

# Agenda

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1	2:30-3:00	<b>Speaker:</b> Mr. Yiyu Wang (CFO) <b>Topic 1:</b> Business Updates and Financial Performance <b>Topic 2:</b> Status of Downstream Business in China and its Financing Demand
2	3:00-3:20	<b>Speaker:</b> Mr. Robert Petrina (VP of YGE & MD of Yingli US) <b>Topic:</b> Global Market Update
3	3:20-3:30	<b>Speaker:</b> Mr. Brian Grenko (VP of Yingli US) <b>Topic:</b> Technology Update
4	3:30-4:00	<b>Q&amp;A Session</b>



Power Your Life

# Yingli Green Energy 5<sup>th</sup> Annual Global Investor Day

2:30 – 4:00 pm  
October 21<sup>st</sup>, 2014

Room S110, Las Vegas Convention Center  
Las Vegas, Nevada, USA

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## Safe Harbor Statement

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This presentation contains forward-looking statements. These statements constitute “forward-looking” statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended, and as defined in the U.S. Private Securities Litigation Reform Act of 1995. These forward-looking statements can be identified by terminology such as “will,” “expects,” “anticipates,” “future,” “intends,” “plans,” “believes,” “estimates,” “target” and similar statements. Such statements are based upon management's current expectations and current market and operating conditions, and relate to events that involve known or unknown risks, uncertainties and other factors, all of which are difficult to predict and many of which are beyond Yingli Green Energy’s control, which may cause Yingli Green Energy’s actual results, performance or achievements to differ materially from those in the forward- looking statements. Further information regarding these and other risks, uncertainties or factors is included in Yingli Green Energy’s filings with the U.S. Securities and Exchange Commission. Yingli Green Energy does not undertake any obligation to update any forward-looking statement as a result of new information, future events or otherwise, except as required under applicable law.

## Brief Snapshot

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Stock Ticker

YGE, listed on NYSE

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Date of IPO

8<sup>th</sup> June 2007

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Market Cap(US\$)

497 million, as of 17 October 2014

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Shares Outstanding

173 million ordinary shares (Basic)

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Cumulative Shipment(GW)

Over 10GW, as of 30 June 2014

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Downstream Pipeline(GW)

1.4GW, as of 30 June 2014

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Capacity(MW)

Total nameplate capacity of 2,450MW

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Staff Number

Over 19,000 by the end of 2013

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Company HQ & Branch Offices

HQ in Baoding, China

Global presence with more than 30 regional subsidiaries and branch offices.

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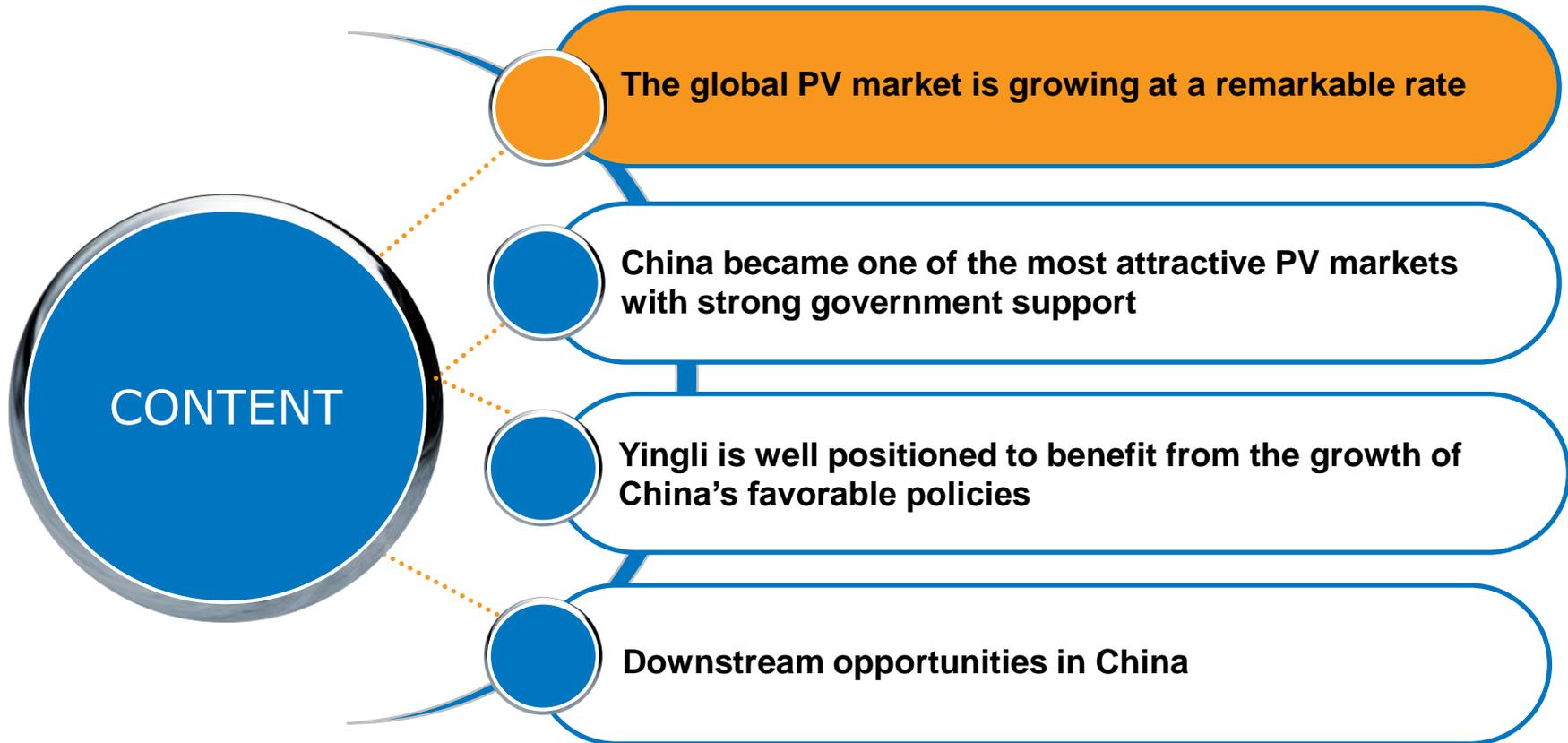


Power Your Life

## Business Updates & Financial Performance

*Yiyu Wang*  
*Chief Financial Officer*

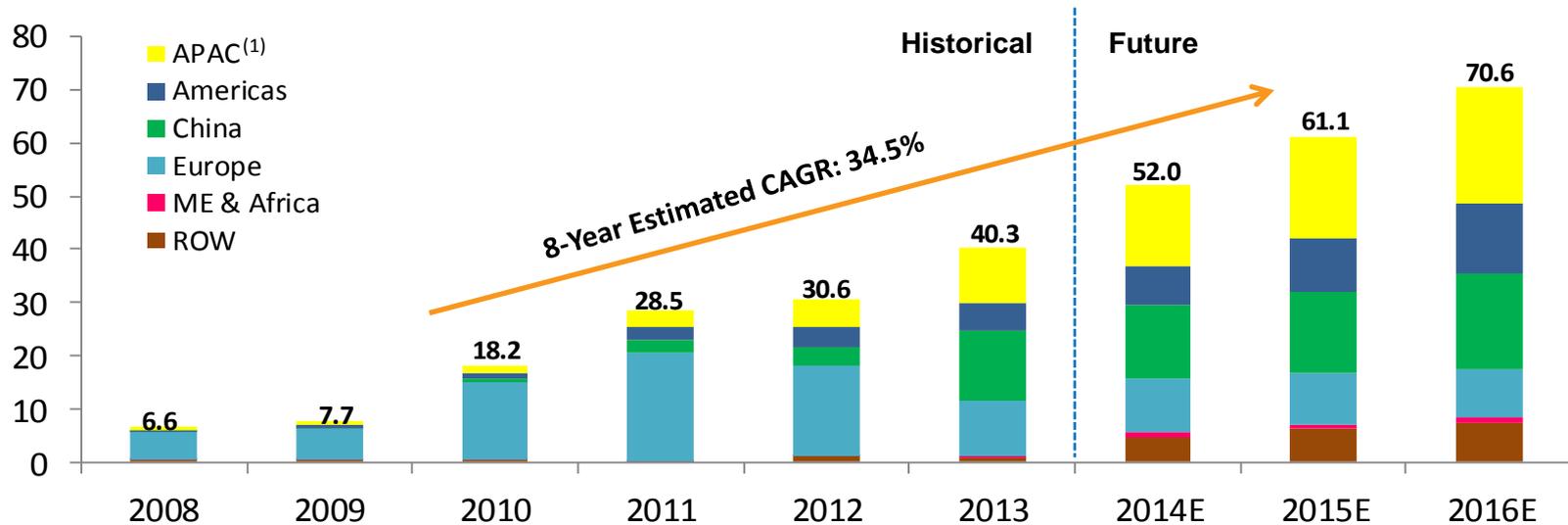
# Business updates



# The global PV market is growing at a remarkable rate, mainly driven by China, APAC and Americas

World clean energy investment in the first three quarters of 2014 was 16% ahead of the same period of 2013, at USD 175.1 billion, making it almost certain that 2014 will produce a bounce-back in dollars invested after two years of decline.

## Global PV Market Demand(GW)



As % of global PV market

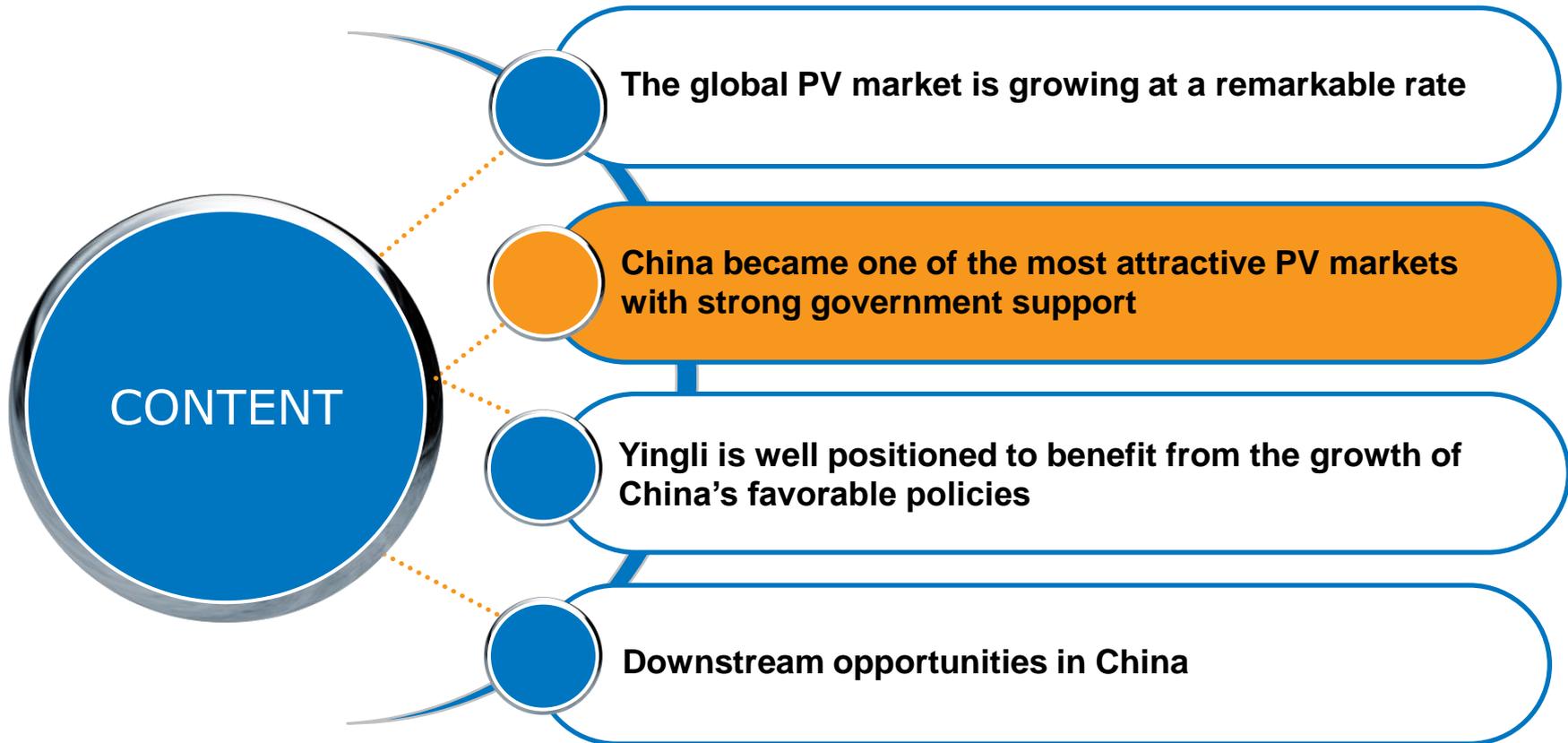
	2008	2009	2010	2011	2012	2013	2014E	2015E	2016E
China	1%	2%	3%	9%	12%	32%	27%	25%	26%
APAC <sup>(1)</sup>	8%	10%	9%	11%	17%	26%	29%	31%	31%

### Demand is strong and more diverse

- 2014-2016: The global PV market is expected to grow at a remarkable rate, especially in China, APAC and Americas. Since 2013, China and APAC accounted more than 50% of the global PV market.
- New markets mentioned above continue to take a significant share of global PV market and growth from these markets continue to offset European slowdown.
- Yingli's sales distribution was generally in line with geographic breakdown.

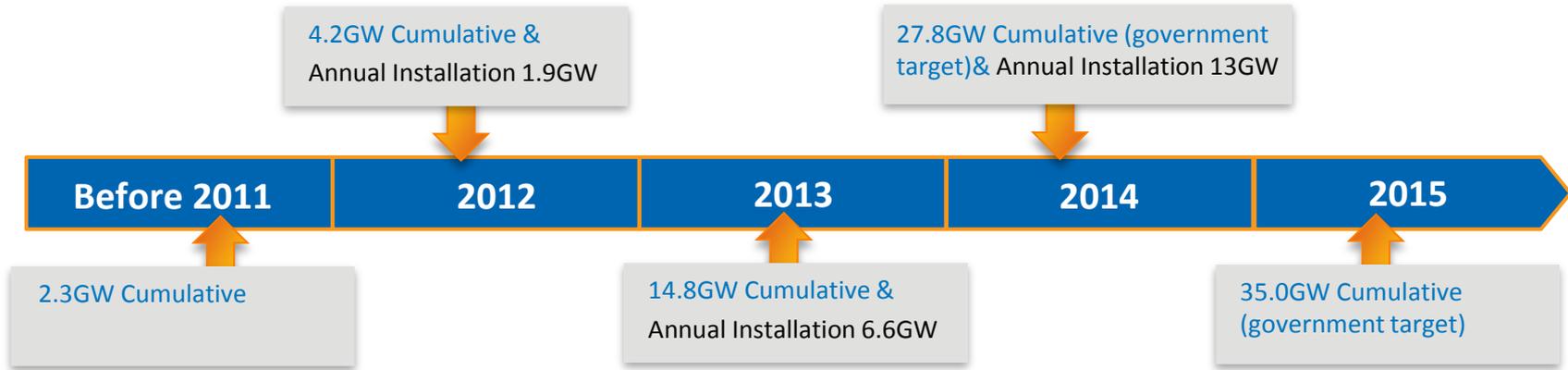
(1)APAC: the statistics refer to the countries and regions out of China in Asia and Pacific ( i.e. Japan)

# Business updates

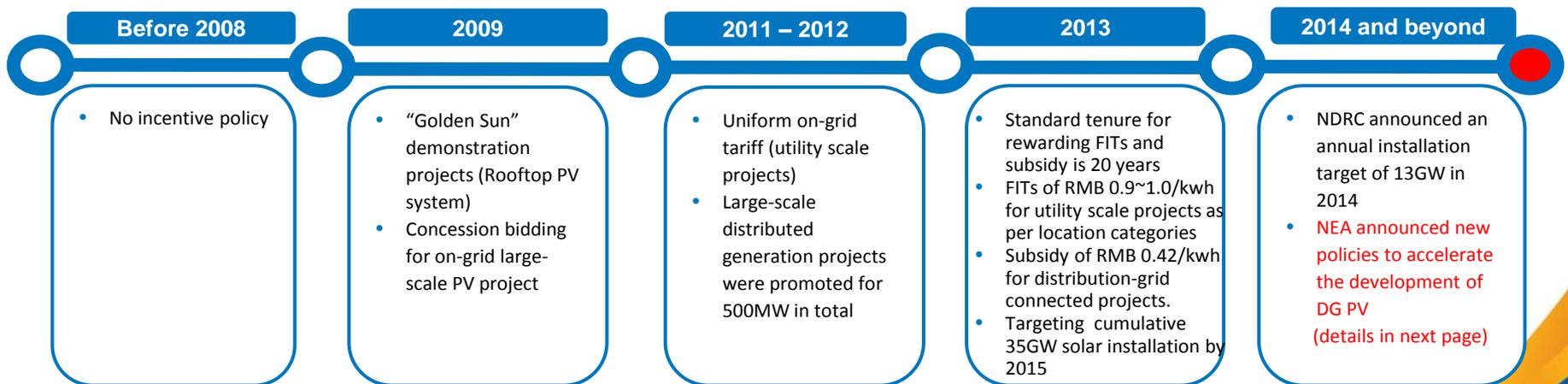


# China became one of the most attractive PV markets with strong government support(1/2)

## 1 Fast growing solar market with magnitude of potential growth and strong government support



## 2 Strong government initiatives to manage pollution and focus on developing “green” economy



# China became one of the most attractive PV markets with strong government support(2/2)

New policies announced by China NEA's in September 2014, reiterated the importance of DG development

## Rights

- To strengthen the planning for distributed PV application. **Defining the primary responsibilities of local government.**
- To encourage various forms of DG applications, fully utilize the qualified roof top(including accessory unused space) resources. **Extending the location conditions for DG projects**
- To establish a simple, efficient, standardized working mechanism for project filing and management. **Streamlining interconnection procedures for faster grid connection**

## Finance

- The PV projects with a capacity below 20MW can choose one out of two modes , "self-consumption plus remainder sold to the grid" or "fully connected to the grid" in application stage. **Removing the uncertainties on future revenue of DG projects and making the project financing less risky to commercial banks.**
- To develop more innovative financing structures of DG projects. **Allowing potential options include loan guarantees, leasing models, strategic partnerships between banks and PV installers, and increased support for personal/business loans.**

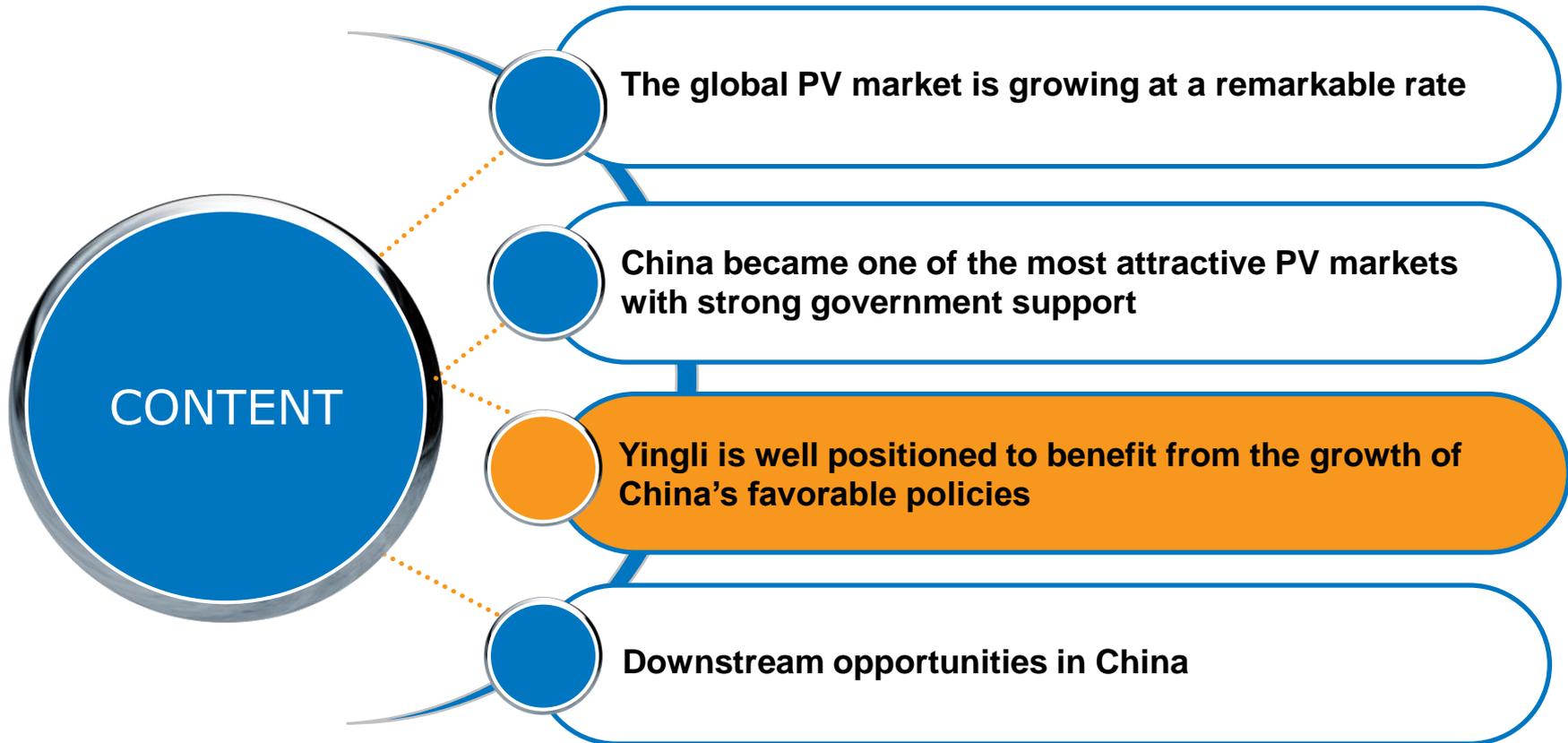
## Rules

- To strengthen the safety assessment and safety management of PV products, PV power generation projects, and installation facilities. To standardize high quality engineering and safety mechanisms for new installations. **Improving engineering standards and quality control of DG projects**
- The grid enterprises should settle the electricity charging and disburse the national subsidies to DG projects owners on a monthly basis (or as agreed by both parties). **Enhancing the payment and subsidies mechanisms for DG projects.**

## Law

- According to the "renewable energy law" , the grid enterprises will be amerced if they are not in accordance with the provisions of grid connection and acquisition for PV power. **Defining the responsibility of NEA to strengthen the market supervision .**

# Business updates



# Yingli is well positioned to benefit from the growth of China's favorable policies(1/2)

## Superior product quality & high brand recognition

High global brand recognition, with a leading track record for supplying modules of superior quality for major projects across the world.

## Strong footprint coverage in China

Well-established manufacturing and sales channel with over 19,000 of employees, 4 manufacturing bases, 20 subsidiaries across China and 2 national Key Labs.

## Earlier Entrance

Pioneer in China PV market with deep understanding of local market since 2002.

## Experienced team

Experienced team for PV projects development in respect of project sourcing, consultation & approval process, project design and installation, project financing, system monitoring & maintenance, etc.

## Main Competitive Advantages

### Abundant reserves

Abundant reserve for PV projects pipeline of approximately 1.4 GW at different approval stages across a dozen of provinces in China.



### Versatile business models

Versatile business models such as EPC, JV with local companies(e.g. Datong Coal Mine Group) and fund management company(e.g. Shanghai Sailing Capital Investment Fund).

# Yingli is well positioned to benefit from the growth of China's favorable policies(2/2)

## Remarkable achievements in downstream

### In the first half of 2014

- Developed 155 MW of PV projects in the first half of 2014, among which a 15 MW project has completed construction and grid-connection.

### In the third quarter of 2014

- Started construction for additional 185 MW of PV projects.
- In the aggregate, 320 MW of PV projects are under construction by the end of September 2014.

### For the year of 2014

- Expects to develop approximately 400 MW to 600 MW of projects in China by the end of 2014.



### Projects in the first half of 2014

- 3 projects with total capacity of 75 MW in Hebei province
- 1 project of 60 MW in Guangxi province
- 1 project of 20 MW in Sichuan

### Projects in the third quarter of 2014

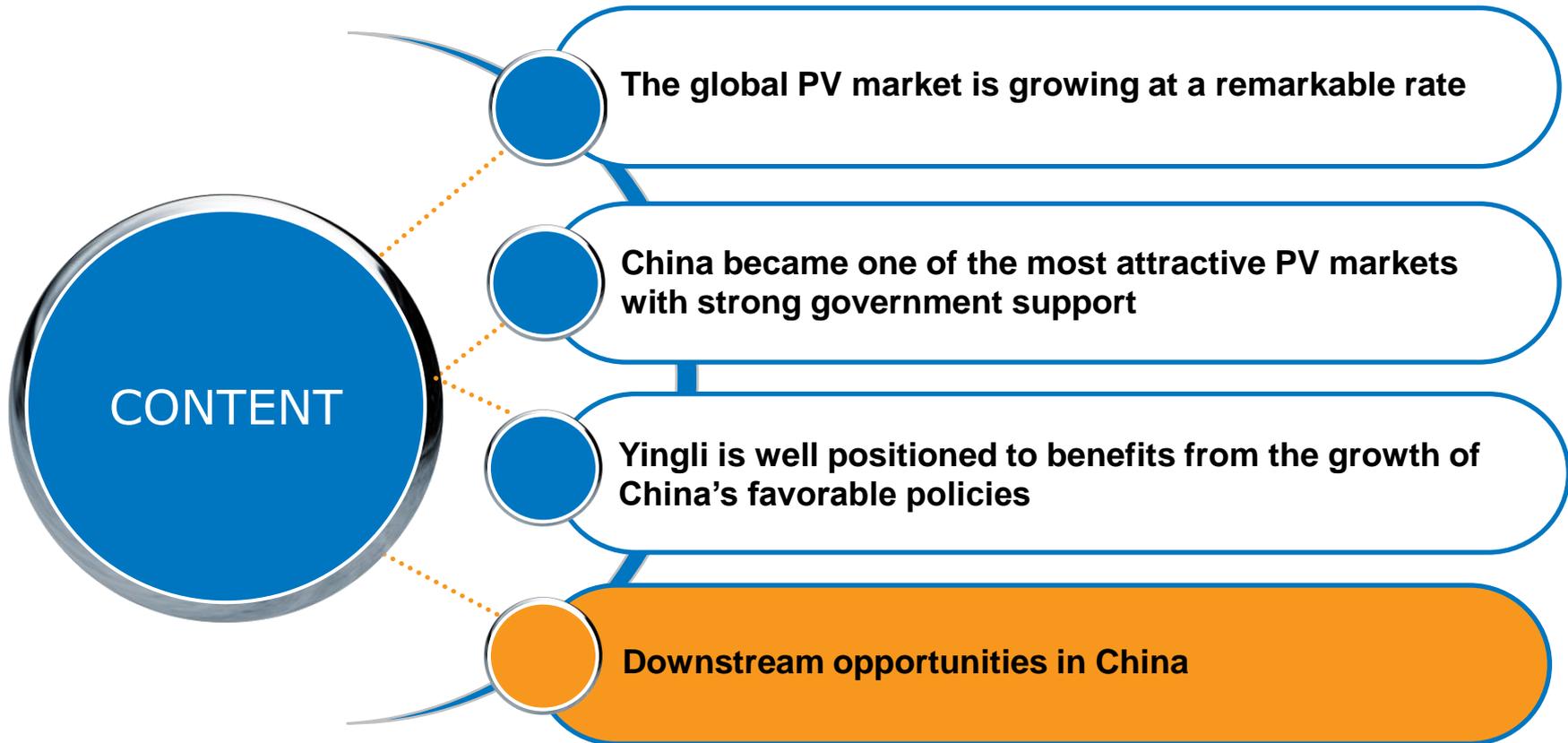
- 3 projects with total capacity of 120MW in Hebei province
- 1 project of 50 MW in Shanxi province
- 1 project of 10 MW in Yunnan province
- 1 project of 5MW in Guangdong province

## Accelerated approval after NEA's new policy on September 2<sup>nd</sup>, 2014



In September 2014, Yingli has received approval of **additional 120 MW** of distributed generation PV projects from Hebei provincial NDRC under the new policy. Yingli is expected to obtain more additional quota for qualified projects in the coming quarters.

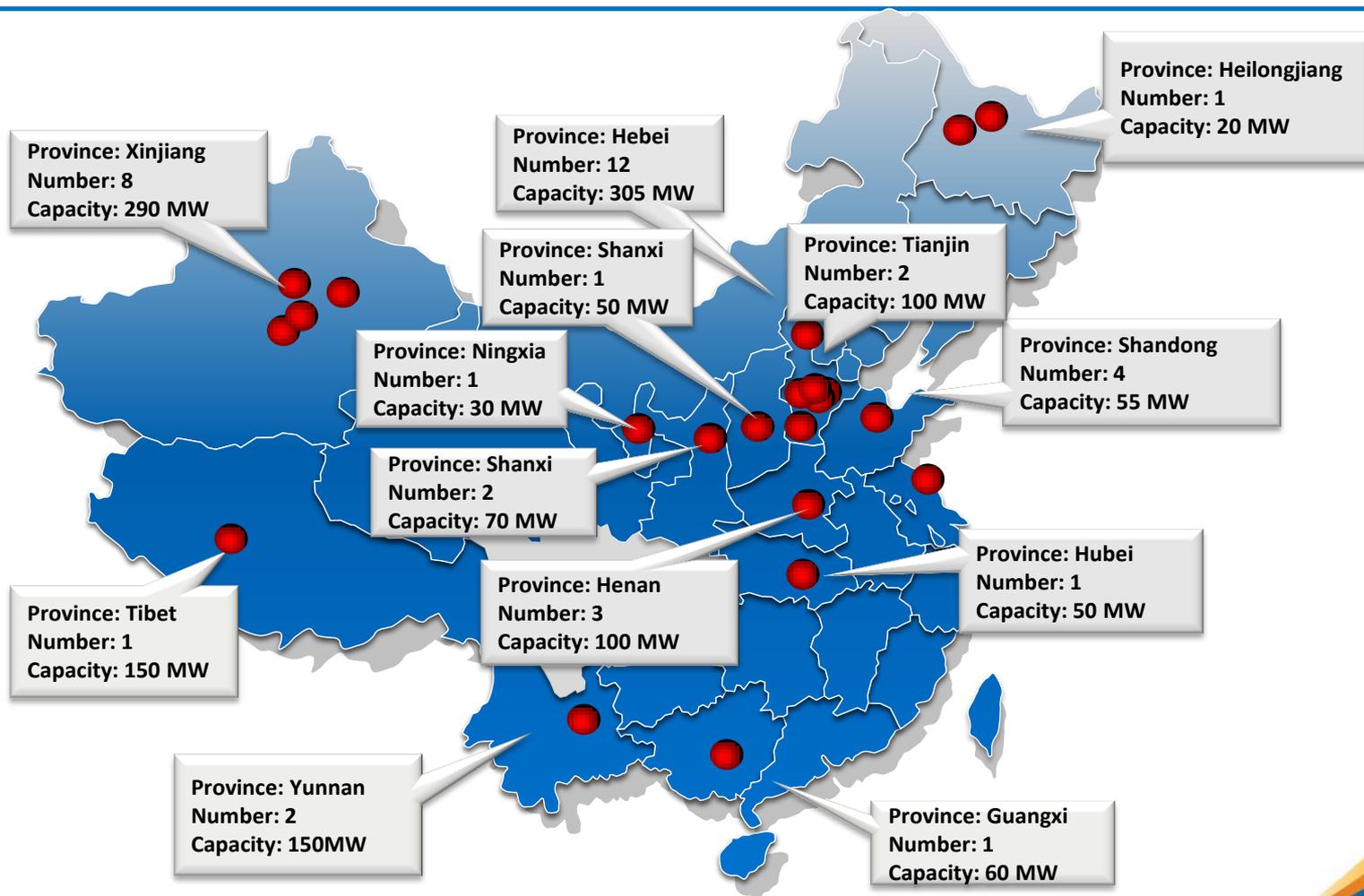
# Business updates



## Downstream Opportunities in China(1/2)

### Yingli's robust downstream pipelines in China

- China will remain an attractive market for solar driven by continued strong government support and improving solar economics.
- In order to further penetrate the market and capture the opportunities of PV downstream business, Yingli has set up **25 offices** at provincial level.
- Yingli has in the aggregate approximately **1.4GW of PV projects pipeline** at different approval stages across a dozen of provinces in China. The majority is located in Northeast China, such as Hebei, Tianjin and Beijing.



# Downstream Opportunities in China(2/2)

## Versatile business model for downstream

- Creative business development strategy to minimize capital outlay and optimize financial return
- Multiple revenue streams to diversify income and enhance profitability of the business

### Model

- EPC
  - Minimal investment with less risks
- Form JV with minority shareholding
  - JV to build and hold/sell solar projects
- YGE to build and sell solar projects to investment companies
- Form JV fund
  - JV fund to invest, build and hold solar projects

### Partners

Energy and  
Resource  
Companies



Datong Coal Mine

Energy and  
Resource  
Companies



中国核工业集团公司  
China National Nuclear Corporation

Renewable  
Energy  
Investment  
Companies



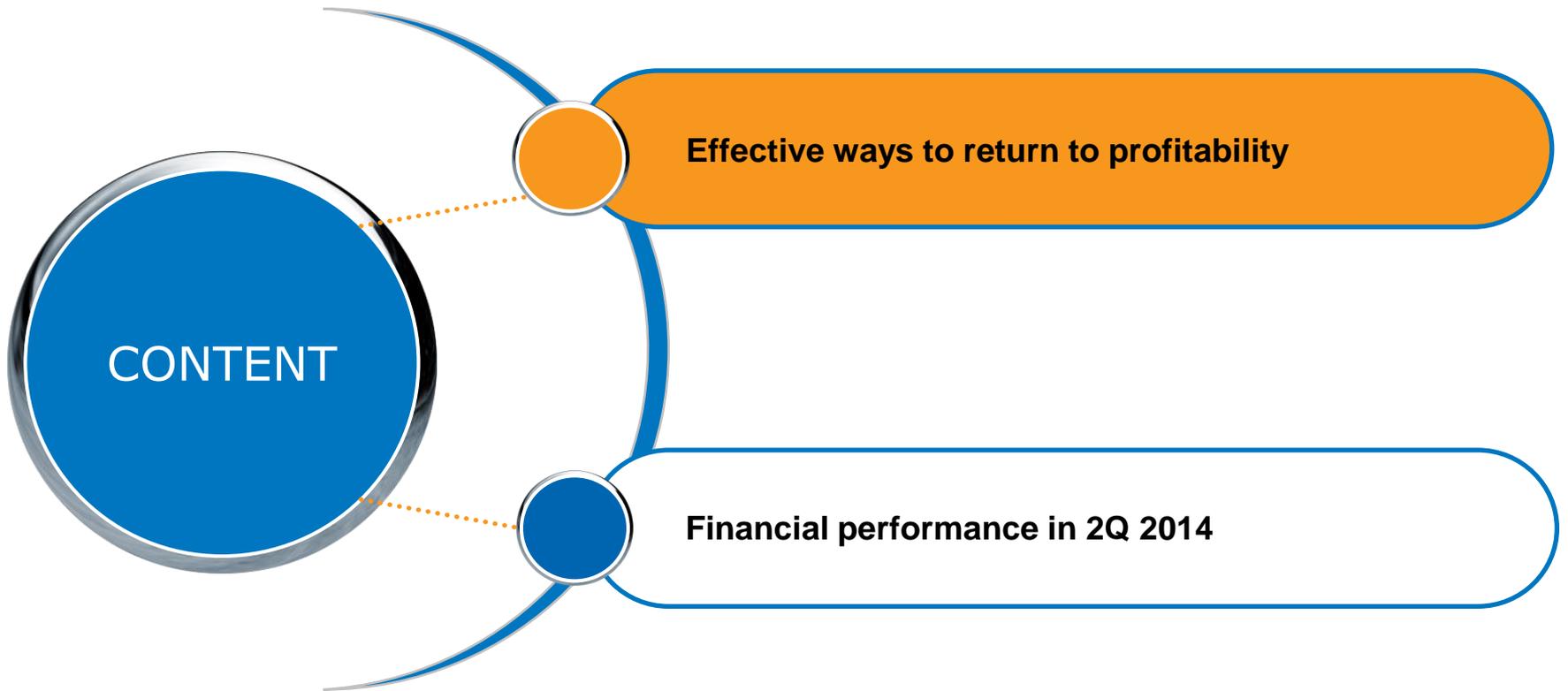
Fund



### Showcase

- 10 MW of utility-scale project located in Tashan, Shandong province
- 25MW of DG project located in Pangang, Sichuan province
- Intention to acquire at least 300 MW of large-scale solar energy systems from 2014 to 2016.
- Mainly focus on investment in PV projects from Yingli
  - Acquired 15MW of grid-connected PV power project located in Guangzong, Hebei province

# Financial Performance



# Effective ways to return to profitability(1/3)

## 1 Cost reduction initiatives

Vertically integrated business model

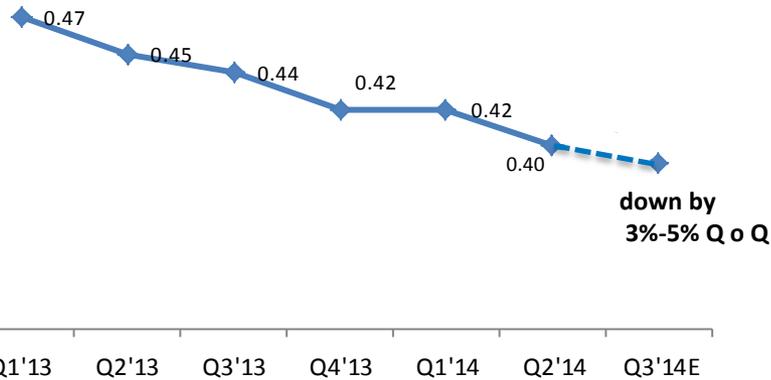
Improved manufacturing process

Effective procurement and inventory management

Improved cell efficiency

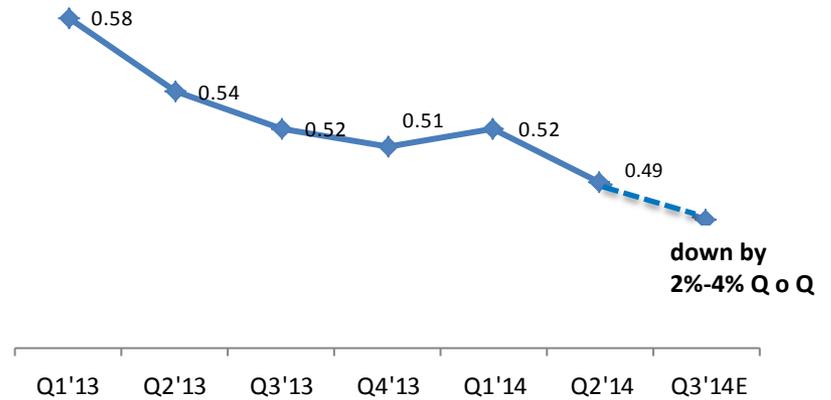
### Overall non-silicon cost (Mono & Multi)

Unit: US\$/W



### Overall module cost (Mono & Multi)

Unit: US\$/W



Note: Excluding the impact of third party cells

# Effective ways to return to profitability(2/3)

## 2 Operating expenses control

### Structural Adjustment

- Restructure and streamline the functionality for international subsidiaries, especially Europe. We plan to reduce European OPEX significantly

### Cost Management

- More control of budget management
- Improve the cost control system
- Continue to improve employees' cost consciousness

### Expenses Control

- Further reduce marketing expenses by 10-15%
- Further reduce interest expenses through repayment debt and deleverage

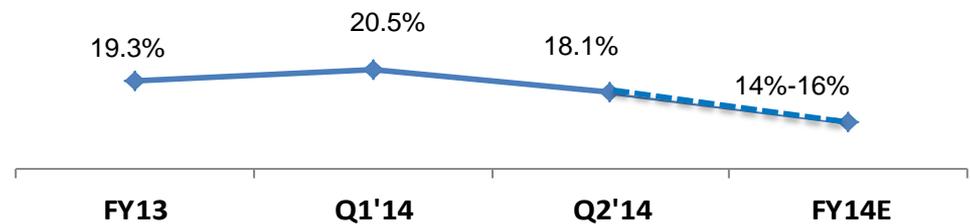
### Selling expenses

as % of total revenue is expected to decrease



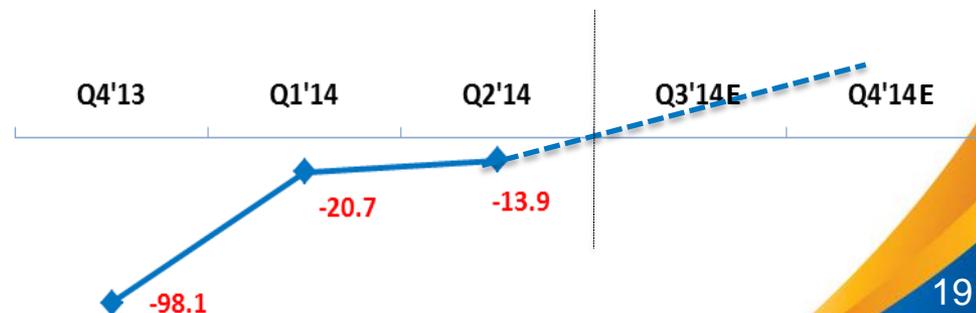
### Operating expenses

as % of total revenue is expected to decrease



### Operating income (US\$ mm)

Paving the path to operating profitability



# Effective ways to return to profitability(3/3)

## 3 Improve cash flow and on-going access to capital

### Improve Working Capital Efficiency

#### Receivables

- Improve balance between credit policy and sales

#### Procurement

- Extend payable periods through negotiations and banking arrangements

#### Inventory

- Further improve raw material consumption planning to increase turnover rate
- Better improve inventory management, such as software upgrade for inventory management

### Capex Planning

- Minimize capital expenditure, including maintenance capex and using OEM instead of self capacity expansion

### Prudent Financing Strategy

- Healthier debt structure, such as creative and prudent financing with banks to deleverage
- Alternative financing, such as supply-chain financing and leasing, etc.

### Improve working capital management

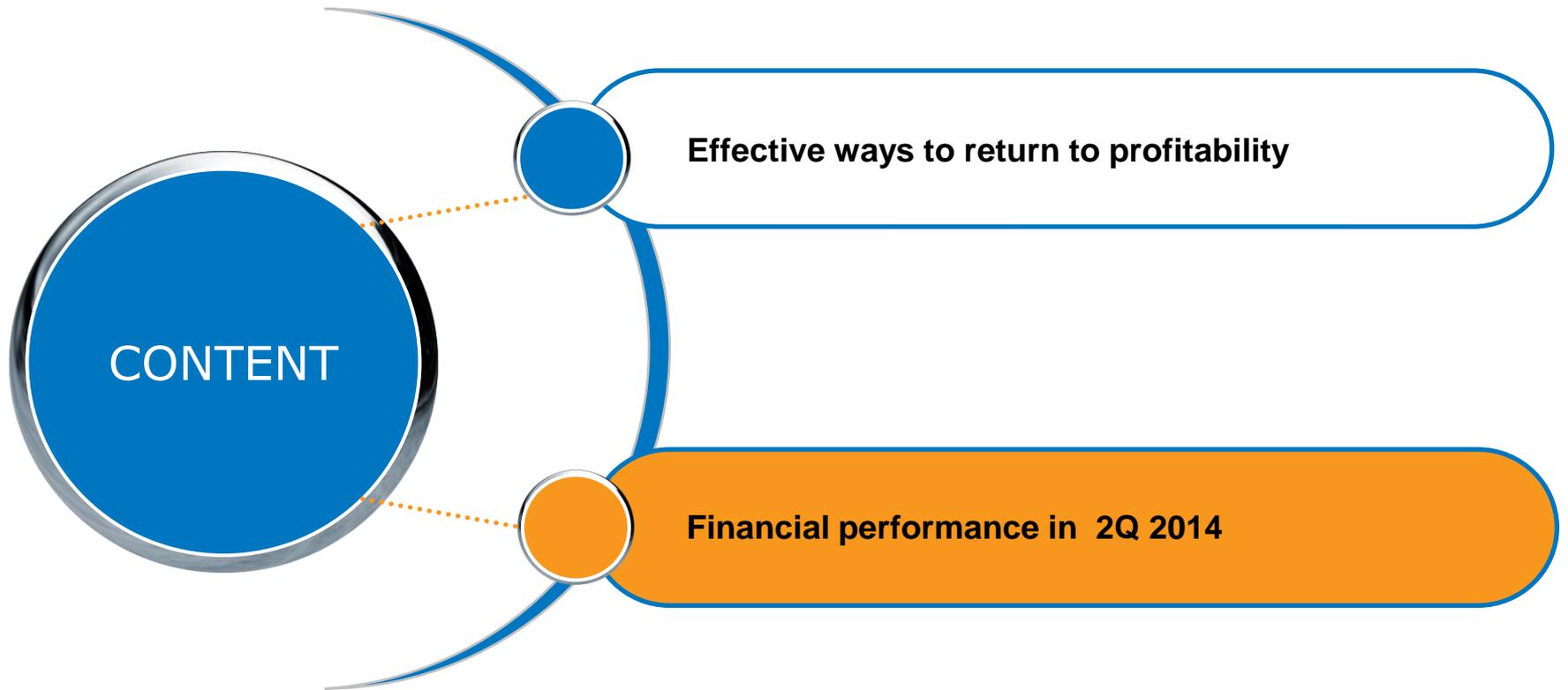
	FY2013	Q1'14	Q2'14
Account Receivables Days	125	155	132
Accounts Payable Days	170	215	170
Inventory Days	65	85	72

### On-going access to capital

Unutilized Credit Facility as of August 27<sup>th</sup>, 2014



# Financial Performance



## Financial performance in 2014

Currency: US\$	Q1'14A	Q2'14A
Revenues(mm)	432.2	549.5
Cost(mm)	364.4	463.7
Overall Gross Profit(mm)	67.8	85.8
Overall Gross Margin	15.7%	15.6%
Gross Margin for Sales of PV Modules	16.8%	16.2%
OPEX as a % of total Revenues	20.5%	18.1%
Operating Income (mm)	(20.7)	(13.9)
EBITDA(mm)	35.7	46.5
Net Loss (mm)	(55.0)	(46.0)
Loss Per Share	(0.35)	(0.26)



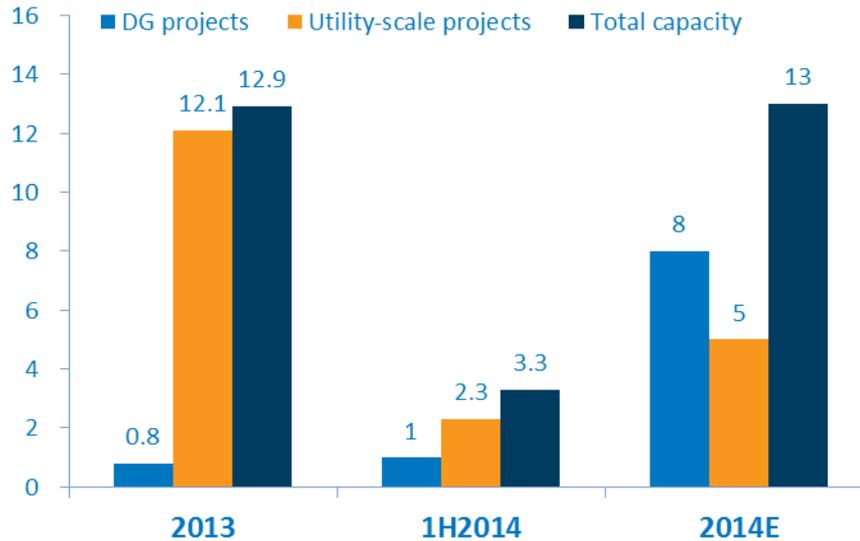
## Status of downstream business in China and its financing demand

*Yiyu Wang*  
*Chief Financial Officer*

# Sustainable growth breeds huge financing demand

## Sustainable growth

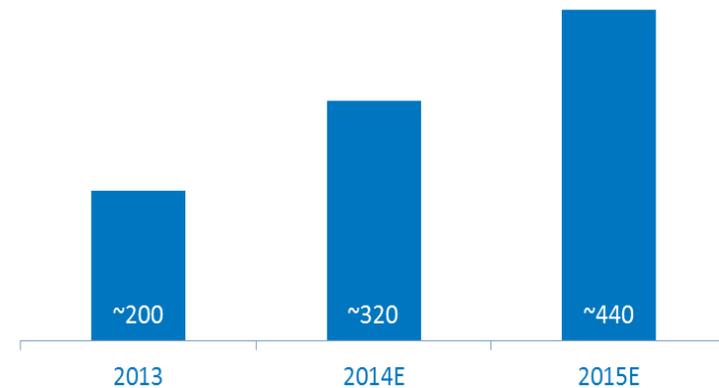
New installed PV capacity in China (GW)



- Instead of utility segment, DG is the main focus of China government and will take a significant portion of the PV market in China in 2014
- DG has a great potential in the second half of 2014 and following years, although a slower than expected development in the first half of 2014.
- Total investment of PV industry in China hit a new record with 12.2 billion USD in the third quarter of 2014, compared to 8 billion USD in the second quarter of 2014 and the 7.5 billion USD in the second quarter of 2013.

## Huge financing demand and alternative financing solutions driven by DG business development

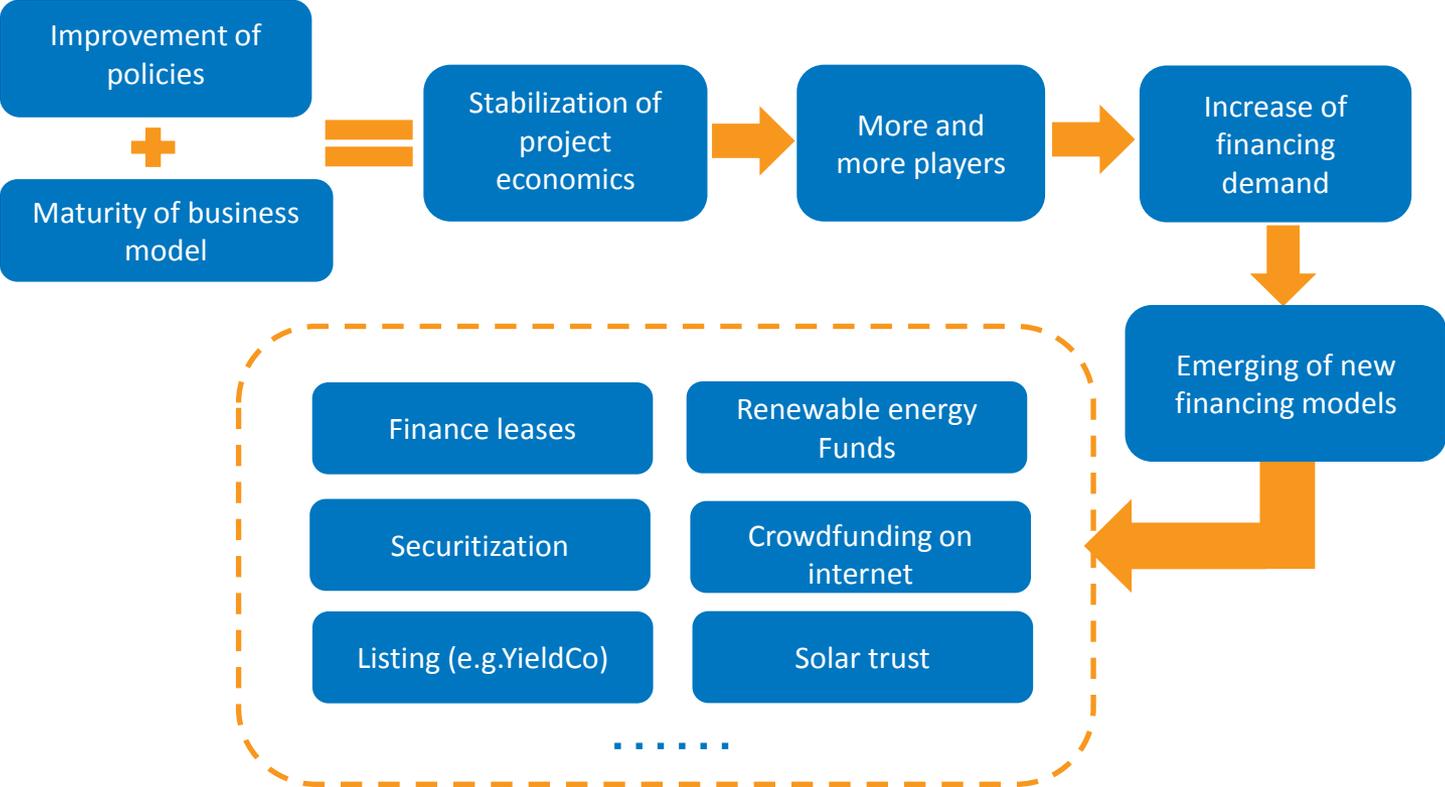
Cumulative investment in downstream business (RMB Billion)



- As the rapid development of downstream business in China, there is a huge financing demand.
- The new business model of DG needs more diversified financing solutions besides bank loans.
- More non state owned companies started to invest downstream business, which was mainly dominated by state owned utility companies before 2013. Non state owned companies accounted for ~40% of the market by the end of 2013 and the number is expected to increase to more than 60% in 2014.

# Innovative financing models provide a path to accelerate the growth

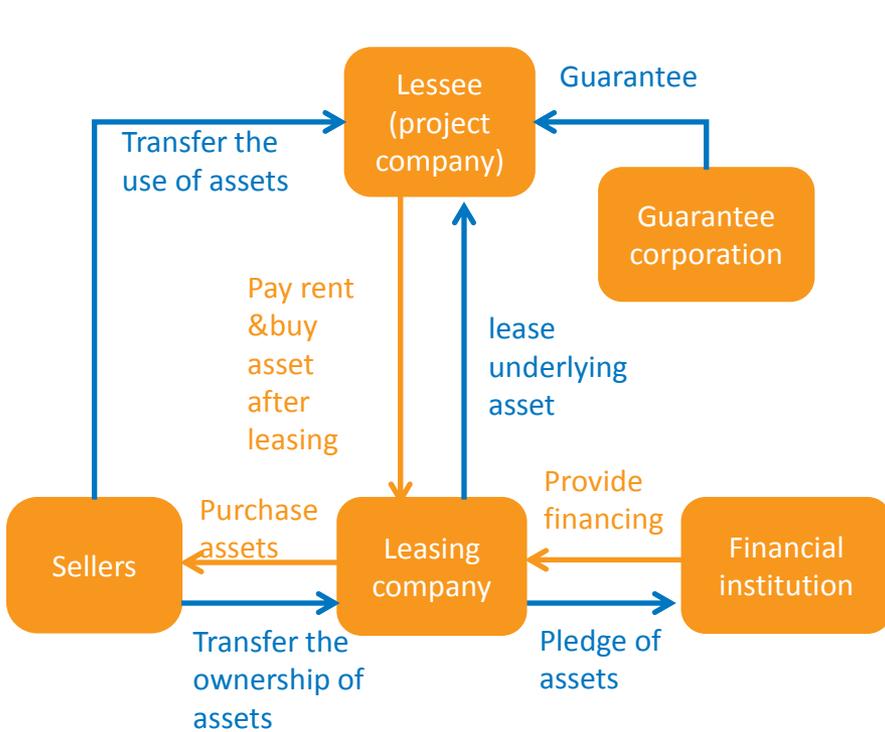
Non state owned companies have less access to bank loans compared to state owned companies.



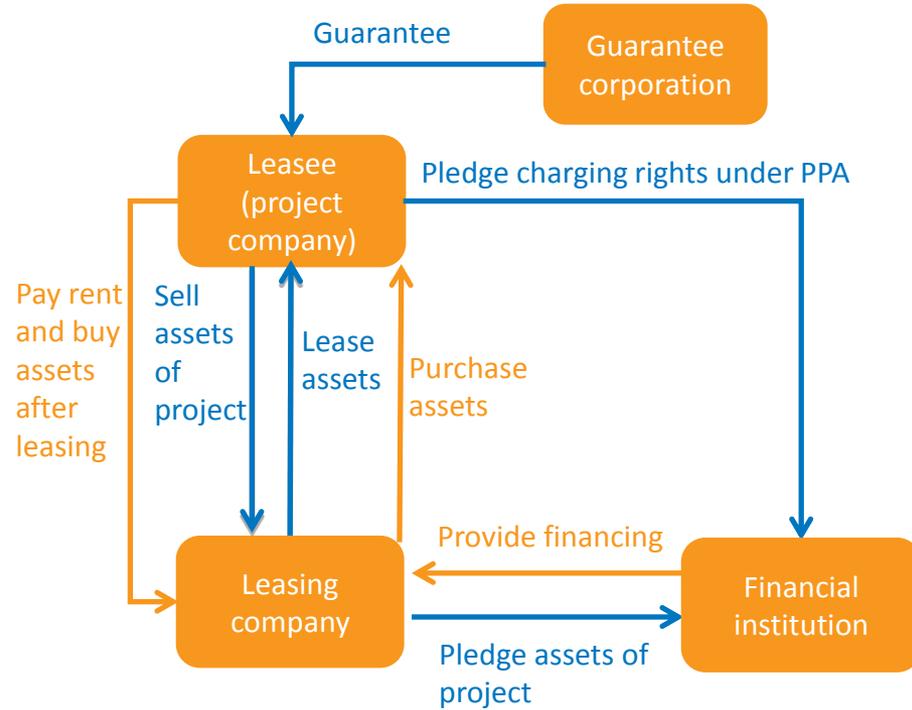
# The development of new financing models – Finance leases

Finance leases: Financial leasing (before project construction) & sale-leaseback (after project construction)

Note: Yingli has obtained the license for finance leases.



**Financial leasing**  
e.g. 20MW project in Baoding, leasing ~70% of total investment

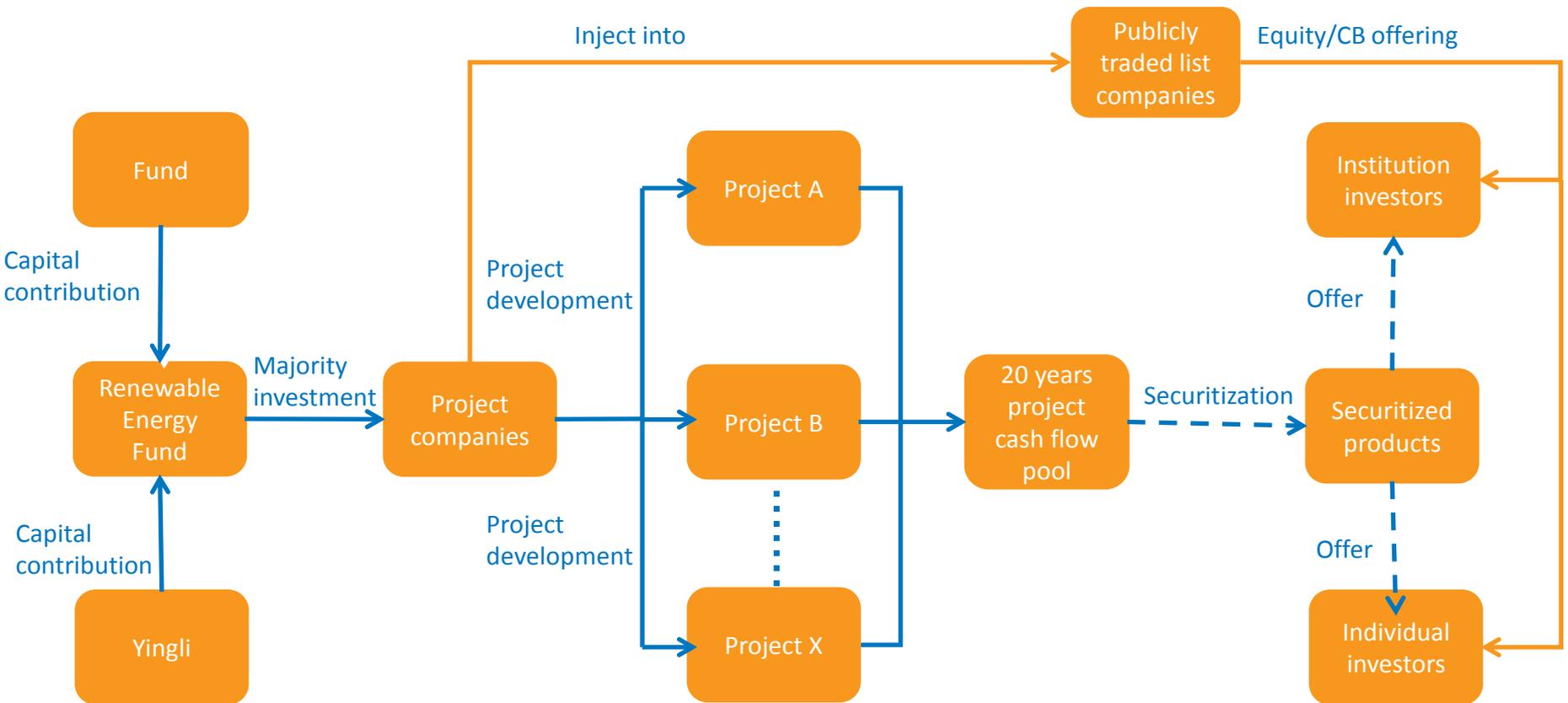


**Sale-leaseback**  
e.g. 10MW Golden Sun project in Baoding, leasing ~40% of total investment

**Bottlenecks for finance leases in China downstream business**

- 1) Concerns on uncertainties of the projects operating, FIT settlement and etc.
- 2) Insufficient long-term (5-10Y) fund available for financial institution excepts strategic banks. Leasing is usually 1-3Y.

# The development of new financing models - Renewable energy fund (1/2)

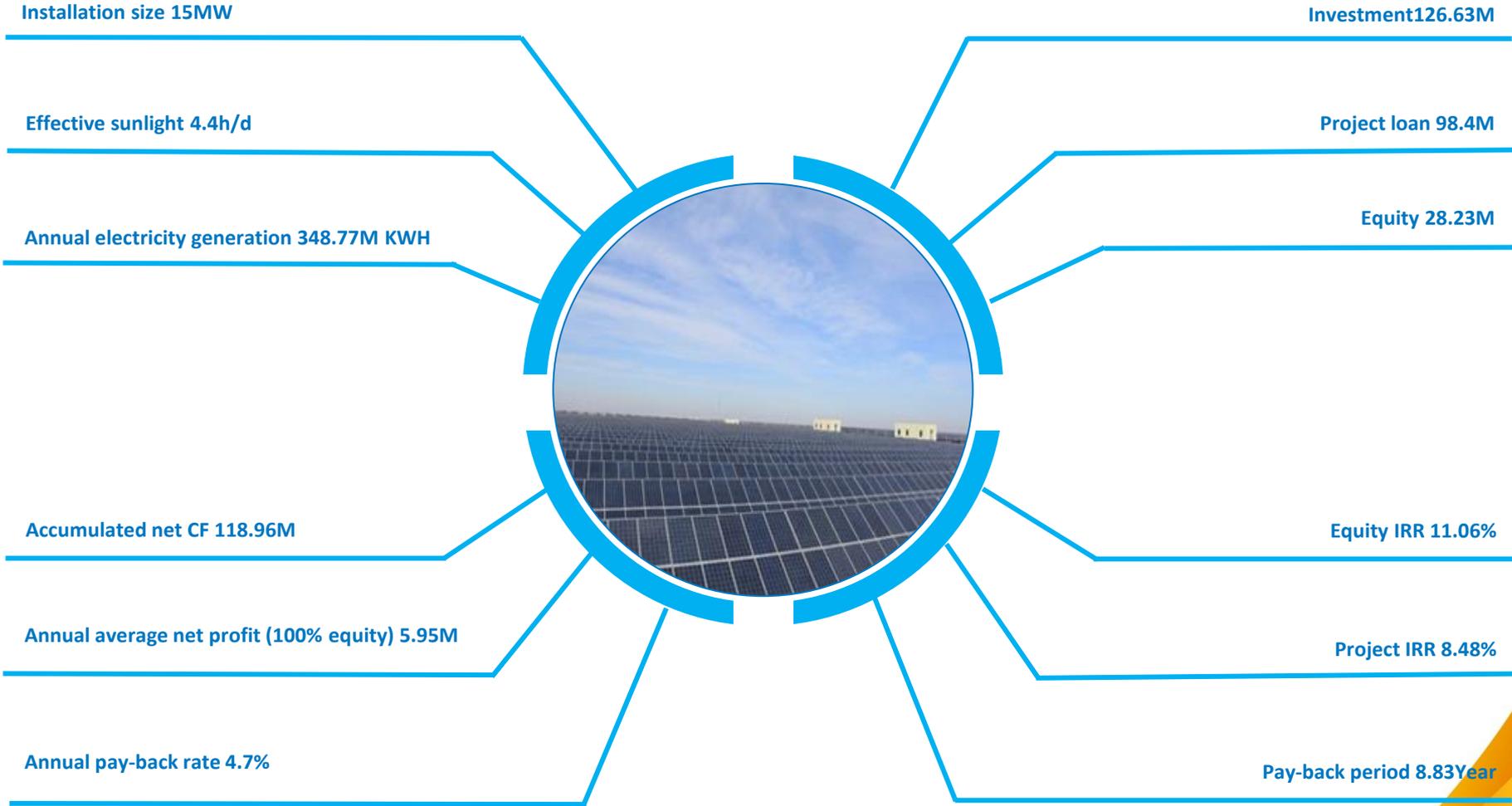


-----> Option A

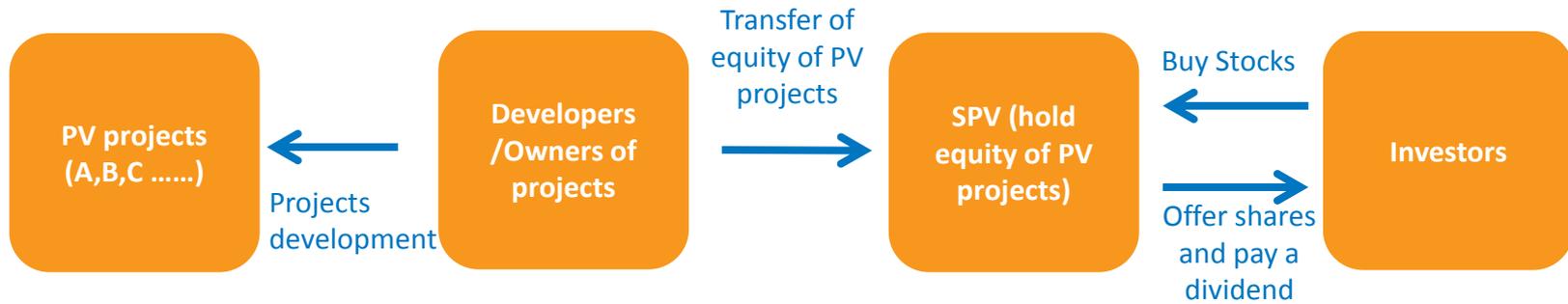
—————> Option B

# The development of new financing models - Renewable energy fund (2/2)

## Guangzong 15MW utility project



# The development of new financing models - YieldCo



**A dividend plus growth story is the key driver of valuations**

## YieldCo's factors comparison between China and U.S.

	China	US
Plenty of PV projects	Yes	Yes
High economics of PV projects	Yes	Yes
Low interest rate	No	Yes
Investors recognition	Not yet	Yes

Highlight: HK is a more ideal listing market for a Yieldco structure when the assets come from China.



## Global Markets Update

*Robert Petrina*  
*Vice President, Global Sales*  
*Managing Director, Yingli Americas*

# Agenda

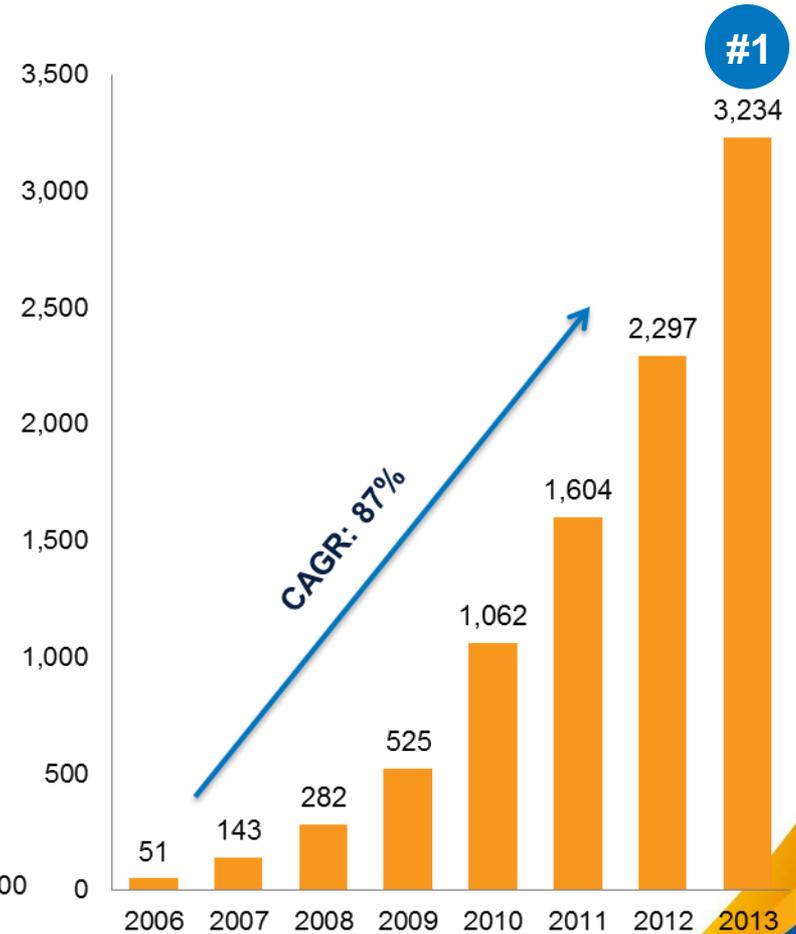
1. Yingli Introduction
2. Overview of substantial PV Markets
  - i. United States
  - ii. Europe
  - iii. Japan
3. Rest of the world & Latin America
  - i. Middle East & Africa
  - ii. Latin America & Caribbean
4. Summary & Conclusion

# Yingli Green Energy is the world's largest solar panel manufacturer

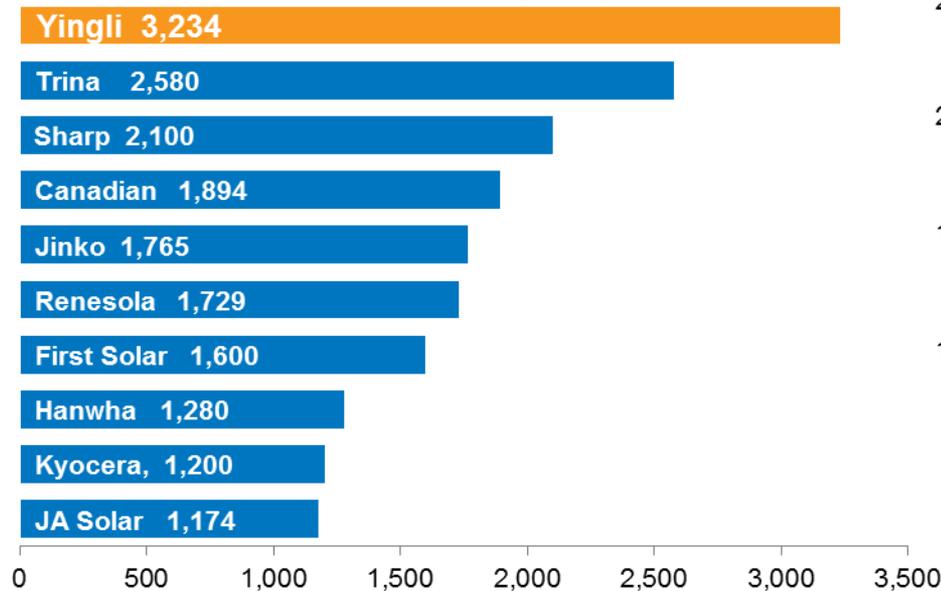
## KEY FACTS

- Listed on NYSE [**YGE**] since 2007
- **Over 10 GW** of solar panels deployed worldwide, including **2.0 GW in the Americas**
- Achieved **~15% market share** in the Americas in 2013

## SHIPMENT GROWTH, 2006-2013 (MW)



## 2013 PANEL SHIPMENTS (MW)

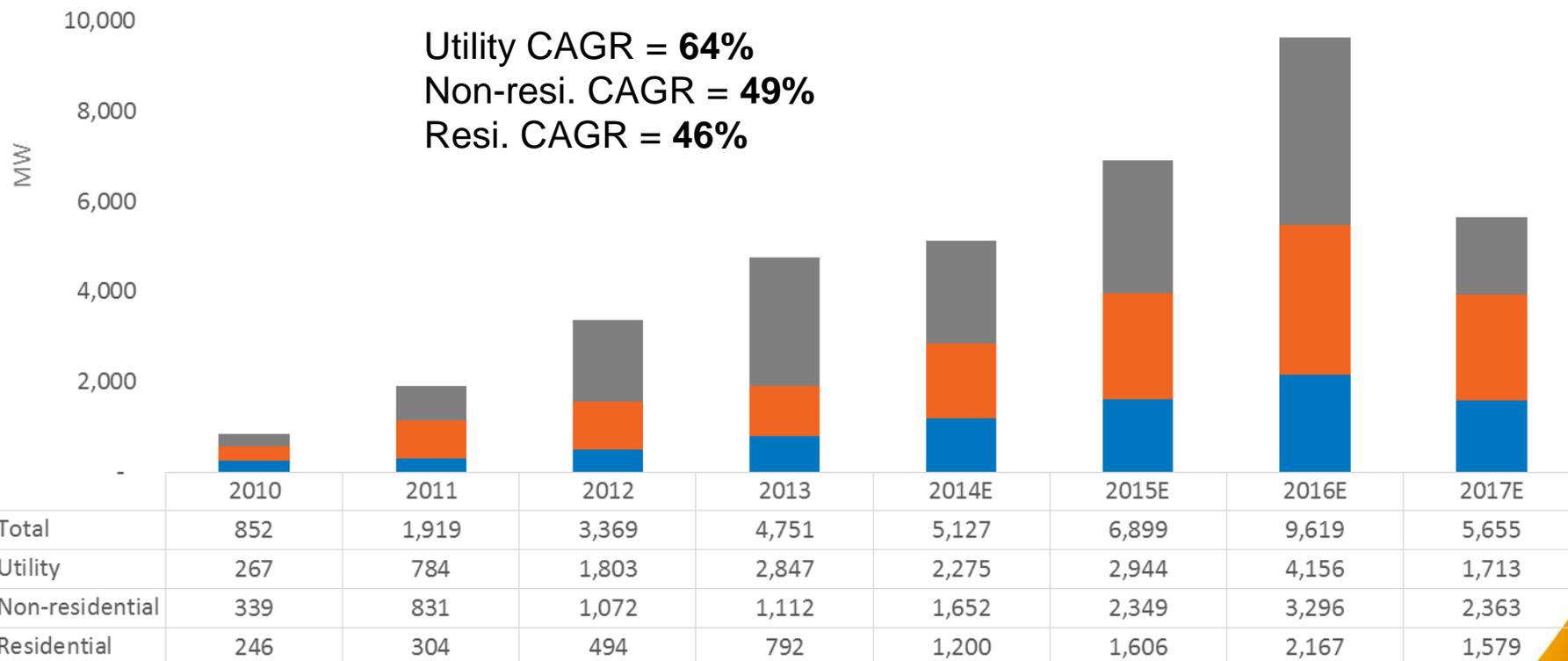


Source: IHS iSuppli

# The US PV Market has grown massively since 2010 and is expected to continue growing through 2017

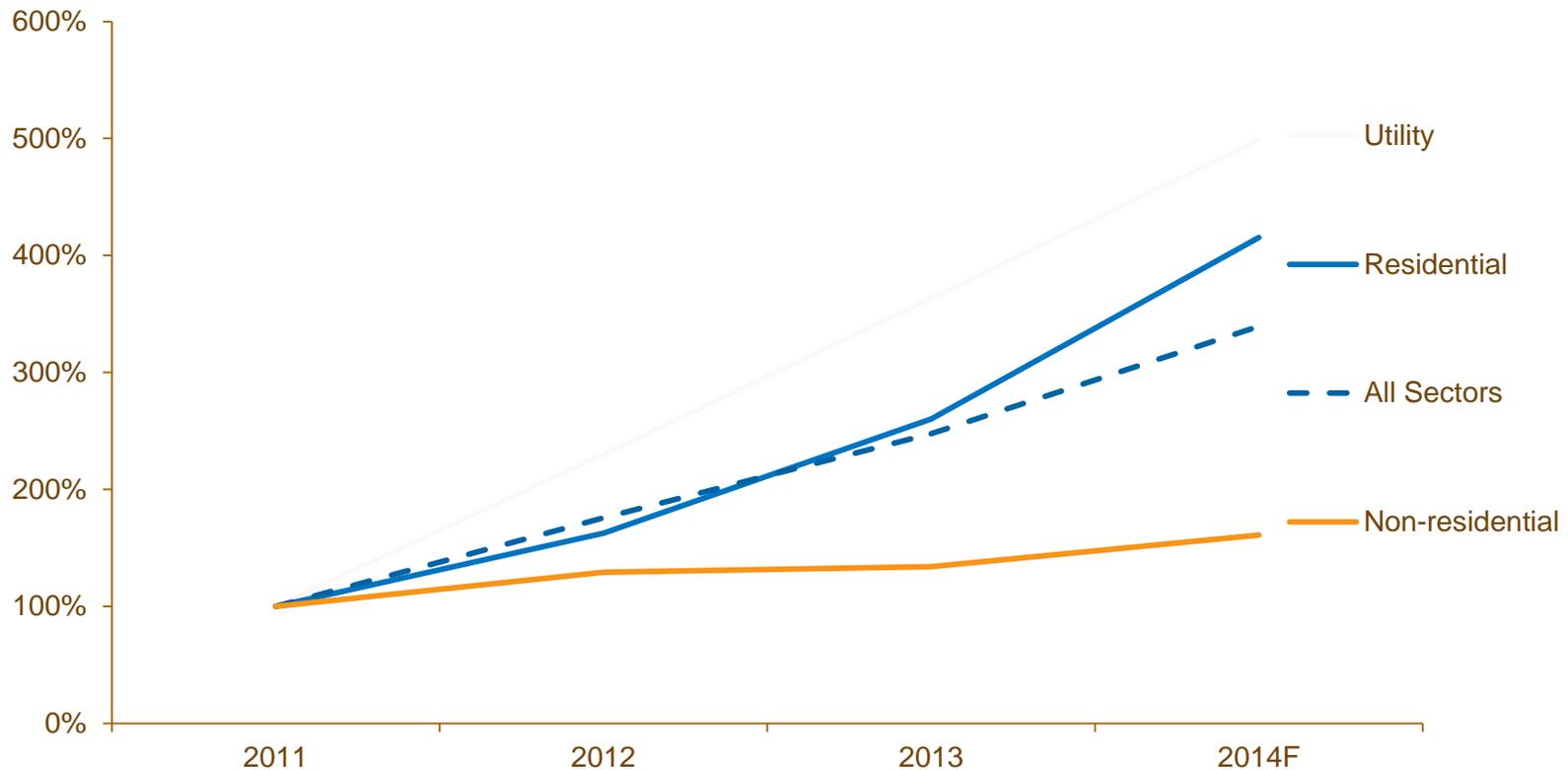
US PV Market Annual Installed Capacity by Sector, 2010-2017E

(MW)



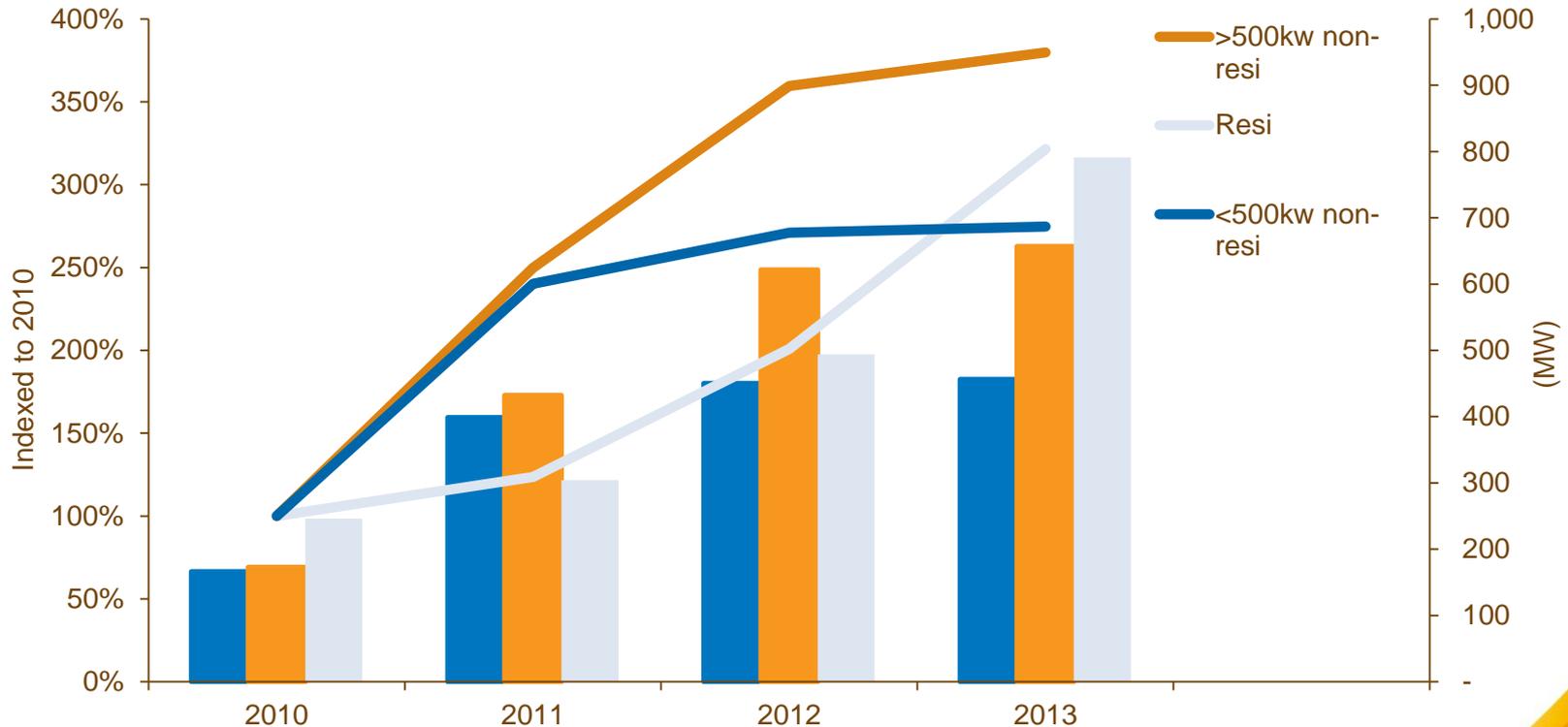
# Over the last three years the **non-resi market has underperformed other sectors** and the greater PV sector

US PV Installations by Sector, 2011-14F Indexed to 2010



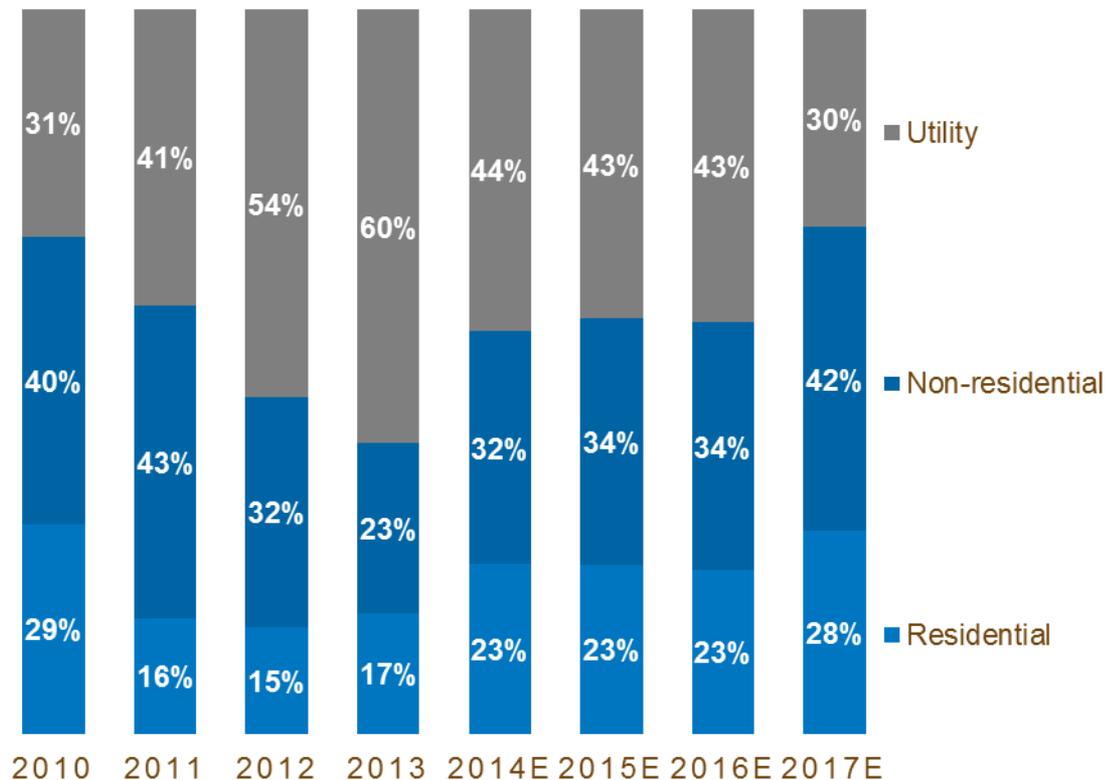
This is largely **driven by near-flat growth in smaller non-resi installations** as larger non-resi installations have continued to grow at a healthy clip. Smaller non-resi don't have a FICO score

C&I Sub-segments vs Resi Installations, 2010-13 (indexed to 2010)



# The US utility sector is expected to decline slightly as a percentage of the US market beginning in 2014

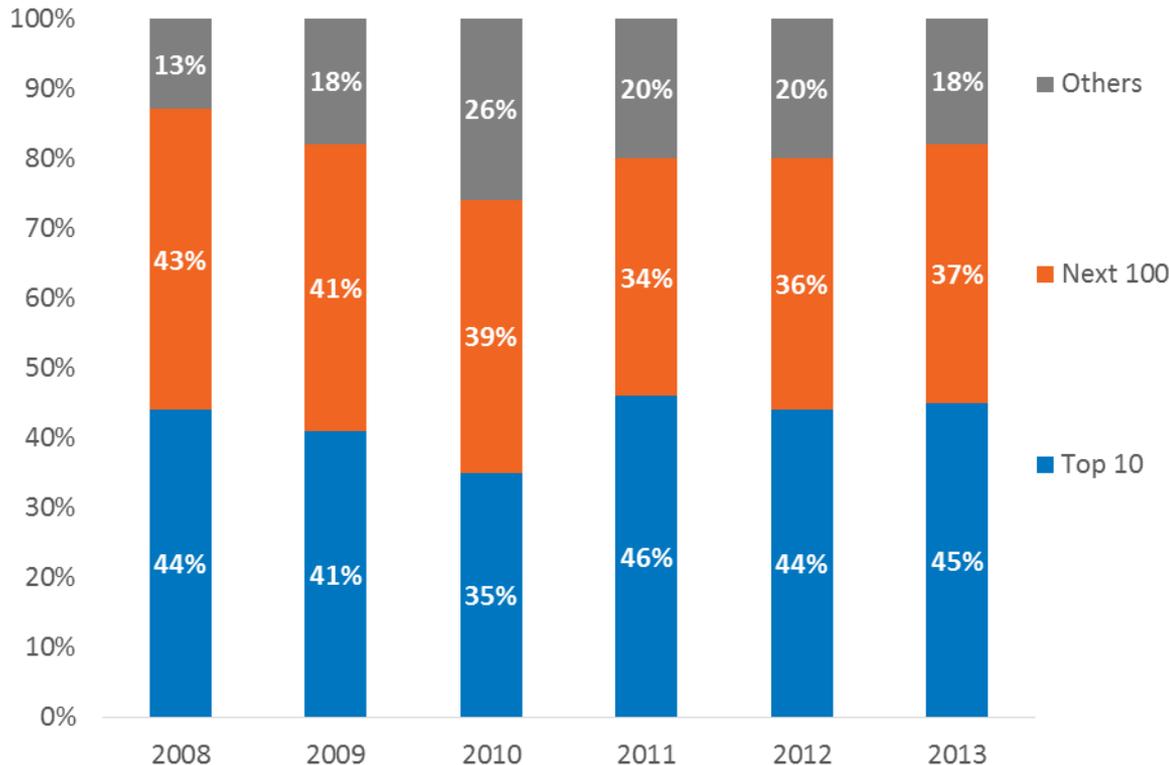
Share of US PV Market by Installation Sector, 2010-2016E



- Residential demand is forecasted to exceed the 6 GW between 2014 and 2017
- Residential market-share will climb to 23% by 2016
- The non-utility market is expected to take 70% share in 2017
- The non-residential market is expected to account for nearly 10 GW of installations between 2014 and 2017

# Smaller dealers are obtaining a large share of the residential market in CA

Share of CA PV Market by Customer Size, 2008-2013

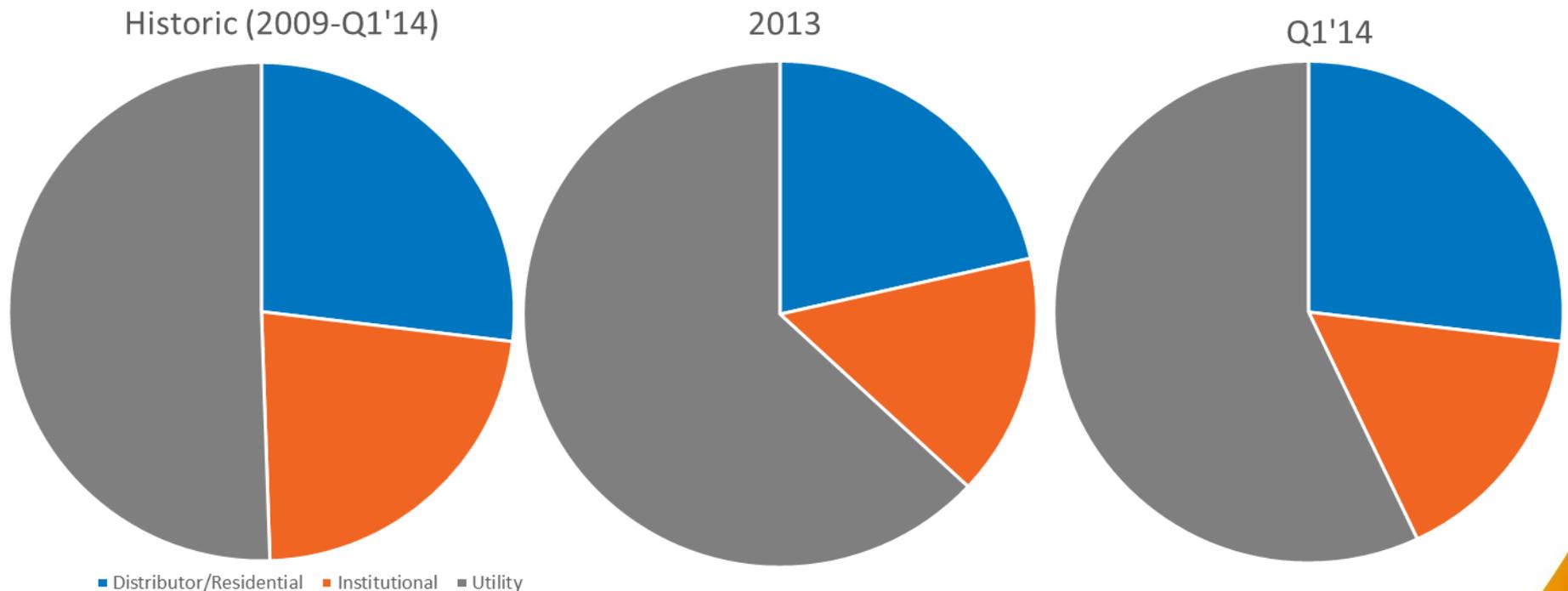


## Small dealers still win

- Low barriers to entry will increase fragmentation of dealer market
- Return of fragmentation as financing becomes more available
- Over half of sales are made by the long-tail
- The long-tail is growing faster than the top 10

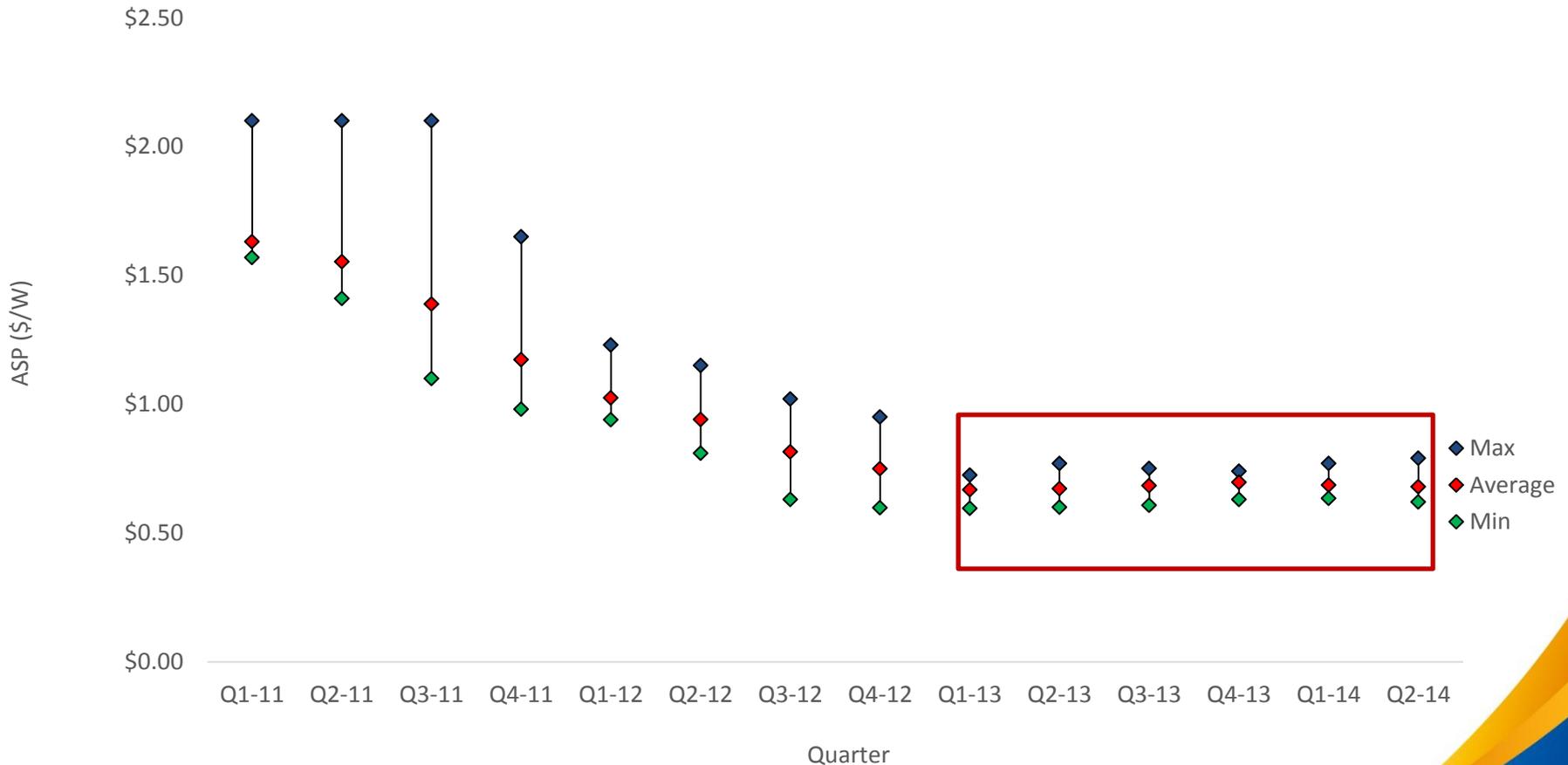
# Yingli's sales align with the market split among utility, DG and residential segments

YGEA Sales Distribution by Sector, 2009-Q1'14



# Quarterly price spreads have been very tight since Q1 2013

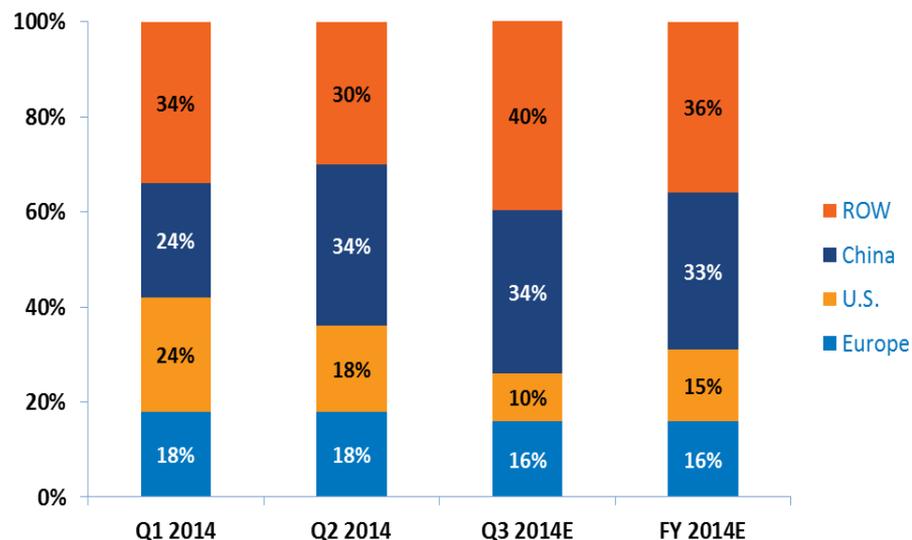
Price Spread by \*Quarter: Q1 2011 – Q2 2014



# Europe: Market conditions and sales improve

## Europe: Status

- Global shipment contribution of sales to Europe in Q2 2014 was 18.4%
- ASPs remain stable and relatively high versus global average given floor price set by the EU Undertaking Agreement
- Sales in Europe in Q2 increased by 39% sequentially driven by solid performance in Germany, UK & Turkey
- The German market showed signs of seasonal growth with installation volumes improving by over 20% in Q2 versus Q1
- UK market continues to develop strongly, particularly the utility scale segment under 1.4 GW ROCs
- UK has been the largest market in Europe in 2014
- UK estimated to deploy approximately 2-2.5 GW in 2014 (total to date ~4GW)



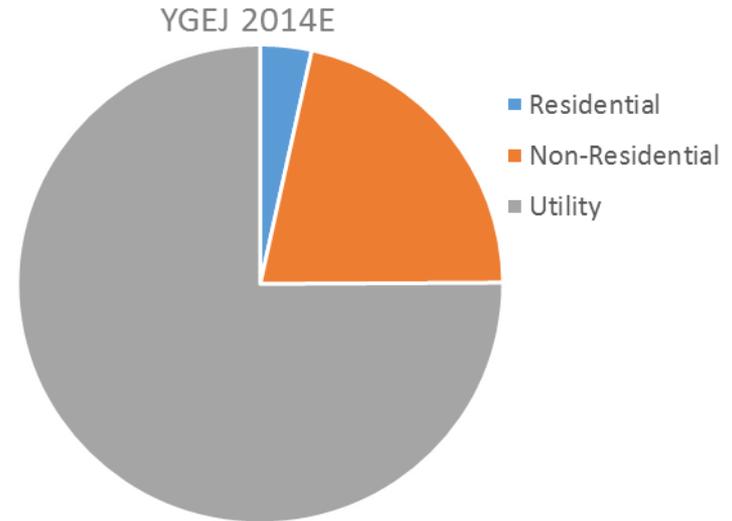
## Europe: Looking forward

- Expecting continued solid shipments to Europe during the 2<sup>nd</sup> half of 2014
- Steady future in the UK predicted through to 2020
- We continue to pursue early and late stage project opportunities in Europe and Africa congruent with our strategy to move downstream in utility scale projects

# Japan: Massive growth over the past two years, expected to continue

## Japan: Status

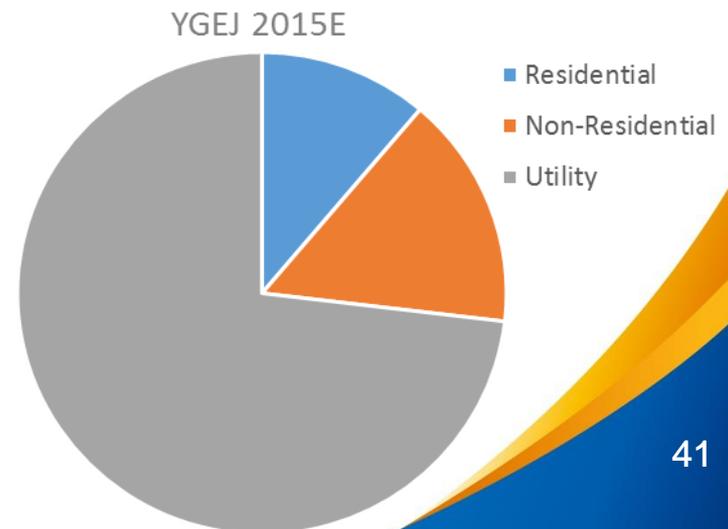
- Cumulative PV capacity is roughly 12 GW, nearly 11 GW of which was installed after July 2012– *PV Magazine*
- In the fiscal year ending March 31, 2014, 7.04 GW of new capacity was installed– *PV Magazine*
- Deutsche Bank expects Japan to install 6 to 7 GW in 2014
- In April 2014- FIT rates dropped 11% for commercial users and 2.6% for residential users to USD \$0.32/ kWh and USD \$0.36/ kWh respectively– *PV Tech*



## Japan: Looking forward

- For 2015 we will focus on creating new partnerships with house builders and increasing roof top installers thorough our roof top certification seminars.
- We are shifting focus towards residential system package sales, moving downstream.
- Projected sales increase of roughly 20% YoY between 2014 and 2015
- Projected **residential** sales to double between 2014 and 2015

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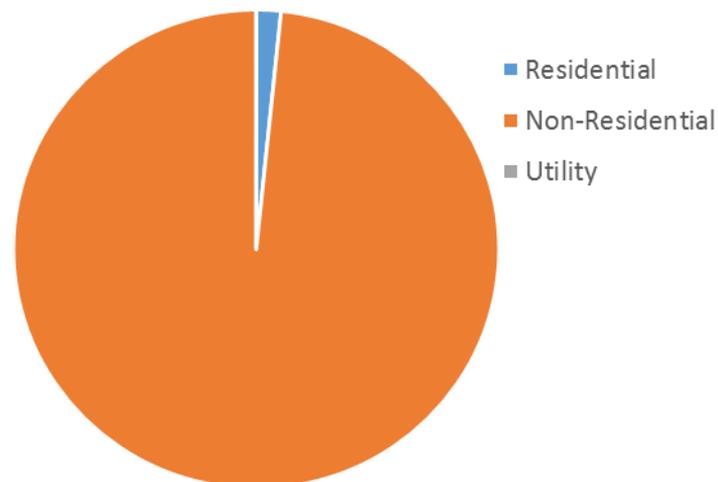


# Middle East & Africa

## MEA: Status

- Cumulative PV capacity is roughly 100-110 MW
- Est FY installed capacity in 2014 is around 25-30 MW
- In 2014, Jordan is the leading PV market in the Middle East– the market consists of 170 MW of awarded PPA and a lucrative non-residential segment
- In the non-residential segment, systems are net-metered and the system pays itself off with **no government subsidies** within 4-5 years!
- Egypt has recently announced a FIT program and Dubai and Abu Dhabi are planning to announce a rooftop program later this year

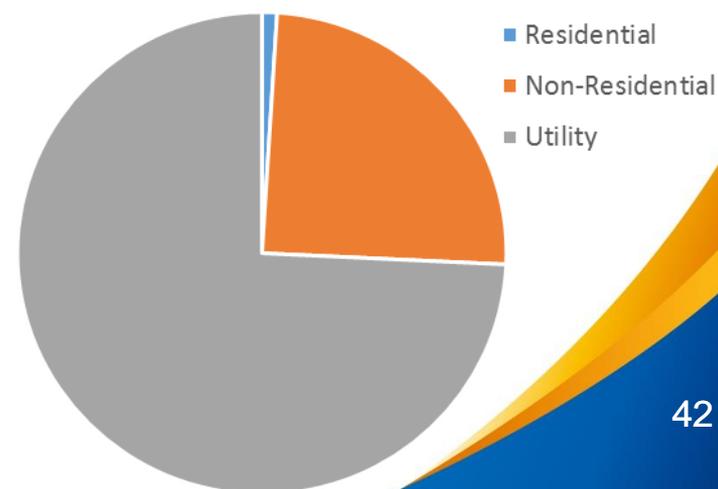
YGEMEA 2014E



## MEA: Looking forward

- In 2015, we can expect the start of construction for all the 170 MW awarded projects in Jordan
- Dubai will announce who will be the winner of the 100 MW Mohammed Bin Rashid Phase II project
- Massive delays in the Saudi market are hopefully going to be sorted during this year
- Egypt's new FIT programs is expected gain traction and we should see a few projects get developed during this time
- Within the next 18-24 months, we expect approximately 350 MW to begin, complete construction, or be awarded

YGEMEA 2015E



# Overview of Latin America and the Caribbean “LAC”

## LAC: Status

- LAC is a diversified region, but many countries share common solar traits:
  - Above average irradiation
  - Growing demand for energy
  - Poor base load quality
  - Minimal adoption of solar PV
  - Increasing government support for renewable energies
- Region is Experiencing Normal “Growing Pains”
  - Young market: slow, deliberate approach required
  - Poor policy implementation
  - Lack of consumer financing options & risks surrounding PV investments now widely understood by local investors
- 2012 Actual Installations = ~165 MW (YGE ESTIMATE)
- 2013 Actual Installations = ~200 MW (YGE estimate)

## LAC: Looking forward

- 2014 Forecasted Installations = ~700 MW-800 MW (YGE estimate)
- 2015 Forecasted Installations = ~1,600+ MW (GTM estimate)
- Annual installations estimated to increase to 2.25 GW by 2018 (GTM estimate)

# Chile

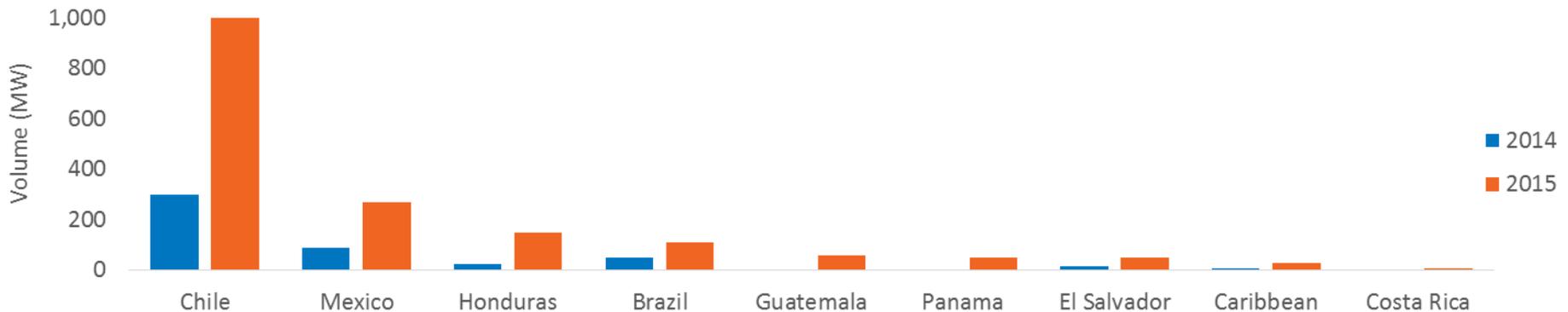
1. Utility market dominates demand- 12+ GW pipeline of approved projects
2. High insolation and high energy costs driving both PPA and merchant project development
3. Policy targets 20% renewables by 2025
4. New Net Billing law now in place, but payback well over 12 years with current program
5. Expect 300 MW to be installed in 2014 and 1 GW to be installed in 2015

# Mexico

1. Energy Reform
2. 38 GW of new capacity by 2024
3. 35% of all generated electricity must come from renewable sources
4. High insolation: On average 5.5 kWh/m<sup>2</sup>/day
5. Strong policy: Net metering <500 kW has been in place for seven years, 100% accelerated depreciation for PV equipment in year one

# Brazil

1. Expected to be a 1 GW solar market by 2016
2. Demand for large scale projects fueled by solar auctions
3. Lack of rainfalls and ever growing demand for electricity undermine hydropower as dominant generation source in Brazil
4. Electricity rate increases above 20% for captive customers
5. Average irradiation above 2,000 kWh/m<sup>2</sup>/year



## In all markets above, Yingli is present and leading

1. Establishment of – and investment in – local team to support regional operations
2. Local product inventory to provide high customer service
3. Working with the tax authorities to reverse and eliminate the module tariff
4. Introducing local and international financiers to developers and integrators to accelerate project schedules
5. Advanced plans for local manufacturing in Brazil

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# Takeaways

- The US commercial and residential sectors are forecasted to represent 126 GW of opportunity between 2015 and 2030 with the majority being residential and C&I
- California is expected to further increase its share of the US market, accounting for 52% between Q3-'14 and Q1-15
- The six major states are forecasted to account collectively for over 85% of all demand (CA, AZ, NJ, HI, NV, NM)
- Europe is stable—the UK is on pace to be Europe's largest market in 2014
- Japan is expected to install 6 to 7 GW in 2014
- Middle East growing slower than expected but huge potential
- Mexico, Chile and Brazil are forecasted to represent over 425 MW of new capacity in 2014, and over 1.3 GW in 2015
- Yingli is active in all major growth markets

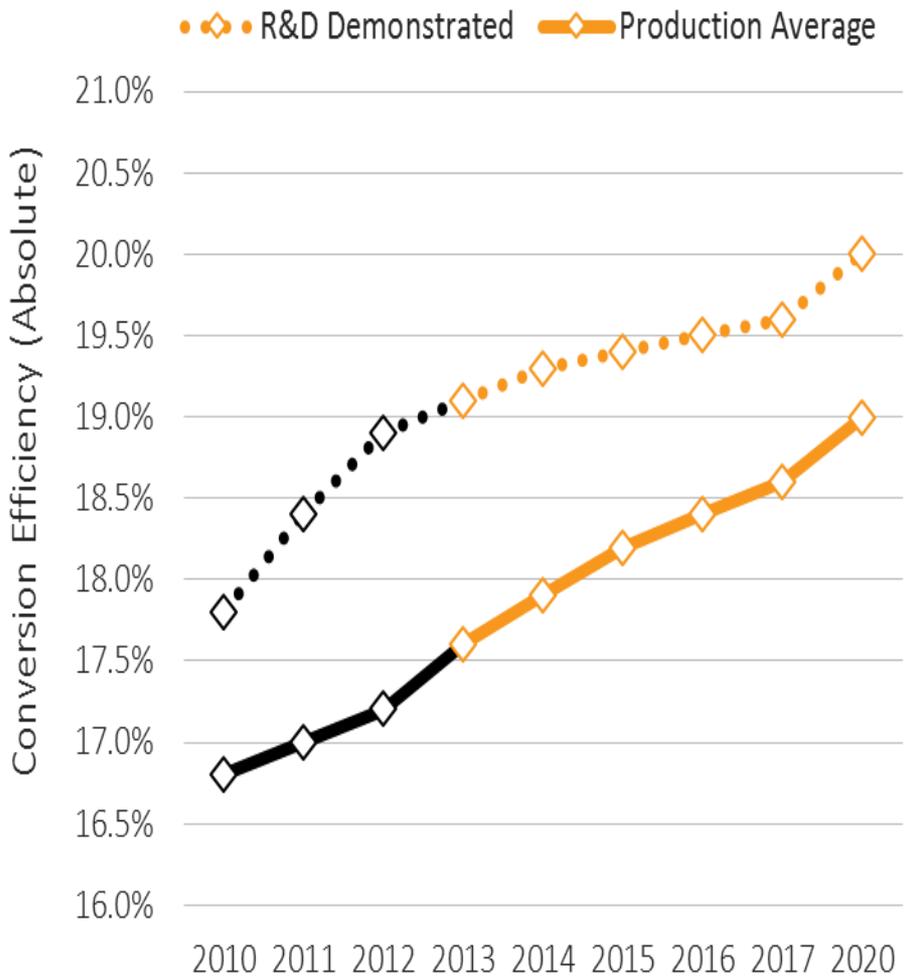


## Technology Update

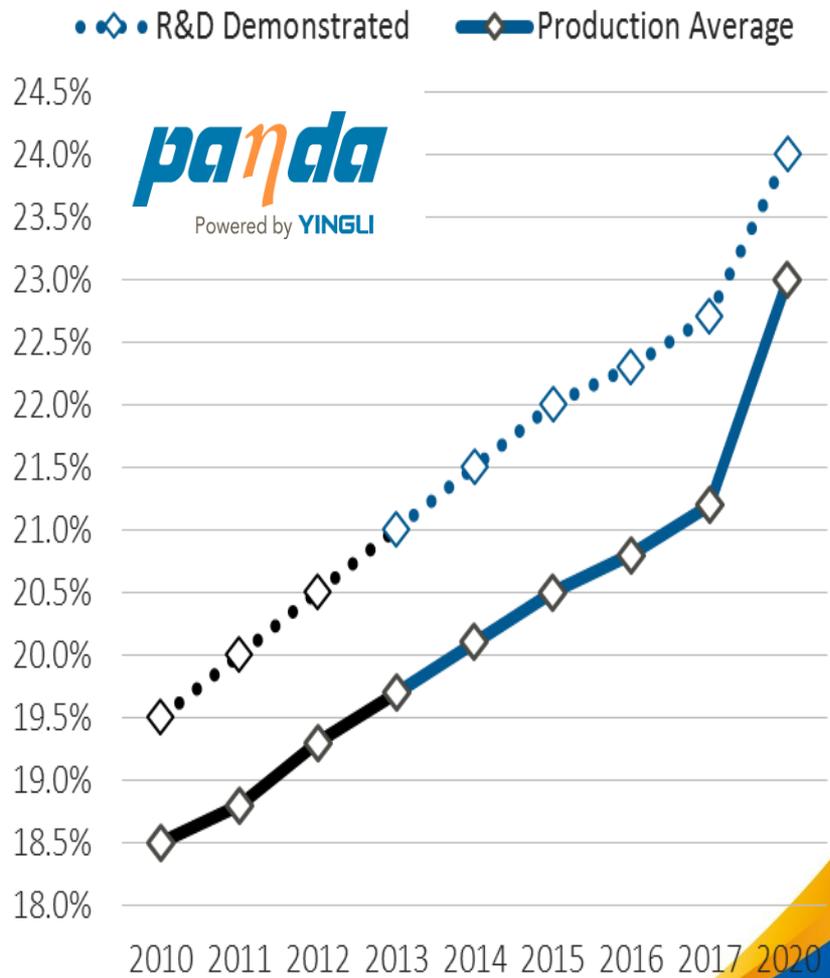
**Brian Grenko**  
**VP Technology, Yingli Americas**

# Cell conversion efficiency remains the largest cost lever

P-TYPE MULTI CELL EFFICIENCY ROADMAP

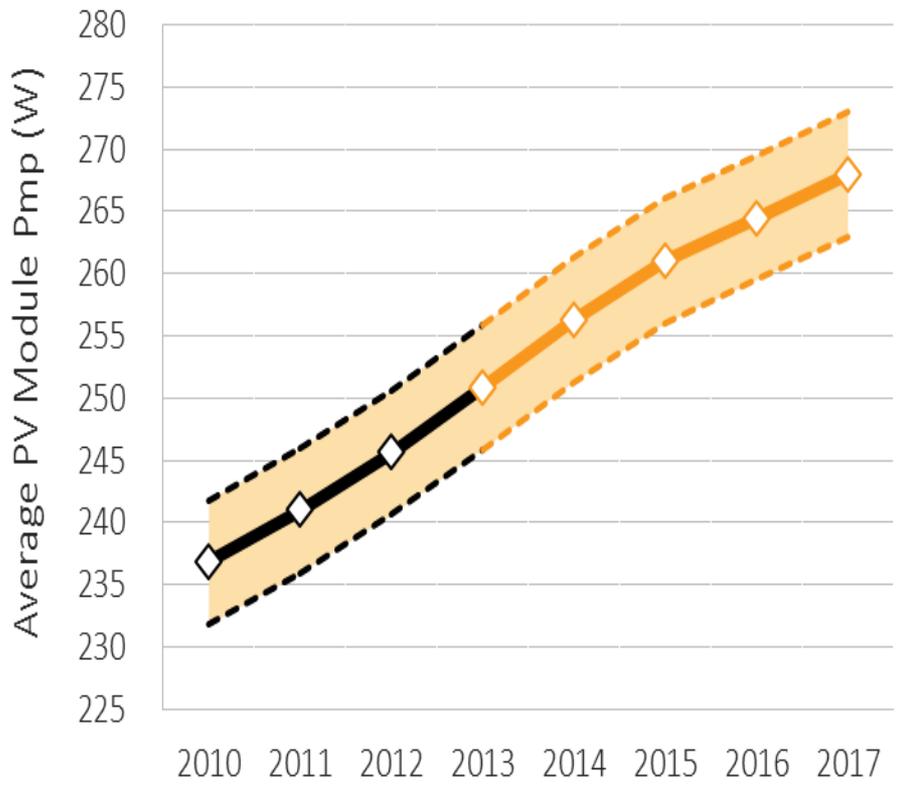


N-TYPE MONO CELL EFFICIENCY ROADMAP

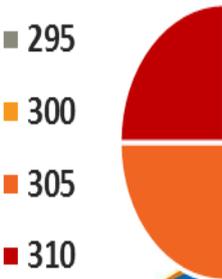
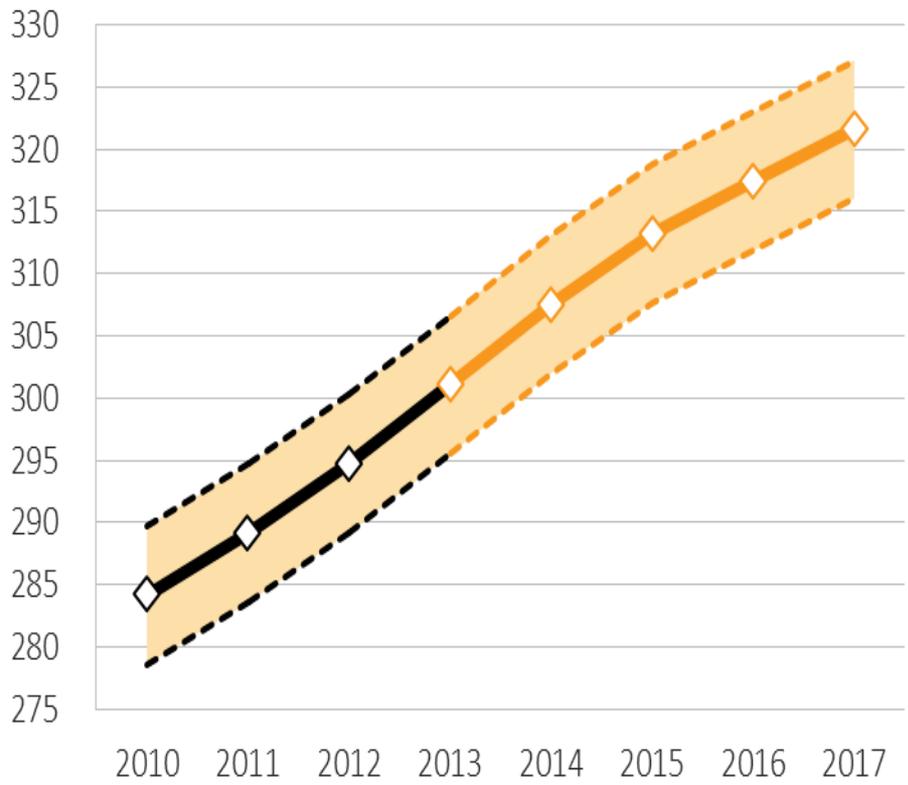


# Multicrystalline module power will steadily increase

## 60-CELL MULTI PV MODULE POWER FORECAST



## 72-CELL MULTI PV MODULE POWER FORECAST



# Higher power cells come from higher quality wafers

## WAFER LINE CONTINUOUS IMPROVEMENT PROJECTS

Optimization of DSS casting process lowers defect density while improving consistency of grain size, increasing cell efficiency up to 3%

Crucible improvements increase yield at lower cost:

- Modifications to crucible geometry lower electricity costs and reduce cycle time
- High-purity coatings and surface texturing reduce tail waste while improving bulk minority carrier lifetime

Lower waste and operating cost through increases in saw slurry recycling

Standard multicrystalline wafer



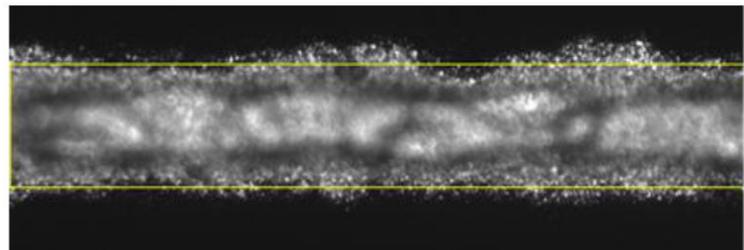
High efficiency multicrystalline wafer

# Cell metallization offers significant opportunities

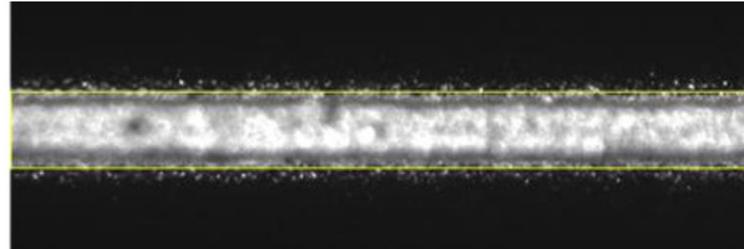
## STENCIL PRINTING

Several advantages over screen printing:

- Reduced finger width increases active area
- Up to 25% less Ag usage = lower cost
- Lower series resistance at busbar interface



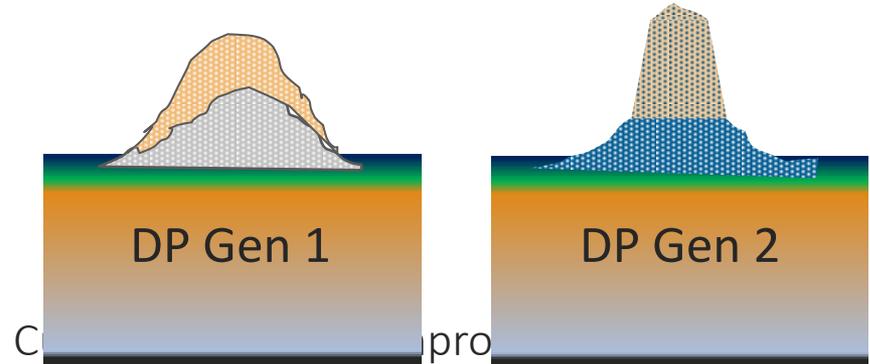
Conventional screen print (98µm finger width)



Stencil screen print (58µm finger width)

## DOUBLE PRINTING (DP)

When used in combination with stencil printing, significantly higher cell efficiencies can be obtained (lower series resistance)



Similar paste printed twice with the first print step, and improve conductivity with second print step

Different pastes

# AR coatings are not just for cells and glass

## PROBLEM STATEMENT

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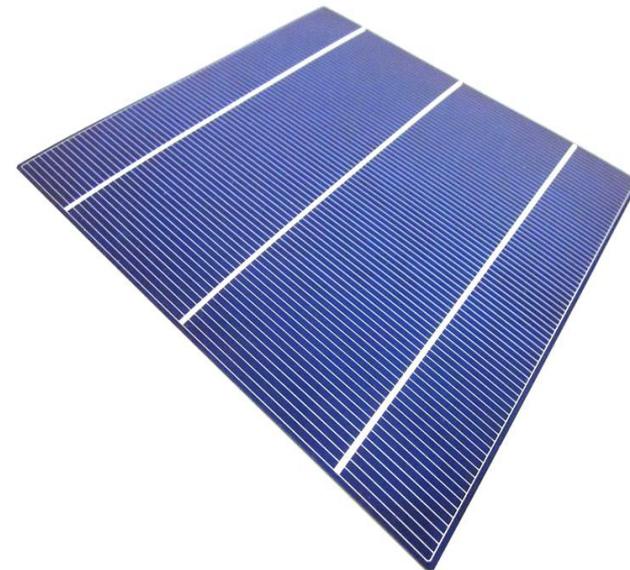
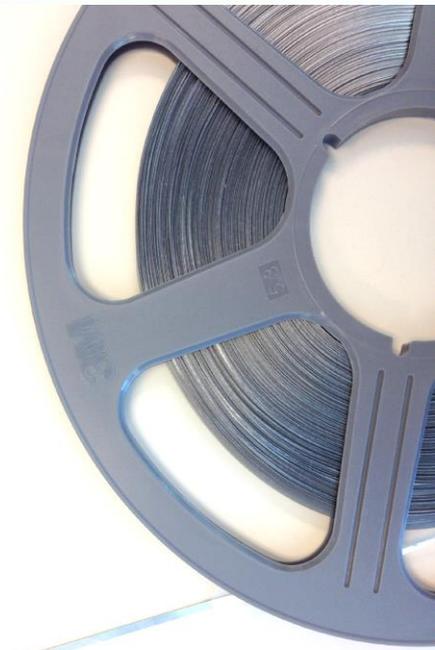
Almost 4% of the Yingli cells are covered by soldering ribbon, reducing active area and limiting the power output of the cell

## POTENTIAL SOLUTION

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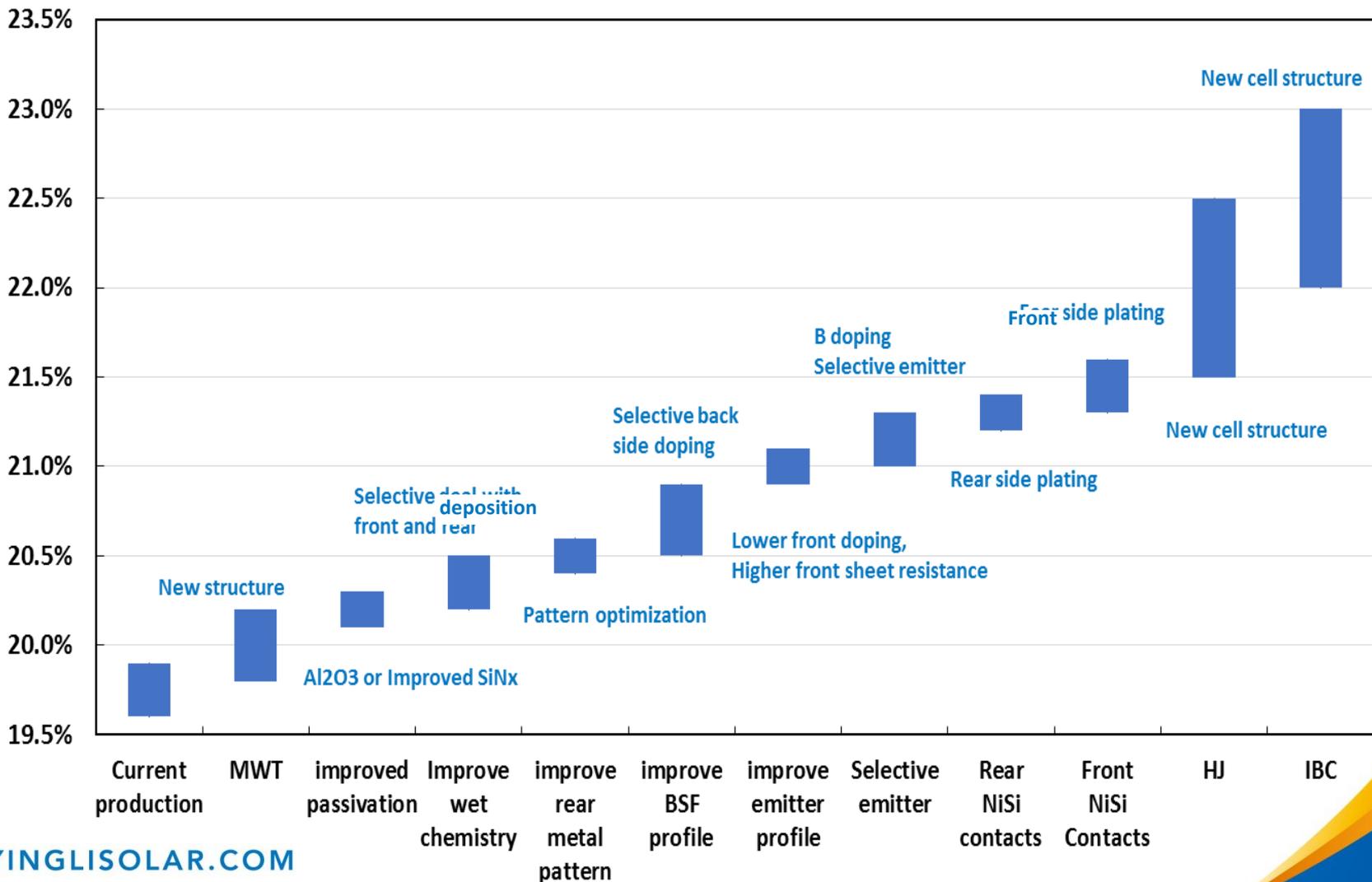
New AR film products cover busbar ribbon and increase light capture, boosting power while improving aesthetics

5W power gain observed in Yingli 60-cell mc-Si modules during manufacturing trials



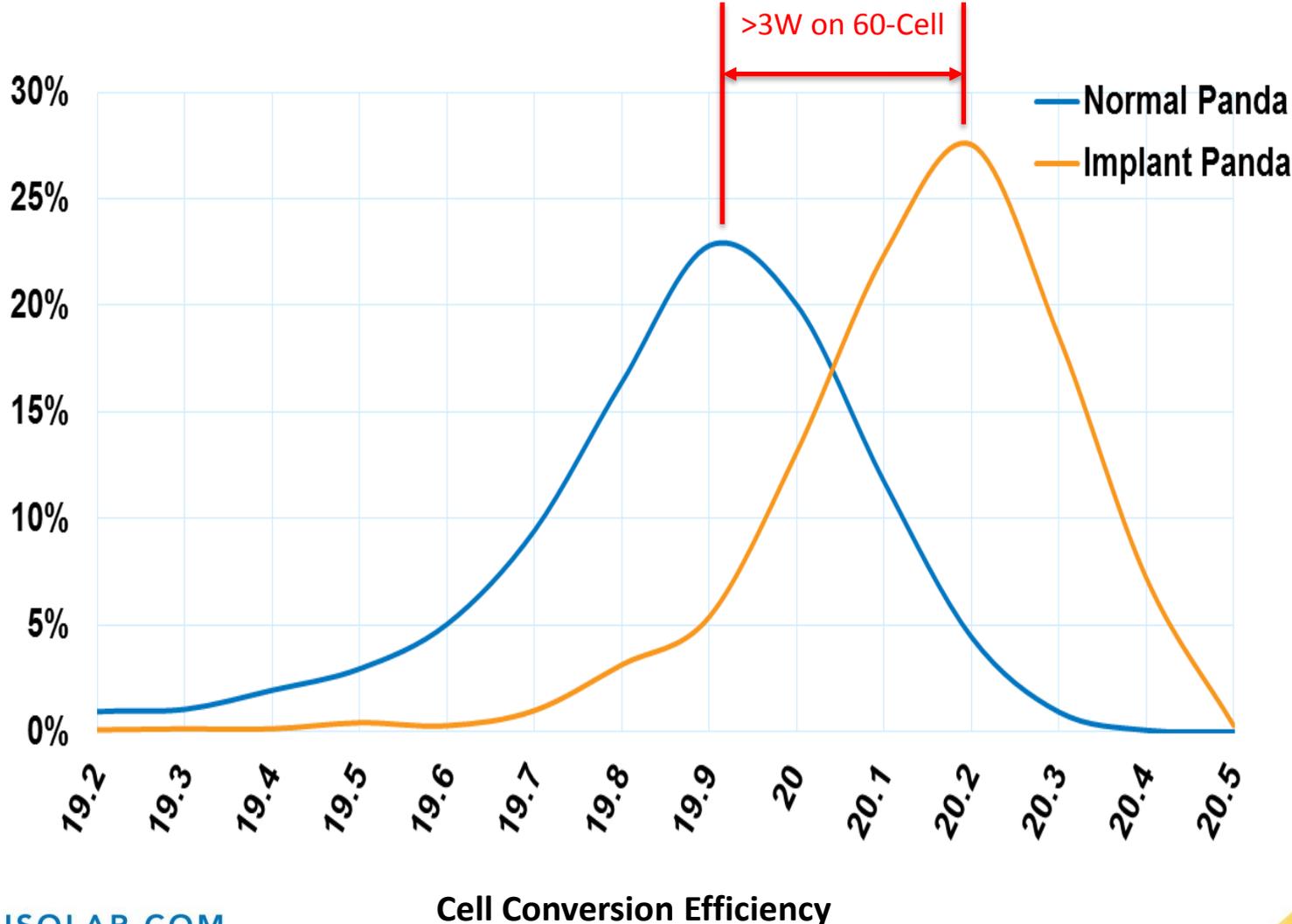
# New technology developments well suited for PANDA

## PANDA ROADMAP



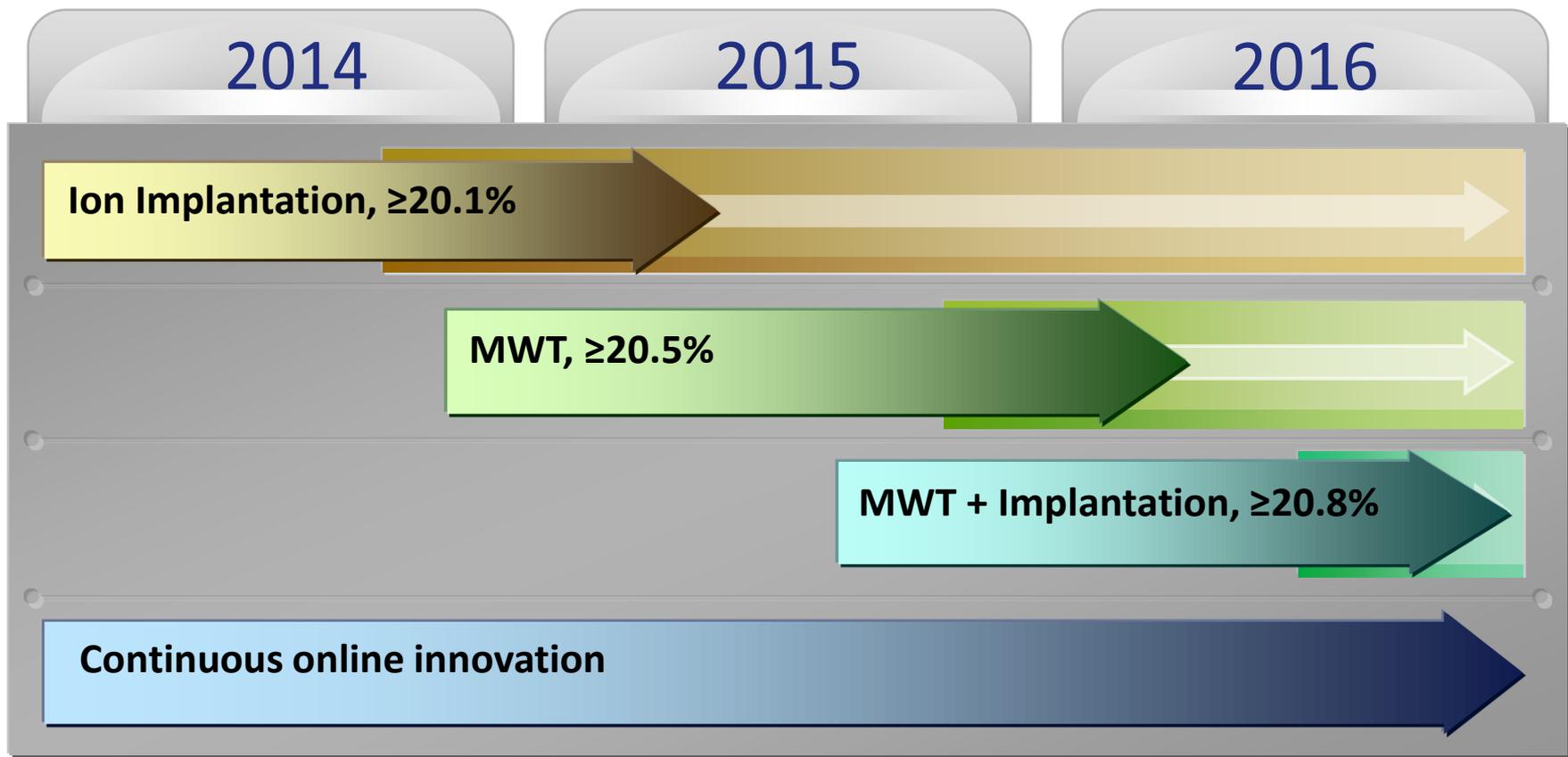
# Ion implantation technology well suited to PANDA

FREQUENCY DISTRIBUTION PLOT COMPARISON



# PANDA roadmap starts with ion implantation and MWT

## FREQUENCY DISTRIBUTION PLOT COMPARISON





# Thank you!

## Contact

Investor Relations  
Yingli Green Energy Holding Company Limited  
Tel: +86-312-8929-789  
Email: [ir@yingli.com](mailto:ir@yingli.com)