

Energy Efficiencies: How or Will Energy Efficiency Play in Compliance Markets

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M.J. Bradley & Associates LLC

M.J. Bradley & Associates helps private and public sector clients understand and meet the challenges posed by changes in environmental law and policy, energy markets and technology.

We advise our clients in the following areas:

Corporate business planning and development of sustainability programs.

Climate change and air quality policies and regulations and market opportunities.

Assessment and demonstration of advanced transportation technologies.

Technical, economic and market assessments for advanced technologies and mitigation projects.

Energy Sector Clients

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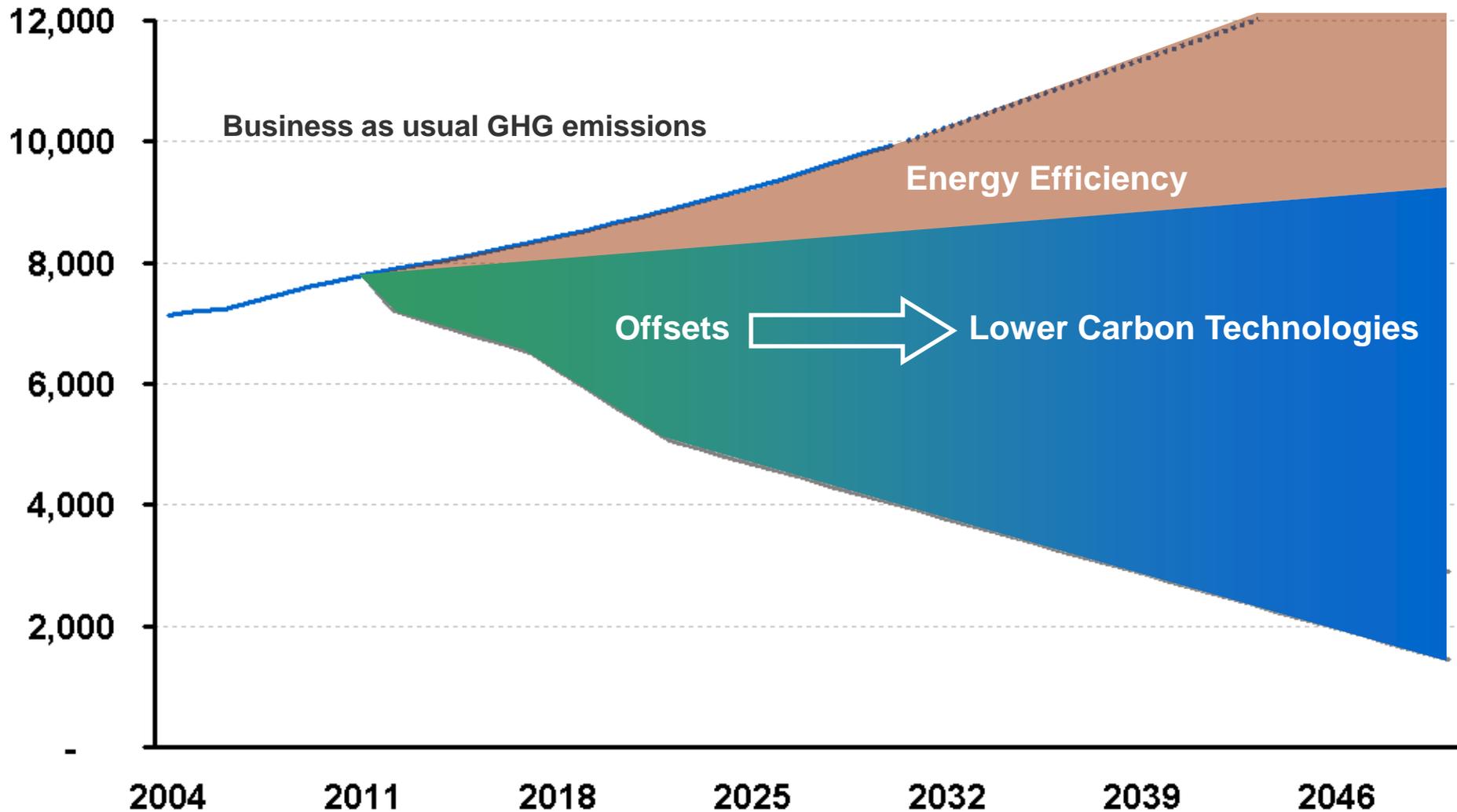
M.J. Bradley's parent company is Climate Change Capital a London-based investment manager specializing in the opportunities generated by the global transition to a low carbon economy. CCC has over \$1.5 billion under management.



Overview

- The electric utility industry is facing unprecedented levels of impending environmental and energy regulations that will require the implementation of both supply and demand side strategies:
 - ▶ Energy efficiency and renewable energy mandates
 - ▶ Command and control and cap-and-trade programs for air pollution and GHG emissions
- Supply and demand side energy efficiency strategies likely hold the keys to cost effective compliance solutions.
- Efficiency strategies results in multiple value streams – energy savings, fossil fuel savings, air pollution and GHG emission reductions, etc.
 - ▶ What market based tools are available today?
 - ▶ How will the market value these benefits going forward?

Energy Efficiency and Offsets in the Context of Long Term Climate Policy



Supply and Demand Side Resources: What are we Talking About?

- Supply side strategies:
 - ▶ Low and zero carbon generating capacity
 - ▶ More efficient power generation and delivery
- Demand-side strategies:
 - ▶ **Energy efficiency** — installing more efficient equipment or using more efficient processes/ systems to achieve a permanent reduction in electricity use
 - ▶ **Demand response** — changing a customer's electricity demand in response to dispatch instructions or price signals
 - ▶ **Distributed generation** — generating electricity at the customer site such as CHP.
 - ▶ **Fossil fuel efficiency** — installing more efficient combustion equipment or using more efficient processes/systems to achieve a permanent reduction in fossil fuel use

Efficiency Measures Provide Multiple Benefits

	Energy Cost Savings	Air Pollution Emission Reductions	GHG Emission Reductions	Avoids the Need for New Generation Capacity
Supply Side Efficiency	√	√ (Direct)	√ (Direct)	√
Demand Side Efficiency (Stationary Combustion)	√	√ (Direct)	√ (Direct)	√ (Distributed Gen)
Demand Side Efficiency (Electric)	√	√ (Indirect)	√ (Indirect)	√



Supply Side Market Based Drivers?

- The regulation of GHG emissions from motor vehicles will trigger the inclusion of GHG emissions under the PSD and Title V permit programs for stationary sources starting January 2, 2011.
- As a result, all permits for stationary sources issued after that date that trigger PSD will have to include a Best Available Control Technology (BACT) analysis for GHG emissions.
- Given that GHG emissions control technology is in its infancy, improving thermal energy efficiency is the primary strategy to reduce GHG emissions.
- Until there is a price on carbon, there are limited market based drivers for supply side efficiency.

Demand Side - Market Based Drivers

■ Forward Capacity Markets

- ▶ Forward capacity markets in the US were developed to ensure resource adequacy in the power system at a reasonably competitive price.
- ▶ Demand response and energy efficiency are able to participate along side generation supply in forward capacity markets

■ Energy Efficiency Portfolio Standards

- ▶ States and the federal government are exploring establishing mandatory energy efficiency portfolio standards that require regulated utilities to meet a certain percentage of their projected power needs through energy efficiency.

■ Carbon Offset Markets

- ▶ States and federal government have developed offsets mechanisms for stationary fossil fuel combustion emission reductions.

Forward Capacity Markets - PJM and ISO-NE

- The forward auctions in both PJM and ISO-NE are held three years before the delivery year.
 - System operator runs a competitive auction to establish capacity prices, and then procures capacity at the market clearing price.
 - The regional system operator is the sole buyer in this market.
 - LSEs are individually responsible for meeting their customers' peak loads, and are allocated a pro-rata share of the capacity costs incurred by the system operator to meet those loads.
- PJM
 - ▶ Demand resources represented 5% of the 2012/2013 PJM auction.
 - ▶ PJM limits capacity payments for efficiency measures to four years of their measure life (rather than for the full measure life).
 - ▶ Demand response resource (including distributed generation) can participate in the PJM capacity market for as long as its ability to reduce demand continues.
 - ISO-NE
 - ▶ Demand resources have consistently represented 8 percent of the resources cleared in ISO-NE auctions
 - ▶ In contrast to PJM, all demand-side resources in ISO-NE are eligible to bid capacity for their full measure life.



Combined Efficiency and Renewable Electricity Standard (CERES)

- The American Clean Energy and Security Act (ACES), included a CERES
 - ▶ Combined 20% renewable energy and energy efficiency standard by 2020.
 - ▶ 15% from renewable energy sources and demonstrate annual electricity savings of 5% from energy efficiency measures.
 - ▶ If the governor of a state determines that utilities in the state cannot meet the 15% renewable requirement, the governor may reduce the renewable requirement to 12% and increase the efficiency requirement to 8%.
- Energy efficiency reduces the utility's overall sales, thereby reducing their CERES energy targets and associated financial compliance obligation.
- The U.S. Energy Information Administration (EIA) assessed the national impact of a March 2009 discussion draft version of the American Clean Energy and Security Act (EIA 2009a) and found that fully incorporating energy efficiency into the RES can lower electricity rates.

Carbon Offsets

- The nascent U.S. carbon offset market focuses on DIRECT emission reductions.
- Indirect reductions associated with electricity savings HAVE NOT broadly been valued as pre compliance grade carbon offsets in the market to date.
- There are several reasons for this –
 - ▶ Concerns over ownership of the emission reductions and
 - ▶ The expectation that major emitting stationary sources (i.e., electric generation, industrial) GHG emissions will be capped.
- However, other voluntary buyers have shown some interested in the indirect emission reductions associated with electrical energy efficiency.



Conclusion

- Market based tools exist today that provide value for energy efficiency resources – largely on the demand side
- Stationary fossil fuel combustion efficiency (supply and demand side) will become increasingly important as EPA looks to regulate GHGs under the CAA and Congress establishes a cap-and-trade program
- The value proposition of energy efficiency may change significantly if federal CERES is enacted.
- Coal plant retirements could create added incentives for energy efficiency.
- Supply side and demand side energy efficiency will reduce the demand for allowances in a cap and trade program.
- Key questions regarding double counting of “attributes” will be a key issue going forward if multiple value streams are to be tapped.

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