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# Renewables Portfolio Standards: What Are We Learning?

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# Presentation Outline

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- ❑ Overview of the RPS
- ❑ Where have RPS policies been implemented in the United States?
- ❑ What positive impacts have been generated by these policies?
- ❑ What pitfalls have been experienced, and lessons learned?



# Current Renewable Energy Market Drivers in the United States

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- ❑ **Renewables Portfolio Standards:** 13 states have enacted RPS policies, which obligate suppliers to deliver a certain amount of renewable energy
- ❑ **Renewable Energy Funds:** 15 states have set-aside funds to financially support renewable energy sources
- ❑ **Green Power Markets:** Utility green pricing programs, competitive green power markets, and REC marketers have all emerged
- ❑ **Tax Incentives:** Federal production tax credit for wind, investment tax credit for solar and geothermal, and accelerated depreciation, as well as state tax incentives, all help spur development
- ❑ **Economics:** Some forms of renewable energy, especially with tax incentives, can compete on cost alone (e.g., wind at ~2-4 cents/kWh)

# Renewables Portfolio Standard

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## WHAT IS IT???

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

*Sometimes* accompanied with a tradable renewable energy credit (REC) program to ease compliance

# Advantages and Disadvantages of the Renewables Portfolio Standard

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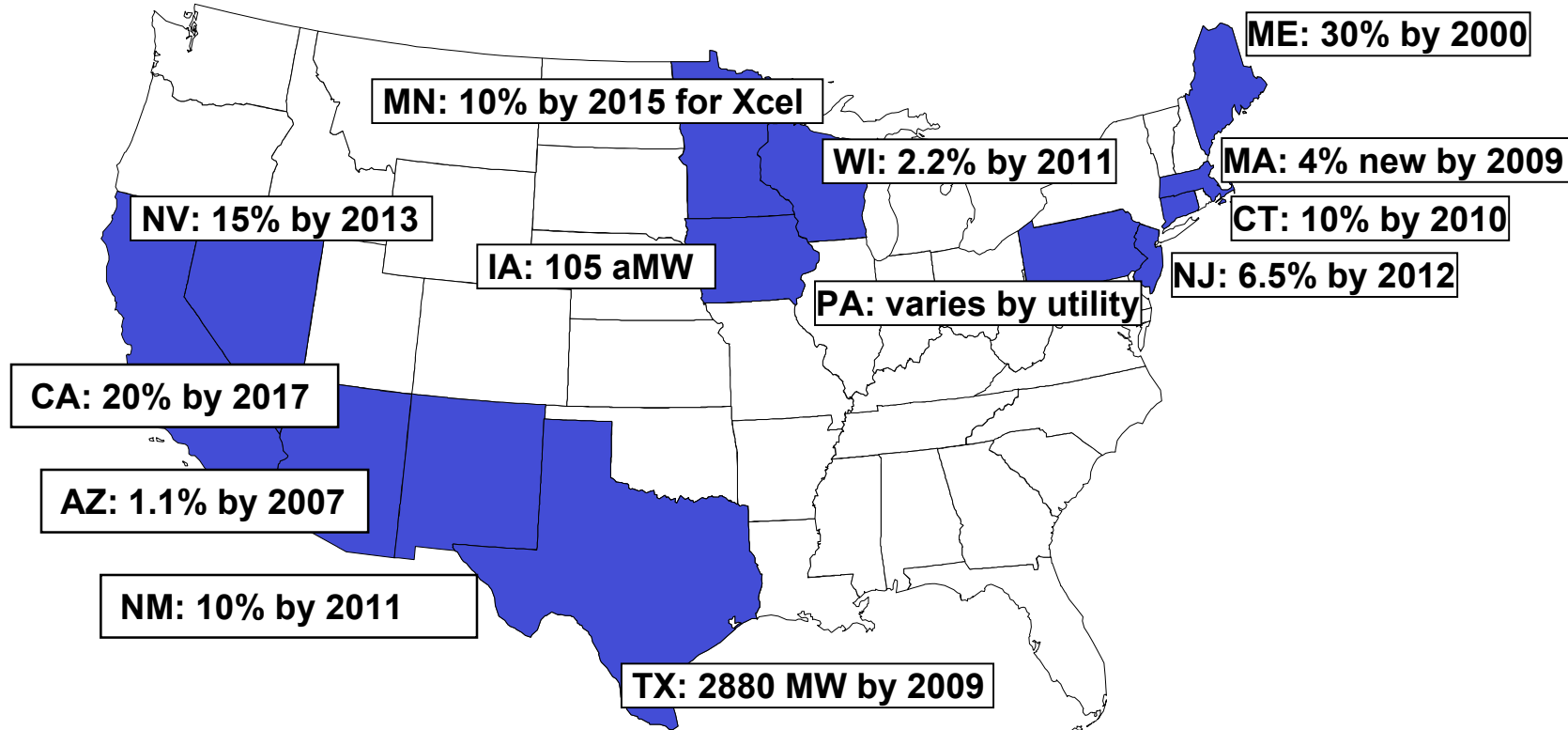
## ADVANTAGES

- ❑ Can ensure known quantity of renewable energy
- ❑ Can lower cost of achieving target by giving private market flexibility
- ❑ Competitively neutral if applied to all load-serving entities
- ❑ Relatively low administrative costs and burdens
- ❑ Can be applied in restructured and regulated markets

## DISADVANTAGES

- ❑ Due to complexity, can be difficult to design well
- ❑ Less flexible in offering targeted support to *specific* RE sources, or ensuring resource diversity
- ❑ Cost impacts not known with precision in advance
- ❑ Operating experience is limited
- ❑ Questions over whether RPS policies will necessarily lead to long-term contracts

# State Renewables Portfolio Standards and Purchase Mandates – 13 States



- Renewable energy “goals” established in Illinois, Minnesota, and Hawaii
- RPS being considered in many other states (e.g., CO, NY, VT, WA, RI), potentially revised in some states (ME, NJ, PA, NM, WI), and national RPS has been discussed

# State RPS Program Context

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- ❑ **RPS Application:** RPS typically applies to regulated investor-owned utilities and competitive energy service providers; publicly owned utilities often exempt
- ❑ **Regulated vs. Restructured:** more than half in restructured markets, but increasingly in monopoly markets as well
- ❑ **Load Covered:** ~30% of U.S. load covered by a state RPS or a renewable energy purchase obligation
- ❑ **Operating Experience:** experience with policy is growing, but few states have >3 years experience
- ❑ **Potential Impact:** ~16,000 MW of new renewable energy capacity possible by 2017, if all goes well

# State RPS Policies Differ: There is No Single Way to Design an RPS!

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- ❑ Structure of RPS
- ❑ Standard levels
- ❑ Resource eligibility
- ❑ Treatment of existing plants
- ❑ Tiers and bands
- ❑ Start and end dates
- ❑ Application of standards
- ❑ Enforcement/penalties
- ❑ Flexibility mechanisms
- ❑ Renewable energy credit (REC) trading



# The Most Important (and obvious) Lesson Learned to Date

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An RPS Can Be A...

**Elegant, cost effective,  
flexible policy to meet RE  
targets**

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**Poorly designed, ineffective,  
or costly way to meet RE  
targets**

**The legislative and regulatory  
design details matter!!!**

# The Impacts of State RPS Policies: The Good, the Bad, and the Ugly

<b>Successful Outcomes</b>	<b>Mixed or Unclear Success</b>	<b>Unsuccessful Outcomes</b>
<input type="checkbox"/> Texas	<input type="checkbox"/> Arizona	<input type="checkbox"/> Connecticut*
<input type="checkbox"/> Iowa	<input type="checkbox"/> California	<input type="checkbox"/> Maine
<input type="checkbox"/> Minnesota	<input type="checkbox"/> Massachusetts	<input type="checkbox"/> Pennsylvania
	<input type="checkbox"/> Nevada	
	<input type="checkbox"/> New Jersey	
	<input type="checkbox"/> New Mexico	
	<input type="checkbox"/> Wisconsin	

\* CT revised its RPS in 2003, ensuring more positive effects in the future.

**State RPS policies rated based on amount of new renewable energy development, full compliance with RPS, reasonable and stable costs, and recovery of prudently incurred compliance costs**



# The Early Positive Impacts of State RPS Policies

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- ❑ **Texas:** Over 1100 MW of wind installed since RPS established
- ❑ **Minnesota:** Largely met initial 425 MW wind/125 MW biomass mandate
- ❑ **Iowa:** Policy met with 250 MW of wind some time ago
- ❑ **Wisconsin:** 140 MW of RE so far, with more on the way
- ❑ **California:** Interim procurements resulting in lots of RE contracts, a fraction of which are coming from new RE
- ❑ **Nevada:** Initial procurement led to 277 MW of RE contracts
- ❑ **Arizona:** 7 MW PV, 5-10 MW LFG, 3 MW biomass, 15 MW wind (contract), 20 MW geothermal (contract)
- ❑ **New Mexico:** Contributor to 204 MW wind project installed in 2003
- ❑ **Massachusetts and Connecticut:** Merchant LFG, wind development, biomass repowering and re-development
- ❑ **New Jersey:** Mostly supported existing LFG so far, but some new wind and LFG indirectly affected by policy

# Design Requirements For An Effective RPS

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- ❑ Strong political support and regulatory commitment that is expected to continue over the duration of the policy
- ❑ Clear and well-thought-out renewable energy eligibility rules
- ❑ Predictable long-term renewable energy targets that ensure new renewable energy supply
- ❑ Standards that are achievable given permitting challenges
- ❑ Credible and automatic enforcement – penalties must exceed cost of compliance
- ❑ Applied to electricity suppliers that are credit-worthy and are in a position to enter into long-term contracts, if possible

# Major Design Pitfalls: Lessons Learned

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## ❑ **Narrow Applicability**

- An RPS that is applied un-equally to suppliers will limit the impact of the RPS, create competitive supplier entry barriers, and create political vulnerability
- *Example:* Until 2004, CT exempted providers of last resort (POLR) service (>90% of load); PA's RPS still applies only to certain competitive POLR suppliers

## ❑ **Poorly Balanced Supply-Demand Condition**

- An RPS will not protect or increase renewable supply if supply-demand balance is not carefully managed; at the same time, an RPS that is too aggressive may result in supply constraints and high costs
- *Example:* ME RPS ineffective due to considerable oversupply of eligible resources (NJ and PA have similar problems); MA and NV arguably gave too little time to develop new resources

## ❑ **Insufficient Duration and Stability of Targets**

- Standards must be durable and stable, or else makes financing difficult, raises costs, creates paralysis
- *Example:* AZ and ME standards unclear after 2003 and 2005, respectively; in other cases, fate of RPS after a certain date is unspecified (e.g., PA)

# Major Design Pitfalls: Lessons Learned

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## ❑ **Insufficient Enforcement**

- May result in non-compliance, investment risk increases
- *Example:* AZ RPS has no penalties; in other cases enforcement is vague or unspecified: ME, MN, NV, NJ, NM, PA

## ❑ **Lack of Contracting Standards and Cost Recovery Mechanisms**

- Contracting standards and cost recovery mechanisms are often required for utilities and regulated POLRs to ensure that long-term contracts are made available to RE projects
- *Example:* In MA, few suppliers are making long-term commitments; same thing may occur in NJ and other states

## ❑ **Undue Design Complexity**

- Complex policies that require considerable and detailed regulatory oversight may be unwieldy
- Concerns in CA that design complexity is already delaying RPS solicitations by the utilities, and will lead to legal battles

# The Bottom Line

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- ❑ 13 existing state RPS policies are currently the principal form of support for large-scale renewable projects
- ❑ Additional states are considering the RPS
- ❑ A state RPS can effectively deliver renewable energy supply and associated benefits, at a low cost
- ❑ But designing such an RPS requires careful attention – the devil is always in the details!!!
- ❑ Experience in other states can help point the way towards a well-designed RPS

