Meeting Expectations: A Review of State Experience with RPS Policies

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Presentation Overview

1. Overview of State RPS
2. RPS Impact on Project Development
3. RPS Design and Design Pitfalls
4. Impact on Renewable Energy Contracting
5. Conclusions

What Is a Renewables Portfolio Standard?

Renewables Portfolio Standard (RPS):

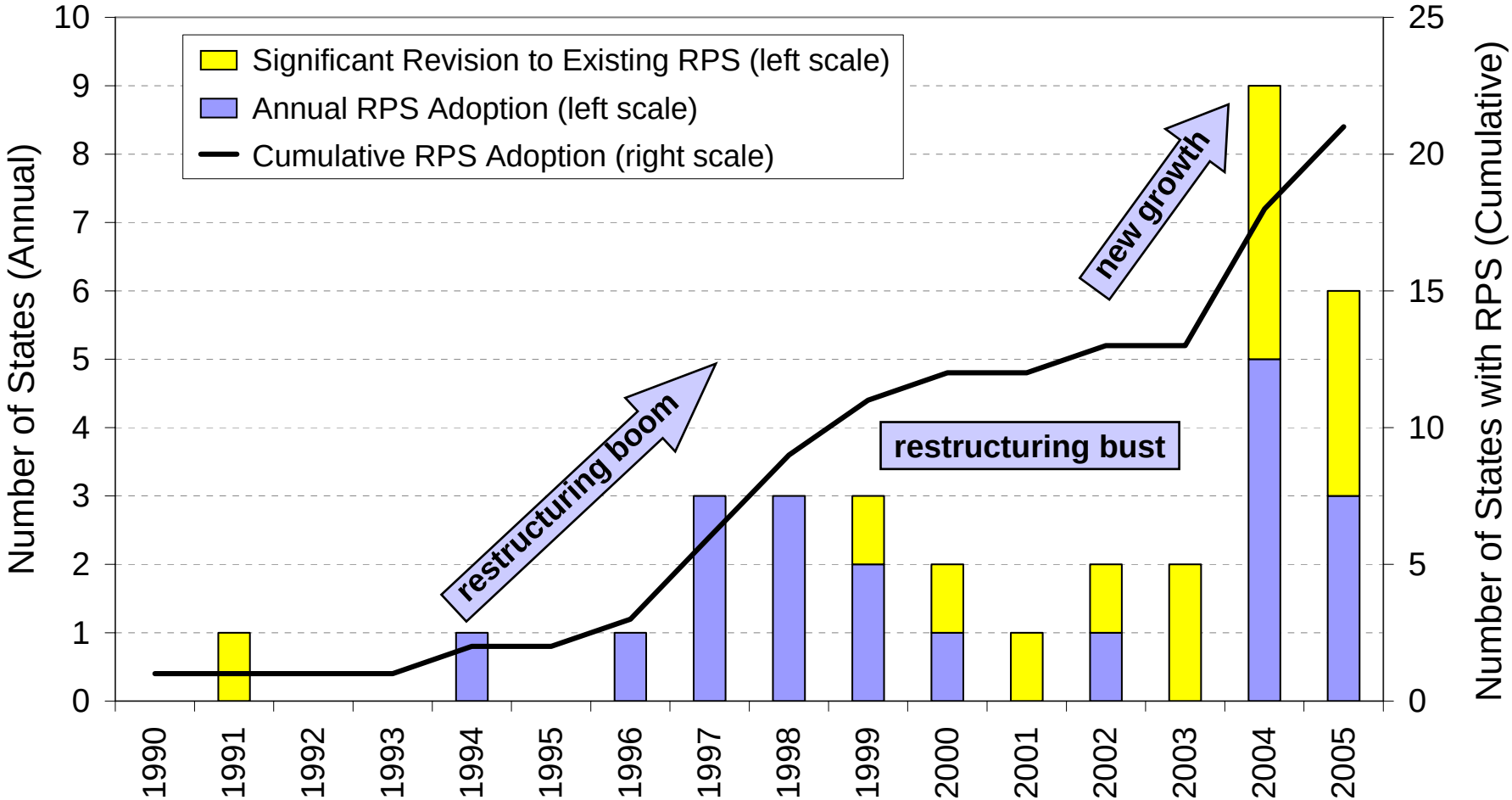
- A requirement on retail electric suppliers…
- to supply a minimum percentage or amount of their retail load…
- with eligible sources of renewable energy.

Typically backed with penalties of some form

Sometimes accompanied by a tradable renewable energy credit (REC) program, to facilitate compliance

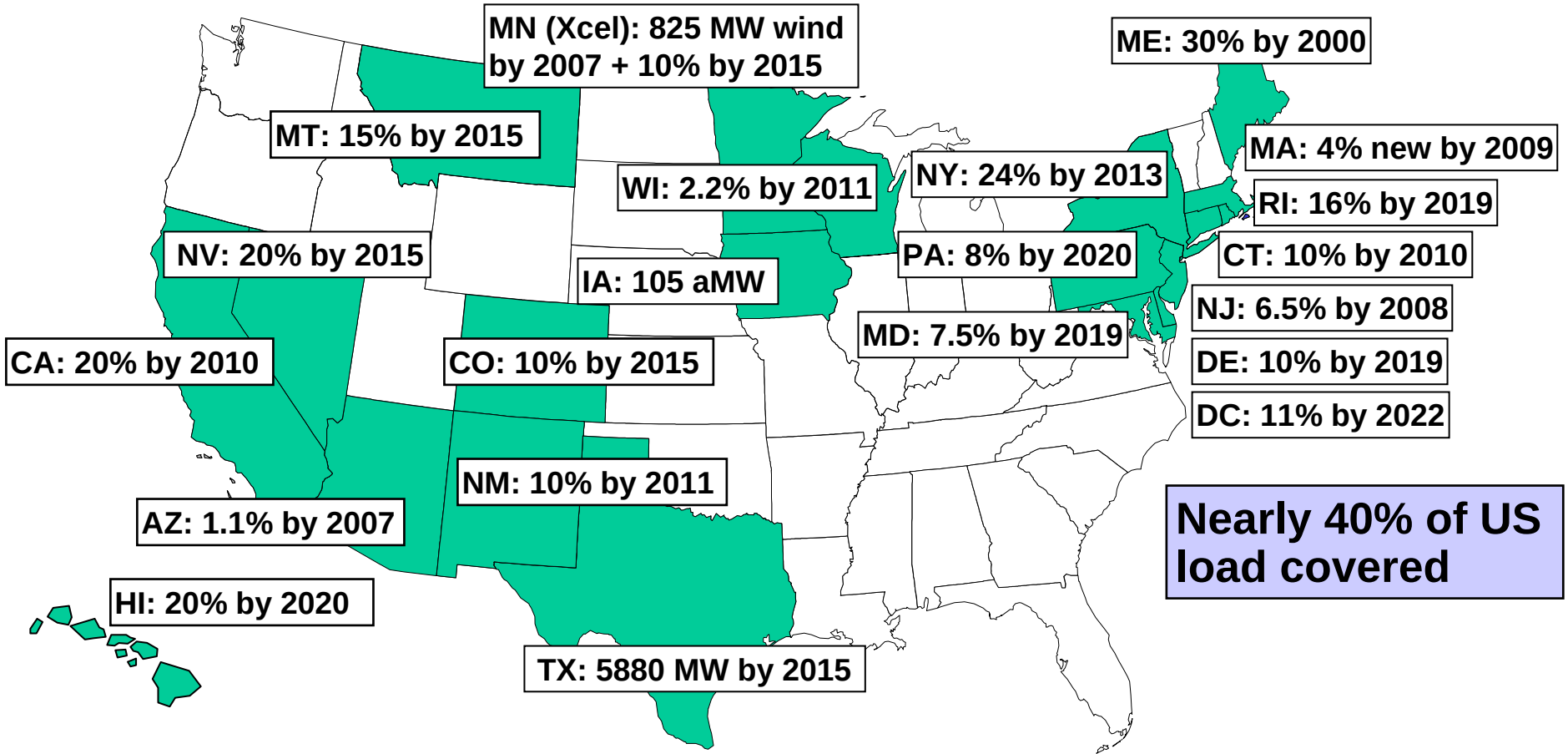
Never designed the same in any two states

State RPS Activity Gathering Steam



Recently Adopted RPS: CO, HI, MD, NY, RI (2004); DC, DE, MT (2005)
Recently Revised RPS: CA, NJ, NM, PA (2004); CT, NV, TX (2005)

State RPS Policies and Purchase Mandates: 20 States and D.C.

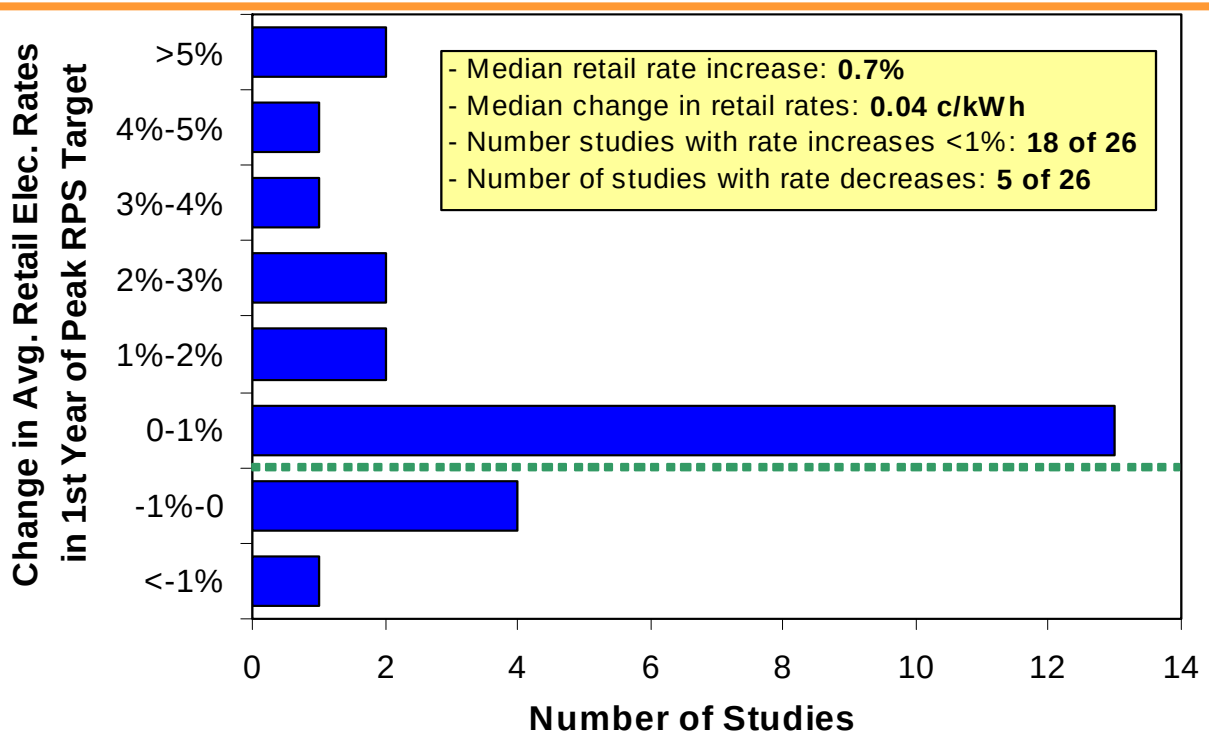


- Renewable energy “goals” established in IL, MN, and VT
- Significant revisions being considered in some states (AZ, NJ, WI); new RPS being considered in others

State RPS Program Context

- **Load Covered:** Roughly 40% of U.S. load covered by a state RPS or a renewables purchase obligation
- **RPS Development:** Most policies emanated from state legislation, but some from regulatory action (e.g., NY, AZ) and one from a state ballot initiative (CO)
- **RPS Application:** RPS typically applies to regulated IOUs and competitive energy service providers; publicly owned utilities often – but not always – exempt
- **Regulated vs. Restructured:** Initially concentrated in restructured states, but now roughly half in monopoly markets
- **Operating Experience:** Experience with policy is growing, but few states have >5 years experience

The Estimated and Actual Cost of State RPS Policies Is Typically Modest...



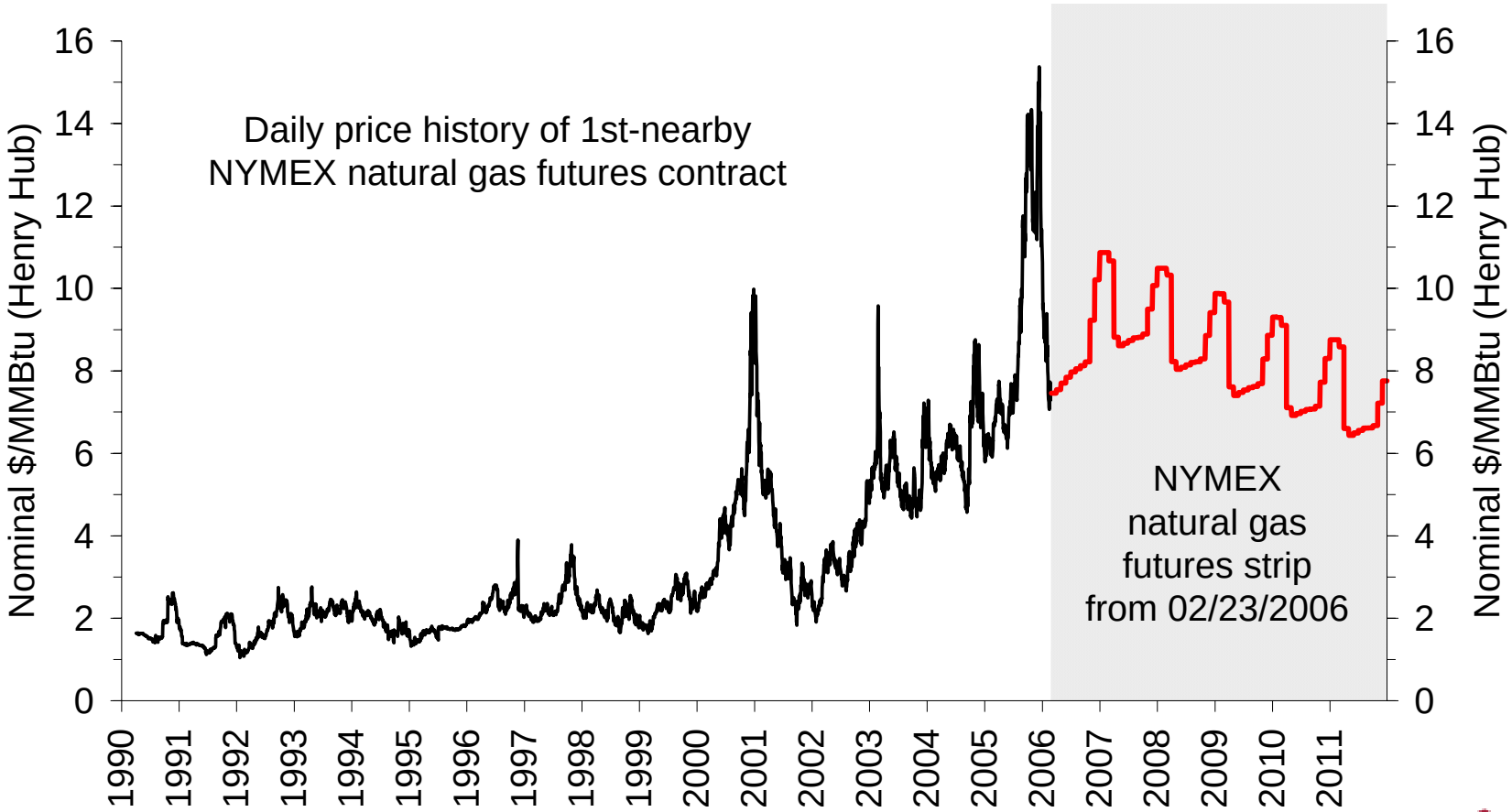
Estimated impacts come from a meta-analysis of state RPS cost-impact studies being conducted by Berkeley Lab

Actual Cost Impacts Also Relatively Modest

- In markets where REC prices or a pre-defined surcharge sets above-market cost, 2006 retail rate impacts estimated to be at most: ME (0.1%), MD (0.1%), NY (0.2%), CT (0.3%), AZ (0.4%), NJ (0.5%), MA (1.2%)
- In many markets where bundled contracts predominate, RPS may provide aggregate savings or at worst modest rate increases: TX, CA, NM, MN, CO, MT

...and Alternatives are Getting Expensive

$9/MMBtu equates to $60/MWh in fuel costs for an advanced CCGT



Source: LBNL

Consumer Support Appears Reasonably Strong

Economic development, fuel diversity, and environmental benefits are presumed to be the major drivers of political and consumer support

VOTES

- Colorado RPS Ballot Initiative: 52% for, 48% against
- Columbia (Missouri) RPS Ballot Initiative: 78% for, 22% against

SURVEYS

- TX Deliberative Polls: 47-62% prefer some collective payments
- PA ECAP Survey: 58% prefer some collective payments
- National Survey (Wiser): 79% willing to pay 50¢/mo more for RPS
- Nebraska Public Power District: 94% say spread the costs

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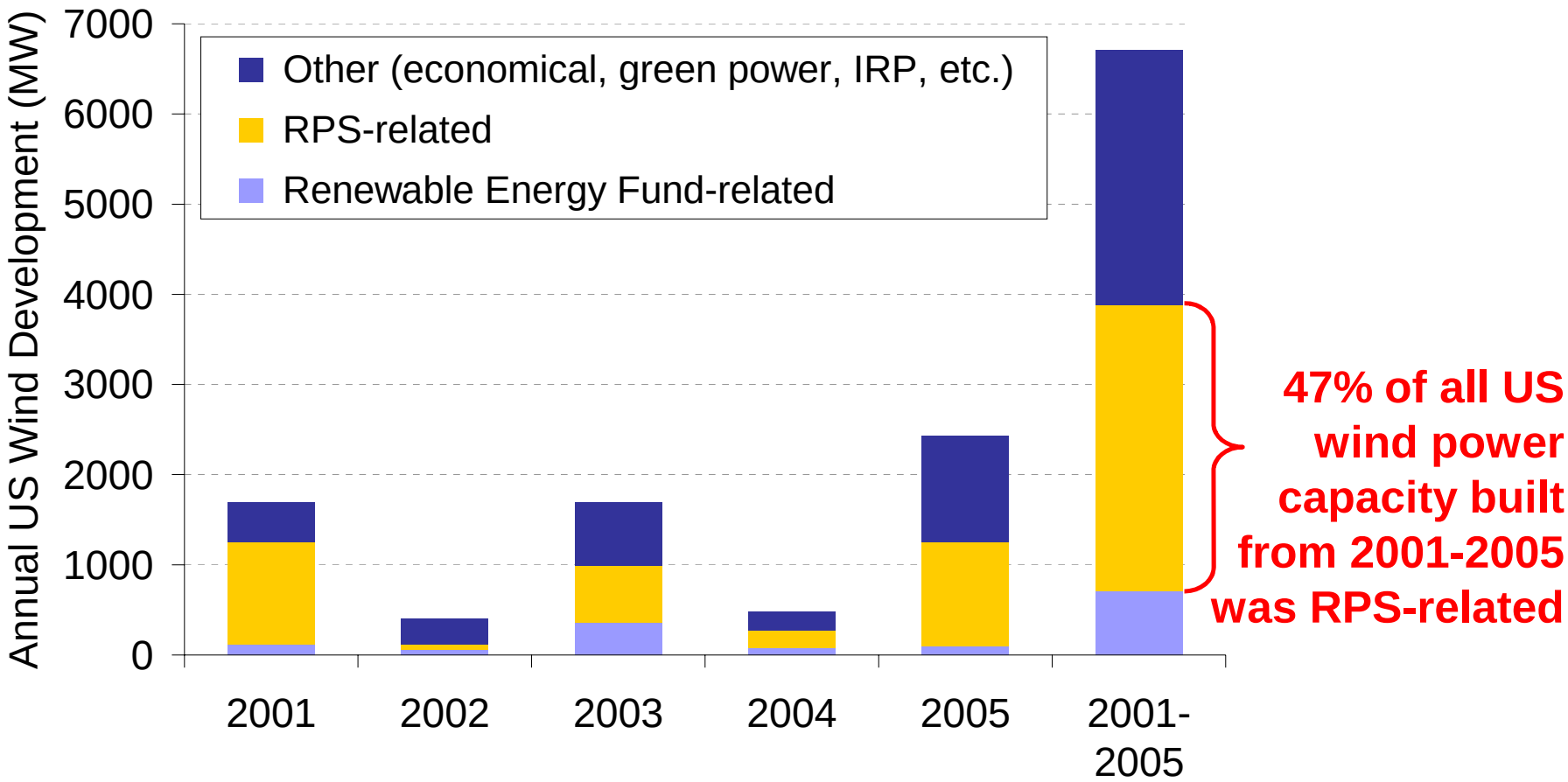
Nearly Half of All Wind Project Development From 2001-2005 Was RPS-Related

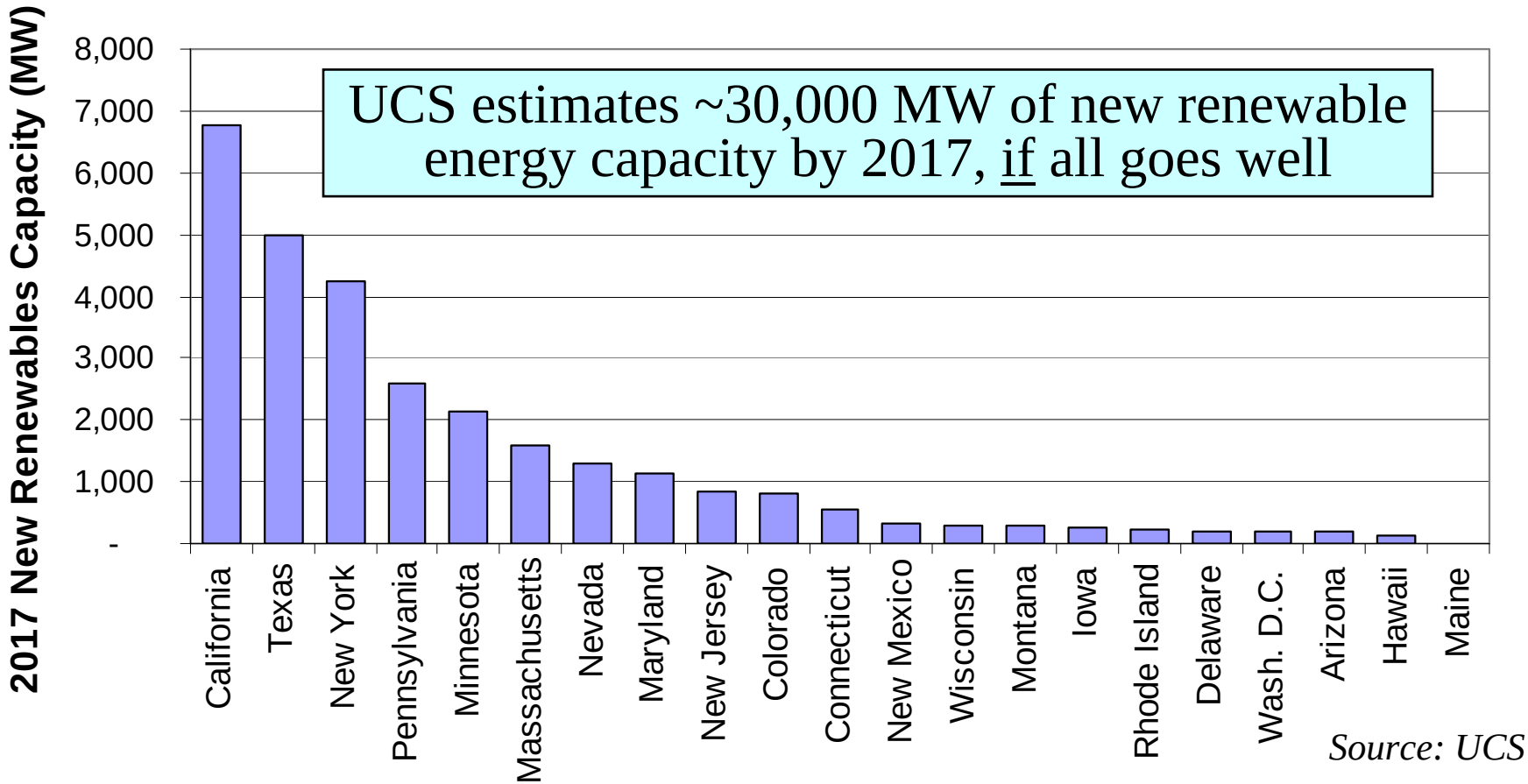


The EIA loosely attributes 1,998 MW out of 3,275 MW (61%) of installed wind in 2004-05 to states with RPS policies

Recent Examples of Impact of RPS Policies on Wind Power Development

Texas	700 MW installed in 2005
California	60 MW installed in 2005; new wind under contract: 727-988 MW (IOUs), 530 MW (POUs)
New York	Four contracts for 317 MW in NY, MD, PA, NJ
Colorado	775 MW in negotiations; 60 MW under contract
Wisconsin	200 MW to be built in 2006 (due to We Energies goal)
Minnesota	145 MW installed in 2005
New Mexico	140 MW installed in 2005
New England and PJM	Development activity in New England and PJM in part as result of state RPS policies

Looking Ahead, Existing State RPS Policies Could be a Major Driver of New Renewables Capacity



- EIA estimates ~9,000 MW of new RE capacity, assuming that all does not go well
- Likely big states for wind: California, Texas, New York, Pennsylvania, Minnesota

Wind Expected to Fare Very Well, But May Not Always Be the Hands-Down Winner

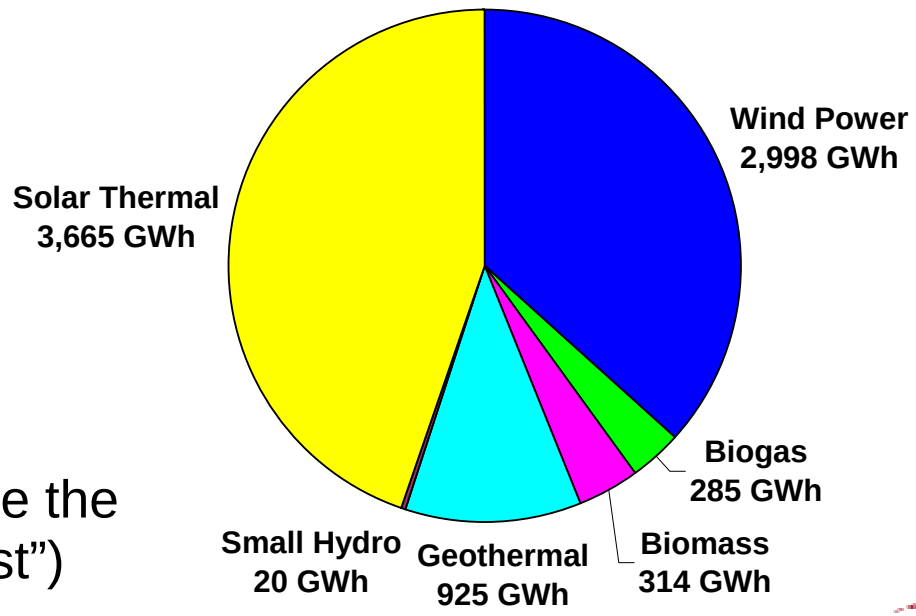
EIA estimates that 92% of RE capacity additions in states with RPS policies from 2004-05 were wind, and that 93% will be wind on a going-forward basis. RPS cost studies predict – in aggregate – that over 60% of renewable deliveries are likely to be wind, while Global Energy predicts over 75%.

California's RPS procurements are governed by "Least Cost, Best Fit" criteria

...and...

Wind may not always provide the "Best Fit" (even if "Least Cost")

New Renewable Energy Deliveries Under Contract to CA IOUs (maximum)



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The Most Important (and obvious) Lesson Learned to Date

An RPS Can Be A…

Elegant, cost effective, flexible policy to meet RE targets	?	**Poorly designed, ineffective, or costly way to meet RE targets**

The legislative and regulatory design details matter!!!

RPS Design Varies Substantially From One State to the Next

Structure, Size and Application
Basis (energy vs. capacity obligation)
Structure (e.g., single tier or multiple tiers)
Percentage purchase obligation targets
Start date
Duration of purchase obligation
Resource diversity requirements or incentives
Application to LSEs - Who must meet targets?
Product- or company-based application
Eligibility
Geographic eligibility
Resource type eligibility
Eligibility of existing renewable generation
Definition of new/incremental generation
Treatment of multi-fuel facilities
Treatment of off-grid and customer-sited facilities

Administration
Regulatory oversight body(ies)
Compliance verification (TRCs or contract-path)
Certification of eligible generators
Compliance filing requirements
Enforcement mechanisms
Cost caps
Flexibility mechanisms (banking, borrowing, etc.)
Implementing future changes to the RPS
Contracting standards for regulated LSEs
Cost recovery for regulated LSEs

Variations in Design Are Driven By Different Goals, Market Circumstances, Political Influences

- Unfortunate result is uneven historical and expected market impacts of state RPS policies
- Some RPS policies seemingly working well…
  - Texas, Minnesota, others
- Other policies are under-performing so far…
  - Chronic under-compliance in Arizona, Nevada, Massachusetts, and California so far
  - Other policies have largely supported or will support existing (not new) renewable generation (ME, MD, etc.)
- Many others are just getting underway, but there are reasons to be concerned

Common Design Pitfalls

Overly Broad Definitions of Eligible Resources

- Existing biomass in Maine, Connecticut

Lenient Geographic Boundaries

- Can enlarge the market for RECs, but may also moderate need for new renewables and reduce local benefits (e.g., PA, MD, NJ, NY)

Force Majeure Clauses and Cost Caps

- Compliance flexibility should be encouraged, but new RPS policies increasingly including a lot of “wiggle room” to possibly allow escape from full compliance (e.g., MT, HI, PA)

Inadequate Enforcement

- Where full compliance is apparently not being achieved (NV, CA, AZ)...will penalties be used to enforce compliance?

Common Design Pitfalls (cont.)

Lack of Long-Term Contracts

- Major problem in Northeast, where retail competition exists and where renewable energy sources are more expensive

Policy Instability

- Uncertainty in RPS duration, target, or eligible technologies can impede development (e.g., CT, AZ, etc.)

Transmission Bottlenecks

- TX, MN and CA trying to be more proactive with transmission planning and construction, but transmission remains a key barrier in many states

Design Complexity

- Is the complexity inherent in the California RPS worth it?

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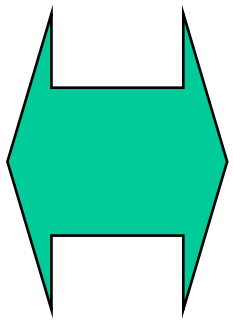
Two General Types of RPS Markets

Regulated Markets

Dominated by long-term bundled contracts for electricity and RECs

Utility RFP solicitations or bilateral negotiations, with PUC oversight



Restructured Markets

More often dominated by short-term trade in RECs to multiple parties, without PUC oversight

Developers often sell electricity and RECs separately

NYSERDA's central procurement approach intended to some degree to replicate regulated market outcomes in a restructured context

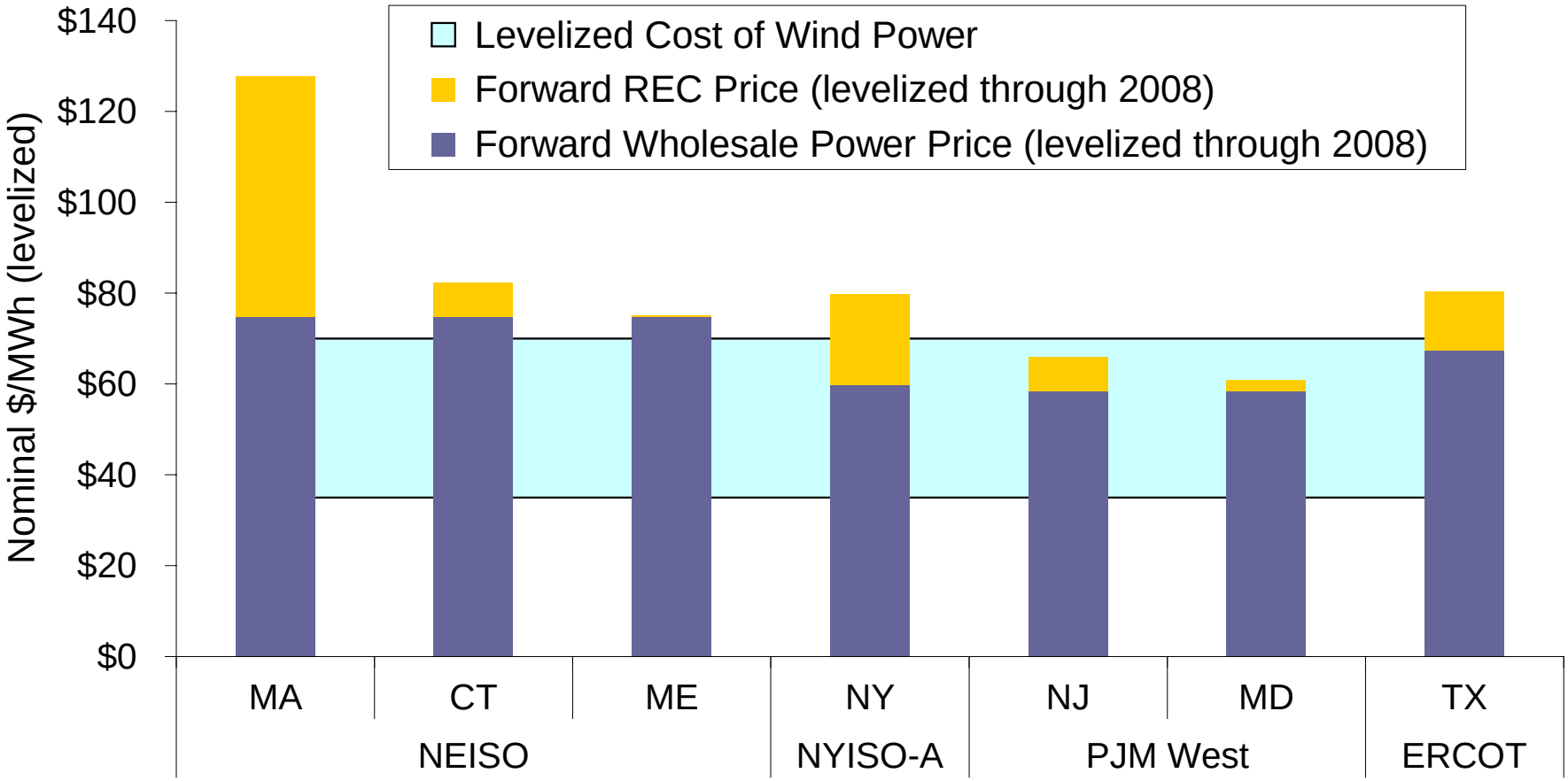
Regulated Markets: RPS Helps Create Buyers for Renewable Energy

- Especially where RPS-driven demand exceeds available supply, can yield profitable and financeable long-term deals, but…
- Often an RFP-driven environment, with fierce competition among developers for contracts
- Emerging concern in some states that utilities are selecting low-priced contracts that may fail to yield operating projects
  - **CA:** Of 1,800 MW of new RE under contract – 10% cancelled; 41% delayed; 48% on track
  - **NV:** Of 414 MW of new RE under contract – 57% cancelled; 37% delayed; 6% online or on track
- In other cases, PPAs impose contractual requirements (construction milestone, performance, credit) that some view as unduly severe ➔ likely to favor the larger developers

Restructured Markets: Managing Electricity and REC Price Risk

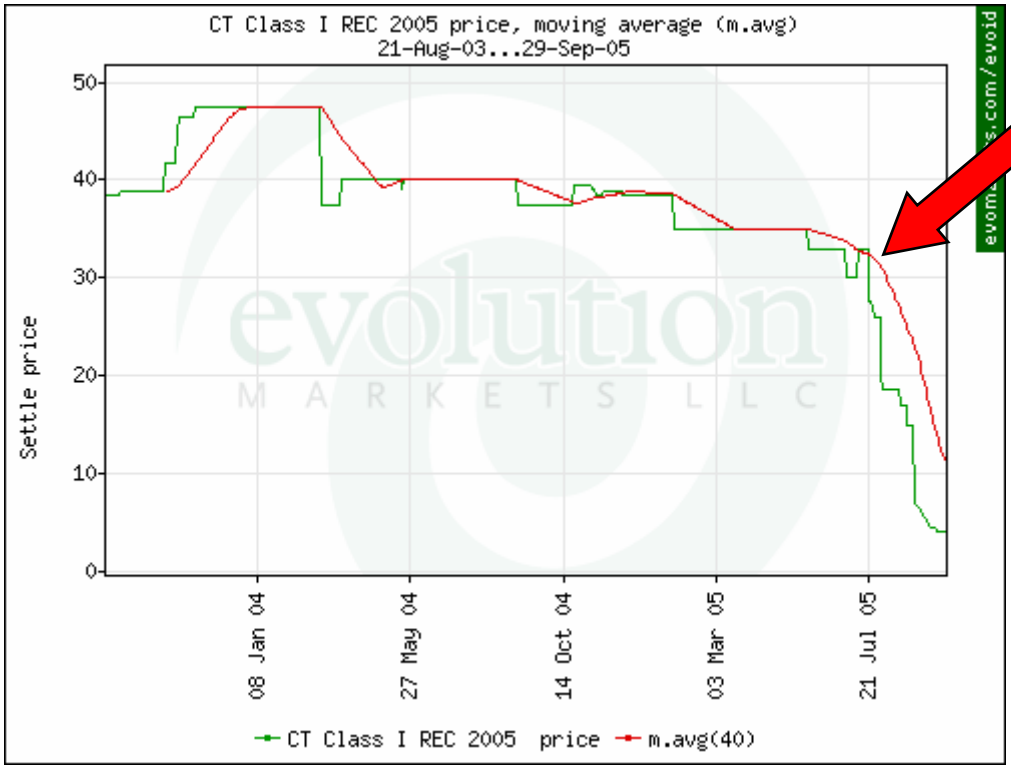
- Holt and Bird (2005) estimate that RECs used for RPS amounted to a $140 million market in 2004, and may increase to $600 million by 2010
- Price of RECs varies substantially across markets ($0.2 - $52/MWh) and over time, depending on RPS design, supply adequacy, geographic and resource eligibility, compliance flexibility, level of penalties, etc.
- REC price uncertainty, and lack of long-term contracts, can make financing more difficult, is slowing renewable energy development in the Northeast, and is increasing the cost of the RPS in some states
  - ➔ Caution: may ultimately lead to a rollback of state RPS policies!
- Strongly favors risk-taking developers, and developers able to "piece together" a project through multiple off-take arrangements of different terms and by accessing financial support from state renewable energy funds
  - ➔ May create profitable opportunities for projects that can make it online, and is encouraging merchant activity in Northeast and Texas

Forward Power + RECs = Opportunity for Merchant Wind



- Forward power prices represent a flat block of power through 2008, de-rated by 5% to account for the timing of wind relative to a flat block, from NYMEX settle on February 24, 2006
- Forward REC prices sourced from www.evomarkets.com January 2006

Political / Regulatory Risk of Relying on Merchant RECs



Source: www.evomarkets.com

- **August 2, 2005:** Connecticut DPUC finds that existing Maine biomass plants, and new gas pipeline expansion (pressure reduction) turbines, qualify as Class I renewable resources
- **August/September 2005:** Connecticut Class I REC prices plummet by $30/MWh on prospect of abundant, cheap supply

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Conclusions

- State RPS policies are currently a principal form of support for wind projects, and are becoming increasingly popular
- An RPS *can* effectively deliver wind power and associated benefits at a low cost, and such policies are meeting expectations in some states
- RPS is opening markets and improving the profitability of wind projects, but not without corresponding risks
- Designing an effective RPS requires careful attention – the devil is in the details!!!