

TESTIMONY OF DORIS MAST



JANUARY 10, 2018

Doris M. Mast
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January 10, 2018

Via Email: puc.hearings@state.or.us

Oregon Public Utility Commission
Administrative Law Judge Patrick Power
P.O. Box 1088 Salem, OR 97308

Re: Doris Mast Intervenor Testimony re Petition for Certificate of Public Convenience and Necessity (PCN-2)

Please accept this testimony for the Tillamook People's Utility District (TPUD),
Petition for Certificate of Public Convenience and Necessity.

N -1 CONTINGENCY

In exhibit TPUD/205, on p 50, Fagen shows the result of N -1, where the T2 transformer is removed from the Wilson River substation, using loads from 2016. He shows total loading of 96% in his scenario, and concluded that additional capacity is needed.

Following this paper is a chart called Doris – 3 that shows 4 loading scenarios using the December 2016 loads as reported in the October 2017 TPUD board report, called Doris – 1. My N -1 scenario shows a total loading of 64% and I conclude that no additional capacity is needed.

Why does Fagen show 96% loading and I show 64%? The answer is found in the capacity column. TPUD has changed the capacity of the 4 substations used in the N -1 scenario twice since they began the project, the first change in August of 2014 in preparation for the CAG meetings, and the second, in October of 2016, in the documents prepared for the Tillamook County Planning Commission and the

PUC, in exhibit TPUD/205, page 50, where Fagen shows his N -1 scenario. In 2014, the capacity ratings were also changed in the TPUD board reports while the capacity numbers used in TPUD/205, page 50, cannot be found in any TPUD board report. If you look in exhibit Doris – 1, the October 2017 TPUD board report, you will find the thermal ratings are still from the August 2014 level. Doris – 4 shows the capacity changes in these 4 substations, while Doris – 7 shows only the 4 substations used in the N -1 contingency were changed. TPUD removed 34.3 MW and is telling you they need to build a 33 MVA substation and transmission line to increase their capacity and reduce loading.

KC Fagen’s conclusion that additional capacity is needed is incorrect, because by reducing capacity by 34.3 MW he actually performed a N -2 scenario. In Doris -3, CHART 4 shows a N -2 scenario using the December 2016 load with both Garibaldi and Wilson River 2 removed, using the 2011 thermal rating, while CHART 3 shows a N -1 scenario but using the capacity found only in this application to PUC and the Tillamook County Planning Commission. The results differ by 3%. N -1 scenario shows the system should be able to handle the loss of T2 with loading of 64%.

TPUD does not need additional capacity. The substation and transmission line are not necessary.

RELIABILITY AND AGING

On p2 of Fagen’s TPUD/212 exhibit, Line 51 had about 805 hours out from 2011 - 2016. In every TPUD board report, there is a chart called outage management. I made chart Doris – 6 showing the system wide outages from 2011 – 2016. The sum for the years 2011 – 2016 is 39 hours and 29 minutes. How can line 51 have 805 hours out from 2011 – 2016 and the whole system had 39 hours and 29 minutes?

On the customer hours out by cause chart (p4 of Fagen TPUD 212), vehicles caused about 58,000 hours out and wind/trees caused about 33,000 hours out. So, 91,000 customer hours out were caused by car/pole or wind/tree. If 65% of the outages are caused by car/pole or wind/trees, TPUD could install guardrails on

Highway 131, to minimize car/pole and maintain the ROW to decrease the wind/tree. Brownouts are not even listed.

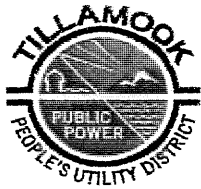
Reliability could be increased even further by using either option 2 or option 3 (TPUD 204, Fagen 2). Building an additional 26 kV feeder gives the second source of power to decrease length of outages. Just last month TPUD authorized the purchase of 4 new transformers at a cost of \$2.5 million. This is a big step in replacing the aging infrastructure and would help make option 2 or 3 a sensible way to increase reliability. TPUD/204 Fagen/3 analyzes the capacity addition, reliability and longevity of each option. Option 2 and 3 both got a good for reliability. The \$13 million transmission line and substation are not the only way to improve reliability.

On page 8 of the petition, TPUD refers again to the 1,800 meters on Line 51 and implies that 3,800 people are without power in an outage. I am including chart Doris – 5 which shows that on April 7, 2017, 586 people were without power in the Netarts – Oceanside area. Why 586 and not 3,800? This might make more sense when you reflect on how coastal communities differ. 6,972 of the 21,116 meters in the PUD system are seasonal and many of these are in Netarts – Oceanside. People spend summers at the beach. Seasonal meters may contribute less to loading as people are not present during the peak loading months, and they are also not present in the high wind events in winter.

Aging can be dealt with by rebuilding line 51 without building a new substation or transmission line. Several year ago, BPA rebuilt the aging Keeler to Tillamook transmission line WITHOUT BUILDING A NEW SUBSTATION OR TRANSMISSION LINE TO DO SO!

PUD could adequately provide reliable service to the residents of Netarts – Oceanside by building a second 26 kV line from the Trask substation, by installing new transformers, by rebuilding Line 51, by maintaining the ROW to reduce tree caused outages, and by using guardrails to minimize vehicle damage to the poles.

PUD does not need to build a new substation or transmission line to adequately provide reliable service to Netarts – Oceanside. The substation and transmission line should not be deemed by the commission to be necessary and convenient.



Tillamook People's Utility District Agenda for October 17, 2017 Regular Board Meeting

Location: Nestucca Fire and Rescue Station 87 in Hebo
(30710 Hwy. 101 South, Cloverdale, Oregon)

- 4:00 p.m. – Workshop – Pre-Budget Presentation
- 6:00 p.m. – Regular Board Meeting

▪ **Presentations by the Public:**

Presentations will be limited to five minutes per person or group unless prior arrangements for additional time have been requested through the general manager's office.

▪ **Approval of Minutes (Voice Vote) Pgs. 1-10**

- September 12, 2017 Board Workshop – Warehouse and Lobby Plan Review
- September 12, 2017 Board Workshop – Pre Pre-Budget Presentation
- September 12, 2017 Regular Board Meeting

▪ **Department Reports**

General Manager	Pgs. ACTION ITEM(S): None
Finance	Pgs. 11-31 ACTION ITEM(S): None
Information Technology	Pgs. 32-33 ACTION ITEM(S): None
Customer Services	Pgs. 34-36 ACTION ITEM(S): Approve Write-offs \$1,306.66
Human Resources	Pgs. 37- ACTION ITEM(S): None
Public Relations	Pgs. 38-50 ACTION ITEM(S): None
Operations	Pgs. 51-52 ACTION ITEM(S): None
Engineering	Pgs. 53-57 ACTION ITEM(S): None

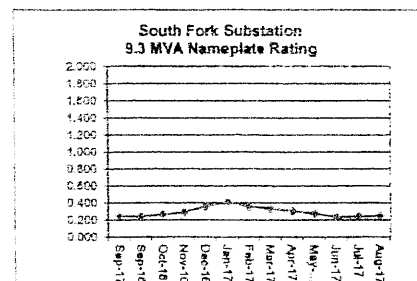
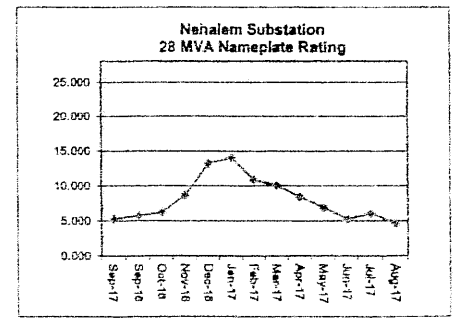
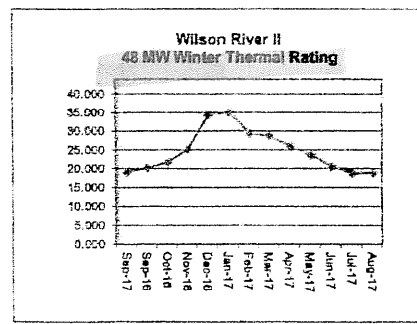
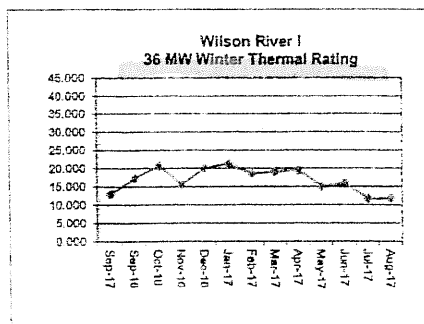
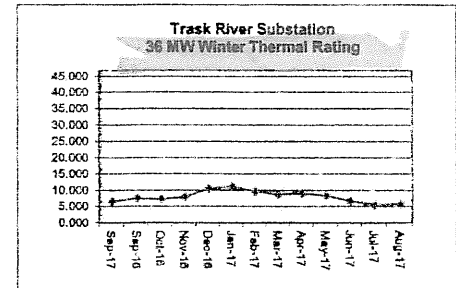
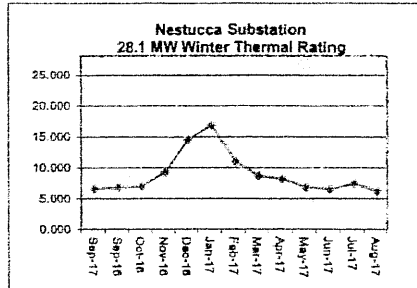
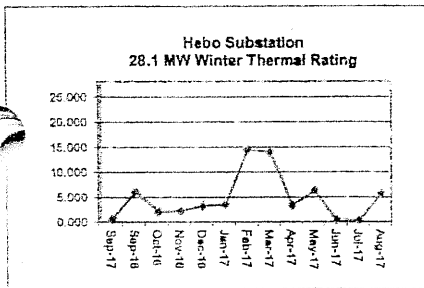
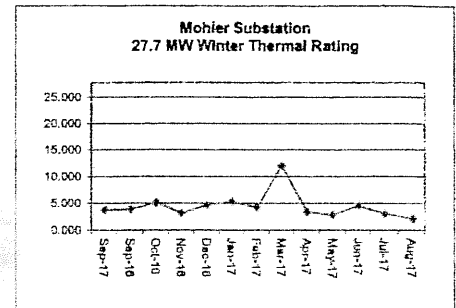
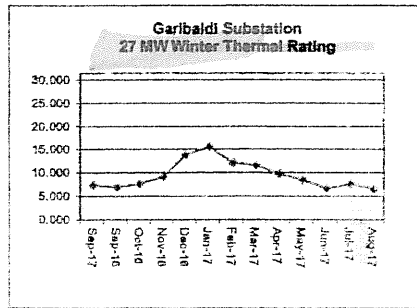
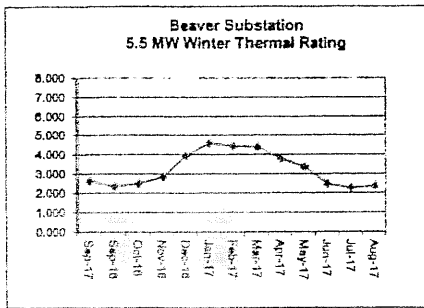
- **Approval of September 2017 Accounts Payable (Voice Vote)**
- **Items from the Board:**

TRANSFORMER LOADING (In Megawatts)

WT 5

	Sep-17	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17
Grbd 15/25	2.630	2.350	2.500	2.850	3.970	4.600	4.450	4.410	3.810	3.370	2.480	2.280	2.370
Mhr 12/20	7.330	6.930	7.660	9.130	13.660	15.540	12.080	11.590	9.810	8.430	6.620	7.590	6.550
Hbo 12/20	3.820	3.950	5.140	3.230	4.700	5.360	4.250	12.000	3.430	2.880	4.560	3.100	2.150
Nstca 12/20	0.720	6.150	2.120	2.290	3.320	3.540	14.510	14.040	3.340	6.410	0.360	0.380	5.760
Trskrv 20/33	6.630	6.790	6.950	9.290	14.510	16.840	10.960	8.690	8.190	6.870	6.530	7.440	6.120
Wilson River I - 20/33	6.640	7.530	7.330	7.980	10.520	11.120	9.720	8.750	9.060	8.330	6.590	5.470	5.730
Wilson River II - 24/40	13.010	17.240	20.620	15.540	20.210	21.240	18.650	19.110	19.530	15.110	15.900	11.710	11.800
Nhlm 15/25	19.080	20.140	21.880	25.150	34.360	35.090	29.900	28.820	25.860	23.620	20.550	18.780	18.870
SoFork 5/7	5.250	5.770	6.230	8.720	13.220	14.040	10.830	10.090	8.470	6.910	5.240	6.050	4.640
SoFork 5/7	0.245	0.243	0.266	0.292	0.361	0.412	0.358	0.337	0.307	0.282	0.239	0.242	0.252
System Total	65.255	77.103	89.496	84.472	119.021	127.782	115.108	117.837	91.807	82.212	69.069	63.042	64.242

1 Missing data for 9/28 - 9/30/17





**Tillamook People's Utility District
Agenda for October 18, 2011
Regular Board Meeting**

- **2 p.m.** - Convene Board Workshop - Pre-Budget Workshop
- **6 p.m.** - Convene Regular Board Meeting - Kiawanda Community Center
- **Presentations by the Public:**

Presentations will be limited to five minutes per person or group unless prior arrangements for additional time have been requested through the general manager's office.

- **Approval of Minutes (Voice Vote) Pgs. 1 - 7**

- September 20, 2011 Executive Session Minutes
- September 20, 2011 Board Workshop Minutes
- September 20, 2011 Regular Board Minutes

- **Department Reports**

General Manager	Pgs. Action Item(s): None
Legal Counsel	Discuss public meeting process
Human Resources	Pgs. 9 Action Item(s): None
Public Relations	Pgs. 10-17 ACTION ITEM(S): Approve Energy Efficiency Loan
Power Services	Pgs. 18-30 ACTION ITEM(S): None
Finance/IS	Pgs. 31-36 ACTION ITEM(S): None
Customer Services	Pgs. 37-38 Action Item(s): Approve Write-offs \$3,080.19 (Voice Vote)

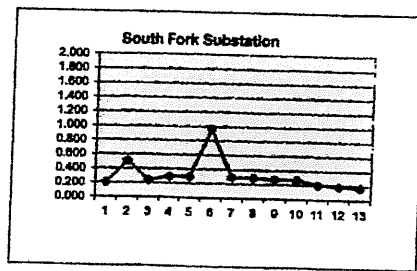
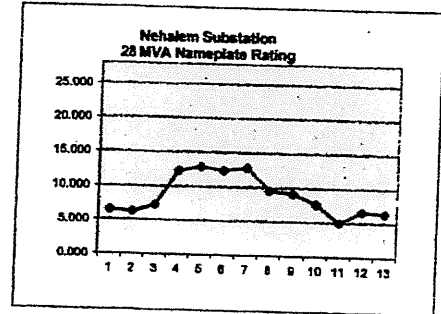
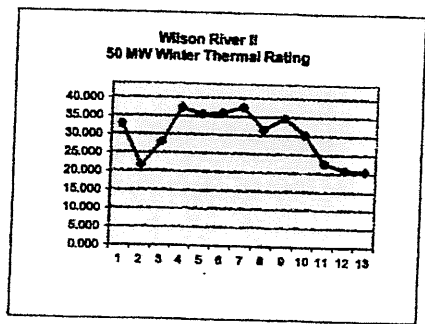
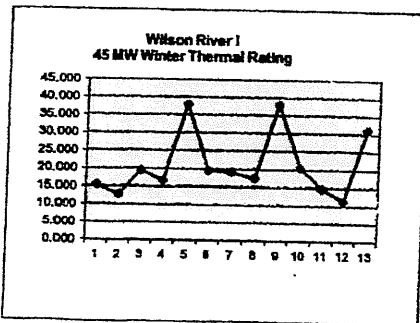
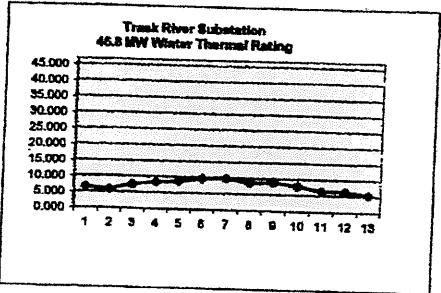
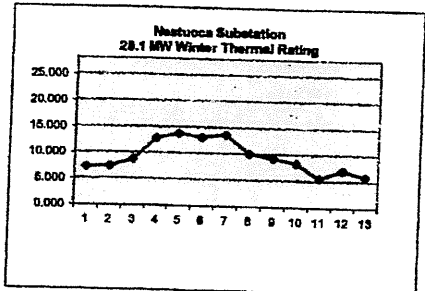
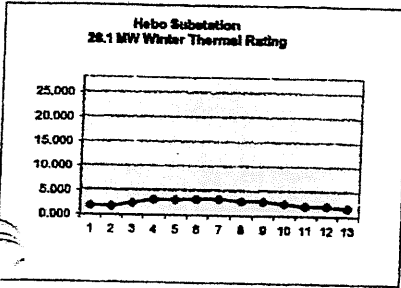
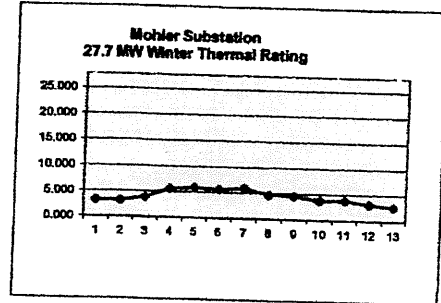
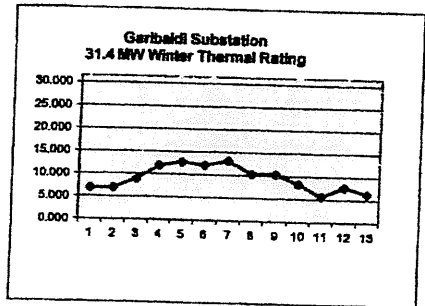
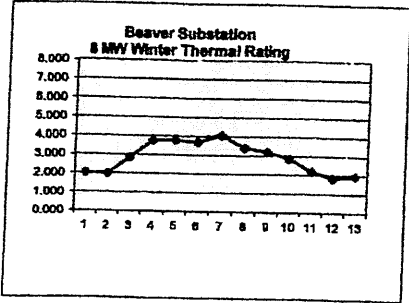
- **Approval of September 2011 Accounts Payables (Voice Vote)**
- **Items from the Board:**

SUBSTATION LOADING (in Megawatts)

Doris 2

Bvr 5/7
Grbd 16/25
Mhr 12/20
Mbo 12/20
stca 12/20
Trakrv 20/33
Wilson River I - 24/40
Wilson River II - 24/46
Nhrm 15/25
SoFork 5/7

	Sep-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11
Bvr 5/7	1.970	1.940	2.790	3.710	3.740	3.650	4.000	3.350	3.160	2.610	2.170	1.790	1.920
Grbd 16/25	6.710	6.740	6.770	11.760	12.560	11.950	12.980	10.220	10.190	8.130	5.500	7.530	6.100
Mhr 12/20	3.080	2.990	3.740	5.510	5.740	5.490	5.830	4.580	4.430	3.640	3.750	3.070	2.570
Mbo 12/20	1.700	1.610	2.280	3.000	2.940	3.130	3.150	2.770	2.760	2.340	1.870	1.880	1.540
stca 12/20	7.150	7.290	8.840	12.890	13.860	12.850	13.560	9.970	9.140	8.240	5.420	6.970	5.820
Trakrv 20/33	6.470	5.690	7.400	8.200	8.570	9.610	9.760	8.530	8.730	7.800	6.370	6.340	5.210
Wilson River I - 24/40	15.160	12.520	19.210	16.400	37.770	19.270	18.780	17.170	37.860	20.300	14.470	11.010	30.890
Wilson River II - 24/46	32.590	21.410	27.760	37.150	35.490	35.840	37.450	31.420	34.560	30.110	22.420	20.820	20.380
Nhrm 15/25	6.380	6.100	7.080	12.170	12.750	12.300	12.730	9.410	9.070	7.530	4.850	6.500	6.270
SoFork 5/7	0.195	0.499	0.232	0.287	0.288	0.857	0.289	0.286	0.266	0.266	0.202	0.181	0.168
System Total	81.385	66.779	87.902	110.877	133.508	116.147	118.518	87.706	120.188	91.166	67.022	65.891	80.868



NO ADDITIONAL CAPACITY NEEDED

Chart 1 shows the load of December 2016 using the the capacity from 2011.

Substation	Load December 2016	2011 Capacity	Loading %
Garibaldi	13.86	31.40	44%
Wilson T1	20.21	45.00	45%
Wilson T 2	34.35	50.00	69%
Trask	10.52	46.80	22%
Totals	78.94	173.20	46%

Chart 2 remains the same except the load on Wilson T2 is distributed to the other three substations.

Substation	N -1 Load	2011 Capacity	Loading %
Garibaldi	20.31	31.40	65%
Wilson T1	30.00	45.00	67%
Wilson T 2	0.00	0.00	0%
Trask	28.63	46.80	61%
Totals	78.94	123.20	64%

Chart 3 has the same load redistributed to the other three substations. Capacity has been changed to the ones PUD gave the PUC.

Substation	N -1 Load	Capacity Reported to PUC	Loading %
Garibaldi	20.31	25.00	81%
Wilson T1	27.00	33.00	82%
Wilson T 2	0.00	0.00	0%
Trask	31.63	36.90	86%
Totals	78.94	94.90	83%

Chart 4 shows the load of December 2016 using the the capacity from 2011, removing 2 subatations

Substation	N - 2 Load	2011 Capacity	Loading %
Garibaldi	0.00	0.00	0%
Wilson T1	38.07	45.00	85%
Wilson T 2	0.00	0.00	0%
Trask	40.87	46.80	87%
Totals	78.94	91.80	86%

Capacity Changes

Substation	2011	August 2014	PUC Report
Garibaldi	31.40	27.00	25.00
Wilson River 1	45.00	36.00	33.00
Wilson River II	50.00	48.00	44.00
Trask River	46.80	36.00	36.90
Total	173.20	147.00	138.90



Recent messages from: **Tillamook People's Utility District**

1. Power restored in Cape Meares and W 3rd St. Scattered outages remain; largest is Hwy 53 with about 80 customers out. [More »](#)
Entered: 3 hours, 57 minutes ago
2. Customers in Cape Meares, Bay Ocean Rd. and west to bridge near hospital will be without power for 1 hr. for emergency repairs. [More »](#)
Entered: 5 hours, 56 minutes ago
3. Power has been restored to 500 people in the Netarts area. Crews continue work to restore service to remaining 86 customers. [More »](#)
Entered: 6 hours, 31 minutes ago
4. About 580 customers in Netarts/Oceanside area are without power as a result of trees and power lines down. Crews are responding. [More »](#)
Entered: 7 hours, 50 minutes ago
5. Power has been restored to customers on 12th St. in Tillamook. Crews replaced a broken piece of equipment which caused the outage. [More »](#)
Entered: 1 week ago
6. Crews are responding to an outage near 12th St. in Tillamook affecting 8 customers. No details are available at this time. [More »](#)
Entered: 1 week ago
7. S. Till. County Outage Update- power restored at 10:25 a.m. to Oretown, Neskowin and Slab Creek RD areas. [More »](#)
Entered: 1 week, 2 days ago
8. Outage, South Till. County areas including Oretown, Neskowin and Slab Creek. [More »](#)
Entered: 1 week, 2 days ago
9. Power has been restored near Beaver. If you are located in this area and remain without electric service, please call 503-842-2122. [More »](#)
Entered: 1 week, 1 day ago
10. Power outage at MP 81 on HWY 101 S near Farmer Creek Road. Crews are responding. [More »](#)
Entered: 1 week, 2 days ago

11. View more messages from this agency »

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Outage Management - Summary of Interruptions

	2011		2012		2013		2014		2015		2016		Total	
	Hr	Min	Hr	Min	Hr	Min	Hr	Min	Hr	Min	Hr	Min	Hr	Min
Power Supplier	1	5		21		46		10	2	15	3	40	8	16
Scheduled	1	29		27		38		28		32		43	4	15
Storms	1	46	6	1		0		53	1	45		10	10	34
Equipment Failure		41		46		22		36	1	38	1	10	5	12
Trees & Wind		20		11		28		1		9	3	59	5	8
Customer Caused	1	46		14		28		38		49		44	4	38
Birds &/or Animals		1		0		1		2		1		5	0	10
All Other		10		50		3		1		6		6	1	16
Total	7	17	8	49	2	46	2	48	6	14	10	35	39	29

Tillamook PUD Transformer Loading

Substation	Substation		Jan 2017 Load	Load as a % of Thermal Rating
	MW Winter Thermal Rating	Year of Thermal Rating		
Beaver	8.00	2011	4.60	58%
	8.00	2014	4.60	58%
	8.00	PUC	4.60	58%
Garibaldi	31.40	2011	15.54	49%
	27.00	2014	15.54	58%
	25.00	PUC	15.54	62%
Mohler	27.70	2011	5.36	19%
	27.70	2014	5.36	19%
	27.70	PUC	5.36	19%
Hebo	28.10	2011	3.54	13%
	28.10	2014	3.54	13%
	28.10	PUC	3.54	13%
Nestucca	28.10	2011	16.84	60%
	28.10	2014	16.84	60%
	28.10	PUC	16.84	60%
Trask River	46.80	2011	11.12	24%
	36.00	2014	11.12	31%
	36.90	PUC	11.12	30%
Wilson River I	45.00	2011	21.24	47%
	36.00	2014	21.24	59%
	33.00	PUC	21.24	64%
Wilson River II	50.00	2011	35.09	70%
	48.00	2014	35.09	73%
	44.00	PUC	35.09	80%
Nehalem	28.00	2011	14.04	50%
	28.00	2014	14.04	50%
	28.00	PUC	14.04	50%
South Fork	2.00	2011	0.41	21%
	2.00	2014	0.41	21%
	2.00	PUC	0.41	21%
Monthly Total Load	295.10	2011	127.78	43%
	268.90	2014	127.78	48%
	260.80	PUC	127.78	49%