INFORMATION BRIEF
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An Inventory of State Renewable Energy Standards

Many states have established goals for the generation of electricity from renewable fuels—wind, solar, biomass, and other sources. This information brief lists, by state:

- which utilities are subject to renewable standards;
- the renewable energy technologies that can be used;
- the numerical targets for renewable energy sales; and
- miscellaneous issues in various state laws.

Contents

Why States Have Renewable Energy Standard Laws

The generation of electricity from renewable fuels—wind, solar, biomass, and other sources—exhibits some advantages compared to electricity produced from fossil fuels. These include:

- lower rates of emission of air pollutants and greenhouse gases;
- smaller scale, decentralized, on-site applications less subject to disruption and threats of terrorism;
- resources that are "free" and inexhaustible public goods (wind and solar);
- resources that are "homegrown" (biomass), and, consequently, allow a larger proportion of energy expenditures to remain in the community to boost economic development; and
- resources that do not require significant foreign policy expenditures to insure their continued supply at reasonable prices.

Many of these advantages, however, also carry the disadvantage of not being reflected in market prices for these forms of energy. As a result, since the 1970s, states and the federal government have granted subsidies to promote the growth of these energy sources so that their advantages may be realized (and to counterbalance subsidies provided to fossil fuels). This strategy was designed not only to reduce the price of renewables to consumers, but also to increase the demand for these newer technologies to the point where significant economies of scale could be exploited in manufacturing their components (solar panels, wind turbines), in order to further reduce their cost.

While the generation of electricity from these sources has increased significantly, renewables have not achieved, in the minds of many, a level of market penetration commensurate with what would result if all the benefits listed above were embodied in market prices. In the 1990s, state legislatures began to enact laws mandating numerical targets for the proportion of electricity sales to be generated from renewable energy sources in the future.

Summary of State Tables

As of 2006, 23 states and the District of Columbia have established targets, known as Renewable Portfolio Standards (RPS) or Renewable Energy Standards (RES). The following tables summarize the basic features of these state policies.

Table 1 reports which utilities—investor-owned (IOUs), municipal utilities, and electric cooperatives—are subject to the standards. In eight states, only investor-owned utilities are required to comply. The standards are mandatory in most states, but are voluntary in Illinois. In Minnesota, only Xcel Energy is required to meet the standards; other utilities are required to make a "good faith effort" to comply. The Minnesota Public Utilities Commission (PUC) has issued a stringent set of standards it will use to gauge utility compliance with this directive. In Vermont, if the statewide target is not met in 2012, the standards become mandatory the following year.

Table 2 lists the renewable energy technologies that are eligible to be counted toward the targets in each state. Eligible technologies generally reflect those available to states as a result of their location. For example, states with more sunshine—California, Nevada, Arizona, Texas, Hawaii—allow more solar technologies to qualify, while technologies utilizing ocean conditions are popular in coastal states.

Table 3 shows that the states with the most ambitious goals are California, Nevada, and Hawaii, which have 20 percent targets in 2010, 2015, and 2020, respectively. While the numerical targets of Maine and New York are higher, so are their current renewable energy levels, 30 percent in Maine's case, and 19 percent (from large-scale hydropower) in New York's.

Minnesota's and Wisconsin's 10 percent goal by 2015 is the most ambitious among the four Midwestern states that have passed RES laws. Five other states—California, Pennsylvania, Nevada, Hawaii, and Montana—have higher targets in that year, and Rhode Island and the District of Columbia require utilities to meet targets above 10 percent after 2015.

Finally, Table 4 catalogues some miscellaneous provisions of these laws. Seven states and the District of Columbia award "extra credit" toward the targets to certain technologies as a way to accelerate their development. Fourteen states and the District of Columbia allow utilities that fall short of targets to make up the shortfall by purchasing credits from other utilities; in Minnesota, the PUC has authority to allow credit trading, but has not exercised it yet. Eight states allow utilities short of their target to make compliance payments to the state, and five states require such utilities to pay monetary penalties. Montana, Texas, Washington, and Connecticut have established per kilowatt-hour penalty rates, while six other states allow or require the PUC to determine the penalty amount. In nine states, including Minnesota, the PUC is given some flexibility to delay or waive the target in a given year if sufficient renewable energy supplies are unavailable at a reasonable price or if reliability is affected.

Table 1

Utilities Subject to State Renewable Energy Standards

Arizona	All regulated utilities
California	All IOUs; electricity service providers included in 2006. Munis must self-implement.
Colorado	All utilities with more than 40,000 customers except municipals and cooperatives that have elected to be exempt from state regulation
Connecticut	IOUs only
Delaware	All utilities except munis and coops that have elected to be exempt from state regulation. Sales to industrial customers w/peak load > 1,500 kWh are exempt.
District of Columbia	All utilities
Hawaii	All utilities
Illinois	All utilities, but standards are voluntary
Iowa	IOUs only
Maine	All utilities
Maryland	All utilities; sales above 300 million kWh to a single industrial process customer are exempt
Massachusetts	All utilities
Minnesota	Required only for Xcel Energy; other utilities must demonstrate "good faith effort" to meet standards
Montana	IOUs only; other utilities with more than 5,000 customers must implement an RES based on legislative intent to encourage renewable energy production while protecting reliability
Nevada	IOUs only
New Jersey	All utilities
New Mexico	IOUs only, except Texas-New Mexico Power Co., until its all-requirements contract expires or is renegotiated
New York	IOUs only, except New York Power Authority and Long Island Power Authority
Pennsylvania	IOUs only; distribution companies exempt until end of restructuring cost-recovery period
Rhode Island	All utilities except Block Island Power Co. and Pascoag Utility District
Texas	All utilities
Vermont	All utilities
Washington	All utilities serving more than 40,000 customers in the state
Wisconsin	All utilities

IOU: Investor-owned utility; Munis: Municipal utilities
Sources: Interstate Renewable Energy Council, *DSIRE database*, www.dsireusa.org; Union of Concerned Scientists, Table C-1, *State Minimum Renewable Electricity Requirements (as of April 2006)*, www.ucsusa.org/clean_energy/clean_energy_policies/clean-energy-policies-and-proposals.html; individual state statutes.

Table 2

Eligible Renewable Energy Technologies

	AZ	CA	CO	CT	DE	D.C.	HI	IL	IA	ME	MD	MA	MN	MT	NV	NM	NJ	NY	PA	RI	TX	VT	WA	WI
Wind	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Hydropower		x[1]	x[2]	x[3]	x[1]	x	x	x	x	x	x[1]		x[4]	x[2]	x[1]	x	x	x[1]	x[5]	x[1]	x	x[6]	x	x[4]
Solar Photovoltaic	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Solar Thermal Electric	x	x		x	x	x	x	x		x	x	x	x	x	x	x			x		x	x	x	x
Solar Space Heat							x								x				x		x	x	x	
Solar Thermal Process Heat							x								x				x		x	x	x	
Solar Water Heat	x						x								x				x		x	x	x	
Geothermal Electric		x	x		x	x					x			x	x	x	x		x	x	x		x	x
Biomass	x	x	x	x	x	x[7]	x	x	x	x	x[7]	x	x	x	x	x	x	x	x	x[7]	x	x	x	x
Landfill Gas	x	x	x	x	x	x	x	x			x	x			x	x	x	x	x	x	x	x	x	x
Anaerobic Digestion		x	x		x	x	x				x			x	x	x	x		x		x	x		
Municipal Solid Waste		x[8]		x		x[9]	x		x	x	x		x		x[10]		x		x					
Fuel Cells (Renewable Fuels)		x	x	x	x		x			x	x	x		x		x	x	x	x	x		x		x
Tidal Energy		x		x	x	x				x	x	x					x	x		x	x		x	x
Wave Energy		x		x	x	x	x				x	x					x	x		x	x		x	x

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Eligible Renewable Energy Technologies

	AZ	CA	CO	CT	DE	D.C.	HI	IL	IA	ME	MD	MA	MN	MT	NV	NM	NJ	NY	PA	RI	TX	VT	WA	WI
Ocean Thermal		x		x	x	x	x				x	x						x		x	x		x	
CHP/ Cogeneration				x			x	x		x								x	x			x[9]		
Other							x[11]	x[12]					x[13]		x[14]			x[15]	x[16]		x[17]	x[18]		

1. 30 MW or less
2. 10 MW or less
3. 5 MW or less; began operation after July 1, 2003
4. 60 MW or less
5 Low-impact hydropower, as certified by the Low-Impact Hydropower Institute and American Rivers, Inc.
6. 200 MW or less
7. Includes biomass co-fired with other fuels
8. Waste must be converted to a clean-burning fuel using a noncombustion thermal process
9. Eligible for RES credit only through 2012
10. Eligible for RES only if at least 80% of MSW incinerated is collected from counties meeting the state's recycling standard of 20% (for county populations exceeding 150,000) or 15% (for smaller populations)
11. Geothermal heat pumps, hydrogen, ice storage, liquid biofuels (ethanol, methanol, biodiesel), seawater, and solar air conditioning
12. Other sources of environmentally preferable energy
13. Hydrogen
14. Utility-subsidized, energy-efficiency measures installed at customer site after January 1, 2005; microwave reduction of waste tires (not combustion)
15. Methane from sewage gas and manure digesters, liquid biofuels (ethanol, methanol, biodiesel)
16. Coalmine and biologically derived methane, waste coal, coal gasification, large hydropower, pulping process, and wood manufacturing byproducts
17. Geothermal heat pumps
18. Incremental energy produced from retrofitting an existing renewable facility that began generating prior to 2005 (which would not otherwise count toward the RES), as long as it increases the plant's efficiency or significantly reduces emissions

Sources: Interstate Renewable Energy Council, *DSIRE database*, www.dsireusa.org; Union of Concerned Scientists, Table C-1, *State Minimum Renewable Electricity Requirements (as of April 2006)*, www.ucsusa.org/clean_energy/clean_energy_policies/clean-energy-policies-and-proposals.html; individual state statutes.

Table 3

State Percentage Targets for Renewable Electricity Sales

	AZ[1]	CA	CO[2]	CT[3]	DE	D.C.[4]	HI	IL[5]	IA[6]	ME[7]	MD[8]	MA[9]	MN[10]	MT	NV[11]	NJ[12]	NM	NY[13]	PA[14]	RI	TX[15]	VT	WA[16]	WI[17]
2001	0.2									30														
2002	0.4																							
2003	0.6	[18]					7					1												
2004	0.8			4								1.5												
2005	1			4.5			8					2	1		6									
2006	1.05			5							3.5	2.5	2				5							
2007	1.1		3	5.5	1	4		2				3	3		9		6		5.7	3	2,280 MW			
2008				8	1.5	4.5		3			4.5	3.5	4	5		6.5	7		6.2	3.5				
2009				9	2	5		4				4	5		12		8		6.7	4	3,272 MW			
2010		20		10	2.75	5.5	10	5			5.5		6	10			9		7.2	4.5				
2011			6		3.5	6		6					7		15		10		9.7	5.5	4,264 MW			
2012					4.25	6.6		7			6.5		8						10.2	6.5		[19]	3	
2013					5	7.1		8					9		18			25	10.7	7.5	5,256 MW			
2014					5.75	7.6					7.5								11.2	8.5				
2015			10		6.5	8.1	15						10	15[20]	20				11.7	10	5,880 MW			10
2016					7.25	8.2					8.5								14.2	11.5			9	
2017					8	8.2				40[21]									14.7	13				
2018					9	8.2					9.5								15.2	14.5				
2019					10	8.3					7.5								15.7	16				

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	AZ[1]	CA	CO[2]	CT[3]	DE	D.C.[4]	HI	IL[5]	IA[6]	ME[7]	MD[8]	MA[9]	MN[10]	MT	NV[11]	NJ[12]	NM	NY[13]	PA[14]	RI	TX[15]	VT	WA[16]	WI[17]
2020						8.8	20												18				15	
2021						9.9																		
2022						11.4																		

1. Solar thermal electric and photovoltaics must provide 60% of the standard. On October 31, 2006, the Arizona Corporation Commission approved a formal rulemaking that increases the renewable target to 15% in 2025, 30% of which must come from distributed generation resources. The solar requirement would be repealed. To become final, the rulemaking must be reviewed by the Attorney General's office.
2. At least 4% of total must come from solar electric, half of which must be on-site.
3. Up to 3% may be from Class II resources: waste-to-energy, certain types of biomass, and existing hydropower. CHP and nonresidential conservation must together provide 1% in 2007 and 4% in 2010.
4. Hydropower and MSW may comprise up to 2.5% in 2007-2012, 1.5% in 2017, 0% in 2022. Solar: 0.005% in 2007, 0.066% in 2012, 0.192% in 2017, 0.386% in 2022.
5. Standards are goals, not mandates. Wind must provide 75% of the standard.
6. Iowa requires IOUs to purchase 105 MW from renewable resources, accounting for under 2% of retail electricity sales of those utilities.
7. Maine currently generates more than 30 percent of its electricity from renewable sources.
8. Tier 2 resources—hydropower and MSW—must comprise 2.5% in 2006-2018, after which the requirement sunsets.
9. The proportion of renewable electricity generated/purchased must increase by 1% annually after 2009 until the state suspends this requirement.
10. Xcel Energy must develop 1,125 MW of wind and 110 MW of biomass. Other utilities must make a "good faith effort" to achieve the standards.
11. Solar energy must provide 5%.
12. Up to 2.5% may be provided from MSW and hydropower < 30 MW that meets environmental standards. In 2008, 0.16% must be from solar photovoltaics.
13. Approximately 19% of New York's electricity was generated from renewable resources, mostly from large-scale hydropower, whereas the RES was enacted in 2004.
14. Tier I sources (wind, biomass, small hydropower, photovoltaics, geothermal, fuel cells, methane) must provide 1.5% in 2007, and increase by 0.5% each year, to 8% in 2020, including 0.0013% from photovoltaics in 2007 and 0.5% in 2020. Tier II sources (MSW, large-scale hydropower, distributed generation, waste coal, demand-side management, etc.) must provide 4.2% in 2007 and 10% in 2020.
15. The 2015 mandate represents an estimated 5% of total retail electricity sales in that year. 500 MW is to be generated from sources other than wind.
16. A utility is deemed compliant with an annual target if it has invested 4% of its total annual retail revenue requirement on the incremental cost of eligible renewable resources or renewable energy credits during the year.
17. Statewide goal is 10% by 2015. Individual utilities must attain specific percentage increases above average 2001-03 level in 2010 and 2015.
18. The proportion of renewable electricity generated or purchased must, beginning in 2003, increase by at least 1% annually.
19. Statewide standard is the lesser of the incremental growth in retail electricity sales between January 1, 2005, and January 1, 2012, or 10% of 2005 retail sales. If this standard is not met in 2012, it becomes mandatory the following year.
20. Must include 75 MW of capacity from locally owned projects of 5 MW or less.
21. In 2006 legislation, Maine established a state policy goal to increase the share of electric capacity generated from renewable resources by 10% from 2007 to 2017.

Sources: Interstate Renewable Energy Council, *DSIRE database*, www.dsireusa.org; Union of Concerned Scientists, Table C-1, *State Minimum Renewable Electricity Requirements (as of April 2006)*, www.ucsusa.org/clean_energy/clean_ energy_policies/clean-energy-policies-and-proposals.html; individual state statutes.

Table 4

State Renewable Energy Standards: Miscellaneous Provisions

State	Multiple Credit for Selected Resources[1]	Credit Trading	Compliance Payments Permitted	Penalties for Noncompliance	Flexibility of Requirements
Arizona	1.5: solar electric power plant or distributed generation meeting certain conditions Add .5 for in-state manufacturing/materials content				
California				At PUC's discretion	
Colorado	1.25: in-state generation	X		PUC may assess monetary penalty after 2010, up to estimated cost of compliance	PUC cannot assess penalty if non-compliance results from PUC-imposed cap on customer cost impact of RES (1% of total monthly bill) or events beyond utility's control
Connecticut		X		5.5¢/kWh	PUC can delay compliance up to 2 years if requirements can't be reasonably met

Table 4

State Renewable Energy Standards: Miscellaneous Provisions

State	Multiple Credit for Selected Resources[1]	Credit Trading	Compliance Payments Permitted	Penalties for Noncompliance	Flexibility of Requirements
Delaware	3.0: solar electric or fuel cells from renewable fuels installed before 2015 1.5: in-state wind installed before 2013	X	2.5¢/kWh, increasing by 1¢/kWh for non-compliance in any subsequent year, up to 5¢/kWh for utilities failing to meet standard for any 4 years		In 2010-14, PSC can ask legislature to speed or slow schedule. After 2014, PSC can decelerate, if compliance payments meet 30% or more of standard for 3 consecutive years. PSC can accelerate if credit price is below given threshold for 2 consecutive years.
District of Columbia	1.2: wind or solar installed before 2007 1.1: wind or solar installed before 2010 1.1: methane produced before 2010	X	30¢/kWh: solar 1¢/kWh: hydropower, MSW 2.5¢/kWh: other sources		
Hawaii					PUC can grant temporary waiver if requirements can't be met at or below avoided cost

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State	Multiple Credit for Selected Resources[1]	Credit Trading	Compliance Payments Permitted	Penalties for Noncompliance	Flexibility of Requirements
Illinois		Participation allowed in regional trading system established by federal government or RTOs		May be considered for utilities which formally agree to meet goal, but then drop out	
Iowa					
Maine				License revocation or monetary penalties	Standard can be met by averaging over 2 or more years
Maryland	1.2: methane installed before 2009 1.2: wind installed in 2005 1.1: wind installed 2006-08 2.0: solar	X	1.5¢/kWh: hydropower, MSW 2¢/kWh: other sources Industrial process load from Tier I sources: 0.8¢/kWh through 2008, declining to 0.2¢/kWh in 2017		
Massachusetts		X	5.5¢/kWh		
Minnesota		At PUC's discretion			Xcel's requirement may be waived temporarily if implementation affects reliability or is not economic
Montana		X		1¢/kWh, not recoverable in rates	PUC may grant temporary waiver under certain conditions

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State	Multiple Credit for Selected Resources[1]	Credit Trading	Compliance Payments Permitted	Penalties for Noncompliance	Flexibility of Requirements
Nevada	2.4: photovoltaics, plus additional 0.05 if distributed generation 1.15: other on-site generation 0.7: microwave reduction of waste tires	X		PUC may impose fine ≥ incremental cost of acquiring renewable electricity above utility's overall cost per kWh	PUC may grant exemption if insufficient supply of electricity from renewables was available to utility
New Jersey		Solar only	30¢/kWh: solar 5¢/kWh: other sources		
New Mexico	3: solar 2: all sources except wind and hydropower	X			Utilities exempt from acquiring additional renewable energy if rate increase exceeds 1% in 2006, or more than 0.2%/year through 2011
New York					
Pennsylvania		X	4.5¢/kWh Twice avg. market value for solar credits		PUC can modify requirements if resources are not reasonably available
Rhode Island		X	5¢/kWh		
Texas		X		Lesser of 5¢/kWh or twice avg. cost of credits traded	Utilities Commission may suspend standard to protect grid reliability and operation

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State Renewable Energy Standards: Miscellaneous Provisions

State	Multiple Credit for Selected Resources[1]	Credit Trading	Compliance Payments Permitted	Penalties for Noncompliance	Flexibility of Requirements
Vermont		X	Price to be set by Public Service Board		Standard may be modified if Public Service Board determines compliance would impair utility's ability to meet demand safely at lowest present value life cycle cost, including environmental costs
Washington	2.0: distributed generation (<5 MW) and associated renewable energy credits or associated credits alone 1.2: acquisition of eligible renewable resource or renewable energy credit if operations begin after 2005 and requisite amount of labor from apprenticeship programs is used to construct facility	X		5¢/kWh, indexed for inflation	Utility deemed compliant if events beyond its control that could not have been anticipated prevent it from meeting target

Table 4

State Renewable Energy Standards: Miscellaneous Provisions

State	Multiple Credit for Selected Resources[1]	Credit Trading	Compliance Payments Permitted	Penalties for Noncompliance	Flexibility of Requirements
Wisconsin		X		Up to $500,000	Utilities may petition Public Service Commission for one-year extension of deadlines

1. Figures in this column represent the multiplier used to determine the RES credit received for each percentage point of retail electricity sales generated by a specific technology. For example, a value of 2 means that the named source receives 2 kWh RES credit for each 1 kWh generated from renewable sources.

Sources: Interstate Renewable Energy Council, *DSIRE database*, www.dsireusa.org; Union of Concerned Scientists, Table C-1, *State Minimum Renewable Electricity Requirements (as of April 2006)*, www.ucsusa.org/clean_energy/clean_energy_policies/clean-energy-policies-and-proposals.html; individual state statutes.

For more information about energy regulation, visit the utility regulation area of our web site, www.house.mn/hrd/issinfo/pututil.htm.