

Increasing Investment and Capital Flows in Illinois

Why Illinois Policy Matters – Renewable Energy Market Momentum At Risk



December 2015



Executive Summary

- ▶ Illinois' Renewable Portfolio Standard (RPS) has created a robust market for renewable energy generation. Over 3,700 megawatts (MW) of wind power and 55 MW of solar power have been constructed since the 2007 enactment of the RPS. Ninety-seven percent (97%) of Illinois' renewable energy generation has been constructed since the enactment of the RPS.
- ▶ Illinois ranks 5th in the amount of installed wind capacity in the country and 25th in the amount of installed solar capacity.¹
- ▶ The scale up of renewable energy in Illinois has attracted more than \$9 billion in asset finance and venture capital to Illinois. AWEA estimates that over \$10.7 million in annual lease payments are made to Illinois landowners, providing additional income to rural communities.²
- ▶ Renewable energy policies have also created domestic supply chains that support domestic manufacturing, construction, and technology sectors and have created tens of thousands of jobs. Illinois is currently home to over 400 companies that are involved in the renewable energy supply chain. In addition, the technologies and products developed and manufactured in Illinois help support the global energy industry and are exported around the world.
- ▶ Despite these gains, no wind development occurred in 2013 and 2014 and only a small amount of solar development has occurred in Illinois since 2012 due to structural problems with the current RPS law. This is jeopardizing future investment in Illinois.
- ▶ Projections for electricity demand in Illinois show that a total of 2,856 MW of wind and 983 MW of solar need to be constructed by the end of 2025 in order to comply with the RPS.
- ▶ Amending Illinois' RPS law to enable better long-term contracting and power purchases would usher in a large-scale development of renewable energy resources. US PREF projects that full compliance with the current RPS would result in over \$5.9 billion in increased economic activity if that capacity was built in the state.
- ▶ Greater policy certainty would provide a clear, stable signal to the market, motivate large amounts of capital, and allow for continued investment and growth of the renewable energy sector in Illinois.

(1) AWEA; SEIA, Illinois State Profiles, available at <http://awea.files.cms-plus.com/FileDownloads/pdfs/Illinois.pdf> and <http://www.seia.org/state-solar-policy/illinois>.

(2) AWEA, Illinois State Profile.

Global Renewable Energy Trends: Massive Private Capital Investment

The Renewable Energy Sector is Attracting Large Amounts of Private Capital

- ▶ Over \$325 billion was invested in the U.S. renewable energy sector from 2004-2014.
- ▶ In 2014 alone, \$38 billion was invested in U.S. renewable energy.¹
- ▶ This capital has been invested to create domestic supply chains that support both our domestic energy market and the global energy technology industry, which attracted \$1.6 trillion in global new investment from 2004-2014.¹
- ▶ Global clean energy sector investment in 2014 alone is estimated at \$270 billion.¹

Falling Renewable Energy Costs Are a Function of Industry Scale Up

- ▶ Thanks to policies that have driven investment, and therefore industry growth, wind and solar PV have reduced their respective by ~61% and ~82% respectively since 2009.²
- ▶ Empirical data suggests that coal, natural gas, and nuclear generation technologies have required massive increases in scale in order to achieve current favorable cost structures. Solar and wind, by contrast, are continuing to experience significant improvements in their cost structure with relatively much smaller increases in scale.

Economic Impact: Job Creation

- ▶ The solar industry experienced a nearly 20% growth in employment from 2012-2014, 20 times the national average.
- ▶ The solar industry is forecasting jobs growth at 20.9% in 2015.³
- ▶ At the end of 2014, over 73,000 wind-related jobs existed in the U.S.⁴

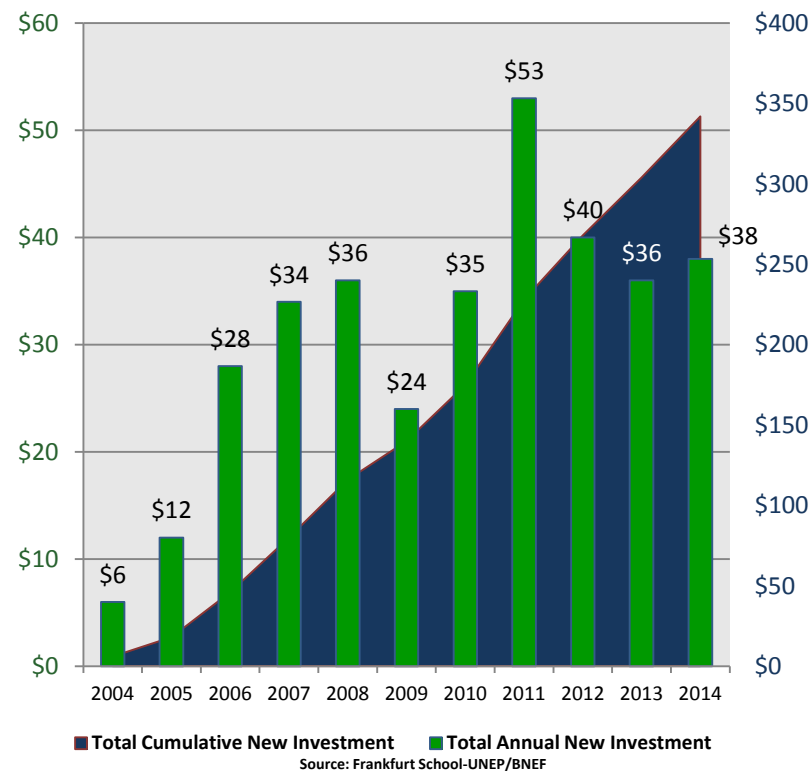
(1) UNEP and BNEF, *Global Trends in Renewable Energy Investment 2015*, http://fs-unesp-centre.org/sites/default/files/attachments/key_findings.pdf.

(2) Lazard, *Lazard's Levelized Cost of Energy Analysis – Version 9.0*, November 2015.

(3) The Solar Foundation, *National Solar Jobs Census 2014: The Annual Review of the U.S. Solar Workforce*, January 2015.

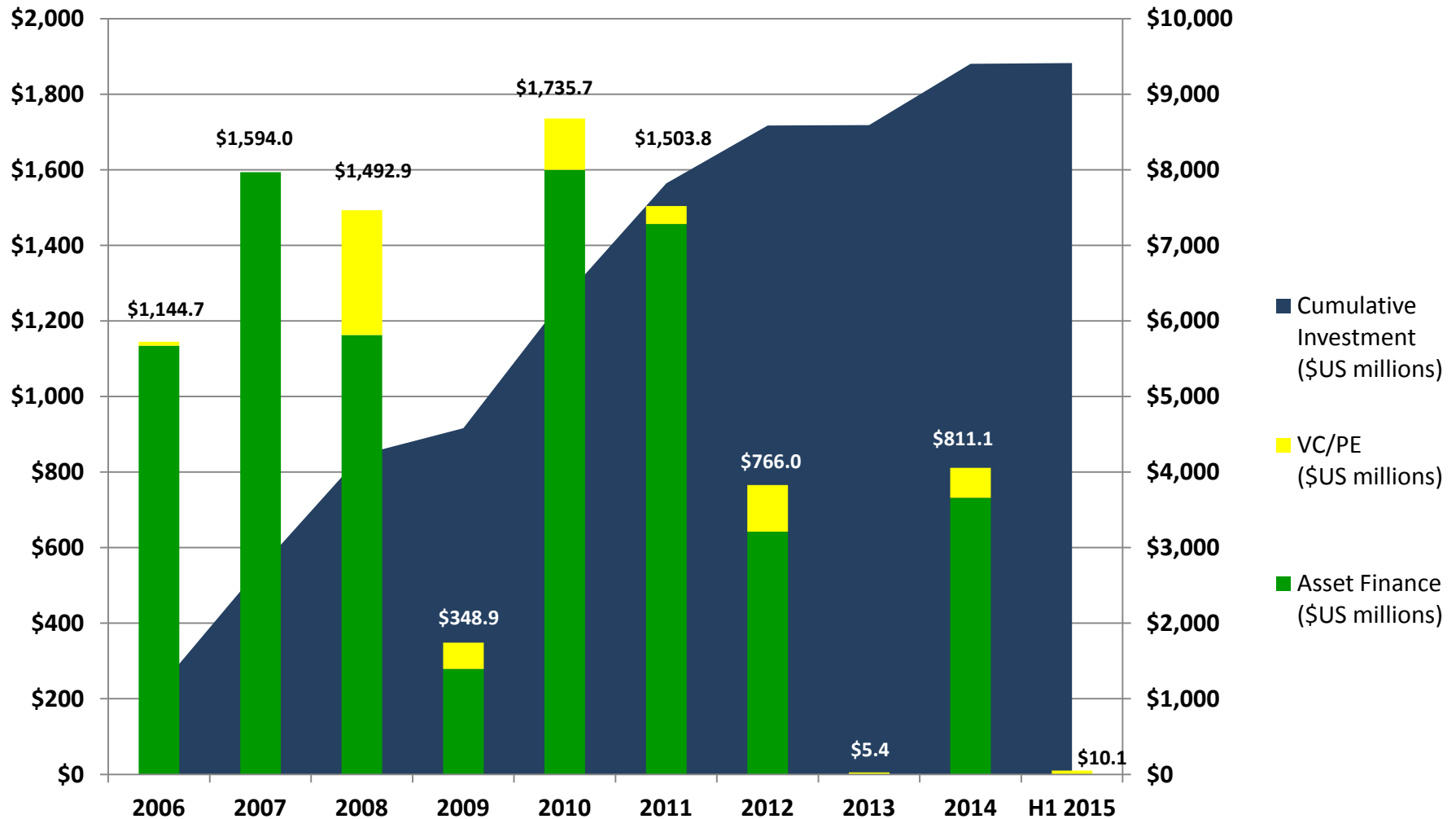
(4) AWEA, *Wind Energy Facts at a Glance*, <https://www.awea.org/Resources/Content.aspx?ItemNumber=5059>.

U.S. Total New Renewable Energy Investment (\$ billion)



Technologies include: all biomass and 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.

Over \$9 billion Invested in Illinois' Renewable Energy Sector Since 2006



Source: BNEF

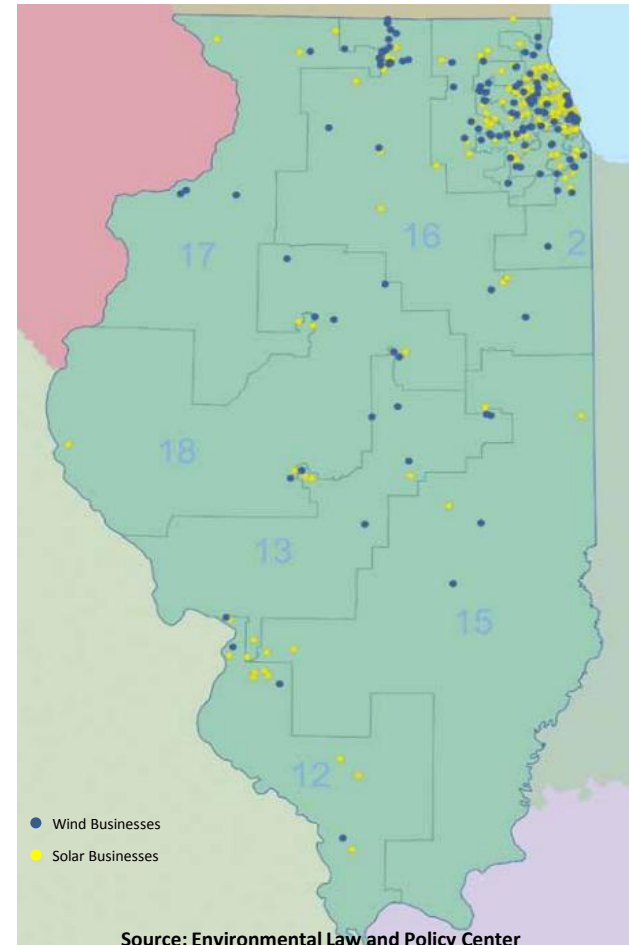
Sectors included are those above 1MW for solar, wind, marine, small hydro (<50MW), geothermal, and biomass & waste, and biofuels above 9mLpa. VC/PE numbers only include companies with sufficient exposure to the sector to be classified as 'new energy' relevant. Results are based on tracked deals only and are not buffered to close gaps with top down statistics.

The Renewable Energy Industry Supports A Robust Supply Chain in Illinois

Over 400 Illinois Companies Are Part of the Renewable Energy Supply Chain

- ▶ Companies include installers, developers, construction, manufacturing and finance.
- ▶ A total of 237 Illinois companies are engaged in the solar industry supply chain.¹ By comparison, there were only 96 solar-related companies in 2011.²
- ▶ In 2015, a total of 170 Illinois companies are engaged in the wind industry supply chain.¹ By comparison, there were 152 wind-related companies in 2011.²
- ▶ 13 wind power corporate headquarters are located in the Chicago area.¹
- ▶ Several factors have helped Illinois establish itself as a leading wind and solar component manufacturer:
 - ▶ Supportive policies
 - ▶ Established manufacturing base and trained workforce
 - ▶ Central location with proven transportation, transmission and logistics
- ▶ Clean Jobs Illinois found that 104,449 people are now employed in clean energy jobs in Illinois.³

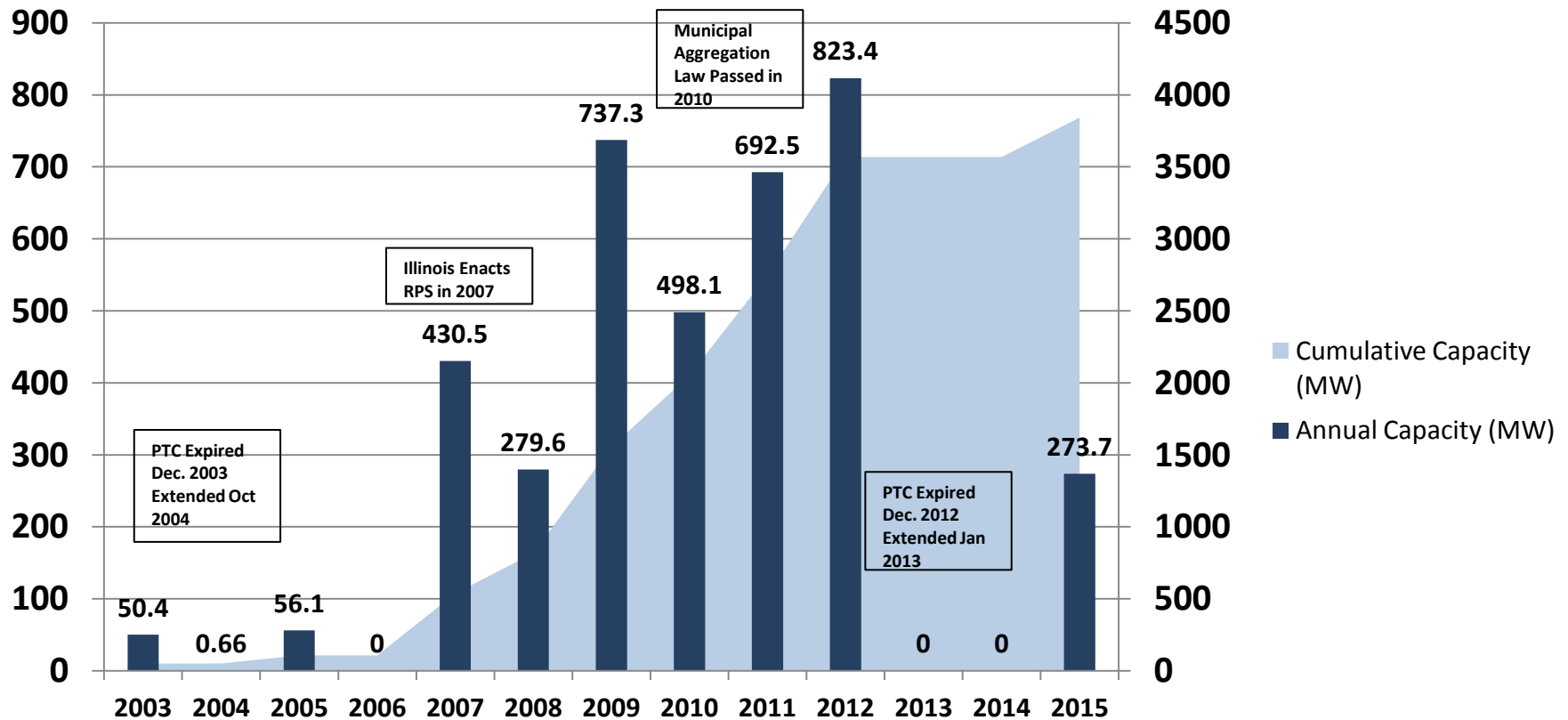
Map of Wind and Solar Supply Chain Businesses in Illinois



- (1) Environmental Law & Policy Center, *Illinois Clean Energy Supply Chain: Good for Manufacturing Jobs, Good for Economic Growth and Good for Our Environment*, 2015.
- (2) Environmental Law & Policy Center, *Illinois Clean Energy Supply Chain: Good for Manufacturing Jobs, Good for Economic Growth and Good for Our Environment*, 2011.
- (3) Clean Jobs Illinois, available at <http://www.cleanjobsillinois.com/2015/#top>

Historical Wind Builds in Illinois

- ▶ Over 97.2% of Illinois' wind capacity (3,735.1MW) has been built following the passage of the state's RPS.
- ▶ The average price of a wind Power Purchase Agreement in Illinois between 2003 and 2012 is \$40.71/MWh.¹
- ▶ Illinois wind builds have been strongly influenced by state policies (RPS, municipal aggregation) and federal tax policies.
- ▶ However, very little development has occurred since 2012.

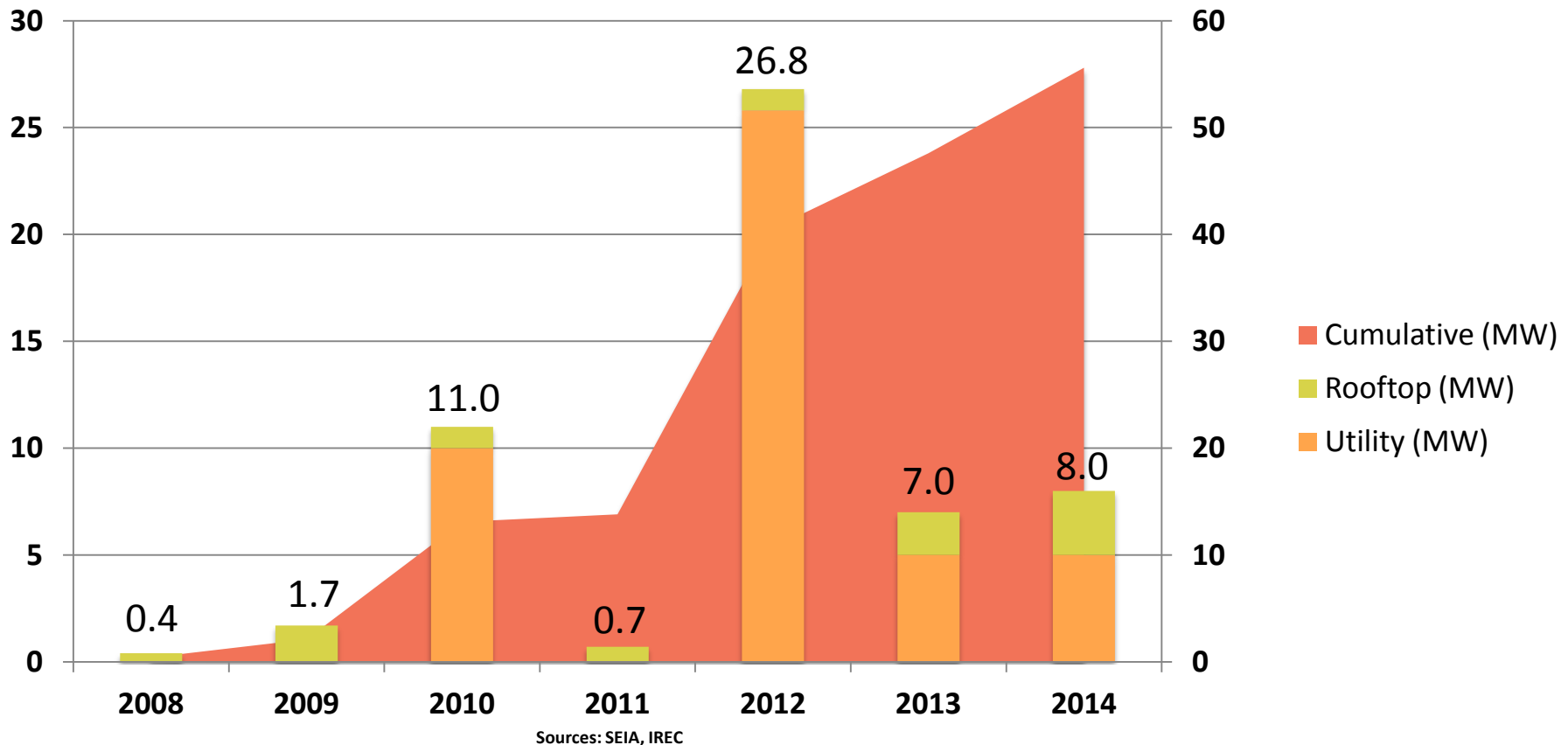


Source: AWEA, BNEF

(1) Bloomberg New Energy Finance database.

Historical Solar Builds in Illinois

- ▶ Solar power in Illinois has been slower to be developed compared to wind power.
- ▶ Nearly 100% of Illinois' solar capacity (~53MW) has been built following the passage of the state's RPS.
- ▶ Recent legislation authorized the Illinois Power Agency (IPA) to spend up to \$30 million for procurement of Solar Renewable Energy Credits (SREC). When coupled with resource procurement by the IPA, over \$58 million in SRECs will be procured in 2015-16. There are currently no anticipated SREC procurements beyond 2016, which could significantly slow the growth of Illinois' solar market.¹



(1) Illinois Department of Commerce and Economic Opportunity, *Renewable Energy Resources Program Report, Jan.-Dec. 2014*, available at: https://www.illinois.gov/dceo/AboutDCEO/ReportsRequiredByStatute/2014%20RERP%20Annual%20Report_FINAL.pdf

Illinois' Renewable Portfolio Standard and Future Requirements

- ▶ Enacted in 2007, Illinois' RPS requires investor owned utilities (IOUs) and alternative retail electric suppliers (ARES) to generate 25% of their retail sales of electricity from renewable resources by 2025.¹
- ▶ The RPS contains specific carve outs for certain technologies:¹
 - ▶ Wind (IOUs) - 75% of annual requirement (18.75% of sales in compliance year 2025-26)
 - ▶ Wind (ARES) – 60% of annual requirement (15% of sales in compliance year 2025-26)
 - ▶ Solar (all) – 6% of annual requirement in compliance year 2015-16 and thereafter (1.5% of total sales in compliance year 2025-26)
 - ▶ Distributed Generation (IOUs) – 1% of annual requirement in compliance year 2015-16 and thereafter (0.25% of sales in compliance year 2025-26)
- ▶ Illinois currently has 3,842 MW of wind power capacity² which generated 10.072 terawatt hours (TWh) of electricity in 2014.³
- ▶ Illinois currently has 55 MW of solar power capacity⁴ which generated 78,666 megawatt hours (MWh) of electricity in 2014.³
- ▶ Bloomberg New Energy Finance (BNEF) estimates that compliance with Illinois' RPS will require 28.2 TWh of renewable energy generation in 2025.⁵ Based on the technology carve-outs in the law, wind will need to generate a minimum of 18.0 TWh and solar will need to generate a minimum of 1.7 TWh in 2025.⁵
- ▶ Based on average capacity factors of current wind and solar generation in Illinois, compliance with Illinois' RPS requires the construction of 2,856 MW of wind and 983 MW of solar by the end of 2025.

Compliance With Illinois' RPS Requires:

- ▶ 2,856 MW of wind
- ▶ 983 MW of solar

To be constructed by 2025

(1) Database of State Incentives for Renewables & Efficiency (DSIRE), available at <http://programs.dsireusa.org/system/program/detail/584>.

(2) AWEA, Illinois Wind Energy, available at <http://awea.files.cms-plus.com/FileDownloads/pdfs/Illinois.pdf>.

(3) Energy Information Administration, Net Generation by State by Type of Producer by Energy Source, available at <http://www.eia.gov/electricity/data/state/>

(4) SEIA, Illinois Solar, available at <http://www.seia.org/state-solar-policy/illinois>.

(5) BNEF, RPS Demand Database, November 2015.

Projected Economic Impact of Wind and Solar Development in Illinois to Comply with RPS

Impact Category	Amount of Impact
Asset Finance	\$9.4 billion
Increase in Economic Activity	\$5.94 billion (\$110M in annual activity after construction)
Total Sales Taxes Paid	\$418.3 million
Annual Property Taxes Paid	\$17.8 million
Annual Lease Payments	\$7.8 million
Total Wages Paid	\$3.36 billion (\$444.4 million annually after construction)

Projections based on the Jobs and Economic Development Impact Model (JEDI) model developed by the National Renewable Energy Laboratories. Dollar values are in 2016 dollars. Actual investment would occur over a 10-year period through 2025. Assumes that a total of 2,856 MW of wind would be built with an average turbine size of 2.5 MW and an average project size of 100 MW. Model also assumes that a total of 983 MW of solar would be built. Investment would occur over 10 years from 2016 through 2025.



ABOUT US PREF

[US PREF](#) is a coalition of senior level financiers who invest in all sectors of the energy industry, including renewable energy. US PREF members focus on increasing capital formation and investment in renewable energy and educate the public sector to assure policy impacts the market as efficiently and effectively as possible. US PREF is a program of the American Council On Renewable Energy (ACORE), a Washington, DC - based non-profit organization dedicated to building a secure and prosperous America with clean, renewable energy.

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ABOUT ACORE

ACORE, a 501(c)(3) non-profit membership organization, is dedicated to building a secure and prosperous America with clean, renewable energy. ACORE seeks to advance renewable energy through finance, policy, technology, and market development and is concentrating its member focus in 2015 on National Defense & Security, Power Generation & Infrastructure, and Transportation. Additional information is available at www.acore.org.