

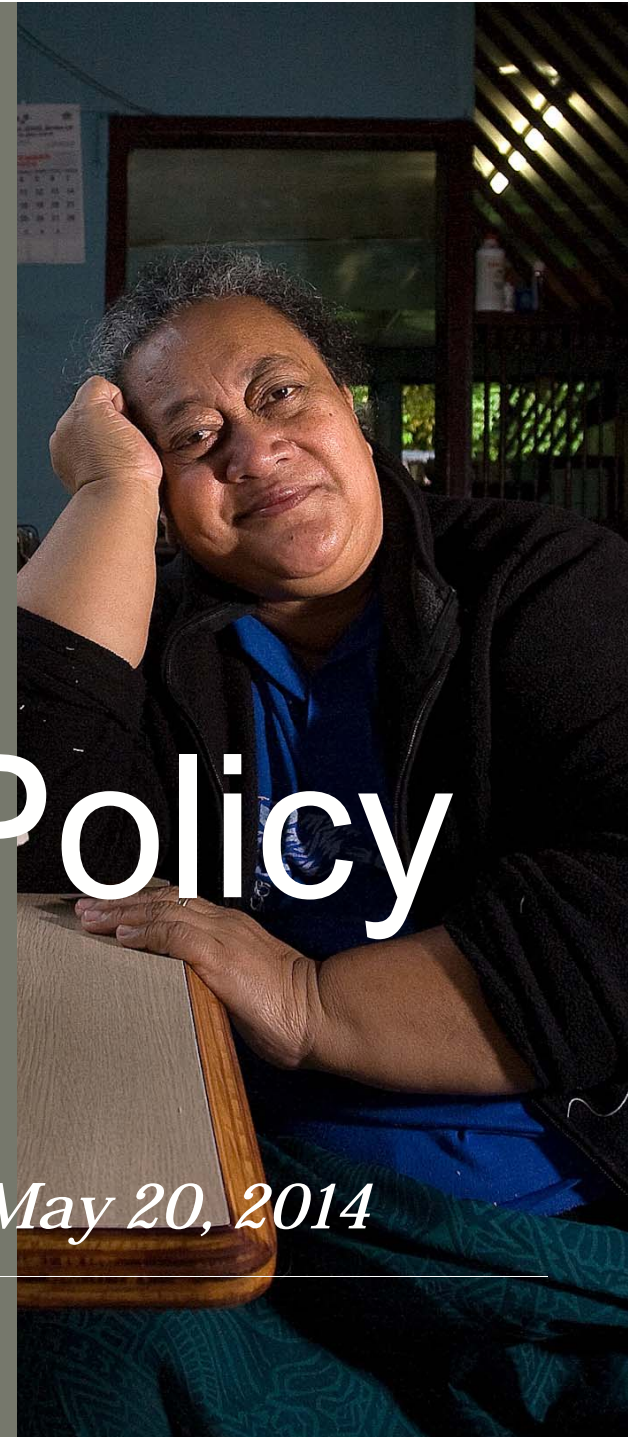


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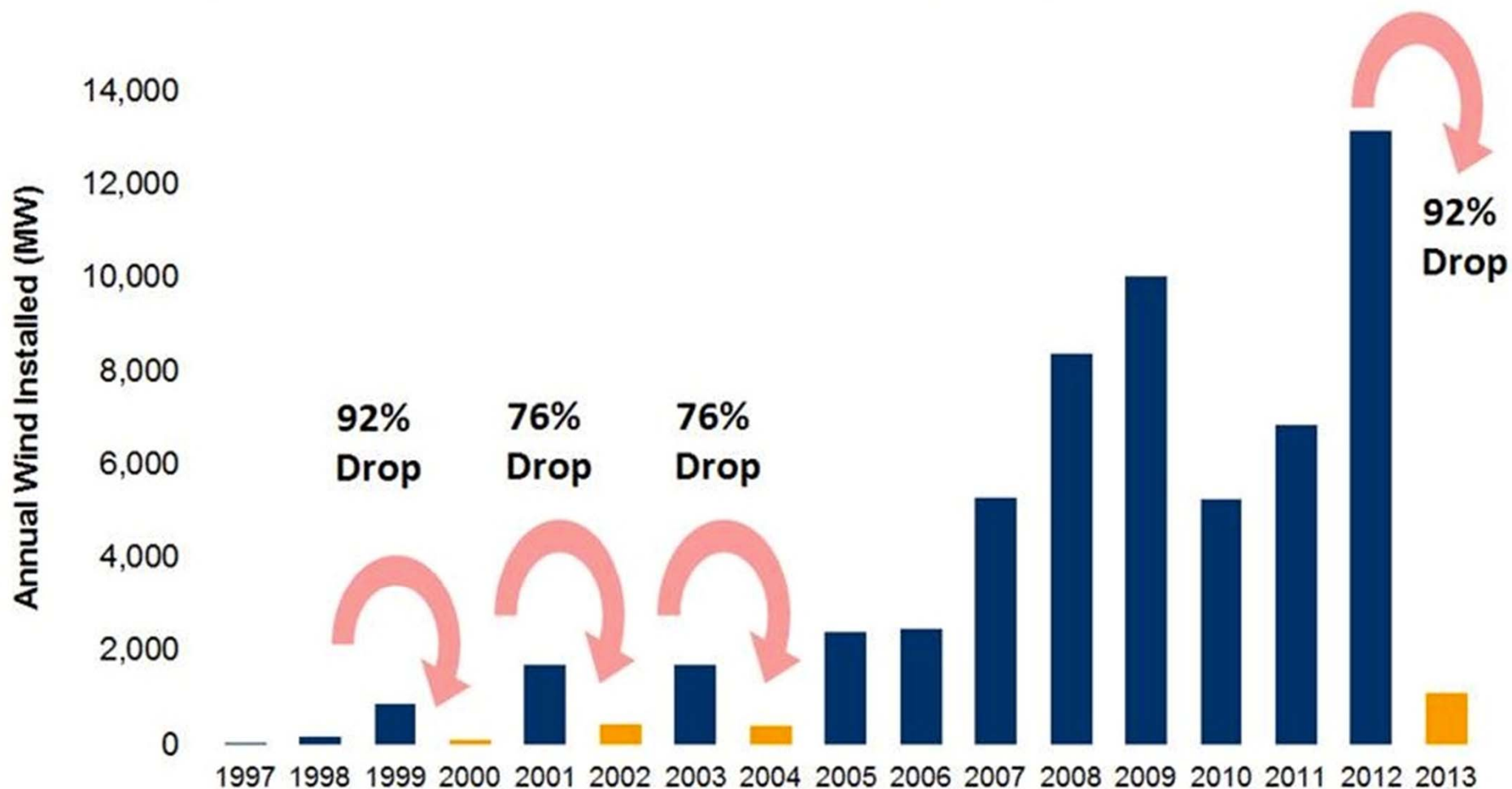
Planning for Policy Stability

Clean Energy Solutions Center Webinar, May 20, 2014

Letha Tawney, Senior Associate



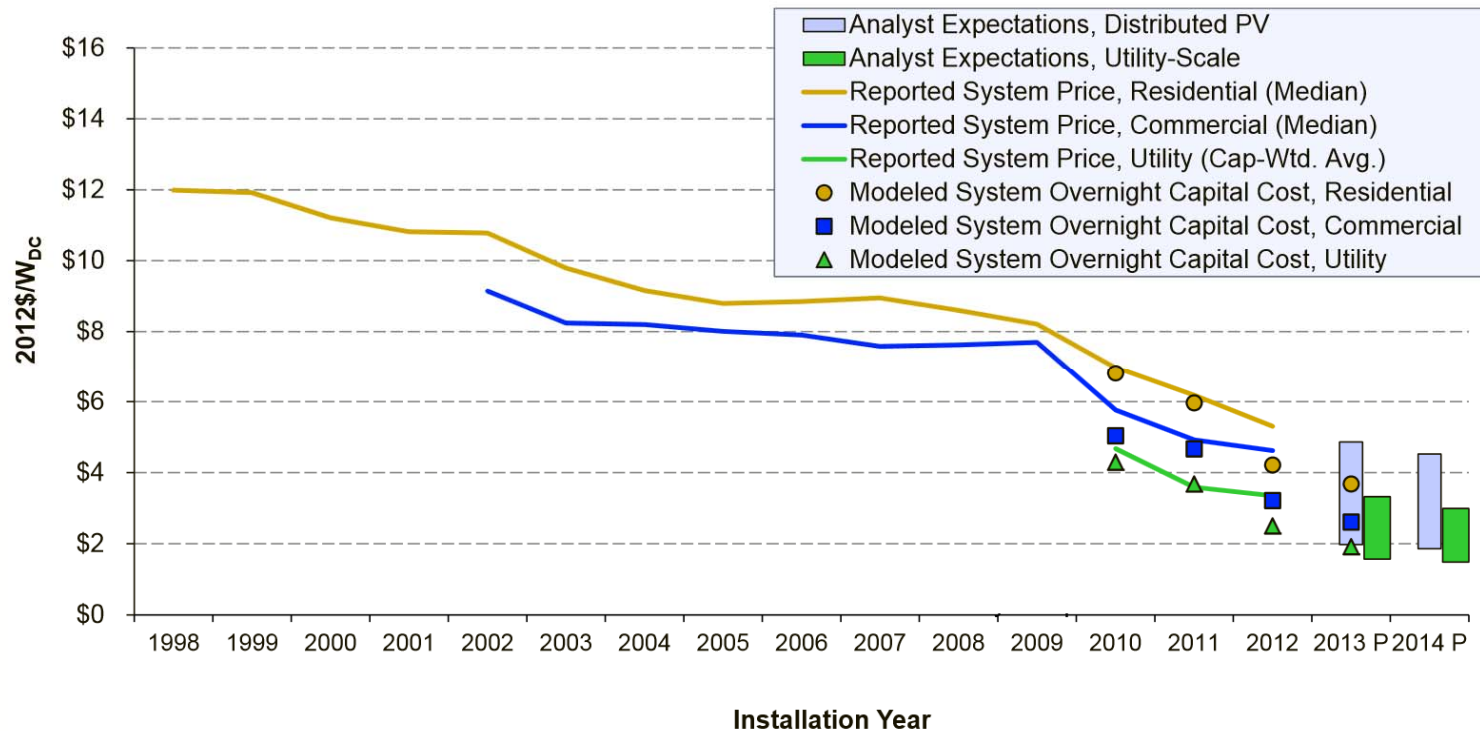
Historic Impact of Production Tax Credit (PTC) Expiration on Annual Wind Capacity Installation



Source: American Wind Energy Association

But the renewable energy market is changing so rapidly – stability ≠ static

US installed price trends and NREL projections:

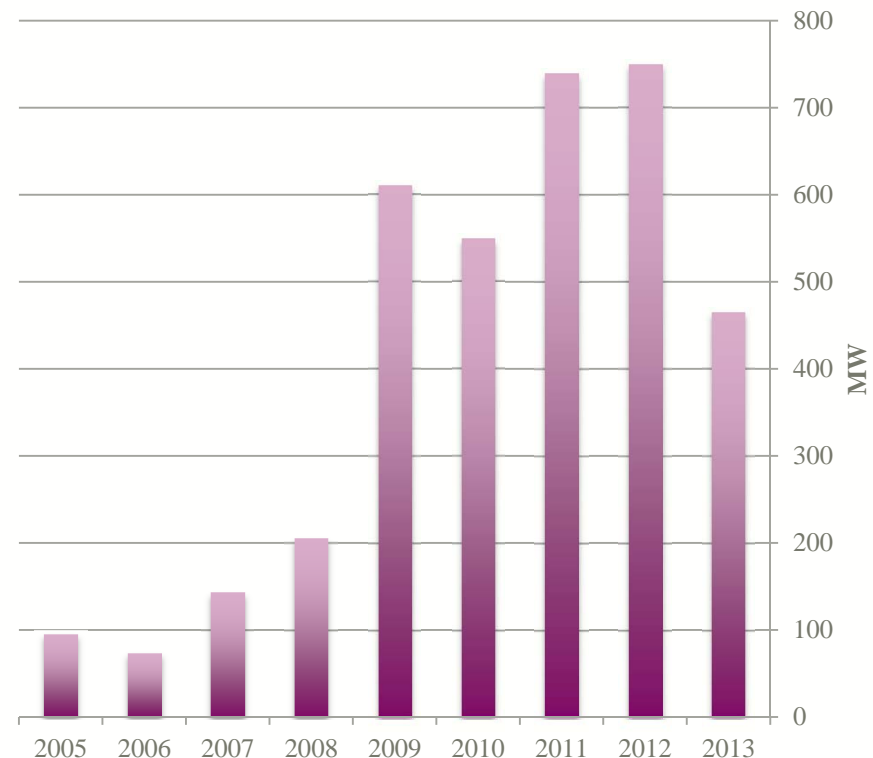


Source: National Renewable Energy Laboratory

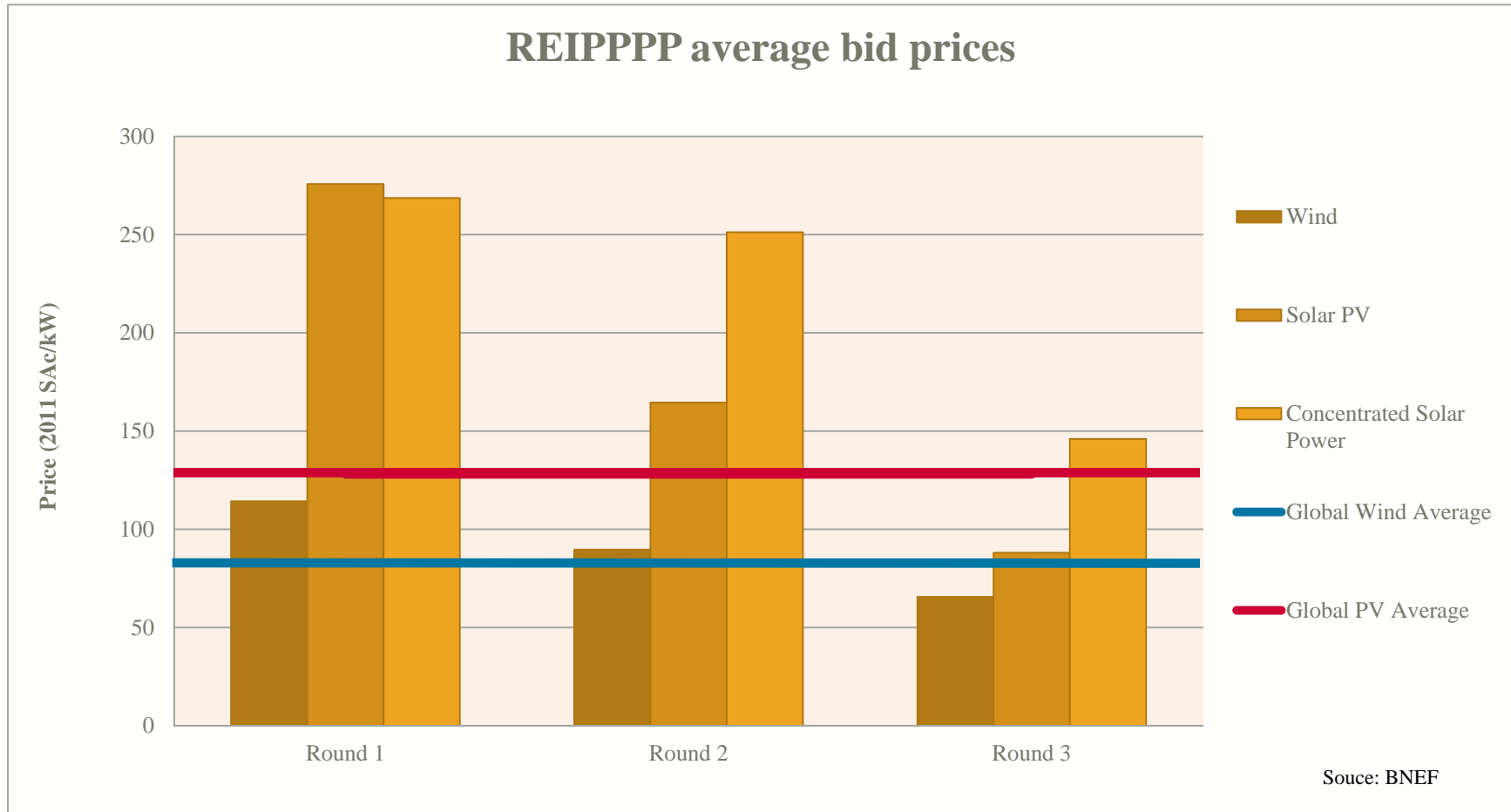
Q6 – Creating a flexible plan – avoiding ‘busts’ while policy is uncertain.

- What happens if progress towards targets is faster or slower than expected?
- How do subsidies adjust to price changes?
- Can investors predict when reviews will happen and the likely outcome?

MW of Solar PV Commissioned in Germany



South Africa's reverse auction is delivering power and lower prices

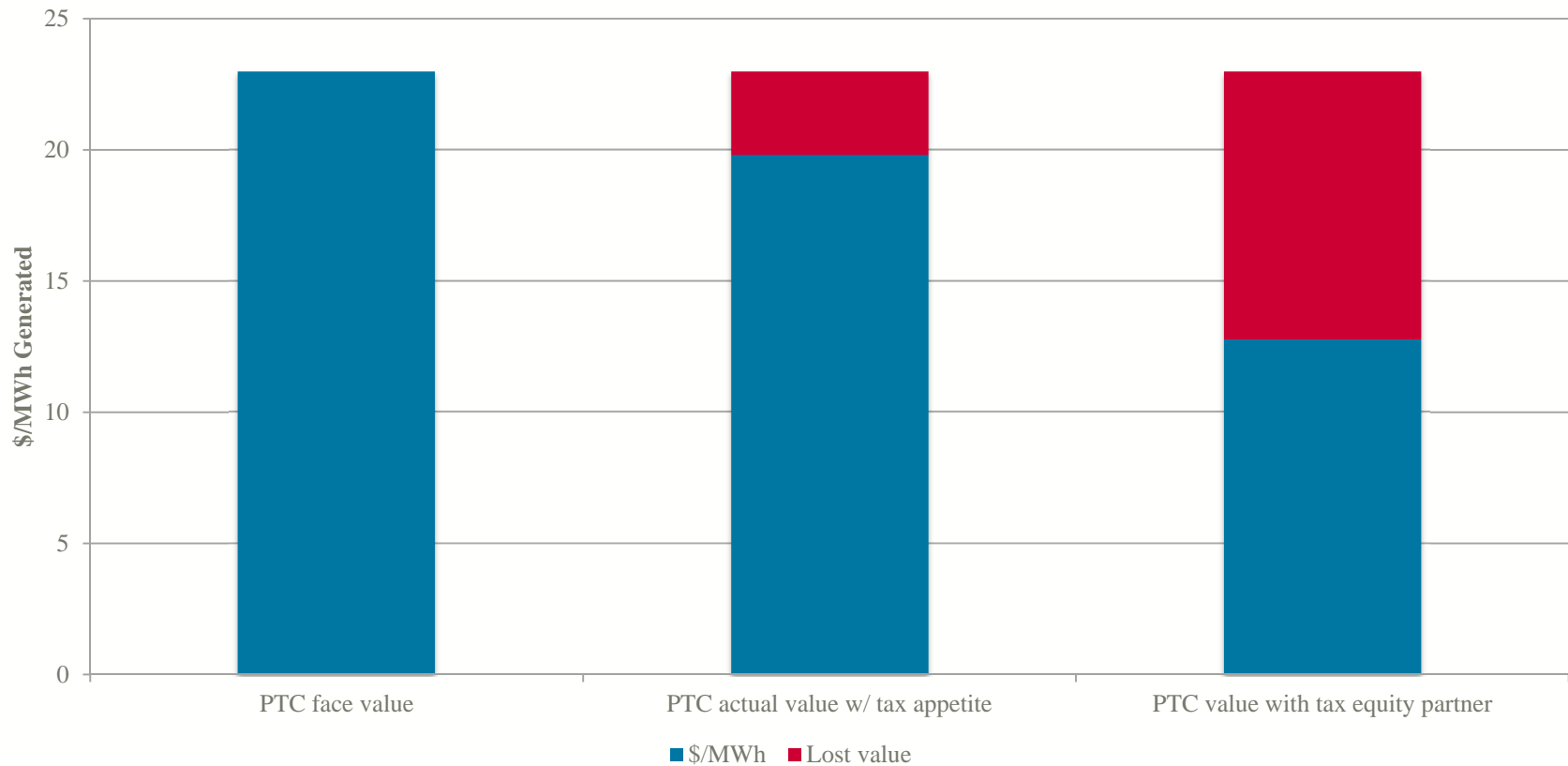


Question 7 – How is the investment financed?

- Is any public incentive structured to keep financing costs to a minimum?
- How will incentives be supported?
- How politically vulnerable are those incentives to retroactive cuts?
- How will the RE industry / stakeholders demonstrate returns for those incentives?

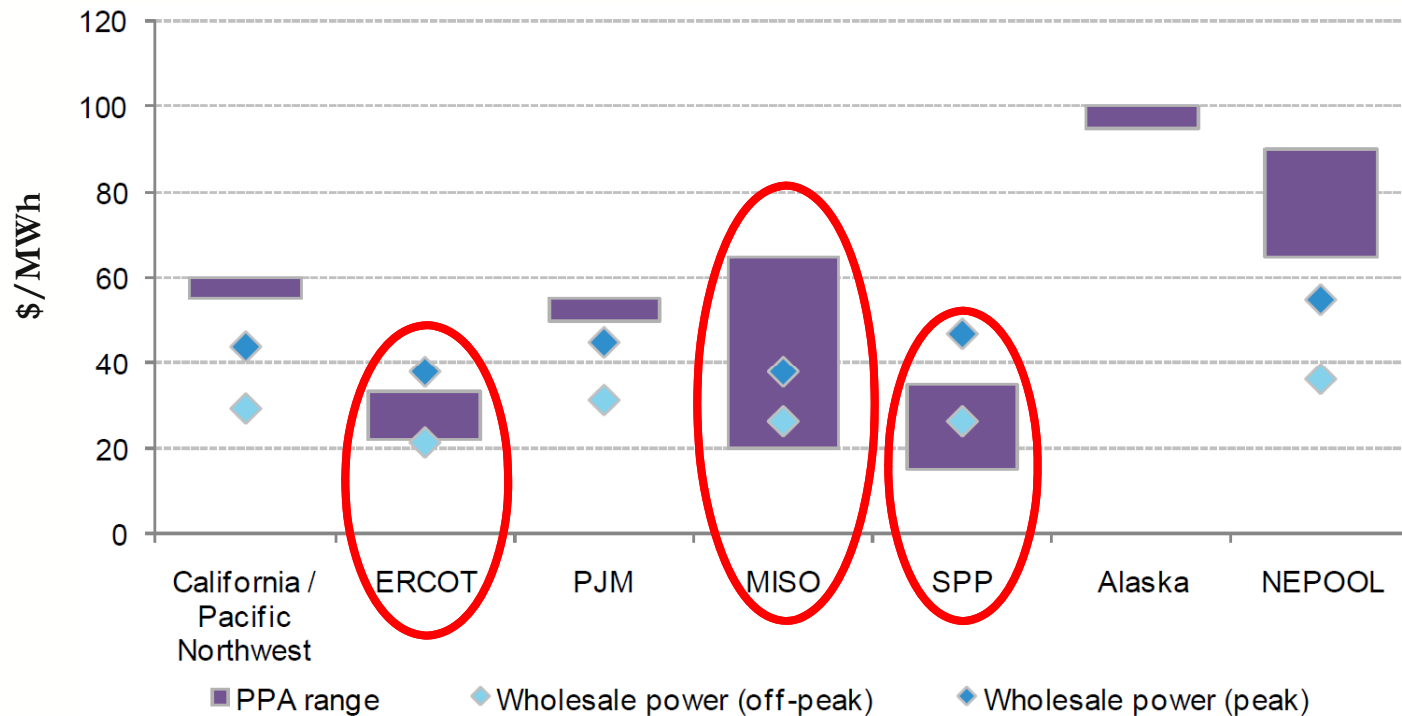
Q7 Example – US PTC is both inefficient and politically vulnerable

US Production Tax Credit Value to Wind Projects



Source: Lawrence Berkley National Laboratory, Bolinger, May 2014

Despite this, wind power prices are very low – competitive with wholesale



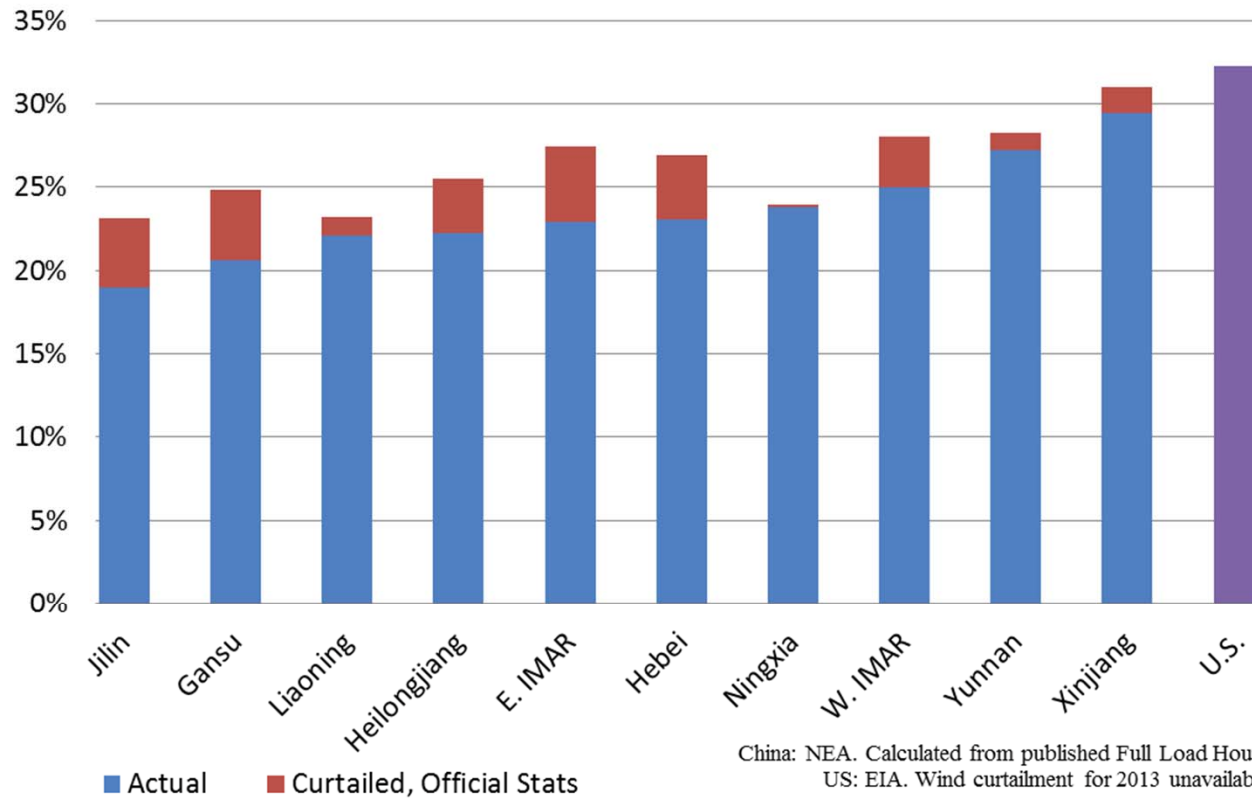
Xcel Energy expects wind **PPAs near \$25/MWh**, with projects in the **SW** bidding at **\$22/MWh**

Q8 - Change isn't only in price – planning for changes scale up will bring

- What technical preparation is necessary for both the goal – and more?
 - A plan for curtailment?
 - A process for absorbing the preferred renewables into the mix?
- Are stakeholders (utilities) assuming scale-up will stop with the goal?

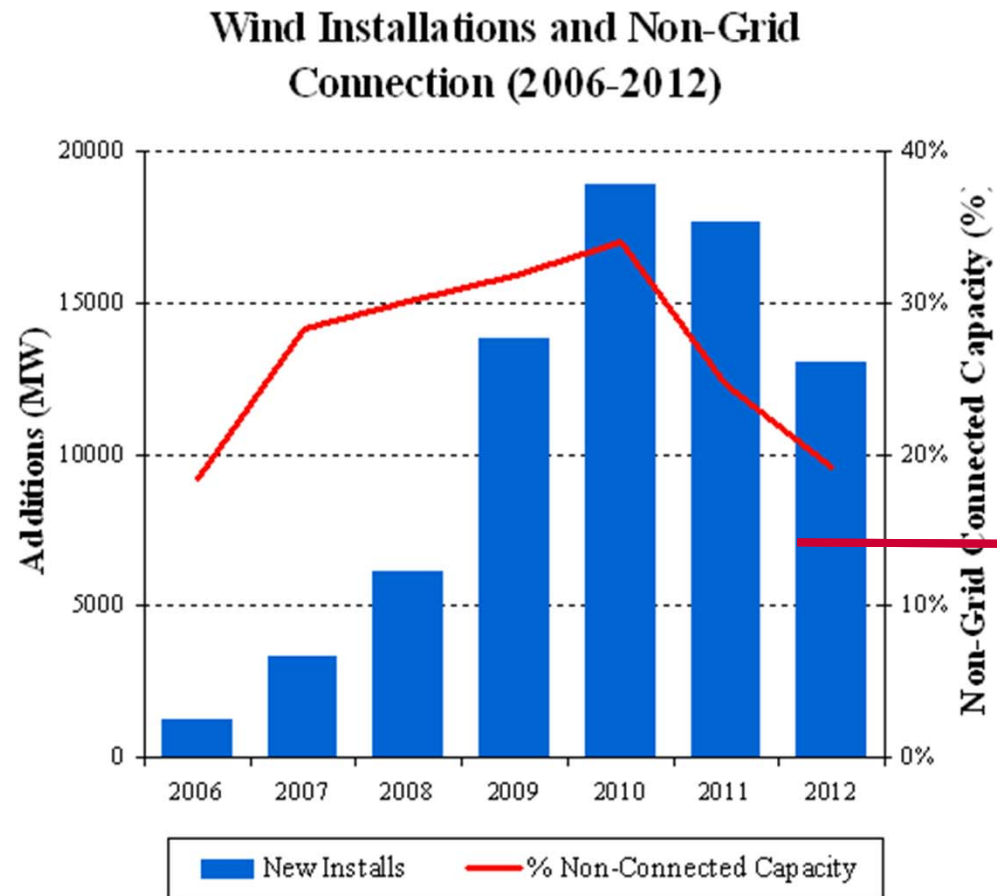
China is facing low capacity factors and curtailment in the wind on the grid

Wind Capacity Factors and Curtailment By Province



Curtailment continued to take a big chunk out of potential wind generation in 2013. Reported capacity factors are still much below U.S. levels.

...and struggling to connect new builds to the grid

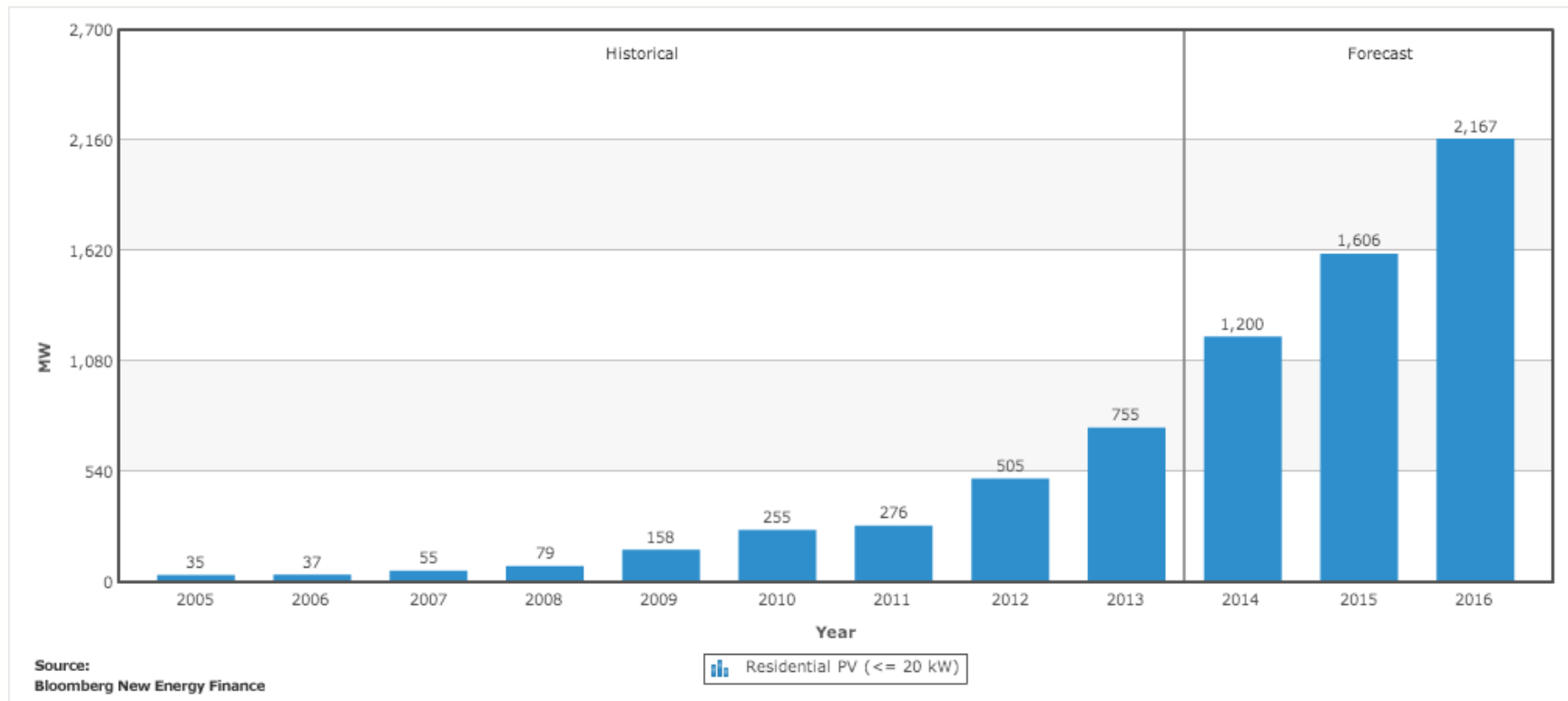


BNEF reports
it may fall to
12% for 2013

Source: China Wind Energy Association, China Electricity Council

Arizona Public Service was surprised by the falling price of distributed PV

Annual Installation of small scale solar PV in the United States



Thank You

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