Renewables Portfolio Standards in the Western United States

Status and Experiences Through 2007

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Renewables Portfolio Standards in the US: A Status Report with Data Through 2007

Report Purpose:

- Provides an overview of the design, early experience, and impacts of renewables portfolio standards (RPS) in the United States
- Emphasizes factual information on state-level mandatory RPS policies, with little focus on "lessons learned"; briefly discusses Federal RPS developments, and state-level non-binding renewable energy goals

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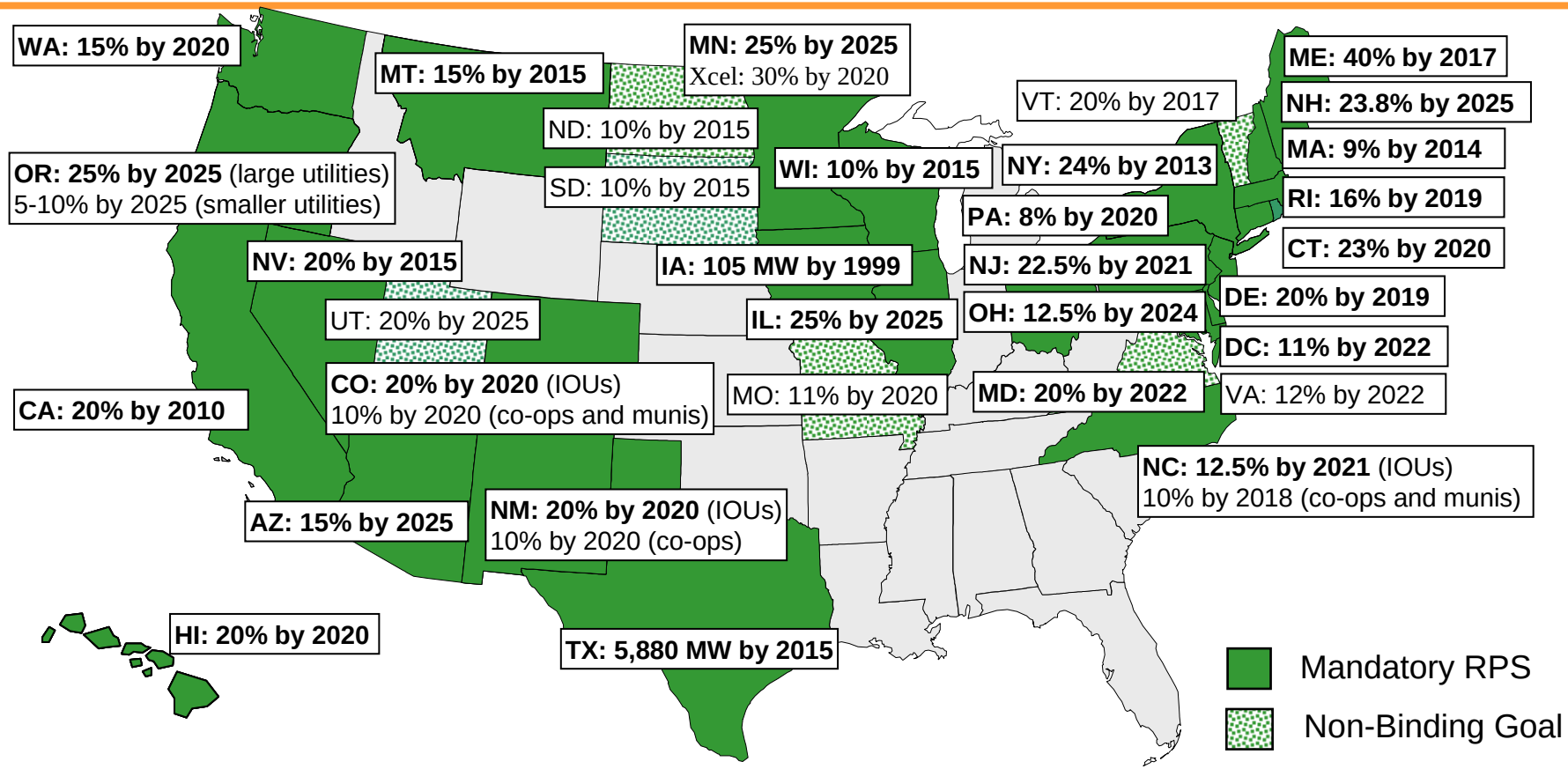
Available at:

http://eetd.lbl.gov/ea/ems/re-pubs.html

Presentation Outline

- **Overview of RPS policy landscape in the West**
- **Operational experience to date**
- **Projected RPS capacity additions through 2025**

RPS Policies Exist in 8 of 11 Western States; plus Non-Binding Goal in Utah



Source: Berkeley Lab

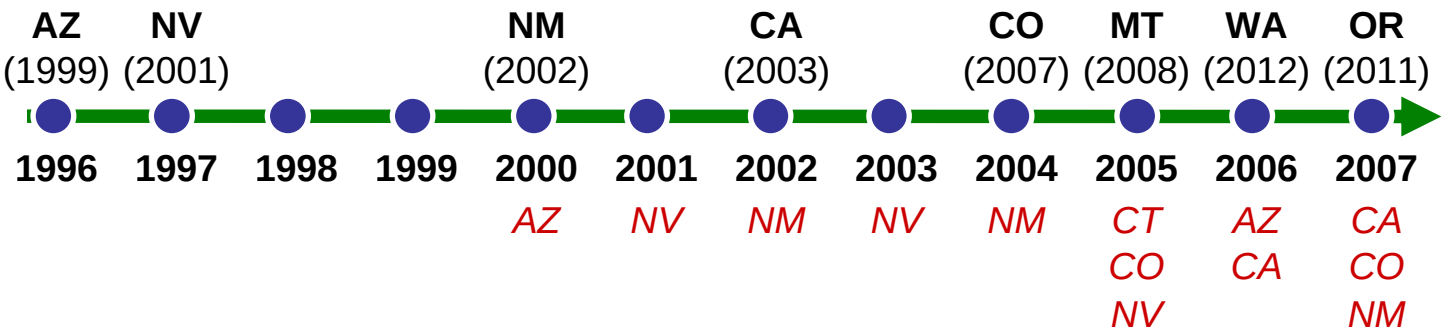
- **Most policies established through state legislation, but some through regulatory action (AZ, NY) or voter-approved initiatives (CO, WA)**
- **CA has a non-binding goal of 33% by 2020, in addition to mandatory RPS**

Oregon Added an RPS in '07; 3 Other Western States Revised an Existing RPS

Enactment (above timeline)

Major Revisions (below timeline)

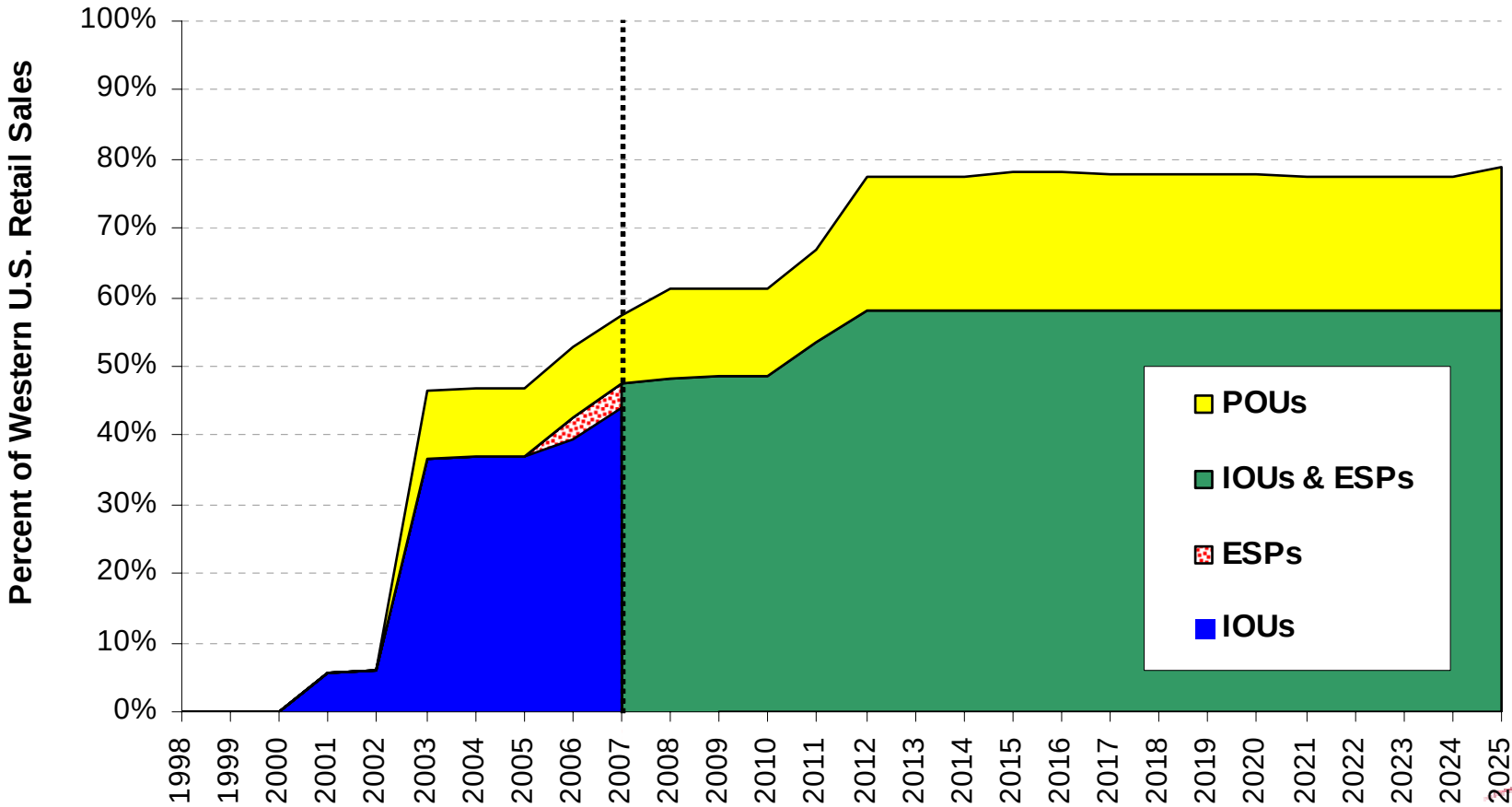
( ) **Year of First Requirement**



- Popularity of mandatory RPS policies has grown in recent years
- States are continuing to revise policies based on ongoing experiences

RPS Obligations Applied to 58% of Western Load in 2007 (Will Apply to 79% Once Fully Implemented)

Western Electrical Load with Active State RPS Obligations
(Historic and Projected)



The Design of State RPS Policies Continues to Differ Widely

- Renewable purchase targets/timeframes
- Eligibility of different renewable technologies
- Whether existing renewable projects qualify
- Whether technology set-asides or vintage tiers are used
- Use of credit multipliers for favored technologies
- Entities obligated to meet RPS, and use of exemptions
- Treatment of out-of-state generators
- Methods to enforce non-compliance
- Existence and design of cost caps
- Allowance for RECs, and REC definitions
- Compliance flexibility rules
- Waivers from compliance requirements
- Contracting requirements
- Role of state funding mechanisms

Geographic Eligibility and Electricity Delivery Rules Vary Considerably

Geographic Eligibility and Delivery Requirements	States	Notes
In-region generation requirement	OR	WECC for unbundled RECs, U.S. portion of WECC and delivered to LSE for renewable electricity
Electricity delivery required to state or to LSE		
Direct transmission inter-tie between generators and state	NV	Allows limited sharing of transmission inter-tie with other generators
Broader delivery requirements to state or to LSE	AZ, CA, MT, NM	CA: relaxed scheduling allows shaped/firmed products
Electricity delivery required to broader region	WA	If located outside Pacific Northwest, requires delivery to state
In-state generation encouragement	CO	No restriction on location of RECs creation, but credit multiplier for in-state projects

- Most Western states require in-state delivery
- OR and CO allow use of unbundled RECs generated anywhere in WECC (and WA, from anywhere in PNW), lessening need for long-distance transmission

Operational Experience with State RPS Policies in the West Remains Limited

Operational Experience with State RPS Policies
(years since first major compliance period)

RPS Compliance in the West Has Been Mixed

Percent of RPS Target Met with Renewable Purchases or RECs
(including available credit multipliers and banking)

State	1999	2000	2001	2002	2003	2004	2005	2006
AZ	-	-	89%	64%	31%	31%	26%	25%
CA	-	-	-	-	-	100%	100%	98%
NM	-	-	-	-	-	-	-	100%
NV	-	-	-	-	31%	30%	95%	39%

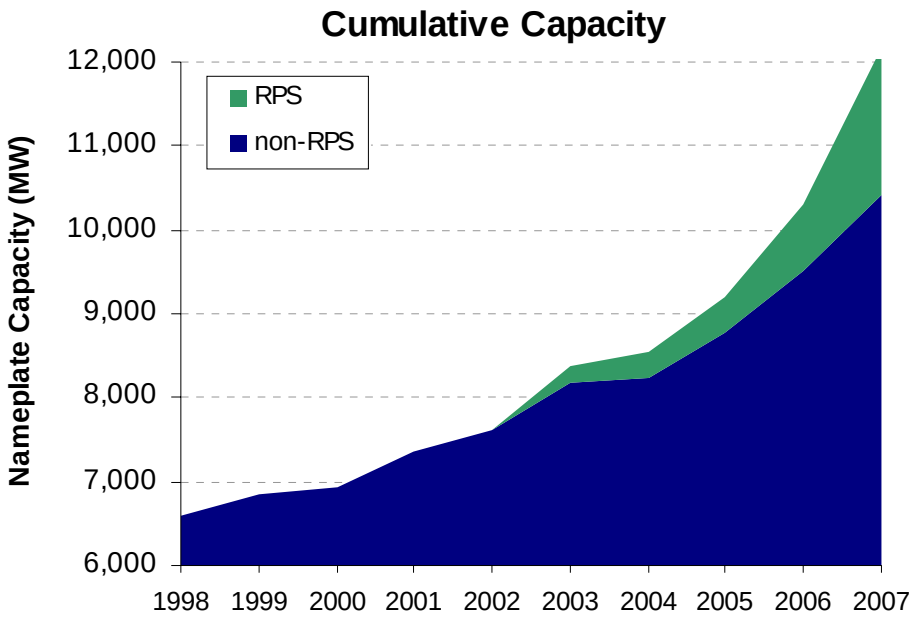
Arizona: Specified funding amounts have been insufficient to achieve full compliance

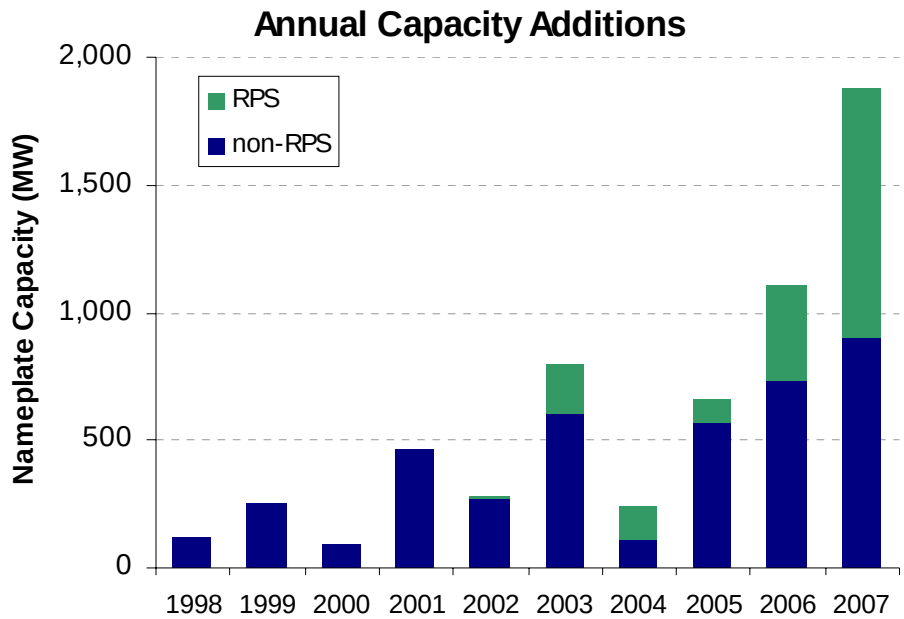
Nevada:

- Nevada Power has limited transmission access to in-state geothermal resources
- Contract failures and project delays have also impeded compliance

State RPS' Are Increasingly Motivating Renewable Energy Development

Cumulative and Annual Non-Hydro Renewable Energy Capacity in Western RPS and Non-RPS States

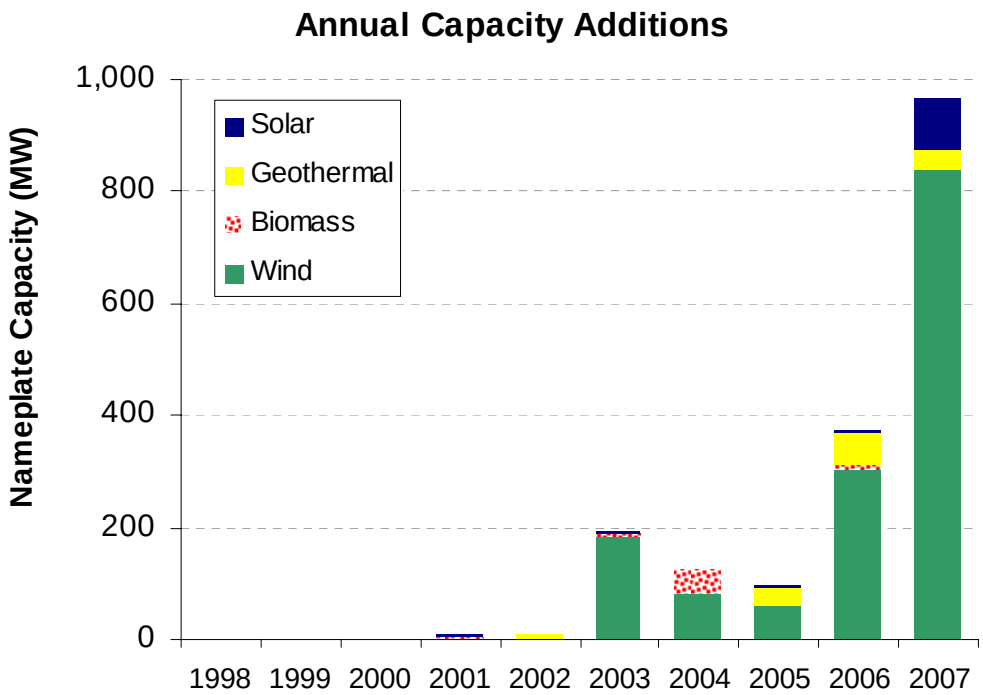


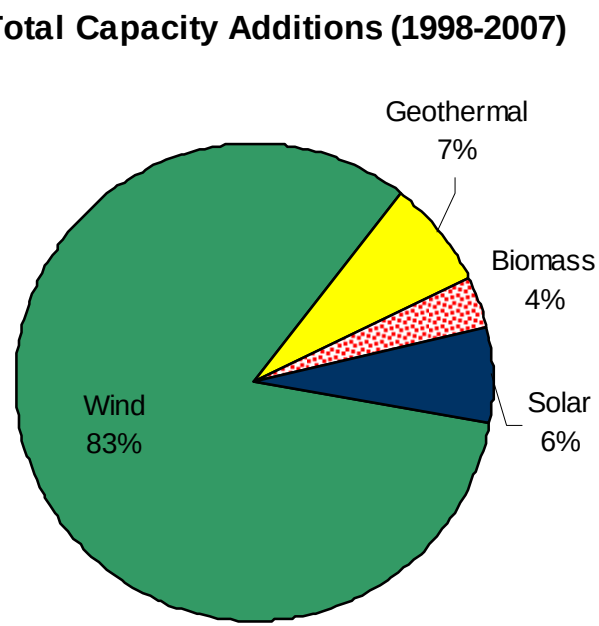


Though not an ideal metric for RPS-impact, 30% of non-hydro renewable additions in the West since 1998 (1,800 MW) have occurred in states with active/impending compliance obligations; 52% in 2007

State RPS Policies Are Primarily Supporting Wind Power

Non-Hydro Renewable Energy Capacity Additions in Western RPS States





**Renewable additions counted as occurring in an RPS state only if commercial operation began no more than one year before the first compliance year of the host state*

Other Technologies Will Also Benefit, in Some States

Wind power is facing increased competition in California from solar, geothermal, and biomass

The same is true, to a lesser extent, in other states

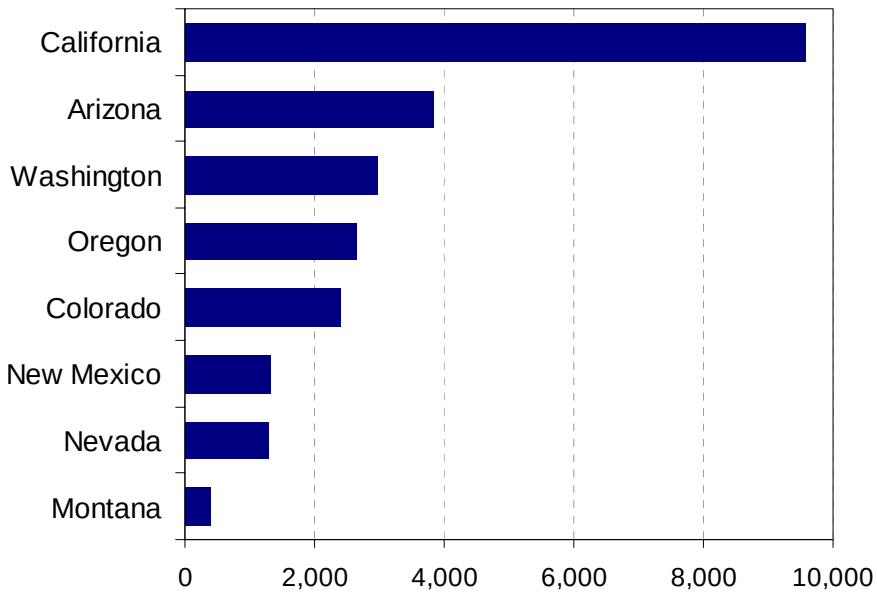
More than 7,000 MW of contracts with new renewable generators signed in California since 2002

Wind	58%
Solar	23%
Geothermal	12%
Biomass/MSW	7%
Small hydro	<1%
Ocean	<1%

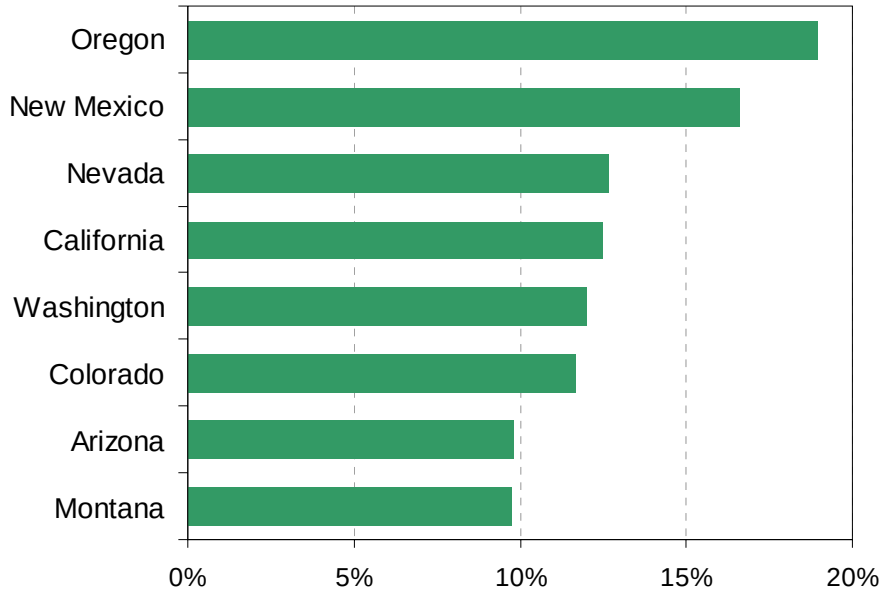
Future Impacts of Existing State RPS Policies Are Projected To Be Sizable

- Roughly 25 GW of new renewables capacity needed by 2025 to meet existing mandatory RPS targets in the West – ***if*** full compliance is achieved
- Increases to 35 GW if non-binding Utah and California renewable goals are included

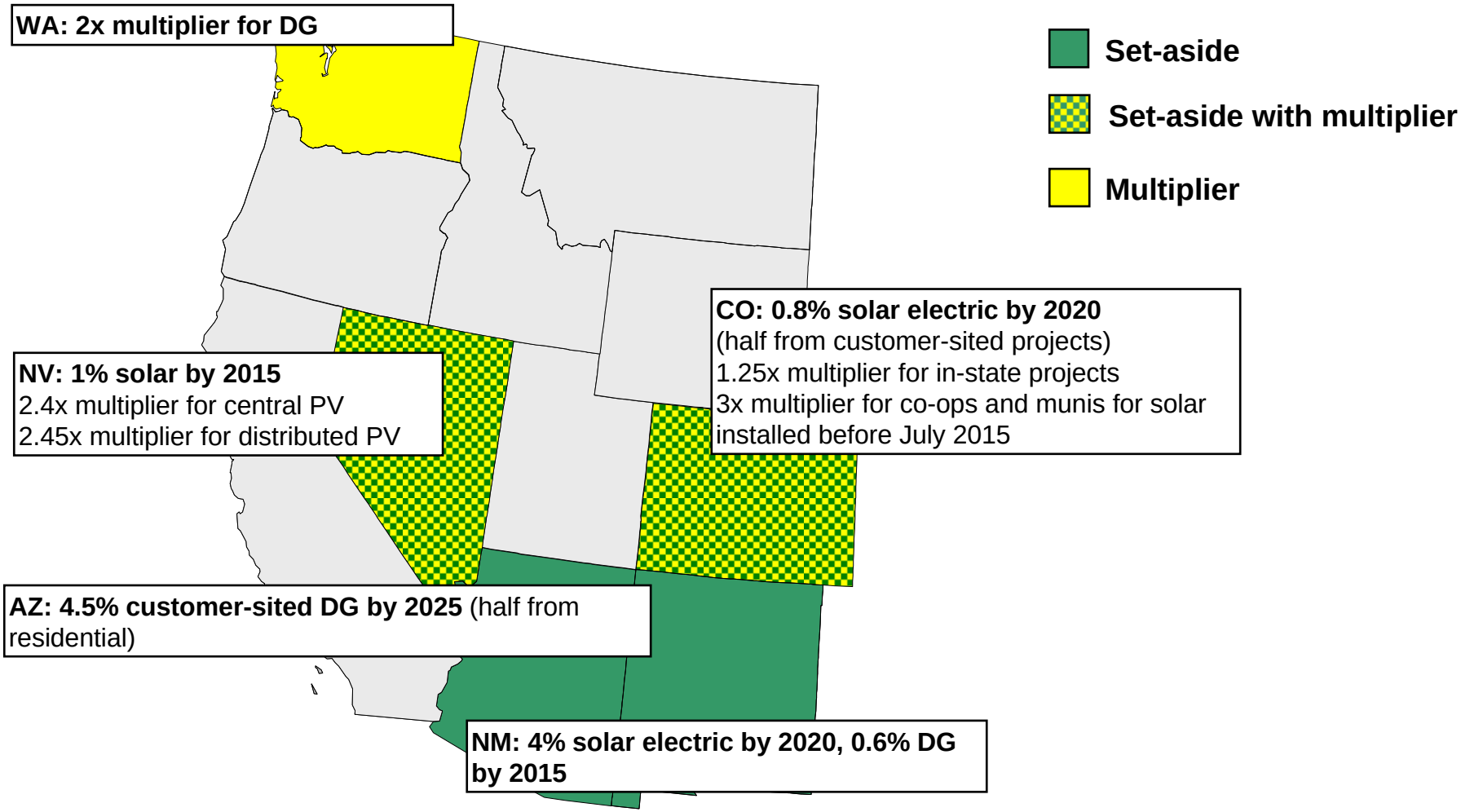
New Renewable Capacity Needed by 2025 (Nameplate MW)



New Renewable Generation Needed by 2025 (% of Projected Statewide Retail Sales)

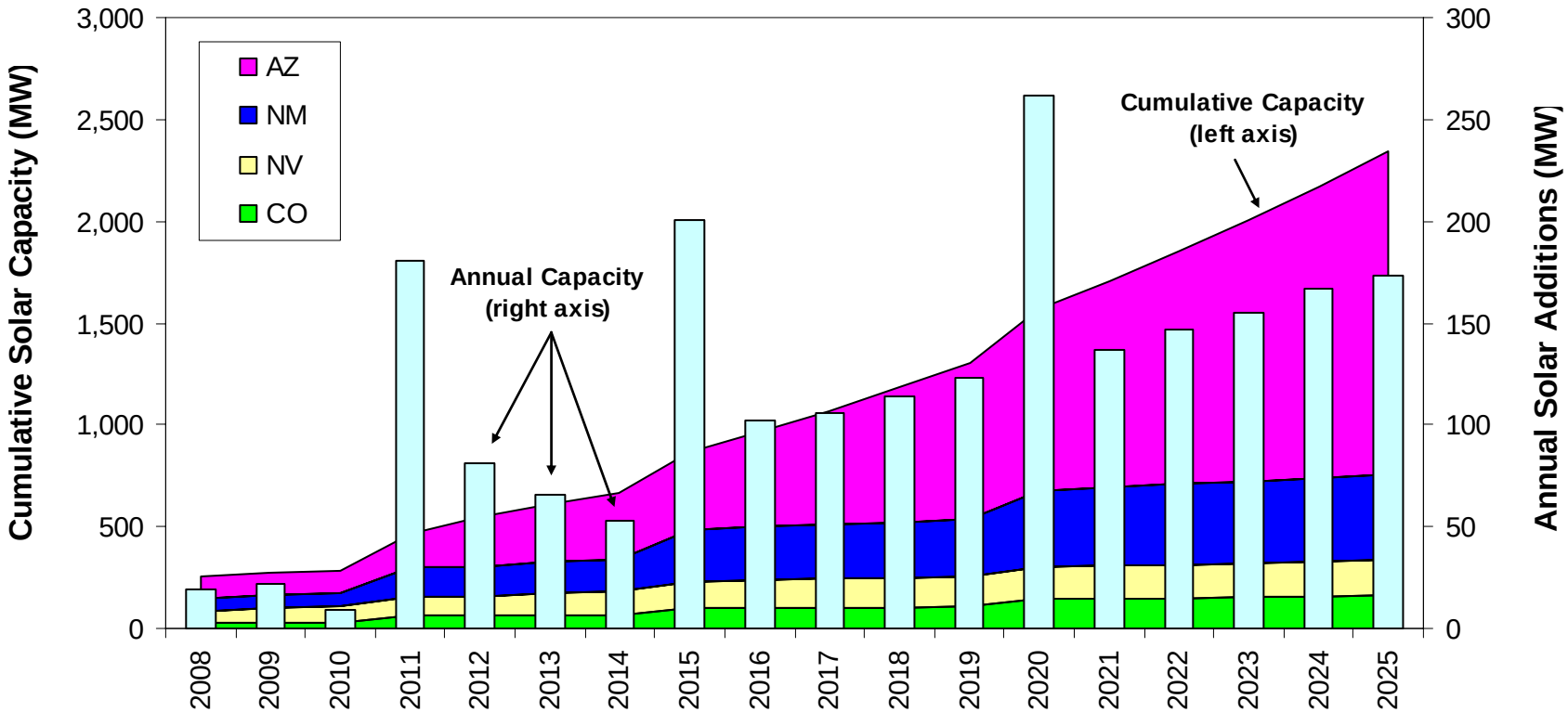


4 Western States Have Solar or DG Set-Asides



Future Impacts of Solar/DG Set-Asides Are Projected To Be Substantial

- 300 MW of solar required by 2010, growing to 2,300 MW by 2025
- Arizona is by far the largest solar set-aside market in the West over the long run



Graphic assumes that full compliance is achieved

Conclusions

- The popularity of state-level RPS policies has grown throughout the West
- The importance of these programs for renewable energy development and associated transmission is expected to build over the coming decade
- The design of these policies vary, with potential implications for transmission expansion needs
- States continue to revise their RPS policies in response to operational experience

For More Information...

See full report for additional findings, description of data sources, etc.

- http://eetd.lbl.gov/ea/ems/re-pubs.html

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