

International Renewable Energy Academy: Renewable Energy and The Post-Election Path to Growth

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About ACORE

Key Focus Areas

- ▶ Policy and Finance
- ▶ Market Development
- ▶ Sector Intelligence
- ▶ Signature Events

Non-profit, Membership Organization

Leading the transition to a renewable energy economy

Members



ACORE's Mission is to Lead the Transition to a Renewable Energy Economy :

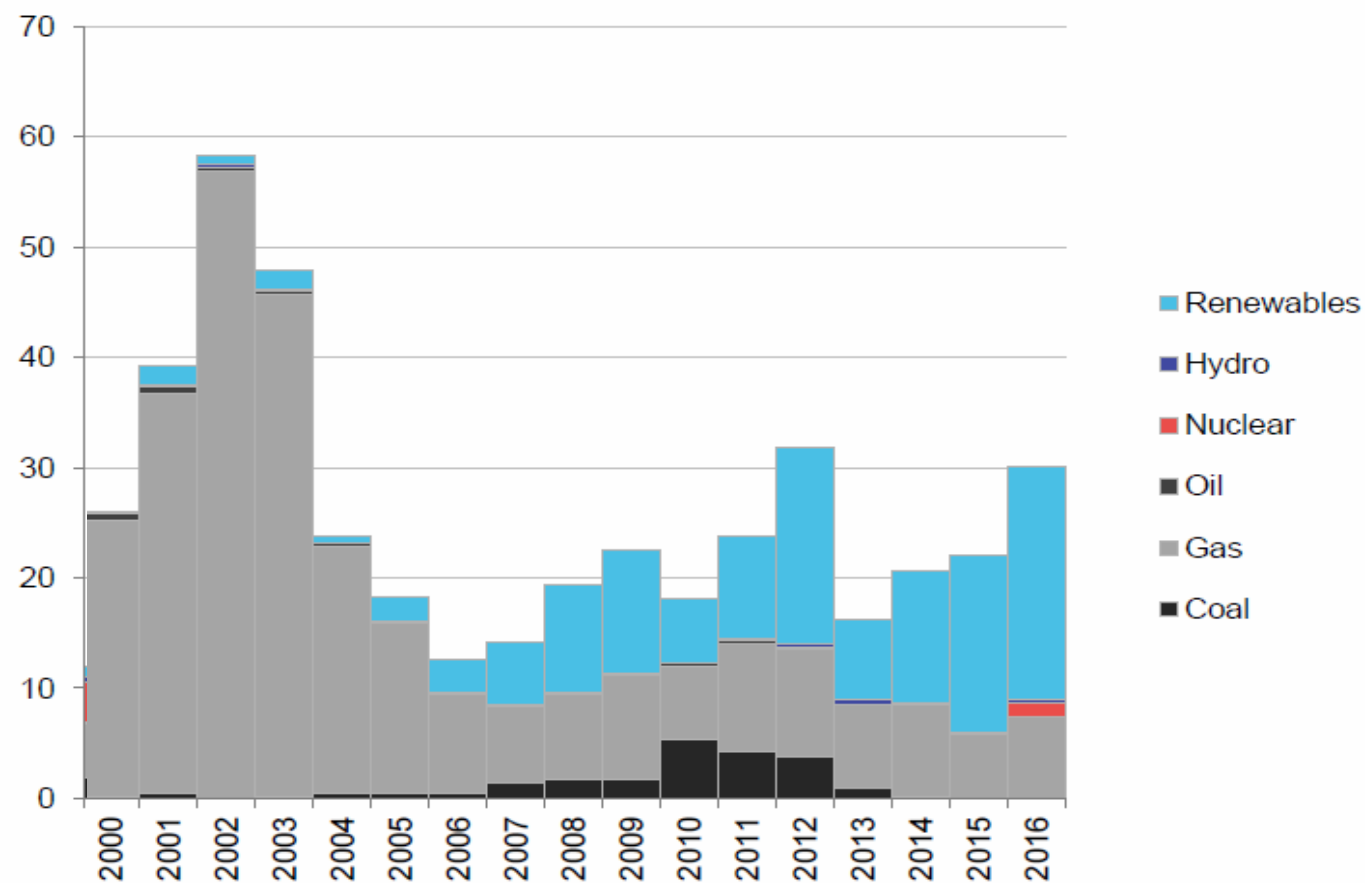
We define this to mean the policies, market conditions, and grid infrastructure necessary to secure RE investment and deployment needed to achieve Paris greenhouse emission reductions.

Industry's Premier Conferences: Policy and Finance



The Transition to Renewable Energy is Underway

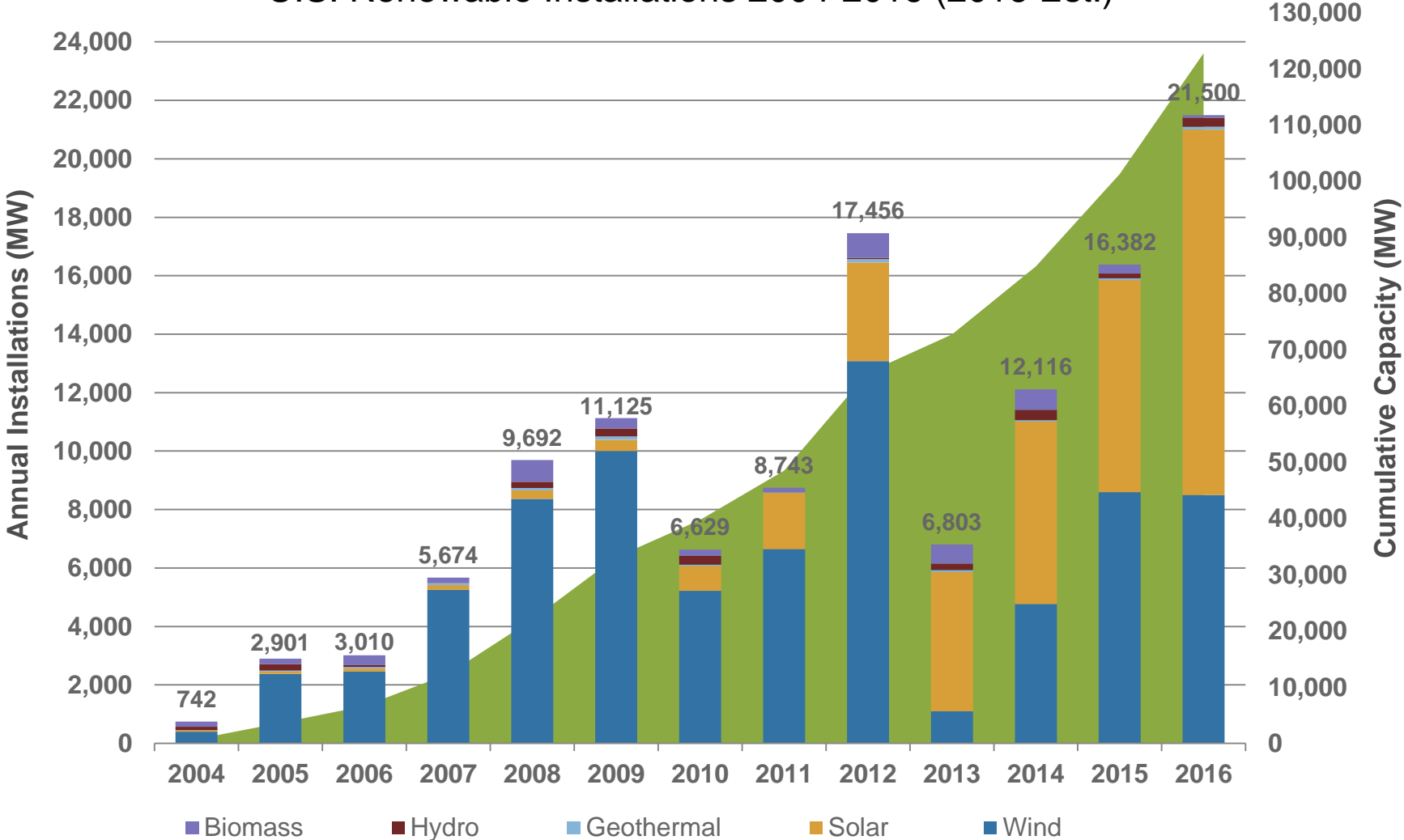
Electric Generation Capacity Build by Fuel Type 2000 – 2016



- Since 2012, non-hydro renewable energy projects have made up **over 62%** of new capacity additions.
- In **2016**, renewables were the largest contributor for the **third year** in a row, with over **21 GW** of total new build, which accounted for nearly **70%** of all new capacity.

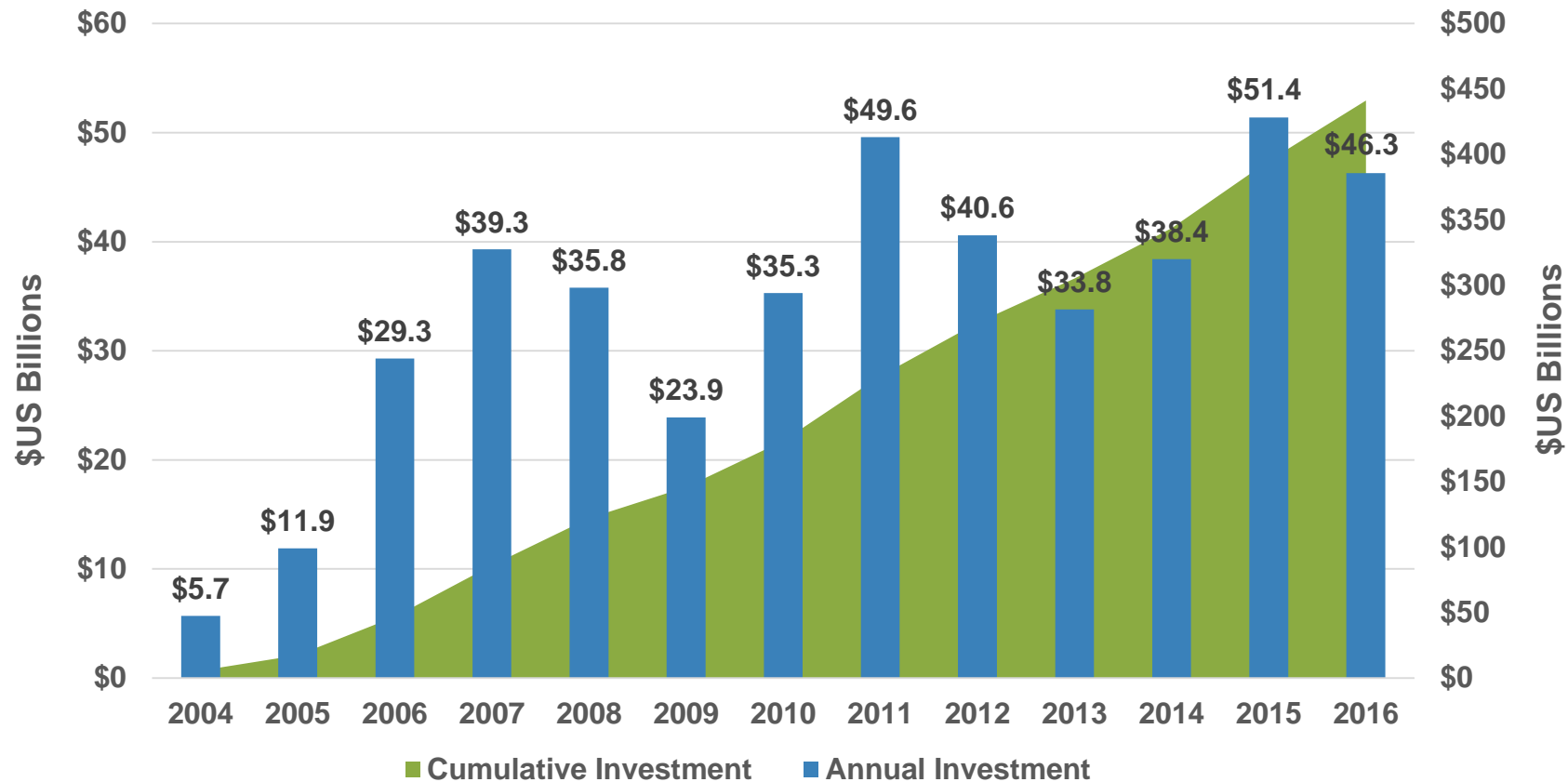
US Generating Capacity

U.S. Renewable Installations 2004-2016 (2016 Est.)



High Levels of Domestic Investment

US Total Renewable Energy Investment 2004 -2016



Technologies include all biomass waste-to-energy, geothermal, and wind projects greater than 1 MW; all hydropower between 1 MW and 50 MW; all wave and tidal projects; all biofuel projects with a capacity of one million liters or greater per year; and all solar projects.

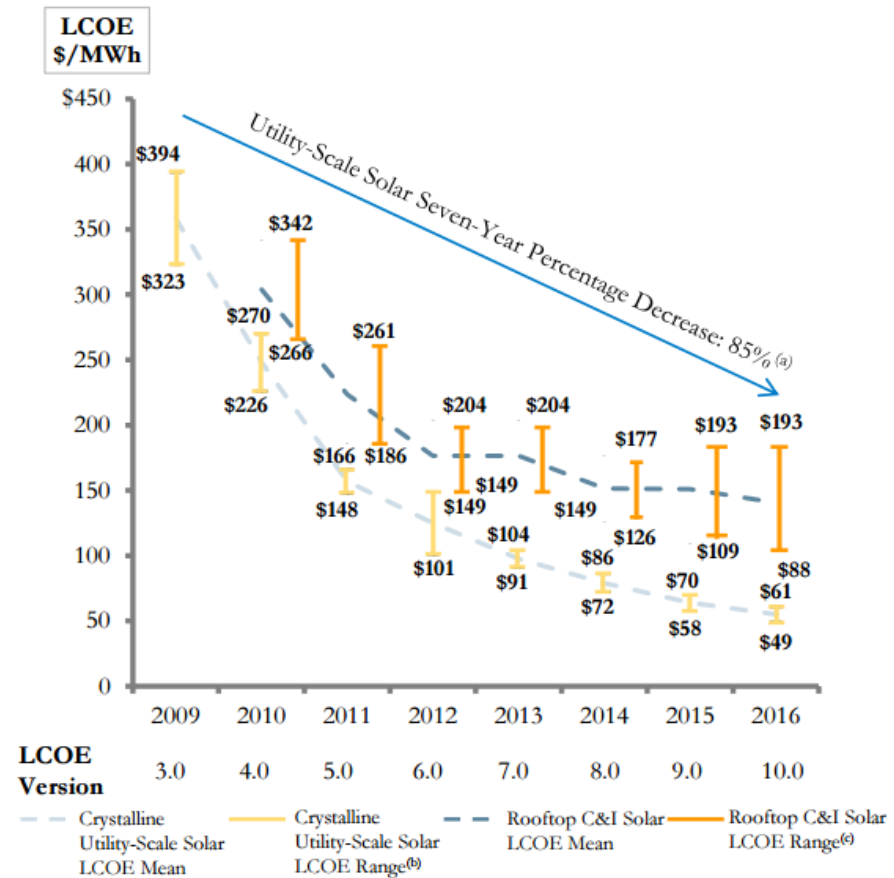
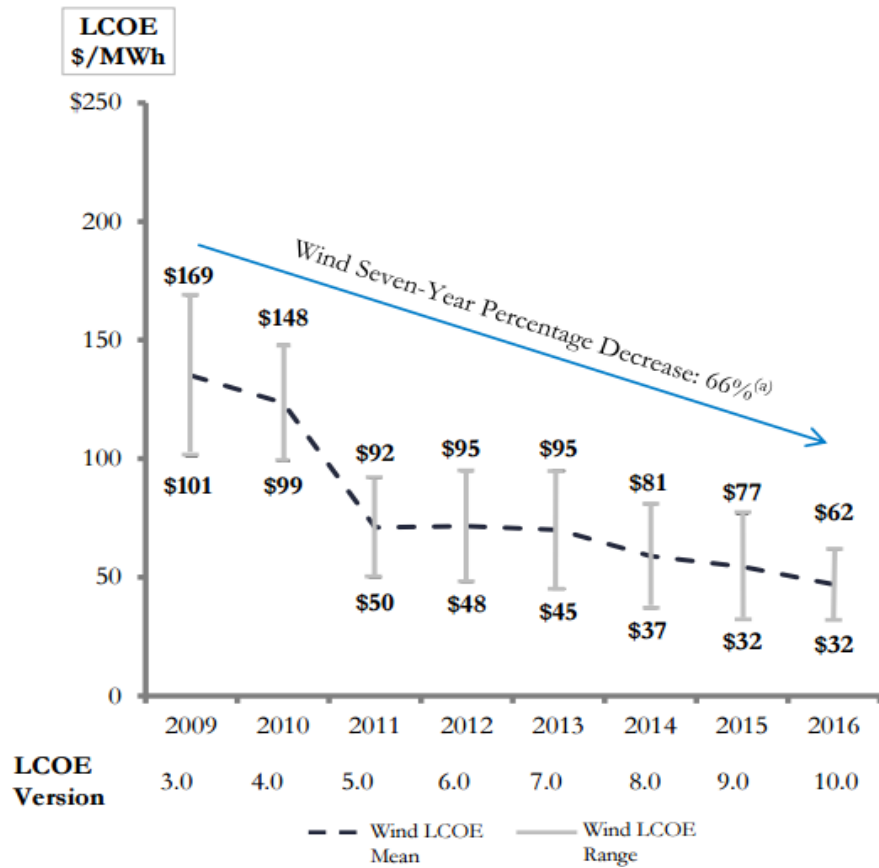
Key Drivers behind the Rapid Growth of Renewable Energy

- 1. Dramatic improvements in cost effectiveness**
- 2. Aggressive state renewable standards in populous (big load) states**
- 3. Increasing demand from residential consumers and American companies**
- 4. A supportive tax platform (over the near term)**

The Growing Cost-Effectiveness of Wind and Solar Power: Part 1

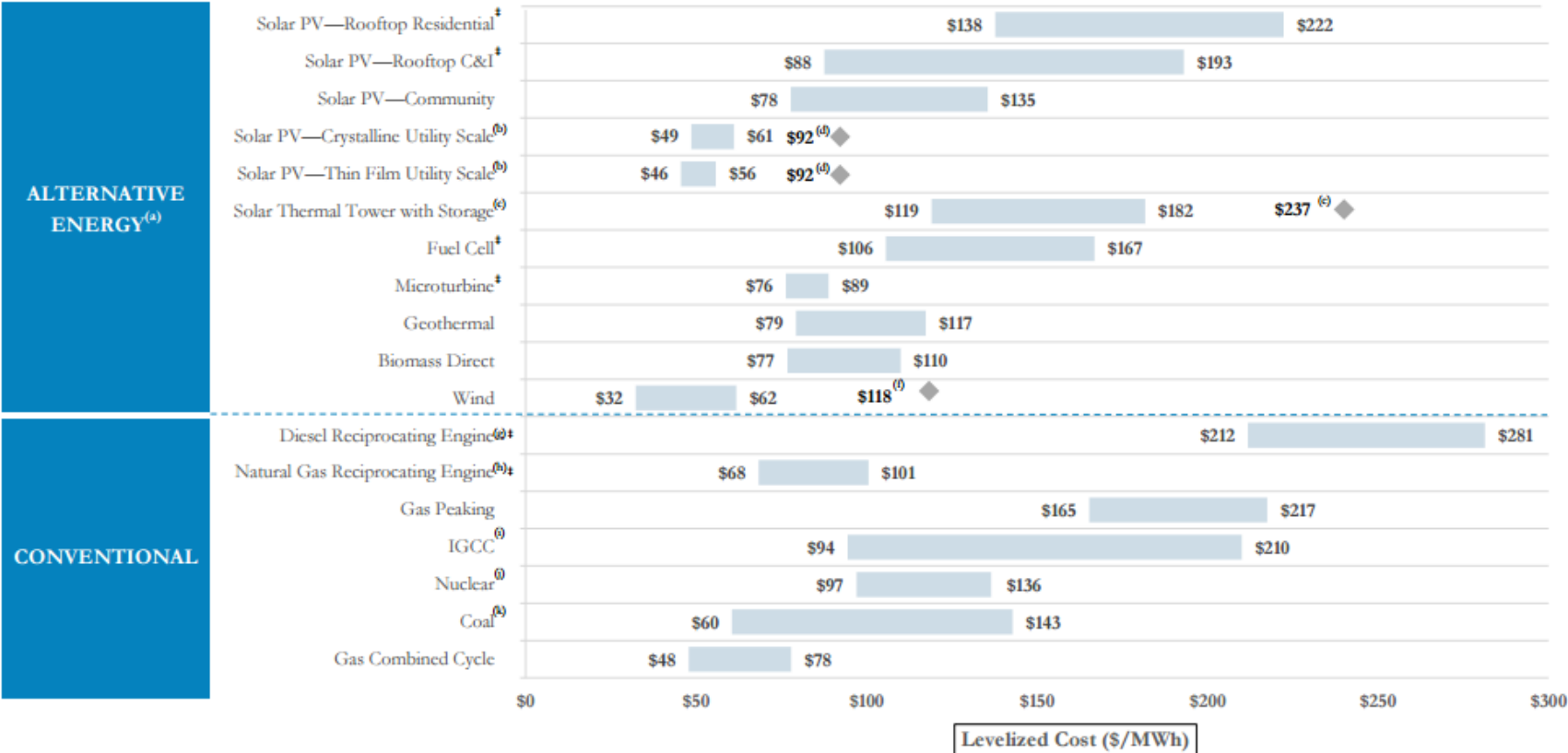
66% Reduction in Wind LCOE since 2009

85% Reduction in Solar LCOE since 2009



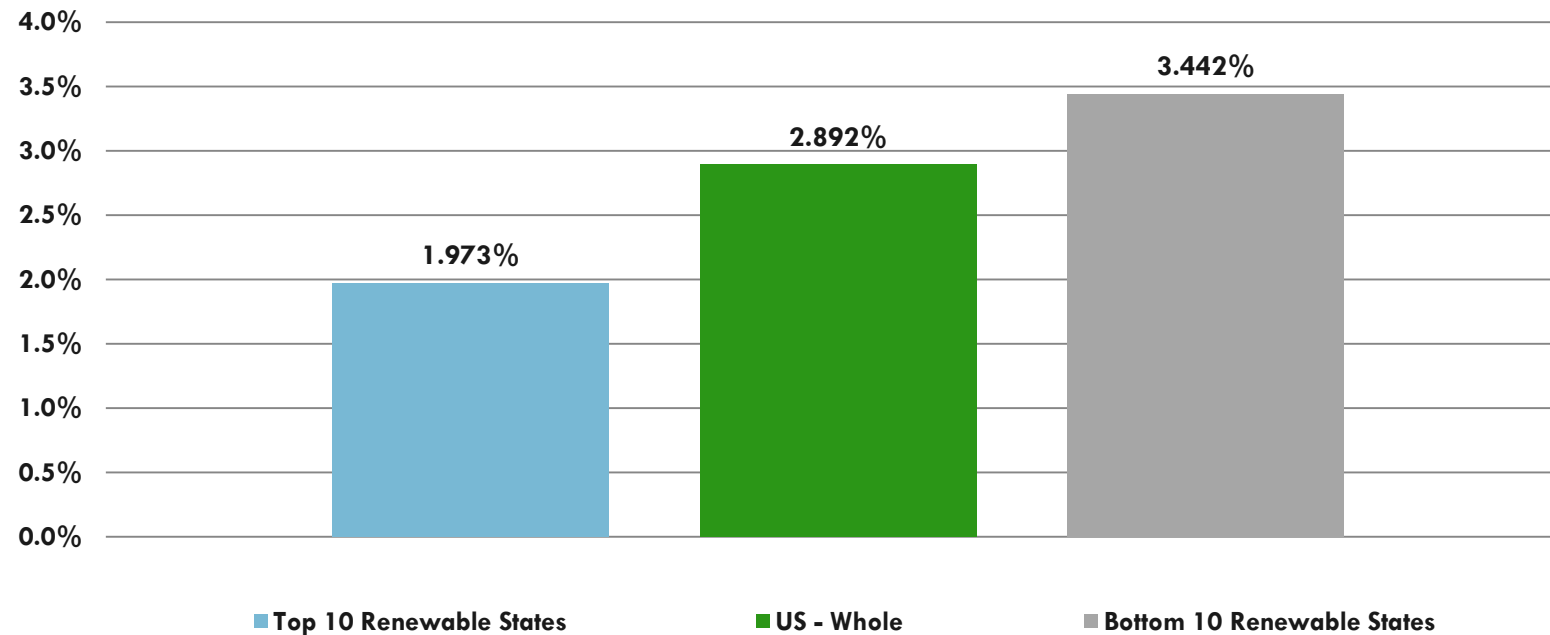
The Growing Cost-Effectiveness of Wind and Solar Power: Part 2

Unsubsidized Levelized Cost of Electricity Comparison (U.S.)



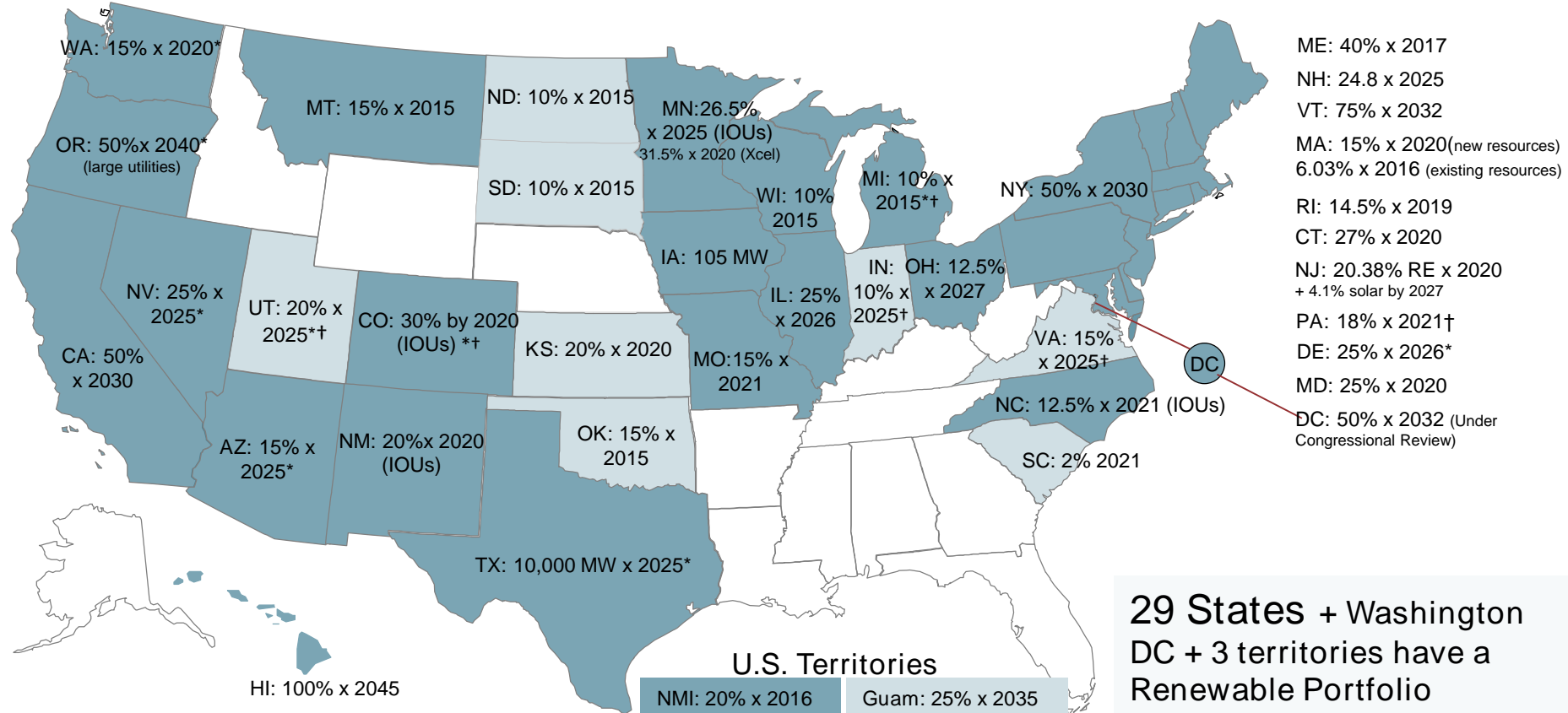
Wind and Solar Power Reduce Electricity Rate Increases

Average Annual Increases In US Retail Electricity Prices,
2002-2015



State Renewable Energy Directives

A Key Driver for Renewable Demand



- ME: 40% x 2017
- NH: 24.8 x 2025
- VT: 75% x 2032
- MA: 15% x 2020 (new resources)
6.03% x 2016 (existing resources)
- RI: 14.5% x 2019
- CT: 27% x 2020
- NJ: 20.38% RE x 2020
+ 4.1% solar by 2027
- PA: 18% x 2021†
- DE: 25% x 2026*
- MD: 25% x 2020
- DC: 50% x 2032 (Under Congressional Review)

U.S. Territories

NMI: 20% x 2016	Guam: 25% x 2035
PR: 20% x 2035	USVI: 30% x 2025

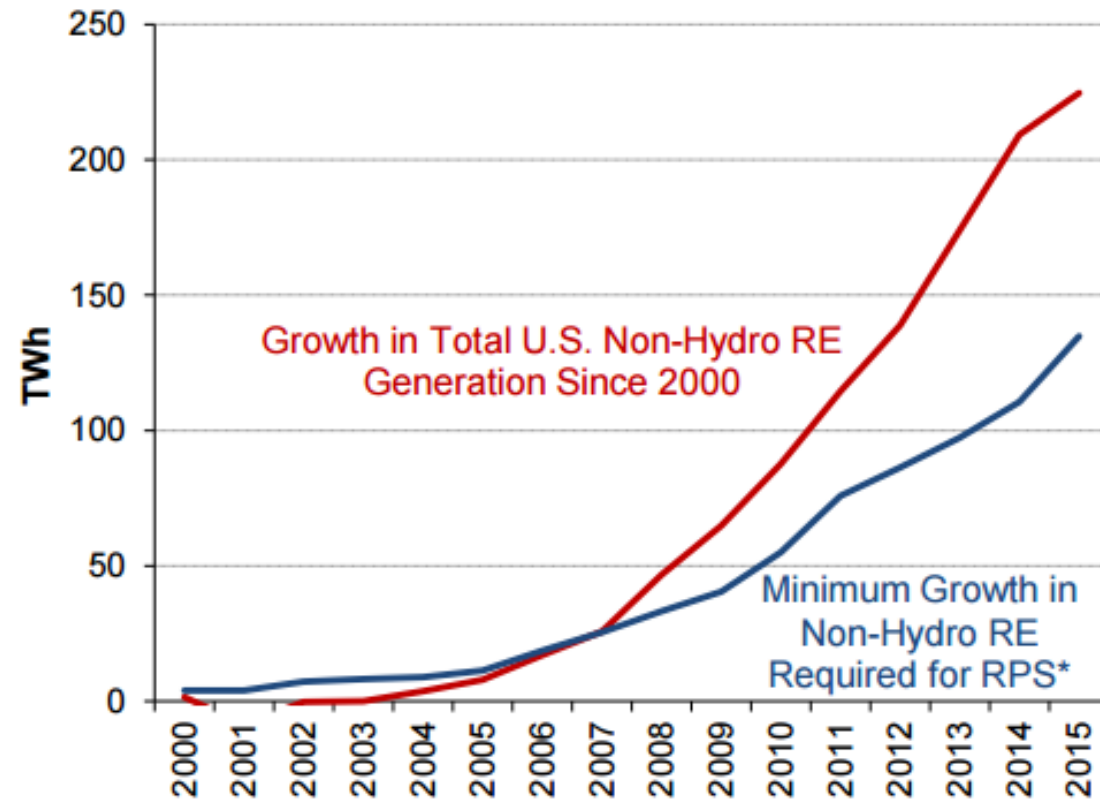
29 States + Washington DC + 3 territories have a Renewable Portfolio Standard
(8 states and 1 territory have renewable portfolio goals)

Renewable portfolio standard
 Renewable portfolio goal

* Extra credit for solar or customer-sited renewables
 † Includes non-renewable alternative resources

Market Evolution: Renewable Energy Growth Exceeds RPS Mandates

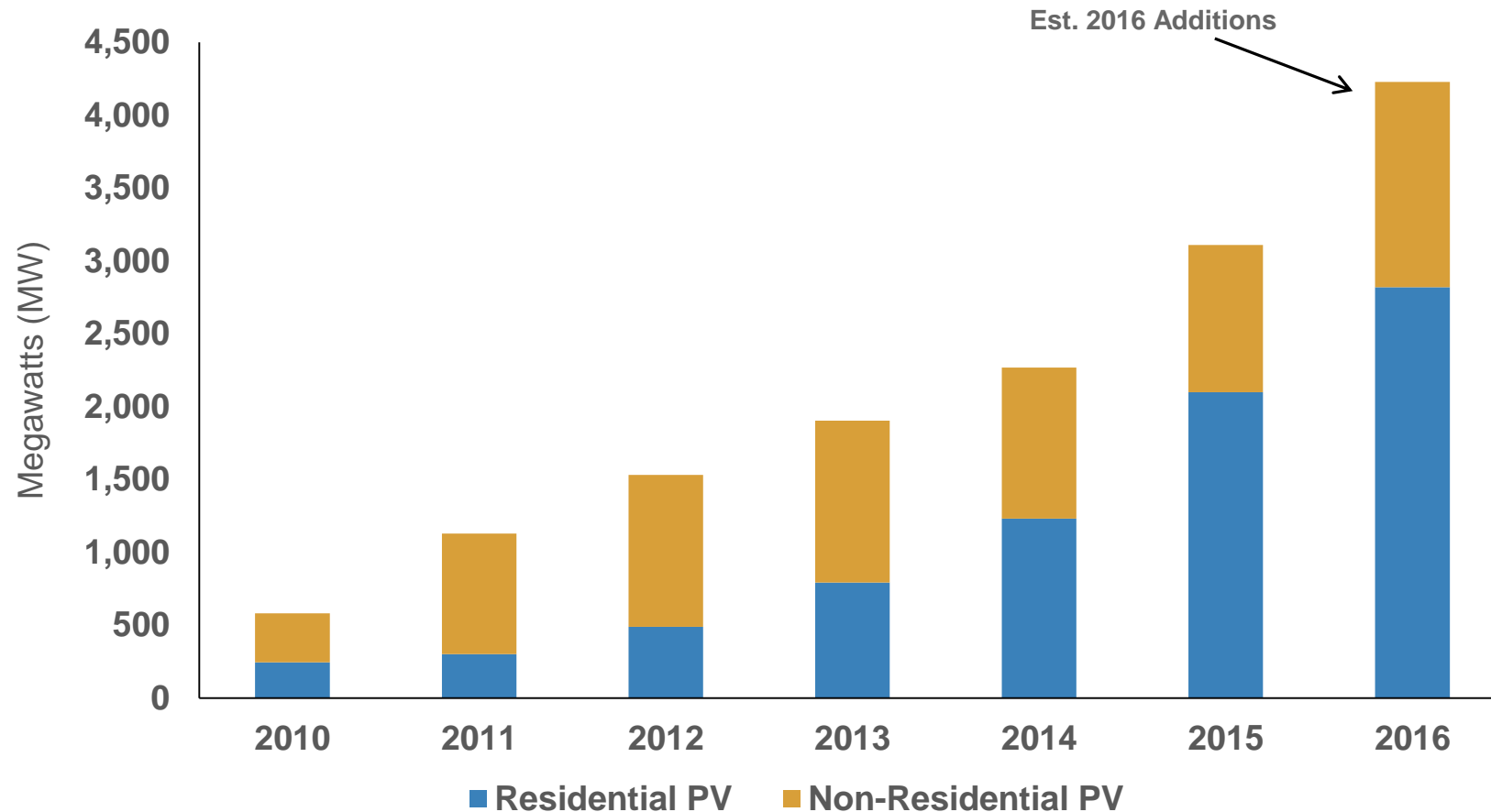
Growth in US Non-Hydro Renewable Generation (TWh)



Growing Consumer Demand: Part 1

Increasing Deployment of Distributed Solar

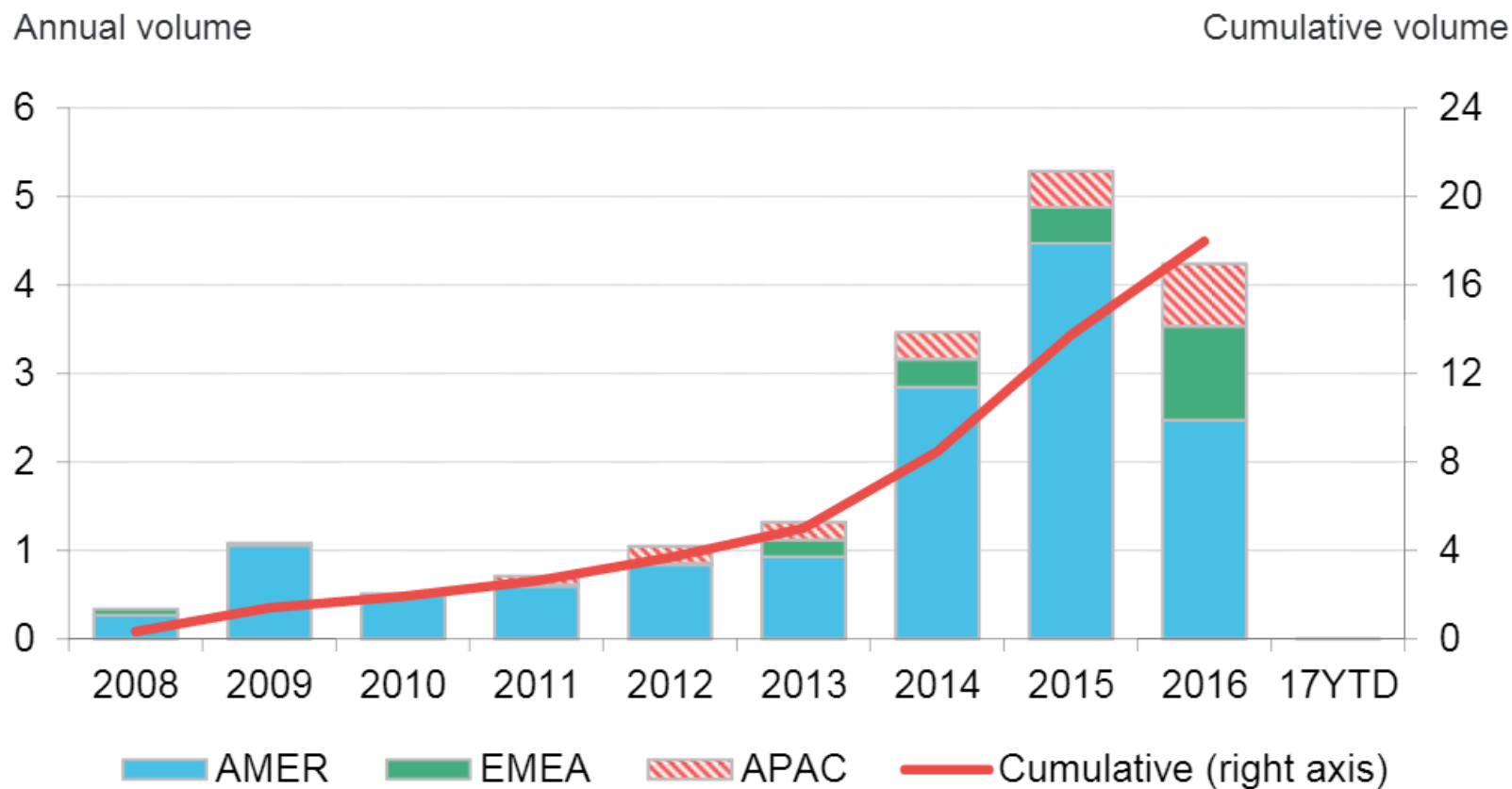
Annual US Solar Installations 2010-2016



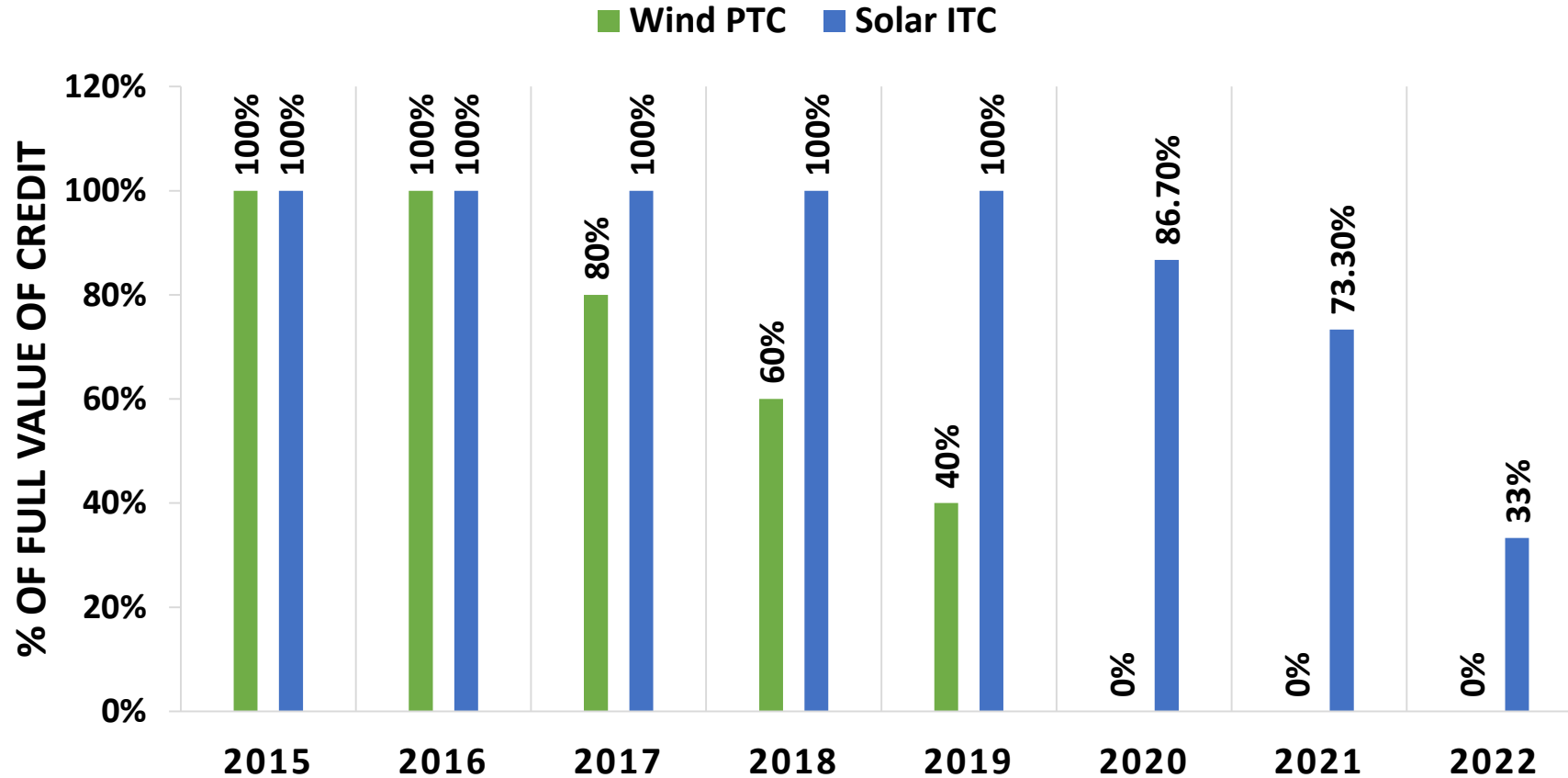
Growing Consumer Demand: Part 2

Commercial and Industrial PPAs

Corporate Demand for Renewable Energy: New Market Entrants & Global Expansion



Wind PTC and Solar ITC Phase-Down Schedules Enacted in December 2015 Tax Package



- PTC guidance with 4-year safe harbor will delay the impact of the wind phase-out.
- Extent to which wind companies will use reduced value PTC is unclear.
- Section 48 ITC continues permanently at 10%, while Section 25 (residential) phases out.
- Treasury has still not issued ITC start construction guidance.

What is the Impact of the Election on the Key Market Drivers?

#1. Dramatic improvements in cost effectiveness

IMPACT: Unchanged by election

#2. Aggressive state renewable standards in populous states

IMPACT: Unchanged by election and apparently growing

#3. Increasing demand from residential consumers and American companies

IMPACT: Appears to be unchanged by election.

#4. Stable Tax Platform

IMPACT: A longer story.

Continued Policy Engagement: Educate & Inform Policy (key targets)

Federal Policy & Tax:

- **White House, Department of Energy, Department of the Treasury**
- **Congress**

State Policy:

- **Renewable Portfolio Standards (RPS)**

Power Markets:

- **Federal Energy Regulatory Commission (FERC) – wholesale market regulator**
- **State Public Utility Commissions – state retail market regulator**
- **Regional Transmission Organizations (RTOs) – grid operators**

Priority U.S. Renewable Energy Policy Issues

Federal:

- **Tax Reform**
- **Infrastructure Investment – ensure applicability to renewable energy grid modernization and transmission**

States:

- **Increase RPSs**
- **Enable 3rd party corporate procurement, e.g. Google, Amazon use of renewable energy**

Power Markets:

- **Integration of renewable energy at scale**
- **Promote investment and development of grid flexibility, modernization and transmission**

Potential Impacts of Tax Reform on the Renewable Energy Sector

- **The mere possibility of tax reform creates uncertainty** that is already complicating deals and giving some investors pause.
- **Changes to Wind and Solar Tax Credits (PTC/ITC) are highly unlikely**, but not impossible.
- **Reductions in corporate tax rates reduce the value of depreciation benefits** for renewables and others. (Apparent failure of healthcare and possible demise of Border Adjustment Tax reduce potential rate change)
- **Lower tax rates could also reduce supply and increase pressure on an already stretched tax equity market**

Potential Positive Impact of Tax Reform: *An Infrastructure Initiative*

An effective program to promote infrastructure investment could potentially support investment in generation, grid modernization, transmission and storage.

However, no clear path has been identified to

- 1) pay for infrastructure effort; or**
- 2) establish criteria for qualifying expenditures.**

How Will Renewables Weather Tax Reform?

- Need to keep investors comfortable but RE sector is used to uncertainty.
- Tax reform is slow, and not a given.
- Tax reform also presents important opportunities.
- Recent success of the RE sector reflects / creates unprecedented private sector support.

Key Steps in Securing Continued Growth and Investment

- **Maintain Momentum:** Reassure investors in the face of today's uncertainty, emphasis on tax policy.
- **Financial Innovation and Market Expansion:** Key elements include: community aggregation, broader corporate and defense sector procurement, and electrification of the broader economy.
- **Grid Modernization/ better market valuation for Energy Storage:** A combined state and federal effort.
- **Secure New Sources of Investment Capital:** Outreach to broaden investor community, recruit participation of insurance and pension funds, expand tax equity market.
- **Level the Federal Tax Playing Field for All Renewables :** Enact a technology neutral incentive post PTC/ ITC replacing subsidies (if possible) and including orphan renewable technologies
- **Long Term Demand Driver (to ensure growth in the face of flat demand):** Near-term state emphasis must ultimately be augmented by carbon pricing or another Federal mechanism

Thank You

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