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## *Managing the Conflict: Reduction Versus Resilience*

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# Bostonia Partners Introduction

- Founded in the 1990s, Bostonia Partners, LLC (“Bostonia”) is a financial services company headquartered in Boston, MA
- The firm is well recognized in the industry for structuring innovative financing solutions in structured project finance and nontraditional debt and equity placements for energy efficiency, renewable energy and real estate projects
- Bostonia established its own broker/dealer, Bostonia Global Securities, LLC (“BGS”) in 2004
- Bostonia’s principals have created numerous financing and investment programs and structures which were the first of their kind
- Bostonia has structured approximately \$4.5 billion in financings

# Agenda

- Energy Reduction vs. Energy Resiliency: Overview
- Energy Reduction vs. Energy Resiliency: Challenges and Benefits
- Generation Market
  - Components
  - Outlook
- Renewable Energy Market
  - Components
  - Outlook
- Extracting the Value Proposition for Energy Security
- Options for Implementation
- Conclusion

# Reduction vs. Resiliency: Overview

Myriad energy and environmental mandates do not equate to mission assurance, and may increase competition for limited resources for mission assurance. As competition increases for funding to develop energy and renewable projects, the potentially greater requirement for energy security remains an unfunded mandate.

Energy Costs are rising and sources of energy are derived from hostile environments – a combination of Reduction and Resiliency will provide energy security for the U.S. Government, but at what cost?

In January 2010, it was established, pursuant to EO 13514, that the Federal Government must reduce greenhouse gas (GHG) pollution by 28% by 2020 and reduce water consumption 26% by 2020. DoD must produce or procure 25% of electrical energy from renewable sources by the year 2025.

# Reduction vs. Resiliency: Challenges

## **Challenges of only Pursuing Reduction Strategies:**

- Does not eliminate reliance on the grid or provide energy security
- Constrains yearly operating budgets
- Does not allow for direct control of energy prices, which are expected to continue rising

## **Challenges of Pursuing Resiliency Strategies:**

- High upfront capital obligations, inflexible budgets
- Higher short-term cost of energy
- Long term cost and security benefits are not immediately realized
- Value proposition not readily definable
- Geographic and market constraints

# Reduction vs. Resiliency: Benefits

## **Benefits of Pursuing Reduction Strategies:**

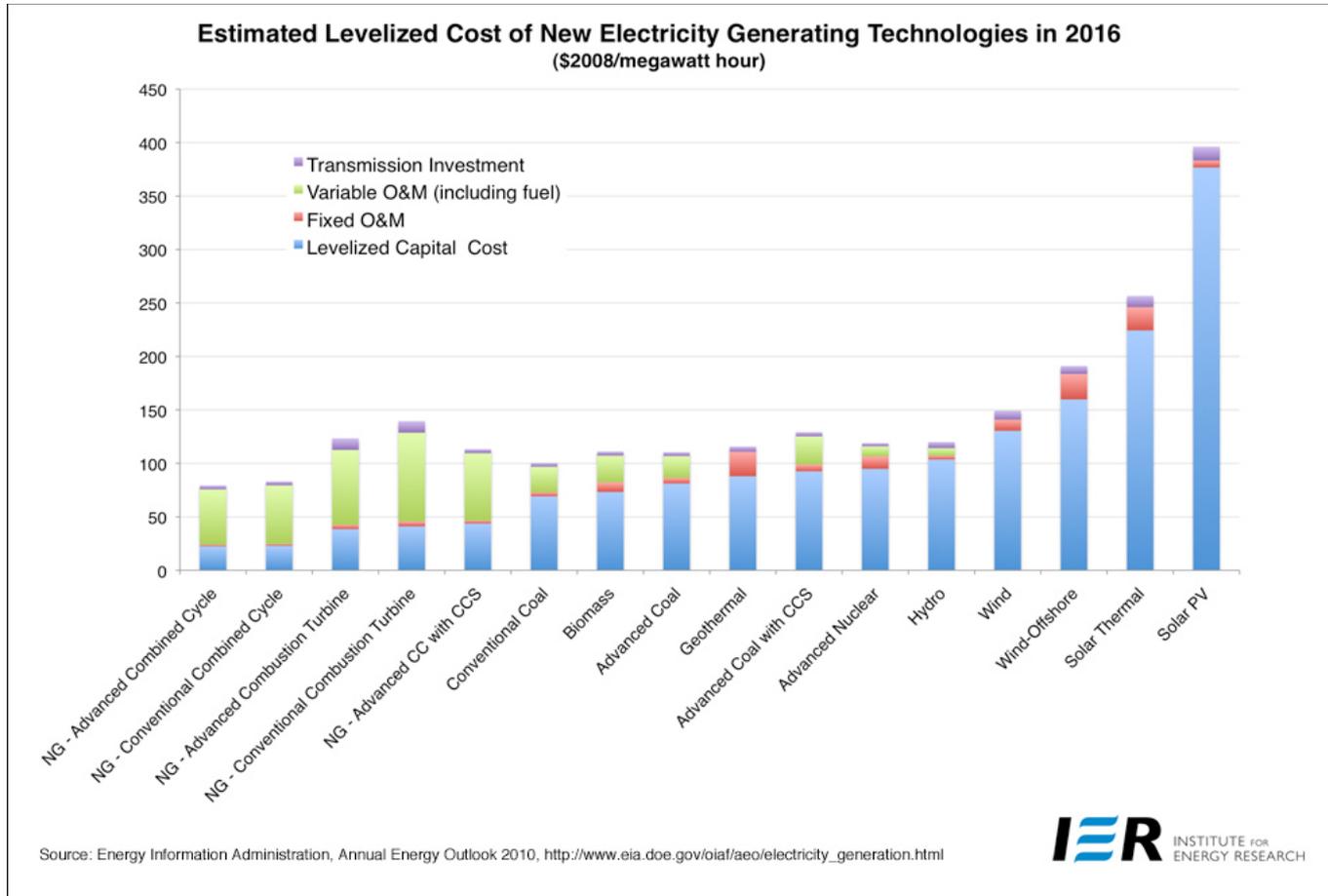
- Realized immediately
- Established marketplace; ESPC and UESC programs
- Investment does not require outlay of capital to procure
- Fits easily into constrained operating budgets
- Reduces need for additional power generation
- Attain compliance with efficiency mandates

## **Benefits of Pursuing Resiliency Strategies:**

- Power Purchase Agreements (PPAs) provide for fixed long-term energy price certainty and protection against rising energy costs – don't require outlay of Capital to procure
- Power contractually delivered with assured quality and in assured quantities
- Possibility to utilize Energy EUL authority which provides in-kind considerations
- Renewable power is needed to comply with federal objectives (25% by 2025), a projected 1% increase annually from current 10%



# Generation Market



- The cost of traditional energy sources is based on the price of oil, hydrocarbons
- The cost of renewable energy sources is based on the price of technology
- Incentives are necessary in low-rate areas: Renewable Portfolio Standards incentivize utilities to purchase RE, broadening market; Federal tax incentives lower development costs; Power Purchase Agreements incentivize developers and financiers

# Generation Market

## Components:

- U.S. electric power industry's total installed generating capacity was 1,112,264 megawatts in 2008, generating 4,110,259 gigawatt-hours
- Fuel mix:
  - Coal: 44.6%
  - Natural Gas: 23.3%
  - Nuclear: 20.2%
  - Hydro: 6.8%
  - Fuel Oil: 1.0%
  - Renewables: 3.6%

Source: EEI

## Outlook:

- Pending legislation, mandates, carbon pricing, and feed-in tariffs will increase the price of hydrocarbon-based fuels
- Investment in a "Smart Grid" and transmission modernization will add to utility's cost recovery base, driving prices higher
- More deregulation will raise prices to end-users; IPPs eager to invest
- Higher prices make RE development viable, attractive
- Procuring energy away from traditional utilities through the use of long-term contracts (PPAs) becomes increasingly attractive

# Renewable Energy Market

## Components:

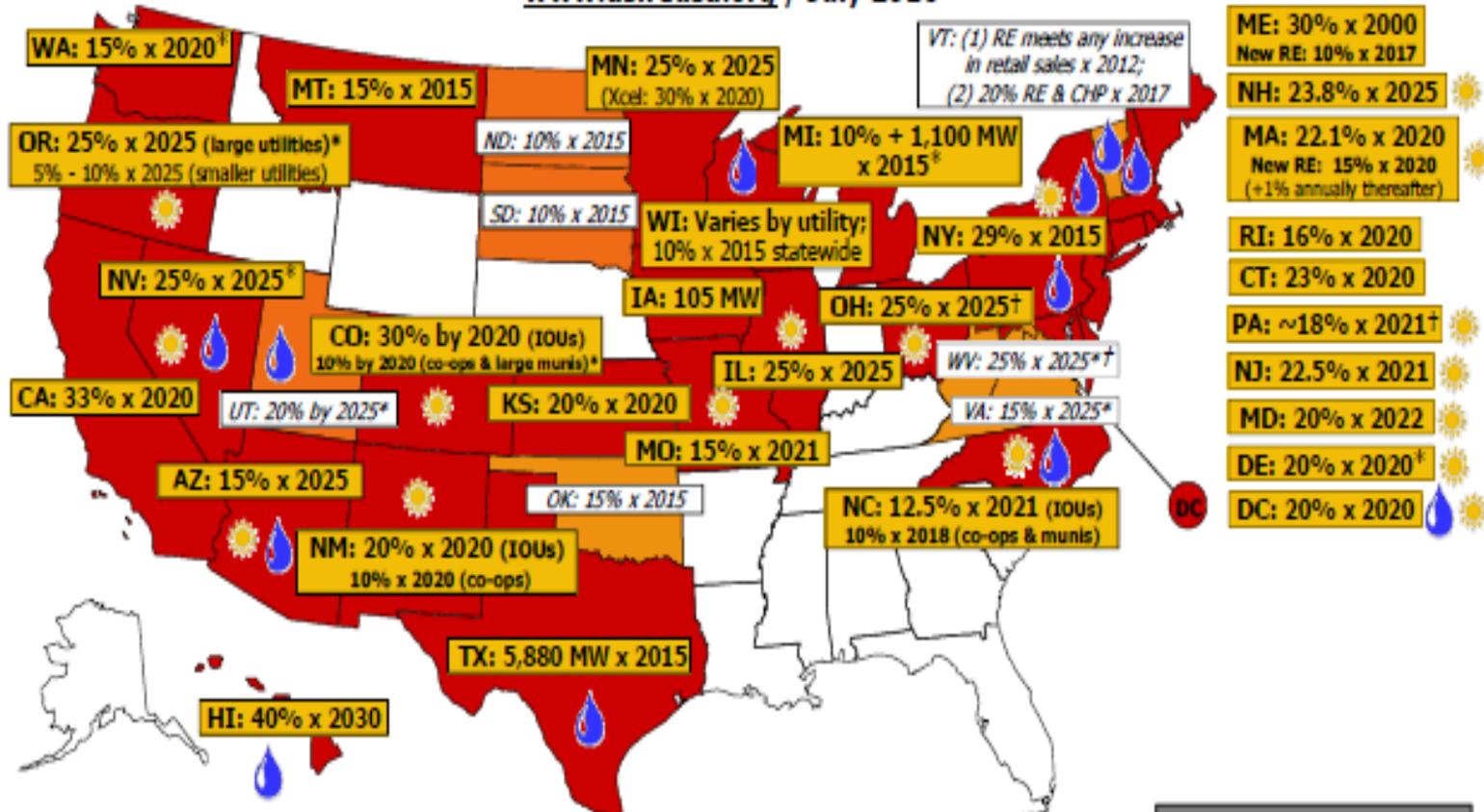
- Renewable energy in the U.S. generated 123,603 gigawatt-hours in 2008
- Emerging technologies are changing the marketplace
- Competition is bringing costs down
- Scalable projects serve a variety of needs at installations and buildings

## Outlook:

- States will continue to quickly adopt Renewable Portfolio Standards (RPS)
- Federal legislation may provide for a nationwide RPS, carbon price
  - Introduction of Renewable Energy Certificate (REC) markets and Alternative Compliance Payments forces utilities to meet state or national RPS
  - Sale of RECs to utilities lowers cost of RE development
  - Compliance at utilities drives overall electricity prices higher
  - Compliance with carbon regulation will raise the price of traditional generation
- Support for renewable energy through tax incentives will keep costs down
- Developers increasingly willing to risk capital on tested technologies
- Standardization of PPA contracts will provide for better access to capital

# Renewable Portfolio Standards

www.dsireusa.org / July 2010

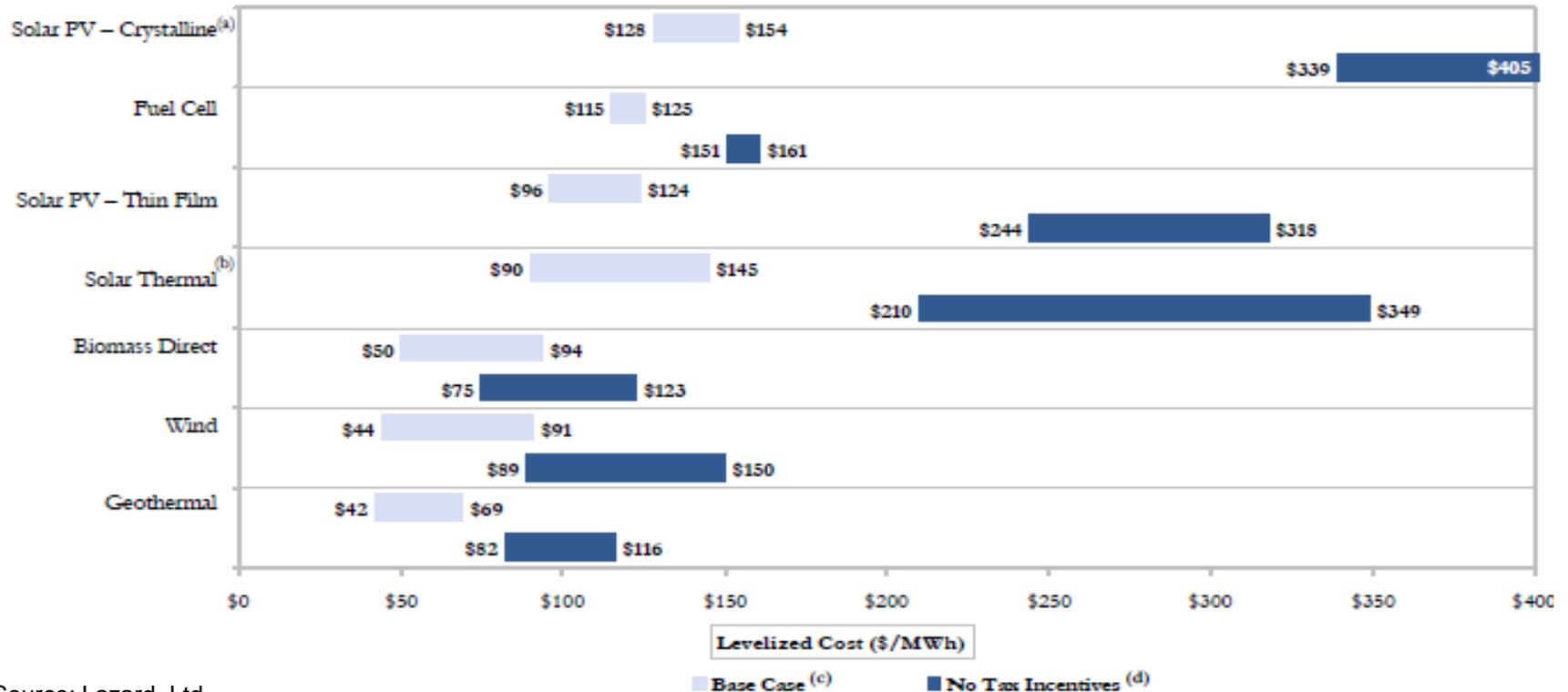


- State renewable portfolio standard
- State renewable portfolio goal
- Solar water heating eligible

- Minimum solar or customer-sited requirement
- Extra credit for solar or customer-sited renewables
- Includes non-renewable alternative resources

**29 states + DC have an RPS**  
(7 states have goals)

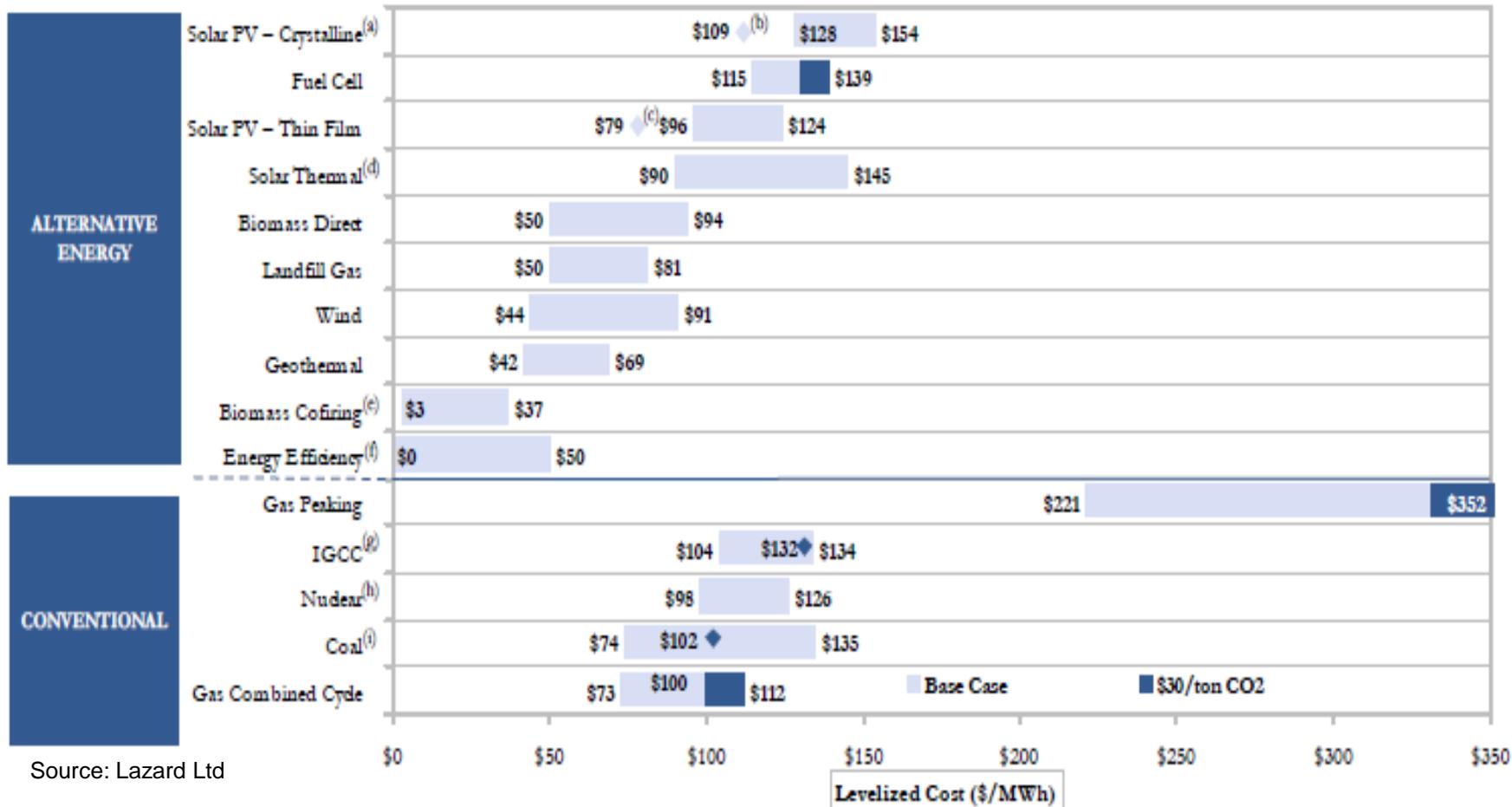
# Effects of State and Federal Incentives on Levelized Cost



Source: Lazard, Ltd.

- Federal and state tax incentives can make energy projects affordable
- Developers and financiers must utilize incentives, lowering the levelized cost

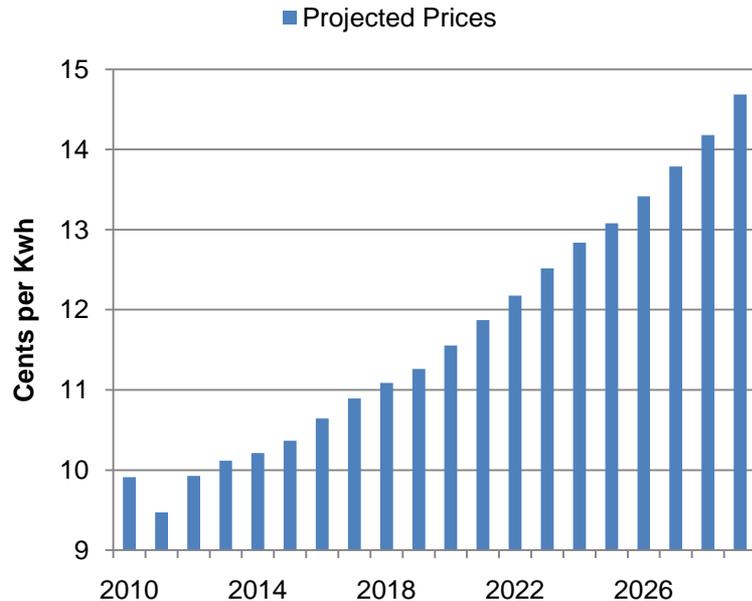
# Effects of Carbon on Levelized Cost



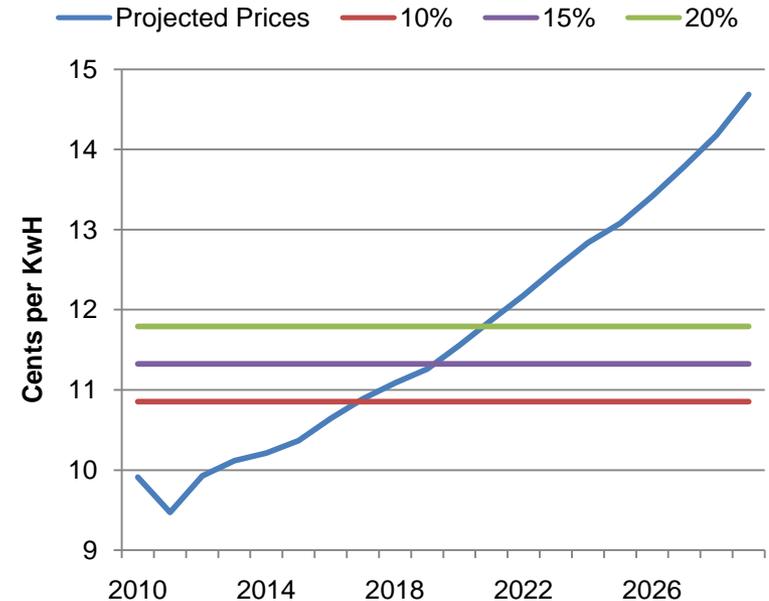
- Future carbon emission costs (including carbon capture, compression, and carbon trading) will drive up the costs of conventional power sources, making renewable energy sources cost-competitive
- Reduction is the cheapest form of energy procurement

# Extracting the Value Proposition for Energy Security

## Projected Prices of Electricity over 20 Years



## Electricity Prices vs. PPAs at Various Premiums



Source: EIA

- PPAs provide protection against the rising cost of electricity
- Savings are realized in the long run
- PPAs are an efficient way to secure energy at an installation, and for developers and financiers to raise capital for RE

# Extracting the Value Proposition for Energy Security

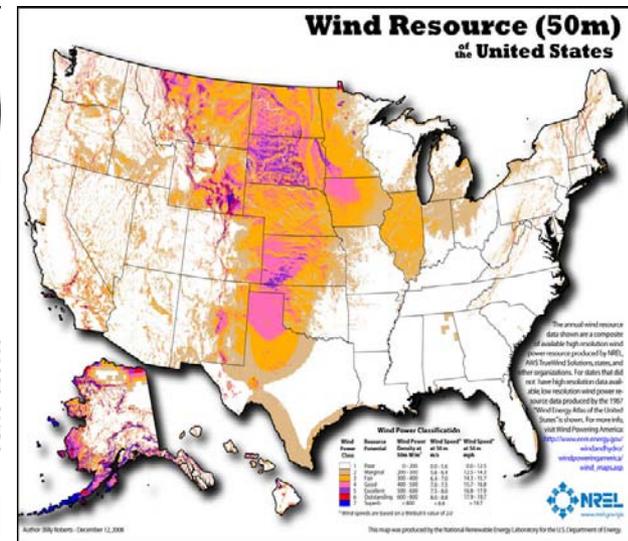
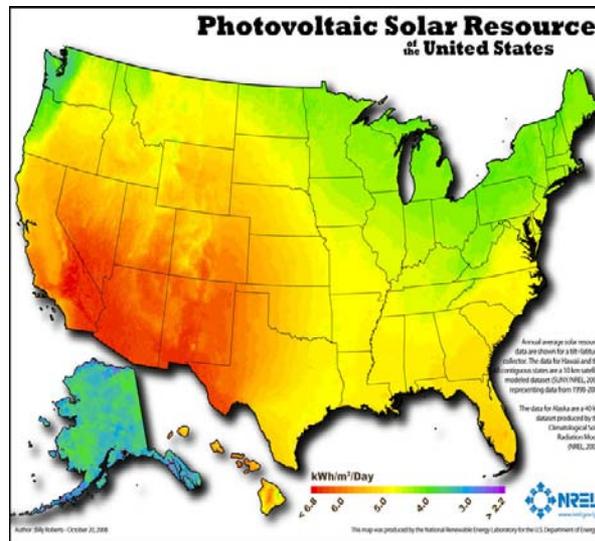
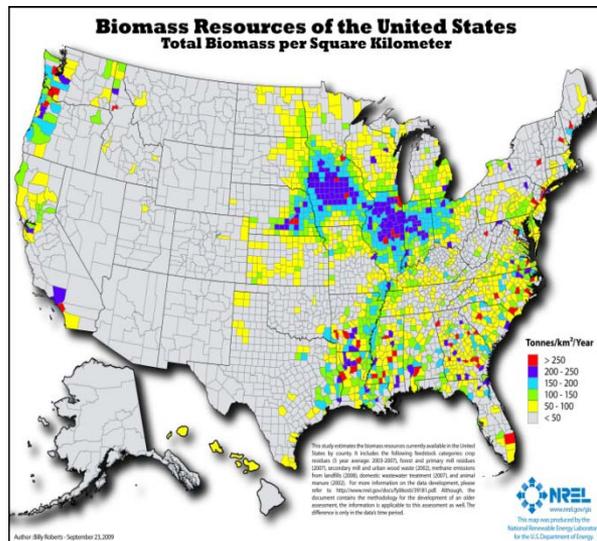
## Installation Demanding 5MW / Year for 20 Years With a Fixed Price Power Purchase Agreement (PPA) vs Status Quo

	Present Value of Electricity Cost	Average Cost Difference
Status Quo (No PPA)	\$7,615,921.97	-
PPA with 10% Premium	\$7,237,742.87	-5%
PPA with 15% Premium	\$7,566,731.19	-1%
PPA with 20% Premium	\$7,895,719.50	4%

- Procuring energy through a PPA grants energy price certainty
- Based on current projected electricity prices, paying a premium today can translate to savings over the term of the contract
- Potential for greater savings if energy prices rise at a faster rate
- Investment incentives and technological advancements are driving costs down, closing the gap and increasing affordability
- How much is energy security worth to an installation?

# Options for Implementation: Energy EULs or Private Development

- Leverage private sector know-how and resources to build an energy plant, “inside the fence,” or procure energy from adjacent facilities utilizing PPAs, securing a steady stream of reliable energy
- Utilize EUL authority to leverage renewable energy alternatives and other power options in close partnership with other government agencies and the private sector
- Nearly every area of the country can take advantage of renewable energy technologies; some technologies are better suited for particular areas, PPAs can leverage resources
- Opportunity offers energy security as well as an opportunity to meet federal objectives for renewable energy (25% by 2025)



# Options for Implementation: Reduction

- The US Government has 2 programs for the development and financing of energy efficiency projects for federal agencies – energy savings performance contracts (ESPC) and utility energy services contracts (UESC)
- Programs require that projects be paid for out of energy savings produced by the projects
- Projects include upgrades to lighting, energy management controls, HVAC, weatherization, water conservation, boilers, steam plants, etc
- Some more complex – cogeneration facilities, turbines/generators and renewable energy projects

# Conclusion: A Blended Strategy

- Energy Reduction and Energy Resiliency both have numerous benefits and challenges
- The strategies should be utilized in unison to achieve mission critical goals and objectives
- Energy Reduction provides short term advantages while Energy Resiliency provides long-term, predictable, and a price stable supply of power allowing installations to gain control over energy requirements and costs
- The present cost of Energy Resiliency may seem more expensive than reduction today, but can achieve affordability over the term through use of PPAs
- Energy Security has quantifiable budgetary value and infinite strategic value

# THANK YOU

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