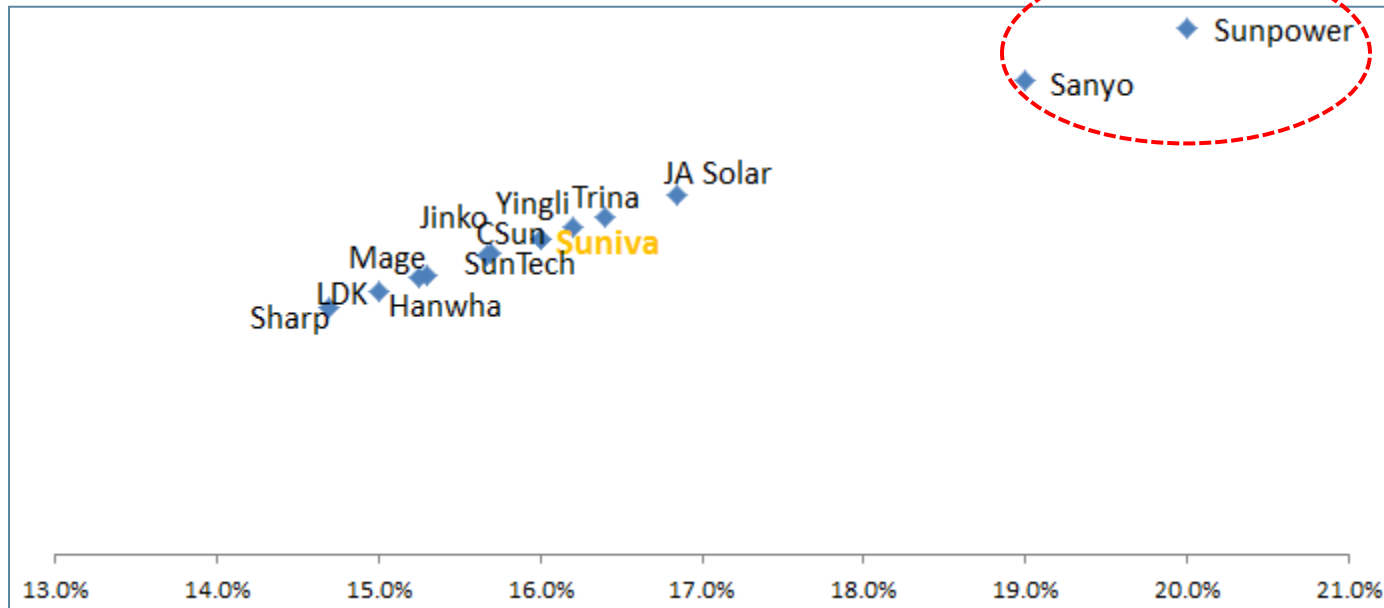
# CURRENT INDUSTRY EFFICIENCIES OF DIFFERENT PHOTOVOLTAIC TECHNOLOGY COMMERCIAL MODULES



Note: In January 2012, First Solar broke the world record in CdTe technology with cell and module efficiency at 17.3 & 14.4% respectively. This information is not included here because production at these efficiencies will not begin until 2015.



# CURRENT INDUSTRY EFFICIENCIES OF MONO PV TECHNOLOGY

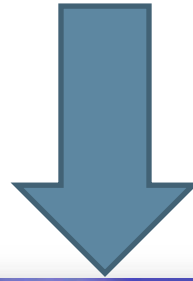


- While technology differentiation is good, the winning strategy is technology combined with a low cost roadmap.

# COSTS: SILICON



1H 2011 \$80/kg



2H 2011 \$24/kg

## Silicon price history (\$/kg, through 02/17/2012)

*ROUGH ESTIMATES*



Result: Shortage likely as companies lack motivation to produce!

Interview data

Data updated 02/21/2012

Next update by 02/27/2012

Confidential & Proprietary

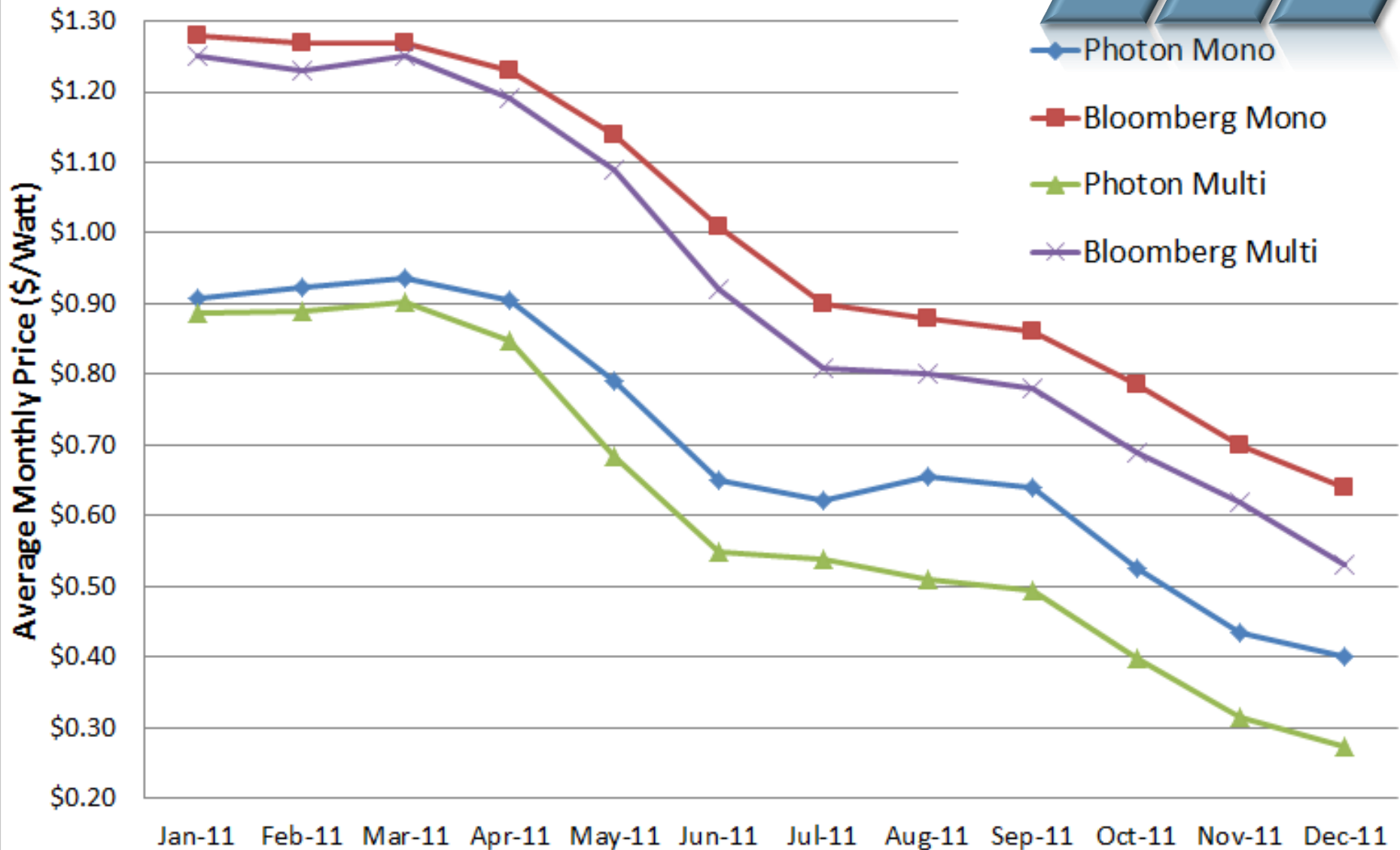
© Suniva®, Inc. 2012



# COSTS: WAFER



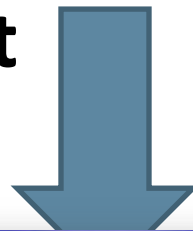
## Comparison- Mono Wafer vs. Multi Wafer



# COSTS: CELL



1H 2011 \$1.28/watt



2H 2011 \$0.55/watt

## Cell price history

(\$/W, spot market, through 02/17/2012)

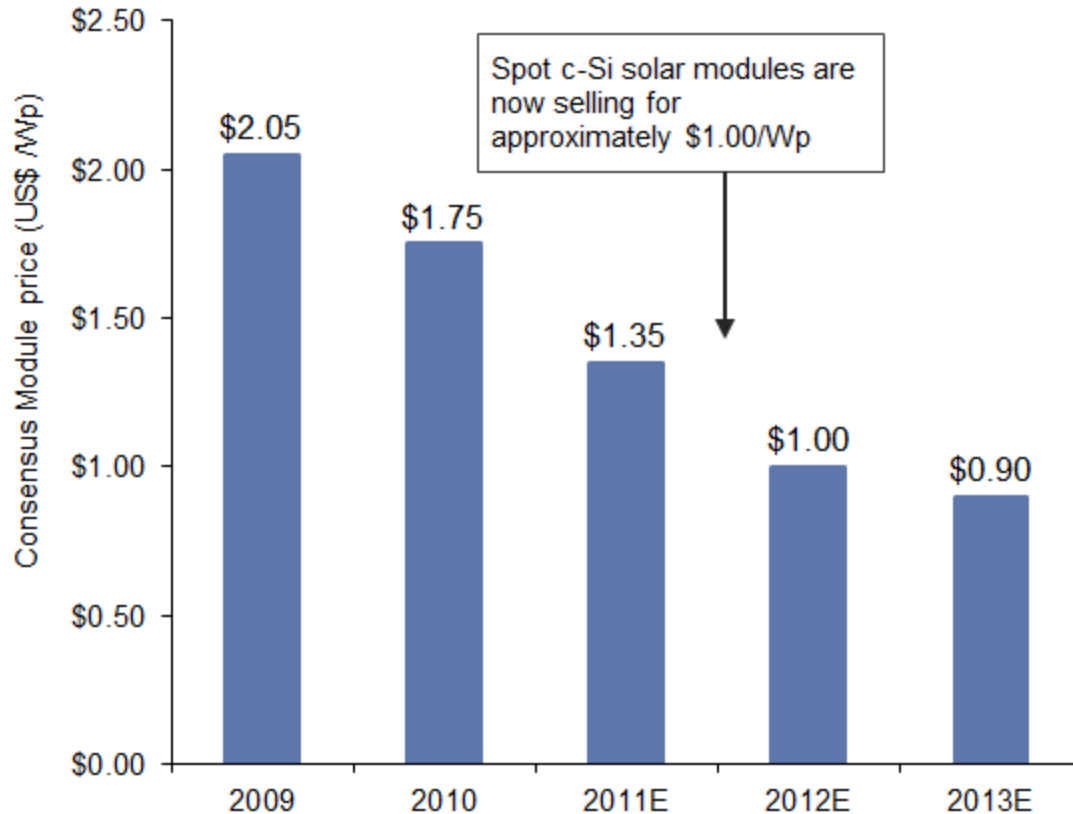
PRELIMINARY



Interview data



# MODULE ASPs

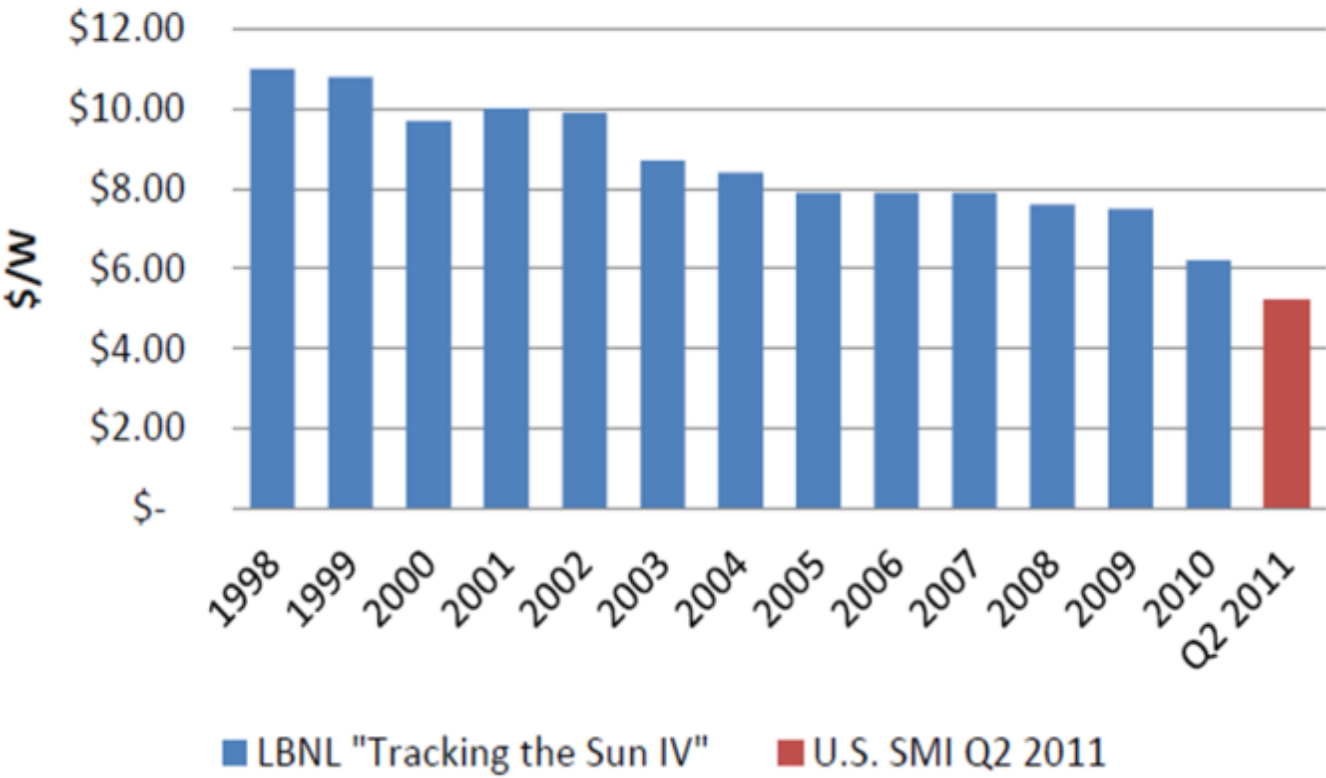


- Due to aggressive capacity expansions, the industry is currently going through a supply-demand mismatch.
- Competitive pricing leads to Chinese Tier-2 crystalline PV modules prices dropping to US\$0.96/W

# INSTALL COST IN THE U.S. MARKET



## Average Installed Price of PV



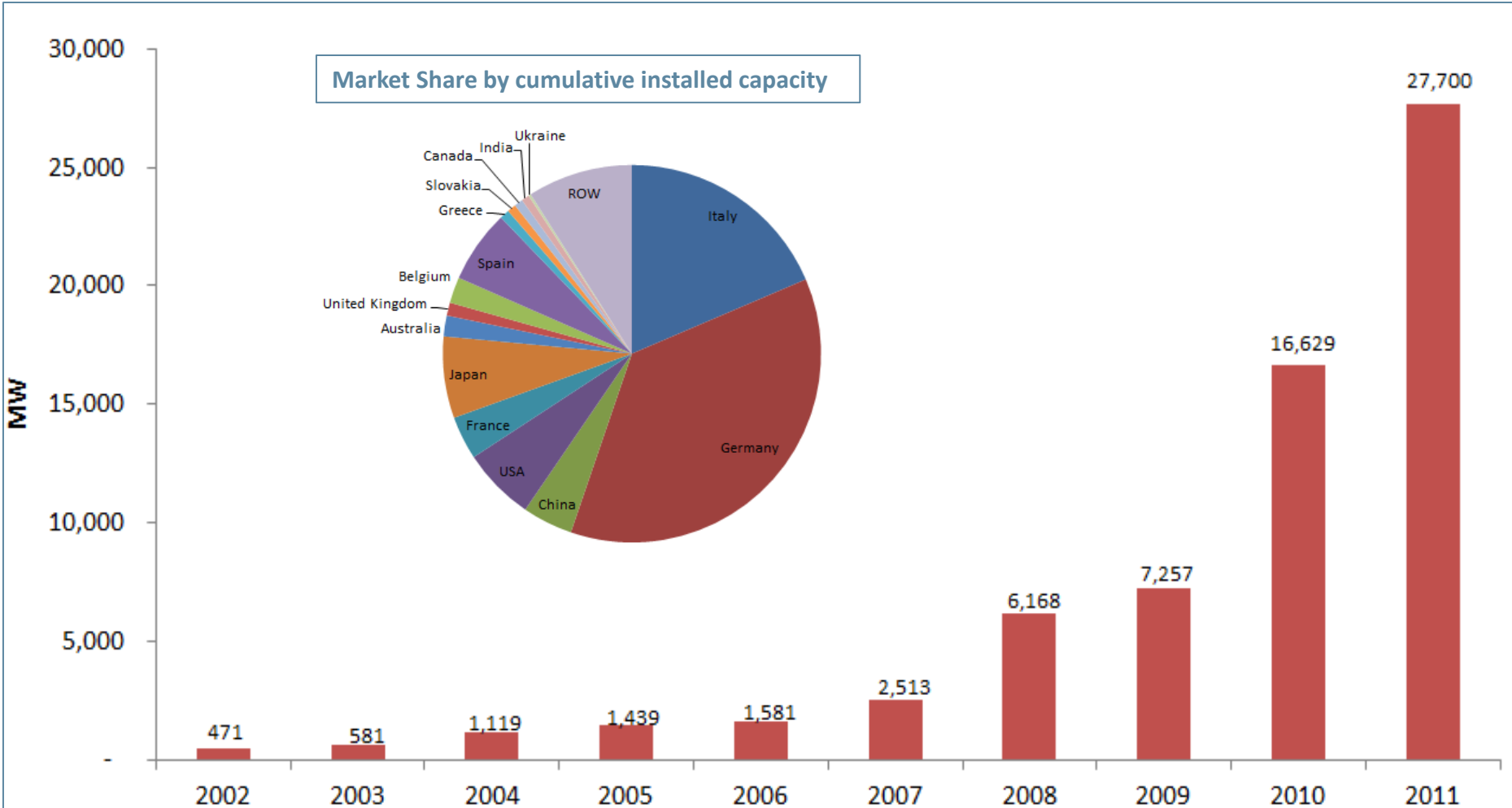
2011 saw significant decrease in install costs compared to 2010:

- Residential – 3.6%
- Commercial – 13.9%
- Utility scale – 21%



# GLOBAL PV MARKET – INSTALLED CAPACITY & MARKET SHARE

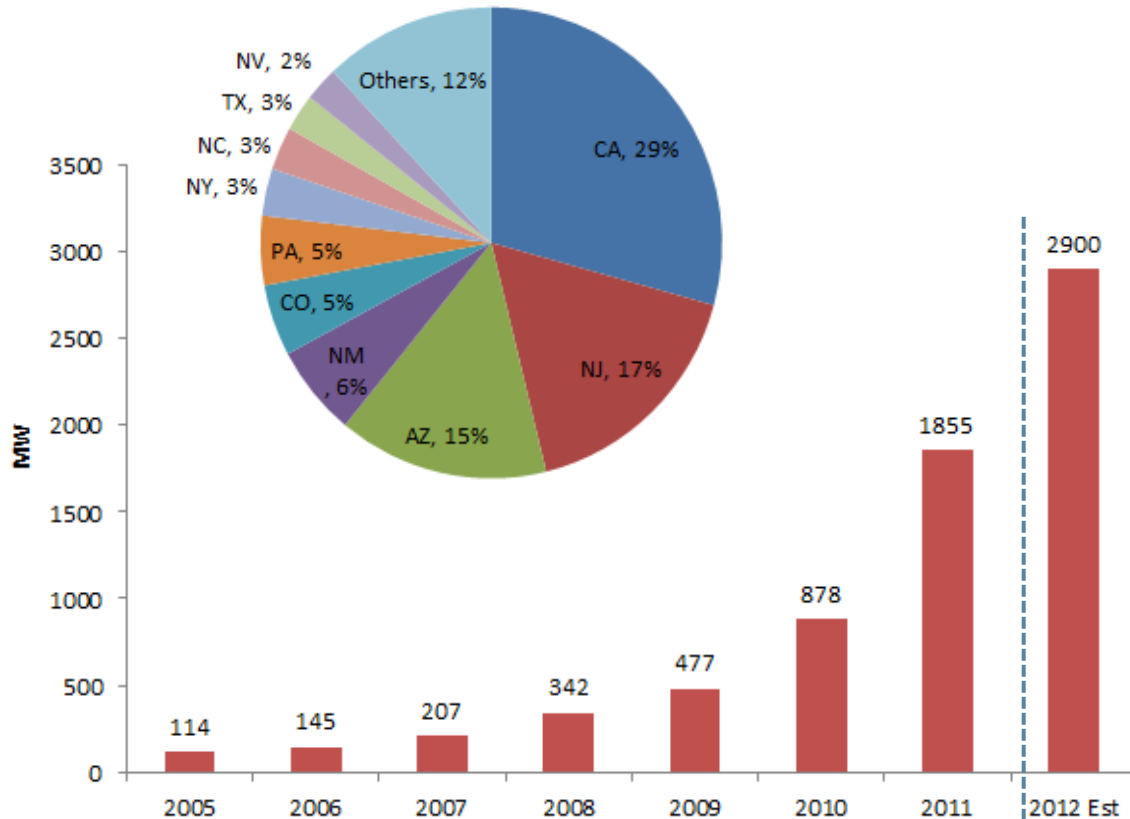
Cumulative installed global capacity is at over 67.4 GW!





# THE US MARKET - 2011 HIGHLIGHTS

Market Share by 2011 installed capacity

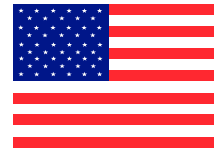


- The US market finally passed the 1GW of PV installed in a year mark!
- PV installations grew 109% in 2011 over 2010.
- The dollar amount of project finance investments reached an all time high:
  - US Bancorp and Solarcity to fund 300MW to power military housing – this is expected to be the largest residential solar project in American history!
  - Other investors included: Warren Buffet’s Berkshire Hathaway Inc. , Google, MetLife, John Hancock Life Insurance Company.

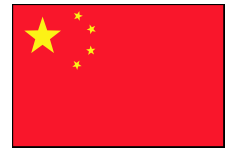
**Solar is bankable!**

# THE US MARKET - 2011 LOWLIGHTS

- **Expiration of US Cash Grant 1603 on Dec 31<sup>st</sup> 2011.**
  - Expectations: 2013 (FY '13) U.S. budget provides for an extension of the U.S. Department of Treasury's Section 1603 program
- **US-China trade: anti-dumping/countervailing duty petition against China and Chinese c-Si cell & module manufacturers (filed by Solarworld and 6 other US manufacturers in Oct 2011)**
  - March 20, 2012 - The Department of Commerce found that China has in fact unfairly subsidized its solar industry. The countervailing duties assigned to the Chinese solar vendors are as follows:
    - Trina 4.73 percent
    - Suntech 2.9 percent
    - All others 3.59 percent
- The anti-dumping case will be determined in May 2012 and this may have a bigger impact than the CVD imposed.



vs.



# GEORGIA ..... PARTLY CLOUDY



## HIGHLIGHTS:

- **Introduction of Senate Bill 401 on Feb 7 2012**
  - Bill will permit 3<sup>rd</sup> party PPAs
  - 3<sup>rd</sup> party ownership has propelled adoption of solar energy in the US and will open up the GA market.
- **2009 - Public Service Commission (“PSC”) voted unanimously to increase the cap placed on the amount of solar energy being used to generate electricity for the Georgia Power transmission grid. The cap was increased from 500 kW to 2.5 MWs**

## LOWLIGHTS:

- **Mismatch between solar resource potential and installation**
  - By 2010, total installed solar PV was less than 1MW (compared to NC which now claims about 3% of the US solar PV market share with 31MW installed in 2010)
- **GA is among a handful of SE states *without* a Renewable Energy Portfolio Standard (RPS)**
  - NC: 12.5% by 2015

Making **high-quality, high-power** solar cells and  
modules using **U.S.-based technology** at  
**affordable** costs to address the world's energy needs



**SUNIVA POWERS GEORGIA**







# GEORGIA GETS POWERED BY SUNIVA

*90 kW rooftop installation on Georgia Tech's Clough Center  
Atlanta, Georgia  
(installation by Radiance Solar)*



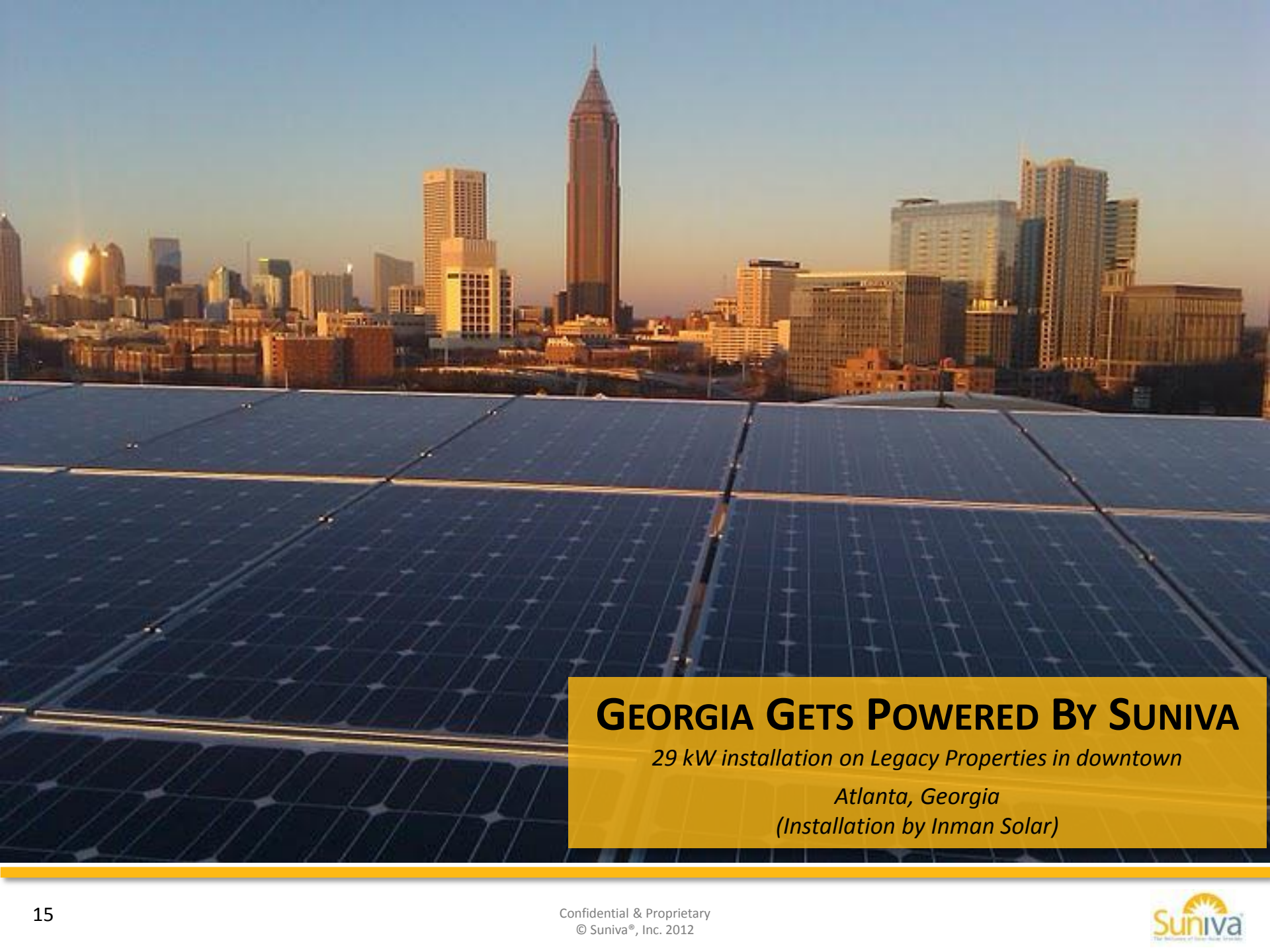
# GEORGIA GETS POWERED BY SUNIVA

*1 MW grid-connected ground mount installation,  
Georgia's largest privately owned PV system*

*Blairsville, Georgia  
(Installation by ESA Renewables)*







## **GEORGIA GETS POWERED BY SUNIVA**

*29 kW installation on Legacy Properties in downtown*

*Atlanta, Georgia*

*(Installation by Inman Solar)*



# GEORGIA GETS POWERED BY SUNIVA

*1.2 MW canopy installation at MARTA's Laredo bus station  
(2<sup>nd</sup> largest solar canopy at a transit system in the US)*

*Decatur, Georgia*

*(Installation by New South Construction)*

