

JCOS DISCUSSION DRAFT

3/14/2022 Steve Behnke

Takeaways from the 2021 Energy/GHG Inventory Update

Purpose and Scope of the Study

The analysis estimates 2021 community energy use and GHG emissions to update similar data compiled in 2007 and 2010. However, the study was not designed to explain the changes that occurred. With only 3 widely separated points in time it cannot conclude much about trends without further analysis. It was not designed to update CBJ climate or energy policy, although it can be used as a source of information for evaluating and updating policies.

Methodological Differences

The study was forced to use different methods than in 2007 and 2010. Fuel suppliers declined to provide information on fuel sales after the 2010 study, so other methods of estimating energy use were applied, consistent with the Global Greenhouse Gas Protocol (ghgprotocol.org). As in 2007 and 2010, the data for different sectors vary in quality.

Some Key Findings

Total Community Energy Use and Emissions

Juneau used less energy and had fewer GHG emissions in 2021 than in 2010 or 2007. Total community energy use in 2021 was 33% less than in 2007, while GHG emissions were 36% lower.

As noted above, the study was not designed to explain these differences, which have probably been affected by a range of different factors. Some of the differences between 2007 and 2010 are discussed in the JCAIP (2011, pp13-14).

Among the likely major causes of differences between 2010 and 2021 are significant economic and demographic changes in Juneau. For example, state jobs declined by about 18% over this period, the population aged, and the economy was particularly hard hit by the covid pandemic in 2020. In addition to other impacts, the 1.4 million cruise ship visitors in 2019 dropped to zero in 2020. These impacts continued into 2021, which saw only 10% of the 2019 visitor numbers. Visitor numbers in 2021 were only 17% of those in 2010. This must have had a significant impact on local marine and air transportation activity and fuel use which are closely tied to tourism. (Is this reflected in highway traffic, enplanement data or harbor activity for 2019 versus 2020 and 2021?).

Buildings

Buildings continue to be one of the largest energy users and GHG producers in Juneau, accounting for 26% of GHG emissions in 2021. However, in 2021 they used somewhat less total energy (-5.3%) and created much lower GHG emissions (-34%) than in 2010.

Use of electricity was 9% higher in 2021 than in 2010. Greater use of hydroelectricity appears to account for some portion of the lower GHG emissions in 2021.

Transportation

Highway, air, and marine transportation accounted for about 36% of the total energy used and 50% of total GHG emissions in 2021.

Air and marine transportation activity and fuel sales in Juneau appear to fluctuate significantly annually, depending on routes and schedules, and where businesses decide to purchase fuels. Both are closely associated with the tourism economy.

Large cruise ships are not accounted for in this study since they do not fuel in Juneau, and they were not accounted for in 2007 or 2010. Their GHG emissions are accounted for in the places that they purchase fuel. However, they are of considerable interest because of the local air pollution and climate pollution they produce while running their diesel generators at dock. The huge quantities of fuel they burn and climate pollution they create while underway are also of strong interest locally. One estimate is that they produce 5 times as much GHG emissions in their half-year season as the Juneau community does annually.

Mining

The two mines are major fuel users and GHG emitters, accounting for 15% of total emissions. In 2021 the Hecla Greens Creek mine used significantly less fuel and emitted less GHG than the Kensington mine, due to Greens Creek's access to hydropower from AEL&P. In 2010 mining emissions were 10% of the community total. Both mines have been taking increasing steps to track, report and reduce their GHG emissions.

Solid Waste

Juneau's landfill accounts for a relatively small proportion of total community GHG emissions, about 2% in 2021. Landfill emissions in 2021 were significantly lower than in the earlier inventories, dropping by more than 50%.

CBJ Government

The City and Borough of Juneau is a significant energy user, accounting for 6.6% of total community energy use and nearly 5% of GHG emissions in 2021. These proportions were higher than in 2010, when they accounted for 4.5% of total energy use and 3% of total emissions.

We have good data on energy use for the CBJ, in contrast to other sectors. The CBJ government purchased about 11% more fuel in 2021 than in 2010, resulting in about an 11% increase in its share of the GHG emissions, while its use of electricity stayed about the same. Major increases in fuel usage between 2010 and 2021 occurred in school buildings, (possibly attributable to increased ventilation levels during the Covid pandemic), and in the Municipal water/wastewater system (largely attributable to fuel used in the new biosolids dryer).

How can Juneau use the study's results?

What do they mean for Juneau climate and renewable energy policy?

- The 2021 update highlights major areas of energy use and sources of GHG emissions. They can help us identify the areas where Juneau residents, businesses, and the CBJ can target energy use and emissions.
- While there have been some changes, most of the mitigation strategies and actions identified in the JCAIP (2011) and the JRES (2018) continue to be relevant.
- More years of energy use data are needed to inform community trends. To what extent do the differences between 2021 and earlier inventories reflect real trends? Updates for several years in a row would provide a more complete picture. For specific sectors where there are questions we could go back and fill in existing data – for example in areas such as air travel and marine transportation where energy use and GHG emissions appear to fluctuate up and down over the years. Establishing a mechanism whereby records of Juneau diesel and gasoline fuel sales are obtained would also greatly assist in portraying the community's energy use and GHG inventory.
- The 2021 results appear to indicate that both energy efficiency and increasing electrification of the building sector are playing a role in change. With the update completed, we have an opportunity to begin to look at scenarios for increasing electrification of buildings and transportation.
- CBJ facilities and operations provide one major focus of continuing attention. The CBJ is a major energy user and GHG emitter that has increased in relative significance since 2010. This is also the area where the JCOS, CBJ staff and the Assembly can have the most influence. The JRES recommends development of a formal CBJ energy management plan that can address both cost savings and GHG emissions ([Juneau Renewable Energy Strategy, 2018](#) p.62 and Appendix E - Draft Proposal for a CBJ Energy Management Program). Over the past two years, CBJ Maintenance and E&PW staff has developed baseline data and a more detailed tracking system for energy use which is the first step in an energy management plan.

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