

Voluntary Green Power Market Forecast through 2015



Jenny Sumner

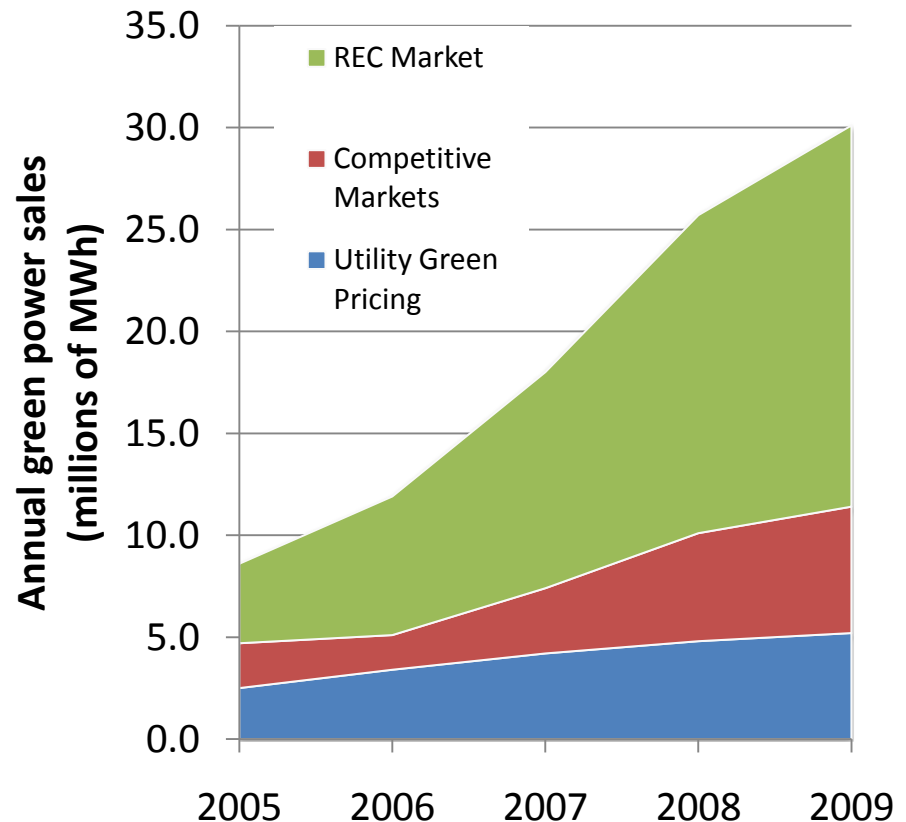
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Growth of the Voluntary Market

- In 2009, the voluntary market totaled 30 million MWh.
- From 2008-2009, voluntary green power sales increased by 17% and annual growth rates have averaged 37% from 2004-2009.
- From 2008-2009, REC markets grew by 20%, competitive markets grew by 18%, and utility green pricing programs grew by 7%.
- Where is the voluntary market headed? How will consumers respond to policy considerations?



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National Renewable Energy Laboratory

A national laboratory of the U.S. Department of Energy
Office of Energy Efficiency & Renewable Energy

Innovation for Our Energy Future

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Full report available online:

<http://www.nrel.gov/docs/fy10osti/48158.pdf>

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Methodology

- Spreadsheet model primarily based on historical market trend data and factors that will influence uptake rates and offerings in the near term.
- Treated each market segment differently. Examined unbundled RECs, regulated utility programs, competitive electricity markets, and onsite generation.
- For each submarket, developed a high-growth scenario, low-growth scenario, and a negative policy-impacts scenario.
- Primary focus was to forecast demand through 2015, though a projection was also made through 2020.

Scenario Considerations and Assumptions

High Case

Demand continues to grow rapidly and any price impacts from RPS are limited

Potential carbon policies are designed to support emissions reductions claims by voluntary renewable energy purchasers (e.g., through allowance retirement)

Utilities actively promote programs

Low Case

RPS requirements are increased, creating competition for RECs and raising prices

GHG inventories allow green power purchases to count toward electricity emissions

Utilities less inclined to promote programs

Negative Policy Impacts Case

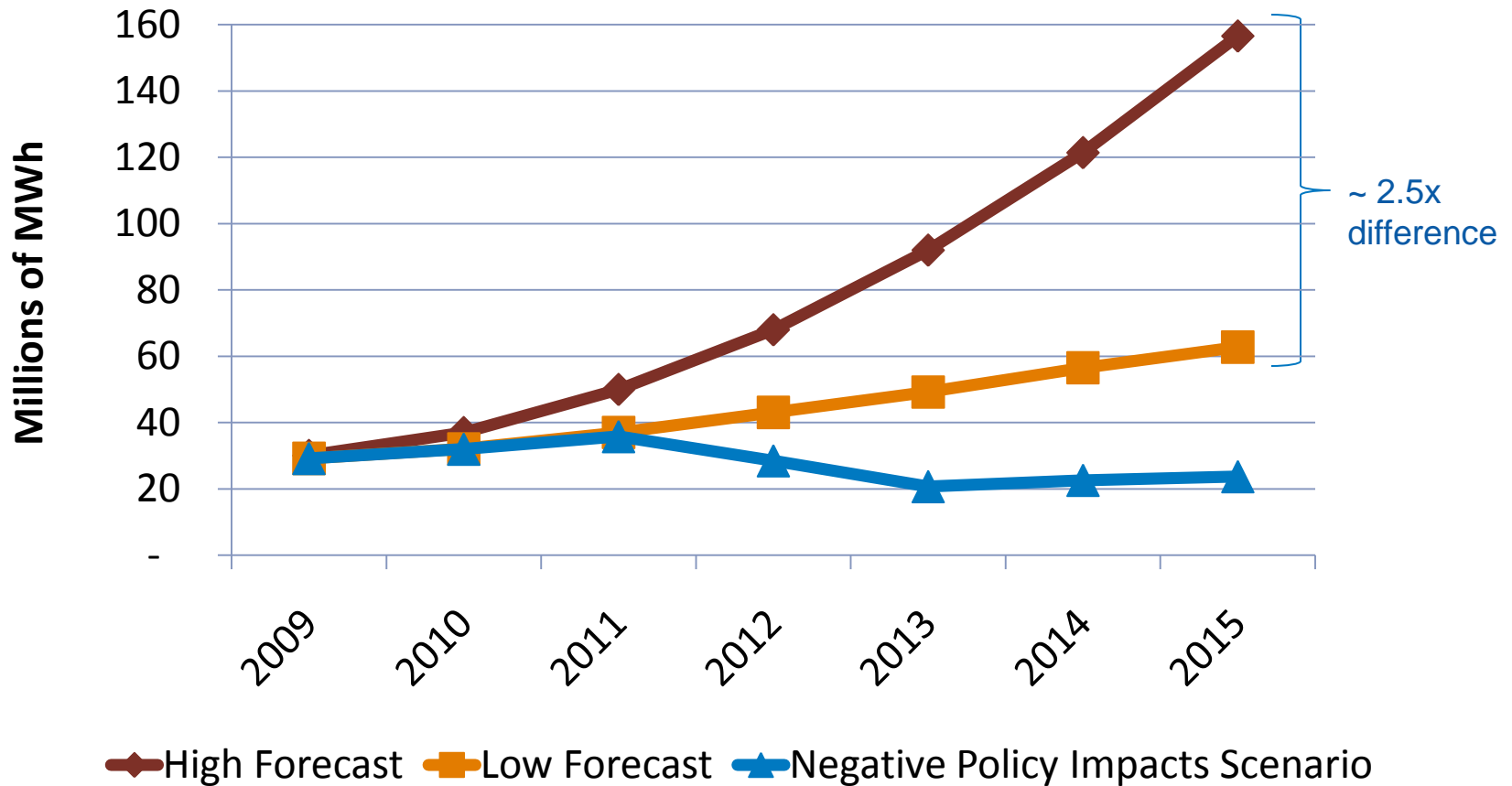
RPS requirements are increased, creating competition for RECs

Carbon policy is adopted that does not allow emission reduction claims and purchasers are not able to count green power purchases toward GHG emissions goals, causing many existing customers to cease purchasing.

No new utility programs

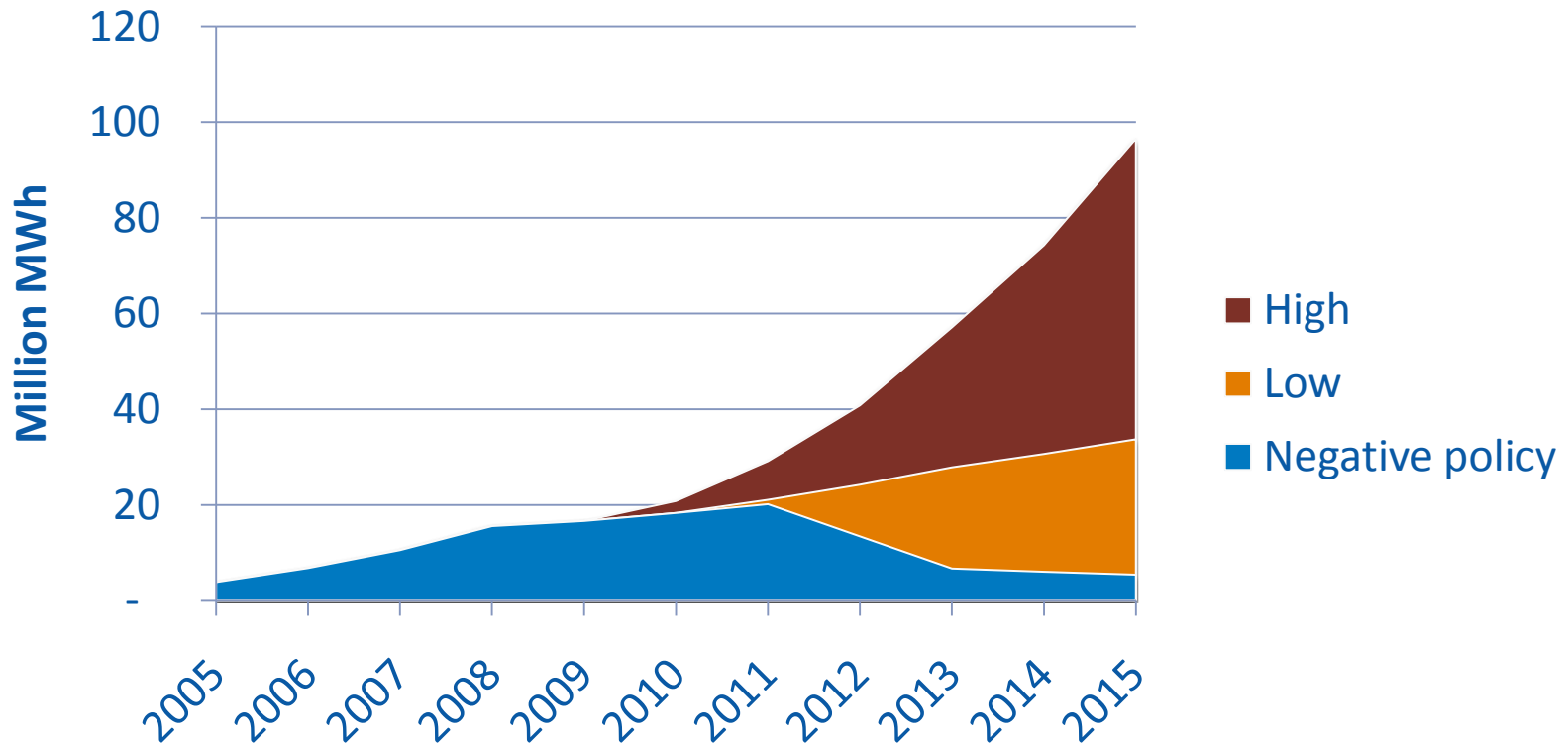
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- Forecast assumptions are influenced by the external factor but generally are not quantitatively tied to them. Assumptions are also influenced by an awareness of the typical lifecycle of demand for new products (standard “S” curve).

Total Voluntary Demand through 2015



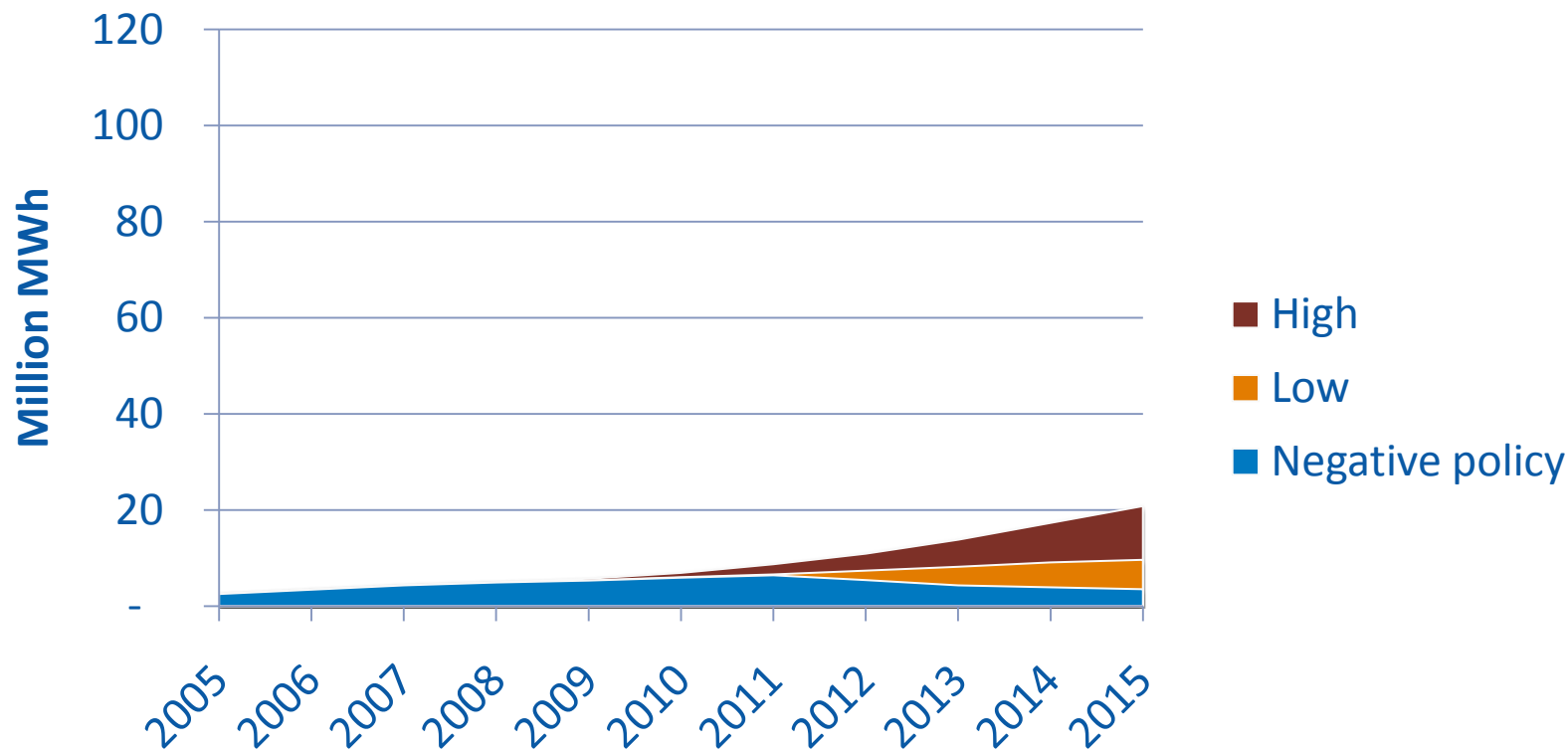
- High case results in 157 million MWh in 2015
- Low case results in 63 million MWh in 2015
- Negative policy case results in 24 million MWh in 2015

Unbundled REC Markets



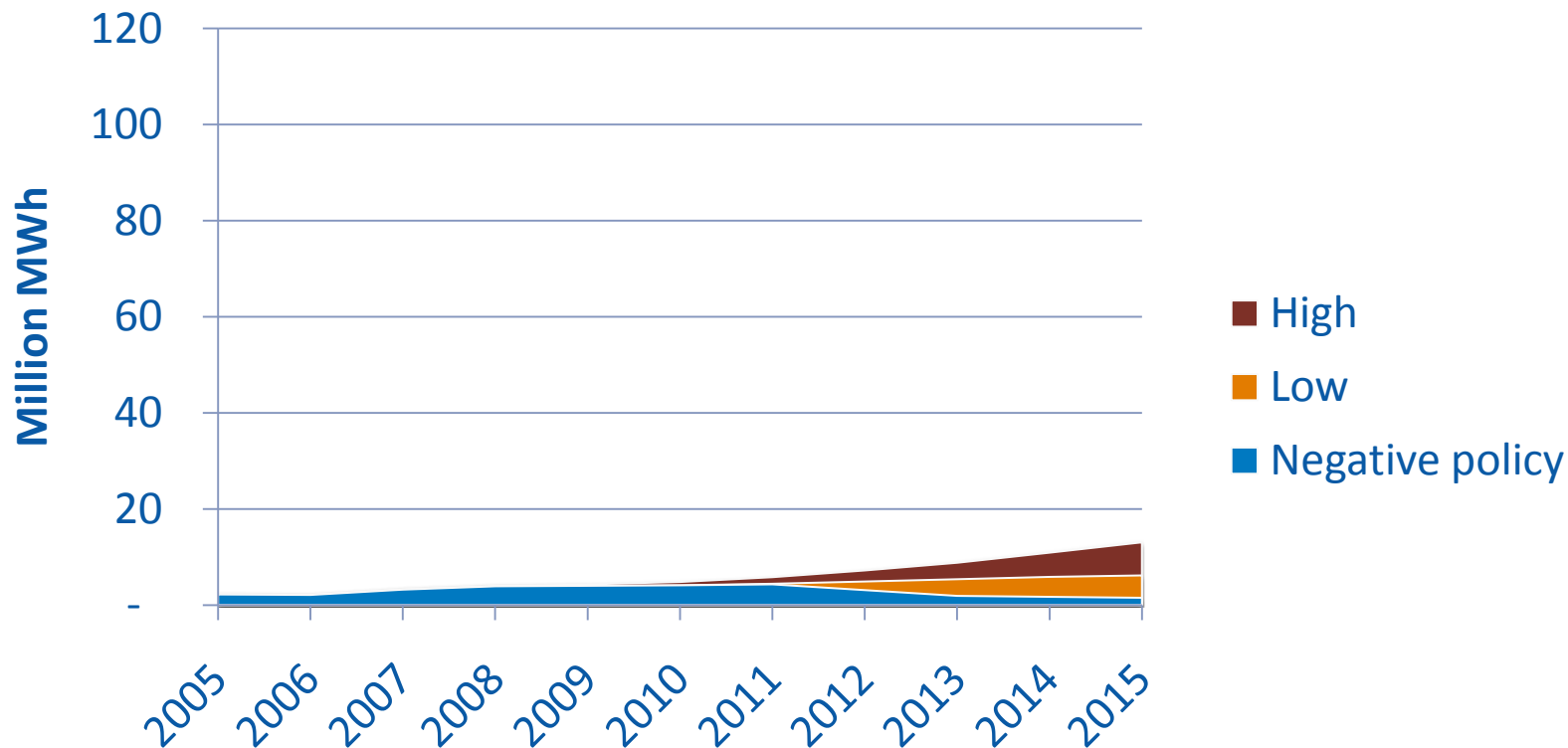
- Primarily nonresidential demand; has seen compound annual growth of more than 50% in the 2006-2009 timeframe.
- Used EPA Green Power Partnership data on REC demand in order to look at market in more detail (e.g. by customer size).
- In the high and low cases, REC markets continue to drive much of the growth in the voluntary market; decreases to 23% of total market in the negative policy case.

Regulated Utility Programs



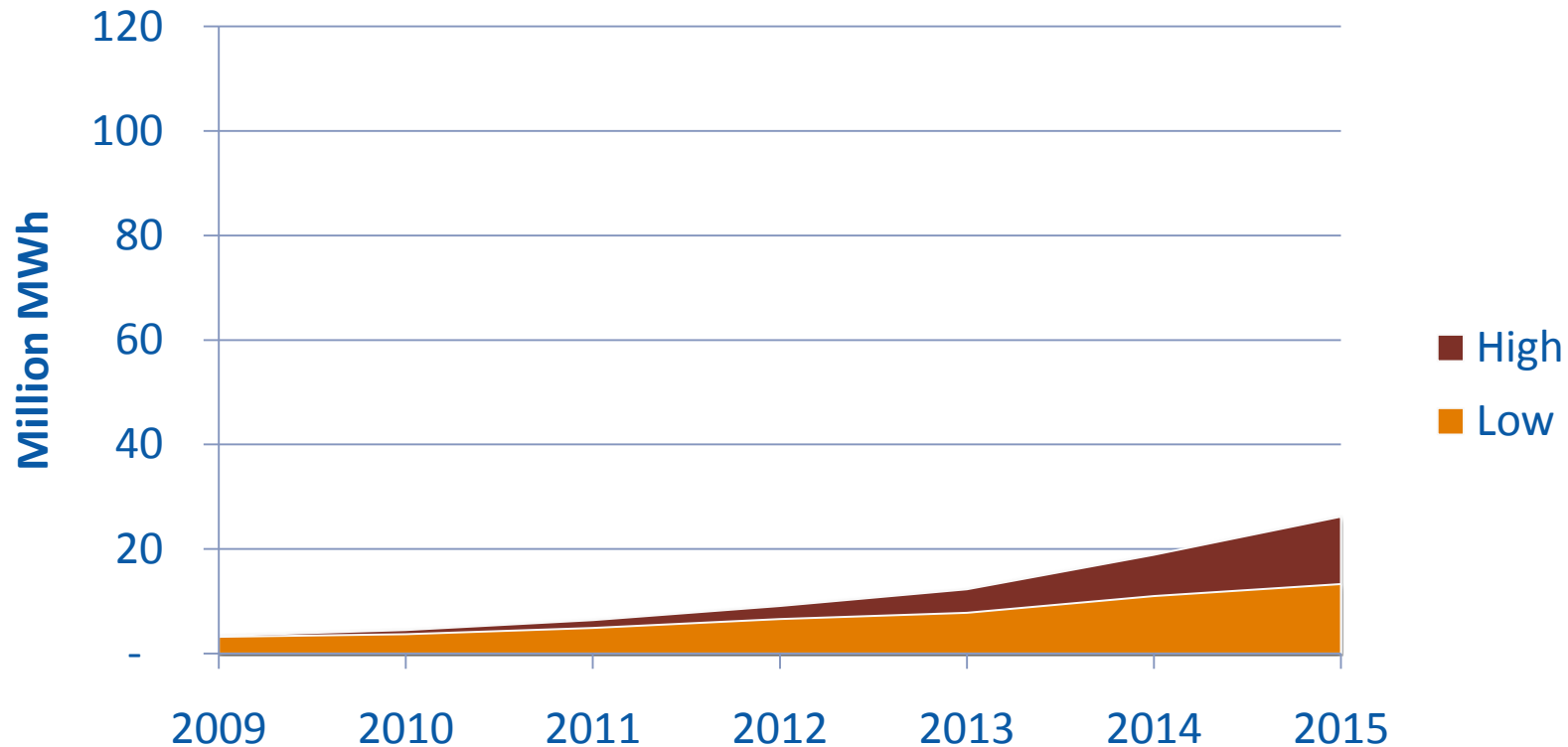
- Includes existing programs and forecasted new programs. Broken down by utility type (IOU, Coop, Muni).
- Green power sales by IOU and Coops have seen compound annual growth rates of 24-29% in the 2004-2008 time period; GP sales by coops have declined slightly.
- Projected to decline as a share of the total voluntary market.

Restructured Markets



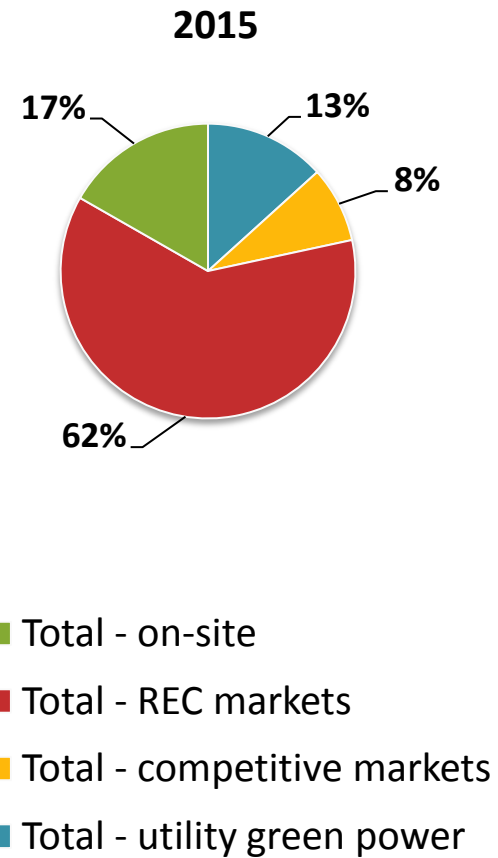
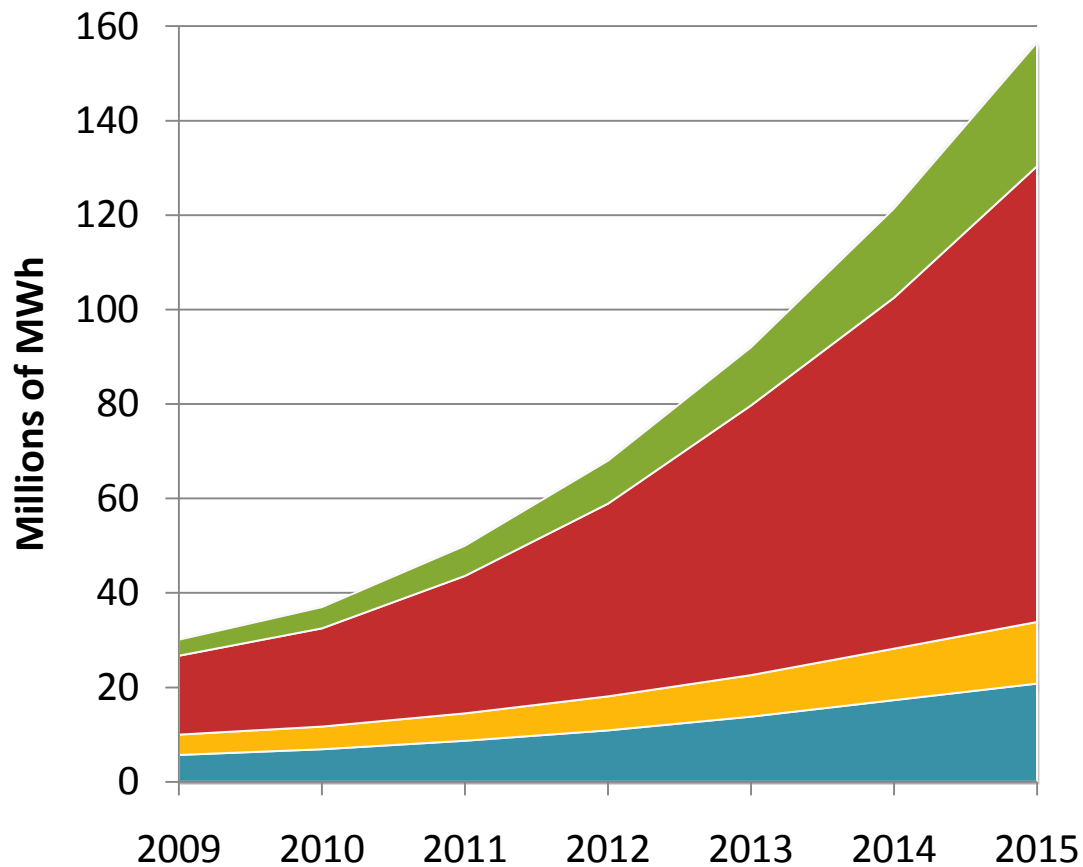
- Includes competitive marketers, existing and new competitive programs.
- Historical growth in marketers sector = 15% CAGR 2005-2008.
- Historical growth in competitive programs (“default supplier” or “check-off programs”) = 48% CAGR 2005-2008.
- Forecasted to represent between 6% (negative policy case) and 10% (high case) of the voluntary market in 2015.

On-site Renewable Energy

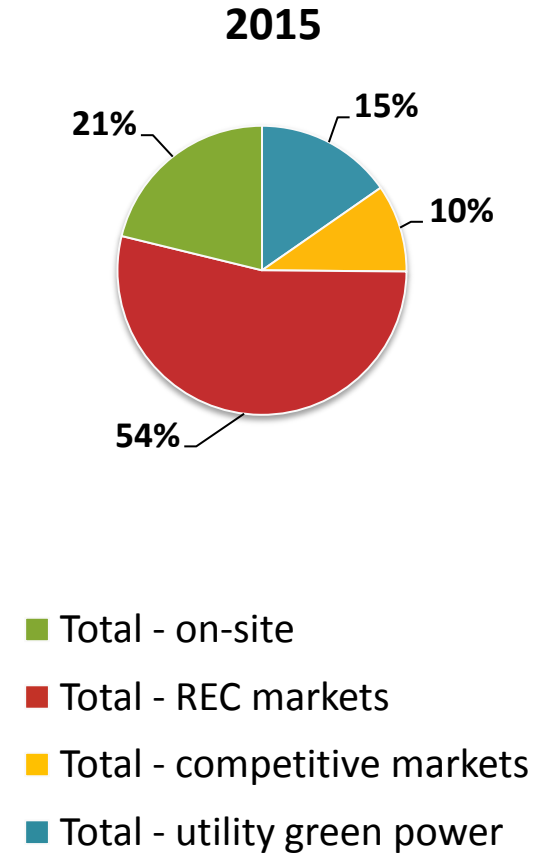
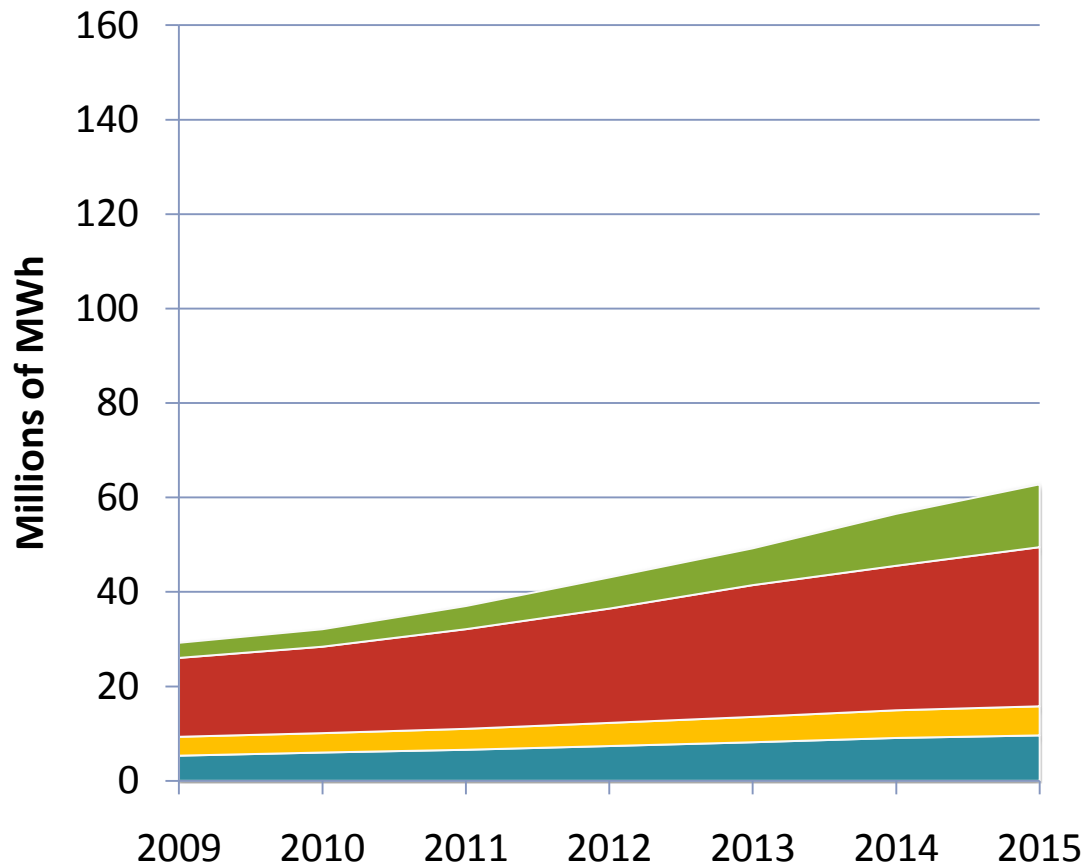


- On-site solar: used projections that Navigant Consulting completed for NREL.
- On-site solar accounts for 21.4 million MWh in the high case and 11.5 million MWh in the low case. The remaining demand is from non-solar on-site projects. We used data from the EPA's Green Power Partnership to determine demand from this sector.

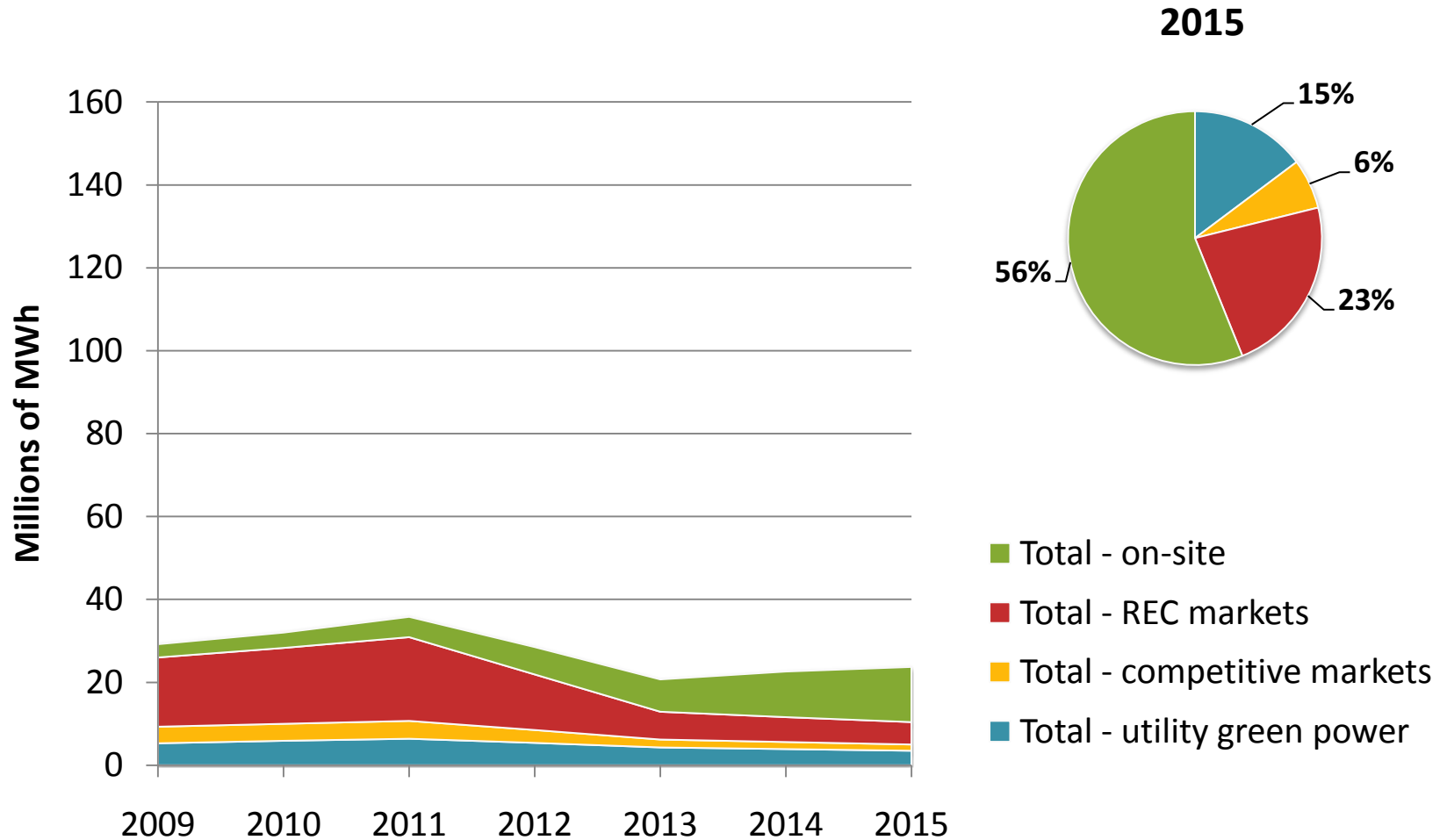
High Forecast - Summary



Low Forecast - Summary



Negative Policy Impacts Case - Summary



- Potential impact of policy takes effect in the 2011-2013 timeframe.

Key Results

- The high case represents 3.8% of total projected retail electricity sales in the U.S. in 2015. The low case represents 1.5% and the negative policy case represents 0.6%, respectively.
- In both the high and low forecasts, REC markets continue to drive much of the growth.
- On-site solar is projected to increase its share of the total voluntary market.
- Utility green power programs and the competitive market are predicted to decline as a share of the total voluntary market.

Uncertainties

- The growth assumptions are informed largely by **historical growth rates** in each submarket, but it is unclear where the market lies along the S-curve of market diffusion and how consumer interest will change.
- There is significant **policy uncertainty** over the time period analyzed. The design details and timing of any potential federal and state RPS policies as well as regional or federal cap and trade programs will have implications for the market that are difficult to predict without specific knowledge of the policies.
- Uncertainty surrounding the **price of renewable generation** over the period analyzed and its relative competitiveness with conventional generation has implications for consumer willingness to pay for renewables. Voluntary market demand can be price sensitive.
- There is significant uncertainty in the **level of interest that utilities will show** in offering and promoting green power products going forward. The level of promotion is an important factor in determining participation.

Thank you.

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