

# Idaho Power: Current Distribution System & Small-Scale Generation



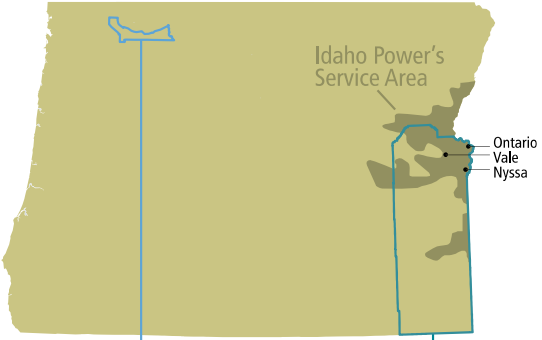
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# Idaho Power in Oregon

OREGON  
Average system load **83 Megawatts**



Oregon Customers **19,119** | **4,000 SQUARE MILES**



**Multnomah County**  
(Portland Area)

**Malheur County**  
(Idaho Power Customers)

Total Population	807,555	30,480
Unemployment Rate	3.7%	4.6%
Bachelor's Degree or Higher Age 25+	44%	13%
Non-farm Employment	440,043	11,918
Housing Units that are Mobile Homes	2%	17%
Housing Units Heating with Electricity	42%	53%
Average Electric Bill (Monthly)	\$124	\$85
Mean Family Income (Annual)	\$76,557	\$46,571
Median Value of Owner-Occupied Homes	\$336,600	\$155,000

# Oregon Distribution System

## By The Numbers



- 26 distribution stations & 62 feeders
  - 56 percent of stations and 72 percent of feeders are equipped with remote control and monitoring devices
- AMI used by 92 percent of Oregon customers
  - Expanding to 99 percent by end of 2020
- Company-wide Volt/VAR optimization
  - Integrated Volt-VAR Control System (IVVC) will reach 79 substations and 372 feeders across company service territory by end of 2021

# Monitoring

- System Average Interruption Frequency Index (SAIFI)
- System Average Interruption Duration Index (SAIDI)
- Customer Average Interruption Duration Index (CAIDI)
- Momentary Average Interruption Event Frequency Index (MAIFI-E)
- Customers Experiencing Multiple Interruptions (CEMI)

Year*	SAIDI	SAIFI	CAIDI	MAIFI-E	CEMI
2014	3.43	1.63	2.10	2.48	26.1%
2015	6.18	1.95	3.17	3.86	24.1%
2016	2.88	1.05	2.74	2.83	14.5%
2017	3.69	1.23	3.00	3.82	15.6%
2018	2.49	0.96	2.59	3.30	7.3%

\* Idaho Power also files an Annual Electric Service Reliability Report under Docket RE 90

# Monitoring & Management



- **Outage data analytics and tools** – Allow the company to track outages, outage causes, and trends in sustained outages
- **Regularly scheduled line patrols and detailed emergency response patrols** – Help identify specific failure points (e.g., damaged insulators, cross arms, poles, arrestors)
- **Distribution reliability programs** – Help identify worst performing feeders with corrective and preventative work performed on an annual basis
- **Vegetation management** – Distribution feeders on a three-year vegetation management cycle. Areas with fast-growing trees or brush near lines are trimmed frequently (annual basis or more often)

# Security



- **Physical security** – Controls in place to deter, detect, deny and/or delay access to company sites (data centers, substations, operation centers, company headquarters)
- **Cybersecurity** – Aligned with National Institute of Standards and Technology (NIST) guidance; company has also developed a threat model to identify threats, related impacts, and mitigation controls
- **Industry consultation and coordination** – Idaho Fusion Center (DHS), InfraGard (FBI), E-ISAC, EEI, among others

# PURPA

## 21 Qualifying Facilities of 10 MW or under

- 16 QFs online, totaling 120 MW (~20 MW online prior to 2014)
- 3 QFs, totaling 9 MW, scheduled to come online in 2020
- 1 QF is scheduled to come online in 2022

Incremental QF Additions			
	Resource	No. of Projects	Size
<b>2015</b>	N/A	N/A	N/A
<b>2016</b>	Solar	6	49.5
<b>2017</b>	Wind	5	50
<b>2018</b>	N/A	N/A	N/A
<b>2019</b>	Solar	1	2.75

# DER Deployment: Solar VIR & Customer Generation

## VIR Program

60 projects online, totaling 0.46 MW, in the Oregon Solar Volumetric Incentive Rate pilot

### Incremental VIR Additions

	Resource	# Projects	Size
<b>2014</b>	Solar	6	0.05
<b>2015</b>	Solar	7	0.06
<b>2016</b>	N/A	N/A	N/A
<b>2017</b>	N/A	N/A	N/A
<b>2018</b>	N/A	N/A	N/A

## Solar Customer Generation & NEM

63 projects, totaling 1.28 MW, are connected under the company's net metering tariff (through end of 2019)

### Incremental Customer Solar Generation

	# Solar Projects	Size
<b>2014</b>	3	0.21
<b>2015</b>	10	0.24
<b>2016</b>	5	0.25
<b>2017</b>	13	0.15
<b>2018</b>	10	0.14
<b>2019</b>	12	0.13



# Interconnection



- **Process & Requirements** – Idaho Power makes interconnection information readily available on its website, including:
  - Requirements for PURPA QF, non-PURPA QF, and customer generation
  - Facility connection requirements
  - Specific information and rules for Oregon customers
  - Link to the interconnection queue
  - Pre-application process and information for primary distribution connected generation
  - Direct company contact information
  - <https://www.idahopower.com/about-us/doing-business-with-us/generator-interconnection/>

# Customer Values

- **Quarterly relationship surveys** – Conducted with all customer groups, including residential, commercial, industrial, and irrigation customers. Results are proprietary.
- **J.D. Power and Associates Electric Utility Residential Customer Satisfaction Survey** – Conducted annually, but company monitors quarterly to ensure customers are aware of Idaho Power’s efforts, specifically related to two key questions:

