



May 19, 2021

Chairman Lawrence
Chairman Berry
Committee on Energy, Utilities and Technology
Cross Building Rm. 211
Augusta, ME 04333

RE: LD 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

Dear Chairman Lawrence and Chairman Berry,

My name is Forrest Small. I am a Senior Vice President at Concentric Energy Advisors. I am testifying today “neither for nor against” LD 1708 on behalf of Avangrid, the owner of Central Maine Power. Although Avangrid and CMP are opposed to LD 1708, our work with regard to this bill constituted an independent analysis of claims regarding electric reliability and electric rates in Maine generally, and for CMP specifically. We do not have a position with regard to LD 1708 itself.

Electric Reliability Findings

Standard electric reliability metrics reported to the United States Energy Information Administration (“EIA”) by utilities show that electricity customers in states with a higher proportion of forest coverage experience higher average interruption time than customers in states with lower forest coverage. Maine has the highest percentage of forest coverage of any state in the U.S., and it is also susceptible to high winds, hurricanes, icing, and storms throughout the year. Maine’s reliability is consistent with the level of forest coverage, with tree contacts accounting for 87% of the outage time experienced by CMP customers. In addition, over 80% of CMP’s tree-related outages are due to trees growing outside CMP’s rights-of-way, where the utility is not allowed to trim or remove trees.

EIA data shows that service territories with lower customer density tend to have longer outage duration. CMP serves more than 640,000 customers spread across 11,000 square miles of a largely rural geographic region. This large and sparsely populated service territory results in long distribution lines serving about 58 customers per square mile.

Concentric compared CMP’s reliability with the three largest consumer-owned utilities in northern New England: Eastern Maine Electric Cooperative (EMEC), New Hampshire Electric Cooperative (NHEC), and Vermont Electric Cooperative (VEC). While the service territories of these consumer-owned utilities are smaller than CMP’s service territory, they are the most comparable for evaluating reliability. Maine’s other consumer-owned utilities have service areas that are far smaller and more compact than CMP’s service area and are not comparable for reliability analysis.



Concentric looked at EIA reliability metrics for CMP, EMEC, NHEC, and VEC over five years from 2015 to 2019, the most recent five years with reported EIA data. Excluding major event days due to severe storms, CMP customers experienced less frequent outages, on average, than customers of EMEC, NHEC, and VEC. Over that same period, excluding major events, CMP customers experienced shorter duration outages, on average, compared to EMEC, NHEC, and VEC customers.

Electric Rates Findings

Maine's electric utility rates have four main cost components: power supply, transmission, distribution, and policy initiatives like energy efficiency. The two components over which utilities have control are the T&D costs, sometimes referred to as "delivery" costs. Because CMP is not allowed to own or sell retail electricity, power supply for CMP customers is procured through the competitive wholesale market under the direction of the Maine Public Utilities Commission, and thus CMP does not have any control over the cost of the power supply.

As with the reliability analysis, Concentric compared CMP's electric delivery costs with the largest consumer-owned utilities in northern New England – that is EMEC, NHEC, and VEC. Concentric's analysis assumed a typical residential customer with a monthly usage of 550 kWh, and found that a CMP customer would pay \$50.98 per month for electric delivery, or less than any of the other utilities (\$51.24 for EMEC, \$70.29 for NHEC, and \$69.87 for VEC).

Concentric also compared CMP's electric delivery costs with investor-owned utilities in Maine, New Hampshire, and Vermont. That analysis showed that the delivery cost for the typical residential customer of CMP is the second-lowest in northern New England – only Versant Power's Maine Public District is lower.

Attached to this written testimony are copies of Concentric's whitepapers titled "Comparing the Reliability of Central Maine Power to Consumer-Owned Utilities" and "Comparison of Electric Rates in Northern New England by Ownership Model" that discuss the assumptions and results of our analyses.

Sincerely,

Forrest Small
Senior Vice President
Concentric Energy Advisors, Inc.

Whitepaper: Comparing the Reliability of Central Maine Power to Consumer-Owned Utilities

May 2021



www.ceadvisors.com

ELECTRIC RELIABILITY

Central Maine Power (“CMP” or the “Company”) has retained Concentric Energy Advisors, Inc. to evaluate claims regarding electric reliability in Maine generally and for CMP specifically. Maine’s electric reliability is influenced by the fact that Maine is the most heavily forested state in the U.S., with nearly 90% of CMP’s outages resulting from tree contact and related damage. Furthermore, Maine has a relatively low customer density per line mile, making it more time consuming to restore power to customers during outages. These fundamental facts would not change whether electric service is provided by an investor-owned utility or a consumer-owned utility.¹ While claims have been made publicly that consumer-owned utilities have better reliability than CMP,² this is misleading. In fact, when compared to comparable consumer-owned utilities in Maine, New Hampshire, and Vermont, CMP has had lower outage frequency and duration over the last five years.³

1.1 ELECTRIC RELIABILITY METRICS

Utilities track and report reliability performance using metrics in Standard 1366 of the Institute of Electrical and Electronics Engineers (“IEEE”). Utilities, regulators, and other government agencies widely recognize these metrics as standard measures of reliability. The United States Energy Information Administration (“EIA”) compiles IEEE reliability metrics as part of its Annual Electric Power Industry Report (Form EIA-861). These metrics are defined as follows:

Interruption: A customer’s power is interrupted for more than five minutes.

System Average Interruption Frequency Index (“SAIFI”): The total number of customers interrupted in a one-year period divided by the total number of customers served. Said another way, the number of sustained interruptions experienced by all customers. SAIFI indicates the average number of times in a year a customer could expect to experience a sustained interruption.

System Average Interruption Duration Index (“SAIDI”): The total number of customer minutes interrupted in a one-year period, divided by the total number of customers served. Said another way, the time (in minutes) that every customer was without power due to a sustained interruption. SAIDI indicates the average time in a year a customer could expect to experience a sustained interruption.

Major Event Day (“MED”): A day in which the daily SAIDI is above a threshold value. A MED usually occurs because of a severe weather event that causes infrastructure damage and

¹ The term “consumer-owned utility” is a term of art that encompasses non-profit rural electric cooperatives and government-owned electric systems such as municipal electric districts. In Maine, Eastern Maine Electric Cooperative (“EMEC”) is non-profit rural electric cooperative, Houlton Water Company is a wholly-owned corporate subsidiary of the Town of Houlton that also provides local electric service, Madison Electric Works is a department of the Town of Madison, and electric systems in Kennebunk and Van Buren are quasi-municipal government entities. All of these entities are referred to as “consumer-owned utilities.”

² For example, Our Power, an organization that supports establishing a consumer-owned power authority in Maine to acquire and operate the existing transmission and distribution systems of CMP and Versant Power, has stated that, “Maine currently has the worst reliability in the United States. Historically, consumer-owned utilities have far better reliability and better customer service than investor-owned utilities.”; see, <https://ourpowermaine.org/faq/>.

³ SAIFI and SAIDI data from EIA-861 data for 2015-2019.

interruptions affecting a significant portion of a utility's service territory. Utilities typically report reliability indices with and without MED.

These reliability metrics help measure performance over time. Utilities can use the metrics to understand what level of performance (target) is achievable at a cost that customers can afford to pay and are willing to pay. The metrics can also help a utility monitor trends and track reliability impacts from design changes and maintenance programs. Each utility can use these standard metrics to improve its performance – but the appropriate targets for each metric are utility-specific.

However, in order to reasonably compare these reliability metrics across electric utilities, the differences between each utility's service territory must be considered. When evaluating electric reliability, it is important to recognize that power outages result from numerous factors, including weather, vehicle accidents, equipment failure, and wildlife on energized equipment. Every part of the U.S. has unique weather challenges, and utilities design their electric systems accordingly. For example, Florida experiences hurricanes and lightning; tornadoes batter Oklahoma and Kansas; intense heat storms stress equipment in the southwest; and in heavily forested northern states like Maine, high winds and freezing temperatures bring tree limbs down on ice-laden wires causing wires, and sometimes poles, to break.

As highlighted by the EIA, tree coverage, weather, and population density – all of which are significant factors in Maine's electric reliability – are important in understanding a utility's electric reliability:

Factors such as weather, population density, and tree density also affect utilities' ability to maintain service. For example, co-ops are generally suppliers to rural homes with more powerline miles and trees per customer, increasing the likelihood that distribution lines will be affected by storms. Municipalities are more likely to serve customers living in higher-density urban areas, which have fewer powerline miles per customer and, in some locations, underground distribution lines.⁴

EIA's comments also underscore their observation that rural electric cooperatives generally have lower reliability ratings than municipal electric districts, which tend to serve more urban areas with fewer trees and more customers per line mile. Both types of entities are "consumer-owned," yet underlying factors such as trees, weather, and population density result in substantially different reliability metrics.

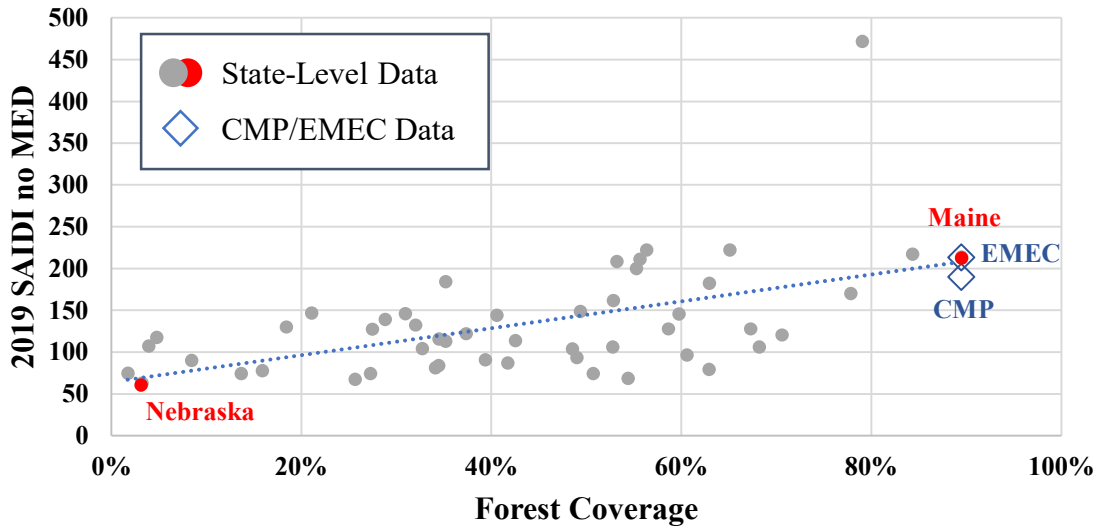
1.2 THE IMPACT OF TREE COVERAGE AND ELECTRIC RELIABILITY

Maine has the highest percentage of forest coverage of any state in the U.S., and it is also susceptible to high winds, hurricanes, icing and storms throughout the year. Trees account for 87% of the outage time experienced by CMP's customers. Vegetation management can help to manage tree contacts and the electric outages they cause; however, over 82% of CMP's tree-related outages are caused by trees outside CMP's rights-of-way – trees that CMP does not have the right to trim or remove.

As shown in Figure 1, EIA electric reliability data shows that states with a higher proportion of forest coverage have higher SAIDI (higher duration of interruption time). As shown, Maine's reliability is consistent with the level of its forest coverage.

⁴ EIA; <https://www.eia.gov/todayinenergy/detail.php?id=27892>

FIGURE 1: CORRELATION BETWEEN SAIDI AND FOREST COVERAGE⁵

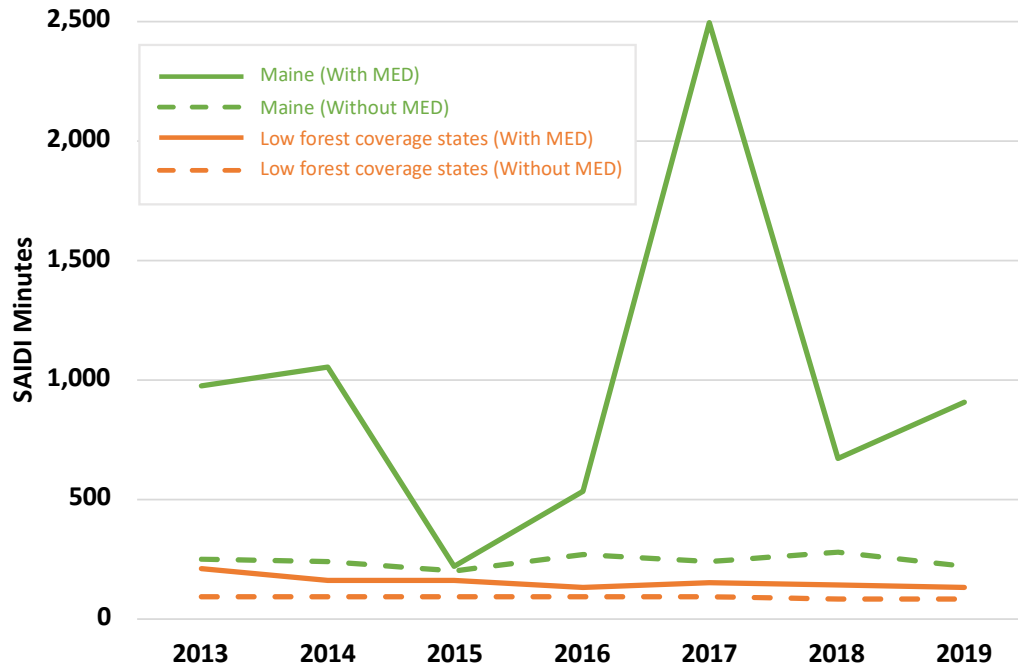


In heavily forested states like Maine, tree contacts are responsible for customer outages throughout the year, during fair weather and storms, causing significantly higher and more variable average outage durations than states with low forest coverage. High winds and ice make tree-caused outages worse and can result in significant differences in outage durations year-to-year based on the frequency and severity of major storms that can affect large portions of a utility’s service territory. Figure 2 presents a comparison between outage durations with and without major event days for Maine and states with less than 20% forest coverage.⁶ As shown in Figure 2, electric utilities in states with negligible tree cover can experience fewer severe outages and significantly less variation in outage durations year-to-year as compared to Maine.

⁵ EIA Form-861 and Concentric analysis. Figure 1 assumes that CMP and EMEC have the same average forest coverage as Maine overall.

⁶ In order from least percentage of forest coverage, these states are: North Dakota, Nebraska, South Dakota, Kansas, Iowa, Illinois, Nevada and Wyoming.

FIGURE 2: TREE COVERAGE CAN CAUSE LARGE VARIATIONS IN OUTAGE DURATIONS FROM MAJOR EVENTS⁷

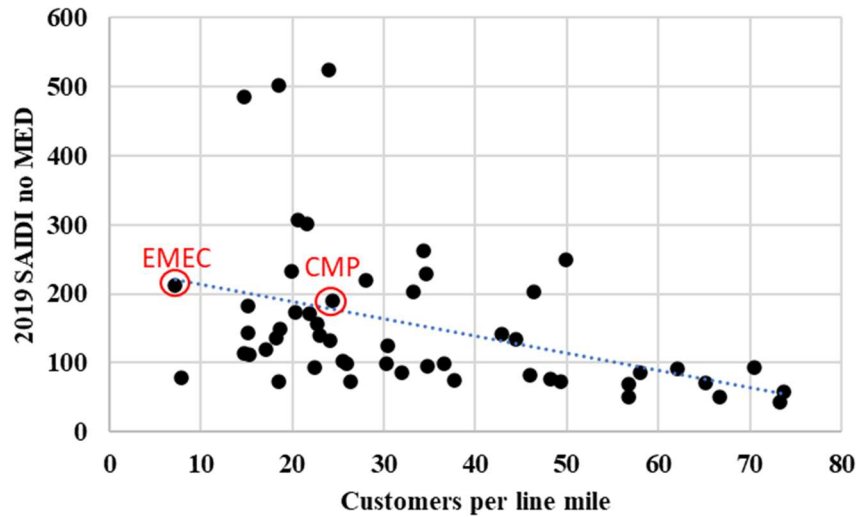


1.3 THE EFFECTS OF CUSTOMER POPULATION DENSITY AND ELECTRIC RELIABILITY

CMP serves a broad, largely rural geographic region across southern and central Maine that includes over 26,000 miles of transmission and distribution lines providing service to over 646,000 customers spread over 11,000 square miles. This translates into a system average of just over 24 customers per line mile. As shown in Figure 3, longer distribution lines serving fewer customers per line mile can experience higher outage durations than shorter lines serving denser populations. As these lines stretch far out into rural areas, each line can have more exposure to variable weather and associated tree contacts. In denser service areas utilities sometimes build connections between two different distribution feeders to provide temporary backup in the event of an outage. In sparsely populated service areas, long distances between adjacent feeders can make backup connections prohibitively expensive.

⁷ EIA Form-861 and Concentric analysis.

FIGURE 3: LOWER CUSTOMER DENSITY SERVICE TERRITORIES HAVE HIGHER OUTAGE DURATION⁸



1.4 CMP’S RELIABILITY IS BETTER THAN COMPARABLE CONSUMER-OWNED UTILITIES IN NORTHERN NEW ENGLAND

As noted, CMP has a very large, predominantly rural service territory that has a relatively low customer density of approximately 58 customers per square mile. CMP serves its customers with over 475 distribution circuits, which results in an average of approximately 1,350 customers per circuit. Maine’s “consumer-owned” utilities have much smaller service territories than CMP, and differ considerably in customer density. For example, EMEC has a rural service territory of about 300 square miles served by 20 distribution circuits, with approximately 42 customers per mile. By comparison, Kennebunk Light & Power District serves a town of approximately 44 square miles with 11 distribution circuits, with approximately 162 customers per square mile (about four times the customer density of EMEC in a much smaller footprint).⁹ While EMEC is smaller than CMP, it is the most comparable consumer-owned utility in Maine to CMP in terms of its service area and customer density, both important factors in tree-caused outages and restoration time.

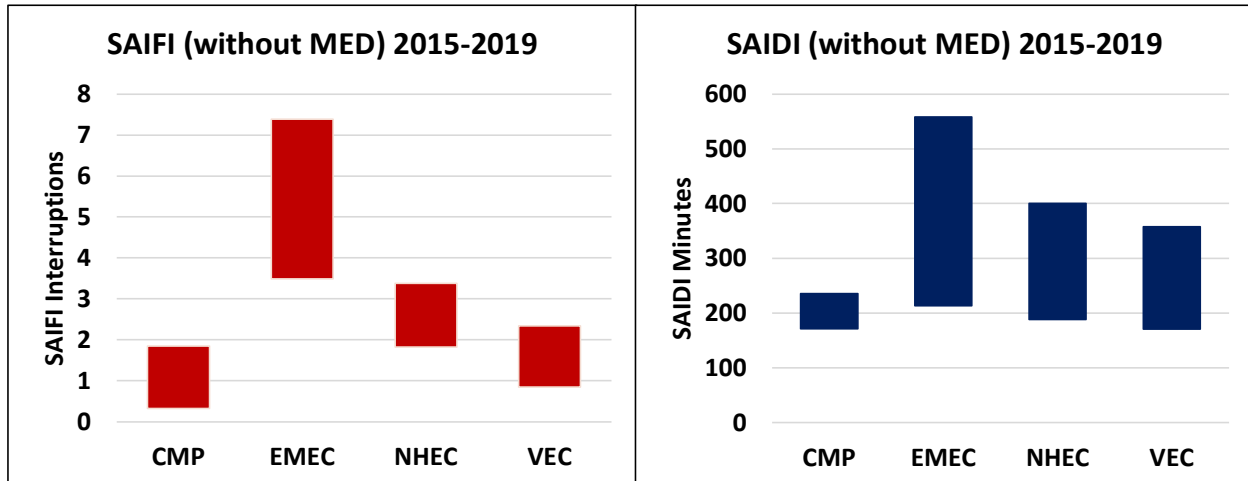
In addition to EMEC, Concentric has compared CMP’s reliability to other comparable consumer-owned utilities in northern New England, namely, New Hampshire Electric Cooperative (“NHEC”), and Vermont Electric Cooperative, Inc. (“VEC”). EMEC, NHEC and VEC have relatively large service territories with characteristics more similar to CMP. When comparing reliability experience over the most recent five years for which there is data available (*i.e.*, 2015-2019), CMP’s outage frequency and duration have been consistently better than EMEC, NHEC and VEC. Figure 4 reflects the range of the SAIFI and SAIDI measures during the past five years. As shown, CMP’s reliability performance was better (*i.e.*, lower

⁸ EIA Form-861 and Concentric analysis. Utilities analyzed have greater than 100,000 customers.

⁹ Maine’s other “consumer-owned” electric systems generally occupy a small geographic footprint, including small mainland systems in Madison, Van Buren, and Houlton, as well as a small number of island-based systems off the Maine coast.

SAIFI and SAIDI measures) and less variable (i.e., smaller range over the 5-year period) than that of consumer-owned utilities in northern New England.

FIGURE 4: ELECTRIC RELIABILITY OF CMP RELATIVE TO COMPARABLE CONSUMER-OWNED UTILITIES IN NORTHERN NEW ENGLAND¹⁰



1.5 ELECTRIC RELIABILITY AND ELECTRIC RATES

In heavily forested states such as Maine, providing reliable electricity service requires a robust and durable transmission and distribution system, as well as an ongoing vegetation management program to keep trees and branches away from power lines. The cost of these programs does not change based on utility type, so there would be no savings if such programs are conducted by a “consumer-owned” utility as opposed to an investor-owned utility. In addition to these operational programs, there are a range of capital investments that that Maine’s utilities can follow in order to enhance reliability such as hardening the system; building additional connections to support backup supply; and increasing automation to reduce the scope of outages when they occur. These investments increase costs to customers regardless of whether the utility is investor-owned or consumer-owned, and thus the level of reliability must be balanced with the cost of providing such reliability. Overall, Concentric’s analysis confirms that CMP has experienced better reliability over the past 5 years as compared to comparable consumer-owned utilities in northern New England (see Figure 4), and CMP has lower electric transmission and distribution service rates than comparable consumer-owned utilities in northern New England – in fact, CMP has the lowest residential electric distribution rates of an any investor-owned utility in the same region.¹¹

¹⁰ EIA Form-861 and Concentric analysis.

¹¹ Whitepaper: Northern New England Electric Rates (Concentric Energy Advisors, 2021), 4-6.

Whitepaper: Comparison of Electric Rates in Northern New England by Ownership Model

May 2021



www.ceadvisors.com

ELECTRIC RATE COMPARISONS

Central Maine Power (“CMP” or the “Company”) has retained Concentric Energy Advisors, Inc. to evaluate claims regarding the rates for its electric service as compared to consumer-owned utilities.¹ In this regard, Concentric has performed a rate comparison between CMP and other comparable northern New England consumer-owned and investor-owned electric utilities. Concentric’s analysis leads to three important conclusions: (1) over the past five years Maine’s electric delivery rates are among the lowest in New England and New York; (2) CMP’s electric transmission and distribution (“T&D”) costs in particular are lower than comparable consumer-owned utilities in northern New England; and (3) CMP’s electric T&D costs are the second lowest among investor-owned utilities in northern New England.

These findings are counter to the misleading claims made by Our Power, an organization advocating for the establishment of a state power authority to take over Maine’s two investor-owned utilities, which has alleged that CMP’s rates are higher than consumer-owned utilities in Maine.²

1.1 ELECTRIC RATE COMPONENTS

Electric utility rates are comprised of four main components:

1. **Distribution:** The cost of delivering electricity across local power lines to customers. Distribution rates include the cost of operating and maintaining a utility’s low voltage, local electric grid.
2. **Transmission:** The cost of transporting high-voltage electricity from the generating source, which may be in or out of state, to the various distribution system receipt points (substations) where the power can be delivered and consumed locally.
3. **Power Supply:** The cost of generating electricity by power plants.
4. **Policy Initiatives:** The costs associated with various societal and state policy initiatives such as energy efficiency programs, distributed solar/net metering, and electric vehicle pilot programs.

CMP, like other Maine utilities, procures power supply through the competitive wholesale market under the direction of the Maine PUC. Therefore, the rate comparisons herein exclude power supply costs. Costs associated with local and state policies that are outside the control of CMP have also been removed, including incremental costs for conservation and energy efficiency programs, stranded costs and transition charges from state deregulation of transmission and generation services (that are

¹ The term “consumer-owned utility” is a term of art that encompasses non-profit rural electric cooperatives and government-owned electric systems such as municipal electric districts. In Maine, Eastern Maine Electric Cooperative (“EMEC”) is non-profit rural electric cooperative, Houlton Water Company is a wholly-owned corporate subsidiary of the Town of Houlton that also provides local electric service, Madison Electric Works is a department of the Town of Madison, and electric systems in Kennebunk and Van Buren are quasi-municipal government entities. All of these entities are referred to as “consumer-owned utilities.”

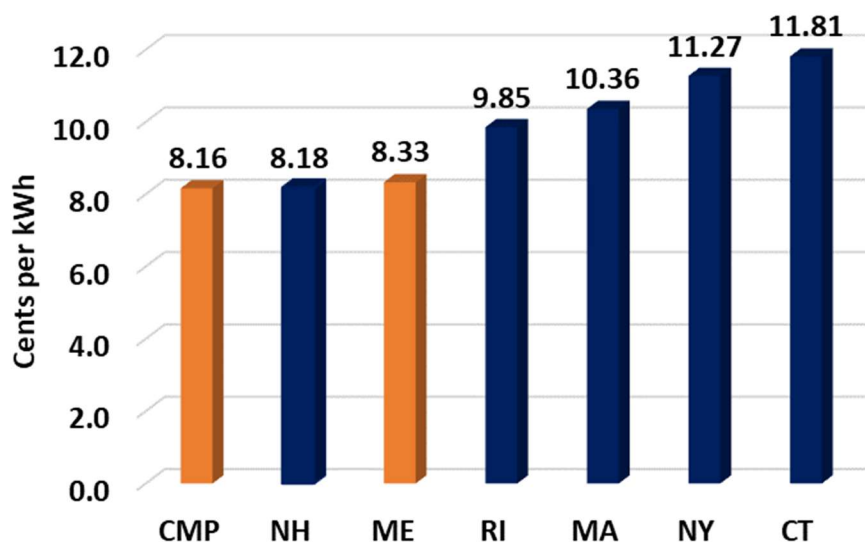
² Our Power states that, “[r]atepayers pay less, on average, to consumer-owned utilities than to CMP or Versant (formerly Emera, formerly Bangor-Hydro). In fact, investor-owned utility delivery charges are 58% higher for residential users than consumer-owned utility delivery charges in Maine for 2021.” Our Power’s website does not provide any data to support its claims, and thus Concentric is unable to replicate the group’s analysis. See, <https://ourpowermaine.org/faq/>.

collected through distribution surcharges), solar/renewable/electric vehicle incentives and net metering charges, and residential low- and moderate-income programs.

1.2 RATE COMPARISONS

On average, CMP’s residential electric delivery rates have been lower than the comparable rates paid by customers in New England and New York over the past 5 years.³ As shown in Figure 1, CMP’s average residential delivery rates are lower than any of the comparable rates for the states in New England and New York.

FIGURE 1: COMPARISON OF AVERAGE RESIDENTIAL ELECTRIC DELIVERY RATES – PAST 5 YEARS



CMP serves a broad, largely rural geographic region across southern and central Maine that spans 11,000 square miles (i.e., an area approximately size of Massachusetts and Rhode Island combined) serving over 646,000 customers through approximately 2,900 miles of transmission lines and 23,500 miles of distribution lines.⁴ In contrast, most of the consumer-owned utilities in Maine serve a much smaller area, in many instances a single community, and a few are also electric systems serving islands off the Maine coast. These utilities with smaller service territories and/or island-based systems are not comparable to CMP’s much larger, non-island service territory.⁵ Therefore, Concentric’s rate comparison is limited to the largest consumer-owned utilities in northern New England (i.e., Maine, New Hampshire, and Vermont) that are most comparable to CMP.

³ Energy Information Administration. Reflects residential electric usage and revenues excluding power supply for each state except Vermont. Vermont does not have unbundled electric service such as the other New England states and New York, and thus data is not available excluding power supply. Note, data for 2015 through 2019 is the most currently available.

⁴ CMP 2020 SEC Form 10-K; Company Fact Sheet from website.

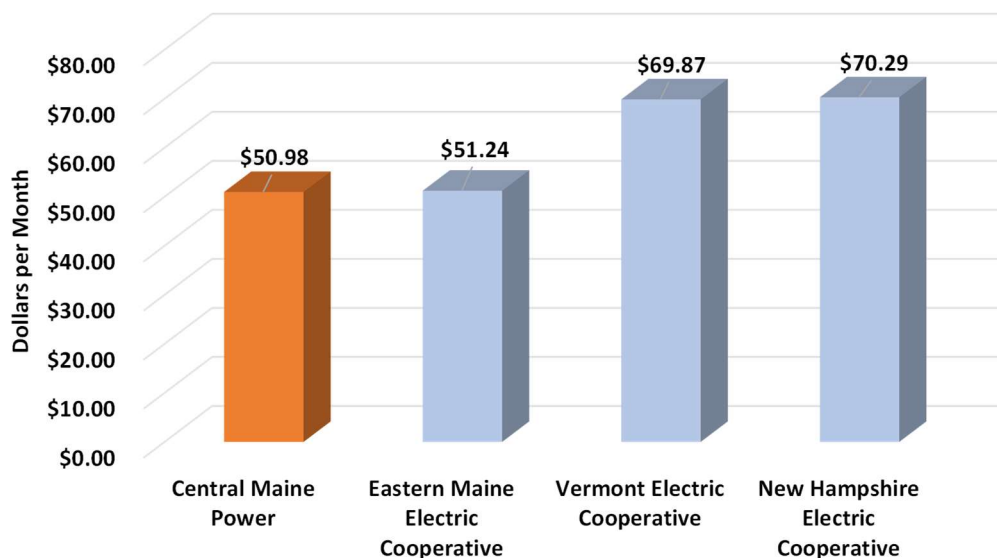
⁵ Other than EMEC, the other eight consumer-owned utilities in Maine range from Kennebunk Light and Power with approximately 6,100 customers to Matinicus Electric Company, which serves 129 customers. Each of these consumer-owned utilities occupy a small municipal or island geography not comparable to the large, rural territory of CMP, Versant Power, or EMEC. Isle au Haut Electric Power and Monhegan Plantation Power District are also small consumer-owned utilities, and do not have publicly-reported customer counts.

The largest consumer-owned electric utility in Maine is Eastern Maine Electric Cooperative (“EMEC”), with a service territory covering a large portion of eastern Maine and serving approximately 10,300 customers. New Hampshire’s largest consumer-owned utility, New Hampshire Electric Cooperative (“NHEC”), has approximately 86,200 customers in 115 communities throughout the state. Vermont’s largest consumer-owned utility, Vermont Electric Cooperative, Inc. (“VEC”), has 39,300 customers in the northern portion of the state. This analysis compares the electric rates of each utility, excluding the power supply costs and state policy surcharges – both of which are outside the control of the electric utilities.⁶

Cost Comparison – CMP v. Consumer-Owned Utilities

Distribution-only rates are not separately stated for consumer-owned utilities. However, rates are available for the combined electric transmission and distribution (“T&D”) service and can provide a meaningful comparison between large consumer-owned utilities and investor-owned utilities. For purposes of this comparison, Concentric compared CMP’s T&D costs (excluding policy costs) to the consumer-owned utilities for a typical residential customer assuming electric usage of 550 kWh per month. Figure 2 presents the cost comparison between CMP and comparable consumer-owned utilities in northern New England.

FIGURE 2: COMPARISON OF RESIDENTIAL ELECTRIC T&D COSTS OF COMPARABLE CONSUMER-OWNED UTILITIES AND CMP (EXCLUDES POLICY COSTS) – ASSUMING CUSTOMER USAGE OF 550 KWH⁷



As shown in Figure 2, CMP’s combined T&D costs are lower than all comparable consumer-owned utilities in northern New England.⁸

⁶ Most New England utilities acquire supply from the ISO-NE markets at prices that vary significantly by delivery location. Policy surcharges also vary significantly among states and between IOUs and COUs and thus distort a comparison that is intended to compare the cost of distributing electricity among utilities.

⁷ Rates derived from utility tariffs on their respective websites.

⁸ EMEC is not part of ISO New England for transmission service but rather is part of the Northern Maine Independent System Administrator.

Cost Comparison – CMP v. Investor-Owned Utilities

In addition, Concentric compared CMP’s electric costs to other investor-owned utilities in northern New England. Concentric developed two comparisons to the investor-owned utilities’ costs: (1) transmission and distribution service costs; and (2) distribution-only costs. Similar to the cost comparison for the consumer-owned utilities, the cost components associated with state policy initiatives that are outside the control of the utility have been excluded, and the analysis is done assuming an average residential customer using 550 kWh per month.

FIGURE 3: COMPARISON OF RESIDENTIAL ELECTRIC T&D COSTS OF INVESTOR-OWNED UTILITIES – ASSUMING RESIDENTIAL CUSTOMER USAGE OF 550 KWH⁹

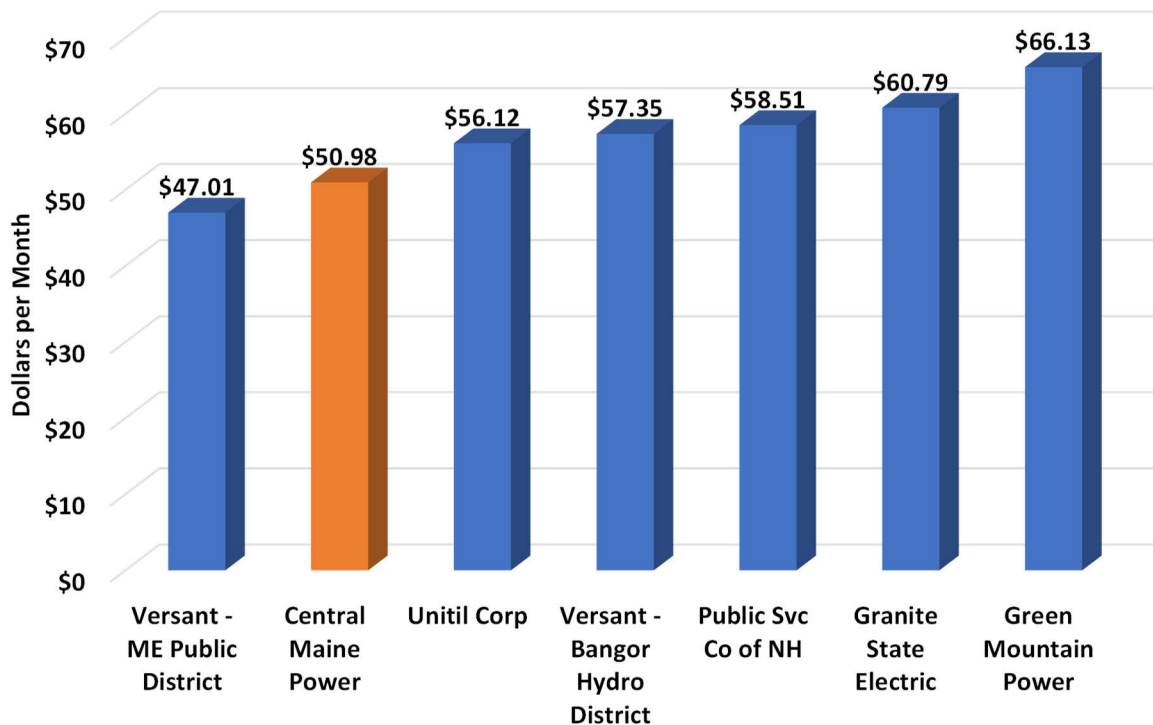


Figure 3 shows that, on a combined basis, CMP has the second-lowest residential electric T&D rates of investor-owned utilities in northern New England. Also, it should be noted that Versant - Maine Public District is not directly interconnected to ISO New England such as the other investor-owned utilities in northern New England, but rather the Northern Maine Independent System Administrator (NMISA). Since NMISA has lower transmission rates than those found in the ISO-NE region, Versant-Maine Public District benefits through lower overall T&D rates. This differential is unrelated to the form of ownership of the utilities in each region.

⁹ Rates derived from utility tariffs on their respective websites.