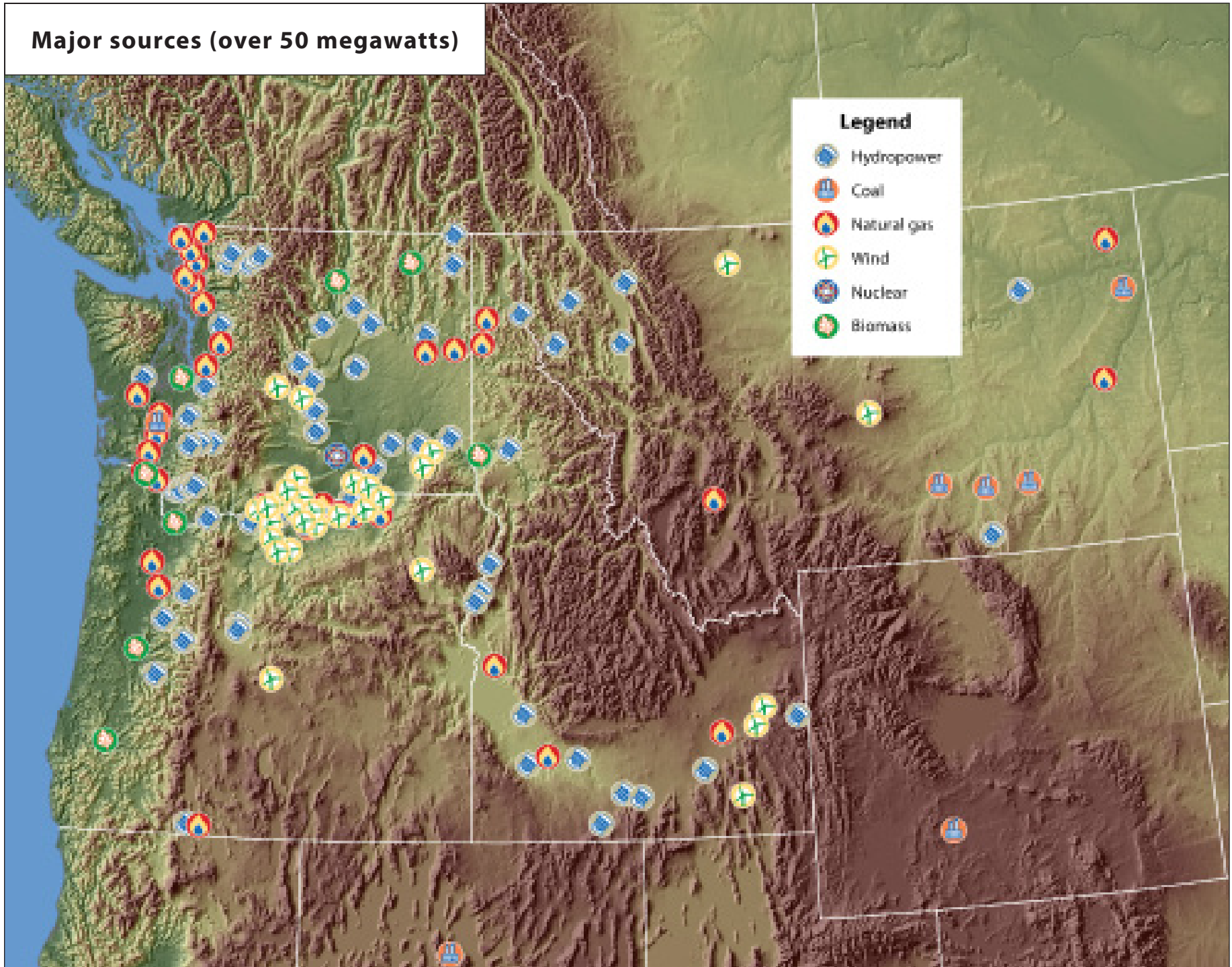


MARCH 2011

# Electricity Generation for the Pacific Northwest

also see interactive version at [www.nwcouncil.org/maps/power](http://www.nwcouncil.org/maps/power) >>

Major sources (over 50 megawatts)



# Major Power Plants of the Pacific Northwest

From the late 1800s, when the first hydropower turbines were installed on Northwest streams, into the 1960s, water power supplemented by small steam plants fueled by coal, oil, and wood, provided most of the electricity in the Pacific Northwest. Then, as population increased and the regional economy grew, demand for electricity surpassed the output of the dams. Other types of power plants were built, steadily adding to the region's electricity supply. Primarily, these were baseload coal and nuclear steam-electric plants and small peaking combustion turbines fueled by natural gas. Later, the system was further expanded by the addition of highly efficient natural gas combined-cycle plants. Recently, large numbers of wind turbine generators have been added to the system.







Electricity in the Northwest is still dominated by hydropower, which accounts for about 58 percent of the installed capacity. The amount of hydropower varies with water conditions. Most of the region's hydropower is generated on the Columbia River and its tributaries, but there are also dams on other rivers, particularly

In this publication, the output of power plants is expressed in megawatts of capacity. A megawatt is 1 million watts. Capacity is the maximum power that can be produced by a power plant at specified times under specified conditions. One megawatt, provided continuously for one year, is enough electricity to power approximately 700 homes.

those that empty into Puget Sound. In years when precipitation and runoff are normal, the region's hydroelectric system can provide about 16,000 average megawatts of electricity (an average megawatt is one million watts supplied continuously for a period of one year). In approximate number, the amount can be as much as 20,000 in a wet year or as little as 12,000 in a dry year. About 12 percent of the region's electricity capacity is at plants that burn coal, with plants that burn natural gas providing 16 percent. The region's single operating nuclear plant, located in eastern Washington, accounts for about 2 percent of the region's capacity. In all, the region's power supply capacity totals about 59,000 megawatts.

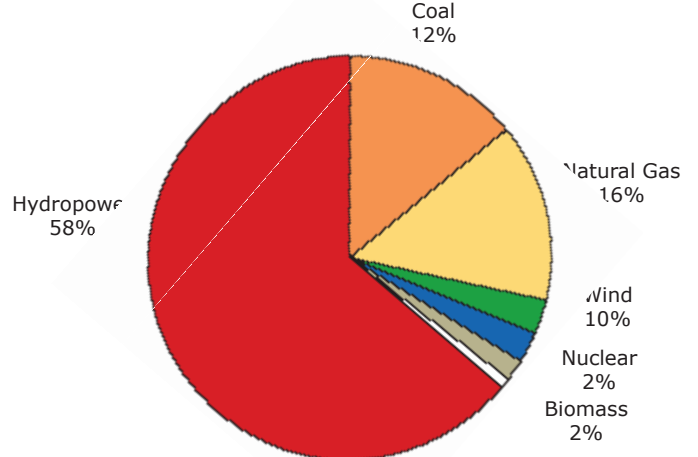
The map in this brochure shows the diversity of the modern power supply in the Northwest, but not all of the power plants. The smallest plants are not shown because there are so many. The map also doesn't depict the most important resource to the Power and Conservation Council — energy efficiency. Consistent with the Northwest Power Act of 1980, the federal law that authorized the four Northwest states to create the Council, energy efficiency gets planning preference over all other sources of electricity to meet future demand for power. At a cost that is less than the cost of building new generating plants, measures can be implemented to improve energy efficiency — insulation, double-paned windows, compact fluorescent light bulbs, low-wattage traffic lights, and energy-efficient industrial motors, for example. Between 1983 (when the Council completed its first Northwest Power Plan) and 2008 more than 3,700 average megawatts of energy efficiency have been achieved in the Northwest. Expressed as energy generation, that is more than enough power for three cities the size of Seattle.

## Northwest Power Installed Capacity by Fuel Type

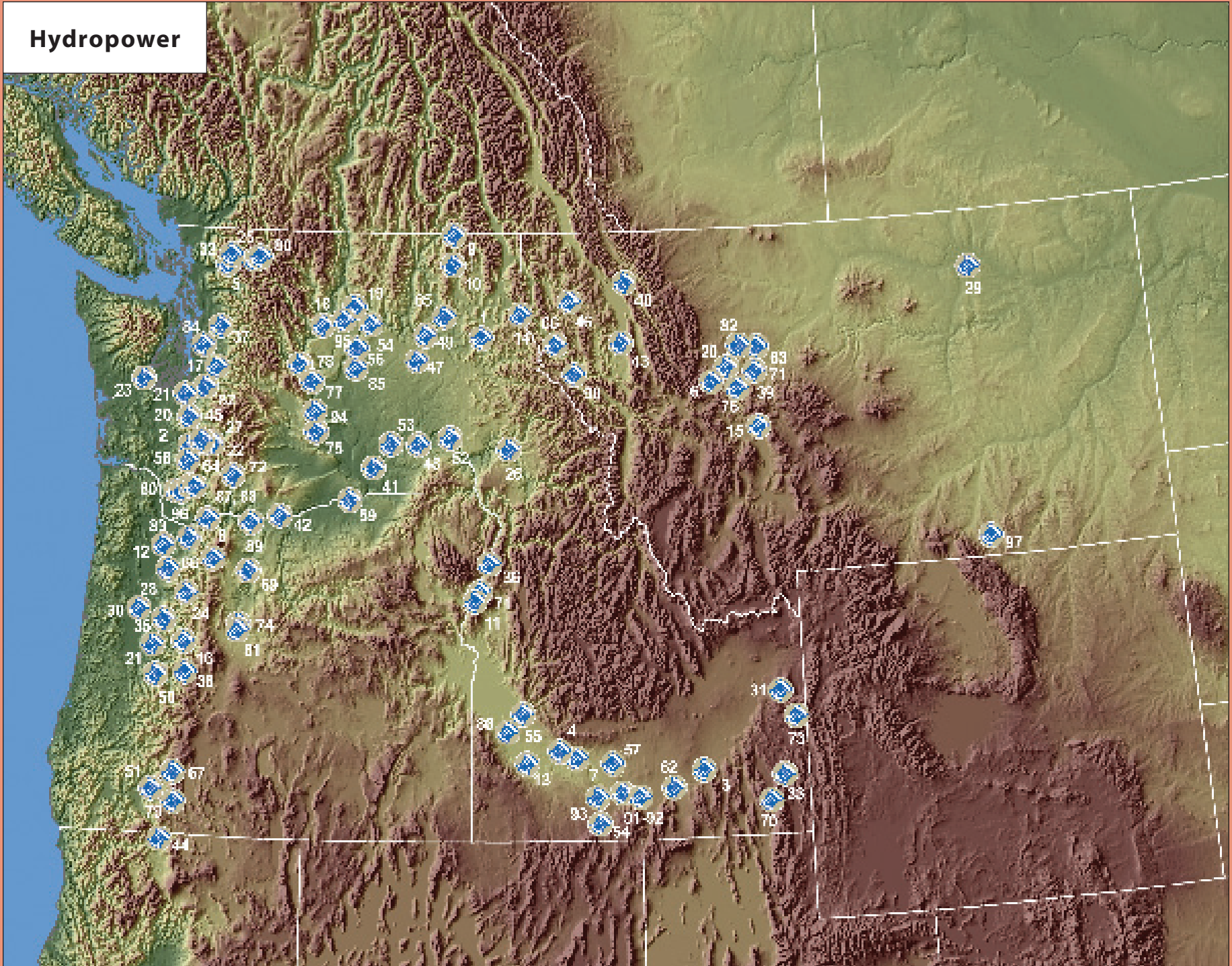
Type of Fuel	Capacity in Megawatts	Percentage of Total Supply
 Hydropower	34,103	58%
 Coal	7,318	12.4%
 Natural Gas	9,163	15.5%
 Wind	5,583	9.5%
 Nuclear	1,200	2.0%
 Biomass	1,063	1.8%
Other	470	0.8%
<b>Totals</b>	<b>58,900</b>	<b>100%</b>

June 2010

## Percentage of Total Supply Capacity



# Hydropower





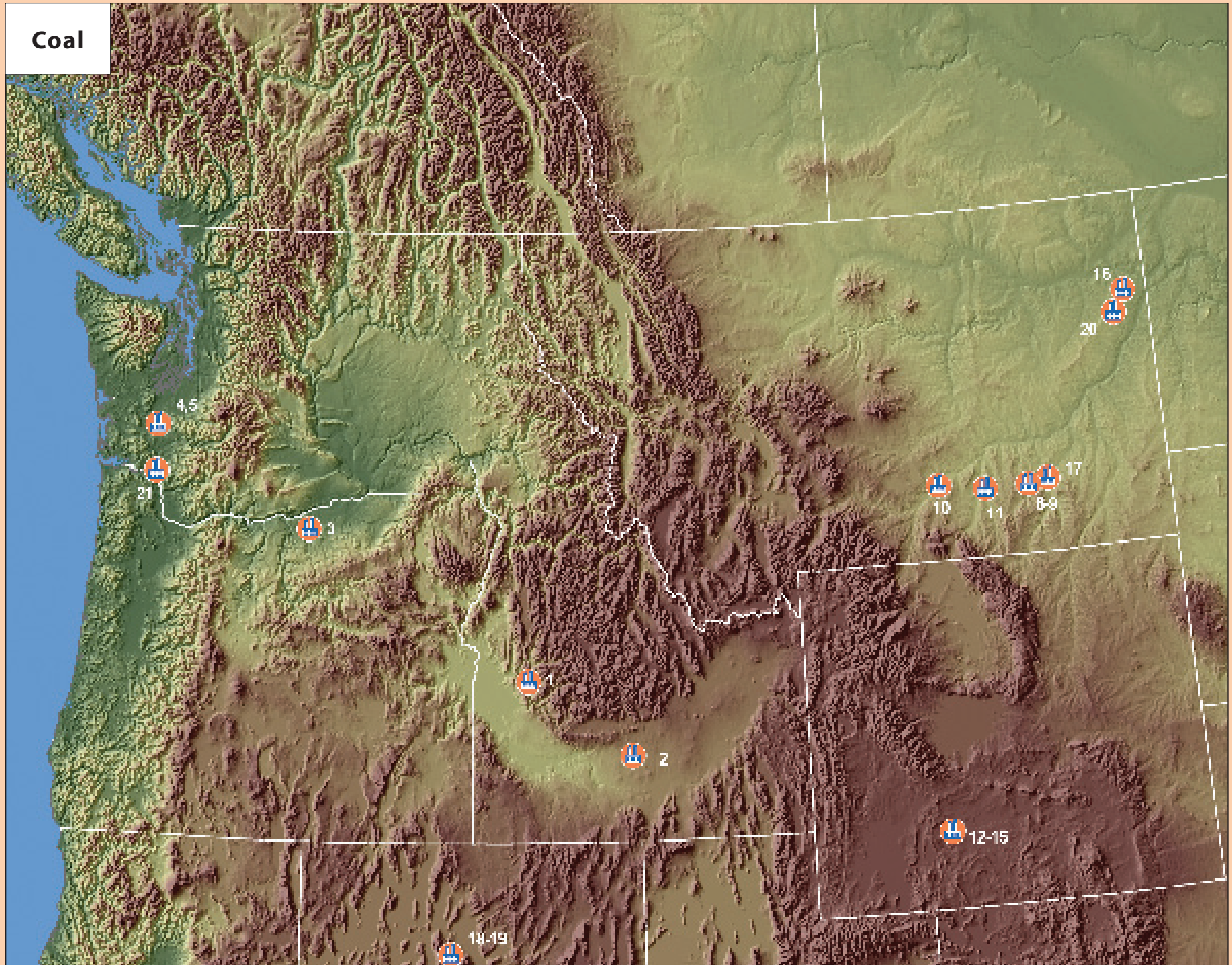
## Hydropower Facilities\*

\* Facilities of 20 megawatts or greater

Number	Project Name	Capacity	Owner	Number	Project Name	Capacity	Owner
1	Albeni Falls	42	U.S. Army Corps of Engineers	55	Lucky Peak	101	Boise Proj. Board of Control
2	Alder	50	City of Tacoma	56	Main Canal Headworks	26	S. Columbia Basin Irr. Dist.
3	American Falls	92	Idaho Power Co.	57	Malad Project (e)	22	Idaho Power Co.
4	Anderson Ranch	40	U.S. Bureau of Reclamation	58	Mayfield	162	City of Tacoma
5	Baker River Project (a)	176	Puget Sound Energy	59	McNary	991	U.S. Army Corps of Engineers
6	Black Eagle	24	PPL Montana	60	Merwin	136	PacifiCorp
7	Bliss	75	Idaho Power Co.	61	Milner	59	Milner Dam Inc.
8	Bonneville	1093	U.S. Army Corps of Engineers	62	Minidoka	28	U.S. Bureau of Reclamation
9	Boundary	1040	City of Seattle	63	Morony	45	PPL Montana
10	Box Canyon	60	Pend Oreille Co. PUD	64	Mossyrock	300	City of Tacoma
11	Brownlee	585	Idaho Power Co.	65	Nine Mile	26	Avista
12	Bull Run Project (b)	36	City of Portland	66	North Fork	41	Portland General Electric
13	C.J. Strike	83	Idaho Power Co.	67	North Umpqua Project (f)	189	PacifiCorp
14	Cabinet Gorge	265	Avista	68	Noxon Rapids	488	Avista
15	Canyon Ferry	50	U.S. Bureau of Reclamation	69	Oak Grove (Three Lynx)	51	Portland General Electric
16	Carmen-Smith	114	City of Eugene (EWEB)	70	Oneida	30	PacifiCorp
17	Cedar Falls	20	City of Seattle	71	Oxbow	190	Idaho Power Co.
18	Chelan	48	Chelan Co. PUD	72	Packwood Lake	28	Energy Northwest
19	Chief Joseph	2456	U.S. Army Corps of Engineers	73	Palisades	176	U.S. Bureau of Reclamation
20	Cochrane	48	PPL Montana	74	Pelton	110	PGE(2/3), Warm Springs Power Enterprises (1/3)
21	Cougar	26	U.S. Army Corps of Engineers	75	Priest Rapids	956	Grant Co. PUD
22	Cowlitz Falls	70	Lewis County PUD	76	Rainbow	36	PPL Montana
23	Cushman Project (c)	124	City of Tacoma	77	Rock Island	624	Chelan Co. PUD
24	Detroit	100	U.S. Army Corps of Engineers	78	Rocky Reach	1300	Chelan Co. PUD
25	Diablo	153	City of Seattle	79	Rogue Project (g)	44	PacifiCorp
26	Dworshak	400	U.S. Army Corps of Engineers	80	Ross	339	City of Seattle
27	Electron	23	Puget Sound Energy	81	Round Butte	300	PGE(2/3), Warm Springs Power Enterprises (1/3)
28	Faraday	37	Portland General Electric	82	Ryan	48	PPL Montana
29	Fort Peck	185	U.S. Army Corps of Engineers	83	Smith Creek (Smith Falls)	38	Smith Falls Hydropower
30	Foster	20	U.S. Army Corps of Engineers	84	Snoqualmie Falls	45	Puget Sound Energy
31	Gem State	23	City of Idaho Falls	85	Summer Falls	92	Columbia Basin Irr. Dists.
32	Gorge	207	City of Seattle	86	Swan Falls	25	Idaho Power Co.
33	Grace	33	PacifiCorp	87	Swift 1	240	PacifiCorp
34	Grand Coulee	6495	U.S. Bureau of Reclamation	88	Swift 2	70	Cowlitz PUD
35	Green Peter	80	U.S. Army Corps of Engineers	89	The Dalles	1807	U.S. Army Corps of Engineers
36	Hell's Canyon	392	Idaho Power Co.	90	Thompson Falls	88	PPL Montana
37	Henry M. Jackson	112	Snohomish Co. PUD	91	Twin Falls (IPC)	53	Idaho Power Co.
38	Hills Creek	30	U.S. Army Corps of Engineers	92	Twin Falls (TFHA)	20	Twin Falls Hydro Associates
39	Holter	38	PPL Montana	93	Upper Salmon	35	Idaho Power Co.
40	Hungry Horse	428	U.S. Bureau of Reclamation	94	Wanapum	1038	Grant Co. PUD
41	Ice Harbor	603	U.S. Army Corps of Engineers	95	Wells	774	Douglas Co. PUD
42	John Day	2160	U.S. Army Corps of Engineers	96	Yale	134	PacifiCorp
43	Kerr	212	PPL Montana	97	Yellowtail	250	U.S. Bureau of Reclamation
44	Klamath Project (d)	170	PacifiCorp				
45	LaGrande	65	City of Tacoma				
46	Libby	525	U.S. Army Corps of Engineers				
47	Little Falls	32	Avista				
48	Little Goose	810	U.S. Army Corps of Engineers				
49	Long Lake	71	Avista				
50	Lookout Point	120	U.S. Army Corps of Engineers				
51	Lost Creek	49	U.S. Army Corps of Engineers				
52	Lower Granite	810	U.S. Army Corps of Engineers				
53	Lower Monumental	810	U.S. Army Corps of Engineers				
54	Lower Salmon Falls	60	Idaho Power Co.				

- a) Baker River Project: Upper Baker (105 MW), Lower Baker (71 MW)
- b) Bull Run (Portland Hydro) Project: Bull Run 1 (24 MW), Bull Run 2 (12 MW)
- c) Cushman Project: Cushman 1 (43 MW), Cushman 2 (81 MW)
- d) Klamath Project: COPCO 1 (20 MW), COPCO 2 (27 MW), East Side (3 MW), Iron Gate (18 MW), J.C. Boyle (99 MW), Keno (no generation), West Side (1 MW)
- e) Malad Project: Lower Malad (14 MW), Upper Malad (8 MW)
- f) North Umpqua Project: Clearwater 1 (15 MW), Clearwater 2 (26 MW), Fish Creek (11 MW), Lemolo 1 (32 MW), Lemolo 2 (33 MW), Slide Creek (18 MW), Soda Springs (11 MW), Toketee Falls (43 MW)
- g) Rogue Project: Prospect 1 (4 MW), Prospect 2 (32 MW), Prospect 3 (7 MW), Prospect 4 (1 MW)

# Coal





## Coal Facilities

Number	Project Name	Capacity	Owner
1	Amalgamated Sugar (Nampa)	9	Amalgamated Sugar
2	Amalgamated Sugar (Twin Falls)	10	Amalgamated Sugar
3	Boardman	601	PGE (65%);GECC (15%); IPC (10%); Power Resources Cooperative (10%)
4	Centralia 1	730	TransAlta
5	Centralia 2	730	TransAlta
6	Colstrip 1	358	PPL Montana (50%); PSE (50%)
7	Colstrip 2	358	PPL Montana (50%); PSE (50%)
8	Colstrip 3	778	PPL Montana (30%); PSE (25%); PGE (20%), Avista (15%); PacifiCorp (10%)
9	Colstrip 4	778	NorthWestern (30%); PSE (25%); PGE (20%), Avista (15%); PacifiCorp (10%)
10	Corrette	173	PPL Montana
11	Hardin Generating Station	116	Rocky Mountain Power
12	Jim Bridger 1	578	PAC (67%); IPC (33%)
13	Jim Bridger 2	578	PAC (67%); IPC (33%)
14	Jim Bridger 3	578	PAC (67%); IPC (33%)
15	Jim Bridger 4	584	PAC (67%); IPC (33%)
16	Lewis & Clark (a)	50	Montana Dakota Utilities Co.
17	Montana One	42	Colstrip Energy, LP
18	North Valmy 1	254	SPP (50%); IPC (50%)
19	North Valmy 2	267	SPP (50%); IPC (50%)
20	Sydney Sugars	4	Holly Sugar Corp.
21	Weyerhaeuser (Longview)	31	Weyerhaeuser

a) Midwest Reliability Organization electrical liability area (not part of Western Interconnected System)

IPC - Idaho Power Co.

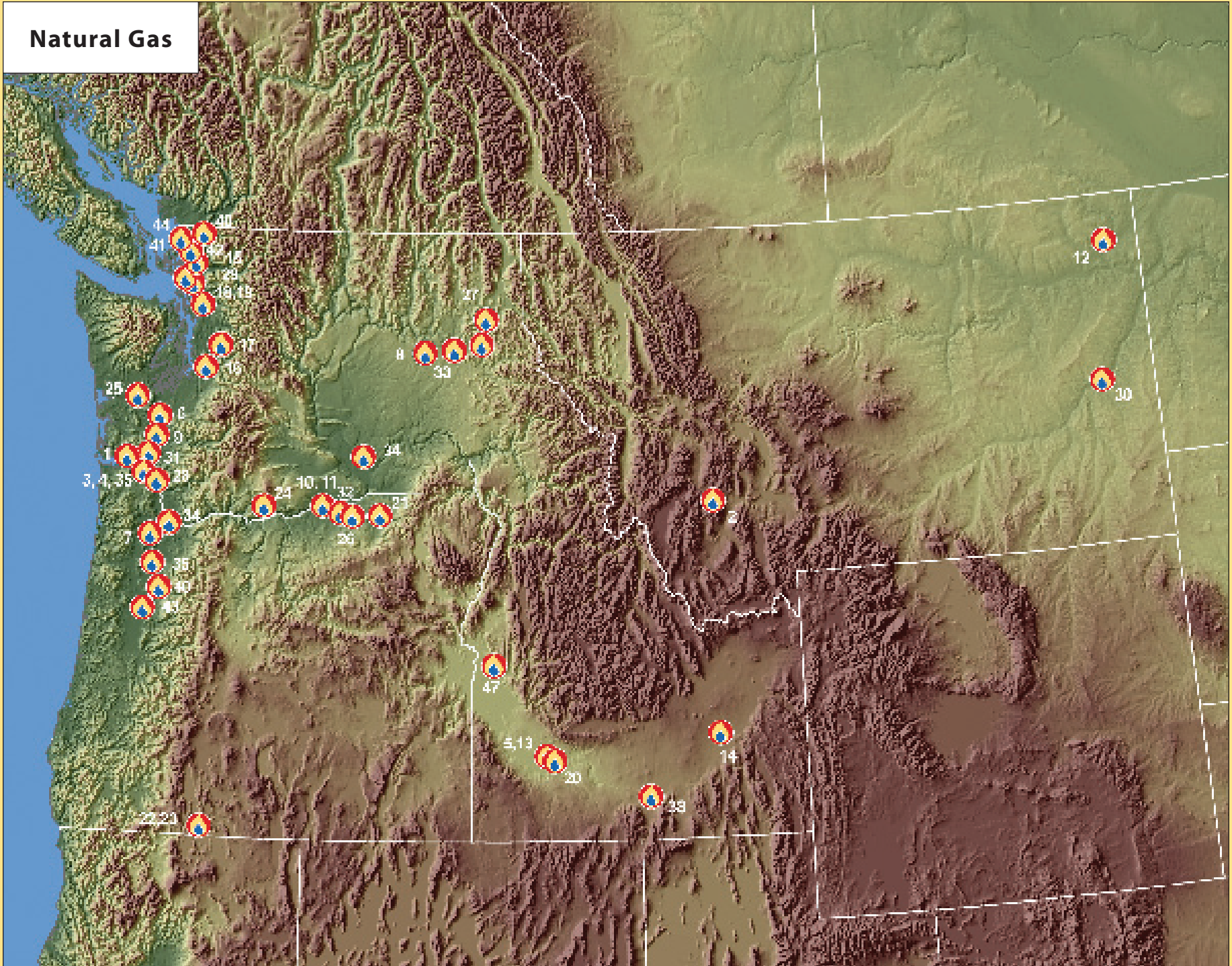
PGE - Portland General Electric

PAC - PacifiCorp

GECC - General Electric Credit Corp.

SPP - SIerra Pacific Power (Nevada Energy)

# Natural Gas







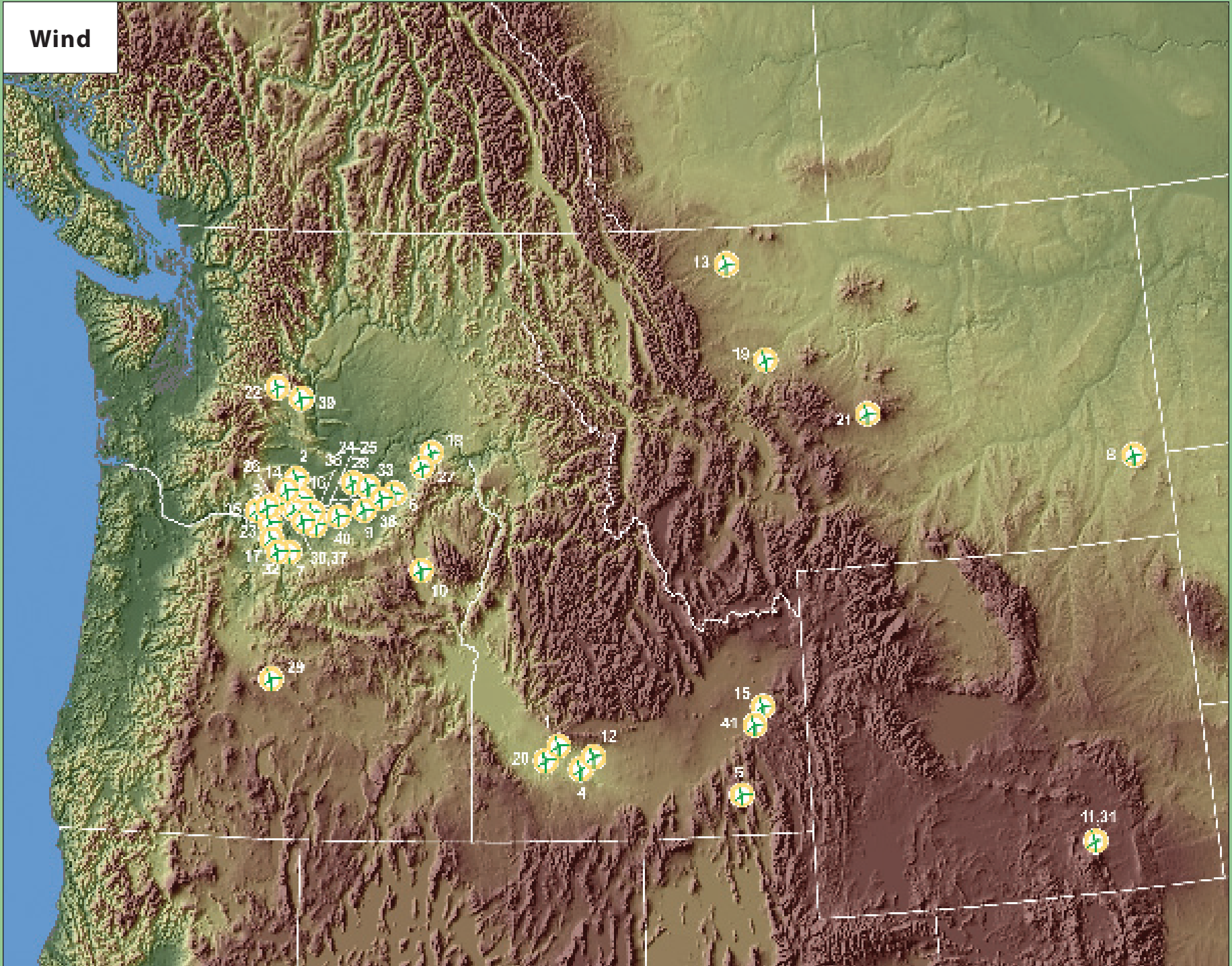
## Natural Gas Facilities\*

\* Facilities of 10 megawatts or greater

Number	Project Name	Capacity	Owner
1	Alden Bailey (aka Wauna Peaking/Loki)	11	Clatskanie PUD
2	Basin Creek 1 - 9	55	Basin Creek Power
3	Beaver 1 - 7	586	Portland General Electric
4	Beaver 8	25	Portland General Electric
5	Bennett Mountain	173	Idaho Power Co.
6	Big Hanaford	322	TransAlta
7	Blue Heron Paper	15	Blue Heron Paper Co.
8	Boulder Park 1 - 6	25	Avista
9	Chehalis Generating Facility	593	PacifiCorp
10	Coyote Springs 1	266	Portland General Electric
11	Coyote Springs 2	287	Avista
12	Culbertson (a)	91	Basin Electric Power Cooperative
13	Danskin CT 1 - 3	1@170, 2@50	Idaho Power Co.
14	Don Plant (Simplot Pocatello)	16	Simplot Leasing Corp
15	Encogen 1-4	176	Puget Sound Energy
16	Frederickson 1 & 2	2@89	Puget Sound Energy
17	Frederickson Power	318	EPCOR (50%)/Puget Sound Energy (50%)
18	Fredonia 1 & 2	2@129	Puget Sound Energy
19	Fredonia 3 & 4	2@59	Puget Sound Energy
20	Glenns Ferry Cogeneration	10	Glenns Ferry Cogeneration Partners (50%); Black Hills Energy (50%)
21	Goldendale	280	Puget Sound Energy
22	Grays Harbor Energy Facility (aka Satsop)	650	Invenergy (dba Grays Harbor Energy)
23	Hermiston Generating Project 1 & 2	2 @ 235	PacifiCorp (50%), Hermiston Generating Co. (50%)
24	Hermiston Power Project	689	Calpine, dba Hermiston Power Partners
25	Klamath Cogeneration Project	536	Iberdrola Renewables
26	Klamath Generation Peakers 1 - 4	4@25	Iberdrola Renewables
27	Lancaster	270	Energy Investor Funds (80%, Goldman Sachs (20%))
28	Longview Fibre 8	68	KVA Resources
29	March Point 1 - 4	167	March Point Associates
30	Miles City GT (a)	23	Montana Dakota Utilities Co.
31	Mint Farm	319	Puget Sound Energy
32	Morrow Power	25	Morrow Power (Subsidiary of Montsano Enviro Chem Systems)
33	Northeast 1 & 2	2@31	Avista
34	Pasco GT 1 - 4	4@11	Franklin Co. PUD (50%); Greys Harbor PUD (50%)
35	Port Westward	399	Portland General Electric
36	Rathdrum 1 & 2	2@83	Avista
37	River Road Generating Plant	248	Clark Public Utilities
38	Rupert Cogeneration	10	Rupert Cogeneration Partners (50%); Black Hills Energy (50%)
39	SP Newsprint	163	SP Newsprint
40	Sumas Cogeneration Station	126	Puget Sound Energy
41	Tenaska Washington	253	Tenaska Power Partners/Diamond Generating Corp.
42	Tesoro	18	Tesoro Northwest
43	Wah Chang	14	Wah Chang
44	Whitehorn	2@85	Puget Sound Energy

a) Midwest Reliability Organization (MRO) Interconnection

# Wind





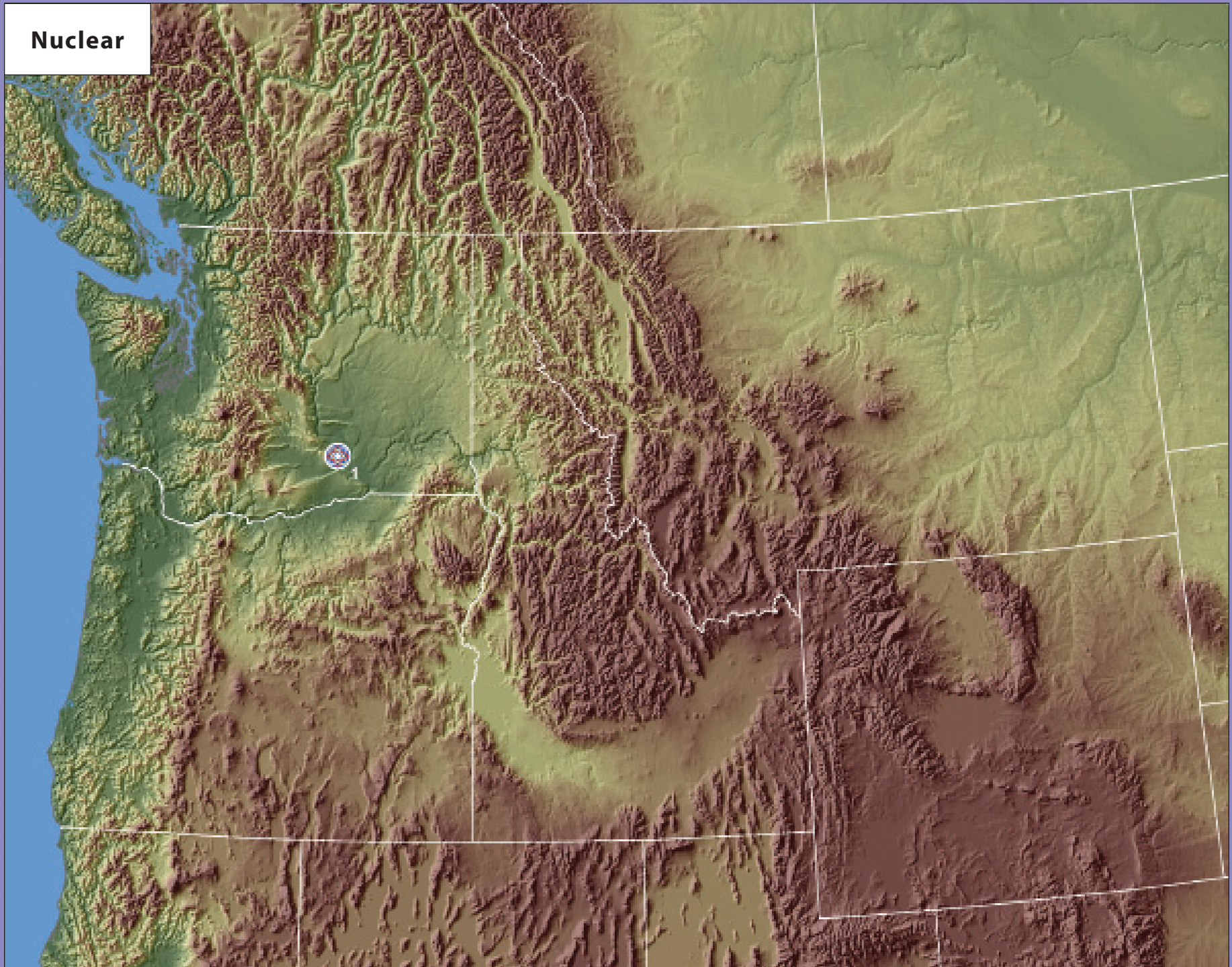
## Wind Facilities\*

\* Facilities of 10 megawatts or greater

Number	Project Name	Capacity	Owner
1	Bennett Creek	21	Exelon (John Deere Renewables)
2	Big Horn I & II	249	Iberdrola Renewables
3	Biglow Canyon I, II & III	450	Portland General Electric
4	Cassia	46	John Deere Renewables
5	Cassia Gulch	19	Exelon (John Deere Renewables)
6	Combine Hills I & II	104	Eurus Energy America, Inc.
7	Condon	50	Goldman Sachs, AES SeaWest
8	Diamond Willow (a)	20	MDU Utilities
9	Echo Wind Farms	65	John Deere Renewables
10	Elkhorn Valley	100	Horizon Wind Energy
11	Foot Creek I - IV	83	Caithness Energy
12	Fossil Gulch	11	Exergy Development Corp.
13	Glacier Wind Energy I & II	210	NaturEner
14	Goodnoe Hills	94	PacifiCorp
15	Goshen North	125	Ridgeline Energy/BP Wind Energy
16	Harvest Wind	99	Cowlitz PUD (30%), Lakeview L&P (30%), Peninsula Light (20%) & EWEB (20%).
17	Hay Canyon	101	Iberdrola Renewables
18	Hopkins Ridge	157	Puget Sound Energy
19	Horseshoe Bend	21	United Materials
20	Hot Springs	183	Exelon (John Deere Renewables)
21	Judith Gap	135	Invenergy
22	Kittitas Valley	101	Horizon Wind Energy
23	Klondike II, III and IIIA	399	Iberdrola Renewables
24	Leaning Juniper I	101	PacifiCorp
25	Leaning Juniper II	201	S. CA Public Power Authority
26	Linden Ranch	50	S. CA Public Power Authority
27	Marengo I & II	211	PacifiCorp
28	Nine Canyon	96	Energy Northwest
29	Pebble Springs	99	Iberdrola Renewables
30	Rattlesnake Road	103	Horizon Wind Energy
31	Rock River I	50	Shell WindEnergy, Inc.
32	Star Point	99	Iberdrola Renewables
33	Stateline	300	NextEra Energy Resources
34	Tuana Springs	11	Idaho Wind Partners
35	Tuolumne	137	Turlock Irrigation District & Walnut Energy Center Authority
36	Vansycle I & II	124	NextEra Energy Resources
37	Wheat Field	97	Horizon Wind Energy
38	White Creek	205	Lehman Brothers, Prudential Capital Group, Summit Power
39	Wild Horse I, II & Expansion	317	Puget Sound Energy
40	Willow Creek	72	Invenergy
41	Wolverine Creek	65	Invenergy

a) Midwest Reliability Organization (MRO) Interconnection

# Nuclear





## Nuclear Facility

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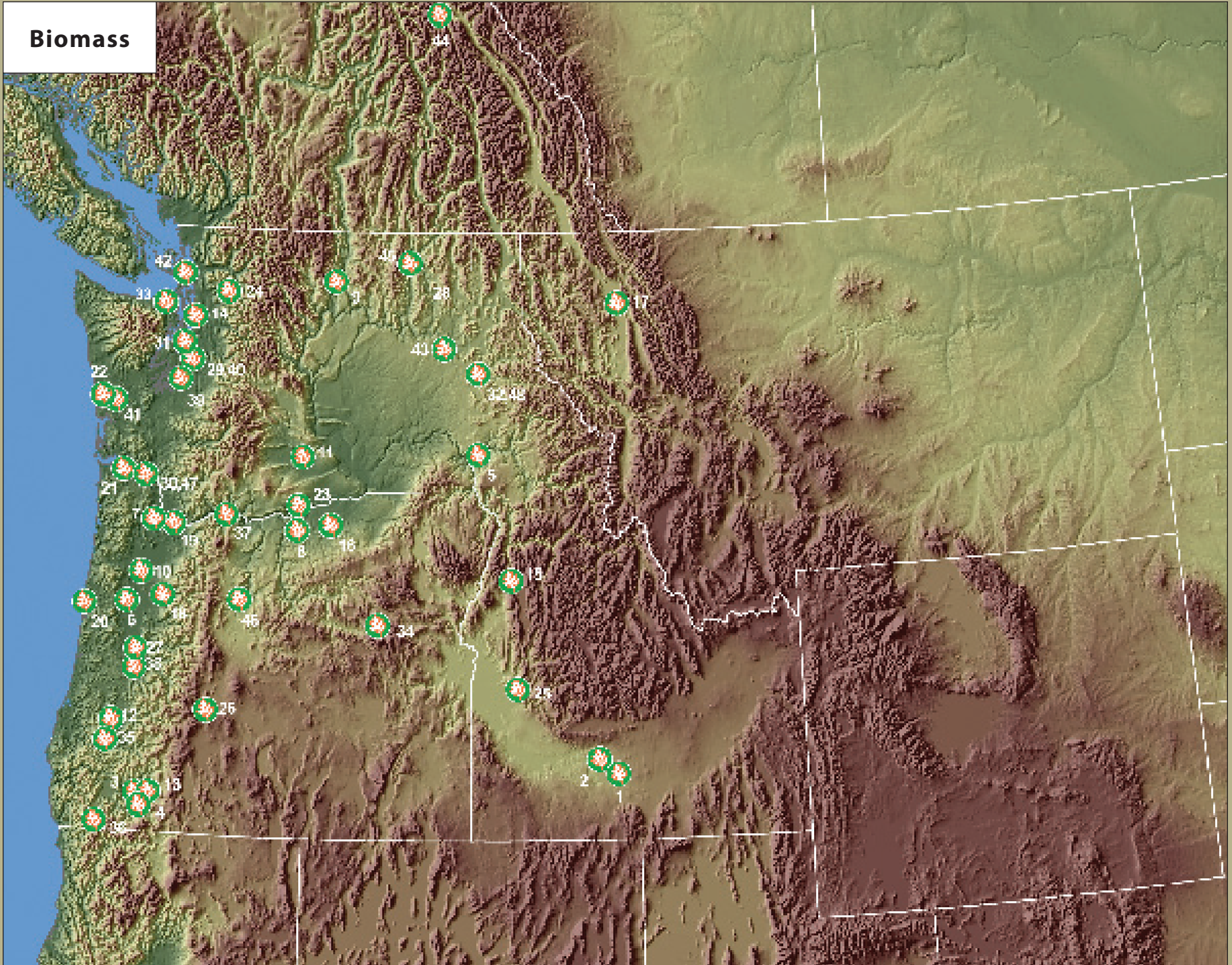
Number	Project Name	Capacity	Owner
1	Columbia Generating Station	1200	Energy Northwest



Photo: Energy Northwest

Columbia Generating Station, Richland, Washington

# Biomass



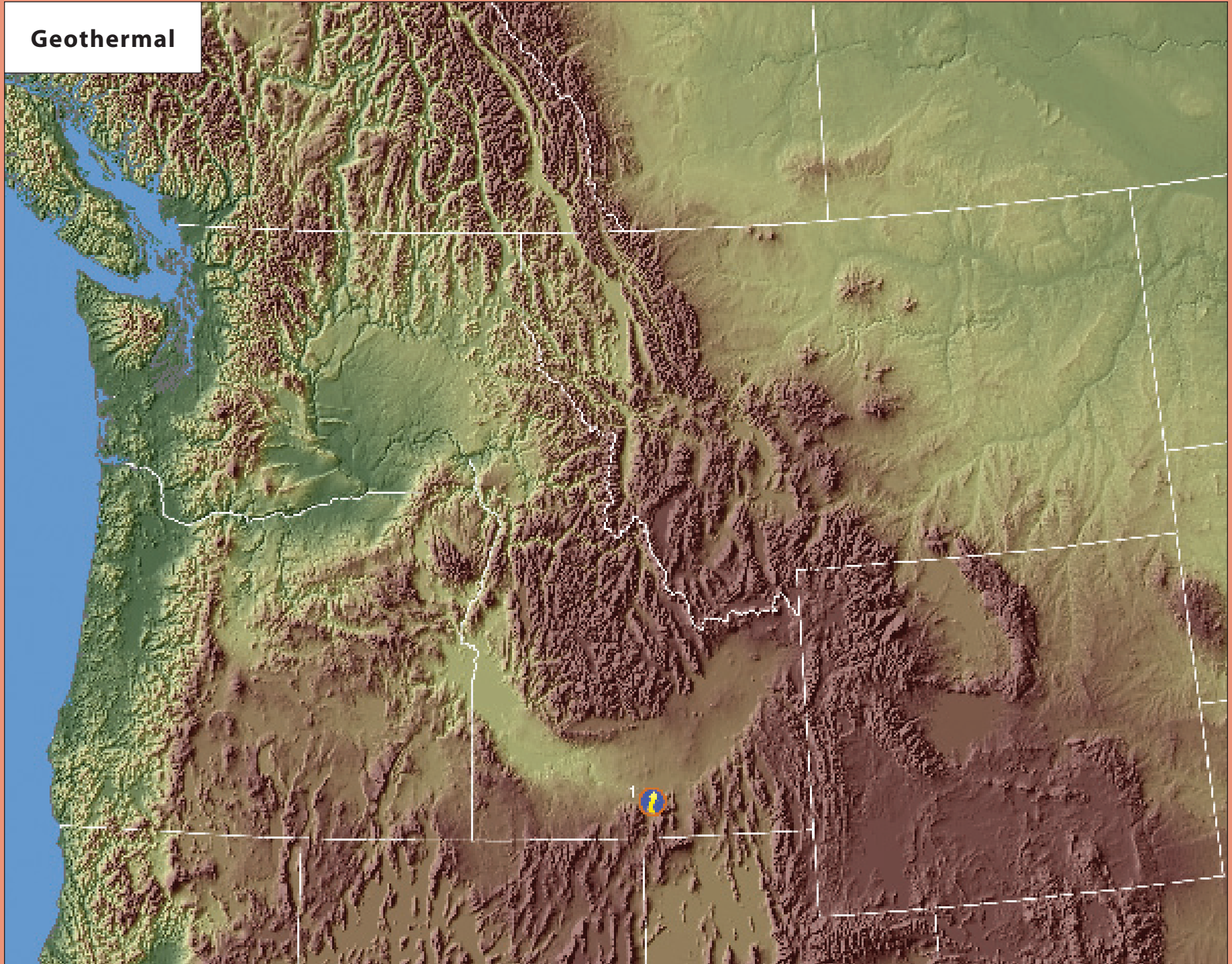


## Biomass Facilities\*

\* Facilities of 1 megawatt or greater

Number	Project Name	Primary Fuel	Capacity	Owner
1	Bettencourt Dry Creek Biofactory	Animal Waste Digester Gas	5	Cargill Environmental Finance
2	Big Sky West Dairy Digester	Animal Waste Digester Gas	2	Dean Foods Co./AgPower Partners
3	Biomass One	Woody Residues	25	Biomass One
4	Boise (Medford)	Woody Residues	9	Boise Cascade
5	Clearwater Paper	Black Liquor	113	Clearwater Paper
6	Coffin Butte	Landfill Gas	5	Power Resources Cooperative
7	Columbia Blvd Wastewater Treatment Plant	Wastewater Digester Gas	2	City of Portland
8	Columbia Ridge Landfill	Landfill Gas	6	Waste Management
9	Colville Indian Power & Veneer	Woody Residues	25	Colville Tribal Enterprise Corporation
10	Covanta Marion	Municipal Solid Waste	13	Ogden-Martin
11	DeRuyter Dairy	Animal Waste Digester Gas	1	DeRuyter Dairy
12	Douglas County Forest Products	Woody Residues	3	Douglas County Forest Products
13	Dry Creek Landfill	Landfill Gas	3	Oregon Environmental Industries
14	Everett Cogeneration Project	Black Liquor	42	Snohomish Co. PUD
15	Evergreen Forest Products	Woody Residues	6	Tamarack Energy Corp
16	Finley Buttes Regional Landfill	Landfill Gas	3	Finley Bioenergy
17	Flathead County Landfill	Landfill Gas	2	Flathead Electric Cooperative
18	Freres Lumber	Woody Residues	10	Evergreen Biopower
19	Georgia-Pacific (Camas)	Black Liquor	52	PacifiCorp
20	Georgia-Pacific (Toledo)	Black Liquor	30	Georgia-Pacific
21	Georgia-Pacific (Wauna)	Black Liquor	36	Clatskanie Co. PUD; EWEB
22	Grays Harbor Paper	Woody Residues	16	Grays Harbor Paper/Grays Harbor PUD
23	H.W. Hill (Roosevelt Biogas)	Landfill Gas	11	Klickitat Co. PUD
24	Hampton Lumber	Woody Residues	7	Hampton Lumber Co.
25	Hidden Hollow	Landfill Gas	3	G2 Energy
26	Interfor Pacific Gilchrist	Woody Residues	2	Interfor Pacific
27	International Paper (Springfield 4)	Woody Residues	52	Weyerhaeuser
28	Kettle Falls Generating Station	Woody Residues	51	Avista
29	King County Wastewater Treatment Plant	Wastewater Digester Gas	8	King County Wastewater Treatment Div.
30	Longview Fibre 1 - 7	Black Liquor	67	Longview Fibre
31	Metro West Point Treatment Plant 1-3	Wastewater Digester Gas	4	King County Dept. of Natural Resources
32	Plummer Forest Products	Woody Residues	6	Plummer Forest Products
33	Port Townsend Paper	Black Liquor	14	Port Townsend Paper
34	Prairie Wood Products (Cogen I)	Woody Residues	8	Prairie Wood Products Co-gen Co.
35	Roseburg Forest Products (Dillard)	Woody Residues	52	Roseburg Forest Products
36	Rough & Ready Lumber	Woody Residues	1	Rough & Ready Lumber
37	SDS Lumber (Gorge Energy)	Woody Residues	10	SDS Lumber
38	Short Mountain	Landfill Gas	3	Emerald PUD
39	Simpson Tacoma Kraft Cogeneration	Black Liquor	55	Simpson Tacoma Kraft
40	South Treatment Plant	Wastewater Digester Gas	10	King County
41	SPI Aberdeen	Woody Residues	18	Sierra Pacific Industries
42	SPI Burlington	Woody Residues	30	Sierra Pacific Industries
43	Spokane Waste-To-Energy	Municipal Solid Waste	26	City of Spokane (Wheelaborator)
44	Stahlbush Island Farms	Animal Waste Digester Gas	2	Stahlbush Island Farms
45	Vaagen Brothers Lumber	Woody Residues	4	Vaagen Brothers Lumber
46	Warm Springs Forest Products	Woody Residues	9	Warm Springs Forest Products Industries
47	Weyerhaeuser (Longview)	Black Liquor	64	Weyerhaeuser
48	Wood Power	Woody Residues	6	Pacific Crown

# Geothermal







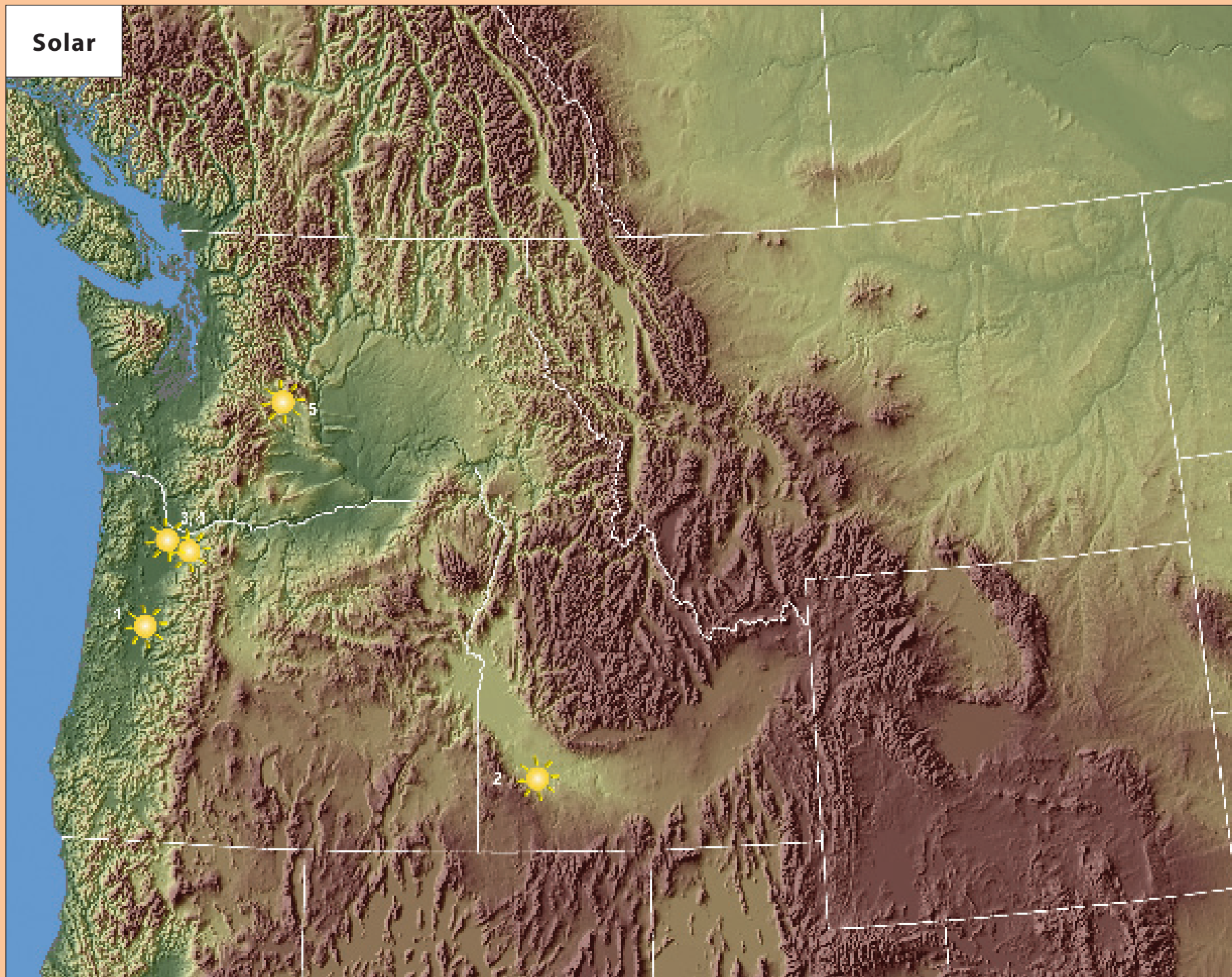
## Geothermal Facility

Number	Project Name	Capacity	Owner
1	Raft River	15.8	U.S. Geothermal Co.



Raft River Geothermal Project

# Solar

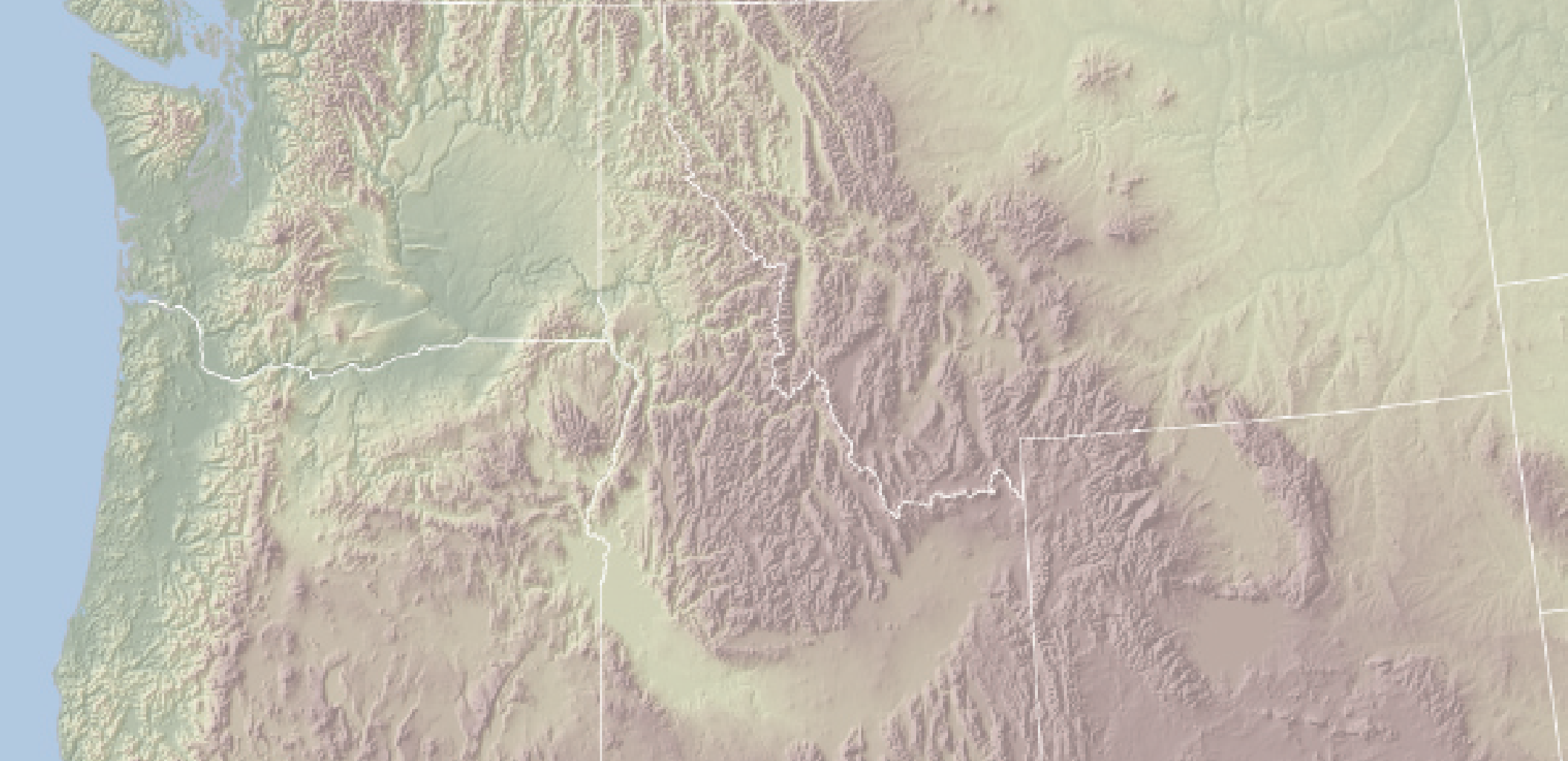




## Solar Facilities

Number	Project Name	Capacity	Owner
1	Kettle Foods	< 0.1	Kettle Foods
2	Mountain Home AFB PV	0.1	USAF
3	Portland Habilitation Center	0.9	Portland Habilitation Center
4	ProLogis	3.5	MMA Renewable Ventures
5	Wild Horse Solar	0.5	Puget Sound Energy





The Northwest Power and Conservation Council was authorized by the 1980 Pacific Northwest Electric Power Planning and Conservation Act to give the citizens of Idaho, Montana, Oregon and Washington a stronger voice in determining the future of key resources common to all four states — namely, the electricity generated at, and fish and wildlife affected by, the Columbia River Basin hydropower dams.

The Council is a unique organization that helps the Pacific Northwest make critical decisions that balance the multiple uses of the Columbia River and its tributaries.



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Council document 2010-16



**Interactive maps** include more project details, photos, navigation, layers, and more. See [www.nwcouncil.org/maps/power](http://www.nwcouncil.org/maps/power)