

Financing Energy Portfolios of the Future

Dan Bakal, Ceres
NARUC/NCEP Utility of the Future
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Ceres is...

- A **coalition** of 130-plus investors, environmental, and public interest groups
- A **network** of more than 80 companies representing diverse industries & businesses
- A leader in convening companies with their stakeholders in a **constructive dialogue** on sustainability issues
- Initiator of the **Global Reporting Initiative (GRI)**, and the **Investor Network on Climate Risk (INCR)**

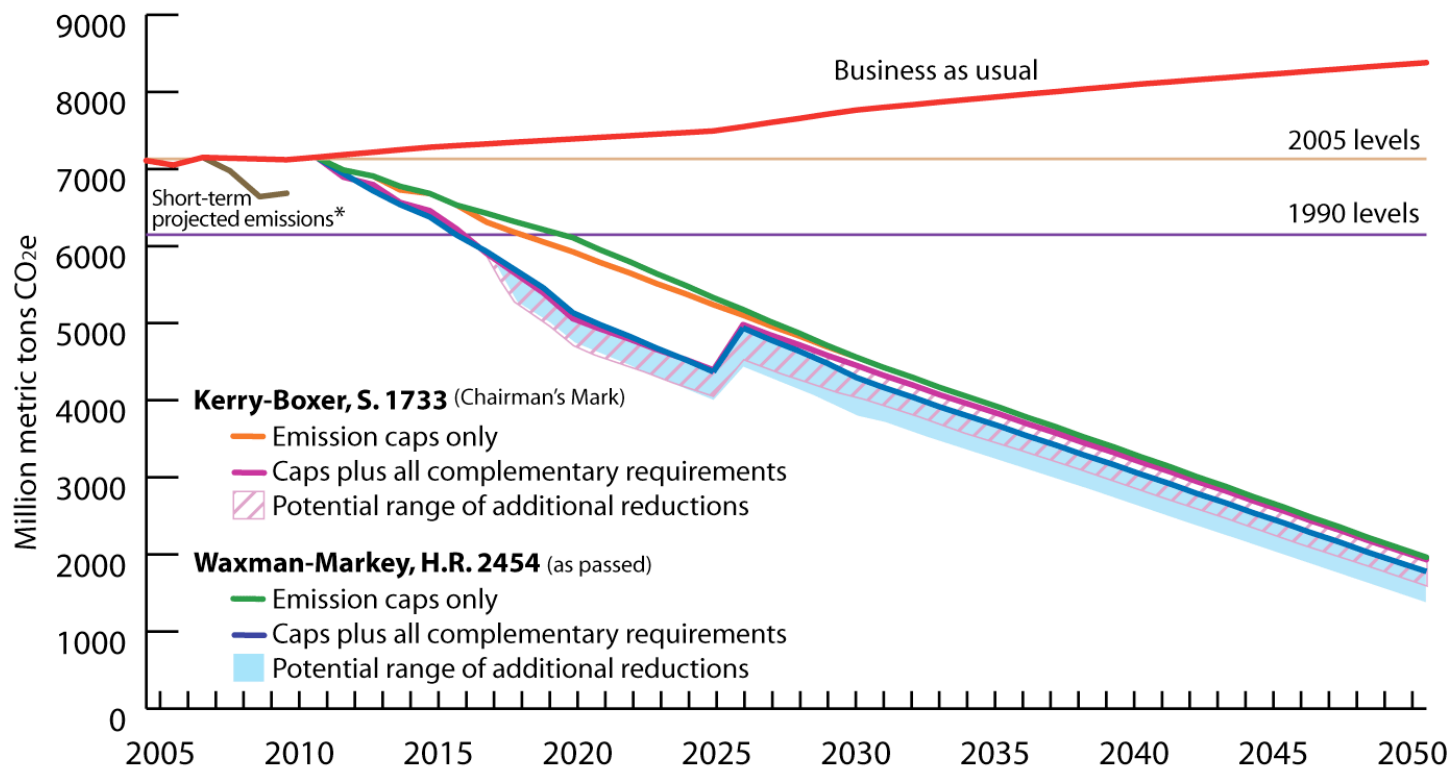
The Low-Carbon Imperative

- A comprehensive transition of our global energy system to low-carbon is necessary:
 - It will require aggressive **policies**
 - It will take several **decades**
 - It will cost **trillions** of dollars of capital
 - It will lead to increased **electrification**

THEREFORE... Utilities and utility commissioners will have a critical role to play

Congressional Climate Proposals

Emission Reductions Under Cap-and-Trade Proposals in the 111th Congress, 2005-2050
October 28, 2009



The Financial Challenge

- **Total global cleantech investment needs to reach \$500 B/yr to hold global warming to less than 2° C**

--New Energy Finance, Nov. 2009

- **U.S. EE investment of \$520 Billion would yield energy savings of over \$1.2 trillion by 2020 and reduce projected energy use by 23%**

-- McKinsey, "Unlocking Energy Efficiency in the U.S. Economy," July 2009

- **U.S. will need to spend \$1.5 - \$2 trillion by 2030 to upgrade its electricity system. To raise and spend capital on this massive scale, the utility industry must represent a sufficiently investment attractive vehicle**

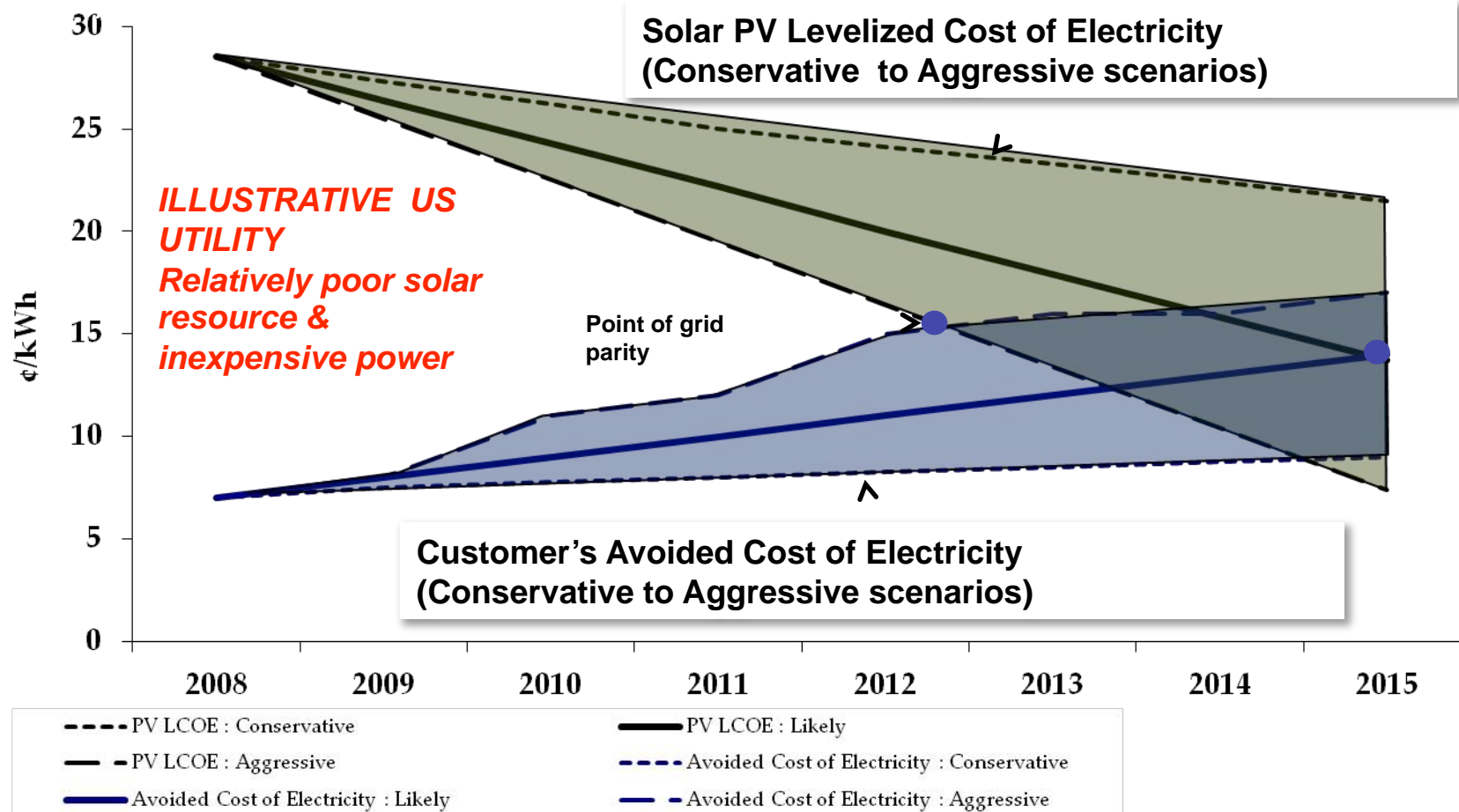
-- The Brattle Group

The Carbon Principles

- **Adopted by Citi, Morgan Stanley, JPMorgan, Bank of America, Credit Suisse, and Wells Fargo**
- **Commitment to a robust process for the financing of new electric power generation, maximizing reliance on efficiency and renewables and addressing lender and investor concerns around carbon risk while working to meet the future power needs**
- **The Enhanced Due Diligence Process:**
 - **Provides lenders with a process by which to evaluate a proposed financing against a range of potential carbon policy assumptions and expected costs**
 - **Encourages consideration of assumptions that err on the side of caution until more clarity around anticipated carbon policies becomes available**
 - **Examines the strategies of the project sponsor to mitigate carbon related risks**
 - **Promotes a discussion around a company's overall supply strategy, including energy efficiency and renewable efforts where applicable**

Utilities will likely face revenue erosion from distributed solar PV when customer are able to get electricity cheaper from PV

PV Levelized Cost of Electricity (LCOE) vs. Avoided Cost of Electricity for a Utility (Real



Utilities Want to Own and Rate-Base Distributed Solar

Utility Programs for Distributed Solar: Examples of Recent Filings for Rate Basing



Filed February 2009
500MW Program
(250MW utility owned)

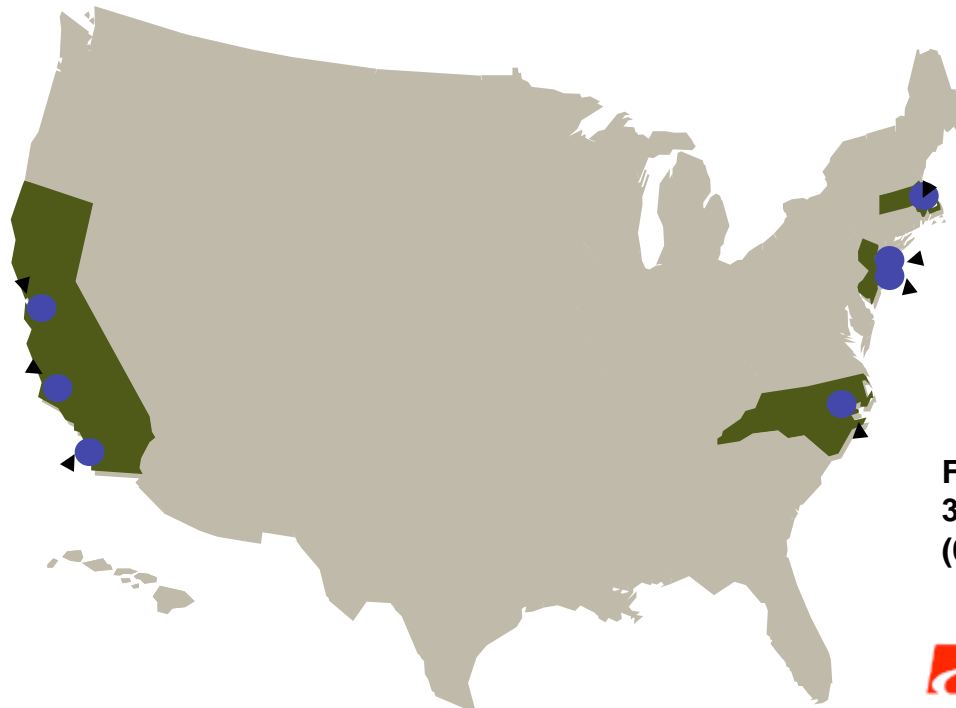


Filed March 2008
500MW Program
(250 MW utility owned)



A Sempra Energy Utility

Filed July 2008
77MW original filing.
Decision pending.
Possibly 26 MW utility
owned + 3rd party owned
(no MW cap)



Proposed 4Q 2008
5MW



Filed February 2009
80 MW



Filed November 2007
3.5MW Program
(0.5 MW utility owned)



Filed June 2008
10MW Program

Electric Power Resources and Key Challenges

- **EE** – need policies to provide incentives and address revenue erosion
- **Solar thermal** – address water use and env. impacts
- **Solar PV** – continue down cost curve and address revenue erosion
- **Smart Grid** – demonstrate consumer and carbon benefits
- **Natural gas** –reduce price volatility and resolve emerging env. issues with shale gas
- **Coal w/CCS** –resolve commercialization and liability issues and water use
- **Nuclear** –resolve cost, waste, and water use

For More Information

Dan Bakal

Director, Electric Power Programs

bakal@ceres.org

(617) 247-0700 ext. 113

Dan Mullen

Sr. Manager, Electric Power Programs

mullen@ceres.org

(617) 247-0700 ext. 126