



2024 Alaska Railbelt Net Metering Update

By Chris Pike

Alaska Center for Energy and Power, University of Alaska Fairbanks

This is a summary of the growth of installed net metered distributed generation capacity on the Alaska Railbelt through the end of 2023 as reported in utility filings submitted to the Regulatory Commission of Alaska (RCA). The Alaska Railbelt is a 700-mile-long transmission corridor, built beside a vital rail line that spans from Fairbanks, south through Anchorage, and on to the Kenai Peninsula.

Net metered capacity on the Alaska Railbelt grew by 20 percent in 2023 for a total installed capacity of 15,969 kW. All utilities, except for Matanuska Electric Association (MEA), have increased their net metering allowance from the initial required amount of 1.5 percent. More detail about the MEA interpretation of the regulation is explained later in this report. Solar photovoltaic (PV) installations continue to be responsible for nearly all new net metered capacity.

Railbelt wide, installed net metered capacity was at 2.3 percent of the average annual load at the end of 2021, 2.7 percent at the end of 2022, and 3.2 percent at the end of 2023; however, the percent of annual energy production from net metered systems is far smaller. Using a 10 percent capacity factor assumption (which is high since most residential roof mounted solar PV arrays experience at least some shading and sub-optimal tilt and orientation), at the end of 2023, annual net metered renewable energy production is estimated to be about 14,372 MWh, or about 0.33 percent of the Railbelt total retail sales.

Starting in 2021, utilities were required to report how much energy from net metered systems was fed back onto the grid, which is different than the gross energy produced by the renewable energy asset. Because the generation source is behind the customer meter, the utility meter is only able to record power flowing back onto the grid when the customer load is less than customer generation. Of the 14,372 MWh of approximated total net metered renewable energy production at the end of 2023, 4,237 MWh or about 29 percent was fed back onto the grid. This statistic must be interpreted with care (see footnote 1, below). It does NOT mean that customer-sited PV systems produced 4,237 MWh more energy in 2023 than the system owners consumed in 2023. It is important to remember that from the perspective of reducing the need for utility generation, every kWh of energy produced by customer-sited generation reduces utility generation by one kWh.

Only Matanuska Electric Association saw load growth in 2023. All other Railbelt utilities saw slight load declines.

Railbelt Wide

**Alaska Center for Energy and Power • University of Alaska Fairbanks • 1764 Tanana Loop – JUB Suite 404
P.O. Box 755910 • Fairbanks, Alaska 99775-5910 • Tel: (907) 474-5402 • Fax: (907) 474-5475**

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- At the end of 2023, Railbelt net metered renewable energy systems had an installed capacity of 15,969 kW.
- The installed net metered capacity at the end of 2023 increased 20 percent over the 2022 total of 13,314kW.
- There were 2,766 net metered customers on the Railbelt electric grid at the end of 2023. The majority of these, 2,689, have solar PV installed.

Table 1. The total installed capacity of net metered installations at the end of each calendar year is shown below.

Year	Installed Capacity (kW)	Year over Year Installed Capacity Change [kW]
2010	182	
2011	381	199
2012	490	108
2013	625	135
2014	804	179
2015	1,251	448
2016	1,659	408
2017	2,214	555
2018	3,233	1,019
2019	5,636	2,403
2020	8,544	2,908
2021	11,313	2,769
2022	13,314	2,001
2023	15,969	2,655

- The total energy fed into the grid in 2023 was 4,237 MWh, almost all of which was generated by solar PV.¹
- The average size net metered solar installation on the Railbelt is 5.8 kW.
- Approximately 1% of the Railbelt meters have a behind the meter solar PV system installed.

Table 2. The number of net metered renewable energy installations installed each year is shown below.

New Railbelt Net Metered Installations by Year	
2019	427
2020	479
2021	407
2022	331
2023	390

¹ From CEA net metering report: Represents the sum of all energy (kWh) that flowed out of the customer meters to the grid during the period. This does not represent the amount of energy that Chugach purchased from the member after net metering

From MEA net metering report: This total includes all kWh to the grid, consisting of both the kWh MEA provided net metering members with full retail credit in any given month if the kWh they put onto the grid were less than the kWh they consumed, as well as the kWh MEA purchased at the applicable Small Facility Purchased Power Rate when net metering members put more kWh onto the grid than they consumed in any given month

No detail about the total energy “total energy fed into the grid” was given in the HEA or GVEA net metering reports.

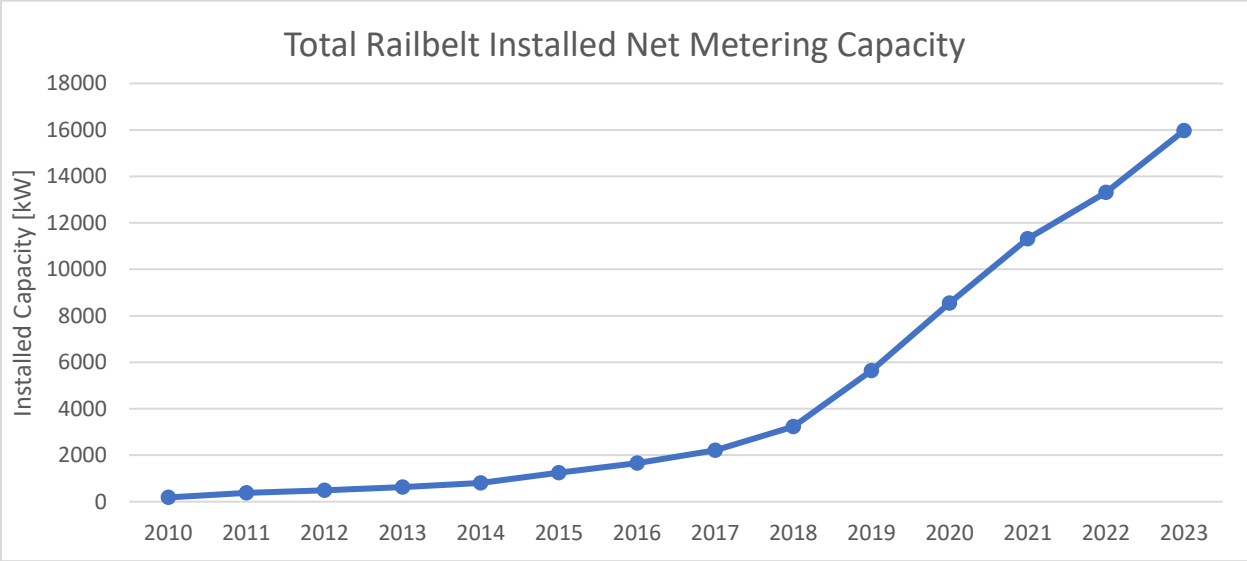


Figure 1. Total Railbelt net installed metering capacity by year

Matanuska Electric Association (MEA)

- At the end of 2023, MEA had 3,164 kW of installed net metered capacity.

- This amount was 239 percent of the 1.5 percent threshold interconnection amount of 1,323 kW.
- MEA net metered customers include 457 with solar PV, 23 with wind turbines, and 8 with both solar PV and wind turbines. All added capacity in 2023 was solar PV.
- The total energy fed into the MEA system from net metered facilities in 2023 was 957,844 kWh. Of this amount, 923,162 kWh was from solar net metered facilities; 18,342 kWh was from wind net metered facilities; and 16,340 kWh was from combined wind/solar net metered facilities.
- 0.7 percent of MEA meters are connected to net metered generation.
- One should take note that currently the installed net metering capacity on the MEA electric grid exceeds the 1.5 percent threshold. In their 2023 filing they stated:

“Under the RCA’s regulations, MEA is required to accept all eligible net metering applicants into the net metering program so long as the maximum nameplate capacity of all net metering members does not exceed 1.5% of MEA’s average retail demand from the prior year. While MEA has not established any higher, self-imposed limit on net metering applications and, based on MEA’s reading of the regulations is not required to do so, the 1.5% threshold for mandatory utility acceptance must be updated annually in this RCA compliance filing.

In 2023, 1.5% of MEA’s average retail demand was 1,323 kW. The nameplate capacity for eligible net metering systems as of February 2024, was 3,164 kW, which is 2.39 times ($=3,164 / 1,323$) the 1.5% average retail demand threshold. Therefore, MEA has not only reached, but has far exceeded the current 1.5% average retail demand threshold.

As stated previously, MEA has not established any higher, self-imposed limit on acceptance of net metering applications and presently has no plans to deny future net metering applicants from participating. Instead, MEA will continue to monitor the load regulation and economic effects of net metering penetration levels on MEA’s system and investigate alternative retail rate designs, with the intent of enabling MEA’s net metering program to remain in place for the foreseeable future by utilizing such rate designs to provide an equitable cost sharing between net metering program participants and non-participants. At this time that investigation is ongoing, and MEA has made no final determination for a course of action”

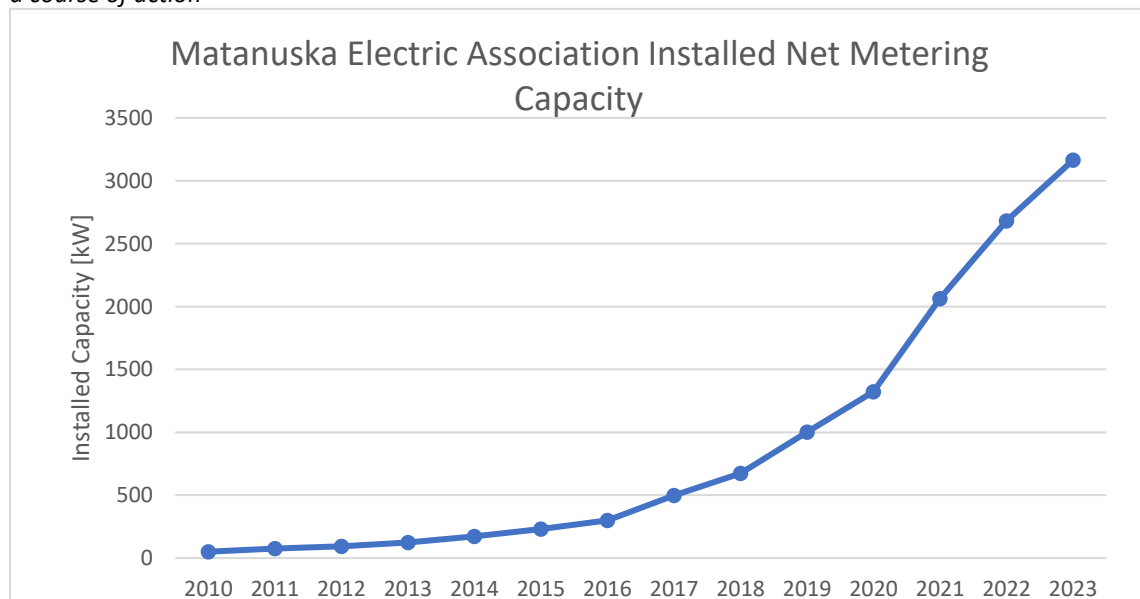


Figure 2. Total Matanuska Electric Association installed net metering capacity by year

Homer Electric Association (HEA)

- At the end of 2023, HEA had 3,533 kW of installed net metered capacity.
- This amount was 458 percent of the 1.5 percent threshold interconnection amount of 772 kW (1.5 percent of average annual load).
- In September of 2020 HEA raised its net metering limit to 7 percent of its average annual load (3,602 kW).
- HEA net metered customers include 534 with solar PV, 33 with wind turbines, and 1 with generation from biofuel. All new net metered capacity installed in 2023 was solar PV.
- The total energy fed into the HEA electric grid from net metered facilities during 2023 was 1,403 MWh. Of this amount, 1,377 MWh was from solar net metered facilities.
- 1.7 percent of HEA meters are connected to net metered generation.
- HEA collects a system delivery charge of \$24.12 for customers that purchase less than 150 kWh per month from HEA. Per the HEA website, the system delivery charge “recovers expenses associated with building, operating and maintaining transmission and distribution facilities whether or not electric service is used. If energy consumption meets or exceeds 150 kWh within the billing period, no charge applies.”

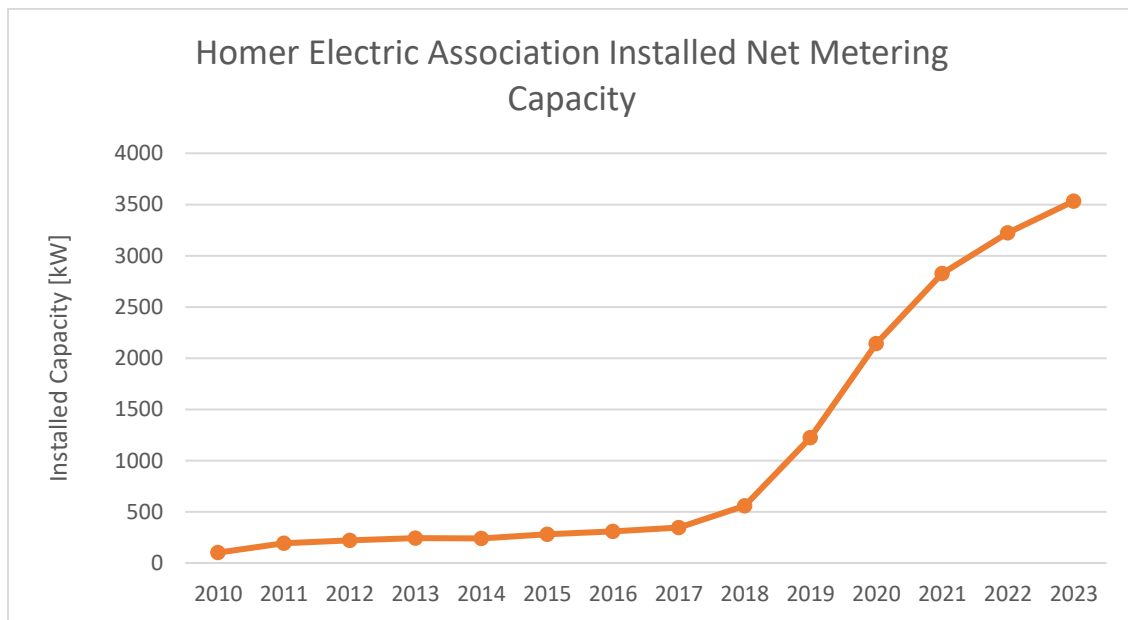


Figure 3. Total Homer Electric Association installed net metering capacity by year

Golden Valley Electric Association (GVEA)

- At the end of 2023, the GVEA service territory had 4,647 kW of installed net metered capacity.
- This amount was 218 percent of the 1.5 percent threshold interconnection amount of 2,130 kW (1.5 percent of average annual load).
- In 2023 GVEA raised the net metering limit to 5 percent of its average annual load (7046 kW).
- GVEA net metered customers include 810 with solar PV and 7 with wind turbines. In 2023, 207 solar installations and one net metered wind installation was added.
- 1.8 percent of GVEA meters are connected to net metered generation.
- The total energy fed into the GVEA electric grid from net metering facilities during the previous 12 months was 513 MWh. All of this came from solar power. Readers may observe that the energy fed to the grid as a function of the total net metered systems is far less for GVEA than the other utilities. We suspect that this is likely because GVEA is only counting energy that fed onto the grid that was in addition to the monthly customer energy consumption. This energy would have been compensated at the avoided cost rate. It appears that the other three Railbelt utilities accounted for all the energy that passed through the customer meter and fed onto the grid, regardless of how customers were compensated for that energy, as explained in the footnote on page two.

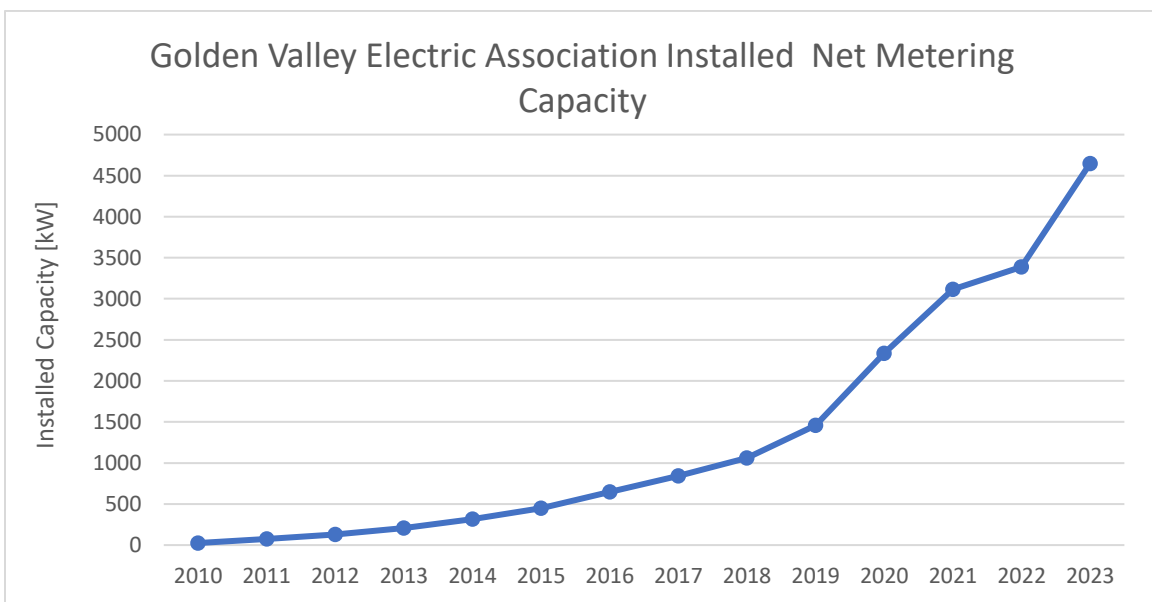


Figure 4. Total Golden Valley Electric Association installed net metering capacity by year

Chugach Electric Association (CEA)

- At the end of 2023, CEA had 4,625 kW of installed net metered capacity.
- This amount was 142 percent of the 1.5 percent threshold interconnection amount of 3,238 kW (1.5 percent of average annual load).
- In February 2022 CEA raised its net metering limit to 5 percent of the average annual load (10,794 kW).
- CEA net metered customers include 888 with solar PV and 5 wind turbines. This represents 111 new net metered solar customers and 1 new net metered wind customer added in 2023.
- 0.8 percent of CEA meters have net metered generation.
- The total energy fed into the CEA electric grid from net metering facilities in 2023 was 1,363 MWh, 98 percent of this came from solar PV.

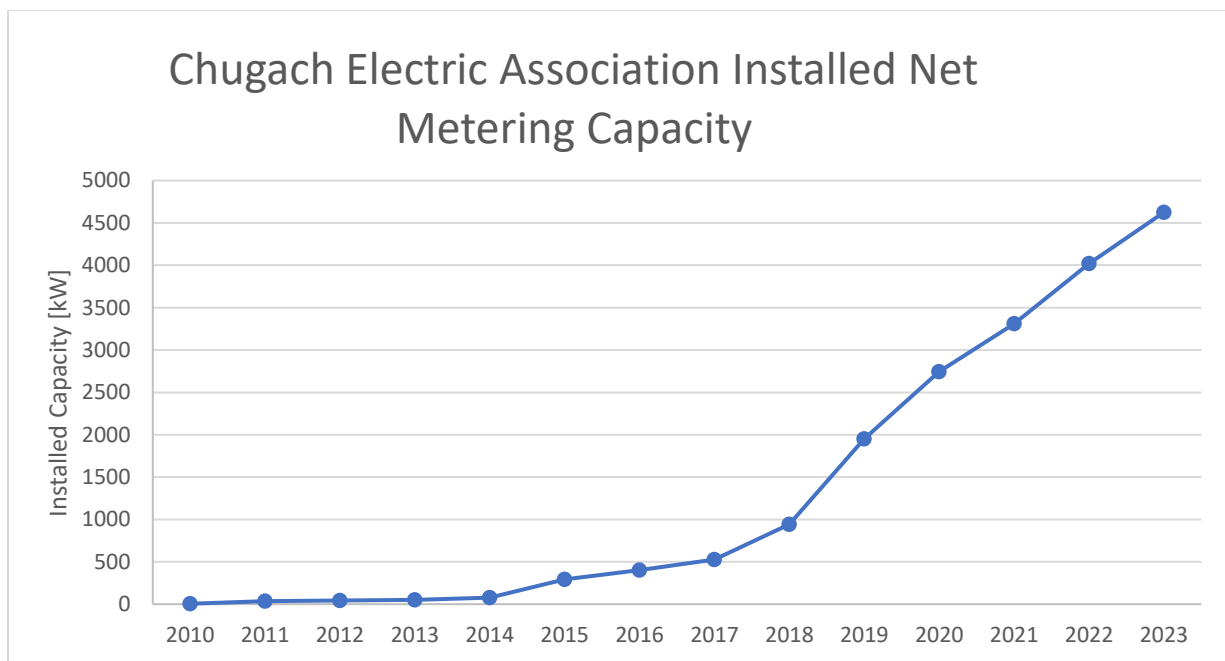


Figure 5. Total Chugach Electric Association installed net metering capacity by year