2024 Alaska Electricity Trends Report

An Analysis of Electricity in Alaska, Data Years 2011-2021

Alaska Center for Energy and Power

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Notice

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Chapter 1.

Introduction

An Analysis of Electricity in Alaska, Data Years 2011-2021

Welcome

This interactive report summarizes electricity data gathered from federal, state, and utility sources and presented in the form of a web book. It provides an overview of electricity capacity, generation, consumption, and price trends from 2011 to 2021. A comprehensive report highlighting these trends has not been produced for the state of Alaska since 2013's *Alaska Energy Statistics Report*.

This web book is designed as 'best available' document for the 2011-2021 energy trends data and reports. This website will be updated when updates to the underlying 2011-2021 data or fixes become available. Future year trends reports will be tackled in a different context and reporting structure.

Please explore the data using the chapter navigation links in the left sidebar and the section navigation links in the right sidebar.

1.0.1. How to Cite

Alaska Center for Energy and Power. "2024 Alaska Energy Trends Report Web Book." Accessed `{ojs} currentDate`. https://acep-uaf.github.io/aetr-web-book-2024

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AU  - Alaska Center for Energy and Power
TI  - 2024 Alaska Electricity Trends Report
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UR  - https://acep-uaf.github.io/aetr-web-book-2024/
N1  - Accessed on ${currentDate}
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Executive Summary

The objective of this work is to provide regulators, legislators, and other energy stakeholders with a holistic look at recent trends in electrical generation. The first impetus for this report is a lack of combined reporting on electricity generation across the state that extends to federally and non-federally regulated electric utilities (most of Alaska's electric utilities do not meet the minimum threshold for federal reporting requirements). The second impetus for this report is to aid in decision-making processes surrounding Alaska's energy future.

With uncertainty in natural gas sources on the Railbelt, technological advancements in generation technology, and improvements in the affordability of technologies, understanding trends in the state's capacity, generation, consumption, and prices is vital to more informed decision-making.

In this report, we present data collected from federal, state, and local sources supplemented by correspondence with utilities. We show trends for capacity, generation, consumption, and prices. The capacity and generation trends include data from 2011 to 2021, and the consumption and prices trends are data limited to 2019. More information on sources and methods are provided in the subsequent sections throughout the report. This report uses data visualizations as the primary mode for presenting the trends. To accommodate this presentation style, we present trends as simplified regions of the state as opposed to the Alaska Energy Authority energy regions.

We emphasize that this report is designed to provide factual information to the best of our ability without providing recommendations or in-depth analysis. However, context is provided for more impactful trends.

Key Takeaways

1.0.1. Capacity

- Generation capacity on average increased across all of Alaska from 2011 to 2021.
- The state saw large increases in renewable energy capacity, storage, and on-demand peaking units.

1.0.2. Generation

- Net generation has remained relatively stable
- The Coastal region generated more power from wind and hydro, but less from oil in 2021 than in 2011.
- The Railbelt region generated more power from wind, hydro, coal, and solar, but less from oil and gas in 2021 than in 2011.
- The Rural Remote region generated more power from wind and solar, but less from oil and hydro in 2021 than in 2011.
- We have seen significant increases in the usage of utility-scale battery storage.

1.0.3. Consumption

- Electricity consumption overall has fallen for all customer classes, with residential customers seeing the most reductions.
- The number of customer accounts have continued to increase throughout the state.
- Per capita consumption for the residential sector is highest in the Coastal region and lowest in the Rural Remote region.

1.0.4. Prices

- Residential electricity rates increased on average across Alaska after adjusting for inflation, the PCE subsidy, and population weighting.
- The region that experienced the least residential rate increase was the Coastal region with a 6% increase.
- The region experiencing the highest residential rate increase was the Railbelt with a 26% increase.
- Commercial and Other customers in the Coastal and Rural Remote regions saw rate decreases where Commercial customers in the Railbelt region saw price increases of about 15%.
- PCE subsidies continue to dampen residential prices in the Coastal and Rural Remote regions.

Appendix A.

About this Report

Description of the 2024 Alaska Electricity Trends Report Web Book

A.1. General Overview

This Alaska Electrical Trends Report (AETR) Web Book has been produced by the Alaska Center for Energy and Power (ACEP) at the University of Alaska Fairbanks (UAF). It is designed to be interactive and dynamically updated when new data becomes available.

Throughout the years, several agencies have prepared and published reports and data compilations on energy use in Alaska. AETR is complementary to those prior reports, but is not presented in a comparable format.

A.2. Historical Timeline of Prior Reports

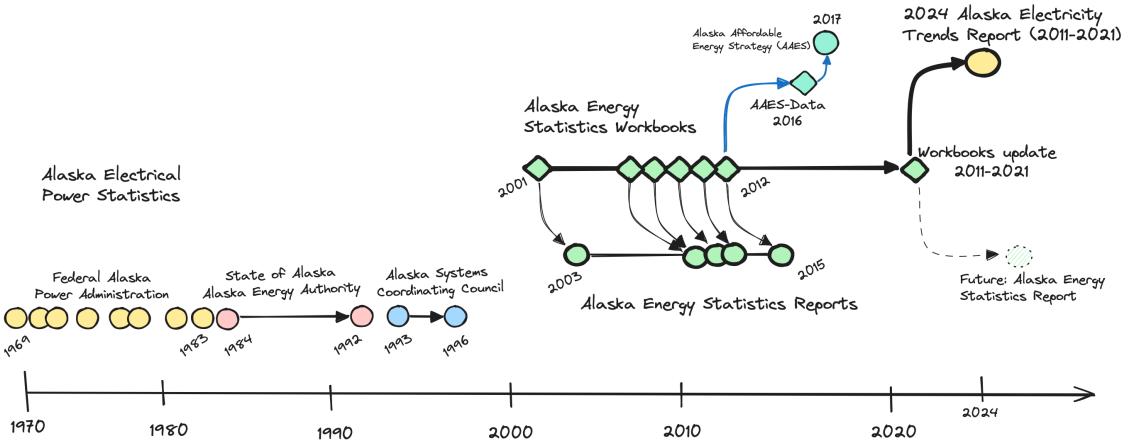

Figure A.1.: Timeline of Energy Reports

Starting in 1969, the first Electric Power Trends report was published by the Alaska Power Administration. During this time, the Alaska Power Administration was a federal agency housed within the U.S. Department of the Interior. Their first publication was known as the "First Annual Report" and covered data from the 1968 fiscal year. However, this became the "Alaska Electric Power Statistics Report" in 1971 and examined data from the 1960-1969 data years. The APA continued to produce intermittent reports until 1983 when the State of Alaska established the Alaska Power Authority (APA), which later became the Alaska Energy Authority (AEA).

Under state direction, the APA/AEA continued to publish intermittent reports on electric power statistics until their final publication in 1992 which covered data years 1960 to 1991. To address the reporting gap, the Alaska Systems Coordinating Council in collaboration with the State of Alaska,

Department of Community and Regional Affairs, Division of Energy continued generating reports until 1996 with their final report covering data years 1960 to 1995. Finally, the University of Alaska Anchorage, Institute of Social and Economic Research produced several reports with their last covering 1960 to 2012. Since then, there have been no electric power statistical reports.

The Table A.1 provides a summary of this timeline. This report serves to supplement the reporting gap in electric power statistics for the State of Alaska.

Table A.1.: Historical Timeline of Reports

Year Published	Institution	Data Coverage
1971 to 1983	Alaska Power Administration	1960 to 1982
1984 to 1988	Alaska Power Authority	1960 to 1987
1989 to 1992	Alaska Energy Authority	1960 to 1991
1992 to 1996	Alaska Systems Coordinating Council; State of Alaska	1960 to 1995
2003, 2011 to 2015	University of Alaska Anchorage, Institute of Social and Economic Research	1960 to 2012

For a table of links to these historic reports, please refer to **?@tbl-historic-reports**.

A.3. Technical Details

The book is formatted using Quarto, an open-source scientific and technical publishing system. The template was developed by the Openscapes project, as part of their Quarto Website Tutorial.

The markdown files that make up the book reside in the aetr-web-book GitHub repository. The generation process is publicly accessible. Errors in the document can be flagged using GitHub issues where they can be tracked and addressed by the DCM team.

The book also integrates R code for data processing and figure generation. When data files are updated, manually triggering the Quarto render will update the figures automatically.