



INTEROFFICE MEMO

EUGENE WATER & ELECTRIC BOARD
Power Resources Division

Rely on us.

TO: Commissioners Farmer, Brown, Cassidy, Cunningham and Ernst

FROM: Brenda Sirois & Steve Newcomb

March 9, 2009

RE: Follow-Up Items Regarding Seneca Project & Additional Informational Needs,
Climate Neutrality and Qualifying Renewable Criteria.

Issue Statement

The objective of this Board Backgrounder is to continue to build on Commissioners' informational needs and requests in support of the Board's consideration of a resolution on May 5, 2009, regarding the Seneca Cogeneration Project.

Background

Preliminary sustainability results were presented during the Feb. 17 Board work session. After the staff presentation, Commissioners weighed in on what additional information needs they would like to have prior to a Board resolution regarding the Seneca cogeneration project. In this document, staff reflects those informational needs back to Commissioners to make sure we captured all of the requests. Detailed responses will be provided in subsequent Board Backgrounders.

In addition to a summary of the additional information needs, staff is providing documentation on which states and countries consider this type of resource and technology as a qualifying renewable, and context for why wood fueled biomass is considered climate neutral.

Also, please find in Attachment 1 the LRAPA Notice of Public Informational Meeting Notice for the Seneca Project. The date for this public meeting is Thursday April 2, 2009.

Discussion

Synopsis of Commissioners Comments & Additional Information Requests

Bob Cassidy:

- Interested in the effects on this community, not all of Lane County. Scale the data to the Eugene/Springfield community.
- Why did we use 2002 data? Is there anything more recent available?

- Who will monitor the source, LRAPA or Seneca?
- Make sure EWEB isn't liable for any lawsuits generated by the plant.
- Provide a detailed description of Seneca and LRAPA's monitoring of the project.

Ron Farmer:

- Look at the cumulative overview of the resource capacity based on raw material availability. What is the potential build out of this technology in Eugene?
- EWEB is not a regulatory agency. Look at this resource in comparison to what we might buy from BPA.
- What is the cumulative affect of project emissions in Eugene/Springfield area?

John Brown:

- How is biomass cogeneration carbon neutral, who says this and what are their qualifications?
- What happens if the plant runs out of water?
- What monitoring does LRAPA do at Baxter, McFarland or IP?
- To what extent can the biomass cogeneration facility operate during an emergency and what percentage of essential services can they provide?

Joanne Ernst:

- Wants Seneca to guarantee certain things to EWEB customers:
 1. Use BACT technologies in every situation
 2. Work with LRAPA for constant monitoring including dioxins, HAPS, PM
 3. Provide more information on equipment guarantee of emissions reductions
 4. Guarantee the type of wood feed stock in percentages
 5. Guarantee that no other feed stocks besides slash and wood by-products would be burned
 6. Put in writing that Seneca will not move to a 40-year harvest rotation
 7. Seneca to help fund West Eugene LRAPA ambient air monitoring system
- If out of compliance, what would Seneca do to correct?
- What would Seneca do if they ran out of water? Will water use impact other people's water rights? If so, will they stop?
- What is source of urea? How much is being used? Unpleasant odors? Is this safe?
- HAPS levels are just under threshold levels - project may require a different kind of permitting due to this.
- Will this energy be sold as Green Power to customers?

Rich Cunningham:

Does it meet or exceed the LRAPA, DEQ and EPA standards and requirements?

What Is Meant by Climate Neutral and is Biomass Climate Neutral?

In the most simplistic sense, carbon neutral refers to having no net effect on the amount of carbon in the biosphere. Carbon neutral is being used to frame the concept of cancelling out the harm done to the earth's atmosphere by one type of greenhouse gas-generating human activity, through another human activity that either reduces CO2 emissions by an

equal amount; or prevents an equal amount to be generated. In other words, carbon neutrality, or having a net zero carbon footprint, refers to achieving net zero carbon emissions by balancing a measured amount of carbon released with an equivalent amount sequestered or offset.

Morris, Gregory. (2008). Bioenergy and Greenhouse Gases. Green Power Institute, the Renewable Energy Program of the Pacific Institute.

The greenhouse-gas emissions produced at biomass and biogas generating facilities come from carbon that is already a part of the linked atmospheric-biospheric carbon cycle. This is in stark contrast to fossil-fuel combustion, which removes carbon from permanent geologic storage and adds it as net new carbon to the carbon already in the atmospheric-biospheric circulation system. Most people focus on this aspect of bioenergy production, and proclaim it to be “Carbon Neutral.”

In addition to being carbon neutral, biomass energy production can affect atmospheric greenhouse-gas concentrations in two important ways. First, the total amount of carbon that is sequestered in terrestrial biomass affects the amount of carbon in the atmosphere. Energy production from forest fuels contributes to forest health and fire resiliency, thereby increasing the amount of carbon that is stored on a sustainable basis in the earth's forests. Second, biomass energy production can change the timing and relative mix (oxidized vs. reduced) of carbon forms emitted into the atmosphere associated with the disposal or disposition of the biomass resources. As a greenhouse-gas, reduced carbon (CH₄) is 25 times more potent than oxidized carbon (CO₂) on an instantaneous, per-carbon basis. Therefore the form in which carbon is transferred from the biomass stock to the atmospheric stock is critically important from the standpoint of greenhouse forcing impact.

Qualifications of author:

Dr. Gregory Morris has more than two decades of diversified experience and accomplishments in the energy and environmental fields. He is an expert in biomass and renewable energy systems, climate change and greenhouse gas emissions analysis, integrated resources planning, analysis of the environmental impacts of resource management practices, electric power generation, the environmental impacts of energy production and use, and probabilistic risk analysis.

Dr. Morris works for private-sector and public sector clients on the development and analysis of renewable energy policy; integrated resources planning; integrated market and financial analysis to support the commercialization of new energy and environmental technologies; and technical, environmental, and financial risk assessment. He also provides consulting services in the areas of optimization modeling and environmental-economic cost-benefit analysis. Dr. Morris has a BS degree in Natural Science from the University of Pennsylvania (1974); an MS degree in Biochemistry from the University of

Toronto (1977); and a PhD degree in Energy and Resources from the University of California, Berkeley (1982).

Dr. Morris has made major contributions to the understanding of the environment costs and benefits of energy generation from biomass and has published several widely cited reports on the subject. He created and maintains a comprehensive historical database on the use of solid-fuel biomass for the production of electricity in California. He served on the Western Governor's Association's Biomass Task Force to the Clean and Diversified Energy Advisory Committee and serves on the boards of the California Biomass Collaborative and the Western Renewable Energy Generation Information System (WREGIS).

Dr. Morris has been actively involved in electric utility restructuring in California and across the U.S. He served as editor and facilitator for the Renewables Working Group to the California Public Utilities Commission, consultant to the CEC renewables program committee, consultant to the Governor's Office of Planning and Development during the 2000-2001 energy crisis, and has provided expert testimony in a variety of regulatory and legislative proceedings, as well as civil litigation. As director of the Green Power Institute, he has made major contributions to the development of California's renewable portfolio standards program and is actively involved in the implementation of California's Global Warming Solutions Act (AB 32).

Please see attachment 2 for a list of other agencies that consider biomass to be carbon neutral including a statement from the Oregon Renewable Portfolio Standards legislation.

Is the Seneca Project a Qualifying Renewable?

The Seneca Project is a Qualifying Renewable Resource in context of Oregon's recently adopted Renewable Portfolio Standard (RPS) and most of all the other states Renewable Portfolio Standard and Renewable Energy Standards. Please see Attachment 3 for a complete list and summary of the states in the nation that have adopted this type of biomass as a qualifying renewable.

This project also meets the criteria established in the voluntary Green-E Certification Program.

Recommendations

There are no recommendations at this time.

ATTACHMENT 1

NOTICE OF PUBLIC INFORMATIONAL MEETING

An Air Contaminant Discharge Facility
Seneca Sustainable Energy, LLC
Eugene, Oregon
Has applied for a Lane Regional Air Protection Agency
Construction Air Contaminant Discharge Permit
(Number 207460)

Lane Regional Air Protection Agency (LRAPA) is providing a 21-day notice of an informational public meeting to describe the application for the proposed Seneca Cogeneration Power Plant project and LRAPA's permit review process. You are welcome to attend and submit your questions and give us your comments on relevant air quality issues. Additional notice and opportunity to comment will be provided upon completion of LRAPA's review of the permit application, anticipated in Summer 2009.

The Public Meeting will be held on Thursday, April 2, 2009, from 7:00 pm to 9:00pm at the American Red Cross Building located at 862 Bethel Drive, Eugene.
All interested parties may attend the public meeting to receive information and have the opportunity to submit questions regarding the Construction ACDP for Seneca Sustainable Energy, LLC.

Seneca Sustainable Energy, LLC (SSE) is proposing to construct and operate a new cogeneration power plant North of Eugene, Oregon. The project site is located in an industrial zoned property just South of E. Enid Road and East of Highway 99. The power plant will be constructed to the North of and adjacent to the existing sawmill facility owned and operated by Seneca Sawmill Company.

Activity at the facility's cogeneration power plant will consist of a wood fired boiler and steam turbine/generator.

The facility is located in a designated nonattainment area for PM₁₀. More information on this facility will be available at the public meeting.

Written comments can be submitted to LRAPA Permit Coordinator, 1010 Main Street, Springfield, Oregon 97477 or E-Mail: colleen@lrapa.org

ATTACHMENT 2

Recognition of Biomass Power as Carbon Neutral:

Oregon Renewable Portfolio Standard, Senate Bill 838

<http://www.oregon-rps.org/ENERGY/RENEW/docs/sb0838.en.pdf>

Qualifying electricity includes:

- (2) Except as provided in subsection (3) of this section, electricity generated from biomass and biomass byproducts may be used to comply with a renewable portfolio standard, including but not limited to electricity generated from:
- (a) Organic human or animal waste;
 - (b) Spent pulping liquor;
 - (c) Forest or rangeland woody debris from harvesting or thinning conducted to improve forest or rangeland ecological health and to reduce uncharacteristic stand replacing wildfire risk;
 - (d) Wood material from hardwood timber grown on land described in ORS 321.267 (3);
 - (e) Agricultural residues;
 - (f) Dedicated energy crops; and
 - (g) Landfill gas or biogas produced from organic matter, wastewater, anaerobic digesters or municipal solid waste.
- (3) Electricity generated from the direct combustion of biomass may not be used to comply with a renewable portfolio standard if any of the biomass combusted to generate the electricity includes:
- (a) Municipal solid waste; or
 - (b) Wood that has been treated with chemical preservatives such as creosote, pentachlorophenol or chromated copper arsenate.

Organizations that accept the concept of carbon neutrality of biomass power:

U.S. Department of Energy

http://www1.eere.energy.gov/tribalenergy/guide/renewable_energy_basics.html

Environmental Protection Agency

http://www.epa.gov/chp/documents/biomass_chp_catalog_part8.pdf

Energy Information Administration, Annual Energy Outlook 2009

<http://www.eia.doe.gov/neic/press/press312.html>

International Energy Agency

<http://www.ieabioenergy-task38.org/description/task38folder.pdf>

Northwest Power and Conservation Council

<http://www.nwcouncil.org/news/2009/02/p3.pdf>

Western Climate Initiative

<http://www.arb.ca.gov/cc/capandtrade/reporting/meetings/feb18biomasspaper.pdf> Green-e Energy National Standard

http://www.green-e.org/docs/energy/Appendix_D_Green-e_Energy_National_Standard.pdf

Portland General Electric (considers biomass energy to be green power)

<http://greenpoweroregon.com/green-power/renewable-energy-options.aspx>

Bonneville Power Association

http://www.bpa.gov/corporate/pubs/2008-MAY_RenewablesBrochure.pdf

California Renewable Portfolio Standard

<http://www.energy.ca.gov/2009publications/CEC-300-2009-001/CEC-300-2009-001-CMF.PDF>

On September 26, 2006 Governor Schwarzenegger signed Senate Bill 107, which requires California's three major utilities – Pacific Gas & Electric, Southern Edison, and San Diego Gas & Electric – to produce at least 20 percent of their electricity using renewable sources by 2010. Sources of energy that count toward the standard include biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, and tidal current.

Washington Renewable Portfolio Standard

<http://www.secstate.wa.gov/elections/initiatives/text/i937.pdf>

On November 7, 2006, Washington state voters approved ballot initiative 937, setting renewable energy standards for utility companies in the state. The measure requires all utilities serving 25,000 people or more to produce 15 percent of their energy using renewable sources by 2020. ... Sources of energy that count toward the standard include biomass, water, wind, solar, geothermal, landfill gas, wave, ocean, tidal power, gas from sewage treatment facilities, biodiesel fuel that is not derived from crops raised on land cleared from old growth or first-growth forests, and qualifying biomass resources.

ATTACHMENT 3

Renewable Energy Standard	Arizona
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Solar Thermal Process Heat, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Geothermal Heat Pumps, CHP/Cogeneration, Solar Pool Heating (commercial only), Daylighting (non-residential only), Solar Space Cooling, Solar HVAC, Additional technologies upon approval, Anaerobic Digestion, Fuel Cells using Renewable Fuels
Applicable:	Utility
Standard:	15% by 2025
Technology Minimum:	By 2012, at least 30% of the standard must be derived from distributed renewable energy (4.5% of total electricity sales by regulated utilities in 2025)
Credit Trading:	Yes
Date Enacted:	11/14/2006
Effective Date:	06/15/2007
Website:	http://www.azcc.gov/divisions/utilities/electric.asp
Renewables Portfolio Standard	California
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Geothermal Electric, Municipal Solid Waste, Anaerobic Digestion, Small Hydroelectric, Tidal Energy, Wave Energy, Ocean Thermal, Biodiesel, Fuel Cells using Renewable Fuels
Applicable Sectors:	Investor-Owned Utility, Electric Service Providers, Small and Multi-Jurisdictional Utilities and Community Choice Aggregators
Standard:	Legislative mandate to increase the percentage of renewable retail sales by at least 1% per year to reach at least 20% by end of 2010; goal of 33% by end of 2020.
Technology Minimum:	No
Credit Trading:	Tradable RECs may be allowed after the CPUC and Energy Commission conclude that the Western Renewable Energy Generation Information System (WREGIS) is operational and when other criteria are met.
Authority 1:	CA Public Utilities Code § 399.11 et seq.
Date Enacted:	2002 (amended 2003, 2006)
Effective Date:	01/01/2003
Authority 2:	Public Resources Code § 25740 et seq.
Website:	http://www.cpuc.ca.gov/renewables
Renewable Energy Standard	Colorado
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, "Recycled Energy", Anaerobic Digestion, Fuel Cells using Renewable Fuels
Applicable Sectors:	Utility, Municipal Utility, Investor-Owned Utility, Rural Electric Cooperative
Standard:	Investor-owned utilities: 20% by 2020 Electric cooperatives: 10% by 2020 Municipal utilities serving more than 40,000 customers: 10% by 2020
Technology Minimum:	Investor-owned utilities: 4% of RPS requirement from solar-electric generation technologies; half of solar requirement must be located on-site at customers' facilities
Credit Trading:	Yes
Authority 1:	CRS 40-2-124
Date Enacted:	11/02/2004
Effective Date:	12/1/2004

Authority 2:	4 CCR 723-3-3650 et seq.
Renewables Portfolio Standard	Connecticut
Incentive Type:	Renewables Portfolio Standard
Eligible Efficiency Technologies:	CHP/Cogeneration, Custom/Others pending approval
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Fuel Cells, Municipal Solid Waste, CHP/Cogeneration, Low E Renewables, Tidal Energy, Wave Energy, Ocean Thermal
Applicable Sectors:	Utility, Retail Supplier
Standard:	27% by 2020 20% Class I resources by 2020 3% Class I or Class II resources by 2010 4% Class III resources by 2010
Technology Minimum:	Minimum % each year from Class I renewables
Credit Trading:	Yes (NEPOOL-GIS)
Authority 1:	Conn. Gen. Stat. § 16-245a et seq.
Date Enacted:	1998 (subsequently amended)
Effective Date:	07/01/1998
Authority 2:	Public Act No. 07-242, Sec. 40-44
Date Enacted:	06/04/2007
Effective Date:	10/1/2007
Website:	http://www.ct.gov/dpuc/cwp/view.asp?a=3354&q=415186
Renewable Portfolio Standard	Delaware
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal, Fuel Cells using Renewable Fuels
Applicable Sectors:	Utility, Retail Supplier
Standard:	20% by 2019
Technology Minimum:	2.005% photovoltaics by 2019
Credit Trading:	Yes
Authority 1:	26 Del. C. § 351 et seq.
Date Enacted:	07/21/2005 (amended 2007)
Authority 2:	Delaware PSC Order No. 7377, Exhibit B
Date Enacted:	04/17/2008
Effective Date:	06/10/2008
Authority 3:	S.B. 328
Date Enacted:	06/25/2008
Website:	http://dep.sc.delaware.gov/electric/delrps.shtml
Renewables Portfolio Standard	District of Columbia
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Fuel Cells, Municipal Solid Waste, Cofiring, Tidal Energy, Wave Energy, Ocean Thermal
Applicable Sectors:	Utility
Standard:	20% by 2020
Technology Minimum:	0.4% from solar by 2020
Credit Trading:	Yes
Authority 1:	D.C. Code § 34-1431 et seq.
Date Enacted:	04/12/2005
Effective Date:	04/12/2005

Authority 2:	DC PSC Order No 14697
Date Enacted:	01/10/2008
Authority 3:	Council Bill 17-492
Date Enacted:	10/22/2008
Effective Date:	08/04/2008
Website:	http://www.dcpsc.org/customerchoice/whatis/electric/elec_restruc.shtm#Link24
JEA - Clean Power Program	Florida
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/ Other Technologies:	Photovoltaics, Landfill Gas, Wind, Biomass, Municipal Solid Waste
Applicable Sectors:	Municipal Utility
Standard:	7.5% by 2015
Technology Minimum:	No
Website:	http://www.jea.com/community/education/electric/renewable.asp
Renewable Energy Portfolio Goal	Guam
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/ Other Technologies:	Photovoltaics, Wind, Biomass, Wave Energy, Ocean Thermal
Applicable Sectors:	Municipal Utility, Investor-Owned Utility, Rural Electric Cooperative
Standard:	25% of net electricity sales by 2035
Authority 1:	Guam Public Law 29-62
Date Enacted:	03/21/2008
Website:	http://www.guampowerauthority.com/operations/strategicplanning/GPAIRP.html
Renewable Portfolio Standard	Hawaii
Incentive Type:	Renewables Portfolio Standard
Eligible Efficiency Technologies:	Heat pumps, CHP/Cogeneration, Ice storage, Rate-payer funded efficiency programs
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Solar Thermal Process Heat, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Geothermal Heat Pumps, Municipal Solid Waste, CHP/Cogeneration, Hydrogen, Seawater AC, Solar AC, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal, Ethanol, Methanol, Biodiesel, Fuel Cells using Renewable Fuels
Applicable Sectors:	Utility
Standard:	10% by 12/31/2010; 15% by 12/31/2015; and 20% by 12/31/2020 (including existing renewables)
Technology Minimum:	None
Credit Trading:	None
Authority 1:	HRS § 269-91 et seq.
Date Enacted:	06/25/2001 (goal), 06/02/2004 (standard), amended 06/02/2006
Effective Date:	12/31/2003

Website:	http://www.hawaii.gov/dbedt/info/energy/
Renewable Portfolio Standard	Illinois
Incentive Type:	Renewables Portfolio Standard
Eligible Efficiency Technologies:	Yes; specific technologies not identified
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Biodiesel
Applicable Sectors:	Utility
Standard:	25% by 2025
Technology Minimum:	75% of the renewable energy is to be derived from wind
Credit Trading:	Yes
Authority 1:	§ 20 ILCS 3855/1-75
Date Enacted:	08/28/2007
Effective Date:	08/28/2007
Authority 2:	Public Act 095-1027
Date Enacted:	01/12/2009
Alternative Energy Law (AEL)	Iowa
Incentive Type:	Renewables Set Aside
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Municipal Solid Waste, Anaerobic Digestion
Applicable Sectors:	Utility
Terms:	105 MW
Authority 1:	Iowa Code § 476.41 et seq.
Date Enacted:	1983 (amended 1991, 2003)
Authority 2:	IAC 199-15.11(1)
Authority 3:	Iowa Utilities Board Order, Docket No. AEP-07-1
Date Enacted:	11/21/2007
Renewables Portfolio Standard	Maine
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Fuel Cells, Municipal Solid Waste, CHP/Cogeneration, Tidal Energy, Other Distributed Generation Technologies
Applicable Sectors:	Utility
Standard:	Class I: 10% new resources by 2017 (and for each year thereafter) Class II: 30% by 2000
Technology Minimum:	No
Credit Trading:	Yes (through NEPOOL GIS)
Authority 1:	35-A M.R.S. § 3210
Date Enacted:	1999:
Effective Date:	03/2000
Authority 2:	35-A M.R.S. § 3210-C
Date Enacted:	06/01/2006

Authority 3:	CMR 65-407-311
Date Enacted:	10/22/2007
Effective Date:	11/06/2007
Renewable Energy Portfolio Standard	Maryland
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Municipal Solid Waste, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal, Fuel Cells using Renewable Fuels
Applicable Sectors:	Utility, Retail Electricity Suppliers
Standard:	Tier 1: 20% in 2022 and beyond; Tier 2: 2.5% in 2006 through 2018
Technology Minimum:	2% solar electric in 2022 as part of the Tier 1 requirement. Suppliers also receive 110% - 120% credit for wind and 110% credit for methane during a specified timeframe
Credit Trading:	Yes
Authority 1:	Md. Public Utility Companies Code § 7-701 et seq. (as amended)
Date Enacted:	5/26/2004
Effective Date:	01/01/2004 (amended 2007 and 2008)
Authority 2:	COMAR 20.61.01 et seq.
Effective Date:	05/05/2008 (most recent revision)
Authority 3:	H.B. 375
Date Enacted:	04/24/2008
Effective Date:	01/01/2011
Authority 4:	S.B. 348
Date Enacted:	04/24/2008
Effective Date:	10/01/2008
Website:	http://webapp.psc.state.md.us/intranet/ElectricInfo/home_new.cfm
Renewable Portfolio Standard	Massachusetts
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Fuel Cells, Geothermal Heat Pumps, Municipal Solid Waste, CHP/Cogeneration, Anaerobic Digestion, Small Hydroelectric, Tidal Energy, Wave Energy, Ocean Thermal, Renewable Fuels, Fuel Cells using Renewable Fuels, Other Distributed Generation Technologies
Applicable Sectors:	Utility
Standard:	Class I standard: 4% of sales by 12/31/2009, and an additional 1% of sales each year thereafter, with no stated expiration date Class II standard: 3.6% of annual sales Alternative Energy Portfolio standard: 0.75% of sales by 12/31/2009, increasing to 5% of sales by 2020, and an additional 0.25% of sales each year thereafter
Technology Minimum:	To be determined by DOER
Credit Trading:	Yes
Authority 1:	M.G.L. ch. 25A, § 11F

Date Enacted:	11/25/1997
Effective Date:	04/2002
Expiration Date:	Not specified
Authority 2:	225 CMR 14.00 et seq.
Date Enacted:	12/31/2008
Effective Date:	01/01/2009
Website:	http://www.state.ma.us/doer/rps/index.htm
Lansing Board of Water and Light - Renewables Portfolio Goal	Michigan
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric
Applicable Sectors:	Municipal Utility
Standard:	7% by 2016
Authority 1:	Resolution 2007-1-9
Date Enacted:	01/23/2007
Website:	http://www.lbw.com/LansingsEnergyFuture/renewable_energy.html
Renewable Energy Standard	Michigan
Incentive Type:	Renewables Portfolio Standard
Eligible Efficiency Technologies:	Yes; specific technologies not identified
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Municipal Solid Waste, CHP/Cogeneration, Coal-Fired w/CCS, Gasification, Anaerobic Digestion, Tidal Energy, Wave Energy
Applicable Sectors:	Municipal Utility, Investor-Owned Utility, Rural Electric Cooperative, Retail Supplier
Standard:	All utilities: 10% by 2015 Detroit Edison: 300 MW of new renewables by 2013 and 600 MW by 2015 Consumers Energy: 200 MW of new renewables by 2013 and 500 MW by 2015
Credit Trading:	Yes
Authority 1:	Public Act 295 (2008)
Date Enacted:	10/06/2008
Effective Date:	10/06/2008
Renewables Portfolio Standard	Minnesota
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Municipal Solid Waste, Hydrogen, Co-Firing, Anaerobic Digestion
Applicable Sectors:	Utility, Municipal Utility, Investor-Owned Utility
Standard:	Xcel Energy: 30% by 2020 Other utilities: 25% by 2025
Technology Minimum:	Of the 30% renewables required of Xcel Energy by 2020, "at least" 25% must be generated by wind power and "the remaining" 5% by other eligible renewables
Credit Trading:	Yes
Authority 1:	Minn. Stat. § 216B.1691

Date Enacted:	02/22/2007 (amended May 2007)
Effective Date:	02/22/2007
Authority 2:	PUC Order, Docket E-999/CI-04-1616
Date Enacted:	12/18/2007
Effective Date:	12/18/2007
Authority 3:	PUC Order, Docket E-999/CI-04-1616
Date Enacted:	12/03/2008
Effective Date:	2007 Compliance Year
Xcel Energy Wind and Biomass Generation Mandate	Minnesota
Incentive Type:	Renewables Set Aside
Eligible Renewable/Other Technologies:	Wind, Biomass
Applicable Sectors:	Utility
Terms:	825 MW wind by 12/31/2002; 110 MW biomass
Authority 1:	Minn. Stat. § 216B.2423 et seq.
Date Enacted:	07/01/1997
Effective Date:	07/01/1997
Expiration Date:	12/31/2010
Authority 2:	S.F. 3337 (2008)
Date Enacted:	05/12/2008
Columbia - Renewables Portfolio Standard	Missouri
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Solar Thermal Process Heat, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric
Applicable Sectors:	Utility
Standard:	2% by 12/31/07; 15% by 12/31/22
Technology Minimum:	Goal of 1% solar
Authority 1:	Columbia Code of Ordinances, §27-106
Date Enacted:	11/02/2004
Website:	http://www.qocolumbiamo.com/WaterandLight/Electric/ElectricSupplyInformation.php
Renewable Electricity Standard	Missouri
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Anaerobic Digestion, Small Hydroelectric, Fuel Cells using Renewable Fuels
Applicable Sectors:	Investor-Owned Utility
Standard:	15% by 2021
Technology Minimum:	0.3% solar-electric by 2021
Credit Trading:	Yes, rules to be determined by the PSC
Authority 1:	Proposition C (2008)
Date Enacted:	11/04/2008

Effective Date:	11/04/2008
Website:	http://www.renewmo.org
Renewable Resource Standard	Montana
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Anaerobic Digestion, Fuel Cells using Renewable Fuels
Applicable Sectors:	Investor-Owned Utility, Retail Supplier
Standard:	5% in 2008; 10% in 2010; 15% in 2015
Technology Minimum:	None
Credit Trading:	Yes
Authority 1:	MCA 69-3-2001 et seq.
Date Enacted:	04/2005
Authority 2:	MONT. ADMIN. R. 38.5.8301
Effective Date:	06/02/2006
Energy Portfolio Standard	Nevada
Incentive Type:	Renewables Portfolio Standard
Eligible Efficiency Technologies:	Yes; specific technologies not identified
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Solar Thermal Process Heat, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Municipal Solid Waste, Waste Tires (using microwave reduction), Geothermal Hot Water District Heating Systems, Solar Pool Heating, Anaerobic Digestion, Biodiesel
Applicable Sectors:	Investor-Owned Utility
Standard:	6% in 2005, rising to 20% by 2015
Technology Minimum:	5% of the energy portfolio must be solar
Credit Trading:	Yes
Authority 1:	NRS 704.7801 et seq.
Date Enacted:	1997
Authority 2:	NAC 704.8831 et seq.
Effective Date:	2002
Authority 3:	LCB File R167-05 (Revised Regulations)
Effective Date:	2/23/2006
Website:	http://pucweb1.state.nv.us/PUCN/RenewableEnergy.aspx
Renewables Portfolio Standard	New Hampshire
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Geothermal Electric, Hydrogen, Anaerobic Digestion, Small Hydroelectric, Tidal Energy, Wave Energy, Ocean Thermal, Ethanol, Biodiesel
Applicable Sectors:	Utility, (all electricity suppliers, except municipal suppliers)
Standard:	23.8% by 2025
Technology Minimum:	0.3% solar electric 6.5% existing biomass 1.0% existing small hydropower
Credit Trading:	Yes

Authority 1:	New Hampshire Statutes, Chapter 362-F
Date Enacted:	05/11/2007
Effective Date:	07/10/2007
Authority 2:	N.H. Admin. Rules, Puc 2500
Effective Date:	06/03/2008
Renewables Portfolio Standard	New Jersey
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Resource-Recovery Facilities approved by the DEP, Anaerobic Digestion, Tidal Energy, Wave Energy, Fuel Cells using Renewable Fuels
Applicable Sectors:	Utility
Standard:	22.5% by 2021 (2.12% from solar; 17.88% from other Class I renewables; 2.5% from Class II or additional Class I renewables)
Technology Minimum:	2.12% of retail electricity supply must be generated using solar by 2021 (approximately 1,500 MW solar)
Credit Trading:	Yes
Authority 1:	N.J. Stat. § 48:3-49 et seq.
Date Enacted:	1999
Authority 2:	N.J.A.C. 14:8-2.1 et seq.
Date Enacted:	2001; amendments adopted 2004, 2006
Effective Date:	09/01/2001
Authority 3:	NJ BPU SACP Board Order
Date Enacted:	09/12/2007
Effective Date:	06/01/2008
Authority 4:	S.B. 2936
Date Enacted:	01/13/2008
Effective Date:	07/11/2008
Authority 5:	NJ BPU Special Adoption: Amendments to the RPS
Date Enacted:	05/08/2008
Effective Date:	05/23/2008
Expiration Date:	11/23/2009
Website:	http://njcleanenergy.com/renewable-energy/program-updates/solar-transition/solar-transition
Renewables Portfolio Standard	New Mexico
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Zero emission technology with substantial long-term production potential, Anaerobic Digestion, Fuel Cells using Renewable Fuels
Applicable Sectors:	Investor-Owned Utility, Rural Electric Cooperative
Standard:	Investor-owned utilities: 20% by 2020; Rural electric cooperatives: 10% by 2020
Technology Minimum:	For IOUs only by 2020: 20% of RPS from solar (4% of total sales) 20% of RPS from wind (4% of total sales) 10% of RPS from geothermal and biomass (2% of total sales) 3% of RPS from distributed renewables (0.6% of total sales)
Credit Trading:	Yes

Authority 1:	NMAC 17.9.572
Date Enacted:	08/07/2007
Effective Date:	09/01/2007
Authority 2:	N.M. Stat. § 62-15-34 et seq.
Date Enacted:	03/05/2007
Effective Date:	07/01/2007
Authority 3:	N.M. Stat. § 62-16-1 et seq.
Date Enacted:	03/2004
Website:	http://www.nmprc.state.nm.us/renewable.htm
Long Island Power Authority - Renewable Electricity Goal	New York
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Fuel Cells, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal, Ethanol, Methanol, Biodiesel
Applicable Sectors:	Utility
Standard:	25% by 2013
Authority 1:	LIPA 2004-2013 Energy Plan
Date Enacted:	06/23/2004
Website:	http://www.lipower.org/cei
Renewable Portfolio Standard	New York
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Fuel Cells, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal, Ethanol, Methanol, Biodiesel
Applicable Sectors:	Investor-Owned Utility
Standard:	24% by 2013
Technology Minimum:	2% of total incremental RPS requirement is set-aside for the Customer-Sited Tier, for a total of 0.1542% of customer-sited generation*
Authority 1:	NY PSC Order, Case 03-E-0188
Date Enacted:	09/24/2004
Effective Date:	09/24/2004
Authority 2:	NY PSC Order, Case 03-E-0188
Date Enacted:	04/14/2005
Effective Date:	04/14/2005
Website:	http://www.dps.state.ny.us/03e0188.htm
Renewable Energy and Energy Efficiency Portfolio Standard	North Carolina
Incentive Type:	Renewables Portfolio Standard
Eligible Efficiency Technologies:	CHP/Cogeneration, Yes; specific technologies not identified
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Solar Thermal Process Heat, Photovoltaics, Landfill Gas, Wind, Biomass, Geothermal Electric, Hydrogen, Anaerobic Digestion, Small Hydroelectric, Tidal Energy, Wave Energy
Applicable Sectors:	Municipal Utility, Investor-Owned Utility, Rural Electric Cooperative
Standard:	12.5% of 2020 retail sales by 2021 for investor-owned utilities; 10% of 2017 retail sales by 2018 for electric cooperatives and municipal utilities
Technology Minimum:	0.2% solar electricity and thermal energy by 2018; 0.2% swine waste by 2018; 900,000 MWh of poultry waste by 2014

Authority 1:	N.C. Gen. Stat. § 62-2 et seq.
Date Enacted:	08/20/2007
Effective Date:	01/01/2008
Authority 2:	NCUC Order, Docket No. E-100, Sub 113
Date Enacted:	02/29/2008
Effective Date:	02/29/2008
Renewable and Recycled Energy Objective	North Dakota
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Hydrogen, Electricity produced from Waste Heat
Applicable Sectors:	Utility
Standard:	10% by 2015 (objective)
Credit Trading:	Yes (M-RETS)
Authority 1:	ND Century Code 49-02-24 et seq.
Date Enacted:	03/23/2007
Effective Date:	08/01/2007
Authority 2:	N.D. Admin. Code 69-09-08
Effective Date:	07/01/2006
Authority 3:	ND PSC Order Case No. PU-07-318
Date Enacted:	06/04/2008
Alternative Energy Resource Standard	Ohio
Incentive Type:	Renewables Portfolio Standard
Eligible Efficiency Technologies:	CHP/Cogeneration, Others Not Specified
Eligible Renewable/Other Technologies:	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, Waste Heat, Energy Storage, Clean Coal, Advanced Nuclear , Anaerobic Digestion, Microturbines
Applicable Sectors:	Electric Distribution Utilities and Electric Service Companies
Standard:	25% alternative energy resources by 2025, at least half of which must be generated from renewable energy resources by 12/31/2024
Technology Minimum:	0.5% from solar energy resources by 12/31/2024
Credit Trading:	Yes (rules to be developed by PUCO)
Authority 1:	S.B. 221
Date Enacted:	05/01/2008
Effective Date:	01/01/2009
Website:	http://www.puco.ohio.gov/PUCO/Rules/Rule.cfm?id=8724
Renewable Portfolio Standard	Oregon
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Hydrogen, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal
Applicable Sectors:	Utility, Retail Supplier
Standard:	Large utilities: 25% by 2025 Small utilities: 10% by 2025 Smallest utilities: 5% by 2025
Credit Trading:	Yes

Authority 1:	ORS § 469A
Date Enacted:	06/06/2007
Effective Date:	01/01/2007
Authority 2:	OAR 330-160-0005 to 330-160-0030
Effective Date:	09/03/2008
Website:	http://www.oregon-rps.org/
Alternative Energy Portfolio Standard	Pennsylvania
Incentive Type:	Renewables Portfolio Standard
Eligible Efficiency Technologies:	Yes; specific technologies not identified
Eligible Renewable/Other Technologies:	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
Applicable Sectors:	Investor-Owned Utility, Retail Supplier
Standard:	18% during compliance year 2020-2021 (8% Tier I and 10% Tier II)
Technology Minimum:	Solar PV set-aside of 0.5% for June 1, 2020 and thereafter
Credit Trading:	Yes
Authority 1:	73 P.S. § 1648.1 et seq.
Date Enacted:	11/30/2004 (amended 2007)
Effective Date:	02/28/2005
Authority 2:	PUC Rulemaking Order L-00060180
Date Enacted:	09/25/2008
Effective Date:	11/22/2008
Website:	http://www.puc.state.pa.us/electric/electric_alt_energy.aspx
Renewable Energy Standard	Rhode Island
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal, Biodiesel, Fuel Cells using Renewable Fuels
Applicable Sectors:	Utility, Retail Supplier
Standard:	16% by 2020
Technology Minimum:	No
Credit Trading:	Yes
Authority 1:	R.I. Gen. Laws § 39-26-1 et seq.
Date Enacted:	6/29/2004
Effective Date:	6/29/2004
Authority 2:	CRIR 90-060-015
Effective Date:	7/25/2007
Website:	http://www.ripuc.org/utilityinfo/res.html
Renewable and Recycled Energy Objective	South Dakota

Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Municipal Solid Waste, Hydrogen, Electricity Produced from Waste Heat , Anaerobic Digestion
Applicable Sectors:	Municipal Utility, Investor-Owned Utility, Rural Electric Cooperative, Retail Supplier
Standard:	10% by 2015 (objective)
Credit Trading:	Yes, rules not yet developed
Authority 1:	HB 1123
Date Enacted:	02/21/2008
Authority 2:	SDCL 49-34A-94 et seq.
Date Enacted:	02/28/2006 (amended 2008)
Authority 3:	HB 1272
Date Enacted:	03/17/2008
Austin - Renewables Portfolio Standard	Texas
Incentive Type:	Renewables Portfolio Standard
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Tidal Energy, Wave Energy
Applicable Sectors:	Municipal Utility, (Austin Energy)
Standard:	5% by 12/31/2004; 30% by 01/01/2020
Technology Minimum:	At least 100 MW from solar by 2020
Authority 1:	City Council Resolution No. 990211-36
Date Enacted:	02/11/1999
Expiration Date:	12/31/2004
Authority 2:	City Council Resolution No. 030925-2
Date Enacted:	09/25/2003
Expiration Date:	01/01/2020
Authority 3:	Austin Energy's Ten-Year Strategic Plan
Date Enacted:	12/04/2003
Authority 4:	City Council Resolution No. 20070215-023
Date Enacted:	02/15/2007
Website:	http://www.ci.austin.tx.us/acpp/acpp.htm

