

HYDROPOWER IN RENEWABLE PORTFOLIO STANDARDS: OREGON IN FOCUS

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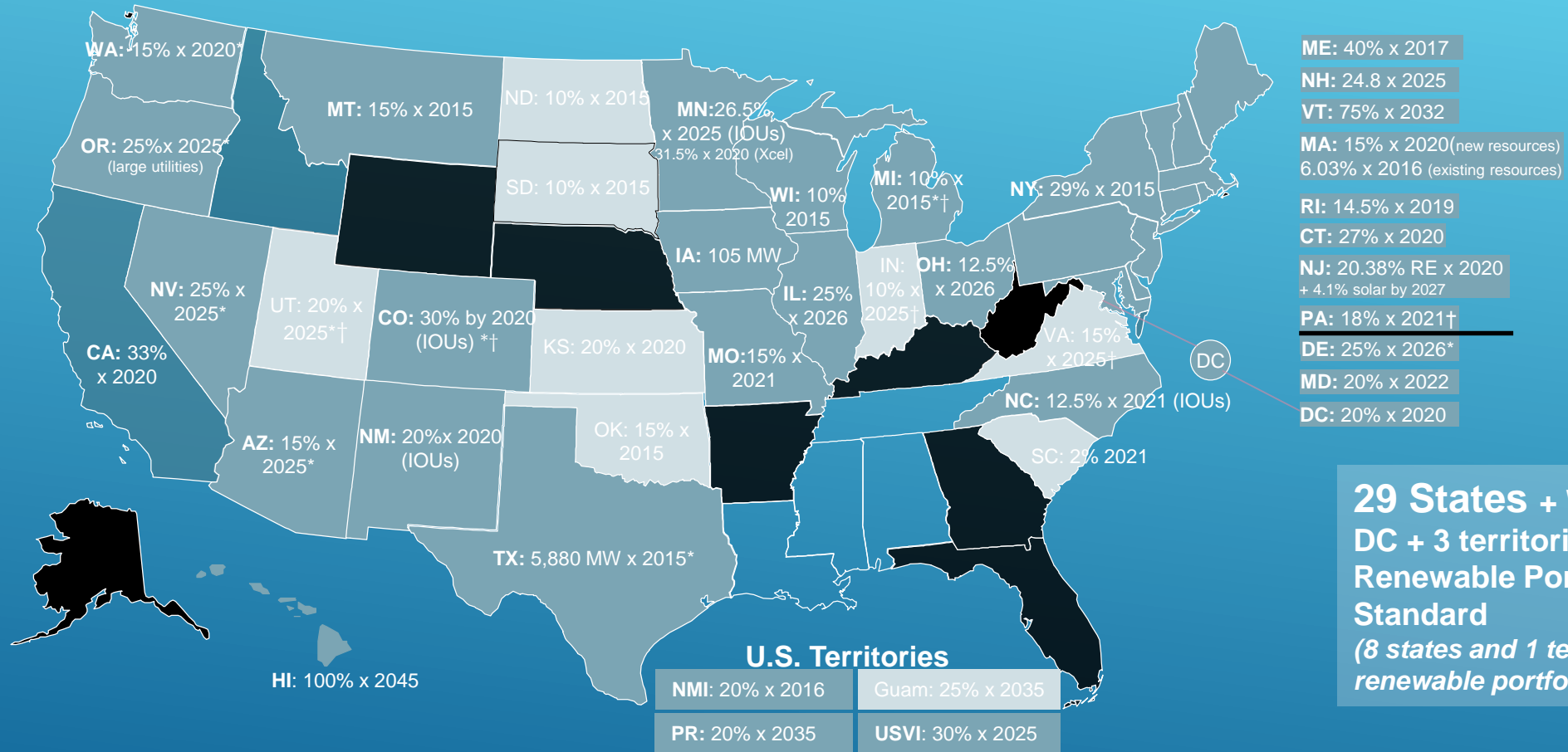
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Renewable Portfolio Standard Policies

www.dsireusa.org / June 2015



29 States + Washington DC + 3 territories have a Renewable Portfolio Standard
(8 states and 1 territories have renewable portfolio goals)

Renewable portfolio standard
 Renewable portfolio goal
* Extra credit for solar or customer-sited renewables
† Includes non-renewable alternative resources














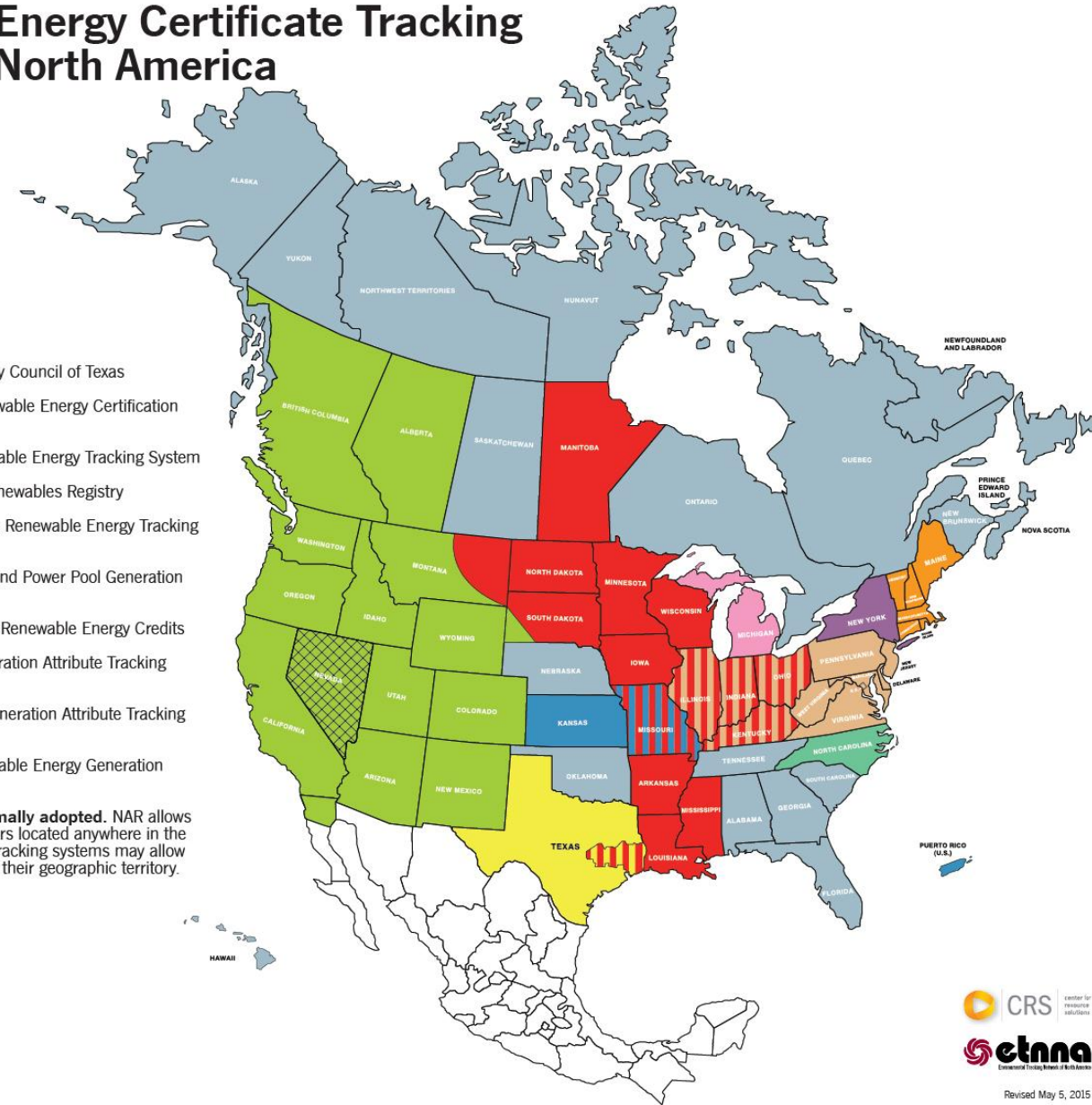
RENEWABLE PORTFOLIO STANDARDS

- ▶ One megawatt hour = one Renewable Energy Certificate
- ▶ Most RECs are tracked by regional databases to ensure there is no double counting and to make RECs tradable
- ▶ Oregon's RECs are tracked using the Western Renewable Energy Generation Information System

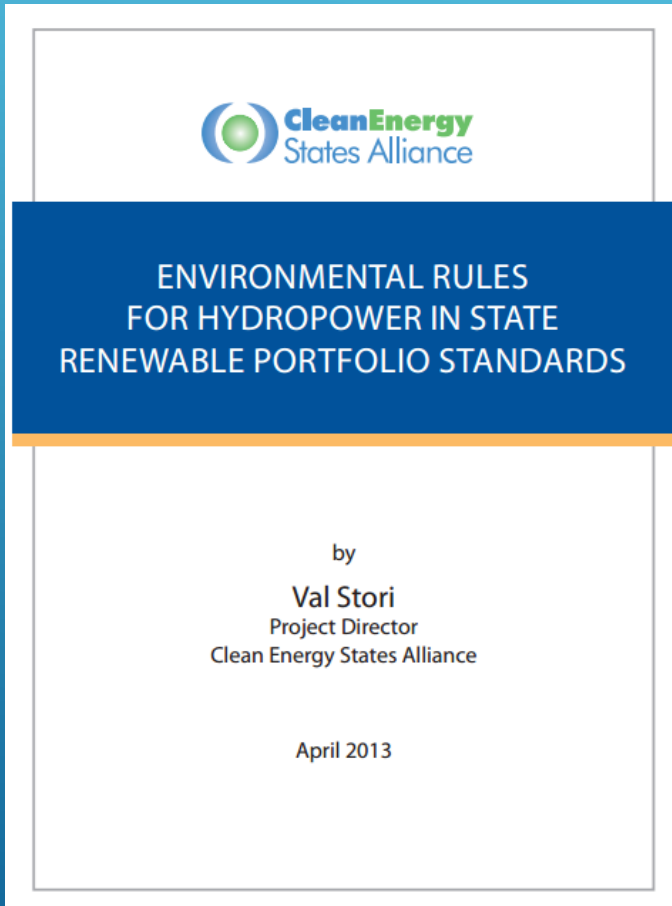
Renewable Energy Certificate Tracking Systems in North America

KEY

-  **ERCOT:** Electric Reliability Council of Texas
-  **MIRECS:** Michigan Renewable Energy Certification System
-  **M-RETS:** Midwest Renewable Energy Tracking System
-  **NAR:** North American Renewables Registry
-  **NC-RETS:** North Carolina Renewable Energy Tracking System
-  **NEPOOL-GIS:** New England Power Pool Generation Information System
-  **NVTREC:** Nevada Tracks Renewable Energy Credits
-  **NYGATS:** New York Generation Attribute Tracking System (in development)
-  **PJM-GATS:** PJM EIS's Generation Attribute Tracking System
-  **WREGIS:** Western Renewable Energy Generation Information System
-  **No tracking system formally adopted.** NAR allows registration from generators located anywhere in the U.S. and Canada. Other tracking systems may allow registrations from outside their geographic territory.



HYDROPOWER IN RENEWABLE PORTFOLIO STANDARDS



- ▶ States and territories that allow hydropower under certain conditions to be eligible for their RPS include:
 - ▶ Arizona, California, Colorado, Connecticut, Delaware, the District of Columbia, Hawaii, Illinois, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Texas, Washington, Wisconsin, Puerto Rico
- ▶ For more specific details about hydropower in individual states and territories visit:

<http://www.cesa.org/assets/2013-Files/RPS/Environmental-Rules-for-Hydropower-in-State-RPS-April-2013-final-v2.pdf>

TYPES OF ELIGIBLE HYDROPOWER

- ▶ Hydropower eligible for Renewable Portfolio standards varies by states
- ▶ Examples include:
 - ▶ Outside of protected areas
 - ▶ Low Impact Hydropower Certified
 - ▶ Hydropower with capacity and age limitations
 - ▶ In-conduit hydropower
 - ▶ Incremental Hydropower efficiency upgrades
 - ▶ Tidal and Wave



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OREGON'S RENEWABLE PORTFOLIO STANDARD

- ▶ The Oregon Legislature enacted the RPS in 2007 (SB 838). Under the law, Oregon utilities must deliver a percentage of their electricity from eligible renewable resources by 2025, with interim standards for large utilities.
- ▶ The goal is to stimulate development of new renewable resources. Energy facilities developed before January 1, 1995 are not eligible.*
- ▶ Renewable Energy Certificates are tracked in a regional database covering the Western Electricity Coordinating Council

*Certain older biomass & municipal solid waste facilities qualify after 2025.



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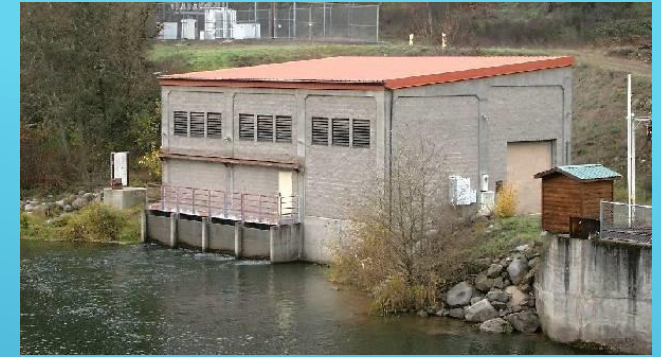
UTILITY REQUIREMENTS

RPS Class	Share of State Sales	Affected Utilities and Electricity Service Suppliers	Standard by Year			
			2011	2015	2020	2025
Large Utilities	> 3%	Eugene Water & Electric Pacific Power Portland General Electric	5%	15%	20%	25%
Smaller Utilities	< 3% but ≥ 1.5%	Central Lincoln PUD McMinnville Water & Light Umatilla Electric Coop Springfield Utility Board Clatskanie PUD	No Interim Obligations			10%
Smallest Utilities	< 1.5%	Other consumer-owned utilities and Idaho Power	No Interim Obligations			5%
Electricity Service Suppliers	Any	All	Aggregate obligation, as if each of the customers served by ESS were served by the customer's distribution utility			

OREGON RPS ELIGIBLE RESOURCES

Wind	Yes
Solar photovoltaic and solar thermal	Yes
Wave, tidal and ocean thermal	Yes
Geothermal	Yes
Biomass Not treated with chemical preservatives	Organic human or animal waste
	Spent pulping liquor
	Forest or rangeland woody debris from harvesting or thinning conducted to improve forest or rangeland ecological health and to reduce wildfire risk
	Wood material from hardwood timber grown on land described in ORS 321.267(3)
	Agricultural residues
	Dedicated energy crops
	Landfill gas or biogas produced from organic matter, waste water, anaerobic digesters or municipal solid waste
Hydroelectric	Facilities constructed after Jan. 1, 1995, located outside of protected areas
	Electricity attributable to an efficiency upgrade
	Certified by Low Impact Hydropower Institute
Municipal Solid Waste	Yes
Hydrogen Gas	Anhydrous ammonia used as a fuel source at the hydrogen power station

HYDROPOWER IN THE OREGON RPS



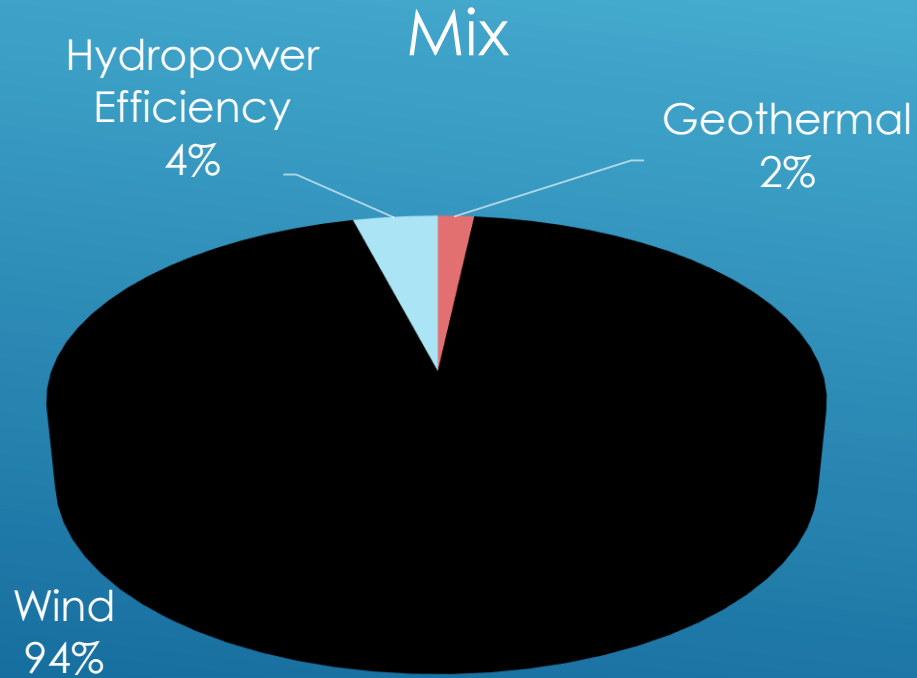
- ▶ **Hydroelectric efficiency upgrades** made after Jan. 1, 1995. For BPA facilities, the portion that is attributable to Oregon's share of the electricity generation may be used for RPS compliance.
- ▶ **Low-impact hydroelectric projects** certified by the Low-Impact Hydropower Institute. Each year a utility can use up to 50 aMW of generation from certified facilities owned by Oregon utilities, plus 40 aMW from certified facilities located in Oregon and owned by others (total of 90 aMW or 788,400 MWh).
- ▶ **New hydroelectric projects** operational after Jan. 1, 1995, and located outside protected areas designated by the Northwest Power and Conservation Council as of July 23, 1999, or any area protected under the federal Wild and Scenic Rivers Act or the Oregon Scenic Waterways Act.



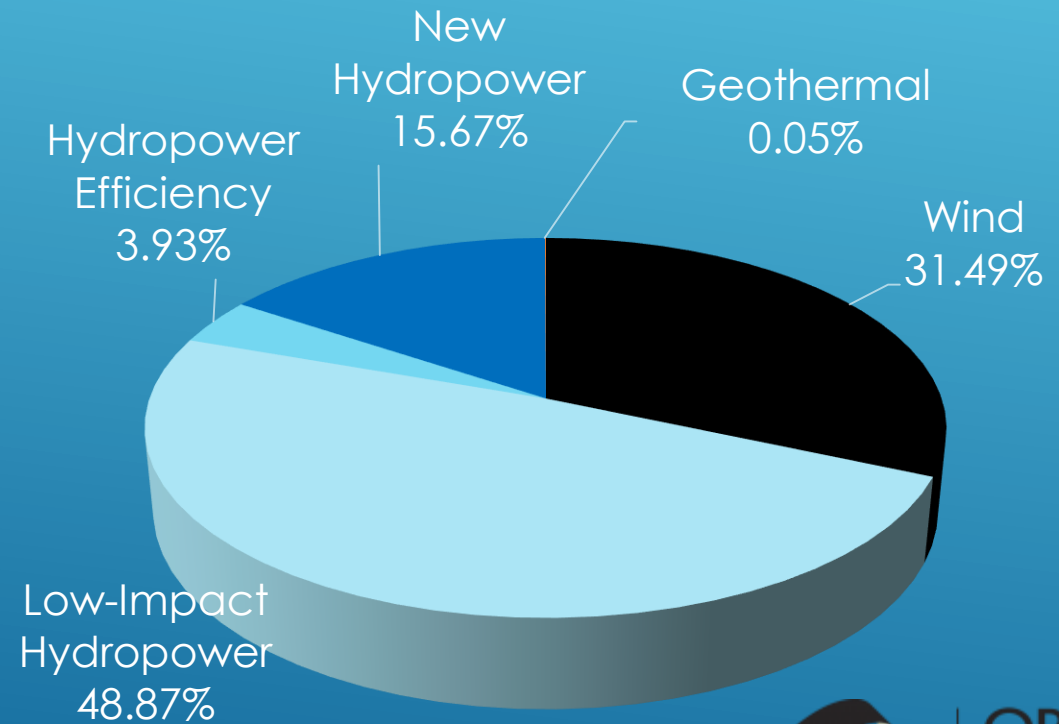
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INVESTOR OWNED UTILITIES

PacifiCorp's 2012 RPS Compliance Resource Mix



PGE's 2012 RPS Compliance Resource Mix



OREGON RPS-CERTIFIED FACILITIES

Full list at http://www.oregon.gov/energy/RENEW/Pages/RPS_home.aspx

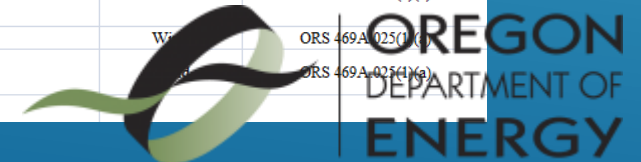
Oregon Renewable Portfolio Standard (RPS) - Approved Facilities

(Current as of May 21, 2013)

Key Terms

- 1.) Western Renewable Energy Generation Information System (WREGIS) - is an independent renewable energy tracking system for the region covered by the Western Electricity Coordinating Council (WECC). WREGIS tracks and uploads electric generation information for all registered facilities and creates Renewable Energy Certificates (RECs) for this generation. To be eligible for the Oregon RPS a facility must be registered in WREGIS.
- 2.) Approved - a facility that has been registered in the WREGIS tracking system and has been certified by the Oregon Department of Energy as meeting all eligibility requirements for the Oregon RPS. RECs produced from approved facilities are eligible to be used by Oregon utilities to demonstrate compliance with the Oregon RPS.
- 3.) First Eligible Vintage Date - the first date from which power generated at a facility can be considered eligible for the Oregon RPS. RECs sourced from these facilities have an eligible vintage date in WREGIS of 08/2012. However, generation from these facilities is eligible for the Oregon RPS beginning 01/2007. RECs sourced from these facilities have an eligible vintage date in WREGIS of 12/2012. However, generation from these facilities is eligible for the Oregon RPS beginning 01/2007.
- 4.) Eligible Thru - date which Oregon eligibility expires unless otherwise renewed. In order to maintain the integrity of the RPS the Oregon Department of Energy requires periodic facility reviews to ensure a facility still meets all Oregon RPS requirements.
- 5.) Date of Certification - date which the Oregon Department of Energy approves a facility as eligible for the RPS. Generation that is registered in WREGIS and has a vintage date prior to Department approval may be used to demonstrate compliance with the Oregon RPS.

WREGIS ID	Oregon RPS ID	Eligible Thru	First Eligible Vintage Date	Month Oregon Certified	Generator Plant Name	Account Holder	State/ Province	Commercial Operation Date	Name Plate Capacity (MW)	Hydroelectric Efficiency Increment	Fuel Type	Statutory Authority
W1890	11h2o024or	01/2016	01/2011	09/2011	Central Oregon Siphon Power Project - SPP	Central Oregon Irrigation District	OR	8/1/1989	5.4		Hydroelectric Water	ORS 469A.020(4)(b)
W2240	11sun028or	01/2014	05/2011	09/2011	PAC OSIP SO 2	PacifiCorp	OR	5/20/2011	0.265		Solar	ORS 469A.025(1)(b)
W1876	11wnd012wa	01/2014	11/2010	11/2011	Kittitas Valley Wind Farm	Sagebrush Power Partners, LLC	WA	12/13/2010	100.7		Wind	ORS 469A.025(1)(a)
W1886	11fkg006or	01/2014	10/2010	11/2011	Dry Creek Landfill Gas to Energy Project	Oregon Environmental Industries, LLC	OR	7/17/2007	3.2		Biogas	ORS 469A.025(2)(g)
W2392	12sun001or	01/2015	09/2011	02/2012	PAC OSIP SO3	PacifiCorp	OR	9/6/2011	0.243		Solar	ORS 469A.025(1)(b)
W2391	12sun002or	01/2015	09/2011	02/2012	PAC OSIP CO2	PacifiCorp	OR	9/13/2011	0.043		Solar	ORS 469A.025(1)(b)
W2326	12sun003or	01/2015	07/2011	02/2012	PAC OSIP WV2	PacifiCorp	OR	7/9/2011	0.242		Solar	ORS 469A.025(1)(b)
W2448	12sun004or	01/2015	10/2011	02/2012	Joseph Community Solar	PacifiCorp	OR	10/28/2011	0.425		Solar	ORS 469A.025(1)(b)
W2611	12sun005or	01/2015	12/2011	03/2012	PAC OSIP EO2	PacifiCorp	OR	12/20/2011	0.025		Solar	ORS 469A.025(1)(b)
W1898	12h2o001or	01/2014	01/2011	04/2012	Copper Dam Plant	Farmers Irrigation District	OR	1/1/1986	3		Hydroelectric Water	ORS 469A.020(4)(b)
W1910	12h2o002or	01/2014	01/2011	04/2012	Peters Drive Dam	Farmers Irrigation District	OR	11/1/1987	1.8		Hydroelectric Water	ORS 469A.020(4)(b)
W2104	12alt001wa	01/2015	04/2011	04/2012	Box Canyon - Box Canyon Unit 4	Pend Oreille PUD	WA	8/1/1955	22.5	Max 3.5%, subject to 20 MW cap	Hydro Efficiency	ORS 469A.025(4)(b)
W2690	12sun006or	01/2015	01/2012	04/2012	PAC OSIP SO4	PacifiCorp	OR	1/9/2012	0.248		Solar	ORS 469A.025(1)(b)
W2775	12bGs001id	01/2015	02/2012	06/2012	Double A Dairy Digester	AgPower Jerome, LLC	ID	1/1/2012	4.5		Biogas	ORS 469A.025(2)(a)
W2659	12fkg001id	01/2015	03/2012	07/2012	Fighting Creek LFGTE Plant	Kootenai Electric Cooperativ	ID	3/5/2012	3.2		Biogas	ORS 469A.025(2)(g)
W1202	12wnd007or	01/2015	01/2015	08/2012	Four Corners Windfarm - Four Corners Windfarm LLC	Exelon Corporation	OR	9/30/2009	10		Wind	ORS 469A.025(1)(a)
W1203	12wnd001or	01/2015	01/2015	08/2012	Four Mile Canyon Windfarm - Four Mile Canyon Windfarm LLC	Exelon Corporation	OR	9/30/2009	10		Wind	ORS 469A.025(1)(a)
W1204	12wnd004or	01/2015	01/2015	08/2012	Big Top - Big Top LLC	Exelon Corporation	OR	7/23/2009	1.65		Wind	ORS 469A.025(1)(a)
W1205	12wnd009or	01/2015	01/2015	08/2012	Butter Creek Power LLC - Butter Creek Power LLC	Exelon Corporation	OR	7/23/2009	4.95		Wind	ORS 469A.025(1)(a)
					Oregon Trail Windfarm LLC -							



QUESTIONS?

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