
State Policy Update: A Review of Effective Wind Power Incentives

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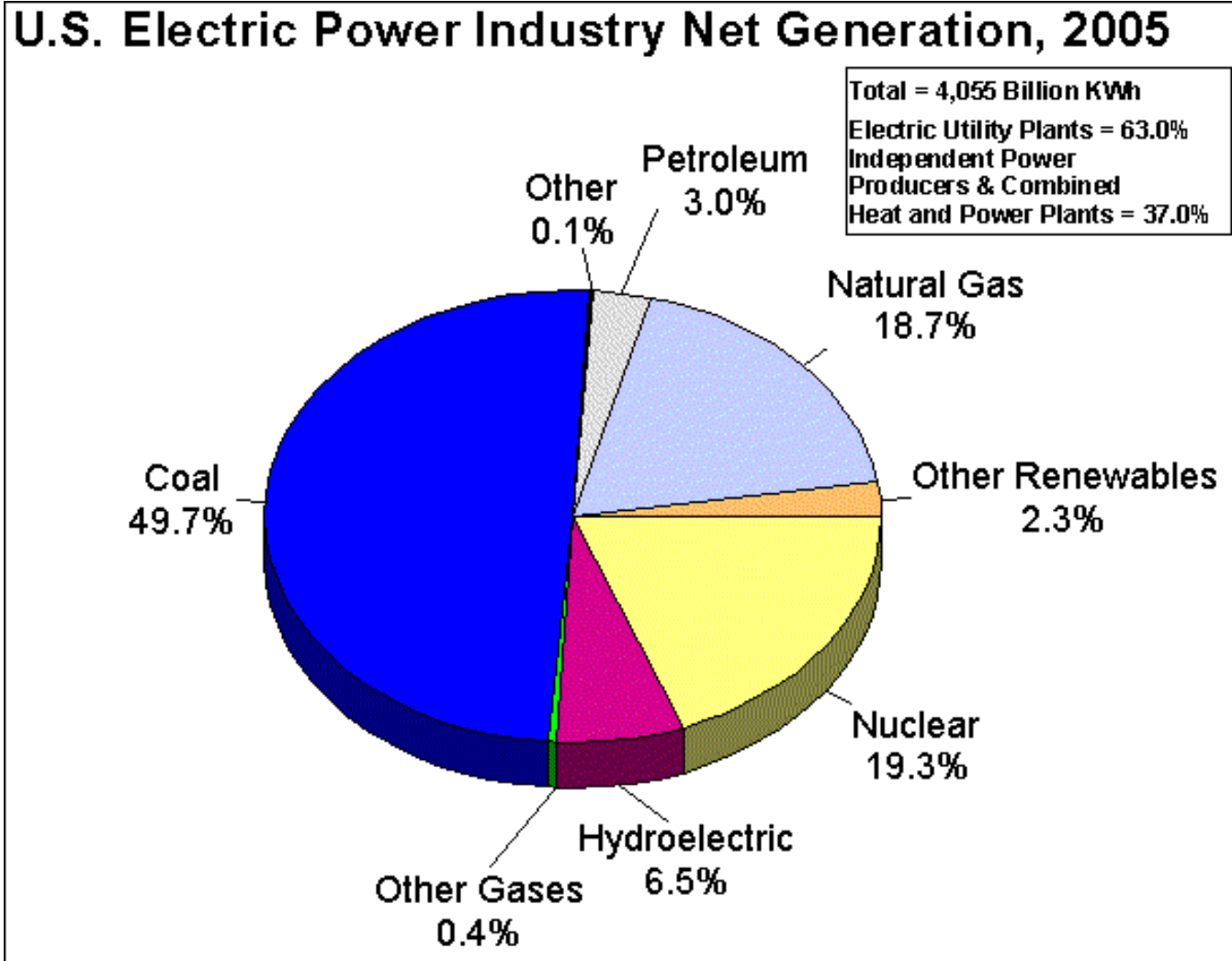
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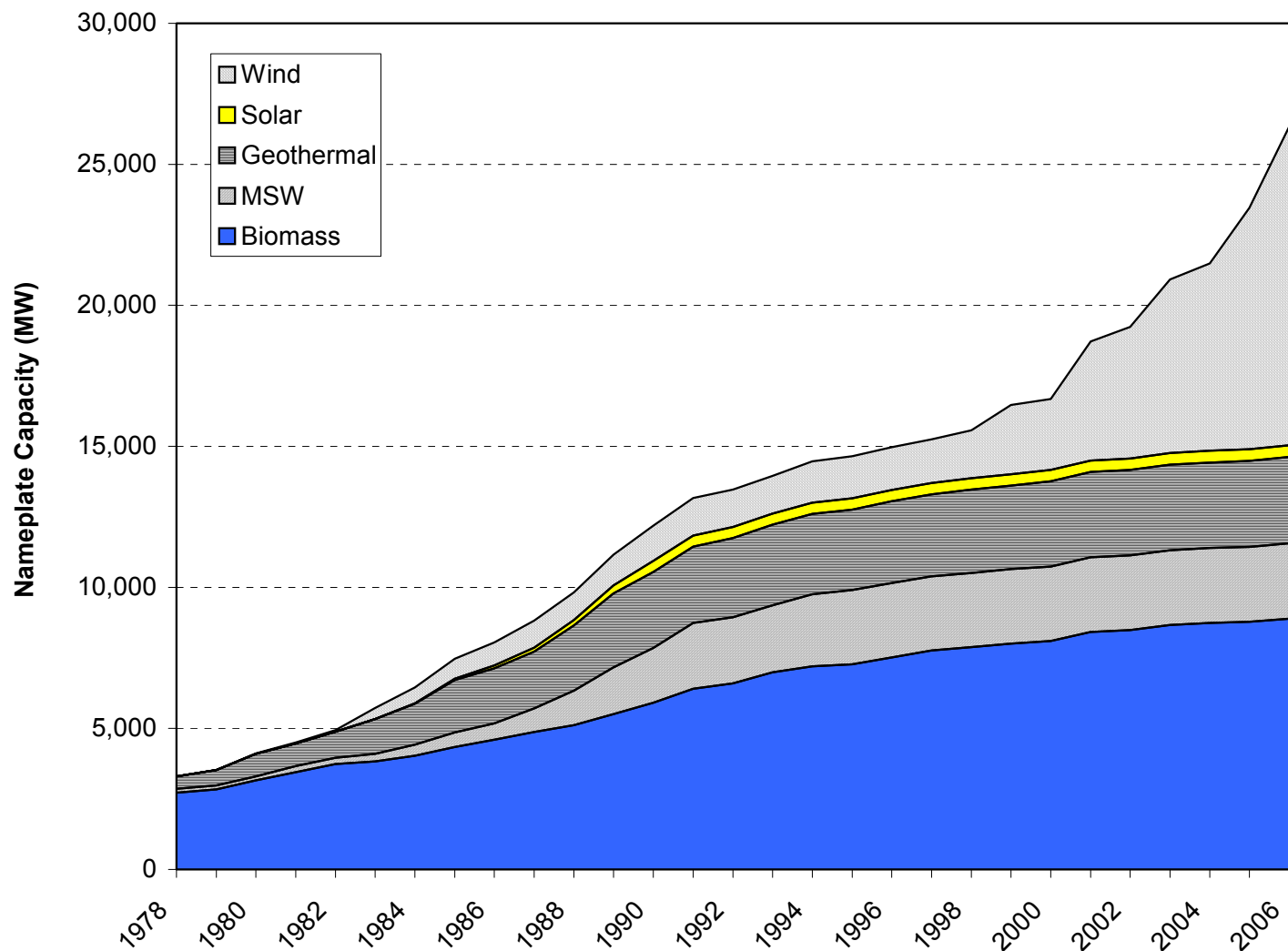
Ann Arbor, Michigan

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Renewable Energy in the United States: Modest Beginnings



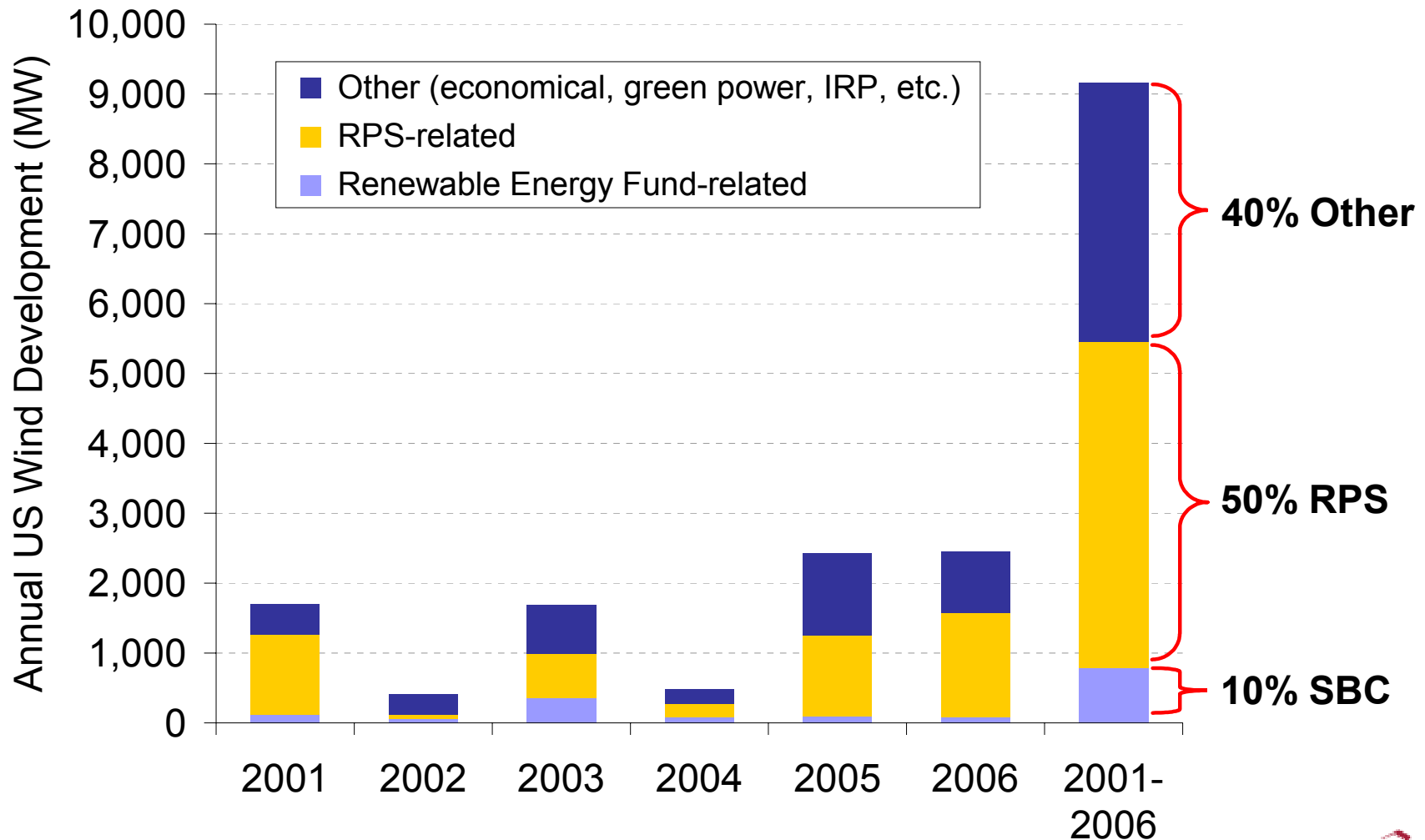
Recent Growth, Especially Wind Power



What Is Driving Growth in the U.S.?

- Enhanced State Policy
- Federal Tax Incentives
- Improving Economics
- Increased Natural Gas Prices
- Prospect for Carbon Regulation

Recent Wind Development Has Been Supported by Mix of State Policies



Presentation Overview

1. Renewables Portfolio Standards
2. Renewable Energy Funds
3. Other State Policies
4. 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

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

Never designed the same in any two states

Advantages and Disadvantages of a Renewables Portfolio Standard

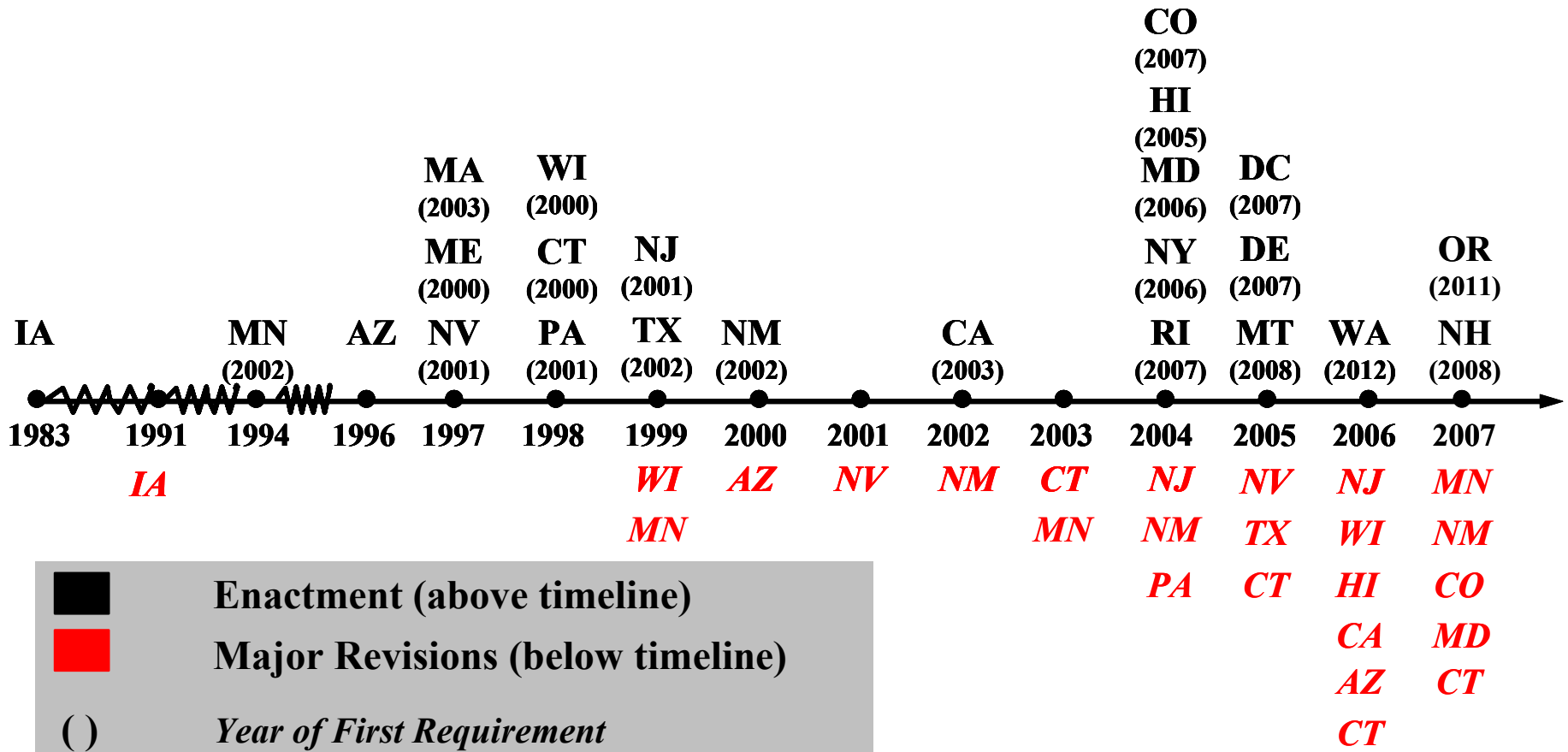
ADVANTAGES

- 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

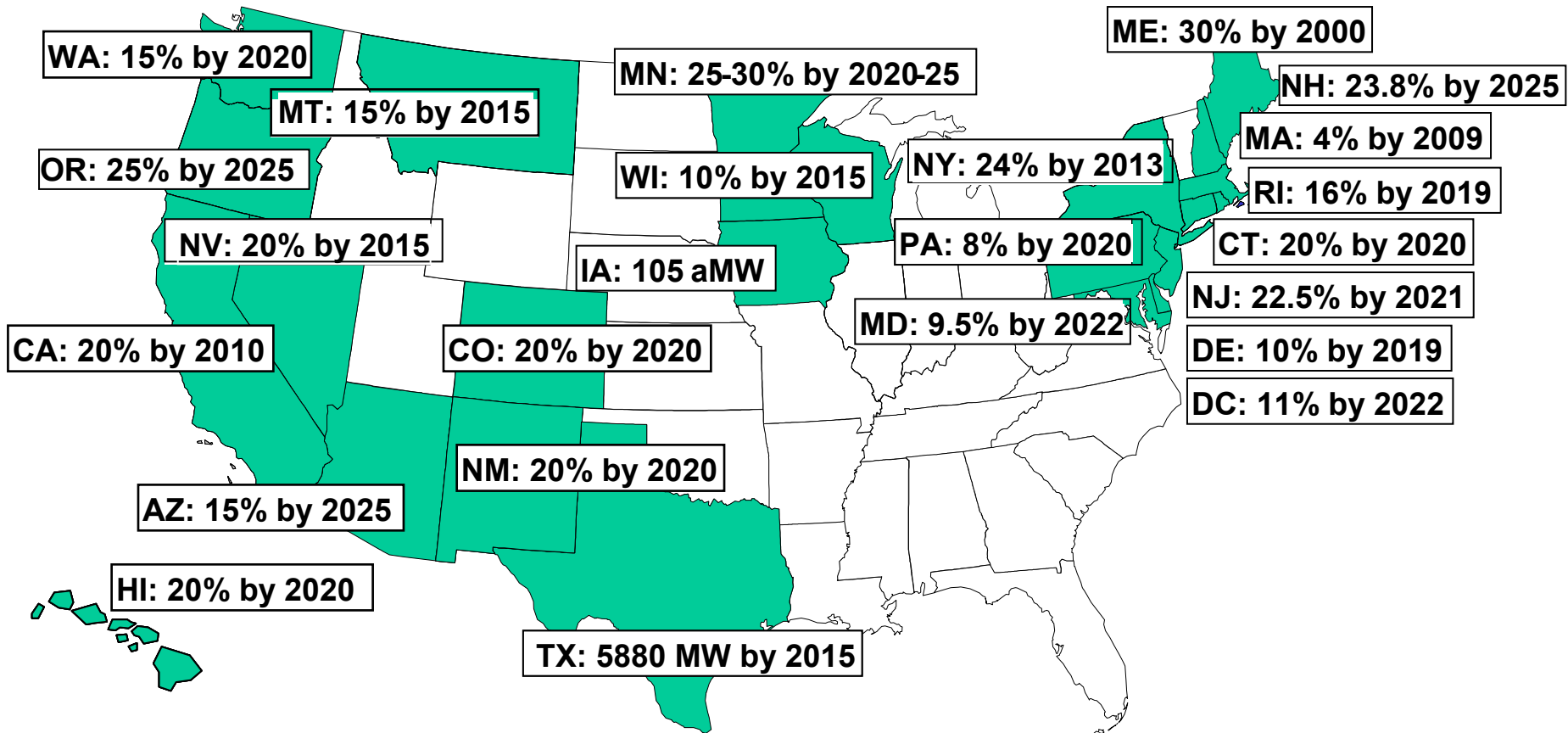
DISADVANTAGES

- 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
- Questions over whether RPS policies will necessarily lead to long-term contracts
- Operating experience is limited

State RPS Activity Is Significant in Recent Years



State RPS Policies: 23 States and D.C.

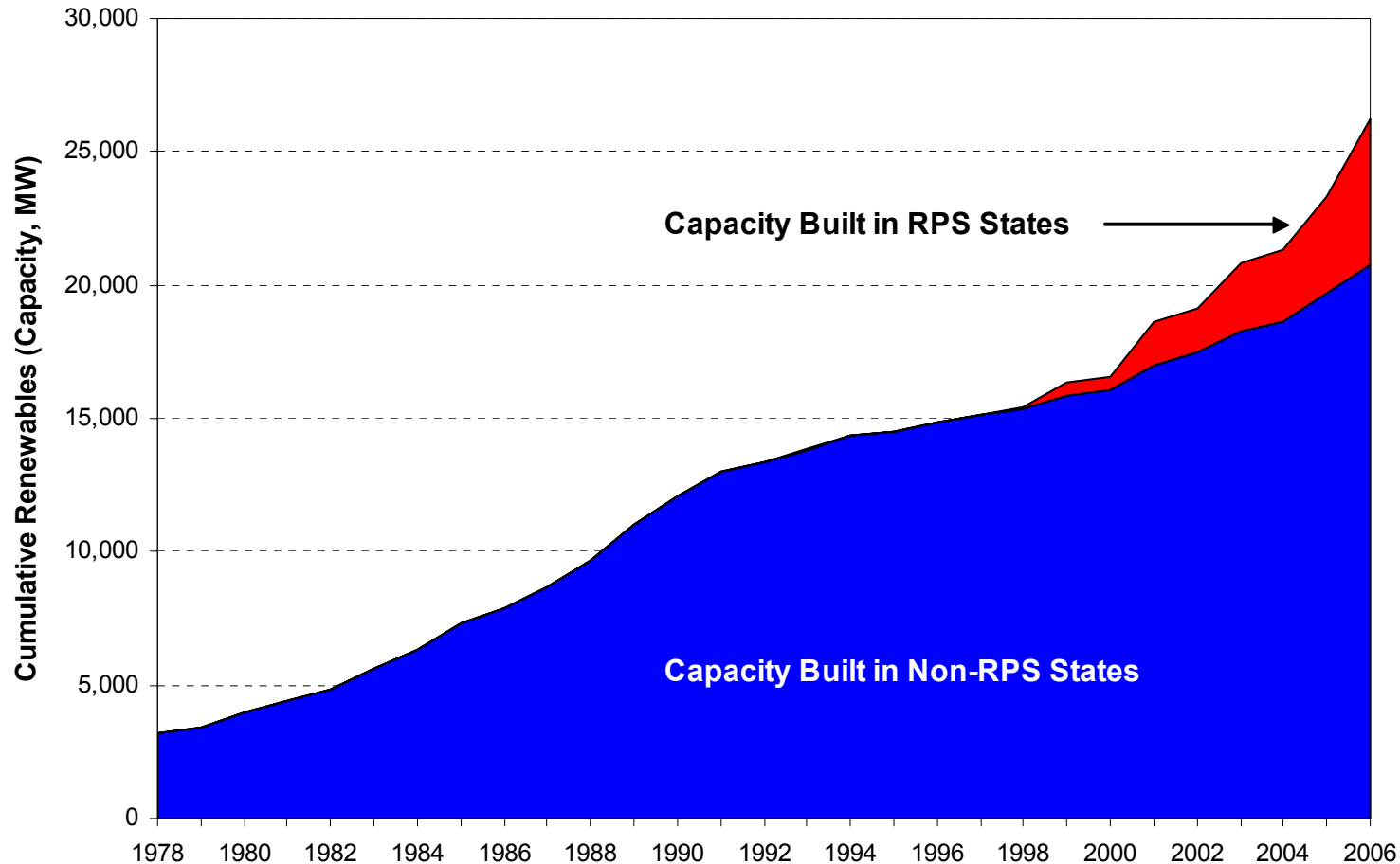


Additional renewable energy “goals” established in IL, IA, VT, VA, and ME

State RPS Program Context

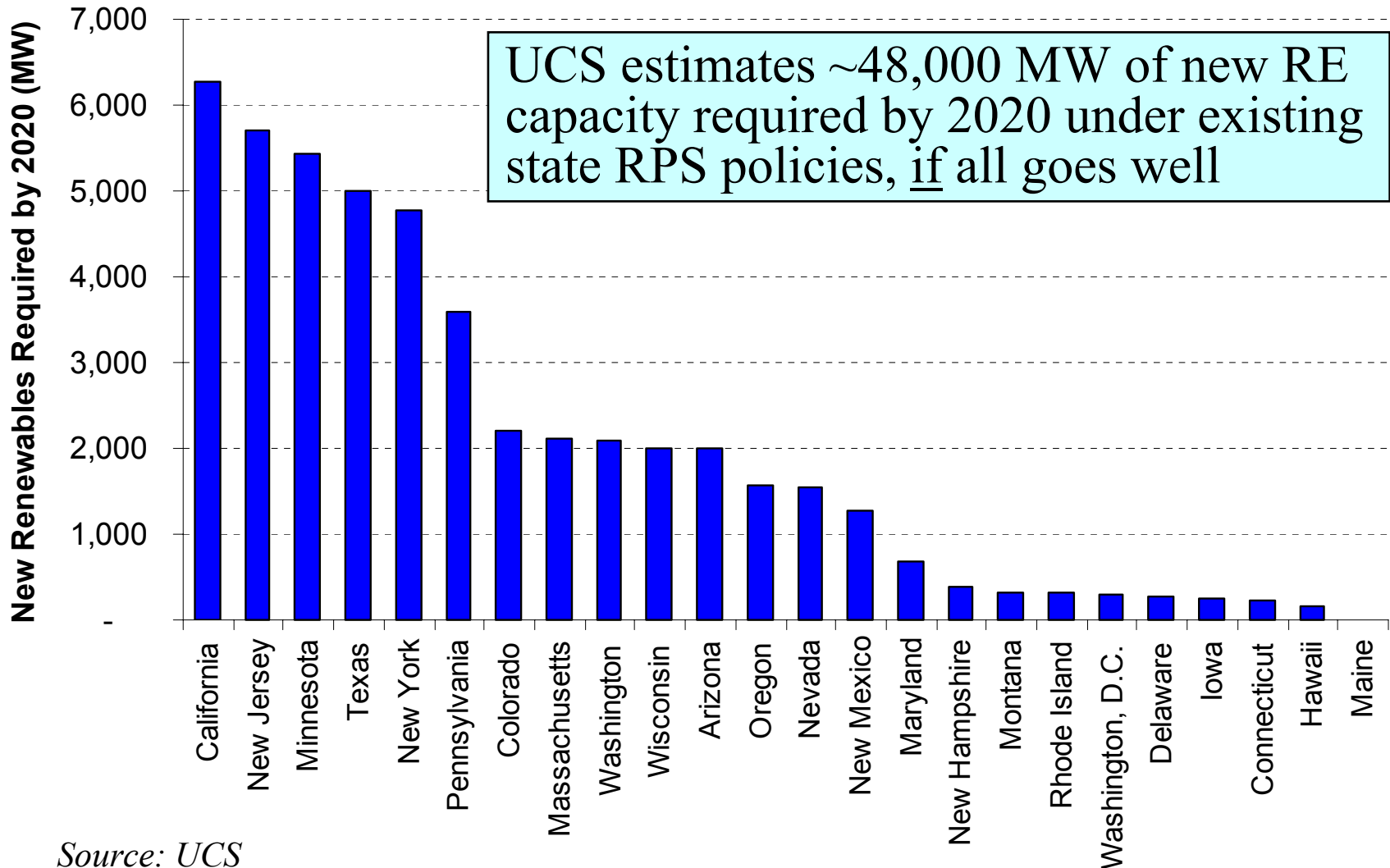
- **Load Covered:** Nearly 50% of U.S. load covered by a state RPS
- **RPS Development:** Most policies emanated from state legislation, but some from regulatory action (e.g., NY, AZ) and two from state ballot initiatives (CO, WA)
- **RPS Application:** RPS typically applies to regulated IOUs and competitive energy service providers; publicly owned utilities sometimes 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

State RPS Policies Are a Significant Driver for Renewable Energy Growth



Development in RPS states predominantly, but not exclusively, wind power so far

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



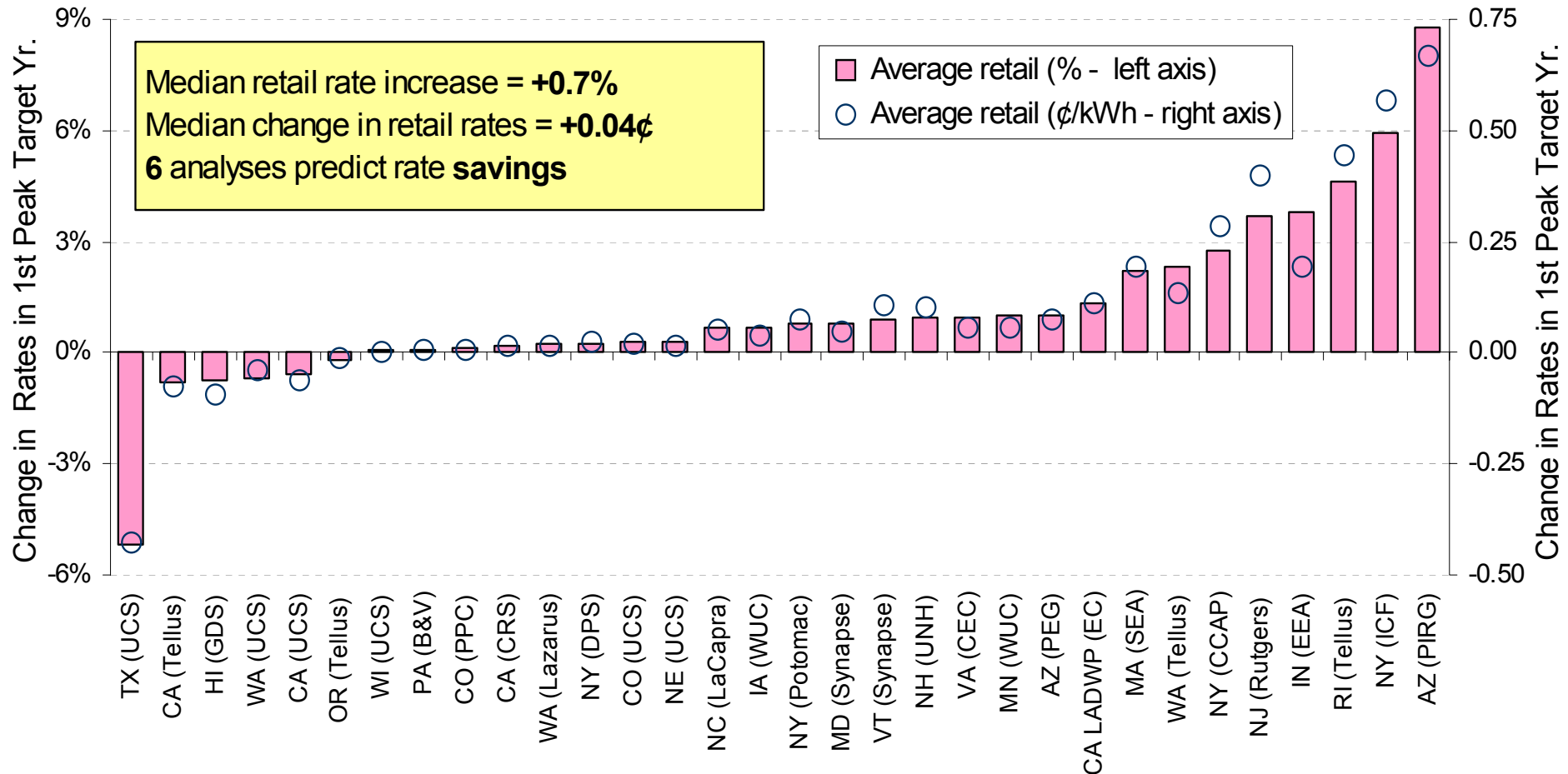
Source: UCS

Key Concern: Potential Cost Implications

Objective of Recent LBNL Study: Review previous state RPS cost-benefit *projections* to compare forecasted impacts across studies, and provide methodological guidance for future RPS cost-benefit projections

- **Project scope**
 - Survey of 30 state RPS cost impact projections in 20 states
 - Sample includes state and utility-level (not federal) analyses in the U.S.
 - Studies present projected (not actual) costs and benefits
- **Comparison of key results**
 - Direct or inferred projected retail rate impacts
 - Projected renewable deployment by technology
 - Scenario analysis; secondary cost impacts; and benefits
 - All results presented here are taken from the first year that each RPS hits its ultimate target level (e.g. 2013 for New York, 2010 for California)
- **Comparison of study methodologies**
 - Modeling approaches; cost characterizations; and key assumptions

23 of 32* State RPS Analyses Predict Rate Increases of Less Than or Equal to 1%



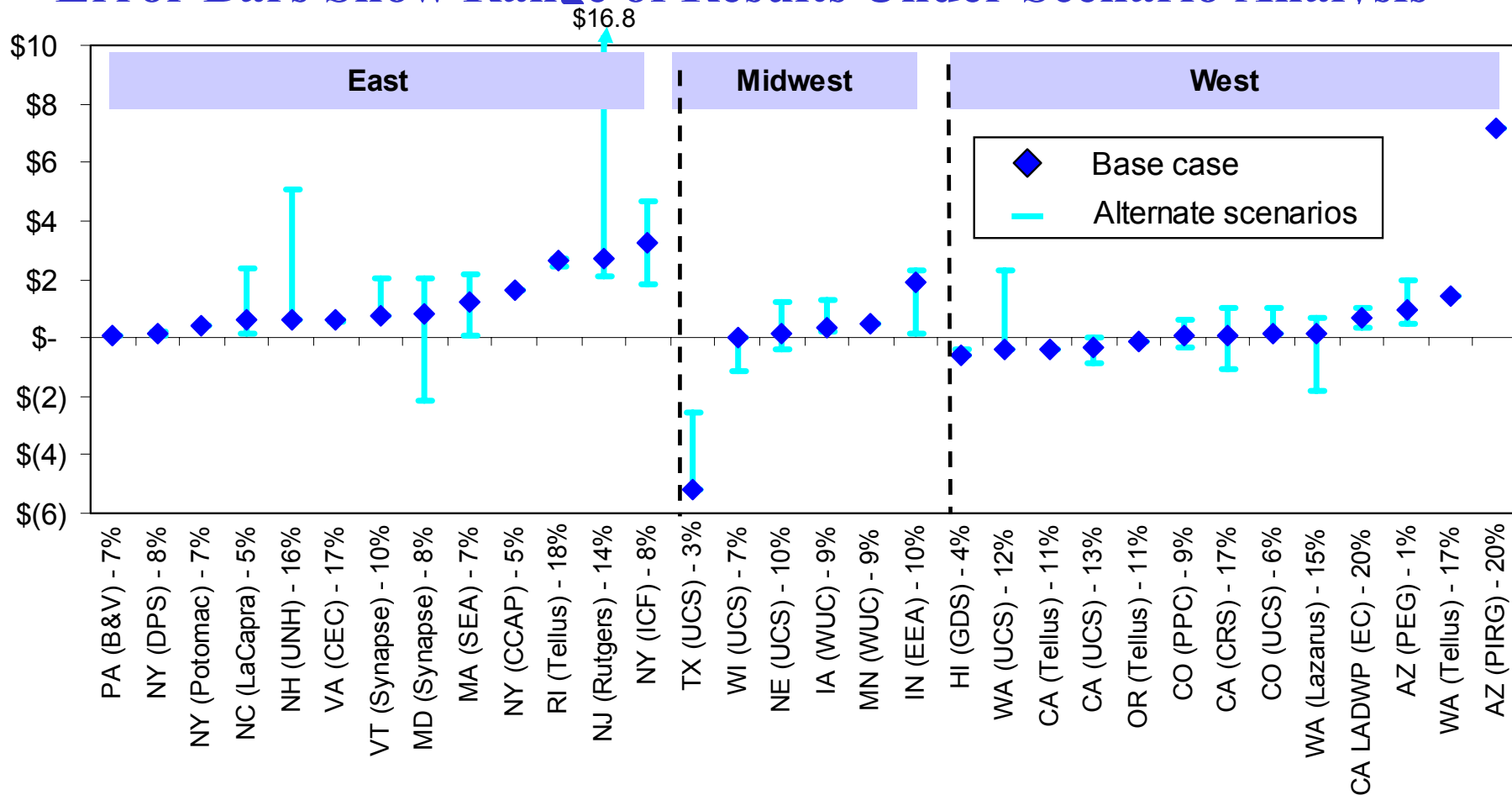
* Number of analyses is more than 30 because results for each state in CA/OR/WA (Tellus) are shown separately



Projected Residential Electricity Bill Impacts Are Typically Low

Error Bars Show Range of Results Under Scenario Analysis

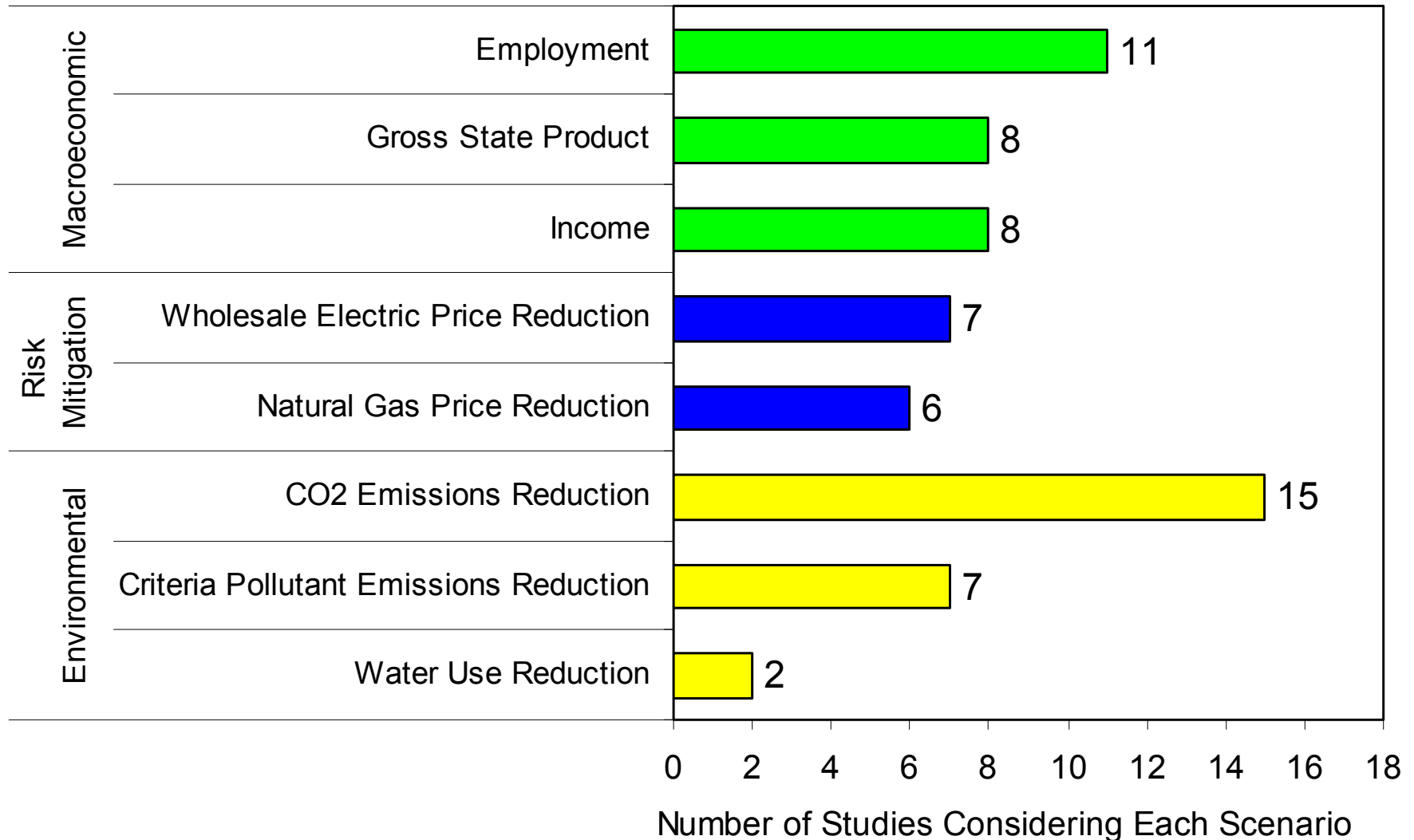
Avg. Bill Impact in 1st Peak Target Yr. (2003\$/mo.)



Study - Incremental RPS Target %



Many State RPS Studies Evaluate Potential Public Benefits



Actual Costs of State RPS Policies

Actual costs and benefits not widely collected and reported, because: policies operating for a short duration; lack of public data on long-term contract prices; challenges in estimating secondary costs/benefits

RECs Markets: In RPS markets where RECs or bill surcharge sets above-market cost, 2006 rate impacts estimated to be at most:

- ME (0.1%)
- MD (0.1%)
- NJ (0.1%)
- NY (0.1%)
- CT (0.2%)
- AZ (0.4%)
- MA (1.1%)

Contract Markets: In many markets where bundled contracts predominate, RPS policies may be providing savings or at worst modest rate increases:

- NM, CO, MN, TX, CA, MT, WI

RPS Cost Cap Mechanisms in Use in Other RPS States

- **Retail Rate/Revenue Cost Cap**
 - Colorado, New Mexico, Washington, Oregon
- **Bundled Contract Price Caps**
 - New Mexico, Hawaii, Montana
- **Alternative Compliance Payments** (*freely available*)
 - Massachusetts, New Jersey, Rhode Island
- **Alternative Compliance Payments** (*available/recoverable in rates if least cost measure and/or insufficient available renewable energy*)
 - Delaware, District of Columbia, Maryland, New Hampshire
- **Financial Penalty** (*for competitive suppliers, will act as cost cap*)
 - Connecticut, Texas, Pennsylvania
- **Customer-Class Bill Impact**
 - New Mexico, Maryland, Delaware, Maine
- **Renewable Energy Fund Limitation**
 - Arizona, California, New York
- **Force Majeure Clauses**
 - Pennsylvania, Minnesota, Nevada, Maine, etc.

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

Design Variations Have Yielded Mixed Results To Date

- Some RPS policies seemingly working well...
 - Texas, Minnesota, New Mexico, others
- Other policies are under-performing so far...
 - 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

What Makes a Strong State RPS? Policy Design Requirements

- Broad applicability (*limited exemptions ok*)
- Carefully balanced supply-demand (*ensures new supply, but not overly aggressive*)
- Sufficient duration and stability of targets (*provides market confidence*)
- Well-defined/stable resource eligibility rules (*ambiguity erodes confidence*)
- Well-defined/stable out-of-state resource eligibility (*ambiguity erodes confidence*)
- Credible & effective enforcement (*to ensure compliance*)
- Flexible verification (*simplifies oversight, contracting; may lower compliance costs*)
- Adequate compliance flexibility (*to ensure that targets can be achieved at low cost*)
- Contracting standards/cost recovery for regulated utilities and providers of last resort (*to ensure reasonable compliance effort, and long-term contracts*)
- Product-based (not company-based) compliance (*supports voluntary sales*)

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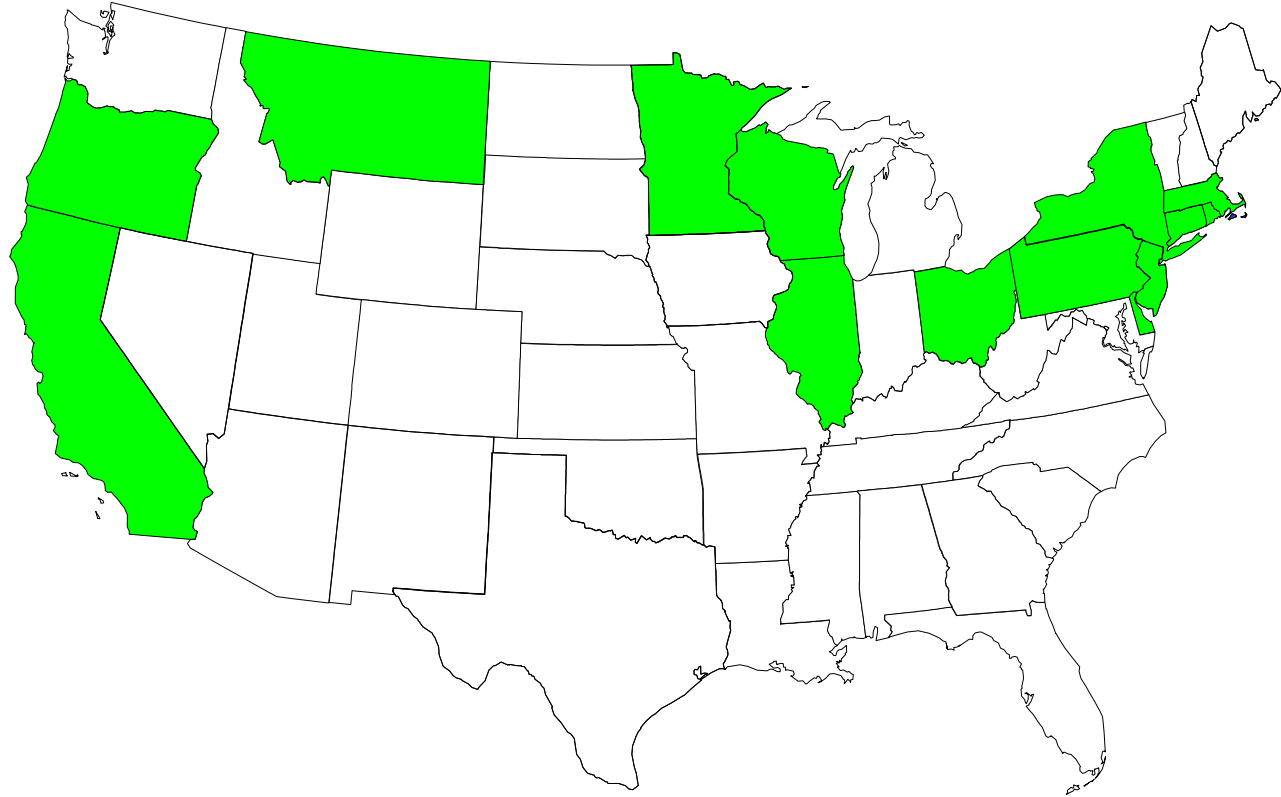
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Renewable Energy Funds: What Are They?

Funds created in 14 states to promote renewable energy:

- Collect over **\$500 million** per year
- Approx. **\$5 billion** over next decade

Majority of funding collected through surcharge on electric bills (a system-benefits charge - SBC)



Common Programs

Renewable energy funds are flexible, and allow states to target a multitude of technologies and programs

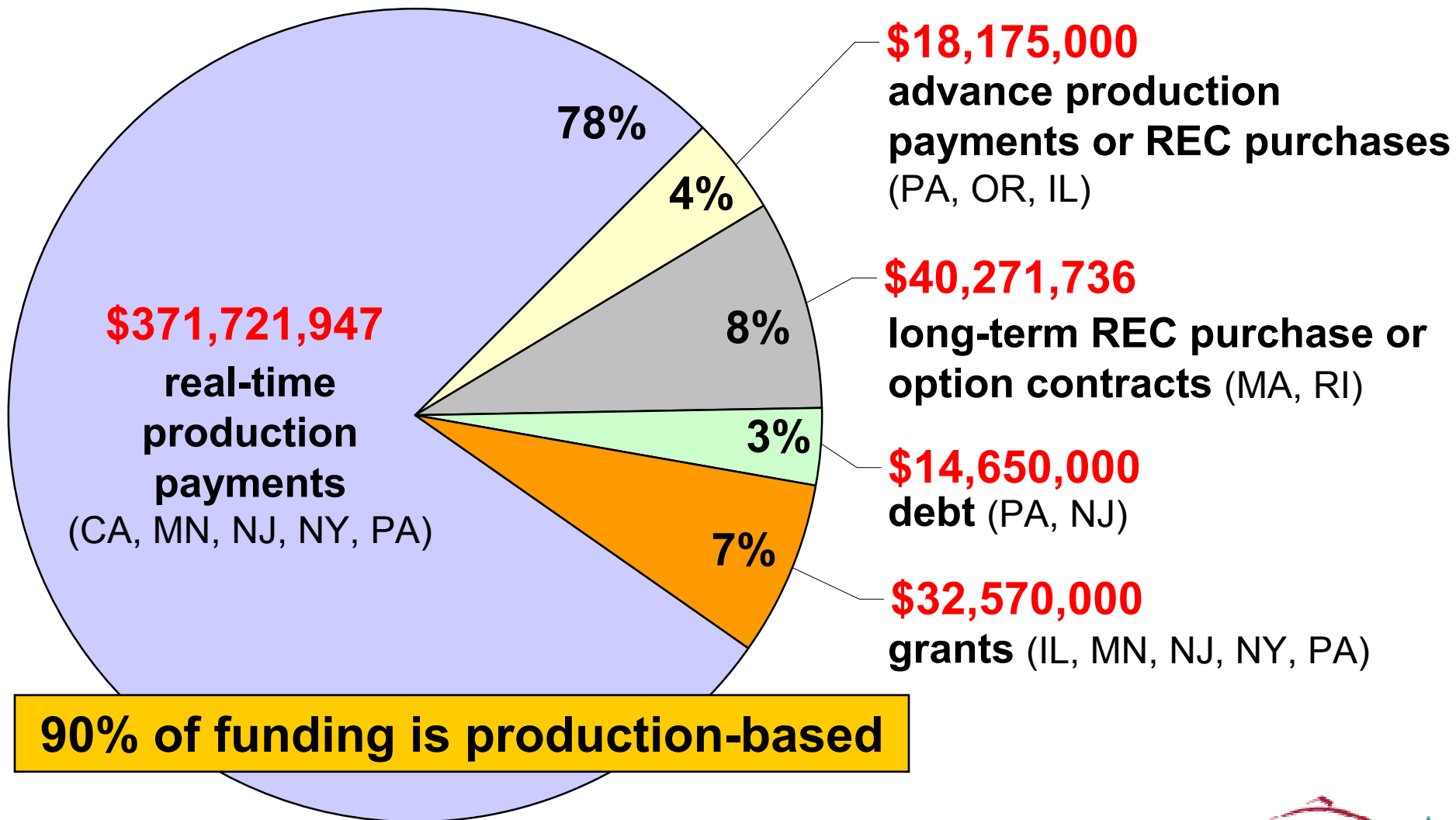
- Financial incentives to large-scale renewable projects
- Distributed generation incentives
- Consumer financing programs
- Project and company financing
- Support for green power marketers
- Consumer education
- Smaller grants for business development, studies, etc.
- Research and development

Financial Incentives for Utility-Scale Projects (as of March 2006)

Resource Type	# of Projects	Obligated Funding (\$)		Capacity (MW)			
		Original	Current	Original	Canceled	Pending	Online
Biomass	9	\$20,347,840	\$16,407,902	99	10	78	11
Bio-Gas	3	\$4,108,210	\$4,108,210	6	-	4	2
Geothermal	4	\$80,331,618	\$80,331,618	157	-	98	59
Hydro	8	\$14,946,409	\$13,757,139	51	-	19	32
LFG	29	\$41,974,893	\$33,797,129	89	24	22	43
Waste Tire	1	\$7,232,413	\$3,287,461	30	-	30	-
Wind	196	\$308,447,300	\$249,928,161	2,286	330	987	969
Total:	250	\$477,388,683	\$401,617,619	2,718	363	1,238	1,117

Wind is the most favored resource, capturing >60% of total funding, and accounting for >80% of obligated capacity

Incentive Designs Used by State Renewable Energy Funds are Diverse



States Are Supporting Wind Power in Other Ways as Well: Notable Current Programs

- **Predevelopment Support**

- **Grants and loans:** MA, NY, CT, RI, PA, NJ

- **Community Wind Power**

- **Direct financial support:** MN, IL, CA, MA, OR, PA
- **Technical assistance:** MA, WI, IL, OR

- **Residential Wind Systems**

- **Grants and rebates:** CA, NY, NJ, WI, OH, RI, MA

- **Support for Green Power Demand**

- **Marketer/customers incentives, public education, etc.:**
PA, NY, RI, MA, CT, NJ

Renewable Energy Fund Summary

- Renewable energy funds are providing useful support for utility-scale wind
- Funds can also offer critical support to community-scale and residential-scale wind systems, and support wind market development in a multitude of other ways
- Key limitations to renewable energy funds include...
 - funds typically do not provide a PPA, and so only offer a piece of the financing puzzle for utility-scale wind
 - size and political stability of funds may limit their effectiveness over long term, especially for large projects

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Other State Policy Approaches

- **Tax Incentives:** income, sales, and property tax reductions or exemptions
- **Standardized Tariffs for Smaller Projects:** sometimes established through PURPA avoided cost rates (e.g., MN, ID, OR)
- **Utility Profit Incentives:** offer utilities a profit motive for aggressively pursuing renewable resources (e.g., being explored in CO, HI)

State Tax Incentives

- Sales and property tax incentives are common, but are unlikely to be primary drivers of wind power
- State-based income tax incentives may be more powerful
 - New Mexico: 10 years, 1 cent/kWh
 - Oklahoma: Through 2011, 0.25-0.75 cents/kWh
- Key design issue for state income tax incentives: ***transferability***
 - Allow non-taxable entities to transfer credit to taxable entities

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Conclusions

- Wind still requires policy support to enable sizable markets
- Lack of sustained Federal support has hindered development
- State policies are beginning to kick-in
 - RPS increasingly popular, and primary driver for large-scale wind
 - Renewable energy funds primary driver for customer-sited and community-scale wind
- Other policies to consider
 - State tax incentives
 - Standardized, fixed-price tariffs
 - Utility profit incentives
- Many existing policies working well, but continued attention to policy design needed

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