



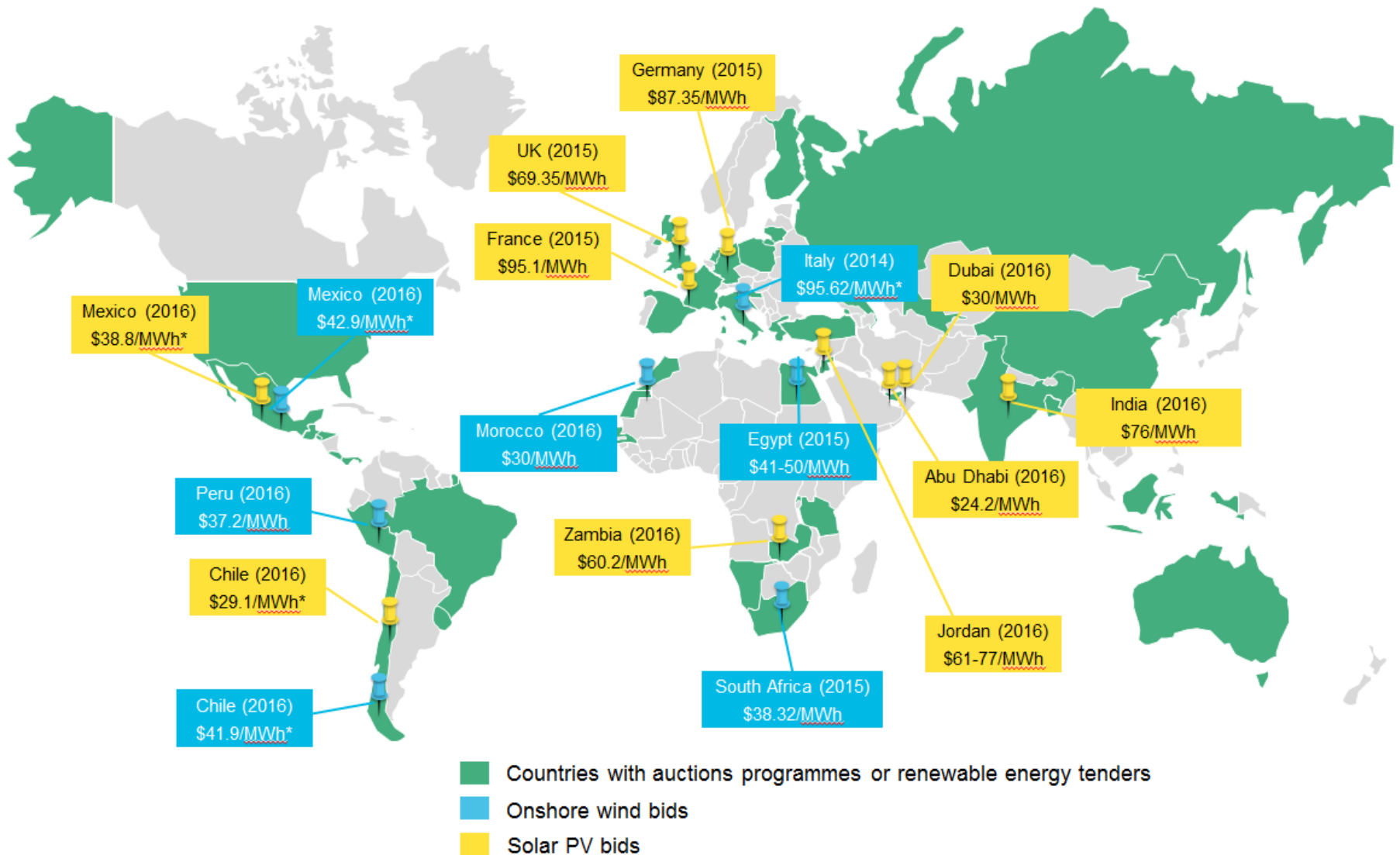
USAID
FROM THE AMERICAN PEOPLE

RENEWABLE ENERGY AUCTIONS: DRIVING FALLING PRICES

Allen Eisendrath
Global Climate Change Office
Director
USAID/Washington

*Presented @IRENA Regional Workshop
on RE in Central Asia, 26 – 27 April 2017*

World Wide Auctions: Solar PV and Wind



Renewable Energy Auctions: The Basics

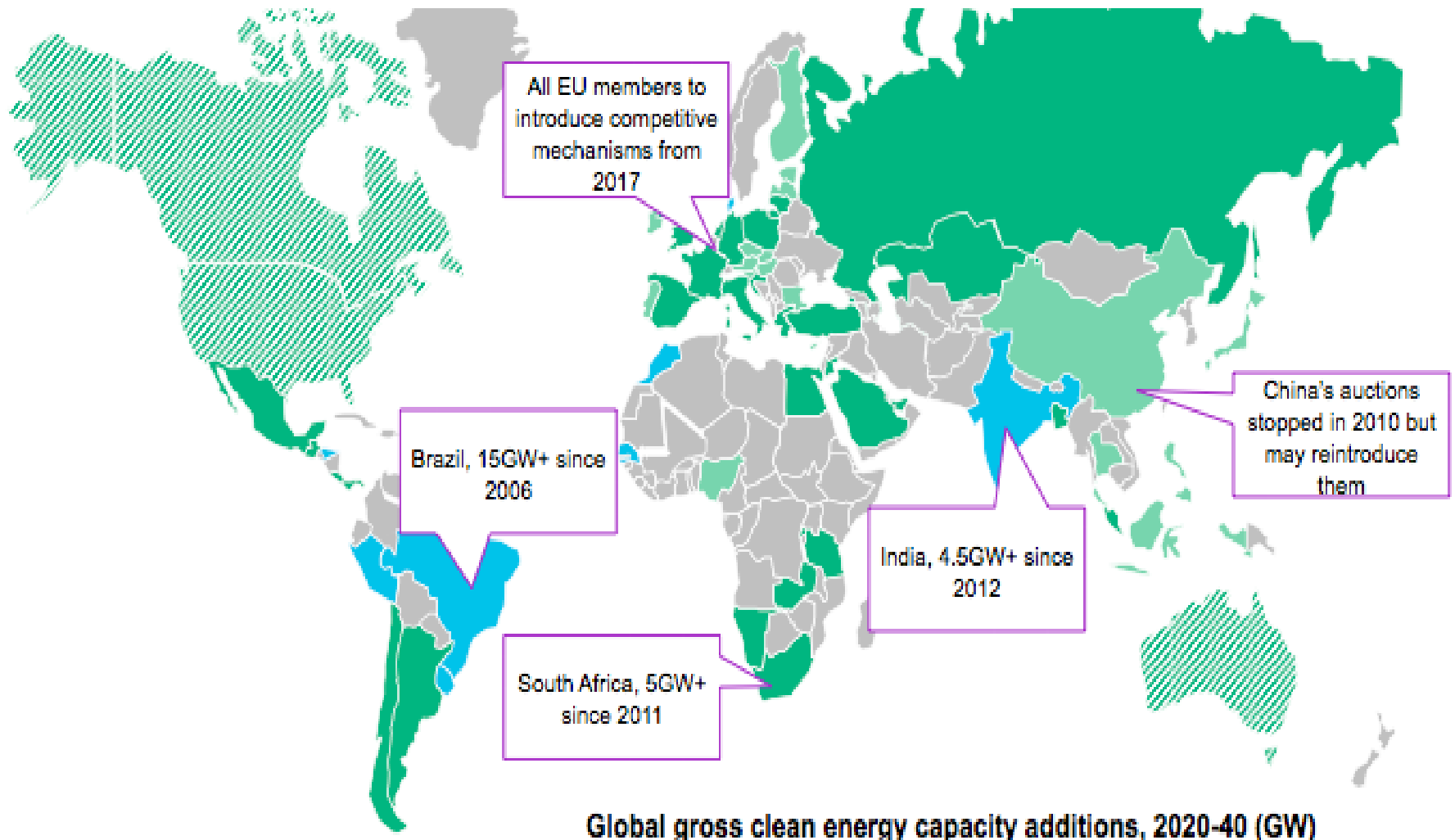
- **Price discovery** in rapidly-changing environment
 - Prices falling fast; **faster** than governments can track
 - FITs set price for a long period- and they set it high
- **Multiple rounds** result in improved investor confidence
- Certain objectives may be weighed more than others
 - Local participation
 - Location
 - Past Performance
 - **It's not just price!**





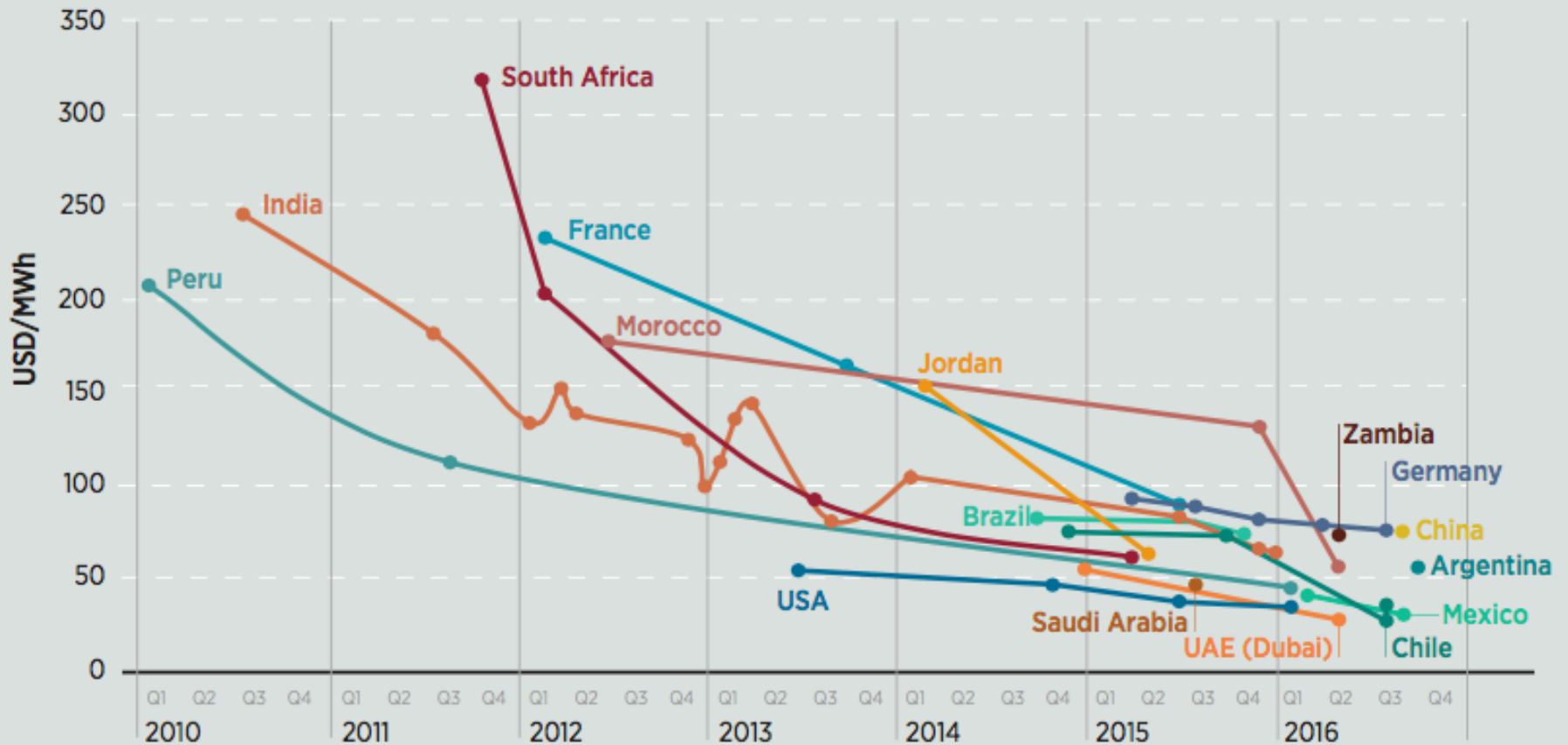
USAID
FROM THE AMERICAN PEOPLE

To look at emerging prices, we look at auctions. Why?
Because they drive prices down.

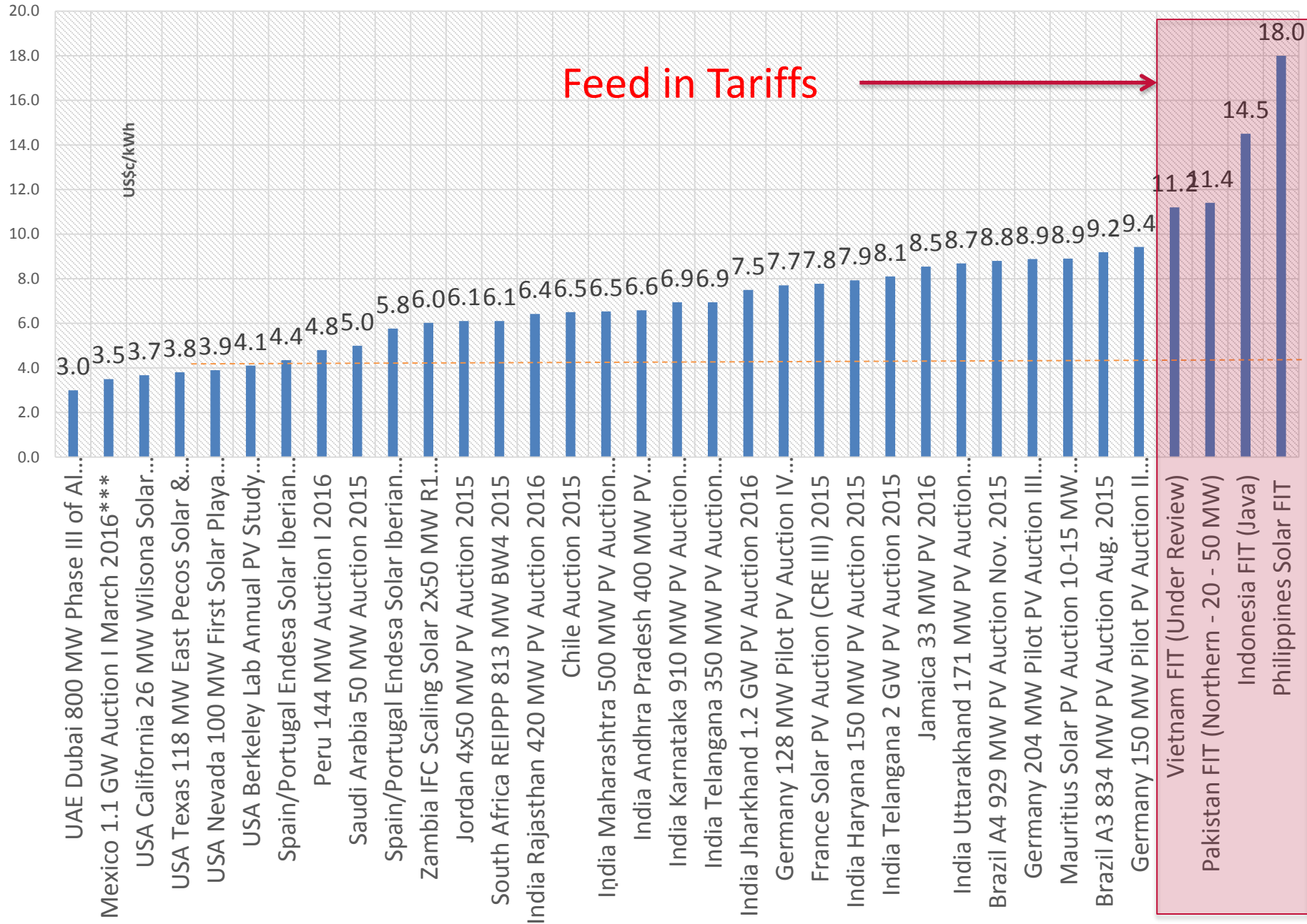


Increased RE experience, falling prices

Figure 3 Evolution of average solar prices in auctions, January 2010-September 2016



Utility-scale Solar PV Auctions/FITs, 2015-2016





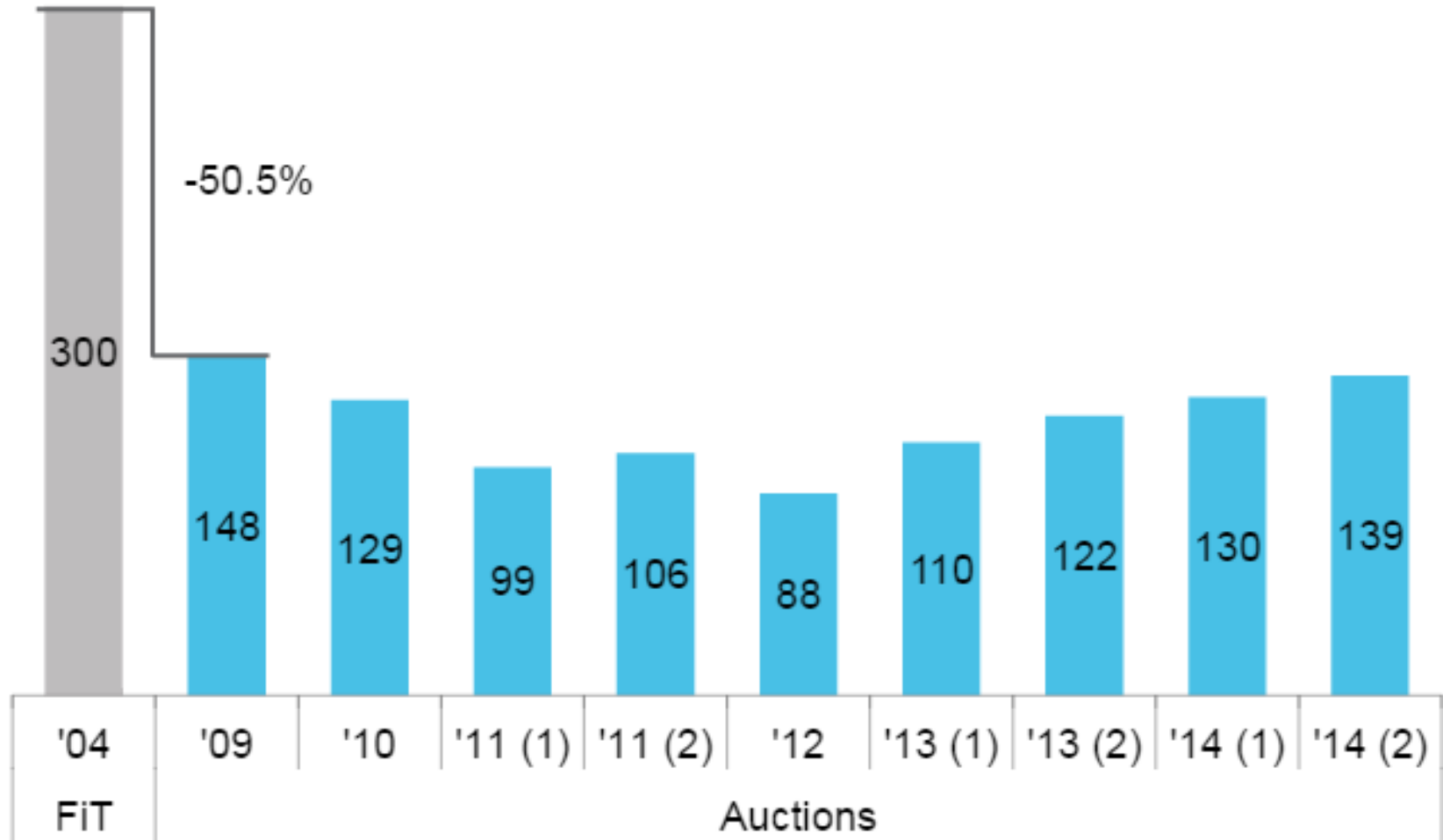
- Mexico Second Round: 2.69 cents/kWh
 - Lowest worldwide PV price
- Chile: 2.91 cents/kWh
- United Arab Emirates: 2.99 cents/kWh
- El Salvador: (1/11/17): 4.95 cents/kWh



- USA 2016: \$2.5/MWh average new PPA price (with production tax credit)
- Morocco: \$30/MWh average price (with production tax credit)
- South Africa: \$47/MWh
- India: \$52/MWh
- Australia: \$57/MWh

<http://reneweconomy.com.au/record-low-wind-energy-price-in-act-auction-but-solar-not-far-behind-12195/>; <http://www.windpowermonthly.com/article/1386944/ontario-wind-auction-pushes-down-prices>; <https://www.gsb.uct.ac.za/files/REAuctionsInSA.pdf>

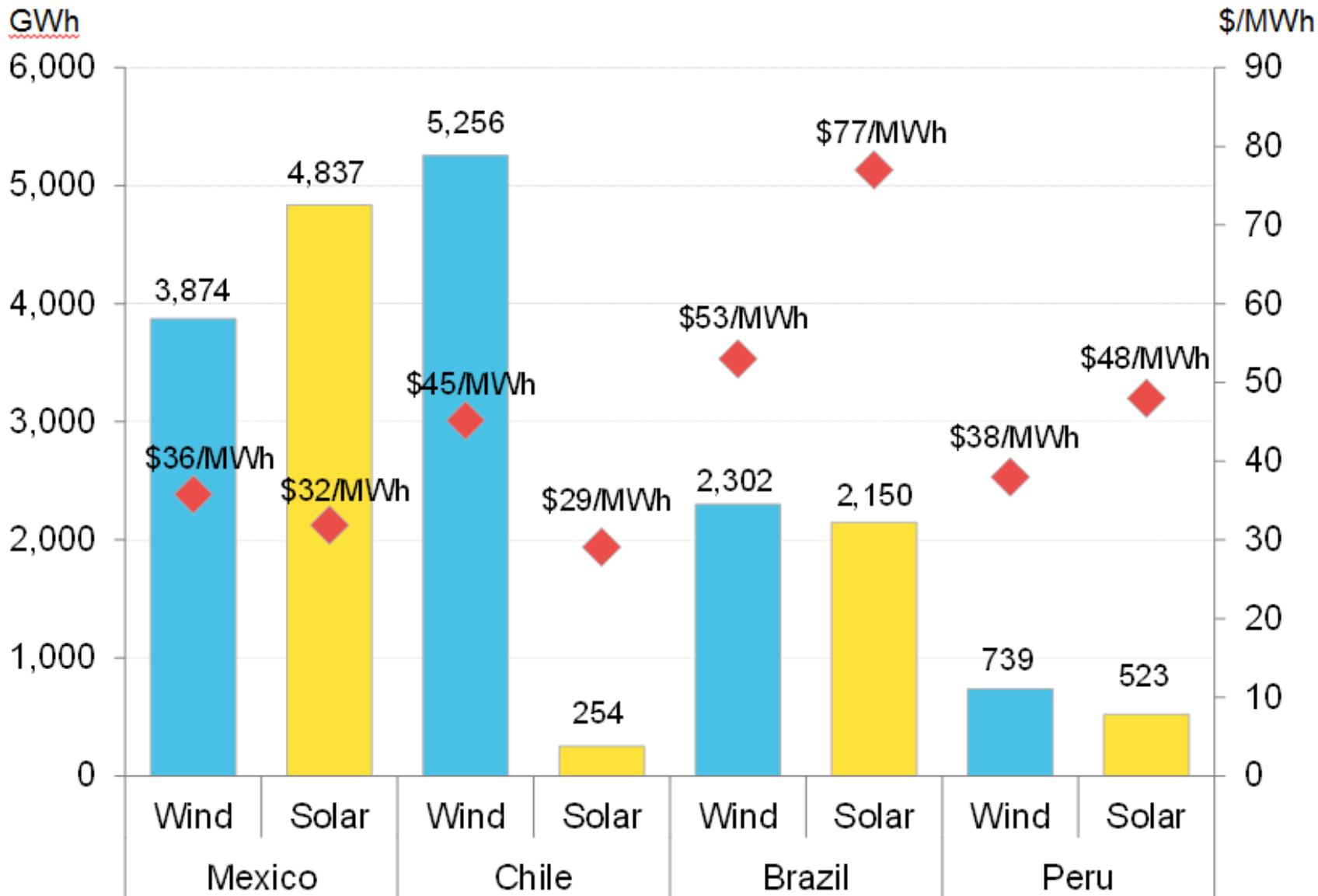
Brazil: RE Auctions Showed Strong Price Declines





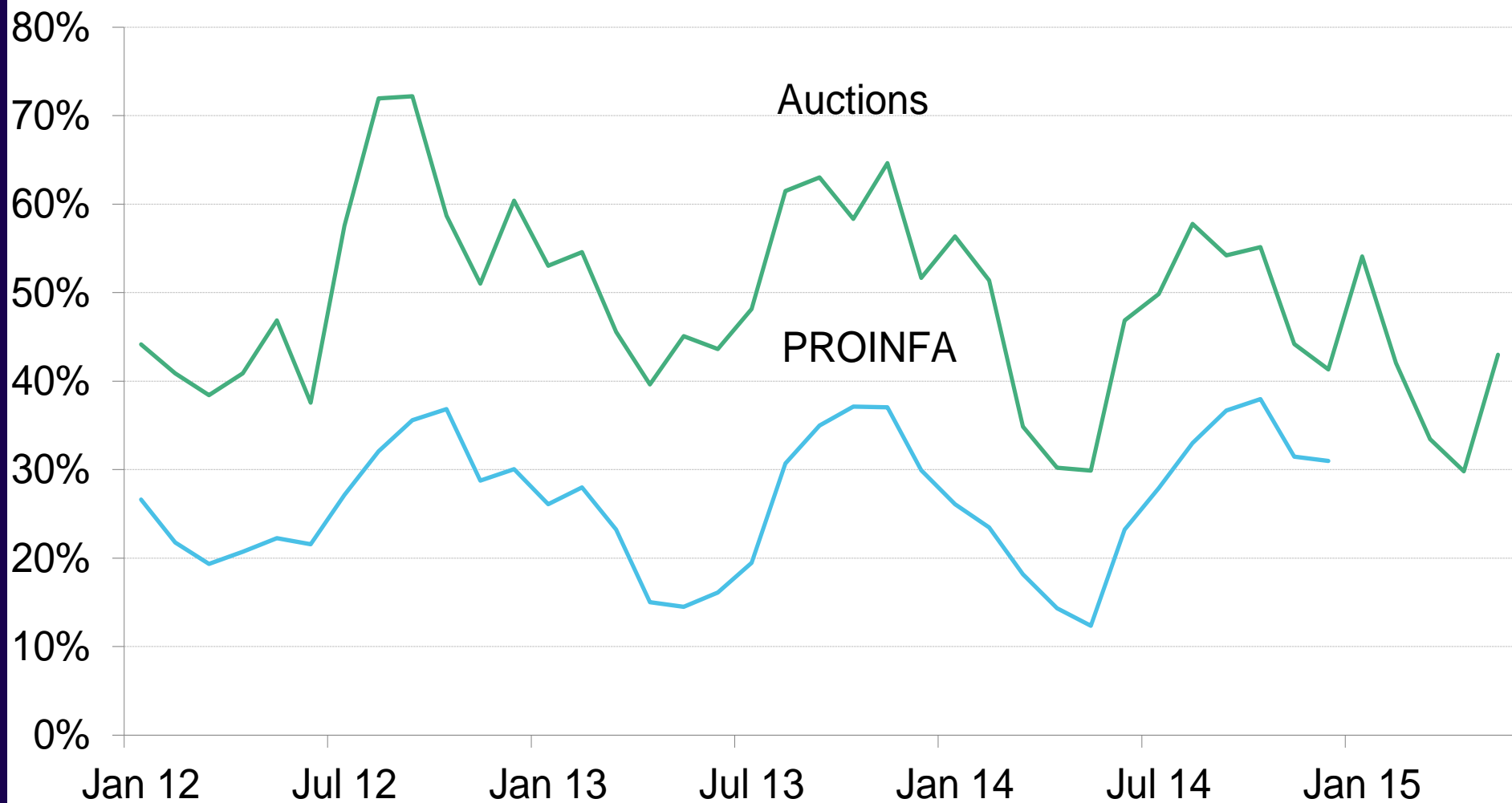
USAID
FROM THE AMERICAN PEOPLE

Comparison of Recent Latin American Auctions



◆ Average price (\$/MWh)

Capacity factors for Brazilian wind projects under auctions and PROINFA FIT, 2012-15 (%)

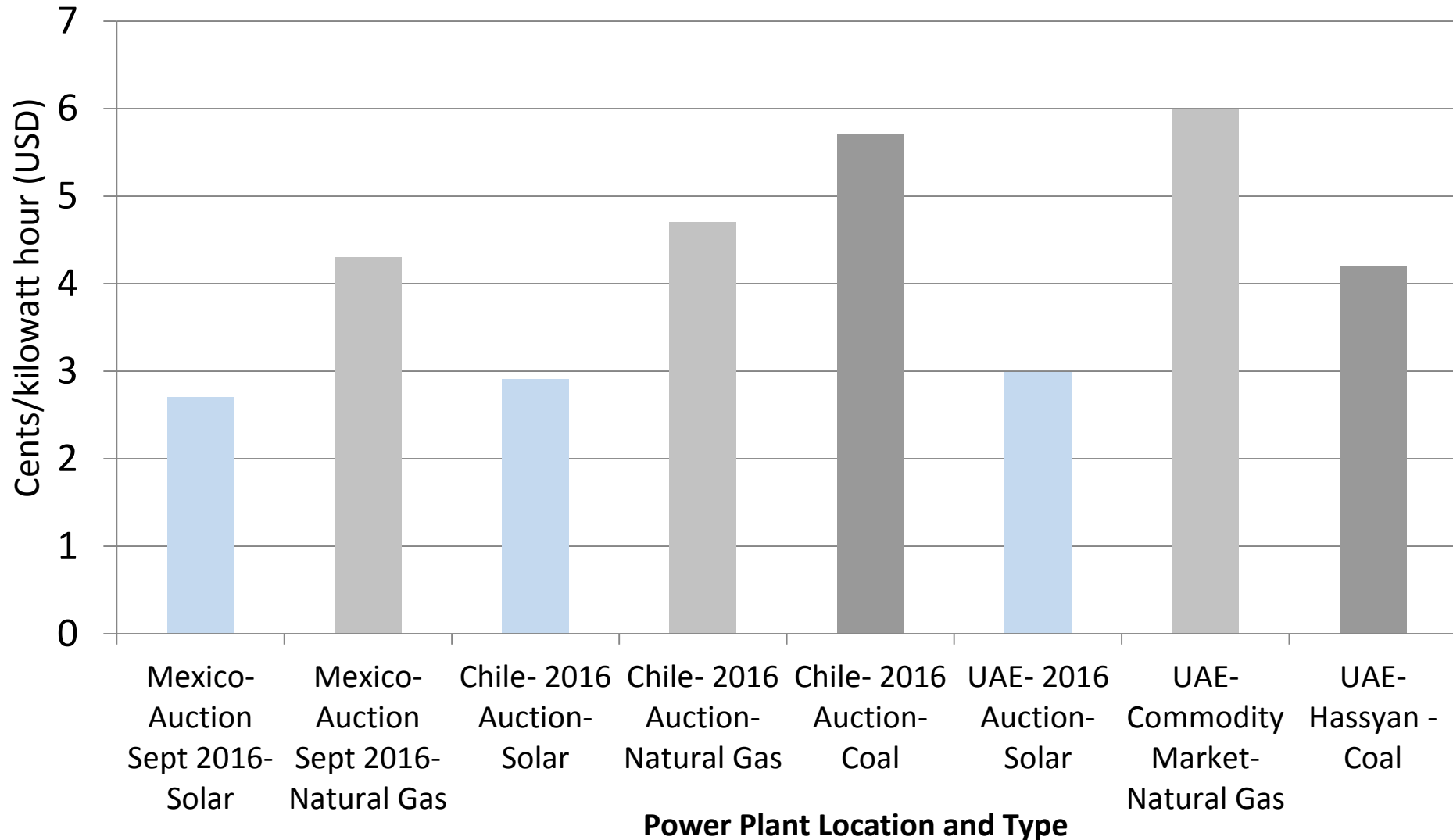


Note: 2015 generation data for PROINFA projects is not disclosed.

Source: Bloomberg New Energy Finance, ANEEL, ABEEolica

RE prices in auctions can be lower than new coal and gas plant generation prices

Solar vs. Thermal Plant Price Comparison (2016)



New RE cheaper than new coal or gas

- Australia: wind \$80; coal \$143; gas \$116
- Chile: wind \$38; gas \$47; coal \$57; \$60 hydro; \$66 geothermal
- South Africa: wind and PV Rand .62; coal Rand 1.1; nuclear Rand 1.25; gas CCGT Rand 1.1
- Denmark, Brazil & Mexico also have lower RE costs than new thermal generation costs



USAID
FROM THE AMERICAN PEOPLE

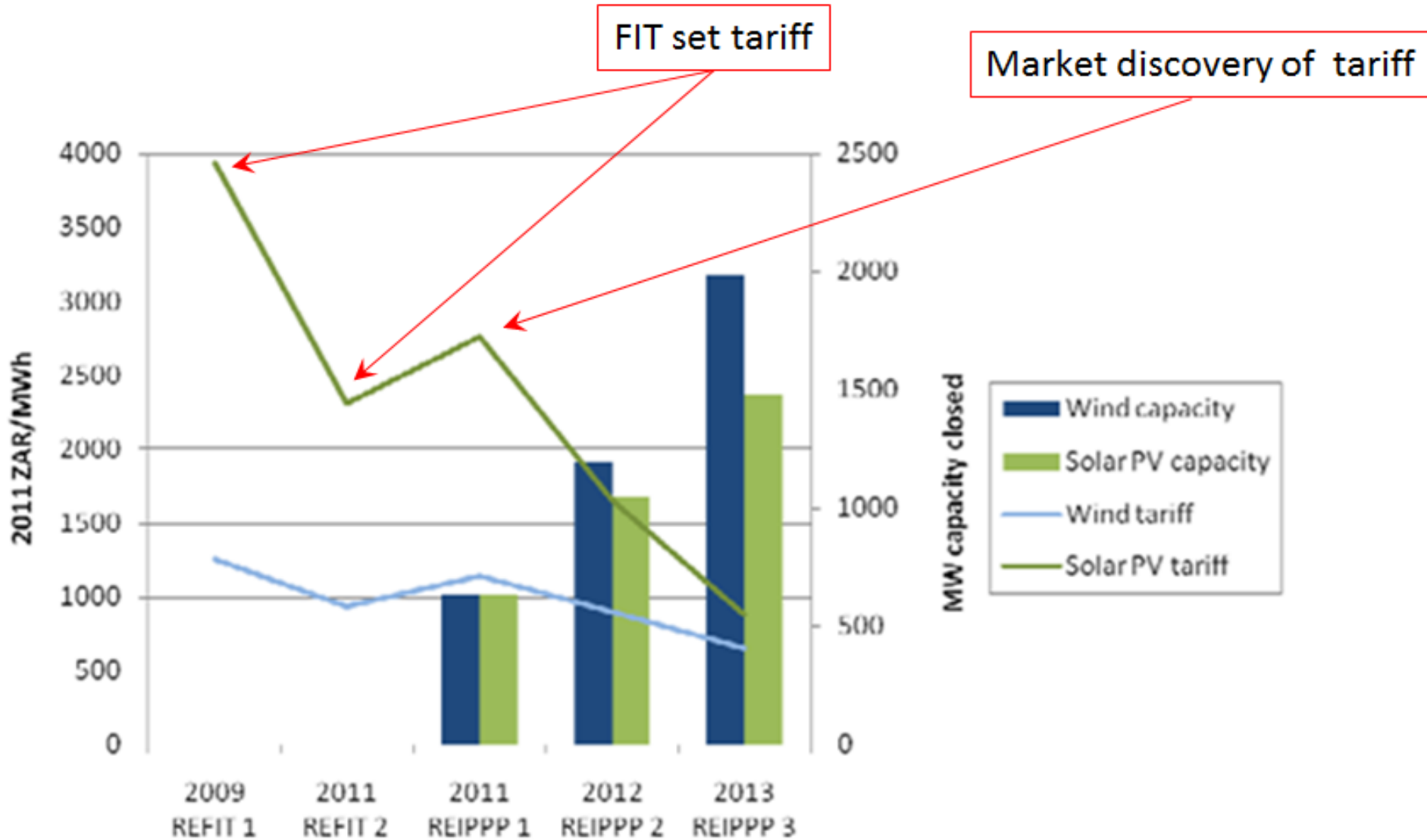
Patterns of Price Decline





USAID
FROM THE AMERICAN PEOPLE

South Africa: Auctions get low prices

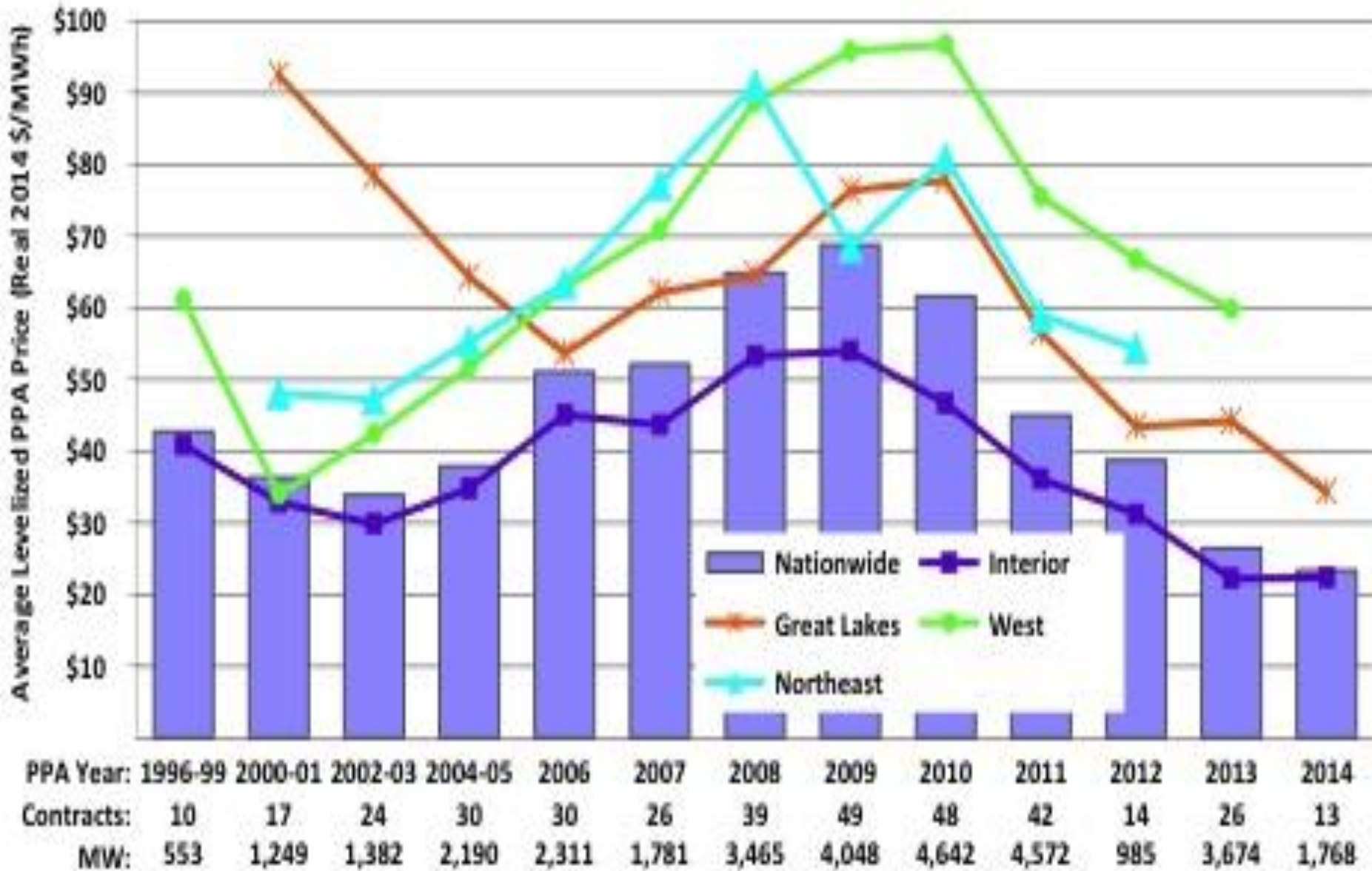


Sources: SA Department of Energy and Minerals 2013, Pegels 2012



USAID
FROM THE AMERICAN PEOPLE

For new contracts, US wind priced drop to US 2.5 cents in 2014



Mexico: Showing Global Best Practices

Results of Mexico's US\$4 billion second renewable energy auction

By Danielle Ola | Oct 03, 2016 11:22 AM BST | 1

Share [f](#) [in](#) [t](#) [e](#)

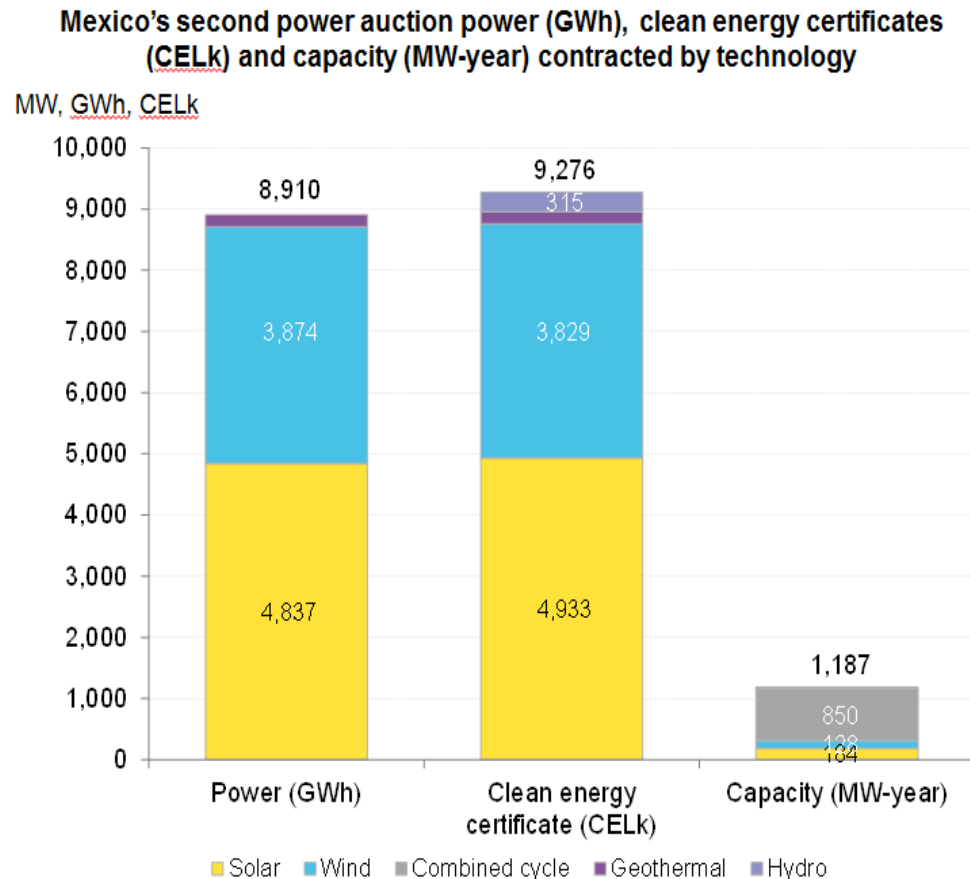


Hernández Martínez and César Hernández Ochoa at the official power auction presentation last Wednesday. Source: SENER

- GOM Target of 35% clean energy by 2024
- Contracted out 6 GW of RE capacity in 2 auctions
- 3rd auction scheduled for next month
- **USAID assisted**

Mexico Round Two Results

- 3 record-low prices for Latin America:
 - Average tender price of \$33.5/MWh
 - Wind price of \$32/MWh
 - Solar price of \$27/MWh
- 19 companies won contracts, a mix of state-owned and private companies, local and international developers



India: Towards 175 GW of RE

India's Madhya Pradesh auctions nation's lowest-priced solar

Today's reverse auction for capacity at the 750 MW Rewa solar farm in the Indian state attracts record-low bid of just INR 3.59/kWh (\$0.053/kWh).

FEBRUARY 9, 2017 IAN CLOVER

INSTALLATIONS

UTILITY-SCALE PV

INDIA



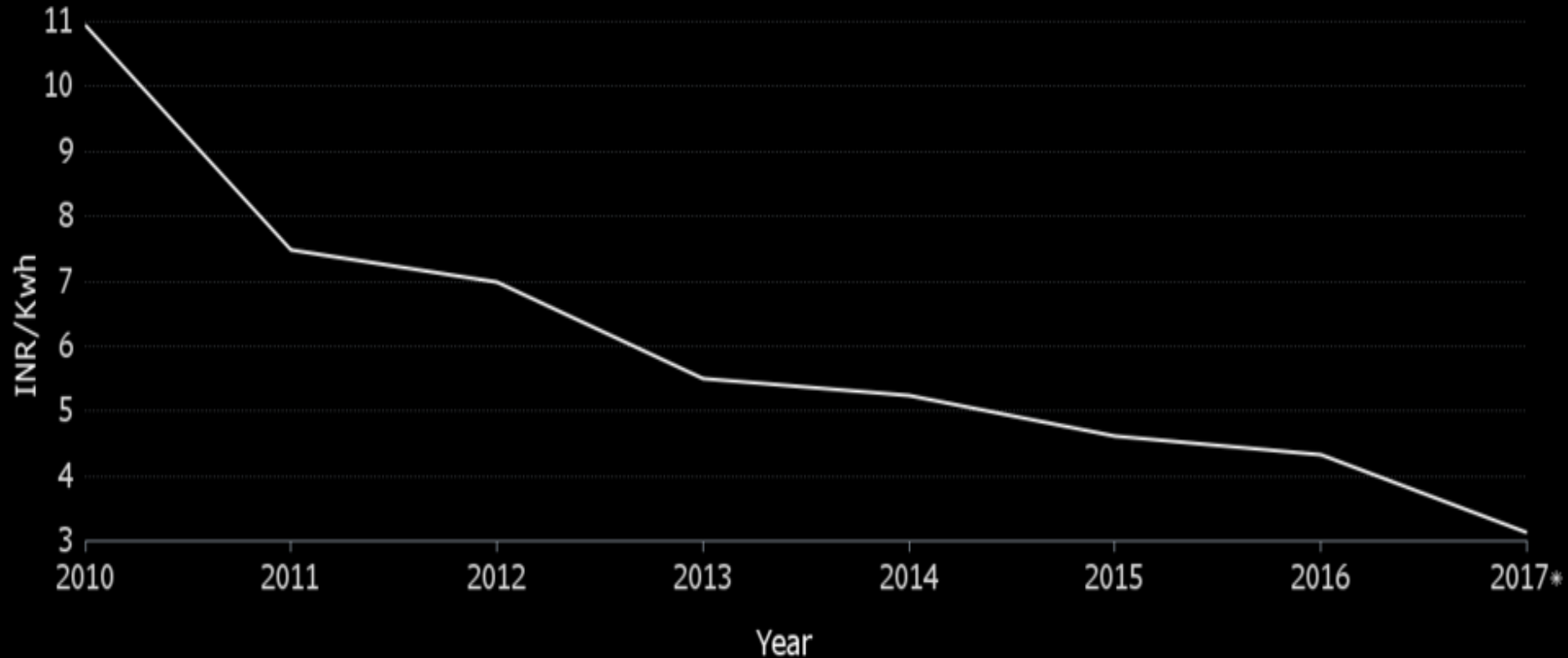
India now has 10 GW of solar capacity installed, and could add that amount again in 2017 alone.

- National renewable energy target: **175 GW** – highest target in world!
 - 100 GW of solar
- More large-scale solar farms planned

India's PV price evolution

Costly to Cutthroat Tariffs : India's Solar Auction Journey

Solar tariff in April's NTPC auction fell to almost a fourth of lowest in 2010



Source: Bloomberg New Energy Finance

* Kadapa solar tariff at INR 3.15/Kwh

India's First National Wind Auction

Wind power tariffs crash to ₹3.46/kWhr, set a new benchmark at auction

M RAMESH

(2) · PRINT · T+

 Tweet

 G+ 2

 Share 45

 Pin it

 Share 4



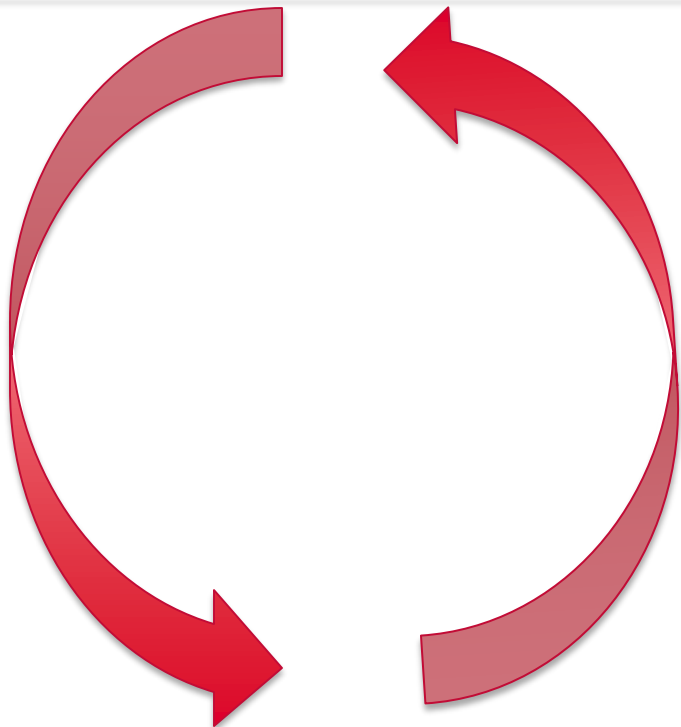
The fall in wind tariffs mirrors a similar trend in solar tariffs. The new projects are expected to come up in Gujarat and Tamil Nadu

- Wind FiT previously in place
- 1 GW of generation was contracted
- GOI target is 75 GW of wind



What's going on here?

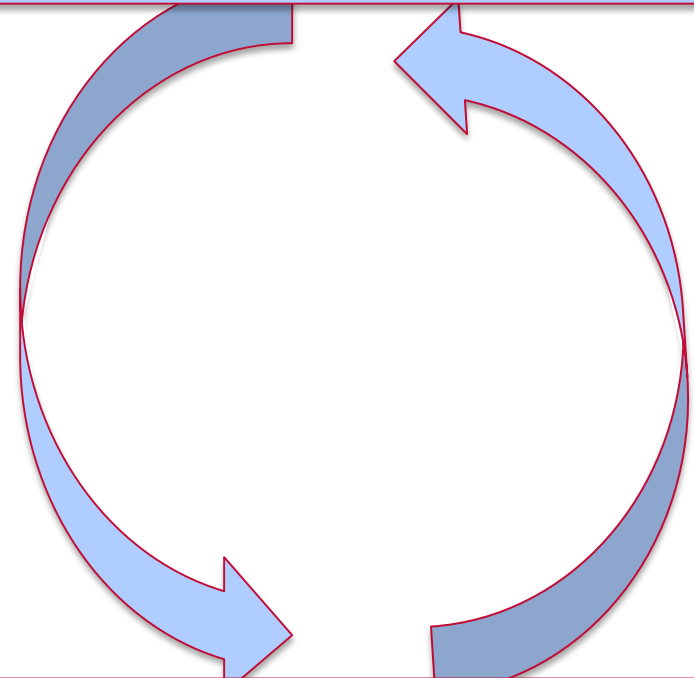
Competitive pressure
drive lower prices



Lower prices lead to
sector officials wanting
more RE

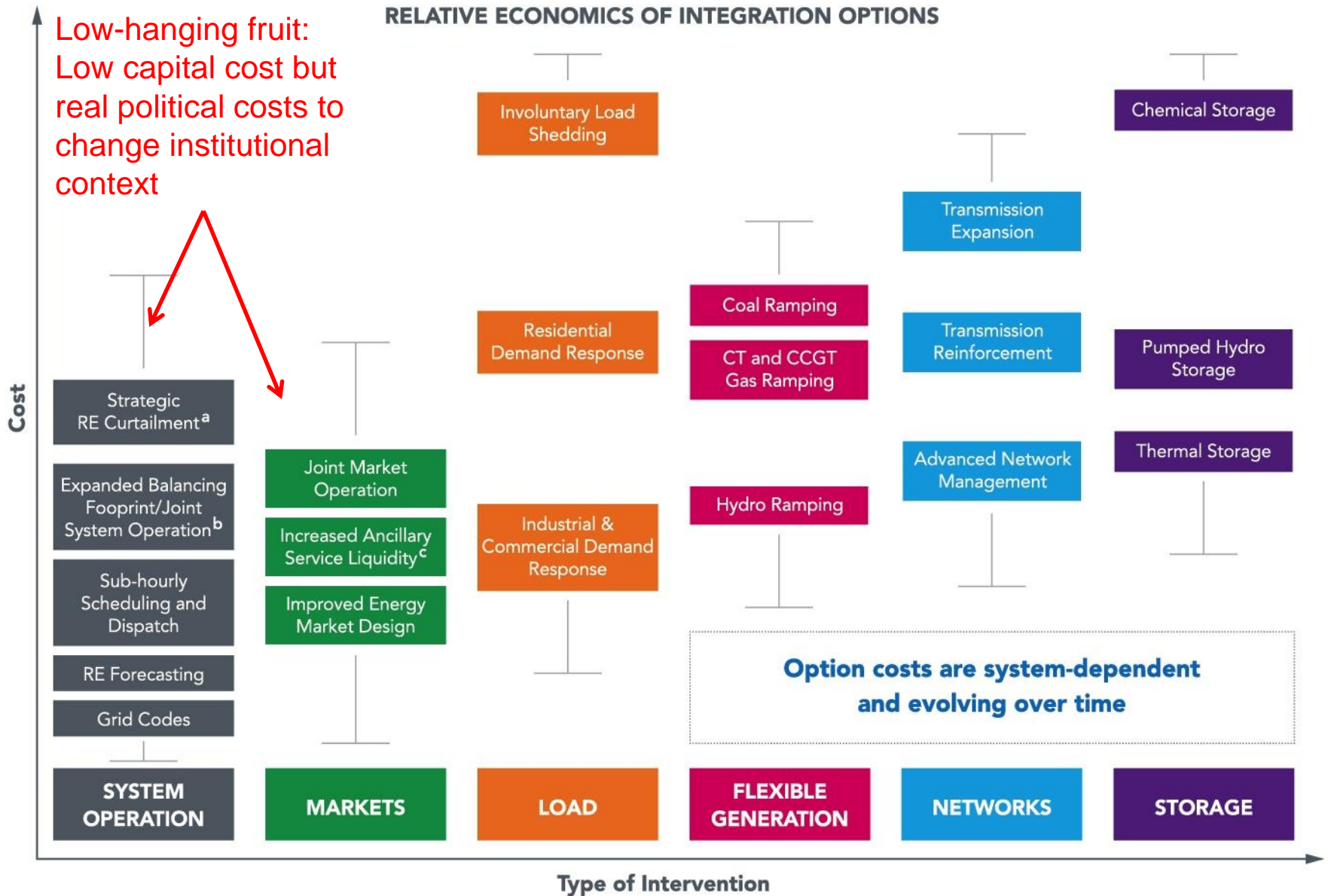
Two
feedback
loops at
work

More capacity drives
supply chain & financing
develop



Better supply chain &
financing drives lower
prices

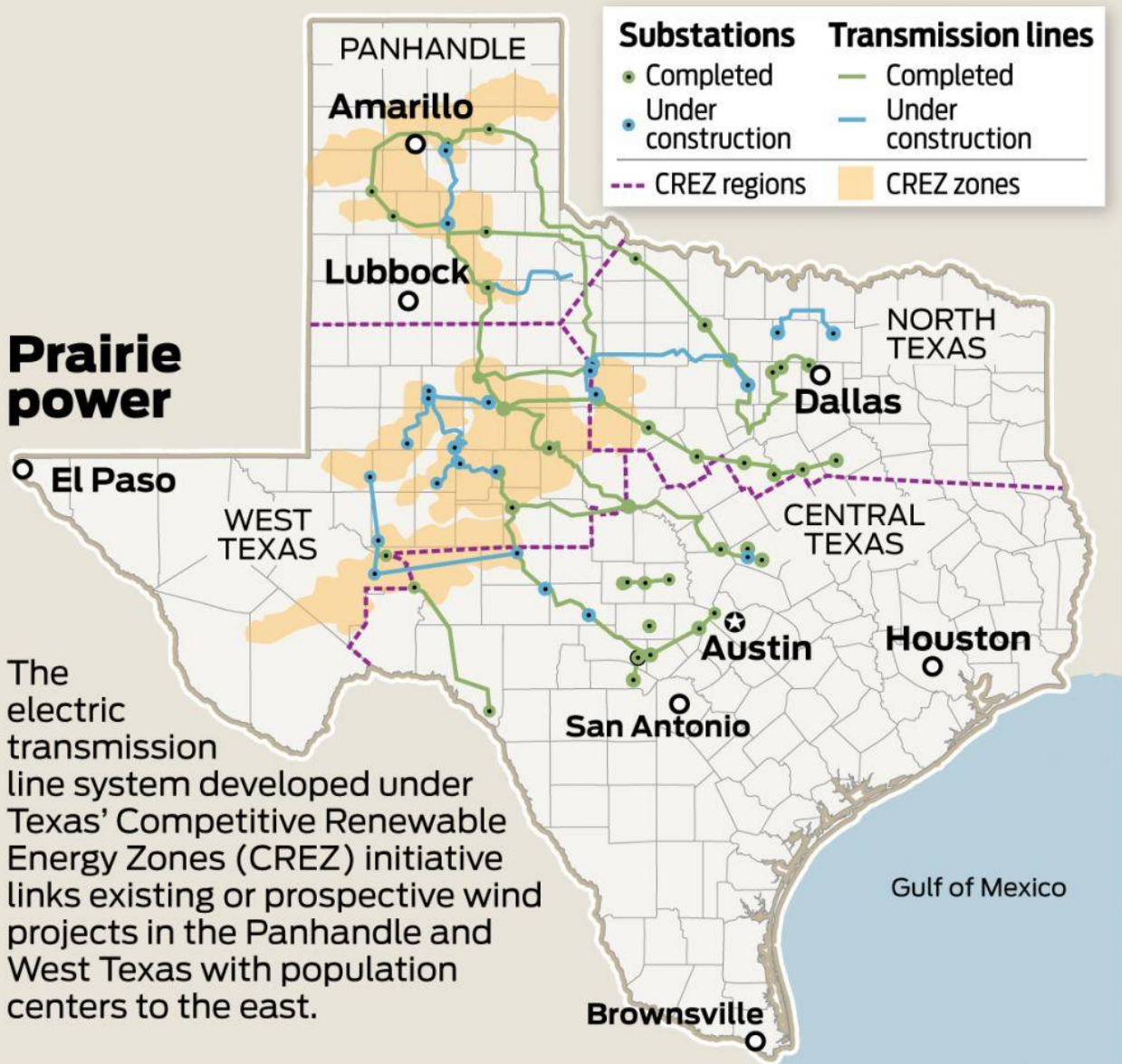
Grid Integration Options





USAID
FROM THE AMERICAN PEOPLE

Establishing Renewable Energy Zones



Prairie power

The electric transmission line system developed under Texas' Competitive Renewable Energy Zones (CREZ) initiative links existing or prospective wind projects in the Panhandle and West Texas with population centers to the east.

Locate in areas of best resources

Develop common infrastructure

Engage Private Sector



- Eliminating subsidies
- Bidding on subsidies
- Bidding on energy, not capacity
- Virtual PPAs
- More operational responsibility on the generator: reactive power, forecasting, curtailment, capacity
- Solar parks & wind zones



USAID
FROM THE AMERICAN PEOPLE

Renewable Energy Auctions

Allen Eisendrath
Global Climate Change Office Director
USAID

