



2023 Alaska Railbelt Net Metering Update

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This is a summary of the growth of installed net metered distributed generation capacity on the Alaska Railbelt during 2021 and 2022 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 32 percent in 2021 and 18 percent in 2022. Since the March 2021 net metering update, Chugach Electric Association (CEA) petitioned the RCA to increase its net metering cap from 1.5 percent to 5.0 percent, which was approved in February 2022. Solar photovoltaic (PV) installations continue to be responsible for nearly all new net metering capacity. 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.

Railbelt wide, installed net metered capacity was at 2.3 percent of the average annual load at the end of 2021 and 2.7 percent at the end of 2022; however, the percent of annual energy production from net metered systems is far smaller than this. 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 2022, annual net metered renewable energy production is estimated to be about 11,982 MWh, or about 0.3 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. This amount is different than the amount of 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 11,982 MWh of approximated total net metered renewable energy production at the end of 2022, 8,185 MWh or about 68 percent was fed back onto the grid.

Homer Electric Association (HEA), MEA, and CEA saw either a slight load decline or nearly unchanged load in 2022 compared to 2021. Only Golden Valley Electric Association (GVEA) saw load growth in 2022.

Railbelt Wide

- At the end of 2022, Railbelt net metered renewable energy systems had an installed capacity of 13,314 kW.
- The installed net metered capacity at the end of 2022 increased 18 percent over the 2021 total of 11,313 kW.
- There were 2,376 net metered customers on the Railbelt grid at the end of 2022. The majority of these, 2,309, have solar PV installed.
- The total energy fed into the grid in 2022 was 8,185 MWh, almost all of which was generated by solar PV.

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

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

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

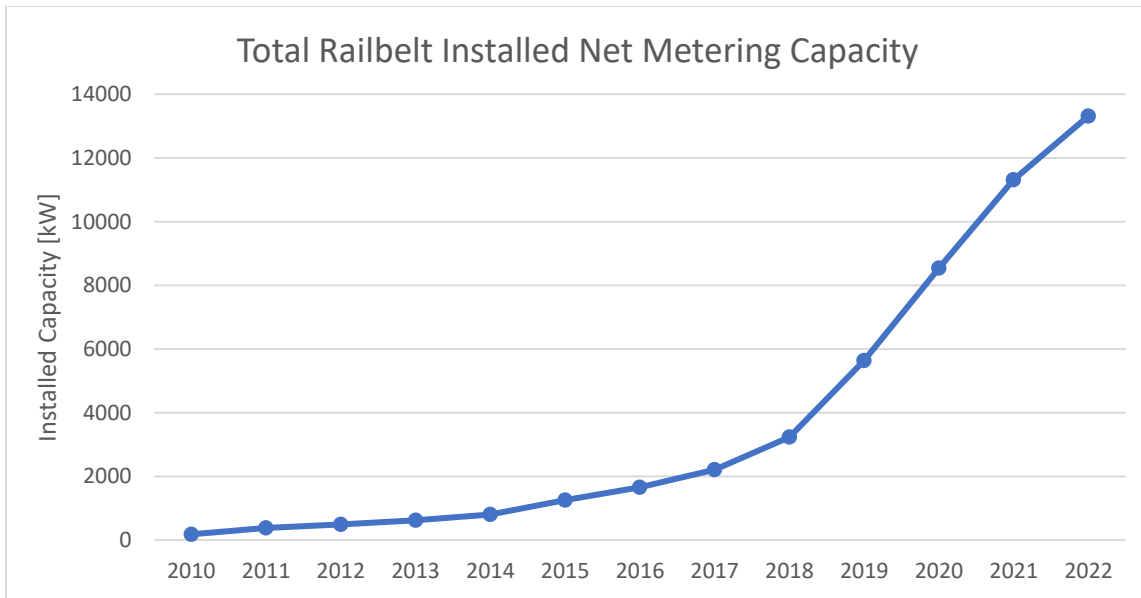


Figure 1. Total Railbelt net installed metering capacity by year

Matanuska Electric Association (MEA)

- At the end of 2022, MEA had 2,681 kW of installed net metered capacity.
- This amount was 204 percent of the 1.5 percent threshold interconnection amount of 1,311 kW.
- MEA net-metered customers include 404 with solar PV, 23 with wind turbines, and 8 with both solar PV and wind turbines. All added capacity in 2022 was solar PV.
- The total energy fed into MEA's system from net-metered facilities in 2022 was 905,961 kWh. Of this amount, 870,006 kWh was from solar net-metered facilities; 15,199 kWh was from wind net-metered facilities; and 20,765 kWh was from combined wind/solar net-metered facilities.
- One should take note that currently the installed net metering capacity on the MEA grid exceeds the 1.5 percent threshold. In their 2022 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 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 2022, 1.5% of MEA's retail demand was 1,311 kW. The nameplate capacity for eligible net metering systems as of February 2022, was approximately 2,681 kW. $2,681 / 1,311 = 204.4\%$ of the 1.5% retail demand threshold. Therefore, MEA has reached the current 1.5% retail demand threshold, but as stated previously, MEA has not established any limit on acceptance of net metering applications. MEA has been, and will continue, monitoring the net metering penetration levels on MEA's system. Rather than limiting net metering participation, MEA continues to investigate alternative rate designs, with the intent of enabling MEA's net metering program to remain in place for the foreseeable future by providing for equitable cost sharing. However, at this time MEA has made no final determinations for a course of action."

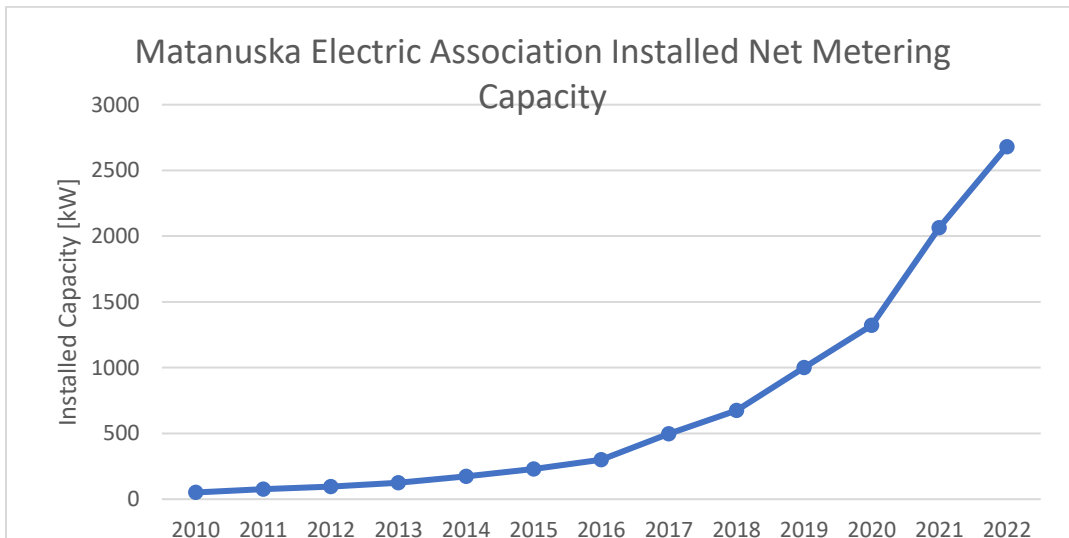


Figure 2. Total Matanuska Electric Association installed net metering capacity by year

Homer Electric Association (HEA)

- At the end of 2022, HEA had 3,223 kW of installed net metered capacity.
- This amount was 416 percent of the 1.5 percent threshold interconnection amount of 776 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 (3,619 kW).
- HEA net metered customers include 517 with solar PV, 33 with wind turbines, and 1 with generation from biofuel. All new net metered capacity installed in 2022 was solar PV.
- The total energy fed into the HEA grid from net metered facilities during 2022 was 1,382 MWh. Of this amount, 1,362 MWh was from solar net-metered facilities.
- 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.”

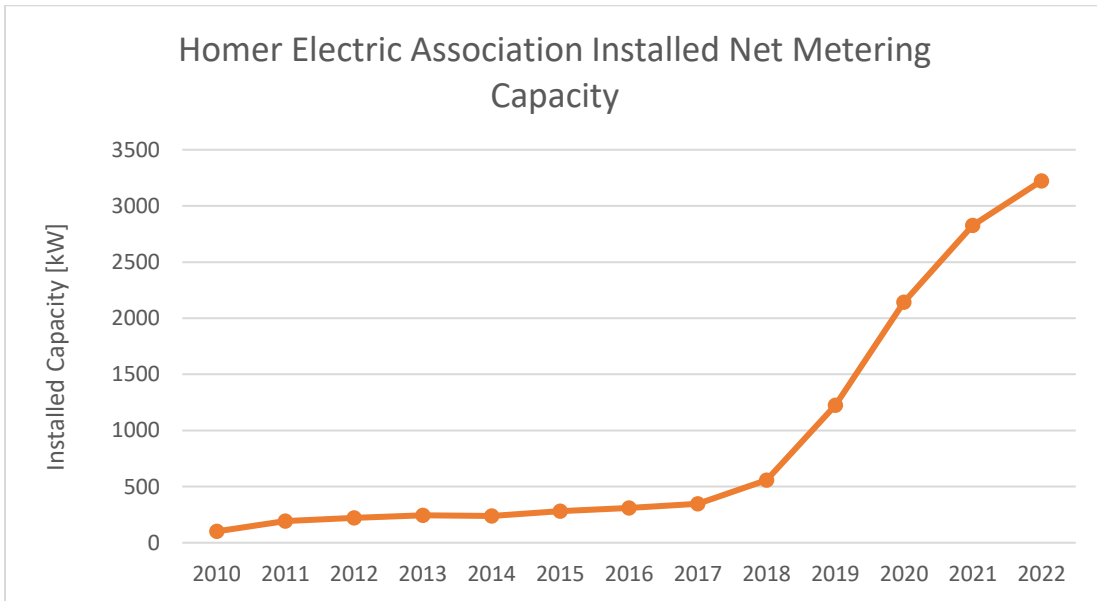


Figure 3. Total Homer Electric Association installed net metering capacity by year

Golden Valley Electric Association (GVEA)

- At the end of 2022, the GVEA service territory had 3,389 kW of installed net metered capacity.
- This amount was 159 percent of the 1.5 percent threshold interconnection amount of 2,130 kW (1.5 percent of average annual load).
- In May 2020 GVEA raised the net metering limit to 3 percent of its average annual load (4,261 kW).
- GVEA net metered customers include 603 with solar PV and 6 with wind turbines. All new net metering capacity added in 2023 was solar PV.
- The total energy fed into GVEA's grid from net metering facilities during the previous 12 months was 449,334 kWh. 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. 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.

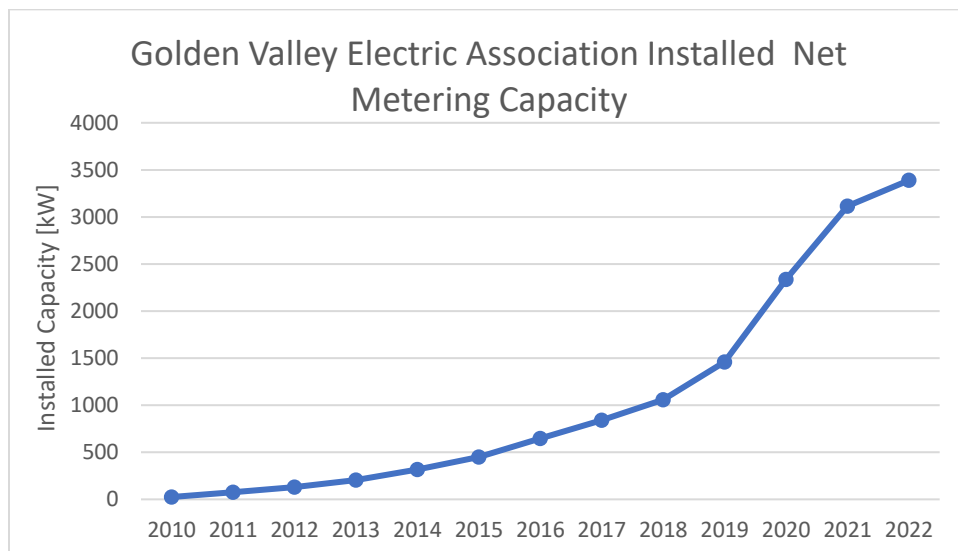


Figure 4. Total Golden Valley Electric Association installed net metering capacity by year

Chugach Electric Association (CEA)

- At the end of 2022, CEA had 4,021 kW of installed net metered capacity.
- This amount was 123 percent of the 1.5 percent threshold interconnection amount of 3,367 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 (10,859 kW).
- CEA net-metered customers include 777 with solar PV and 4 wind turbines. All new net metered systems installed in 2022 were solar PV.
- The total energy fed into the CEA grid from net metering facilities in 2022 was 1,405 MWh, 99.8 percent of this came from solar PV.

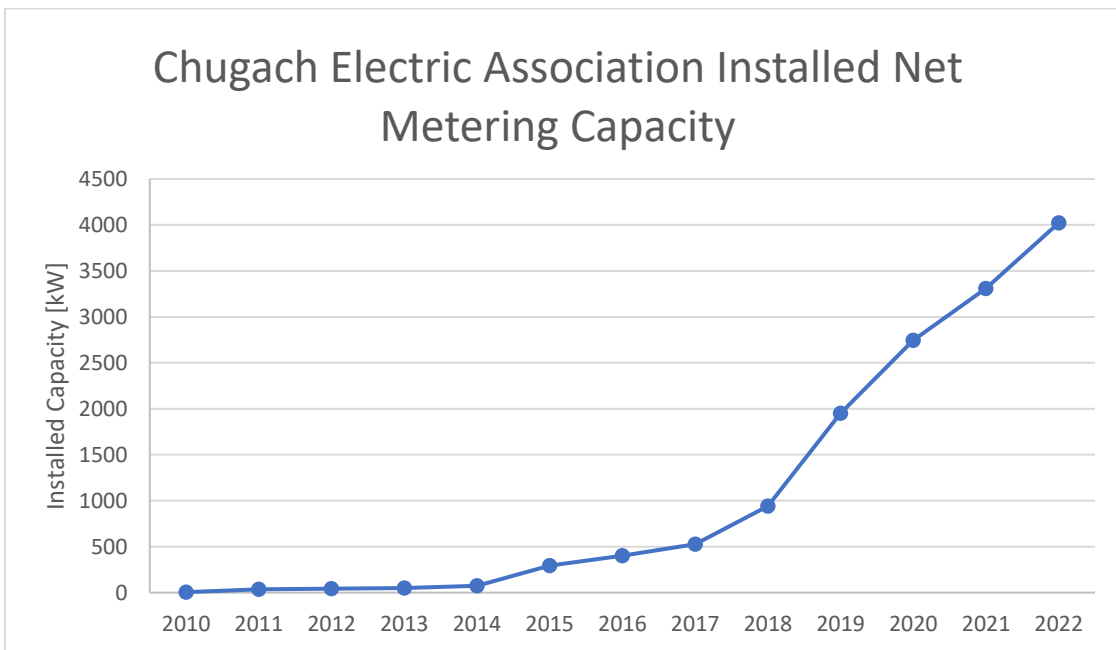


Figure 5. Total Chugach Electric Association installed net metering capacity by year