

Clean Energy and The Power of Demand Side Resources

Oklahoma Wind Energy Conference
December 2, 2009
Richard Sedano



The Regulatory Assistance Project

Vermont ♦ Maine ♦ New Mexico ♦ California ♦ Illinois ♦ China ♦ India ♦ EU



About the Regulatory Assistance Project

- RAP is a non-profit organization providing technical and educational assistance to government officials on energy and environmental issues. RAP Principals all have extensive utility regulatory experience.
 - Richard Sedano was commissioner of the Vermont Department of Public Service from 1991-2001 and is an engineer.
- Funded by foundations and the US Department Of Energy. We have worked in nearly every state and many nations.
- Also provides educational assistance to stakeholders, utilities, advocates.

<http://raponline.org>

2



Setting the Right Bar for New Electric Capacity

- U.S. will need to retool its electric generation fleet to meet climate mitigation objectives
 - Carbon is a/the new metric
- The more we need, the harder it will be to organize

<http://raponline.org>

3



Challenge: Integrating Big Wind and Solar

- Transmission driven by integration
 - Not by load growth
- Big variable: offshore wind
- Big obstacle: lack of interconnection-wide planning to reveal value of alternatives
- Big questions: degree of pre-emption
 - Degree of inter-state cooperation
 - Recognition of national interest renewable lines

<http://raponline.org>

4

Concerns of Northeast States

- Cost allocation for national lines they think are in excess of what is needed if offshore and Canadian resources are developed
 - And pre-emption
- Planning that does not account for offshore and Canadian resources
- New transmission enables coal

<http://raponline.org> 5

How Much Electric Supply Does the US Need?

2009 Prism Analysis

EIA 2009
3854 TWh
"TODAY"

Prism 2030
4888 TWh
"FUTURE"

Can this picture achieve national carbon goals?

<http://raponline.org> 6

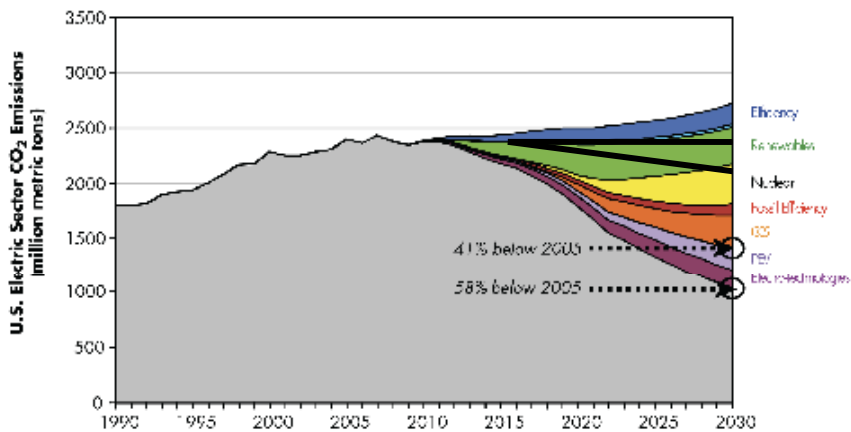
Why Does the Circle Have to Be So Large?

- When Energy Efficiency can make the circle smaller
- Year over year energy demand growth can be offset by annual efficiency gains >>> no change in load as economy expands
- Plus, energy efficiency is cheaper and less risky

<http://raponline.org>

7

EPRI Carbon Plan: Is there Enough Energy Efficiency?



<http://raponline.org>

8



Energy Efficiency: A Reliable Resource

- Measure and Verification is mature
 - Within reasonable error over a population
 - New England and PJM markets crediting energy efficiency with capacity credit using rigorous M&V
 - There is this annoying task of “attribution” due to regulatory requirements
 - Can we make utility engine for savings anywhere?

<http://raponline.org>

11



Why Energy Efficiency Is Under-estimated

- Technology is still emerging, for example
 - LED lighting
 - Smart grid enabled building controls
- Effects of carbon regulation under-estimated
- System Operators don't trust it at large scale
- Regulatory policies retain conflicts
- Retrofits needs better, whole house programs

<http://raponline.org>

12



Barriers are formidable, yet manageable

- Awareness
- Information
- Assistance
- Cash flow
- Money
- Responsibility

Energy Efficiency does not “just happen.”

Programs are the strategies that convey to customers the value to participate, while also maintaining value for all customers as a power system resource

<http://raponline.org>

13




“All Cost-Effective Energy Efficiency” means...?

- Rethink benefit/cost tests
 - Include Non-utility benefits (water, quality of life, end use fossil fuel, risk)
- Pay for it
 - Maximize and be realistic about customer share
- Innovate: more funds allow for more effective, comprehensive savings with each customer contact

<http://raponline.org>

14



What to Do to Organize Around Energy Efficiency

- Set ambitious **targets** for energy efficiency targets (or at least goals) and means to pay for it
- Scrutinize **regulatory/utility business incentives** and make improvements
- Accept that energy efficiency is constantly **evolving**; trial and error is part of success
- Understand **customers** and how they make decisions

<http://raponline.org>

15



More things to do

- Energy Efficiency as a primary **system planning** resource
- **Integrate** energy efficiency and demand response
 - Innovate on program design – more is possible with more money
- Design **smart grid, rate design** to promote energy efficiency and demand response

<http://raponline.org>

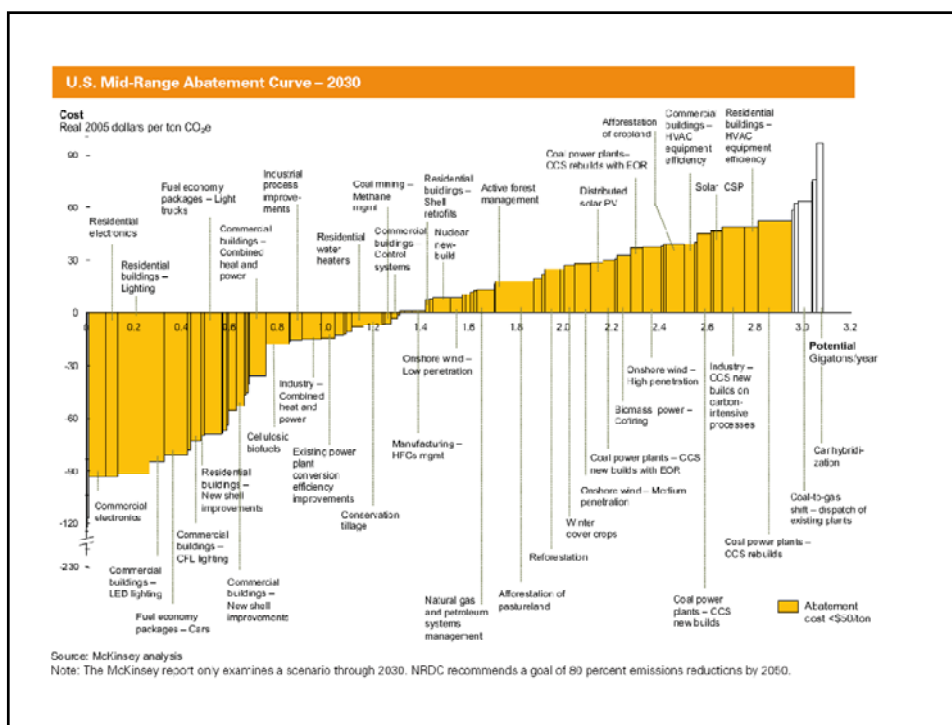
16

And...

- Make standard practice ubiquitous with updated:
 - Building energy **codes** and
 - Appliance and equipment efficiency **standards**
- Activate **communities** to help sell efficiency while strengthening communities
- **Coherent policy** implementing a **strategy**
- **Leadership**

<http://raponline.org>

17





Wait A Minute... What about...?

- Electrified transportation,
- Heat pumps,
- Other end use fossil fuel replacement with electricity?

- Won't these increase load? Won't those circles get bigger?

<http://raponline.org>

19



The Challenge

- Enable the power sector to meet 2050 goals
- While adding significant end uses and demand (adding ~50% to energy use)
 - PHEV + wind promising if done right
- Energy Efficiency is all the more important to make this challenge one that we can win
 - Coupled with clean energy to replace retiring fleet and dispatch ahead of high carbon sources

<http://raponline.org>

20



Thanks for your attention

- rsedano@raponline.org
- <http://www.raponline.org>
- RAP Mission: *RAP is committed to fostering regulatory policies for the electric industry that encourage economic efficiency, protect environmental quality, assure system reliability, and allocate system benefits fairly to all customers.*

<http://raponline.org>

21