TESTIMONY OF WILLIAM H. DUNN, JR.
BEFORE THE ENERGY, UTILITIES & TECHNOLOGY (EUT) COMMITTEE
MAY 20, 2021

Senator Lawrence, Representative Berry, and members of the Joint Committee on Energy, Utilities, and Technology: My name is Bill Dunn and I reside in Yarmouth, Maine, where I and my neighbors frequently have to run our standby generators. I am filing this testimony in enthusiastic support of L.D. 1708, "An Act To Create the Pine Tree Power Company, a Nonprofit Utility, To Deliver Lower Rates, Reliability, and Local Control for Maine Energy Independence." I am the President and sole employee of Sunset Point, LLC, but I am filing this testimony as an unpaid volunteer with Our Power. I have almost 50 years of experience in the electric power industry. Briefly, after two years at engineering firm Stone & Webster (since acquired) I spent the next 16 years split between two New England utilities:

1. Vermont Electric Power Company (VELCO), which is the Vermont transmission company that represents the Vermont distribution utilities in NEPOOL, the New England Power Pool, and runs a sub-pool among the Vermont distribution utilities; and
2. Massachusetts Municipal Wholesale Electric Company (MMWEC), where I was responsible for the power supply and regulatory matters of more than 30 Massachusetts municipal utilities and represented all Public Power utilities in New England on the NEPOOL Operations Committee, which I chaired for two years.

But that was a long time ago. Since 1989 I have been consulting throughout the United States and worldwide in more than 25 countries on issues associated with electricity market design and implementation, ancillary services, utility and electricity market operations, inter-utility coordination, contractual power supply arrangements, and transmission access and pricing. A short bio is attached to this testimony as Attachment A.

The purpose of my testimony is three fold:

1. To discuss customer satisfaction with the two Maine Investor-Owned Utilities (IOUs): Central Maine Power Company (CMP) and Versant Power (Versant), both owned by foreign entities to which a significant share of the rates paid by Maine ratepayers go;

2. To discuss the lack of reliability of the power supply in Maine; and

3. To fully support the legislation (L.D. 1708) to create Pine Tree Power Company.

Customer Satisfaction

In 2020 J.D. Power polled residential customers of utilities throughout the United States as to their satisfaction with their utility service. The polling included the residential customers of both IOUs and Consumer-Owned Utilities (COUs, consisting of municipals, State agencies and cooperatives). The results of this polling showed the abject failure of Maine's IOUs to meet the needs of their customers.

In the case of residential customers, out of 142 utilities rated, Versant ranked 140th and CMP ranked 142nd. Yes, that's right; Maine had two of the three worst rated utilities in the whole United States in terms of residential customer satisfaction. Attached as Exhibit 1 is a spreadsheet showing the ratings of all 142 utilities and a corresponding bar chart (without all the utility names to save space) to demonstrate their failure visually, especially the extent of the drop off from the 141st to the 142nd rated utility, CMP.

Additional information can be extracted from this poll data. In spite of the fact that the customers of twice as many IOUs as COUs were polled, nine of the ten best rated utilities were COUs. Sixteen of the best twenty rated utilities were COUs. Twenty-two of the thirty best rated utilities were COUs. In fact, the average rating of the 47 COUs of 768 was significantly better than the average rating of the 95 IOUs of 745. Note that even this average IOU rating of 745 was considerably higher than the ratings of Maine's IOUs at 689 for Versant and 634 for CMP.

Conversely, twelve of the thirteen worst rated utilities were IOUs. Nineteen of the twenty-one worst rated utilities were IOUs. Finally, twenty-three of the twenty-six worst rated utilities were IOUs. The evidence was clear with respect to residential customer satisfaction, COUs performed much better than IOUs, and all utilities in the rest of the country performed better than Maine's IOUs.

Note that 2020 was not an unusual year. In 2019 the J.D. Power survey of residential customer satisfaction had the two Maine IOUs as the two lowest rated utilities of the 142 utilities rated. In 2018 CMP was slightly better, at 22nd lowest, but Emera was still the 2nd lowest of the 138 utilities rated that year.

J.D. Power also surveyed business customers in 2020 as to their satisfaction. Because of the J.D. Power size criteria for business customers (serving more than 40,000 business customers), quite a few of the utilities in the residential customer survey were not included, and Versant was one of those not included. Also, they apparently did not survey the business customers of Cooperatives. The results, however, were the same. Out of the 80 utilities surveyed for business customer satisfaction, CMP came in dead last.

CMP's rating was over 20 points lower than the next lowest rated utility, world famous Pacific Gas & Electric (PG&E). Just imagine how poor your performance must be to be rated well below PG&E: a utility that (i) twice filed for bankruptcy; (ii) is on federal probation for a pipeline explosion, (iii) was charged with starting fires that killed 86 people several years ago and (iv) spent the summer of 2020 implementing rotating blackouts to limit their chance of starting more fires.

With respect to business customers, there was not a lot of difference in the average rating of the 70 IOUs versus the 10 COUs. Attached as Exhibit 2 is a spreadsheet showing the ratings of all 80 utilities and a corresponding bar chart (without all the utility names to save space) to demonstrate their performance visually, especially the extent of the drop off from the 79th to the 80th rated utility, CMP.

As with the residential customer survey, 2020 was not an aberration. In both 2019 and 2018 CMP was also the lowest rated utility with respect to business customer satisfaction out of 87 and 88 utilities rated, respectively.

One might wonder why the Maine IOUs are so unpopular. For this, let's concentrate on CMP, by far the larger of the two Maine IOUs. In the case of CMP it could be their famous billing problems. It could be the fact that they are using every tactic in the book, including a misleading public relations campaign, to force through their unpopular transmission tie to Québec for the benefit of Massachusetts and CMP's foreign owners and to the detriment of Maine's woods. It could be their resistance to solar power. It could be their poor customer service, when you can actually reach customer service. Whatever other reasons there are, it could also be the fact that Maine has the worse electricity supply reliability in the whole nation.

Reliability

The US Energy Information Administration (EIA) publishes reliability data by State and composite data for the country every October. Therefore, the latest data is for 2019. Exhibit 3 shows the data for that year as compiled by the American Public Power Association (APPA). When reviewing this data several definitions are helpful:

Acronym	Definition	What it means
MED	Major Event Days	An interruption or series of interruptions that exceed reasonable design and/or operational limits of the electric power system. In general, this seems to be days with outages longer than 24 hours.
SAIDI	System Average Interruption Duration Index	The total sustained interruption duration for the average customer during a predefined period of time. SAIDI can be viewed as the total amount of time the average customer can expect to be out of service each year.
CAIDI	Customer Average Interruption Duration Index	The average outage duration that any given customer would experience for each outage. CAIDI can also be viewed as the average restoration time.
SAIFI	System Average Interruption Frequency Index	The average number of interruptions that a customer would experience each year.

An analysis of the data in Exhibit 3 is quite instructive. Looking at the reliability data calculated in accordance with the standards of the Institute of Electrical and Electronics Engineers (IEEE), both with and without Major Event Days, demonstrates Maine's poor performance compared to IOUs in other States and to Public Power utilities:

2019 Outages Without Major Event Days

Acronym	Description	U.S. IOUs	Maine IOUs	Public Power
SAIFI	Number of outages/year	1.18	1.74	0.84
SAIDI	Total outage minutes/year	149.98	245.90	62.19
CAIDI	Minutes out/outage (restore time)	122.84	139.22	83.92

As striking as that table is for demonstrating the failures of Maine's IOUs, the failure is even more apparent when you include Major Event Days:

2019 Outages With Major Event Days

Acronym	Description	U.S. IOUs	Maine IOUs	Public Power
SAIFI	Number of outages/year	1.50	2.58	1.19
SAIDI	Total outage minutes/year	298.41	997.00	124.43
CAIDI	Minutes out/outage (restore time)	186.64	384.17	110.15

As you can see, in 2019 the Maine customers of IOUs experienced more than three times the minutes of outages, including MEDs, as the customers of IOUs elsewhere in the US (almost 17 hours of outages), and the average duration of each individual outage (more than 6 hours) was more than twice as long. As can also be seen, public power entities performed much better than IOUs in general, with less than half the outage minutes each year.

How did Maine compare to other individual States in 2019? Again, Maine did not compare favorably. Here are some of the worst performing States by a variety of measures, with MEDs:

State	Minutes of Outage/Year	Number of Outages/Year	Restoration Time Minutes
Maine	997.00	2.58	384.17
West Virginia	747.17	2.58	295.80

State	Minutes of Outage/Year	Number of Outages/Year	Restoration Time Minutes
Michigan	545.93	1.73	303.62
Louisiana	529.03	1.84	283.47
California	496.68	1.95	266.19
Arkansas	142.00	3.08	46.10
US Average	298.41	1.50	186.64

Note that I included Arkansas in this table to show that while they had the highest number of outages in 2019, they were very short outages and accumulated to much less time than the States with slow restoration times. The average restoration time for an outage in Maine was over 6 hours!

Why was the reliability of Maine's IOUs so poor? I am sure CMP and Versant will say it was because Maine has such bad weather and lots of trees. How disingenuous. Lots of States have lots of trees and bad weather, and Maine does not, for the most part, have hurricanes, tornadoes, earthquakes, etc. So, let's compare Maine's 2019 IOU reliability with other New England States, especially Vermont and New Hampshire, with Major Event Days.

State	Minutes of Outage/Year	Number of Outages/Year	Restoration Time Minutes
Maine	997.00	2.58	384.17
Vermont	474.81*	2.02	235.17
Connecticut	249.20	0.99	251.97
Rhode Island	236.49	1.40	169.28
New Hampshire	185.34	1.08	169.07
Massachusetts	178.63	1.18	156.76

* Using the "Other" outage standard as apparently the Vermont IOU doesn't report by IEEE standards

Again, even in New England, Maine stood out for its poor reliability in 2019 with more than twice as many minutes of outages as the next highest State, Vermont. And, as with customer satisfaction in 2020, Maine's 2019 reliability was not an aberration. Here's a table comparing Maine's IOU reliability with the national averages for 2014 to 2018:

Minutes of Outages With Major Event Days

Year	U.S. IOUs	Maine IOUs	Public Power
2018	336.54	706.65	178.09
2017	366.48	2,295.15	166.55
2016	282.74	714.20	117.73
2015	234.91	189.80	124.95
2014	275.30	1,083.85	79.49

Quite amazing isn't it. In only one year (2015) did Maine's IOU's have reliability comparable to all US IOUs, and even in that year it was still worse than the Public Power reliability. In the other years the outage minutes of Maine's IOUs ranged from 2.1 to 6.3 times the outage minutes of US IOUs and from 4.0 to 13.8 times the outage minutes of Public Power utilities.

So what is the real reason for Maine's poor reliability? It is probably a combination of poor design and poor maintenance. The Maine IOUs apparently would prefer to put their manpower and capital to projects that provide a greater return on investment to their foreign owners than invest in reliability for their captive Maine customers. They are certainly doing that if you check their transmission and distribution rates over the last 10 years. Exhibit 4 contains charts showing the rates of CMP and the two separate service territories (Divisions) of Versant (the territories of the former Bangor Hydro-Electric (BHD) and Maine Public Service (MPD)). What these charts show is the CMP and Versant are putting their investments into transmission rather than distribution, even though it is the distribution system that is the source of most outages. These rate increases are summarized in the following table:

	2011-2020 Rate Increase	
Utility	Transmission	Distribution
CMP	100.18%	15.25%
Versant (BHD)	60.00%	12.95%
Versant (MPD)	176.50%	13.64%

There are real costs, not just inconvenience, to Mainers associated with the poor reliability of Maine's IOUs. There are the capital costs of all the "backyard" or "standby" generators installed in Maine to protect residential, commercial and industrial customers from the repeated failures of the IOU distribution systems which, as previously indicate, are the source of most outages. There are also the costs of running all those backyard or standby generators and the impact on air pollution. For those business customers without backyard generators, or which have to shut down even though they have on-site power, there are the costs of lost business.

In addition, there are other costs for customers without power, such as the spoilage of food, lost production, loss of internet, damage to systems that freeze-up in the cold, etc. Why do you think we see so many ads for standby generators on our TVs? Why do just about all of the houses in my neighborhood, including mine, have standby generators? I grew up in western Massachusetts and lived 7 years in Vermont and 11 years in the Pioneer Valley (Connecticut River Valley) of Massachusetts and never needed or thought about needing a standby generator.

How would a COU like the proposed Pine Tree Power change the reliability of the Maine transmission and distribution system? Initially, Pine Tree Power would improve reliability by restoring the ability of line crews to do their jobs in a safe and efficient manner. This would include improving the design and rebuild of distribution lines that are most likely to need repair, and investing in insulated wires and other upgrades, where appropriate, that should have been implemented in Maine decades ago. This means a short-term investment that will bring long-term benefits. But, these changes will not happen overnight.

Massachusetts's 41 COUs provide a good model for investing in distribution infrastructure in order to improve reliability. Most, if not all, of the COUs in Massachusetts use insulated distribution wires in high risk areas, supported by a strong carrying cable. The added expense is more than justified because it protects against outages caused when tree limbs brush against a line causing the circuit to trip. It also means that the line itself can support some branches and trees leaning against it without tripping or breaking, allowing the power to remain on until line crews can clear the branches or fallen tree.

This not only reduces outages, but also facilitates quick repair, which as indicated can simply involve removing the branches or trees, without calling in expensive outside help. Maine's IOUs, on the other hand, rely on bringing in contractors, tree trimming companies and crews from out-of-state utilities to repair the extensive damage their poor design and maintenance ensures will happen every time there is bad weather or even a little wind. Many COUs also use wildlife guards to reduce outages caused by squirrels and birds (CMP just started running an ad saying they are now doing that!). Hardening distribution lines by using "tree wire" or "spacer cable" systems could add 25% to the cost of materials when installing a line, but would also substantially reduce the cost of foliage removal, repairs and maintenance.

Maine IOUs rarely invest in this type of upgraded distribution infrastructure where needed. The un-supported, bare distribution wires common throughout our highly forested State are vulnerable to the impacts of wind, snow, and ice on trees. The resulting outages are predictable and commonplace. It has become so bad that CMP has been forced to spend time and resources on public relations and information systems to try to soothe public frustration. Central Maine Power has an expensive and elaborate system by which consumers can be informed (often misinformed) of outages. That this has been necessary is revealing.

Power outages also lead to internet outages, since interrupting the power supply to any part of the internet infrastructure can cause an internet outage stretching well beyond the area where electric power is out. Many customers will lose internet service even when their power supply is not interrupted. Customers may blame their internet service provider for these outages, when they actually result from a distant power outage that can be traced to neglect on the part of the electric utility. This is especially critical when many customers are working and attending school from home, as during the coronavirus (COVID-19) pandemic

Power outages are expensive to repair. Before and after each major storm, large numbers of crews, both their own and those of other utilities and service companies, are deployed by CMP and Versant at significant expense. Since ratepayers bear most of the cost of these repairs, the IOU has little incentive to prevent them by investing in better distribution infrastructure. In fact, CMP is currently before the Maine Public Utilities Commission (MPUC) seeking to be reimbursed $26.5 million for the last failure of their dilapidated system (https://www.pressherald.com/2021/04/06/cmp-asks-for-rate-increase-to-offset-costs-from-5-storms/).

Pine Tree Power would not change this overnight. Weak uninsulated distribution lines in high risk areas built by the IOUs can be replaced over time as their working life ends or repairs are needed. Improved distribution infrastructure could be used in all new construction rolled out to handle the increase in electricity demand to meet Maine's beneficial electrification policy goals. Even though these investments would reduce service interruptions and facilitate renewable energy, Maine's IOUs will either not make them or will make them at a far higher cost, given their inherent financial structure.

To the extent that Maine's IOUs have recently begun investing in hardening of the distribution system, it is too little, too late, and too expensive. Using tax-exempt, low-cost capital, Pine Tree Power can accelerate the investments Maine needs to prepare for more extreme weather, while still making it imaginable for Maine people and businesses to switch to clean electricity for their heating and transportation needs. This could save Maine over $9 billion over the next 30 years.

While stringing supported insulated distribution wires costs more up front, it saves even more money in the long run and significantly reduces the outage rate. That is one of the ways, along with lower financing costs (see a paper I wrote on this, based on the economic studies of LEI and Dr. Richard Silkman, in Attachment B) and eliminating the constant pressure to extract a profit, Pine Tree Power can provide improved customer service at lower rates.

The time has come for Maine to relinquish its lamentable title as the State with the least reliable power and the lowest customer satisfaction. The time has come to pass L.D. 1708 and start the process to create Pine Tree Power Company to purchase the transmission, distribution and related facilities of CMP and Versant and to expand and operate those facilities for the benefit of Maine ratepayers.

Exhibit 1

J.D. Power Residential Customer Satisfaction Study

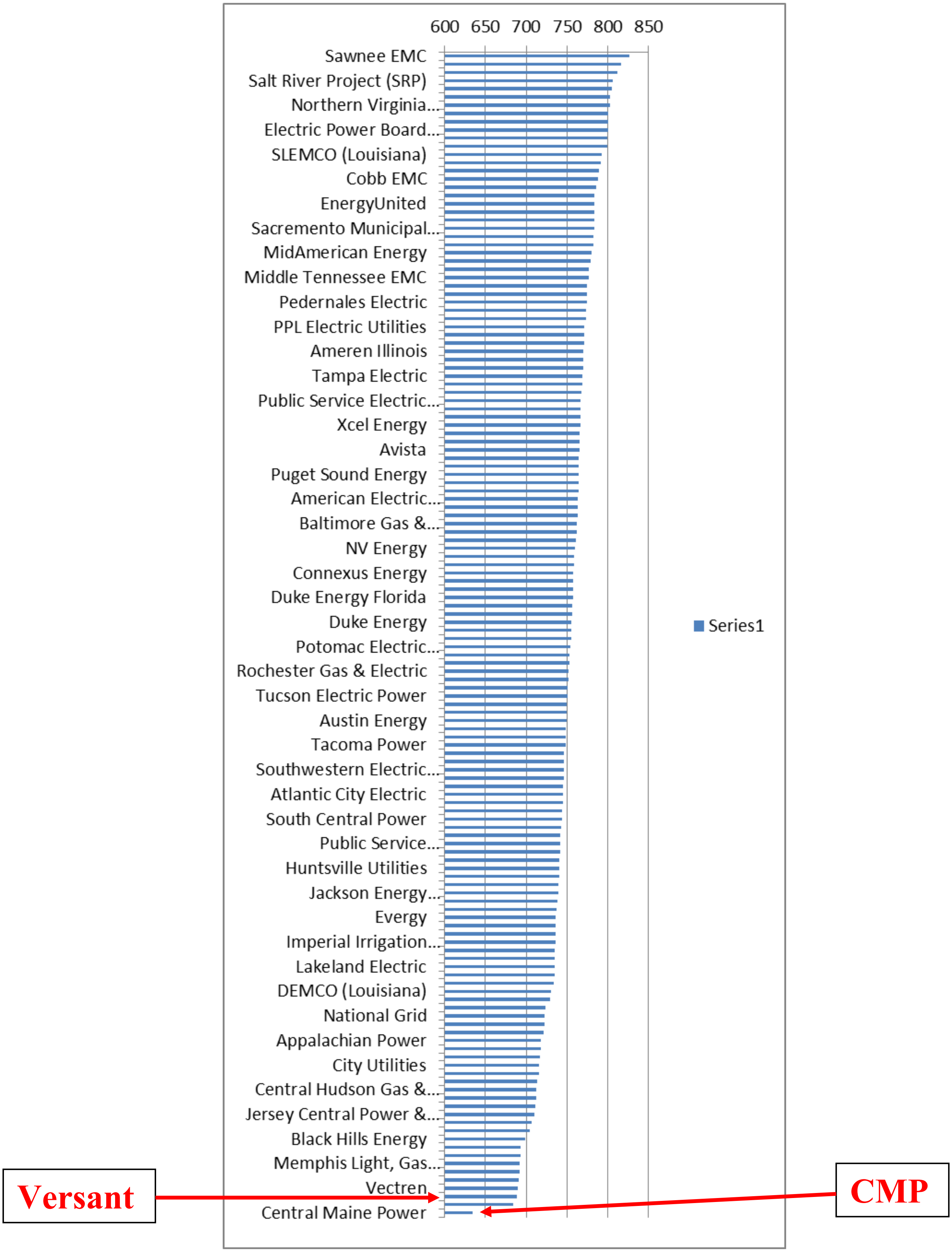
Utility Ranking	Utility	Rating*	Utility Type
1	Sawnee EMC	826	Coop
2	GreyStone Power	816	Coop
3	Clark Public Utiities	812	Muni
4	Salt River Project (SRP)	806	State
5	Sumter Electric Cooperative (SECO) Energy	805	Coop
6	Jackson EMC	803	Coop
7	Northern Virginia Electric Cooperative (NOVEC)	803	Coop
8	Florida Power & Light	801	IOU
9	CoServ (North Texas)	801	Coop
10	Electric Power Board of Chattanooga (EPB)	800	Muni
11	Orlando Utilities Commission (OUC)	799	Muni
12	Magic Valley Electric Cooperative	799	Coop
13	SLEMCO (Louisiana)	792	Coop
14	Georgia Power	791	IOU
15	Southern Maryland Electric Cooperative	789	Coop
16	Cobb EMC	788	Coop
17	Rappahannock Electric Cooperative	786	Coop
18	Idaho Power	784	IOU
19	EnergyUnited	784	Coop
20	Kentucky Utilities	783	IOU
21	Entergy Mississippi	783	IOU
22	Sacremento Municipal Utilitiy District (SMUD)	783	Muni
23	Great Lakes Energy	782	Coop
24	Walton EMC	782	Coop
25	MidAmerican Energy	780	IOU
26	CPS Energy	779	Muni
27	Mississippi Power	777	IOU
28	Middle Tennessee EMC	777	Coop
29	Entergy Louisiana	774	IOU
30	Clay Electric Cooperative	774	Coop
31	Pedernales Electric	774	Coop
32	Alabama Power	773	IOU
33	Cleco Power	773	IOU
34	PPL Electric Utilities	771	IOU
35	Public Service Company of Oklahoma	771	IOU
36	Xcel Energy	771	IOU
37	Ameren Illinois	770	IOU
38	Wiconsin Public Service (WPS)	770	IOU
39	Duke Energy Progress	770	IOU
40	Tampa Electric	769	IOU
41	Santee Cooper	769	State
42	Entergy Texas	768	IOU
43	Public Service Electric & Gas (PSE&G)	767	IOU
44	Rocky Mountain Power	767	IOU
45	Lee County Electric Cooperative	767	Coop
46	Xcel Energy	766	IOU
47	Entergy Arkansas	765	IOU
48	Portland General Electric (PGE)	765	IOU
49	Avista	765	IOU
50	DTE Energy	764	IOU
51	Duke Energy Carolinas	764	IOU
52	Puget Sound Energy	764	IOU
53	Anaheim Public Utilitiesa	764	Muni
54	Withlacoochee River Electric Cooperative	764	Coop
55	American Electric Power (AEP) Ohio	763	IOU
56	Madison Gas & Eletric	763	IOU
57	Oklahoma Gas & Electric (OG&E)	763	IOU
58	Baltimore Gas & Electric (BGE)	762	IOU
59	Ameren Missouri	762	IOU
60	Colorado Springs Utilities	761	Muni
61	NV Energy	760	IOU
62	Consolidated Edison	759	IOU
63	Louisville Gas & Electric	759	IOU
64	Connexus Energy	758	Coop
65	Philadephia Electric Company (PECO)	757	IOU
66	Consumers Energy	757	IOU
67	Duke Energy Florida	757	IOU
68	Pacific Power	756	IOU
69	Southern California Edison	756	IOU
70	Duke Energy	755	IOU

Utility Ranking	Utility	Rating*	Utility Type
71	Ohio Edison	755	IOU
72	Xcel Energy	755	IOU
73	Potomac Electric Company (PEPCO)	754	IOU
74	Dayton Power & Light	753	IOU
75	Dominion Energy	753	IOU
76	Rochester Gas & Electric	752	IOU
77	Indiana Michigan Power	752	IOU
78	Seattle City Light	751	Muni
79	Tucson Electric Power	751	IOU
80	Green Mountain Power	750	IOU
81	Lincoln Electric System	750	Muni
82	Austin Energy	750	Muni
83	Omaha Public Power District	749	Muni
84	Delmarva Power	748	IOU
85	Tacoma Power	748	Muni
86	Commonwealth Edison (ComEd)	746	IOU
87	Gulf Power	746	IOU
88	Southwestern Electric Power	746	IOU
89	Intermountain Rural Electric Association	746	Coop
90	Metropolitan Edison	745	IOU
91	Atlantic City Electric	745	IOU
92	Penn Power	745	IOU
93	City of Tallahassee	744	Muni
94	South Central Power	744	Coop
95	Northern Indiana Public Servic (NIPSCO)	743	IOU
96	West Penn Power	742	IOU
97	Public Service Company of New Mexico (PNM)	742	IOU
98	Snohomish County Public Utility District (PUD)	742	Muni
99	Indianapolis Power & Light	741	IOU
100	Huntsville Utilities	741	Muni
101	San Diego Gas & Electric	740	IOU
102	The Illuminating Company	739	IOU
103	Jackson Energy Authority (JEA)	739	Muni
104	Montana-Dakota Utilities	738	IOU
105	Duquesne Power	737	IOU
106	Evergy	736	IOU
107	We Energies	736	IOU
108	Toledo Edison	736	IOU
109	Imperial Irrigation District	736	State?
110	Potomac Edison	735	IOU
111	Minnesota Power	735	IOU
112	Lakeland Electric	735	Muni
113	Arizona Public Service (APS)	735	IOU
114	Nashville Electric Service (NES)	734	Muni
115	DEMCO (Louisiana)	730	Coop
116	El Paso Electric	729	IOU
117	Pennsylvania Electric Company (Penelec)	724	IOU
118	National Grid	722	IOU
119	Alliant Energy	722	IOU
120	Los Angeles Department of Water & Power	721	Muni
121	Appalachian Power	718	IOU
122	Hawaiian Electric	718	IOU
123	Kentucky Power	717	IOU
124	City Utilities	716	IOU
125	NorthWestern Energy	716	IOU
126	Mon Power	713	IOU
127	Central Hudson Gas & Electric	712	IOU
128	Knoxville Utilities Board	712	Muni
129	Eversource	711	IOU
130	Jersey Central Power & Light	710	IOU
131	New York State Electric & Gas (NYSEG)	707	IOU
132	Entergy New Orleans	704	IOU
133	Black Hills Energy	699	IOU
134	Orange & Rockland	693	IOU
135	United Illuminating	693	IOU
136	Memphis Light, Gas and Water (MLGW)	692	Muni
137	Pacific Gas & Electric	692	IOU
138	Otter Tail Power Company	691	IOU
139	Vectren	690	IOU
140	Versant (formerly Emera Maine)	689	IOU
141	Empire District Electric	684	IOU
142	Central Maine Power	634	IOU

Versant → 140

CMP → 142

Average Utility Rating 752.4
Average IOU Rating 744.5
Average COU Rating 768.2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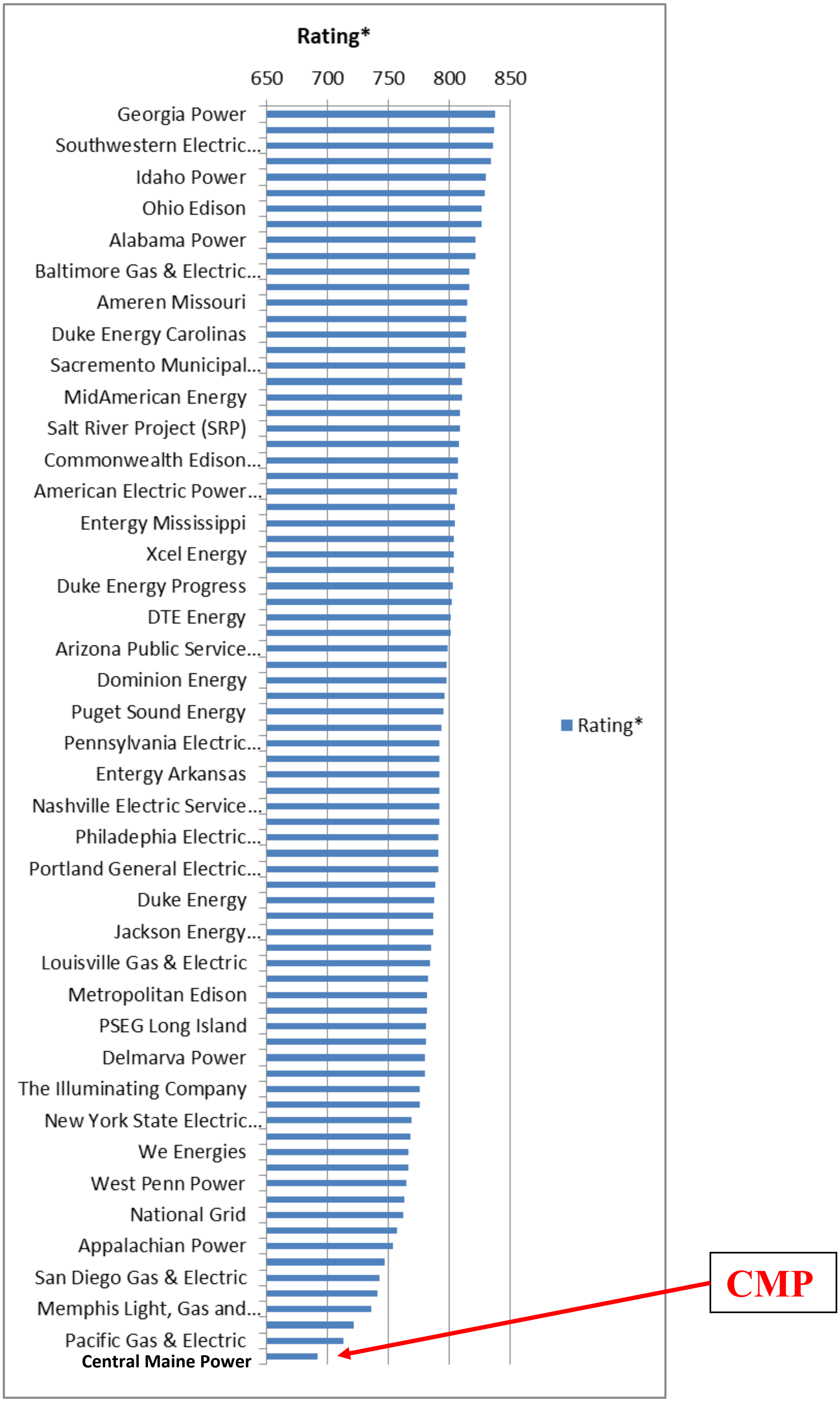
Sawnee EMC
Salt River Project (SRP)
Northern Virginia...
Electric Power Board...
SLEMCO (Louisiana)
Cobb EMC
EnergyUnited
Sacramento Municipal...
MidAmerican Energy
Middle Tennessee EMC
Pedernales Electric
PPL Electric Utilities
Ameren Illinois
Tampa Electric
Public Service Electric...
Xcel Energy
Avista
Puget Sound Energy
American Electric...
Baltimore Gas &...
NV Energy
Connexus Energy
Duke Energy Florida
Duke Energy
Potomac Electric...
Rochester Gas & Electric
Tucson Electric Power
Austin Energy
Tacoma Power
Southwestern Electric...
Atlantic City Electric
South Central Power
Public Service...
Huntsville Utilities
Jackson Energy...
Evergy
Imperial Irrigation...
Lakeland Electric
DEMCO (Louisiana)
National Grid
Appalachian Power
City Utilities
Central Hudson Gas &...
Jersey Central Power &...
Black Hills Energy
Memphis Light, Gas...
Vectren
Central Maine Power
Series1
Versant
CMP

Exhibit 2
J.D. Power Business Customer Satisfaction Study

Utility Ranking	Utility	Rating*	Utility Type
1	Georgia Power	838	IOU
2	Florida Power & Light	837	IOU
3	Southwestern Electric Power	836	IOU
4	Tampa Electric	834	IOU
5	Idaho Power	830	IOU
6	Duke Energy Florida	829	IOU
7	Ohio Edison	827	IOU
8	Kentucky Utilities	827	IOU
9	Alabama Power	822	IOU
10	Seattle City Light	822	Muni
11	Baltimore Gas & Electric (BGE)	817	IOU
12	Consolidated Edison	817	IOU
13	Ameren Missouri	815	IOU
14	Ameren Illinois	814	IOU
15	Duke Energy Carolinas	814	IOU
16	Entergy Texas	813	IOU
17	Sacremento Municipal Utilitiy District (SMUD)	813	Muni
18	PPL Electric Utilities	811	IOU
19	MidAmerican Energy	811	IOU
20	Public Service Company of Oklahoma	809	IOU
21	Salt River Project (SRP)	809	State
22	Austin Energy	808	Muni
23	Commonwealth Edison (ComEd)	807	IOU
24	Entergy Louisiana	807	IOU
25	American Electric Power (AEP) Ohio	806	IOU
26	Xcel Energy	805	IOU
27	Entergy Mississippi	805	IOU
28	Indianapolis Power & Light	804	IOU
29	Xcel Energy	804	IOU
30	Los Angeles Department of Water & Power	804	Muni
31	Duke Energy Progress	803	IOU
32	Public Service Electric & Gas (PSE&G)	802	IOU
33	DTE Energy	801	IOU
34	Pacific Power	801	IOU
35	Arizona Public Service (APS)	799	IOU
36	Potomac Electric Company (PEPCO)	798	IOU
37	Dominion Energy	798	IOU
38	NV Energy	796	IOU
39	Puget Sound Energy	795	IOU
40	Jersey Central Power & Light	794	IOU
41	Pennsylvania Electric Company (Penelec)	792	IOU
42	Atlantic City Electric	792	IOU
43	Entergy Arkansas	792	IOU
44	Oklahoma Gas & Electric (OG&E)	792	IOU
45	Nashville Electric Service (NES)	792	Muni
46	Southern California Edison	792	IOU
47	Philadephia Electric Company (PECO)	791	IOU
48	Duquesne Power	791	IOU
49	Portland General Electric (PGE)	791	IOU
50	Omaha Public Power District	789	Muni
51	Duke Energy	788	IOU
52	Evergy	787	IOU
53	Jackson Energy Authority (JEA)	787	Muni
54	Rocky Mountain Power	785	IOU
55	Louisville Gas & Electric	784	IOU
56	NorthWestern Energy	783	IOU
57	Metropolitan Edison	782	IOU
58	Wiconsin Public Service (WPS)	782	IOU
59	PSEG Long Island	781	IOU
60	CPS Energy	781	Muni
61	Delmarva Power	780	IOU
62	Consumers Energy	780	IOU
63	The Illuminating Company	776	IOU
64	Dayton Power & Light	776	IOU
65	New York State Electric & Gas (NYSEG)	769	IOU
66	Gulf Power	768	IOU
67	We Energies	767	IOU
68	Alliant Energy	767	IOU
69	West Penn Power	765	IOU
70	Public Service Company of New Mexico (PNM)	763	IOU
71	National Grid	762	IOU
72	Eversource	757	IOU
73	Appalachian Power	754	IOU
74	El Paso Electric	747	IOU
75	San Diego Gas & Electric	743	IOU
76	Indiana Michigan Power	741	IOU
77	Memphis Light, Gas and Water (MLGW)	736	Muni
78	Northern Indiana Public Servic (NIPSCO)	722	IOU
79	Pacific Gas & Electric	713	IOU
80	Central Maine Power	692	IOU
	Average Utility Rating	791.4	
	Average IOU Rating	791.0	
	Average COU Rating	794.1	

CMP

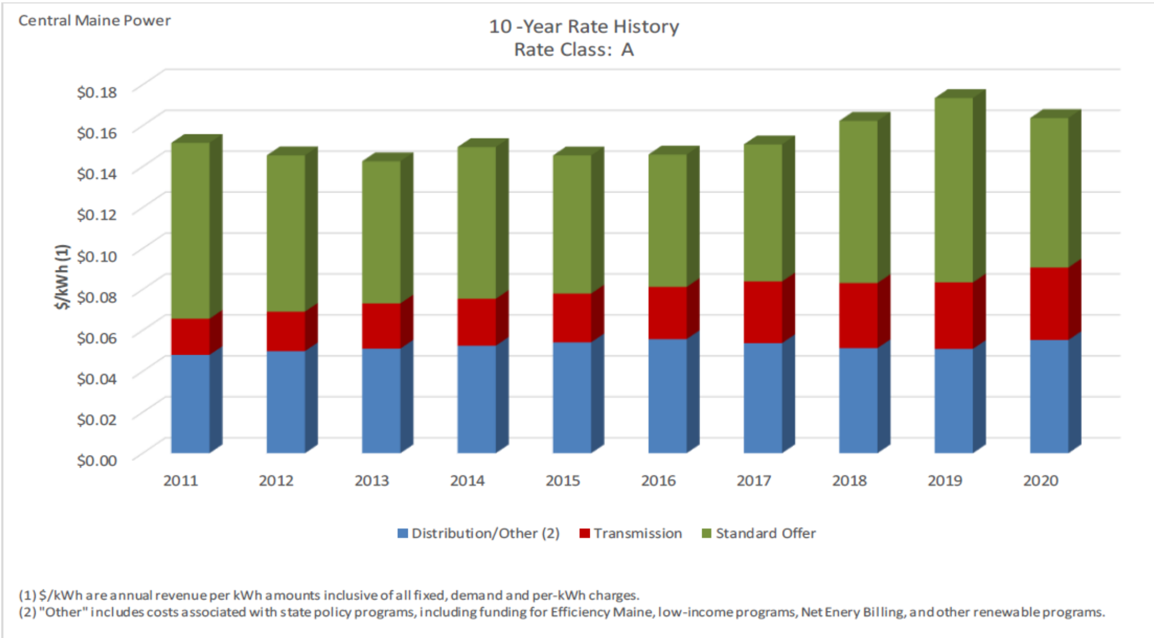

Rating*
650
700
750
800
850
Georgia Power
Southwestern Electric...
Idaho Power
Ohio Edison
Alabama Power
Baltimore Gas & Electric...
Ameren Missouri
Duke Energy Carolinas
Sacremento Municipal...
MidAmerican Energy
Salt River Project (SRP)
Commonwealth Edison...
American Electric Power...
Entergy Mississippi
Xcel Energy
Duke Energy Progress
DTE Energy
Arizona Public Service...
Dominion Energy
Puget Sound Energy
Pennsylvania Electric...
Entergy Arkansas
Nashville Electric Service...
Philadephia Electric...
Portland General Electric...
Duke Energy
Jackson Energy...
Louisville Gas & Electric
Metropolitan Edison
PSEG Long Island
Delmarva Power
The Illuminating Company
New York State Electric...
We Energies
West Penn Power
National Grid
Appalachian Power
San Diego Gas & Electric
Memphis Light, Gas and...
Pacific Gas & Electric
Central Maine Power
Rating*
CMP

<u>Exhibit 3</u>
American Public Power Association (APPA)
Summary of Reliability Data from the
US Energy Information Administration (EIA)

National Data	2019				Units
Number of Utilities Submitting Data Nationally:	All	Coop	IOU	Public Power	
	1184	572	175	437	
National Reliability Metrics (IEEE Standard)	All	Coop	IOU	Public Power	
Average of SAIDI With MED (IEEE)	267.07	346.36	298.41	124.43	Minutes
Average of SAIDI Without MED (IEEE)	138.78	178.10	149.98	62.19	Minutes
Average of SAIFI With MED (IEEE)	1.65	2.04	1.50	1.19	Interruptions
Average of SAIFI Without MED (IEEE)	1.26	1.56	1.18	0.84	Interruptions
Average of CAIDI With MED (IEEE)	146.83	157.20	186.64	110.15	Minutes
Average of CAIDI Without MED (IEEE)	104.01	109.00	122.84	83.92	Minutes
National Reliability Metrics (Other Standard)	All	Coop	IOU	Public Power	
Average of SAIDI With MED (Other)	287.11	487.32	241.38	87.59	Minutes
Average of SAIDI Without MED (Other)	130.91	187.86	107.24	54.34	Minutes
Average of SAIFI With MED (Other)	1.47	1.97	1.68	1.03	Interruptions
Average of SAIFI Without MED (Other)	1.10	1.50	0.95	0.69	Interruptions
Average of CAIDI With MED (Other)	146.01	203.42	159.51	96.01	Minutes
Average of CAIDI Without MED (Other)	102.12	116.69	115.99	81.15	Minutes

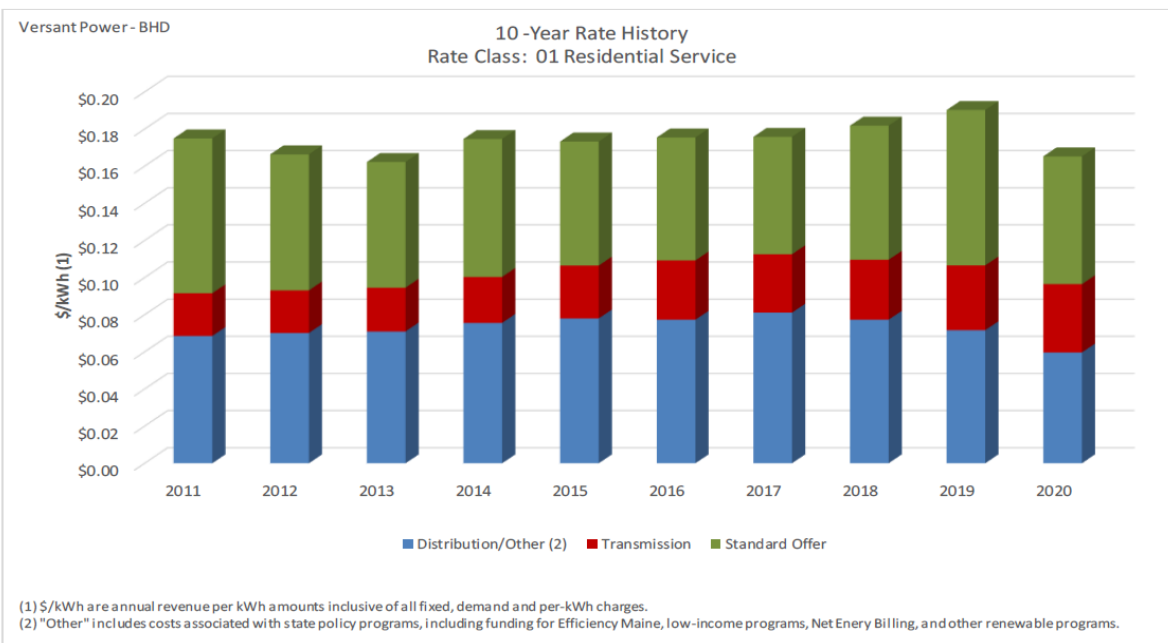
State Data					
Pick a State to Evaluate Reliability Data: ME	<-click on this box to select a state				
	2019				Units
Number of Utilities Submitting Data in This State:	All	Coop	IOU	Public Power	
	3	1	2	0	
Reliability Metrics (IEEE Standard)	All	Coop	IOU	Public Power	
Average of SAIDI With MED (IEEE)	797.86	399.58	997.00	0.00	Minutes
Average of SAIDI Without MED (IEEE)	234.90	212.91	245.90	0.00	Minutes
Average of SAIFI With MED (IEEE)	3.96	6.70	2.58	0.00	Interruptions
Average of SAIFI Without MED (IEEE)	2.98	5.44	1.74	0.00	Interruptions
Average of CAIDI With MED (IEEE)	275.99	59.64	384.17	0.00	Minutes
Average of CAIDI Without MED (IEEE)	105.86	39.14	139.22	0.00	Minutes
Reliability Metrics (Other Standard)	All	Coop	IOU	Public Power	
Average of SAIDI With MED (Other)	0.00	0.00	0.00	0.00	Minutes
Average of SAIDI Without MED (Other)	0.00	0.00	0.00	0.00	Minutes
Average of SAIFI With MED (Other)	0.00	0.00	0.00	0.00	Interruptions
Average of SAIFI Without MED (Other)	0.00	0.00	0.00	0.00	Interruptions
Average of CAIDI With MED (Other)	0.00	0.00	0.00	0.00	Minutes
Average of CAIDI Without MED (Other)	0.00	0.00	0.00	0.00	Minutes
Voltage Metrics	Voltage				
Highest Distribution Voltage Listed (IEEE):	35	kV			
Highest Distribution Voltage Listed (Other):	0	kV			
Customer Metrics	All	Coop	IOU	Public Power	
Average of Number of Customers (IEEE)	276421	12655	408304	0	Customers
Average of Number of Customers (Other)	0	0	0	0	Customers

Exhibit 4
10 Year Rate Histories



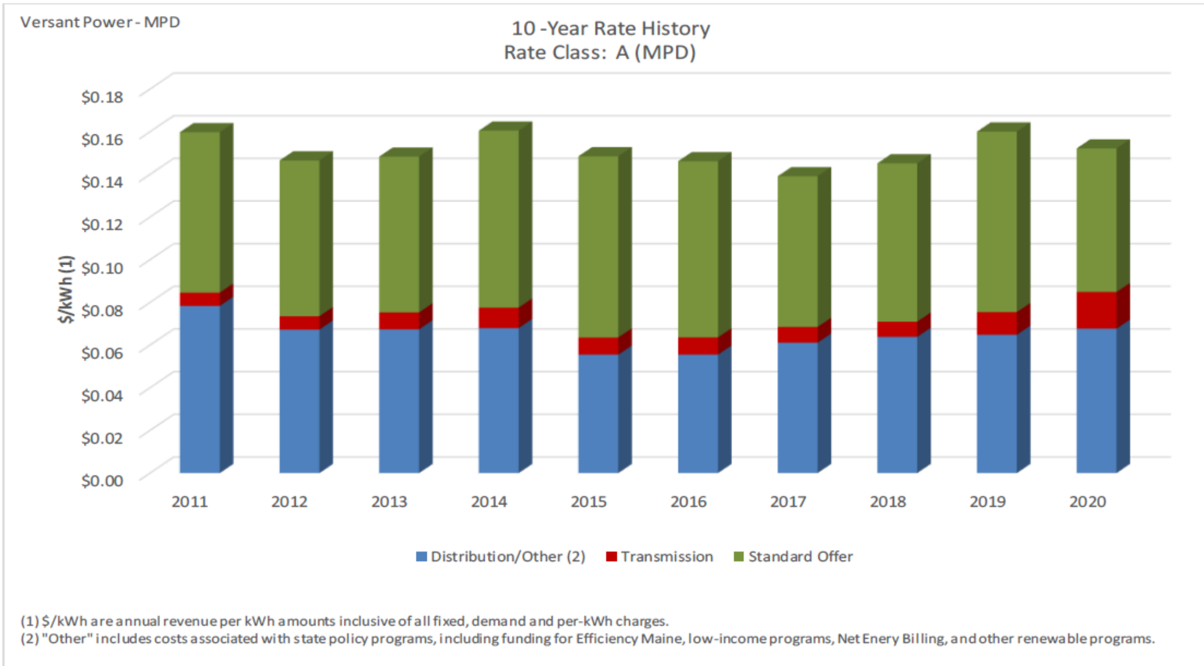
Distribution/Other rates increased 15.25% from $0.04800 to $0.05533 between 2011 and 2020.
Transmission rates increased 100.18% from $0.01767 to $0.03537 between 2011 and 2020.
Standard offer rates decreased 14.98% from $0.08591 to $0.07304 between 2011 and 2020.

Note: Source data Provided by utility in Docket No. 2019-00186



Distribution/Other rates decreased 12.95% from $0.06857 to $0.05970 between 2011 and 2020.
Transmission rates increased 60.00% from $0.02299 to $0.03679 between 2011 and 2020.
Standard offer rates decreased 17.52% from $0.08340 to $0.06879 between 2011 and 2020.

Note: Source data Provided by utility in Docket No. 2019-00186



Distribution/Other rates decreased 13.64% from $0.07837 to $0.06768 between 2011 and 2020.
Transmission rates increased 176.50% from $0.00622 to $0.01719 between 2011 and 2020.
Standard offer rates decreased 10.52% from $0.07521 to $0.06729 between 2011 and 2020.

Note: Source data Provided by utility in Docket No. 2019-00186

<u>Attachment A</u>
Bio of William H. Dunn, Jr.

Mr. Dunn specializes in electricity market design and implementation, ancillary services, utility and power pool/market operations, inter-utility coordination, contractual power supply arrangements, and transmission access and pricing. Mr. Dunn has over 49 years of proven experience in working with electric utility organizations of all ownership types (i.e., public, private, local and federal). He has held senior positions in utilities and on power pool/market committees. In addition, his design and implementation experience in electric utility markets encompasses electric utility market restructuring all across the United States (emphasis on California, Nevada, New England and WestConnect, with additional activities with respect to the Midwest ISO, Florida, Texas, GridWest, Southwest Power Pool and SeTrans), as well as internationally in Albania, Australia, the Baltics, Canada, China, Colombia, El Salvador, England & Wales, Hungary, India, Ireland, Kazakhstan, Kosovo, Kyrgyzstan, Mexico, Moldova, New Zealand, Northern Ireland, North Macedonia, Norway, Portugal, Russia, Rwanda, South Africa, Ukraine, and Venezuela. Mr. Dunn has spoken at senior electric utility industry forums and provided papers for journals. He is the firm's President.

July 1, 2020

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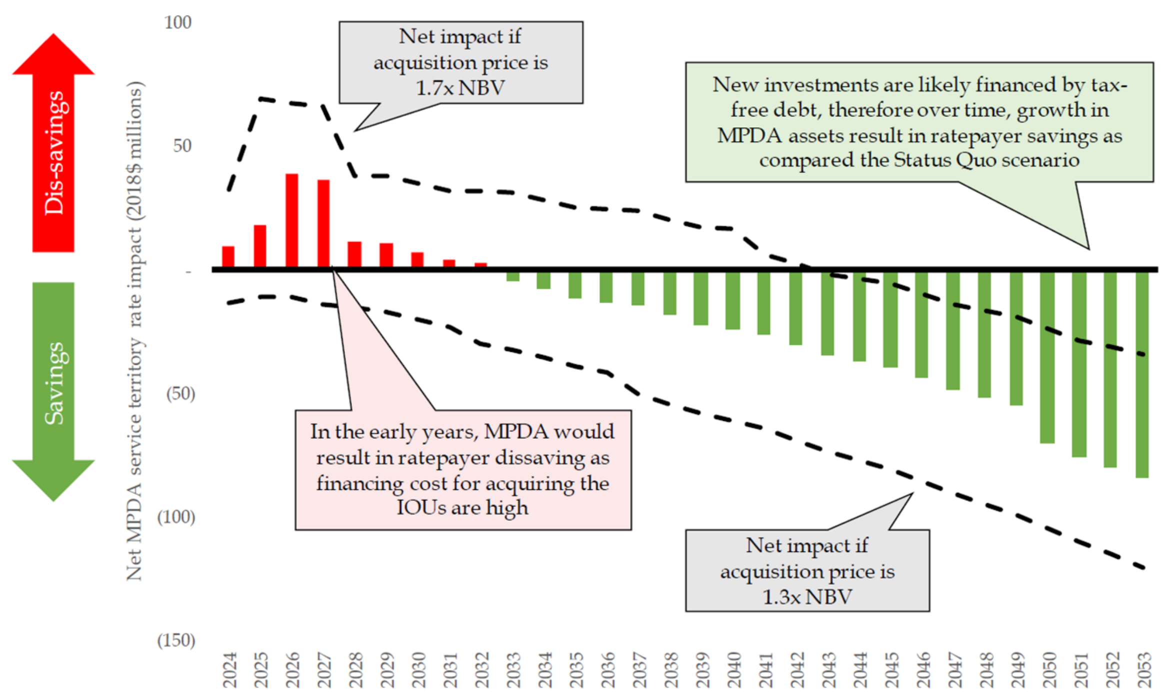
<u>Attachment B</u>
<u>ECONOMIC SYNOPSIS</u>
<u>PINE TREE POWER COMPANY</u>
Bill Dunn, Yarmouth
April 2, 2021

On February 15, 2020 London Economics International LLC ("LEI"), in collaboration with Peter Brown, Esq., issued a report titled "Evaluation of the Ownership of Maine's Power Delivery System" (the "LEI Report")[1]. This 100 page report, commissioned by the Maine Public Utilities Commission ("MPUC"), covered many details associated with the creation of the Maine Power Delivery Authority ("MPDA"). While the LEI Report and the Silkman analysis (referenced later) refer to MPDA, I'll simply refer to Pine Tree Power Company ("Pine Tree Power"), which is the current name of the utility that would be created. Some recommendations of the LEI Report have been incorporated by the proponents of Pine Tree Power into their newer proposal.

While the LEI Report found Pine Tree Power to be economic in the long run, and positive on a present worth basis, their report contained several significant errors which understated the positive economics of Pine Tree Power. Below is Figure 1 from the LEI Report:

Figure 1. Forecast of annual MPDA electric rate impacts (Reference Case), 2018 $ millions



Source: LEI analysis

1 "Evaluation of the Ownership of Maine's Power Delivery System." London Economics International, LLC; February 15, 2020

The base case in this figure shows the economics if Pine Tree Power purchases the assets of the Investor-Owned Utilities ("IOUs")[2] at 1.5 times the Net Book Value ("NBV") of those assets (the Reference Case). It indicates that retail rates would be higher under Pine Tree Power for the first 9 years and then lower forever after that. The sensitivity analyses show that Pine Tree Power is less expensive immediately for a purchase price of 1.3 NBV and is more expensive for the first 19 years for a purchase price of 1.7 NBV. In all cases Pine Tree Power is less expensive (lower electric rates) in the long run (30 years).

On a present worth basis, the LEI Report looked at the cumulative benefits over both 10 years and 30 years at discount rates of 3.5% and 5.5%. The results for the Reference Case (purchase price of 1.5 NBV) were shown in Figure 3 of the LEI Report:

Figure 3. Cumulative ratepayer savings/dis-savings under Reference Case assumptions based on NPV analysis over the short term and long term

$million in 2018$ (negative is savings)		Real discount rate	
		3.5%	5.5%
Time horizon	Short term (10 years)	$118	$110
	Long term (30 years)	($236)	($119)

As can be seen, there are hundreds of millions of dollars of long-term savings from Pine Tree Power under both discount rates. In this regard, the LEI Report supports the creation of Pine Tree Power simply based on its long-term economic benefits. Once the errors in the LEI Report are corrected, the economic case for Pine Tree Power creation is even stronger.

Dr. Richard Silkman analyzed the LEI Report and its underlying economic Model and published his analysis on May 15, 2020.[3] The first correction relates to LEI's treatment of cash. The LEI Model looks at revenues (income) and expenses in determining the economic impact of Pine Tree Power creation. In effect, they determine the Income Statement (or Profit and Loss Statement) for Pine Tree Power over time. However, once Dr. Silkman examined the underlying Model, he found that besides paying expenses and scheduled debt service with the revenues received from customers, the Model was also accumulating cash. This cash was not shown on the Income Statement but on the Balance Sheet as an asset, and no credit was given to the benefits of Pine Tree Power for that cash asset and no interest was earned on that asset.

Correcting to recognize the cash and interest earned on the cash, after 30 years Pine Tree Power has $1.2 billion less debt and has $5.2 billion in cash, so Maine ratepayers (the owners of Pine Tree Power) are $6.4 billion better off, with a net present worth value of about $2.7 billion. This value is about 12 times the $236 million[4] present worth value shown in the LEI Report and equal to about $2,000 for

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[2] Central Maine Power Company ("CMP") and Versant (until 2020 known as Emera and before that as Bangor-Hydro).

[3] "Review, Assessment and Restatement of the Financial Model Used by LEI in its Report to the Maine Legislature on the Creation of a Consumer-Owned Public Utility." Dr. Richard Silkman, May 15, 2020

[4] In his analysis, Dr. Silkman refers to the LEI calculated long-term present worth savings at a 3.5% discount rate as $232 million, not $236 million. The $232 million figure is the figure for that present worth in the LEI Model

each resident of Maine in 2024. This accumulation of cash occurs because the LEI Model limits the amount of cash that can be used to pay down debt or fund capital expenditures and the cash doesn't earn any interest.

That is not the only issue Dr. Silkman had with the LEI analysis. LEI ties operating expenses ("OpEx") to capital expenses ("CapEx"), even though many of the capital expenditures are simply to replace old, worn out and fully depreciated equipment. In other words, excluding system expansion, the value of the rate base goes up, because newer equipment costs more, but the amount of equipment remains essentially the same. Dr. Silkman, instead, ties OpEx to the portion of the rate base that is incremental to the maintenance rate base as it exists today. This lowers the increase in OpEx expenses over the next 30 years from an ~500% increase to an ~300% increase.

With respect to management expenses, Dr. Silkman re-creates the CMP (and Versant) management structures as they existed before their acquisition by other foreign utilities and their need to pay management fees to those companies. This lowers the starting cost of management from ~$82 million in the LEI Model to ~$15.3 million (~$11 million for CMP and then scaled up to include Versant). The difference in this management fee over 30 years is roughly $4.75 billion. To put the management fee structure LEI has built into its Model in perspective, the average annual management fee over the 30-year period is about $10 million **more** than the total amount CMP spent on wages and salaries for its direct employees (employees on the CMP payroll and not employees of Avangrid and/or Iberdrola) plus 100% of the total affiliate charges to CMP by Avangrid in 2018 under its shared services agreement.

Another significant issue in the LEI study was their use of Weighted Average Cost of Capital ("WACC"). The way transmission is priced in New England is that all customers share in the cost of the high voltage Regional Network Service ("RNS") transmission system. In effect, Maine customers pay a small (approximately 9%) portion of the cost of all RNS transmission elsewhere in New England, and the rest of the customers in New England pay a large (approximately 91%) portion of the cost of the RNS transmission in Maine. So, the higher the WACC that Pine Tree Power charges for use of its transmission as part of the RNS rate, the higher the contribution to this cost paid by customers elsewhere in New England. Therefore, if Pine Tree Power uses a WACC similar to the WACCs used by the other transmission companies in New England, say 10%, rather than the 8% used in the LEI study, the economics of Pine Tree Power improve. Such adjustment improves Pine Tree Power finances by ~$4 billion over 30 years.

Finally, there are also differences in the timing of CapEx over the 30 years between Dr. Silkman and the LEI Model, but these do not total to a significant difference and so only represent a very small percent of the total differences between the studies.

Of course LEI commented on Dr. Silkman's analysis,[5] but their comments do not change his conclusions:

- With respect to recognizing the excess cash, LEI says that such cash cannot be liquidated without impacting future financing costs. This ignores the simple fact that the cash is an asset that would be part of the value of Pine Tree Power should it be sold, and would earn interest while accruing.
- With respect to adjusting the OpEx expenses, LEI suggests it is premature to forecast that future OpEx would be less, but does not respond to the specifics of Dr. Silkman's analysis. They suggest that his assumptions could be used with the rest of their assumptions, without

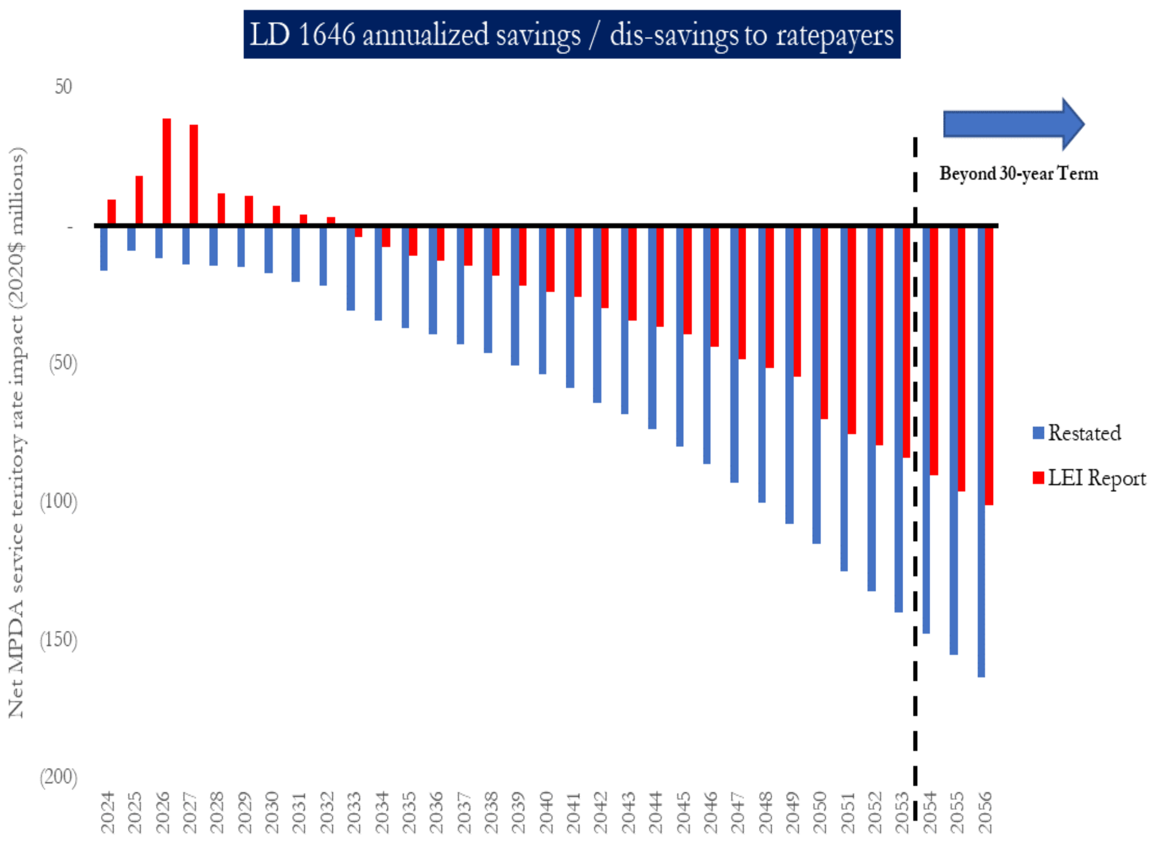
spreadsheet that they provided Dr. Silkman (Model cell D189). Similarly, the spreadsheet shows the present worth of the long-term savings at a 5.5% discount rate as $118 million, not the $119 million shown in LEI Figure 2. The reason for these slight discrepancies is not known, but they do not impact the final analysis.

[5] LEI Letter to EUT Committee in Response to Silkman Restatement, July 29 2020

acknowledging that doing so would improve the economics of Pine Tree Power in their Model even more.

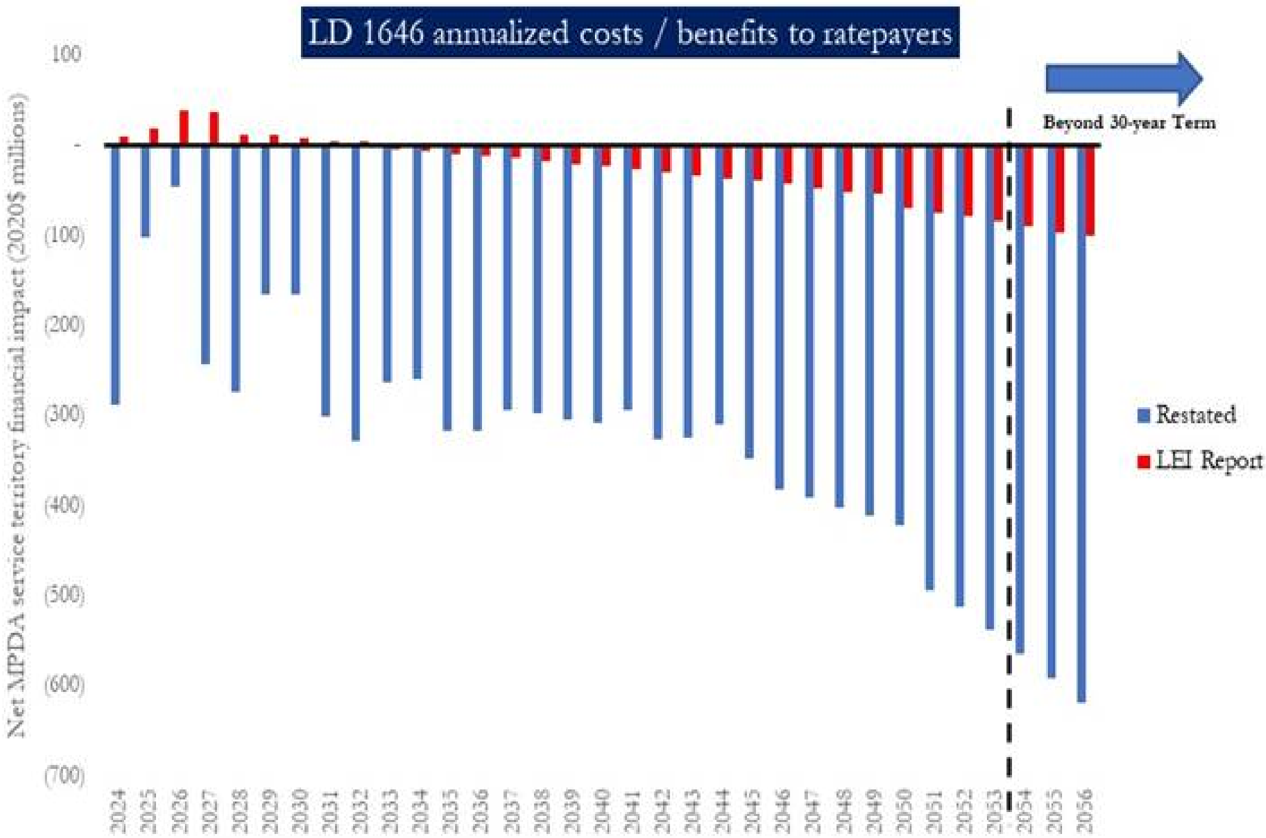
- With respect to management expenses, LEI offers no response.
- With respect to WACC, LEI says that using 10% would represent departure from precedent in the region for municipal rates and would increase the transmission rates for other ratepayers in New England. This ignores Federal Energy Regulatory Commission ("FERC") decisions that allow a COU to impute a capital structure. Also, since the transmission facilities of CMP and Versant are already reflected in the RNS rates, if Pine Tree Power uses the same capital structure as CMP and Versant in imputing its rate, there would be no change to the rates paid by other New England ratepayers.
- With respect to CapEx, LEI offers no comment on Dr. Silkman's view that differences in the timing of CapEx would make little difference in the relative economics of the two studies.

When Dr. Silkman restates the LEI Model making the corrections noted above the results are quite spectacular. For the Reference Case (purchase price of 1.5 NBV), without recognizing the accumulation of cash:



As can be seen, instead of being more expensive for the first 9 years, under the restated Model Pine Tree Power saves Maine ratepayers money through lower rates starting in the first year of operation. In the later years the rate savings to Maine ratepayers are well over $100 million/year.

Once the accumulation of cash is also taken into account, the total benefits to ratepayers in both the lowering of electric rates and the accumulation of cash to either invest in the system or pay down debt are even greater:



Of course, these savings would continue to accrue in future years and at an even high rate as the higher interest rate taxable debt used to acquire the assets of the IOUs in 2024 would be retired shortly after the 30 year study window.

April 2, 2021

Bill Dunn is a consultant in Yarmouth with almost 50 years of experience in the electricity industry and has advised clients of all ownership types (i.e., public, private, local and federal) worldwide and throughout the United States. He specializes in electricity market design and implementation, ancillary services, utility and power pool/market operations, inter-utility coordination, contractual power supply arrangements, and transmission access and pricing.