



# ENERGY PROFILE: GALENA

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# Galena, Alaska Energy Profile

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Galena, Alaska (Walter Borbridge,  
<http://www.sustainablegalena.org/wp-content/uploads/2016/03/edited-GilaNorthFlight.jpg>)

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## Introduction

### Community Appropriate Sustainable Energy Security (CASES)

The Community Appropriate Sustainable Energy Security (CASES) Partnership is an international research initiative involving 15 northern and Indigenous communities and public and private sector project partners from Canada, Alaska, Sweden, and Norway.

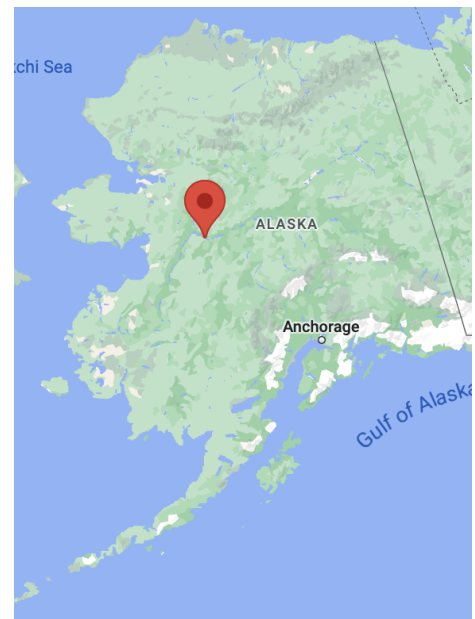
Hosted by the University of Saskatchewan, the overarching goal of the CASES initiative is to reimagine energy security in northern and Indigenous communities by co-creating and brokering the knowledge, understanding, and capacity to design, implement and manage renewable energy systems that support and enhance social and economic values.

The CASES Partnership facilitates the sharing of experience so that not all communities have to experience the same challenges or recreate solutions, thereby expediting the learning experience and accelerating renewable energy innovation.

In Alaska, the CASES project activities are led by the Alaska Center for Energy and Power at the University of Alaska Fairbanks with collaboration from the Institute of Social and Economic Research at the University of Alaska Anchorage.

### Galena, Alaska

Galena is located in central Alaska, 270 air miles west of Fairbanks, 350 miles north of Anchorage, and 1,000 miles northwest of Juneau (Gana-A'Yoo Service Corporation, n.d.). Situated along the Yukon River, Galena is situated on the site of one of 12 Koyukon Athabaskan summer fish camps. Galena is not accessible by road from other parts of Alaska, thus residents rely on transportation by air or water for travel and goods. Galena serves as a regional hub for several other villages in Alaska's Interior (Tanana Chiefs Conference Community Planning Program et al., 2012).



## Regulation and Governance

### Ownership Structure

This section describes the current energy system ownership structure in Galena, including utilities and other services providers.



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The City of Galena owns and operates the community's electric, water, sewage, and solid waste utilities (Tanana Chiefs Conference Community Planning Program et al., 2012). The City also owns several buildings including the community hall, health clinic, and utility buildings, and partially funds the library and pool. The City of Galena has a long term lease agreement with the Galena City School District.

Though not directly responsible for a utility in the community, Sustainable Energy for Galena (SEGA) is a non-profit organization and joint initiative between the Galena City School District, the City of Galena, and Louden Tribal Council, tasked with biomass fuel harvesting and processing (Menghwani et al., 2022).

## **Institutional Arrangements**

This section outlines the key regulations and standards currently in place that impact energy in Galena. This includes programs, policies, and regulations from various levels of government.

### **Regulatory Commission of Alaska (RCA)**

Utilities in Alaska are regulated by the Regulatory Commission of Alaska (RCA). Most utilities in the state providing services to ten or more customers require a certificate issued by the RCA to operate (Regulatory Commission of Alaska, n.d.). The RCA then regulates the rates, services, and practices of the utilities.

### **Power Cost Equalization Program**

For communities in Alaska, a program of interest is the Power Cost Equalization (PCE) program. The PCE is a state subsidy program that provides economic assistance to residents in communities in rural Alaska where the cost of electricity is three to five times higher than for customers living in urban areas of the state such as Fairbanks, Anchorage, and Juneau (Alaska Energy Authority, n.d.-a). The PCE is administered by the Regulatory Commission of Alaska and the Alaska Energy Authority. In Galena, there are 186 residential customers and 13 community facility customers in the PCE program (Alaska Energy Authority, 2022). In fiscal year 2021, the average annual PCE payment per eligible customer in Galena was \$964, with an effective residential rate of \$0.41 per kWh.

### **City of Galena/Gana-A'Yoo Ltd. Timber Sale Agreement**

In 2015, a timber sale agreement was finalized between the City of Galena and Gana-A'Yoo Ltd. in order for the city to access forest areas for biomass (Menghwani et al., 2022). The City formally assigned all responsibilities and land access under the agreement to SEGA.

## **Policy Environment**

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This section outlines key overarching policies or plans in the region that influence the direction of Galena's energy system.

### **Alaska Energy Pathway Toward energy independence**

Alaska's state energy plan was published in 2010. Its objective is to provide Alaskans with affordable power, to achieve 20% energy efficiency improvements by 2020, and generate 50% of its electricity from renewables by 2025 (Alaska Energy Authority, 2010). This plan outlines the state's overall energy policy, therefore has implications for what is done at the community level.

### **United States Energy Policy Act**

At the federal level, the Energy Policy Act covers energy production in the United States including energy efficiency, renewable energy, oil and gas, coal, Tribal energy, nuclear, motor fuels, hydrogen, electricity, climate change technology, and energy tax incentives (US EPA, 2013).

### **Galena Strategic Community Plan**

In 2012, the Galena Strategic Community Plan was adopted by the City of Galena and Loudon Tribal Council. The plan was developed collaboratively by the City, the Tribe, community members and the Tanana Chiefs Conference Community Planning Program. The plan outlines priorities for the community moving forward, and those related to energy are likely to guide future energy projects and decisions made in Galena.

### **Historic Shift and Embeddedness**

Information about historic shifts and embeddedness could not be found during the document review. It is recommended that this topic be researched in further detail through interviews with those in the community.

### **Relationships**

Detailed information on the relationships between governments, organizations, entities, and the community of Galena is not found in documents and websites reviewed for this report. It is recommended that this topic be covered in future interviews and discussions with those representing the various organizations in the region.

Organizations and entities relevant to energy in Galena:

- City of Galena
- Loudon Tribal Council
- Surrounding villages - Ruby, Nulato, Kaltag, Koyukuk
- Galena Interior Learning Academy (GILA)
- Sustainable Energy for Galena (SEGA)
- Gana-A'Yoo Ltd.

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## Local Capacity and Innovation

### Community Energy Plan

Galena does not currently have a community energy plan.

### Community Energy Champion

Tim Kalke, general manager, Sustainable Energy for Galena (SEGA)

- [tim.kalke@sustainablegalena.org](mailto:tim.kalke@sustainablegalena.org)

### Human Capital

The Galena Interior Learning Academy (GILA) is located in the community of Galena. GILA offers vocational training in automotive mechanics, welding, woodworking, cosmetology, health sciences, media and information technology, drone aviation, as well as an academic curriculum (Galena Interior Learning Academy, n.d.). GILA students come from across the state to study in Galena, and the school provides many employment opportunities for those in the community.

### Community Investments

This section outlines recent energy investments made in Galena.

- Galena Biomass Project (2016)
  - A 4.6 MMBtu biomass (woodchip) boiler was installed in 2016 (Menghwani et al., 2022). The biomass project consists of fuel harvesting and processing, energy generation, and heat distribution to GILA.
- Galena Solar Farm (2017)
  - The first stage of a solar farm was installed in Galena in 2017 (Galena City School District, n.d.). The project was funded by the City of Galena and the Yukon River Inter-Tribal Watershed Council.

### Energy Programs and Incentives

This section outlines energy programs and incentives available to Galena for renewable energy projects, energy efficiency, or capacity building.

- US Department of Energy
  - The US DOE provides various funding opportunities for capital projects as well as training and capacity building (U.S. Department of Energy, n.d.).
- State of Alaska
  - The State government provides various programs for energy such as the Renewable Energy Fund (Alaska Energy Authority, n.d.-b). Galena's biomass



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project received a 3.4 million dollar start up grant from the Renewable Energy Fund (Menghwani et al., 2022). The project also received 4 million dollars in loans from the Alaska Housing Finance Corporation and the Alaska Department of Environmental Conservation (Menghwani et al., 2022). The Alaska Energy Authority also provided SEGA with a 500,000 dollar grant for harvesting equipment (Menghwani et al., 2022).

## **Community Energy Source Potential**

According to an energy profile put together by the Alaska Energy Authority (2014) , Galena has the following levels of potential for various energy sources:

- Hydroelectric - low
- Wind diesel - low
- Biomass - high
- Solar - high
- Geothermal - low
- Oil and Gas - low
- Coal - low
- Emerging Technologies - not rated
- Heat recovery - high
- Energy efficiency - high

## **Priorities**

This section outlines community priorities for the future of energy in Galena. The first list of priorities was identified through the development of Galena's Strategic Community Plan, and the second through interviews with community members.

- Priorities - Galena Strategic Community Plan
  - Identifying a solution to address the high costs of energy and transportation.
    - To do so, the community plan suggests establishing an alternative energy working group and coordinating efforts in project implementation between entities in the community.
    - Specific projects identified in the plan to address this priority include implementing biomass solutions to assist in reducing heating costs, encouraging conservation and weatherization programs and alternative energy solutions.
  - Adequate, affordable, and energy efficient housing.
    - To ensure such housing is readily available in Galena, the community plan suggests promoting financing options and accessing state or federal funding to improve insulation and weatherization in new and existing homes. Furthermore, increasing the usage of small scale alternative energy projects in new homes is recommended.

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- Priorities - Community Interviews
    - Cheaper electricity which could provide an array of new economic and educational opportunities, while also making water, heat, and food more affordable.
    - Installing more solar energy systems.
    - Increase efficiency of homes, community facilities, and utilities.
    - Ensuring reliability through back up systems.
    - Achieving net zero.
    - Perfecting the diesel microgrid model for wind and solar so that it can be maintained locally.
    - Developing value added products through the biomass wood harvest.
    - Ensuring the community is central to any energy decisions.

## **Vulnerabilities and Security**

### **Power Disruptions**

Data on power disruptions was not found during the document review. Future research should include connecting with the utility to determine if this information is available.

### **Fuel Supply**

Data on fuel supply was not found during the document review. Future research should include connecting with the utility to determine if this information is available.

### **Infrastructure**

Extensive data on infrastructure was not found during the document review. Future research should include connecting with government agencies who may have infrastructure data for Alaskan communities.

A current research project at the Alaska Center for Energy and Power is examining power poles in Galena through drone surveys. Preliminary findings indicate that erosion and tilting power poles are issues of concern (L. Borger, personal communication, August 2, 2022).



Power Poles in Galena (Logan Borger, 2022)



Tilting power pole in Galena (Logan Borger, 2022)



Erosion near power pole (Logan Borger, 2022)

## Renewables Integration

Data on renewables integration was not found during the document review. Future research should include connecting with the utility to determine if this information is available.

## Economic Vulnerability

This section outlines potential aspects of economic vulnerability for Galena. In the Galena Strategic Community Plan (2012), it is noted that the already high cost of living is continuing to increase due to the high cost of transportation. Furthermore, barriers to economic development in the community include the high cost of energy and transportation and limited availability of land and facilities.

The sentiments related to high costs of energy in the community were echoed by interview participants, who expressed that the current energy system is not affordable for everyone. Quotes from interviewees surrounding the cost of energy in Galena include:

*“You better have a good job, it's pretty high cost compared even to Fairbanks. Fairbanks is probably a third of the cost for fuel.”*



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*"I am fortunate to live in a household that has two working incomes so for our house it's affordable, but I know I've been in a position before where it was just one working household and it was expensive and hard trying to buy fuel at a hundred gallons, so you're looking at almost 600 bucks for a hundred gallons at the time."*

*"If we could get affordable energy our people would benefit the most."*

*"There have been a few times where some community comments were mentioned where if prices do go up for electricity and utilities, that they would have to move because of the price, and so looking at it community wide I guess people do struggle with it."*

## **Security**

A prevalent security risk in Galena is flooding. Located along the Yukon River, Galena has experienced major flooding events in the past and is at risk of flooding in the future. The 2013 flood caused by an ice jam on the river resulted in damage to fuel tanks and other containers of hazardous materials (State of Alaska Division of Spill Prevention and Response, n.d.).

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