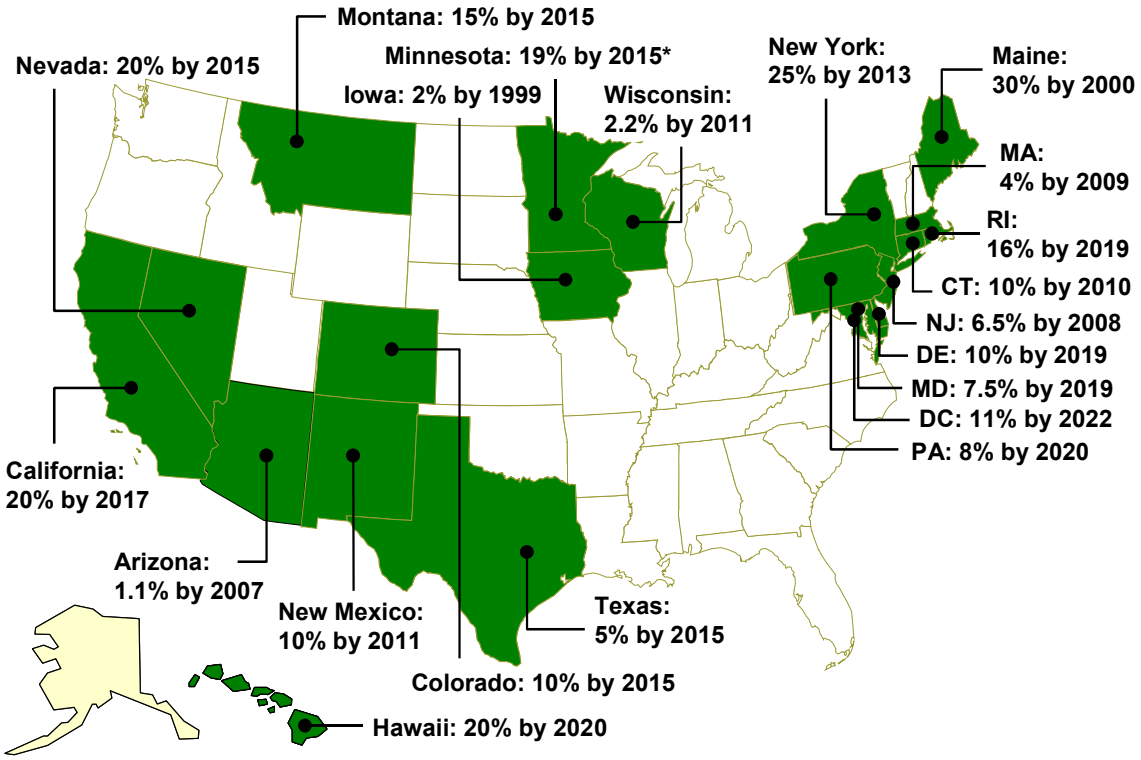
3.3 – States with Renewable Portfolio Standards (RPS)

A Renewable Portfolio Standard (RPS) is a policy that obligates a retail electricity supplier to include renewable resources in its electricity-generation portfolio. Retail suppliers can meet the obligation by constructing or owning eligible renewable resources or purchasing the power from eligible generators. To date, 20 states plus Washington, D.C., have adopted RPS policies (**Table 3.3.1**) or renewable purchase obligations (**Figure 3.3.1**), while several other states have adopted nonbonding renewable energy goals (**Table 3.3.2**). In addition, a number of states have increased their renewable energy standards in recent years. In conjunction with system benefits funds, RPS policies are expected to lead to the development of more than 29,000 MW of new renewable energy capacity by 2017 (**Figure 3.3.2**).



Source: NREL/Union of Concerned Scientists, October 2005

Figure 3.3.1: Renewable Portfolio Standards and Renewables Purchase Obligations by State

Table 3.3.1: State Renewable Portfolio Standards and Purchase Requirements

State	Purchase Requirements	Eligible Resources	Credit Trading	Penalties
AZ	15% by 2015 (of this 30% must be customer sited)	PV and solar thermal electric, R&D, solar hot water, and in-state landfill gas, wind, and biomass.	No central credit trading system	Under consideratio n
CA	Investor-owned utilities must add minimum 1% annually to 20% by 2017.	Biomass, solar thermal, photovoltaic, wind, geothermal, existing hydro < 30MW, fuel cells using renewable fuels, digester gas, landfill gas, ocean energy.	WREGIS system under development	At discretion of CPUC
CO	10% by 2015	Photovoltaics, Landfill Gas, Wind, Biomass, Geothermal Electric, Anaerobic Digestion, Small Hydroelectric, Fuel Cells (Renewable Fuels)	WREGIS system under development	To be determined
CT	3% Class I or II Technologies by Jan 1, 2004 Class I 1% Jan 1, 2004 increasing to 1.5% by 2005, 2% by 2006, 3.5% by 2007, 5% by 2008, 6% by 2009, and 7% by Jan 1, 2010	Class I: solar, wind, new sustainable biomass, landfill gas, fuel cells, ocean thermal, wave, tidal, advanced renewable energy conversion technologies, new run of river hydro (<5 MW). Class II: licensed hydro, MSW, and other biomass.	Yes. Using NEPOOL Generation Information System.	Penalty of 5.5¢/kWh paid to the Renewable Energy Investment Fund for the development of Class I renewables
DE	10% by 2019	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal, Fuel Cells (Renewable Fuels)	Yes. GATS	Penalty of 2.5¢/kWh (increases to 5¢/kWh for multi-year noncomplian ce)
DC	11% by 2022 (0.386% solar)	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Municipal Solid Waste, Cofiring, Tidal Energy, Wave Energy, Ocean Thermal	Yes. GATS. Electric delivery requirement to PJM	Penalty of 2.5¢/kWh for tier 1 resources, 1¢/kWh for tier II, and 30¢/kWh for PV
HI	8% by end of 2005, 10% by 2010, 15% by 2015 and 20% by 2020	Wind, solar, hydropower, biomass including landfill gas, waste to energy, and fuels derived from organic sources, geothermal, ocean energy, fuel cells using hydrogen from renewables	No	Unspecified; standard to be revisited if utilities can not meet it in cost-effective manner
IA	Investor-owned utilities to purchase 105 MW (~2% of 1999 sales)	Solar, wind, methane recovery, and biomass	No	Unspecified
ME	30% of retail sales in 2000 and thereafter. PUC will revisit within 5 years.	Fuel cells, tidal, solar, wind, geothermal, hydro, biomass, and MSW (< 100MW); high efficiency cogeneration. Self-generation is not eligible. Resource supply under this definition exceeds RPS requirement.	Yes. NEPOOL Generation Information System.	Possible sanctions at discretion of PUC

State	Purchase Requirements	Eligible Resources	Credit Trading	Penalties
MD	3.5% by 2006 with 1% from Tier 1 sources, Tier 1 increasing by 1% every other year from 2007 to 2018, Tier II remains at 2.5%, 7.5% total by 2019 and in subsequent years	Tier 1: solar, wind, geothermal, qualifying biomass, small hydropower (<30MW), and landfill methane Tier II: existing large hydropower, poultry litter incineration, existing waste to energy	Yes	Alternative Compliance fee of 2¢/kWh for Tier 1 and 1.5¢/kWh for Tier 2 paid to Maryland Renewable Energy Fund
MA	1% of sales to end-use customers from new renewables in 2003, +0.5%/yr to 4% in 2009 1%/yr increase thereafter until determined by Division of Energy Resources	New renewables placed into commercial operation after 1997, including solar, wind, ocean thermal, wave, tidal, fuel cells using renewable fuels, landfill gas, and low-emission advanced biomass. Excess production from existing generators over historical baseline eligible.	Yes. Using NEPOOL Generation Information System.	Entities may comply by paying 5¢/kWh. Non-complying retailers must submit a compliance plan. Revocation or suspension of license is possible.
MN	(Not true RPS) Applies to Xcel Energy only: 425 MW wind by 2002 and 110 MW biomass. Additional 400 MW wind by 2006 and 300 MW by 2010	Wind, biomass.	No, other than standard regulatory oversight.	No
MT	5% in 2008; 10% in 2010; 15% in 2015	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Anaerobic Digestion, Fuel Cells (Renewable Fuels)	Yes. Electricity must be delivered to MT.	Penalty of 1¢/kWh goes to universal low-income energy assistance fund.
NV	6% in 2005, rising to 20% by 2015. Minimum 5% must come from solar.	Solar, wind, geothermal, & biomass (includes agricultural waste, wood, MSW, animal waste and aquatic plants). Distributed resources receives extra credit (1.15).	Yes.	Financial penalties may be applied for noncompliance.
NJ	Class I or II: 2.5% by 2008 Class I: 4% by 2008, with solar requirement of 0.16% retail sales (90MW) Goal of 20% by 2020.	Class I.: Solar, PV, wind, fuel cells, geothermal, wave, tidal, landfill methane, and sustainable biomass. Class II: hydro <30 MW and MSW facilities that meet air pollution requirements.	Yes. GATS.	Alternative Compliance Payment of 5¢/kWh, 30¢/kWh for solar.
NM	5% of retail sales by 2006. Increase by 1%/yr to 10% by January 1,	Solar, wind, hydro (<=5 MW), biomass, geothermal, and fuel cells. 1 kWh solar = 3kWh; 1	Yes. RECs valid for 4 years from date of issuance.	At discretion of PUC.

State	Purchase Requirements	Eligible Resources	Credit Trading	Penalties
	2011 and thereafter.	kWh biomass, geothermal, landfill gas, or fuel cells =2 kWh toward compliance		
NY	25% by 2013; 1% voluntary standard; 2% of total incremental RPS requirement (7.71%) is set-aside for customer-sited	Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Fuel Cells, CHP/Cogeneration, Biogas, Liquid Biofuel, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal	Possibly. Electricity must be delivered to NY.	Unspecified.
PA	18% by 2020; 8% Tier 1 and 10% Tier II Solar set-aside of 0.5% by 2020	Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Solar Thermal Process Heat, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Fuel Cells, Municipal Solid Waste, CHP/Cogeneration, Waste Coal, Coal Mine Methane, Coal Gasification, Anaerobic Digestion, Other Distributed Generation Technologies	Yes. GATS	Penalty of 4.5¢/kWh, for solar penalty is 200% of PV REC value.
RI	16% by 2020; 3% by 2003, increasing 0.5% annually 2008-2010, increasing 1% annually 2011-2014, increasing 1.5% annually 2015-2019	Solar, wind, eligible biomass, including co-firing, geothermal, small hydropower, ocean, fuel cells using hydrogen derived from renewables	Yes. NEPOOL Generation Information System.	Penalty of 5¢/kWh can be made to Renewable Energy Development Fund
TX	5880 MW by 2015 (5000 MW new) Target of at least 500 MW from renewables other than wind	Solar, wind, geothermal, hydro, wave, tidal, biomass, including landfill gas. New (operational after Sept. 1, 1999) or small (<2MW) facilities eligible.	Yes. ERCOT REC Trading System.	Lesser of 5¢/kWh or 200% of average market value of renewable energy credits.
WI	0.5% by 2001 increasing to 2.2% by 2011 (0.6% can come from facilities installed prior to 1998).	Wind, solar, biomass, geothermal, tidal, fuel cells that use renewable fuel, & hydro under 60 MW. Eligibility may be extended by PUC.	Yes. Utilities with excess RECs can trade or bank them.	Penalty of $5,000-$500,000 is allowed in legislation.

Source: Table updated by NREL, March 2006. Derived from table in Wiser, R. Porter, K., Grace, R., Kappel, C. *Creating Geothermal Markets: Evaluating Experience with State Renewables Portfolio Standards*, report prepared for the National Geothermal Collaborative, 2003.

Table 3.3.2: State Renewable Energy Goals (Nonbinding)

State	Purchase Requirements	Eligible Resources
Illinois	8% by 2013 (75% wind)	Solar Water Heat, Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, CHP/Cogeneration, "Other Such Alternative Sources of Environmentally Preferable Energy"
Minnesota	1% by 2005 increasing by at least 1%/year to 10% by 2015	Wind, solar, hydro (<60 MW), and biomass
Vermont	Meet growth in electricity demand from 2005-2013 with renewable energy sources (becomes mandatory in 2013 if not met).	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Anaerobic Digestion, Fuel Cells (Renewable Fuels)

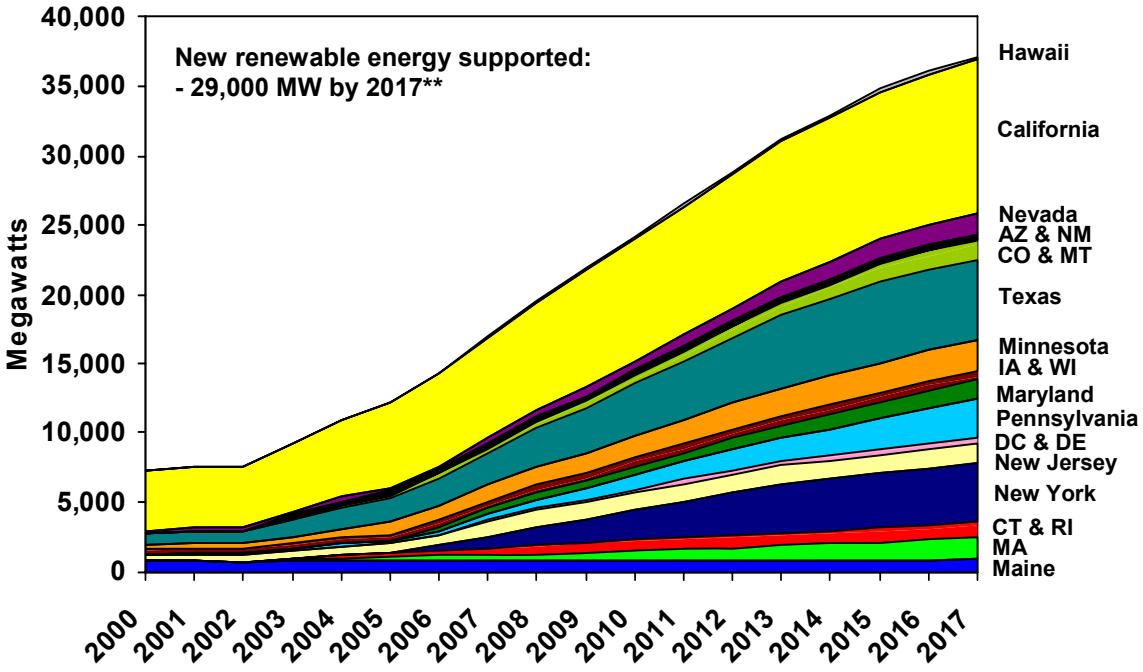
Source: NREL, March 2006.

Nationwide the RPS requirements for renewable energy are estimated to total 2,335 MW of generating capacity. The vast majority (93.5%) is wind power, followed by biomass (2.3%), landfill gas (2.3%), hydropower (1.3%), solar energy (0.4%), and other (0.3%). The five largest states in terms of capacity are Texas, Minnesota, Iowa, California, and Wisconsin.

Table 3.3.3 Estimated Renewable Energy Capacity Satisfying RPS Requirements Through 2003 (Megawatts, Nameplate Capacity)

State	Biomass	Hydro	Landfill Gas	Solar Photovoltaics	Wind	Other/ Unknown	Total
Arizona	0	0	5	9	0	0	14
California	0	20	6	0	175	0	201
Connecticut	0	0	0	0	0	0	0
Maine	0	0	0	0	0	0	0
Massachusetts	0	0	8	0	1	0	9
Nevada	0	0	0	0	0	0	0
New Jersey	0	0	0	0	0	0	0
New Mexico	0	0	0	0	0	0	0
Wisconsin	0	0	3	0	94	0	97
Iowa	16	0	0	0	237	7	260
Minnesota	25	0	0	0	476	0	501
Texas	5	10	31	0.2	1,140	0	1,186
Wisconsin	7	0	0	0	50	0	57
Hawaii	0	0	0	0	0	0	0
Illinois	0	0	0	0	0	0	0
Minnesota	0	0	0	0	0	0	0
Pennsylvania	0	0	0	0	10	0	10
Total	53	30	53	9.2	2,183	7	2,335
Share of Total	2.3%	1.3%	2.3%	0.4%	93.5%	0.3%	100.0%

Source: Petersick, T. 2004. *State Renewable Energy Requirements and Goals: Status Through 2003*, U.S. DOE Energy Information Administration, July http://www.eia.doe.gov/oiaf/analysispaper/rps/index.html



***Projected development assuming states achieve annual RES targets.**
****If achieved, IA, IL, and MN goals would support an additional 5,300 MW by 2017.**

Source: Union of Concerned Scientists, November 2005.

Figure 3.3.2: The Future Impact of State Purchase Mandates and Renewable Energy Funds