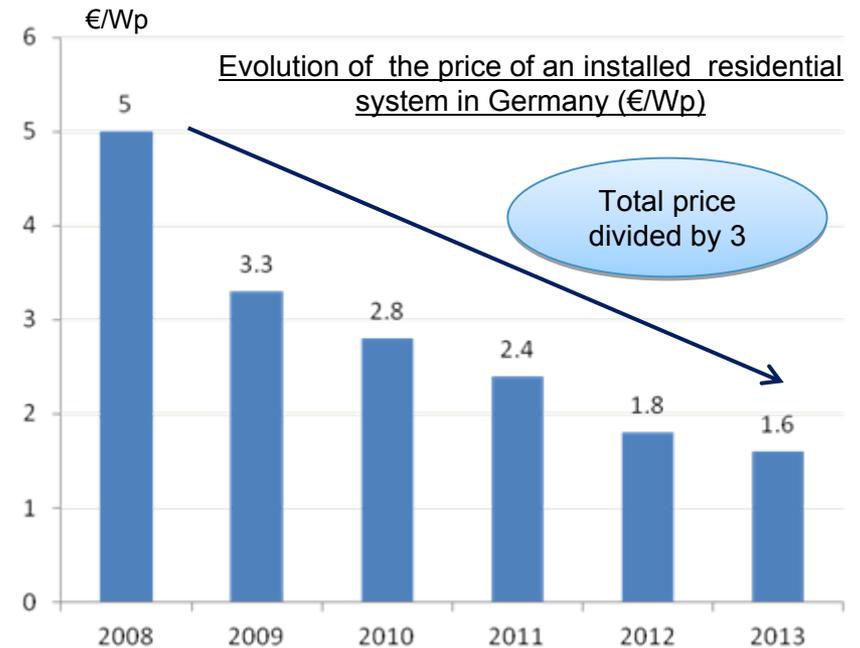
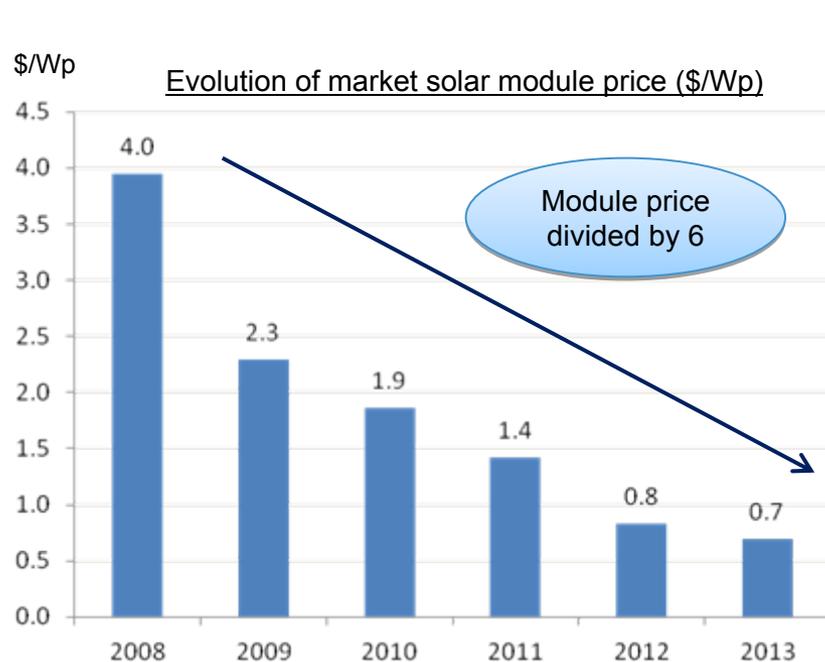


# FINANCING RENEWABLE PROJECTS AN OPERATOR POINT OF VIEW

*PECC Energy Transition Seminar – Santiago de Chile – 24<sup>th</sup>/25<sup>th</sup> June 2014*

# CONFIDENCE IN THE ENERGY

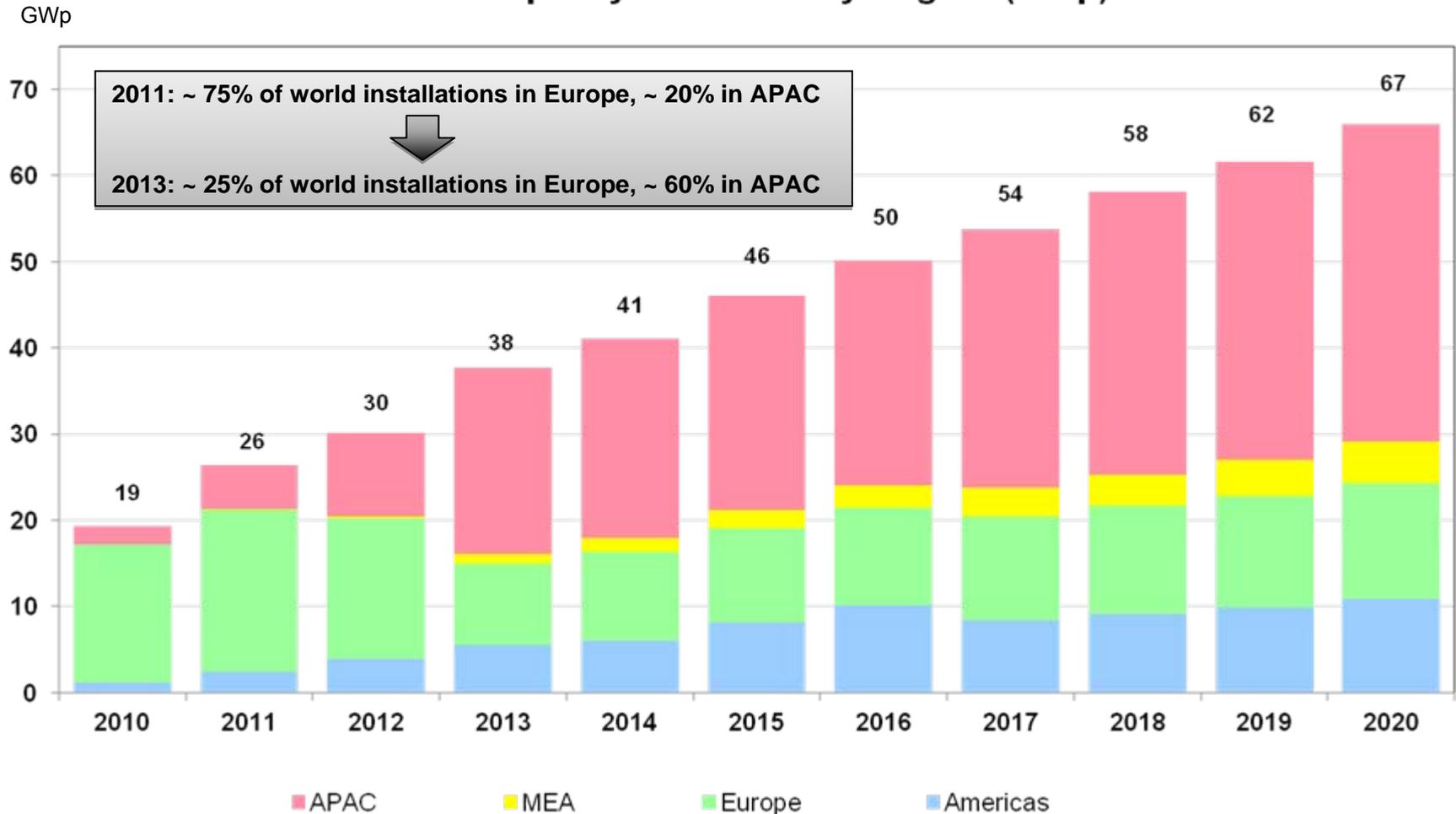
## COST OF SOLAR HAS DROPPED IN THE LAST FEW YEARS...



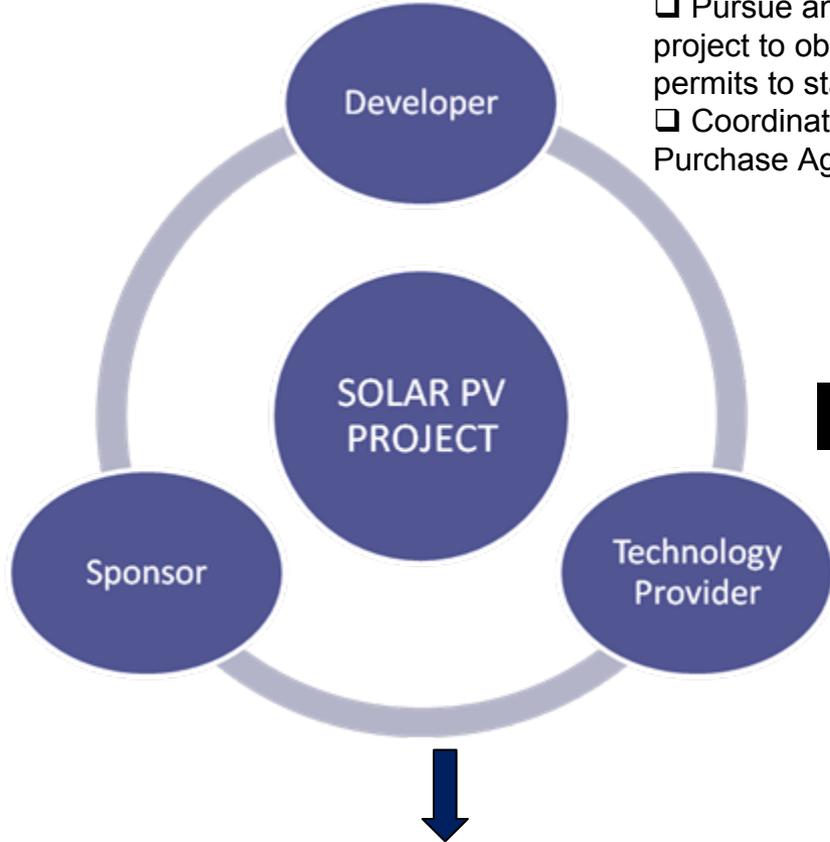
- Drop in module price (cost improvements, scale effects, pricing strategy)
- Stabilization of module prices now expected, but all in system price still expected to decrease
- Solar power has emerged as a competitive power source (but intermittent)

# ... ALLOWING A TREMENDOUS GROWTH OF INSTALLATIONS

## Annual PV Capacity Additions by Region (GWp)



# CONFIDENCE IN THE PARTNERSHIP



- ❑ Pursue and finalize the development of each project to obtain the necessary authorizations and permits to start the construction of each project
- ❑ Coordinate with Total the negotiation of Power Purchase Agreements

## SUNPOWER

- ❑ Brings the complete technical solution
  - SunPower modules and trackers
  - EPC
- ❑ Offers O&M services

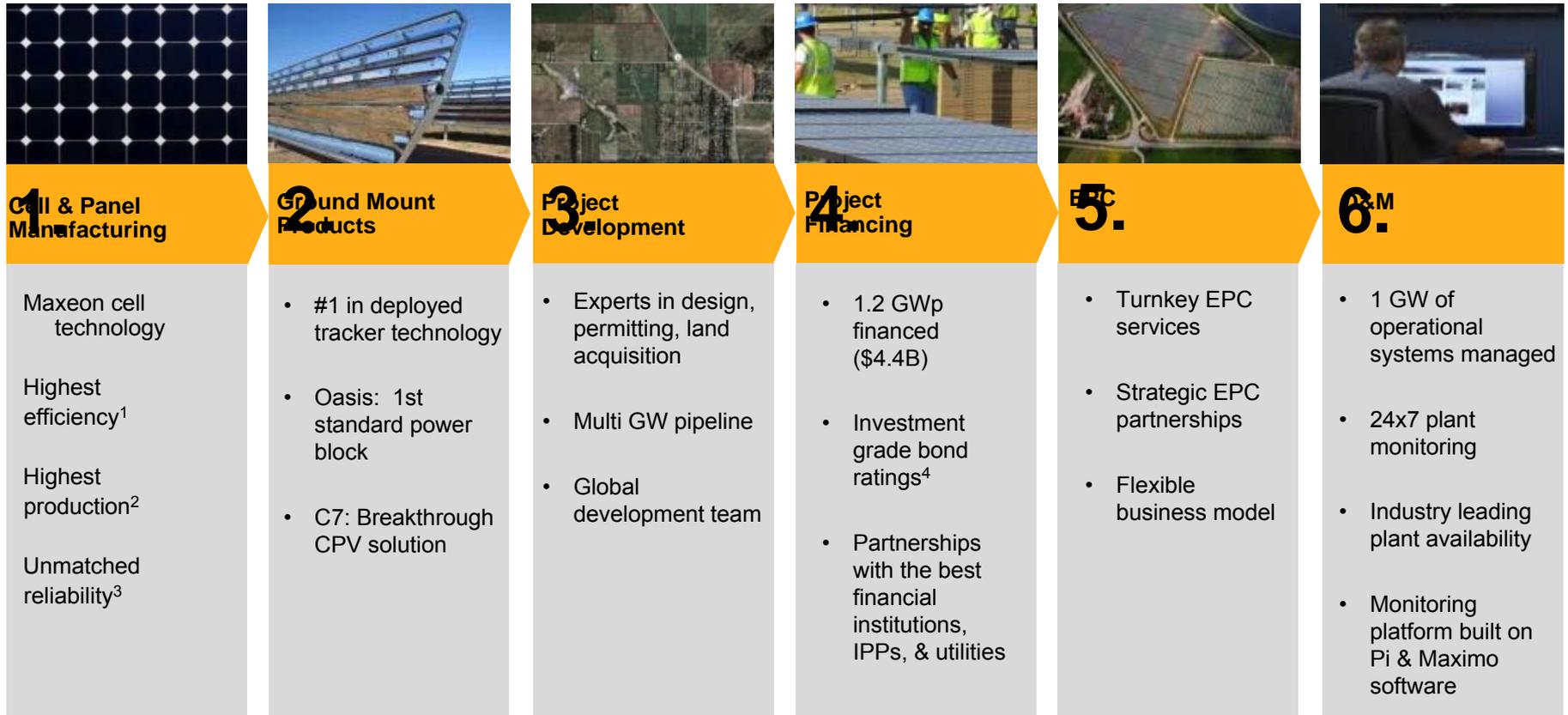
- ❑ Coordinates the financing of the project
  - ✓Brokering debt financing
  - ✓Structuring equity financing
- ❑ Assists with developing the project through support, competence and experience in structuring complex project infrastructure deals

**EQUITY OWNERS**  
Banks, Funds, Family Offices,  
Utilities, IPPs, Institutional Investors  
(e.g. Insurance companies), IFIs, ...



# Confidence in the technology

## Integration in the power plant value chain



<sup>1</sup> Out of all 2600 panels listed in Photon International, Feb 2012.

<sup>2</sup> Most energy per rated watt out of 190 panels. Photon International, Feb 2013.

<sup>3</sup> #1 rank in "PV Module Durability Initiative Public Report," Fraunhofer ISE, Feb 2013. Five out of the top 8 largest manufacturers were tested. Campeau, Z. et al. "SunPower Module Degradation Rate," SunPower white paper, Feb 2013. See [www.sunpowercorp.com/facts](http://www.sunpowercorp.com/facts) for details.

<sup>4</sup> Investment grade rating for Montalto project bond, Italy, Dec 2010

# Confidence in the technology

## Proven Execution of 800+ MW Installed

### Arizona

•20 MW Iberdrola Copper Crossing

### California

•25 MW McHenry Solar Farm  
•250 MW CA Valley Solar Ranch\*  
•579 MW Antelope Valley\*

### Colorado

•30 MW Iberdrola Alamosa  
•19 MW Greater Sandhill

### EAST COAST – U.S.

•25 MW FPL–DeSoto  
•60MW Project Dolphin  
•10 MW FPL–SpaceCoast  
•10 MW LS Power  
•9.8MW Campbell's

### Hawaii

•1.5 MW Lanai  
•5.0 MW KS2

### Illinois

•10 MW Exelon Solar

### Nevada

•14 MW Nellis AFB  
•3.1 MW Las Vegas WD

### Ontario

•20 MW Amherstburg

### GERMANY

•10 MWp Bavaria I  
•3.0 MWp Bavaria II

### ITALY

•85 MWp Montalto  
•7.2 MWp Api Tolentino  
•1.0 MWp EDF Ferentino  
•4.4 MWp E.On Nepi  
•16.5 MWp Veronagest  
•11.5 MWp Solarventures

### SPAIN

•29 MWp Naturener  
•18 MWp Olivenza  
•14 MWp Lorca  
•12 MWp Almodovar  
•11 MWp Magasquilla  
•11 MWp Ciudad Real  
•8.4 MWp Isla Mayor  
•8.3 MWp Guadarranque  
•6.9 MWp Caceres  
•4.8 MWp Llerena  
•3.8 MWp Lebrija

### PORTUGAL

•11 MWp Serpa

### KOREA

2.2 MWp Mungyeong  
2.0 MWp JeonJu  
1.4 MWp Hampyeong  
1.0 MWp Gwangju

### Australia

1.0 MWp Alice Springs  
1.0 MWp Marble Bar

\*Under Construction

# CALIFORNIA VALLEY SOLAR RANCH (250 MW)

DECEMBER 2011



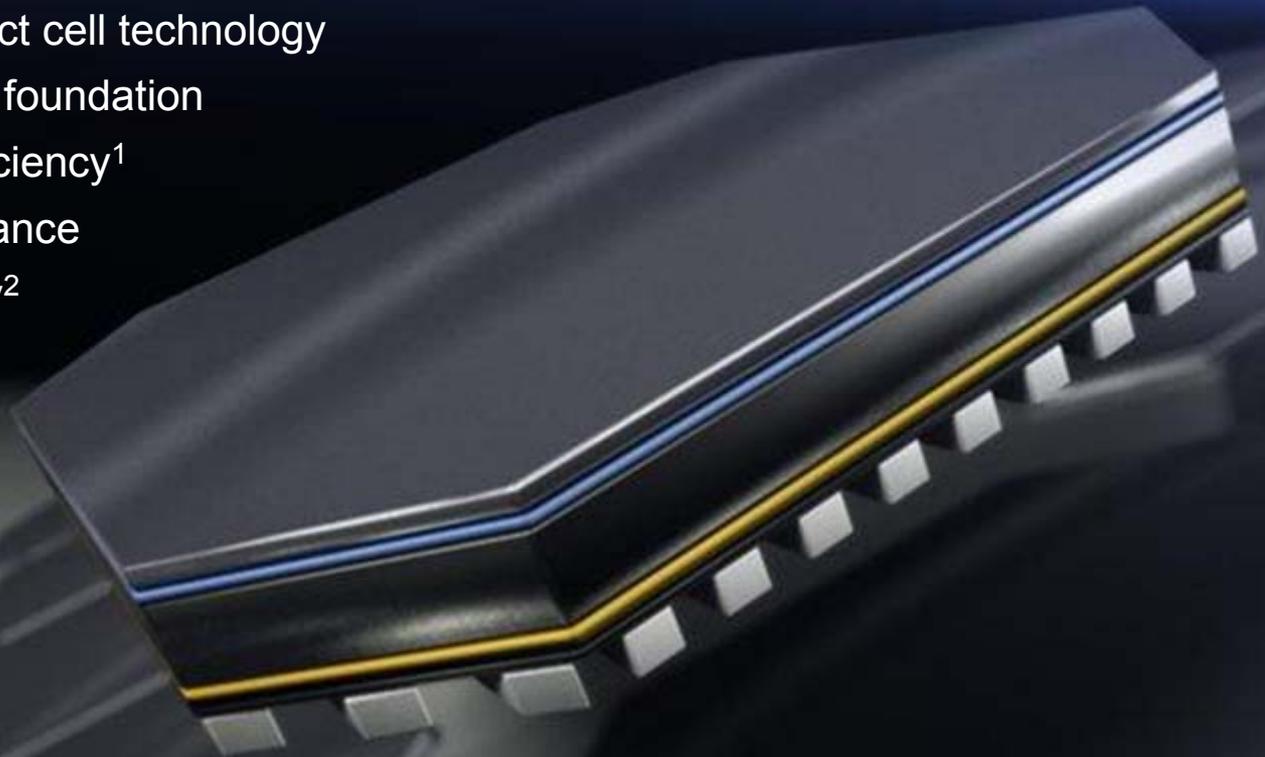
# California Valley Solar Ranch (250 MW) February 2012



# CONFIDENCE IN THE TECHNOLOGY

## THE SUNPOWER® MAXEON® SOLAR CELL

- Patented back contact cell technology
- Built on solid copper foundation
- Record breaking efficiency<sup>1</sup>
- Exceptional performance
- Unmatched reliability<sup>2</sup>



<sup>1</sup> SunPower holds the world-record large Silicon panel efficiency (21.4%). Green, M. A., et. al. "Solar Cell Efficiency Tables (version 39)," Progress in Photovoltaics, 2013, vol. 21, p1-11.

<sup>2</sup> #1 rank in "PV Module Durability Initiative Public Report," Fraunhofer ISE, Feb 2013. Five out of the top 8 largest manufacturers were tested. Campeau, Z., et al. "SunPower Module

# CONFIDENCE IN THE TECHNOLOGY BUILT IN TO A PANEL THAT DELIVERS THE BEST RESULTS



## Highest Efficiency

**20.4%**

Panel efficiency means more watts per square foot than conventional solar<sup>1</sup>

## Highest Production

**7%-9%**

More energy per rated watt than conventional solar<sup>2</sup>

## Unmatched Reliability

**0.25%**

The industry's lowest average degradation rate means more energy over the total life of the panel<sup>3</sup>

<sup>1</sup> Out of all 2600 panels listed in Photon International, Feb 2012.

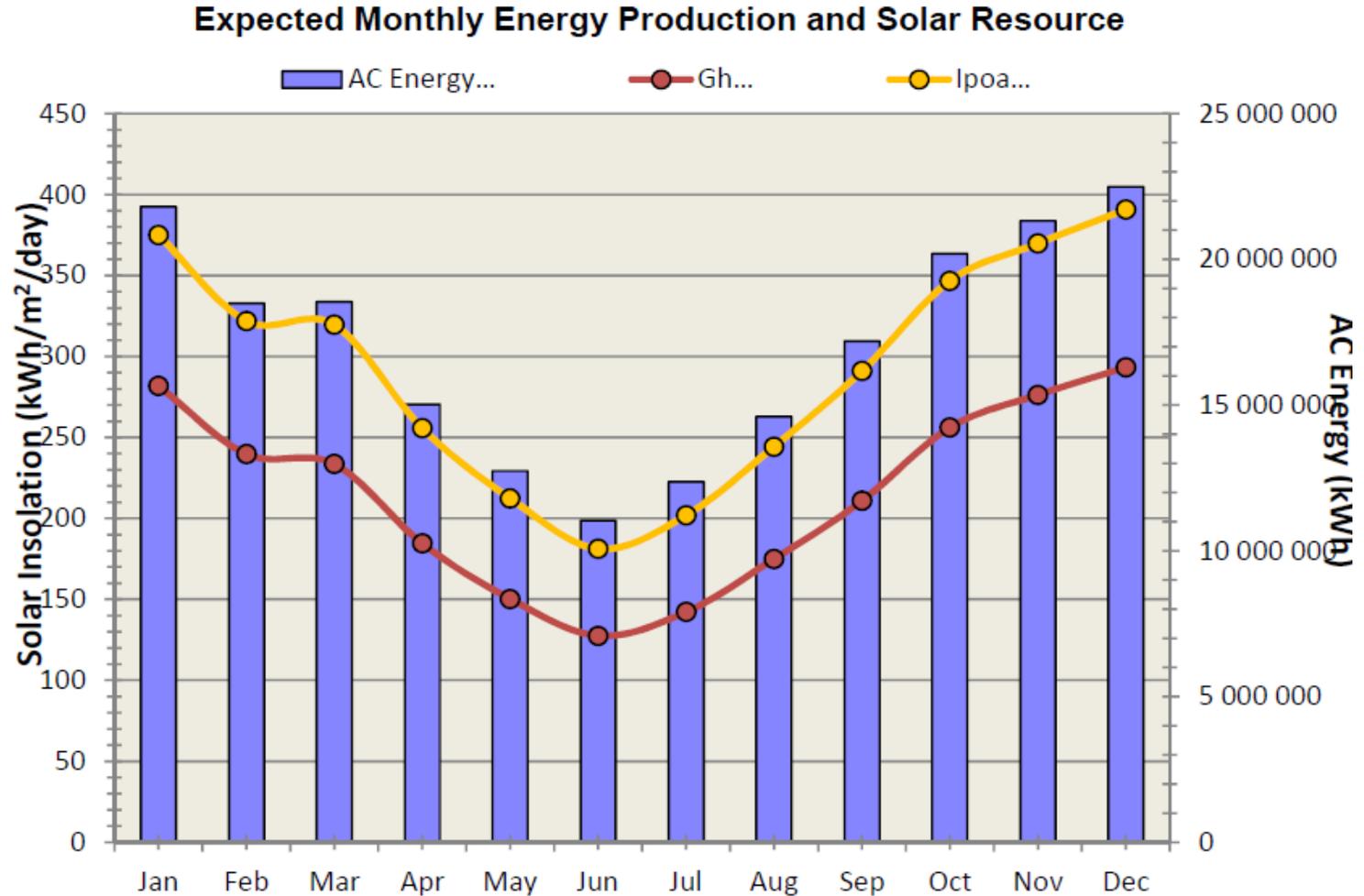
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# CONFIDENCE IN THE RESOURCES

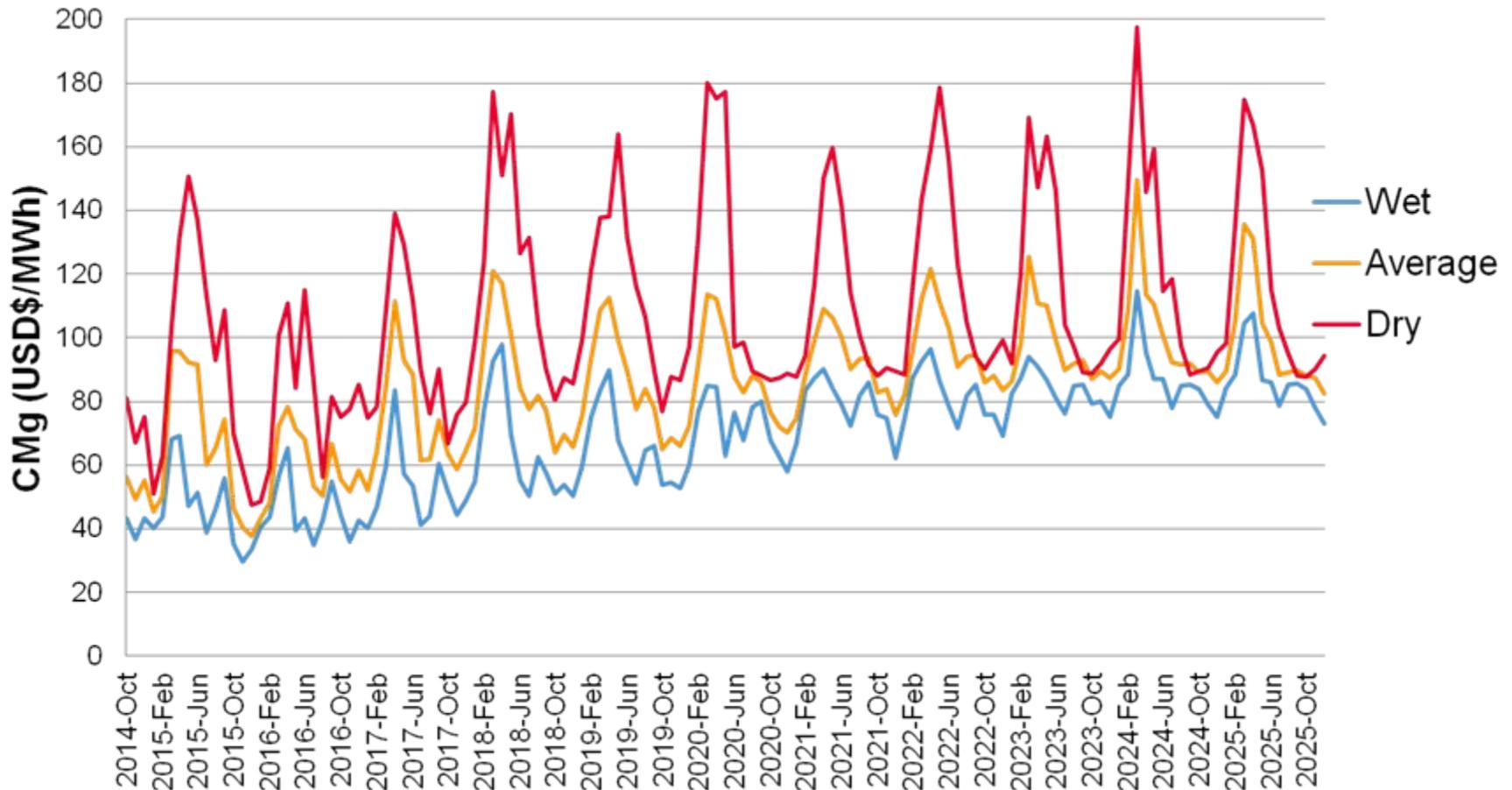
## SOLAR IS A PREDICTABLE SOURCE OF ENERGY

### ► P50 energy simulation



# CONFIDENCE IN THE REVENUES

## Monthly Average Marginal Cost



# KEY LEVERS TO REDUCE THE COST OF SOLAR ELECTRICITY IN CHILE

Criteria	Details	Nature of impact	Achievable lever	Lever impact on LCOE
Structured Finance	Interest rate, gearing	Lower financing cost increase the available cash flows	Reduction of financing costs by 10%	-13%
Yield (KWh/KWp)	<ul style="list-style-type: none"> <li>Solar resource (kWh/m<sup>2</sup>)</li> <li>Superior product &amp; technology</li> </ul>	Direct linear impact on cash flows	+ 8% on the yield	- 7%
Project Size	Total MWp installed	<ul style="list-style-type: none"> <li>Reduce unitary fixed costs</li> <li>Increase appetite of investors and lenders</li> </ul>	+50% of MWp installed	- 5%
Cost of Interconnection	Gen-tie distance (km) Type of interconnection (tap-off versus new sub station)	Impact on Capex of the project to be financed	2.5M\$ (min) versus 10M\$ (avg)	-4.5%
EPC Price	\$/Wp installed	Impact on Capex of the project to be financed	- 10% of the EPC price	-3.4%

# CONDITIONS TO SOLAR PROJECT DEPLOYMENT AT LARGE SCALE

- **Solar is a good response to a very extensive country (4200km N/S)**
- **It is key to reduce carbon footprint (coal and diesel) in the north of Chile, it is complementary to other sources of energies (LNG, hydro, wind)**
- **Consensus within Gvt that Chile needs solar energy resource**
- **Access to financing: solar projects are capital intensive – debt leverage is key**
- **Maturity of the industry: solar projects are the long term investment and need credible players**
- **off-take market organization: power markets have to combine solar with conventional energies (tenders, % of renewable energy in utility mix...)**
- **Regulation in favor of more decentralized energy sources**
  - **Interconnection rules must adapt to less centralized energy**
  - **Net Metering: in Chile the law has enacted the principle but not yet issued the application rules**