



CITY AND BOROUGH OF SITKA

Meeting Agenda Sustainability Commission

Officers: Chair Katie Riley, Vice Chair Aurora Taylor, Secretary Erik de Jong

Members: Elizabeth Bagley, Gerry Hope

Staff Liaison: Bri Gabel, Sustainability Coordinator

Assembly Liaison: Thor Christianson

Monday, January 6, 2025

7:00 PM

Harrigan Centennial Hall

I. CALL TO ORDER AND ROLL CALL

II. ELECTION OF OFFICERS

III. CONSIDERATION OF THE AGENDA

IV. CONSIDERATION OF THE MINUTES

Approve the December 2, 2024 minutes.

V. PERSONS TO BE HEARD (*not to exceed 3 minutes on topics off the agenda*)

VI. SPECIAL REPORTS

VII. UNFINISHED BUSINESS

A. Discussion on Sustainability Commission 2025-2026 Goals

B. Discussion/Direction/Decision on Community Greenhouse Gas Emissions Inventory Draft

VIII. NEW BUSINESS

C. Review and Amend the Bylaws

D. Discussion/Direction/Decision on Commission Attendance to the Sitka Living Locally Event

IX. PERSONS TO BE HEARD (*not to exceed 3 minutes on topics on or off the agenda*)

X. REPORTS (*Staff, Chair, Assembly, Commissioners*)

XI. SET NEXT MEETING DATE AND AGENDA

XII. ADJOURNMENT

PROCEDURE FOR ELECTION OF OFFICERS

3 Seats to be elected: Chair, Vice Chair, Secretary

If one member is nominated:

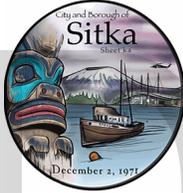
1. Move to nominate: *"I move to nominate _____ as the Chair/Vice Chair/Secretary."*
2. Second of above motion
3. Nominee accepts or declines nomination
4. Commission votes "yay" or "nay", motion passes or fails.

If multiple members are nominated:

1. Move to nominate: *"I move to nominate _____ as the Chair/Vice Chair/Secretary."*
2. Second of above nomination
3. Repeat steps **1** and **2** above as many times as necessary
4. Nominees accept or decline nominations
5. Commissioners vote by roll call and vote by name (rather than "yay" or "nay"), member with majority of votes is elected.

Decision to postpone may be made:

1. For all positions: *"I move to postpone election of officers until the March 4th regular meeting."*
2. For a particular position: *"I move to postpone the election of the Chair/Vice Chair/Secretary to the March 4th regular meeting."*
3. Second of above motion
4. Commission votes "yay" or "nay", motion passes or fails.



CITY AND BOROUGH OF SITKA

Meeting Minutes Sustainability Commission

Officers: Chair Katie Riley, Vice Chair Aurora Taylor, Secretary Erik de Jong
Members: Elizabeth Bagley, Gerry Hope
Staff Liaison: Bri Gabel, Sustainability Coordinator
Assembly Liaison: Thor Christianson

Monday, December 2, 2024

6:00 P.M.

Harrigan Centennial Hall

I. CALL TO ORDER AND ROLL CALL

Chair Riley called the meeting to order at approximately 6:08 P.M.

Present: Katie Riley (Chair), Elizabeth Bagley, Gerry Hope (telephonic), Erik de Jong (telephonic), Aurora Taylor

Absent: Thor Christianson (Assembly Liaison)

Staff: Bri Gabel (Sustainability Coordinator)

Public: Callie Simmons

II. CONSIDERATION OF THE AGENDA

No changes.

III. CONSIDERATION OF THE MINUTES

Approve the November 4, 2024 minutes.

Taylor moved to approve the November 4, 2024 minutes.

Motion PASSED 5-0 by roll call vote.

IV. PERSONS TO BE HEARD *(not to exceed 3 minutes on topics off the agenda)*

None.

V. SPECIAL REPORTS

Callie Simmons presented the 2024 Sitka Community Food Assessment and highlighted food security challenges and opportunities, trends, and changes from the 2015 assessment.

VI. UNFINISHED BUSINESS

A. Discussion on Sustainability Commission 2025-2026 Goals

Commissioners reflected on the joint work session with the City Assembly in November and discussed potential focus areas for the upcoming annual work plan based on comments made by Assemblymembers. Topics such as continuing with municipal solid waste and how food security might be integrated with attention to sales tax on groceries and the overlap between food waste and municipal solid waste. Gabel updated the Commission on the Southeast Alaska Solid Waste Authority's (SEASWA) project for a regional municipal solid waste strategy and explained how the Commission might engage with that project.

De Jong expressed concerns over the heating method of the Gary Paxton Industrial Park (GPIP) boat haul out project heating pad that was on an upcoming Assembly meeting and asked how the Commission might make a recommendation for the heating source. Gabel indicated she would follow up with more information. The Commission continued to discuss ways to integrate sustainability into City projects both in early stages and throughout development.

Gabel proposed that a work session be held in January prior to the regular meeting for the Commission to continue to develop goals; Commissioners agreed.

VII. NEW BUSINESS

B. Discussion/Direction/Decision on Community Greenhouse Gas Emissions Inventory Final Draft

Gabel introduced the draft of the Community Greenhouse Gas Emissions (GHG) Inventory and requested feedback on the document's clarity, accessibility, and accuracy. Commissioners made suggestions on areas that needed additional verification such as the marine sector, household heating ratios, and the integration of cruise ship emissions into the report. Requests were made for additional and/or removal of visualizations, inclusions of customary place names, and additional suggestions to holistically communicate the GHG emissions document effectively to the public.

Commissioners requested more time with the draft and to revisit the draft in January after additional time for review. Gabel requested Commissioners have any additional comments to her by the public comment deadline. The discussion concluded with an emphasis to solicit additional public comment from community members.

VIII. PERSONS TO BE HEARD *(not to exceed 3 minutes on topics on or off the agenda)*

None.

IX. REPORTS *(Staff, Chair, Assembly, Commissioners)*

Staff: None.

Chair: None.

Commissioners: Taylor reported that the U.S. Geological Survey landslide grant was open until, noted Southeast Alaska's landslide risk, and encouraged those in attendance to spread the word.

Hope provided an update on electric vehicle and alternative fuel work with Tribal Pacific Northwest International in looking at EVs in Norway and the Yukon.

X. SET NEXT MEETING DATE AND AGENDA

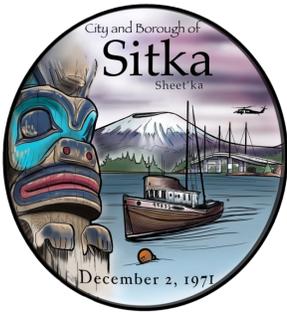
The next meeting was scheduled for Monday, January 6, 2025 at Harrigan Centennial Hall.

XI. ADJOURNMENT

Chair Riley moved to adjourn the meeting.

Seeing no objection, the meeting ADJOURNED the meeting at approximately 7:37 P.M.

Minutes By: Bri Gabel, Staff Liaison



CITY AND BOROUGH OF SITKA

A COAST GUARD CITY

MEMORANDUM

To: Sustainability Commission Members
From: Bri Gabel, Sustainability Coordinator 
Date: January 3, 2025
Subject: Discussion on Sustainability Commission 2025-2026 Goals

Background

On March 26th, 2024, the Assembly [unanimously approved](#) the goals of the [Sustainability Commission 2024-2025 Work Plan](#). These goals are:

1. Continue the development of the [Sitka Community Renewable Energy Strategy](#) (SCRES)
2. Collaborate with City staff on strategic management of municipal solid waste (MSW)
3. Support electrification of the municipal fleet

Over the past several regular meetings, the Commission has been discussing goals for the next work plan. On November 12th, the Sustainability Commission held a joint work session with the City Assembly to introduce new Assemblymembers to the Sustainability Commission and Commissioners, assess Assemblymembers interests and priorities in the Commission's duties and responsibilities, align skillset of Commissioners with Assemblymember interest and priorities to inform 2025-2026 work plan goals.

In December, the Commission heard a special report on the 2024 Sitka Food Security Assessment and discussed additional ways the report and its findings could inform the 2025-2026 goals.

At the December regular meeting, the Commission requested a work session prior to the regular meeting to further develop goals.

Analysis

Based on questions and comments from the Assemblymembers at the joint work session and previous regular meetings, utilizing the greenhouse gas emissions inventory to strategically inform recommendations to further public utilization of Sitka's renewable electricity. A draft of the GHG emissions inventory was released and open for public comment and is currently being prepared for revision based on these comments and Commission direction.

Municipal solid waste was repeatedly flagged by Assemblymembers, with reducing the amount of material brought in as well as streamlining and exploring disposal methods locally and regionally.

Electric vehicle charging infrastructure for both the public and municipality was also of interest.

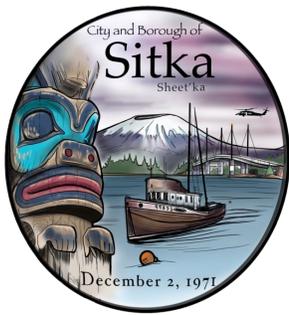
Other recommendations/requests were to explore the potential for tax solutions to support local resource production, ground source heat pumps, and better defining and outlining the "supply chain" to help clarify its purpose and better understand its fragility.

Sales tax on groceries as well as other ways to integrate food security work were discussed as well as further integration of sustainability into City project development and evaluation.

Recommendation

Continue discussion regarding the upcoming work plan. This item can be utilized formally to narrow down a list of projects, or request additional feedback from City staff, formalize work done in the work session or other uses as the Commission sees fit for goal development.

It is recommended that projects/goals near finalization in January with a vote in February. This would allow for a draft work plan to be reviewed at the March meeting and presentation to the Assembly at their March 25th meeting.



CITY AND BOROUGH OF SITKA

A COAST GUARD CITY

MEMORANDUM

To: Sustainability Commission Members
From: Bri Gabel, Sustainability Coordinator 
Date: January 3, 2025
Subject: Discussion/Direction/Decision on Community Greenhouse Gas Emission Inventory Draft

Background

As part of the Sitka Community Renewable Energy Strategy (SCRES), a community-wide greenhouse gas (GHG) emissions inventory is included. GHG inventories are often conducted by specific organizations and/or locations using aggregated, scaled, and/or modeled data to estimate the greenhouse gases emitted in a given timeframe, typically annually.

Throughout the process, the SCRES technical team has collaborated with the Sustainability Commission to create appropriate assumptions for a Sitka-specific inventory, which due to its islanded nature and renewable electricity generation, does not clearly fit standard methodologies.

A draft was released on November 29th, 2024 and public comment was taken via email or phone until December 31st, 2024.

Analysis

In total, 16 comments were received via email and none by phone. Respondents included the general public, Sustainability Commissioners, and Assemblymembers.

Many of the comments provided additional information regarding the marine sector that can be used to refine the calculations as well as specifics for tourism, and home heating ratios.

Next Steps

Public comments will be reviewed, and specific areas will be reevaluated as directed by the Commission and availability of data. New information provided in some comments will be integrated. The marine sector will be further refined based on new data provided by the public, as well as further refinement on home heating, local vehicle fleet composition.

A general request was for more transparency and clarity in methodology.

Recommendation

Review public comments and recommend ways to improve the report. Provide any additional comment you may have to improve the report, additional resources, or other recommendations.

Encl

Draft GHG emissions Inventory

Compilation of public comments.

Note: Comments have been formatted but not altered. Private information has been omitted.



U.S. Department of Energy

Sitka

Sitka GHG Inventory

November 2024



Public Comment is Open until December 31st, 2024

Please submit comments to sustainability@cityofsitka.org
If you need additional assistance commenting, please contact (907) 747-1856
Not sure where to start? Guiding questions are on the last page.

Sitka GHG Emissions
Inventory

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22 1 Purpose

23 This Greenhouse Gas (GHG) inventory was prepared in close collaboration with the City and Borough of Sitka
24 (CBS) under the Energy Transitions Initiative Partnership Project (ETIPP). ETIPP is a Department of Energy
25 program focused on aiding remote and islanded communities in becoming more resilient. The goal of this
26 inventory is to provide a GHG emissions baseline for the full community of Sitka. This can help the municipality
27 track progress towards their decarbonization goals, as well as identify the policy mechanisms that could be
28 implemented to reduce emissions.

29 The City and Borough of Sitka partnered with the Pacific Northwest National Laboratory through the ETIPP
30 program. Pacific Northwest National Laboratory sought input from the Sitka Sustainability Commission to ensure
31 they made acceptable assumptions and used the best data available.

32 2 Methodology

33 This section details the methodology used for calculating the GHG emissions for the full community of Sitka,
34 following guidance from the GHG Protocol. The baseline year for this inventory is 2023, but many of the data
35 sources are from previous years. We used the best available information at the time, and values can be updated as
36 better data becomes available.

37 This report refers to the community in multiple ways. When referring to “Sitka”, that generally means the full
38 community. When CBS is mentioned, that refers to the local municipality, including the municipally owned utility.
39 When referring to the “Sitka Sustainability Commission”, that refers to the group of local community members
40 appointed to a city board to advise CBS on matters of sustainability.

41 GHG inventories are classified by three scopes. Scope 1 emissions are emissions that occur within an
42 organization’s boundaries and within the power of the organization. Scope 2 emissions are indirect emissions that
43 occur outside the organization’s boundaries but consumed by the organization (most commonly through the
44 purchase of electricity). Scope 3 are emissions that are indirect emissions (not included in scope 2) that occur in the
45 value chain of the organization, including both upstream and downstream emissions. The city commission defined
46 the purview of this inventory to be all scope 1 emissions (e.g. electricity generation, stationary fuel combustion,
47 transportation, wastewater) as well as selected scope 3 emissions (e.g.. air travel, waste, shipping) that could be
48 calculated and helpful for the municipality. Scope 2 emissions are not relevant to Sitka since their electricity is
49 generated locally. An additional cruise ship analysis was completed and is detailed in the Additional Analyses
50 Methodologies section.

51 Per direction from the Sitka Sustainability Commission, this inventory does not include carbon sequestration (the
52 trees removing CO2 from the atmosphere) or nonanthropogenic emission from decomposition or natural processes.
53 This inventory also does not include fugitive emissions from refrigerants. Since cooling is not needed frequently in
54 Sitka, refrigerant emissions are estimated to be insignificant.

55 The source of combustion fuel data (fuel oil, kerosene, gasoline) comes from USACE’s 2022 5 Year Cargo
56 Report¹. This report provides the amount of gasoline, diesel, and kerosene shipped to Sitka. This is the amount of
57 fuel burned within Sitka, and therefore, the emissions associated with combustion from heating, driving, boating,
58 and backup electricity generation. The following sections break down this total fuel consumption (and therefore,

¹ 5 Year Cargo Report, 2022: <https://ndc.ops.usace.army.mil/wcsc/webpub/#/report-landing/year/2021/region/4/location/4808>

59 emissions) into finer resolution categories. Breaking down this data into finer categories helps determine which
60 policy levers can be pulled to best impact Sitka’s emissions. Understanding the difference between heating,
61 boating, driving, and cooking emissions can reveal which policy mechanisms has the highest impact on reducing
62 emissions. Policy mechanisms can include incentivizing building energy efficiency measures and electrifying
63 vehicles, building, or boats. Key assumptions and values used for calculating the categories below are summarized
64 in the Appendix, along with classifications of which values should be updated.

65 Emissions are calculated by multiplying activity data (such as gallons of fuel consumed) by an emission factor
66 (emissions per activity unit). Emission factors are taken from the EPA’s GHG Factor Hub and converted to metric
67 tons of CO₂ equivalent (MTCO₂e)². This incorporates emissions from CO₂, CH₄, and N₂O, using the global
68 warming potential (GWP) of 100, as defined by the IPCC report³.

69 **2.1 Electricity Generation**

70 Sitka’s electricity is generated from hydropower, so there are no emissions associated with its primary electricity
71 generation. It should be noted that Department of Energy recognizes that there’s some uncertainty to the emissions
72 associated with hydropower from decomposition of organic materials in the reservoir, so this assumption may need
73 to be updated in a future iteration as new science becomes available.⁴ Sitka occasionally uses diesel for backup
74 power. In 2023, 9,975 gallons of diesel fuel were used as backup power, resulting in 102 MTCO₂e. We assume
75 that 2023 can be used as a representative year and given the small percentage of emissions related to this year,
76 variations from year-to-year are insignificant. Any longer failures or outages of the dams resulting in diesel being
77 burned for electricity, such as that experienced in late 2016, would lead to increased emissions from this source.

78 **2.2 Buildings**

79 Buildings have emissions associated with their electricity and fuel consumption. Since Sitka’s electricity
80 generation is supplied from hydropower which has no emissions associated with its generation, their building
81 emissions are solely from the combustion onsite that occurs for space heating, domestic hot water (DHW), and
82 cooking. Electric heat pumps are increasingly common in Sitka, helping to reduce heating emissions. Since we do
83 not have energy data for every building’s space heating, DHW, and cooking needs, we estimate their associated
84 emissions based on square footage, electric utility bills, state level energy intensity estimates, and fuel source
85 across buildings.

86 **2.2.1 Residential Buildings**

87 The 2017 Sitka Borough Housing Assessment⁵ states that Sitka has 3,513 occupied houses with the average square
88 footage of 1,689 SF/house, resulting in Sitka’s total residential square footage of 5.9 million SF. The Energy
89 Information Administration’s (EIA’s)’s Residential Energy Consumption Survey (RECS) Dashboard⁶ estimates the
90 average space heating and DHW consumption by state. We use the value of 74 mmBtu per household, which is an

² EPA Emission Factors: <https://www.epa.gov/system/files/documents/2024-02/ghg-emission-factors-hub-2024.pdf>

³ GHG Protocol, Global Warming Potential values: https://ghgprotocol.org/sites/default/files/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_0.pdf

⁴ Department of Energy, Tracking the Carbon Footprint of Hydropower: <https://www.energy.gov/eere/water/tracking-carbon-footprint-hydropower>

⁵ Sitka Borough 2017 Alaska Housing Assessment: https://www.ahfc.us/application/files/1215/1510/4582/Final_-_Sitka_Borough_Summary.pdf

⁶ Residential Energy Consumption Survey (RECS) Dashboard, 2020.
[https://experience.arcgis.com/experience/cbf6875974554a74823232f84f563253?src=%E2%80%B9%20Consumption%20%20%20%20%20Residential%20Energy%20Consumption%20Survey%20\(RECS\)-b1](https://experience.arcgis.com/experience/cbf6875974554a74823232f84f563253?src=%E2%80%B9%20Consumption%20%20%20%20%20Residential%20Energy%20Consumption%20Survey%20(RECS)-b1)

91 average of the RECS’s Alaska and Washington state average space heating and DHW load. We did this to avoid
92 overestimating Sitka’s residential heating since Sitka often shares similarities with northern Washington’s climate.
93 Using utility bills, we determined which residential building’s heating systems were electric. We processed all the
94 electric utility bills by residential and commercial buildings. If the average electricity consumption over the
95 summer months (June, July, August) were 30% greater than the winter months (November, December, January),
96 we conservatively determined the building was heated by electricity. If not, we assumed it’s heated by fuel oil and
97 a small percentage by wood. This resulted in 82% of residential buildings used electric heating, 16% used fuel oil,
98 and 2% used wood for heating. This results in 3,971 MTCO_{2e} from residential space heating and domestic hot
99 water per year.

100 **2.2.2 Commercial Buildings**

101 For commercial buildings, we used the Sitka’s 2024 Commercial and Industrial Square Footage data, showing 2.3
102 MSF for Sitka’s commercial and industrial buildings. We assume that 25% of these building’s square footage is not
103 space conditioned (heated or cooled), from either unoccupancy (especially seasonal), warehouses, or storage. The
104 EIA estimates that commercial buildings use on average 25 kBtu/SF for space heating⁷. The Commercial Building
105 Energy Survey (CBECS) places Sitka, Alaska in the “cold / very cold” region and can be used to estimate Sitka’s
106 commercial buildings fuel source⁸. Using Sitka’s building utility bills, we determined which commercial building’s
107 heating systems were electric. This resulted in 25% of commercial buildings used electric heating, while 75% are
108 dependent on fuel oil. We combine commercial and industrial buildings in this analysis since Sitka doesn’t have a
109 large industrial footprint. We assume domestic hot water heating is included in this assumption since it is
110 predominately electric water heating. This results in total commercial building emissions of 2,361 MTCO_{2e} per
111 year.

112 **2.3 Ground Transportation**

113 Since Sitka is an island, on-road transportation emissions include the fuel combustion emissions that occur from
114 vehicles within the CBS boundary. According to the Alaska Department of Motor Vehicles, Sitka currently has
115 14,689 registered vehicles in 2024. However, we assume that not all vehicles are in driven regularly and that some
116 are electric. Electric vehicles produce zero emissions in Sitka because the electricity is supplied by hydropower.
117 We assume that 8,000 vehicles are driven regularly at an average of 12 miles/day with an average fuel efficiency of
118 20 miles per gallon of gasoline. This results in total gas vehicle emissions of 14,750 MTCO_{2e} in 2024. We also
119 assume that there are 1,000 trucks or vans or recreational vehicles that rely on diesel, resulting in 1,793 MTCO_{2e}.
120 This results in a total vehicle emissions of 16,532 MTCO_{2e}.

121 Sitka has 100 small passenger vans or buses with cruise ship load/unloading permits associated with tourism.
122 Assuming the cruise ships are at full capacity (see Cruise Ship section, based on 2024 cruise ship schedule),
123 607,000 tourists spend a day in Sitka per year. Assuming each cruise ship tourist is transported via van or bus for
124 an average of 15 miles per day, this results in 460 MTCO_{2e} per year.

⁷ U.S. Energy Information Administration (EIA), *Heating U.S. commercial buildings is most energy intensive in cold climates*, September 2023:
<https://www.eia.gov/todayinenergy/detail.php?id=60301#:~:text=U.S.%20commercial%20buildings%20in%20cold,heating%20in%20each%20climate%20zone>.

⁸ U.S. EIA, Commercial Buildings Energy Survey (CBECS):
<https://www.eia.gov/consumption/commercial/data/2012/bc/cfm/b29.php>

125 **2.4 Air Travel**

126 Since Sitka is an island, air travel is a prominent mode of transportation. This inventory includes emissions from
 127 fuel combustion for aviation occurring within the city boundary and from portions of transboundary journeys outside
 128 the city boundary. Sitka has multiple types of flights: commercial, personal, general aviation (e.g. medical,
 129 coastguard, etc.), and cargo. FAA data shows there were 1,812 commercial flights, 9,860 seaplane flights, 1,325
 130 military flights, and 10,342 general aviation flights, resulting in a total of 23,339 flights in 2023.

131 According to the 5 Year Cargo Report, Sitka imports 658,000 gallons of kerosene, which in its highly refined form
 132 is a form of jet-fuel. This jet-fuel is used for smaller air travel such as seaplanes, small personal planes, and
 133 helicopters used for coastguard or medical evacuation. Emissions from burning this jet fuel are 6,700 MTCO_{2e}.

134 Sitka's Rocky Gutierrez airport does not refuel planes onsite. Therefore, these commercial and cargo air travel
 135 emissions are not captured as fuel shipped to Sitka in the 5-year Cargo report. This also means that we do not have
 136 airport data on the annual jet fuel used at the airport. According to the Bureau of Transportation Statistics T-100
 137 Segment Data for 2023,⁹ Sitka's Rocky Gutierrez airport had 40,586 passenger-miles (number of passengers and
 138 the distance they've flown in thousands) in 2023. From this, we can calculate the air travel emissions using the
 139 passenger-miles based method. We assume most of these flights are classified as "medium haul" (such as to Seattle
 140 - ~850 miles), and therefore we use EPA's "Air Travel – Medium Haul" Emission Factor for passenger-miles. This
 141 results in a total of 5,300 MTCO_{2e} from commercial travel. Currently, cargo plane data is not reflected in this
 142 calculation. Sitka's total air travel emissions are estimated to be 11,980 MTCO_{2e} per year.

143 **2.5 Marine Activity**

144 Marine activity includes commercial fishing, recreational fishing and boating, and charter boats. Shipping is
 145 discussed in more detail in the Shipping section under Additional Analyses.

146 We investigated fuel use in commercial fishing using the State of Alaska CFEC Public Search Application and the
 147 calculated averages of tracked fuel usage from Sitka fishermen and fuel usage estimates from the Kempy
 148 Energetics analysis tool^{10,11}. Using active fishing permits and the fuel usage estimates, we determined that the
 149 commercial fishing fuel consumption is 1,805,600 gallons of diesel per year. The estimated emissions from Sitka's
 150 commercial fishing is 18,500 MTCO_{2e} per year.

151 Recreational boats include all boats that are not for commercial fishing or charter boats. We assume there to be
 152 about 1,000 active recreational boats based on boating registrations, taking an average of 20 miles trips, 4 times per
 153 month, 6 months per year, with an average fuel efficiency of 5 miles per gallon (which is approximately the fuel
 154 efficiency of a 20-ft recreational aluminum Hews Craft). This results in an estimated emissions of 1,660 MTCO_{2e}
 155 per year.

156 Charter boats are popular in Sitka, especially during tourist season. The charter boat logbook, provided by Sitka
 157 Area Management, documents 7,920 charter boat trips taken in 2023 from 142 active vessels. These are the number
 158 of trips that ended in Sitka, and do not include private fishing trips, which are included in "recreational boating" in
 159 the previous paragraph. Charter boats are assumed to primarily run on diesel based on input from the Sitkan
 160 boating industry. Since no further information is documented regarding charter boats (such as size of boat and how

⁹ Bureau of Transportation Statistics: https://www.transtats.bts.gov/Data_Elements.aspx?Qn6n=H

¹⁰ CFEC, <https://www.cfec.state.ak.us/plook/#permits>

¹¹ <https://kempyenergetics.com/white-paper/white-paper-example-1/>

161 long the trip), we assumed that each trip goes 25 miles, with an average conservative fuel efficiency of 5 miles per
162 gallon, consuming a total of 39,600 gallons of diesel. This results in 407 MTCO_{2e} per year from charter boats.

163 **2.6 Solid Waste Disposal and Wastewater Treatment**

164 Solid waste disposal and wastewater account for 8% of Sitka’s GHG emissions. Municipal solid waste from Sitka
165 is shipped to Washington. According to Republic Services 2023 Summary, Sitka shipped 7,618 tons of waste to
166 Seattle in 2023. Using EPA’s average mixed MSW emission factor, this produces 4,418 MTCO_{2e}. Since this waste
167 is generated within the city boundary but disposed in landfills outside the city, these are considered Scope 3
168 emissions. The city commission determined it is important to include since it reflects Sitka’s operations.

169 Sitka also ships 240 tons of recycling, which does not include glass or metals, which produces 22 MTCO_{2e}. Glass
170 and metals recycling occurs onsite, but results in a minuscule amount of emissions. While recycling produces a
171 minimal amount of emissions, we include it in “Solid Waste Disposal”.

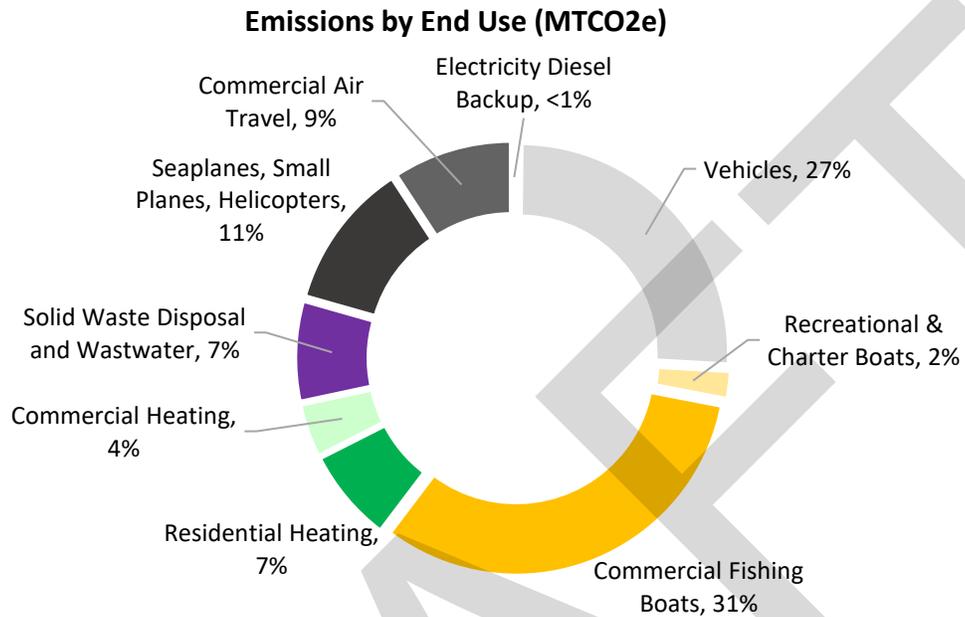
172 Wastewater treatment emissions can be calculated based on the total population served and type of treatment, using
173 the federal GHG wastewater reporting methodology¹². Based on a population of 8,380 people, and a wastewater
174 treatment plant without nitrification or denitrification process, wastewater treatment results in a total of 8
175 MTCO_{2e}.

176 **3 Results**

177 Based on our analysis, Sitka produced approximately **60,459 MTCO_{2e}** in 2023. The sectors analyzed include
178 vehicles, recreational and charter boats, commercial fishing, residential and commercial heating, waste and
179 wastewater, and air travel. These calculations were validated against the Cargo Report which provide the total
180 amount of fuel shipped to Sitka in a given year. Figure 1 and Table 1 show Sitka’s GHG emissions by end use,
181 revealing that the largest end uses of emissions are commercial fishing (31%), ground-based vehicles (27%), and
182 small aircraft (seaplanes, small planes, helicopters) (11%).

183

¹² Federal Greenhouse Gas Accounting and Reporting Guidance, Council on Environmental Quality, 2016:
https://www.sustainability.gov/pdfs/federal_ghg%20accounting_reporting-guidance.pdf



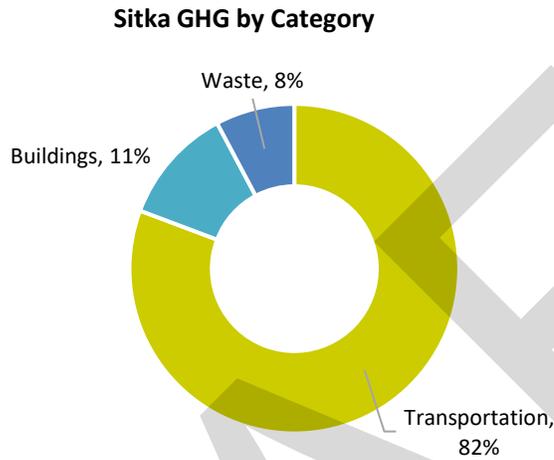
184
185 Figure 1. Sitka’s GHG Emissions by End Use (MTCO2e)

186 **Table 1. Emissions by End Use**

End Use	Emissions (MTCO2e)	% Total Sitka Emissions
Commercial Heating	2,361	4%
Residential Heating	3,971	7%
Commercial Fishing Boats	18,507	32%
Recreational & Charter Boats	2,548	4%
Vehicles	16,543	27%
Seaplanes, Small Planes, Helicopters	6,699	11%
Commercial Air Travel	5,280	9%
Solid Waste Disposal & Wastewater Treatment	4,448	7%
Electricity Diesel Backup	102	<1%
Total Emissions	60,459	

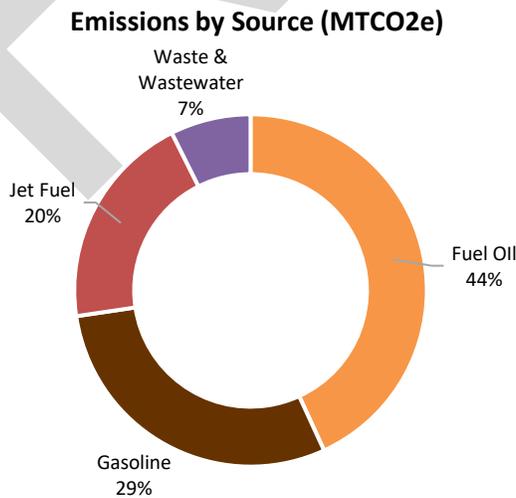
187
188 Transportation is the largest emissions sector, accounting for 81% of Sitka’s emissions, as shown in Figure 2. This
189 consists of ground-based, marine, and air travel, including seaplanes, commercial planes, small planes, recreational

190 and commercial boats, cars, and buses. It is unsurprising that transportation is such a large component of Sitka’s
191 emissions since people are required to fly or boat to arrive in or leave Sitka, since this inventory includes scope 3
192 emissions. Waste accounts for 7% of Sitka’s emissions., which includes the emissions associated with solid waste
193 disposal, wastewater, and recycling.



194
195 Figure 2. Sitka’s GHG Emissions by Category (MTCO₂e)

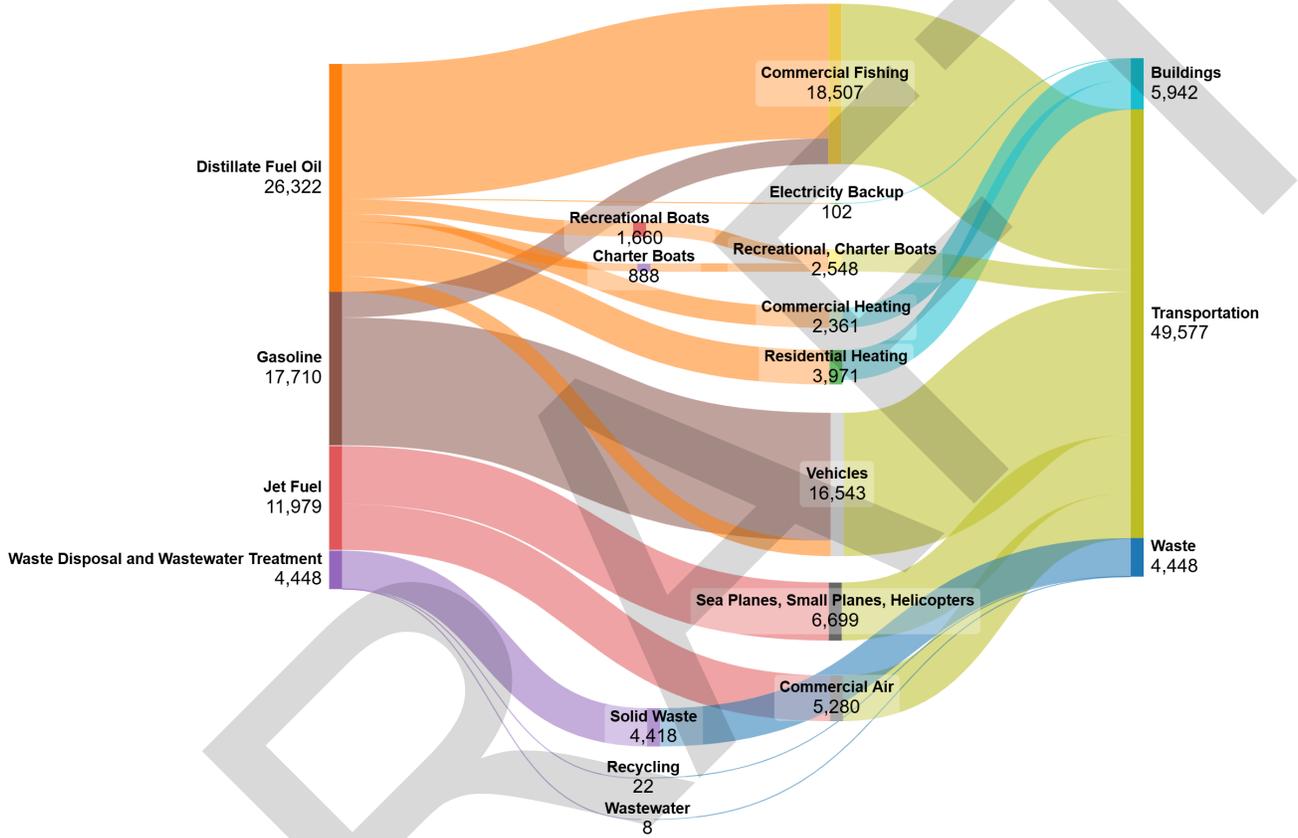
196 Figure 3 displays Sitka’s emissions by source. Distillate fuel oil (also known as diesel) is the largest portion at
197 44%, and figure 4 separates these emissions by end use. The largest portion of distillate fuel oil comes from
198 commercial fishing, followed by residential and commercial buildings. Gasoline is the second highest source of
199 emissions at 29%. This reveals that promoting electrification is an impactful policy driver to reducing Sitka’s
200 emissions from vehicles, buildings, and boats. Air travel (from jet fuel, or a highly refined version of kerosene)
201 account for 20%.



202
203

204 Figure 3. Sitka’s GHG Emissions by Source (MTCO2e)

205 Figure 4 helps visualize the correlation of emissions source and end use, showing the interconnection of emission
206 source to end use to general category.



207

208

209 Figure 4. Sankey Diagram of Sitka’s GHG Emissions by source, end use, and category (MTCO2e)

210

211 4 Additional Analyses

212 The following sections can either be included or omitted from Sitka’s GHG inventory, depending on what policy
213 levers Sitka would like to consider. GHG Inventories typically include measures that are within the jurisdiction’s
214 control and occurring within the jurisdiction’s boundaries.

215 4.1 Shipping

216 Sitka is very dependent on marine shipping, which are considered scope 3 emissions and not always included in
217 GHG inventories. Defining boundaries is important for estimating shipping emissions. According to the 2022
218 Cargo Report, Sitka ships and receives 235,316 tons of material via barges. A barge can carry one ton about 650

219 miles with one gallon of fuel, according to one study¹³. Assuming that a barge travels to and from Seattle,
220 including stops in Ketchikan and Petersburg, the distance traveled is approximately 1,000 miles. Actual shipping
221 distances may be greater. This results in approximately 362,000 gallons of diesel fuel consumed by the barges, or
222 3,700 MTCO_{2e}. To improve estimates of shipping emissions, data from official records, manifests, or surveys can
223 be used to determine the apportionment of emissions to Sitka from the overall shipping companies. It should be
224 noted that barge transport is per gallon more efficient than other forms of shipping, such as trains, trucks, or barges.

225 4.2 Cruise Ships

226 Revenue from cruise ships and their passengers account for a large portion of Sitka's economic activity, although
227 there are contentious divisions within the community about whether or not they should welcome them. Cruise ships
228 do not draw power from Sitka's port, and they do not refuel in Sitka. This means that Sitka has little power to
229 control cruise ship emissions (such as electrifying power), other than reducing the number of cruise ships that enter
230 and leave Sitka. Because they are not being controlled by policy mechanisms within Sitka, cruise ships are not
231 included in this GHG inventory, as is common practice in this situation. However, understanding the impact of
232 cruise ship emissions on Sitka is still important. The community of Sitka has to deal with the pollution and local
233 impacts of the emissions from the cruise ships, even though they cannot control those emissions.

234 We used the 2024 cruise ship schedule to determine the number of cruise ships visiting Sitka annually. There are
235 38 cruise ships with a scheduled 332 trips to Sitka. We define the scope of cruise ship emissions to include just the
236 number of emissions they produce while within Sitka's boundary: transiting to and from the port and while docked.
237 We have the number of people each boat carries as well. We assume a 3-hour maneuver time, which is the time to
238 approach Sitka, tie to the dock, and leave. We assume the average stay in Sitka is 8 hours. We assume the docking
239 load to be ~50% of the total power to power lights, heating, swimming pools, etc. We assume the fraction load of
240 the generation to be 60%. This results in a calculated emissions value of 23,000 MTCO_{2e} per year.

241 Cruise ships increase other emissions in Sitka, that are captured in other parts of this inventory. For example,
242 increased people may result in increased building energy and transportation emissions. There are 100 small
243 passenger vans or buses with cruise ship load/unloading permits associated with tourism in Sitka. Assuming the
244 cruise ships are full, this results in 607,000 tourists per year. Assuming these vehicles travel an average of 15 miles
245 per day, this results in an associated emissions of 460 MTCO_{2e} per year. (Note: these emissions from tourist buses
246 are already captured in the vehicle data from the inventory. This analysis is just to separate out the emissions
247 impact from cruises.)

248 If cruise ships are included in the inventory, cruise ships while within Sitka's waters produce 80,600 MTCO_{2e}.
249 Figure 5 shows an infographic communicating the impact of cruise ships on Sitka's GHG emission inventory.

¹³ Texas A&M Transportation Institute, *A modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001-2014*. 2017. <https://nationalwaterwaysfoundation.org/file/31/final%20tti%20report%202001-2014%20approved.pdf>



250
251

Figure 5. Infographic displaying cruise ship impacts on Sitka.

252

4.3 Additional Analyses Results

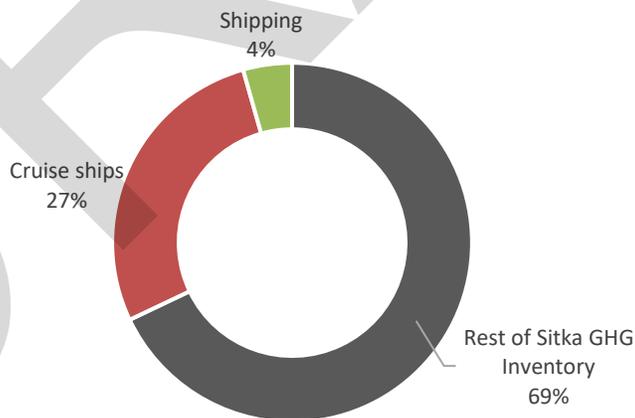
253

Including estimated shipping and cruise ship emissions in the inventory results in 84,000 MTCO₂e. Adding these increase the inventory's GHG emissions by 31%, as shown in Figure 6. This emphasizes the impact cruise ships have on the community's emissions, even when just transiting and idling within their boundary.

254

255

Cruise Ships & Shipping Impacts Compared to Rest of Inventory



256

257

Figure 6. Impact of cruise ships and shipping impacts

258

259 **5 Next Steps**

260 Now that the GHG inventory baseline has been created, it can be used for multiple purposes. For example,
261 comparing GHG inventories across municipalities can be useful to begin to answer questions like “How much is
262 Sitka contributing to global GHG emissions?” However, comparing inventories can be challenging because
263 different inventories include different scopes. For example, not all inventories include air travel. GHG inventories
264 can be used to highlight the impact various policy levers can be pulled, emphasizing which mechanisms have
265 highest impact and which (while still useful) may have smaller impacts.

266 A baseline inventory is useful when updated at a regular interval to track progress towards decarbonization targets.
267 We will conduct a training for CBS to update the inventory in the future, either for new years to compare to this
268 baseline, or update values as better data comes available.

269

270 **6 Appendix**

271 **Table 2: Main assumptions**

Calculation	Building Heating- Commercial		Ground Transportation- Personal				Ground Transportation- Vans and Buses		
Input assumption	Commercial buildings average 25 kBtu/SF for space heating	75% of commercial buildings use fuel oil	14,689 registered vehicles	8,000 vehicles driven regularly	Vehicles average 12 miles/day	Average fuel efficiency of 20 miles per gallon	100 vans or buses permitted for tourists	607,000 tourists per year	Each tourist is transported 15 miles
Calculation	Air Travel								
Input assumption	1,812 commercial flights	9,860 sea plane flights	1,325 military flights	10,342 general aviation flights	658,000 gallons kerosene	40,586 passenger-miles at airport	Most commercial flights are "medium-haul"	EPA's "Air Travel – Medium Haul" Emission Factor	Cargo plane data is not reflected in this calculation
Calculation	Marine Activity- Commercial		Marine Activity- Recreational		Marine Activity- Charter				
Input assumption	Commercial fishing fuel consumption is 1,805,600 gallons per year, using Kempy Energetics analysis tool	1,000 active recreational boats	Recreational boats average of 20 miles trips, 3 times per month, 6 months per year	Average fuel efficiency of 5 miles per gallon	7,920 charter boat trips taken in 2023 from 142 active vessels	Charter boats are assumed to primarily run on diesel	Each trip goes an average of 25 miles	Average fuel efficiency of 5 miles per gallon	
Calculation	Waste		Wastewater						
Input assumption	Sitka shipped 7,618 tons of waste to Seattle in 2023	240 tons of recycling	Population of 8,380 people	Wastewater treatment plant without nitrification or denitrification process	Federal GHG wastewater reporting methodology				

272
273 Color Key:

- Confident in values and unlikely to need to adjust in the future except in response to major projects or new scientific understanding
- Confident in estimate, but numbers will need to be updated in future iterations of the inventory.
- Additional, better, or more local data could improve estimate, but the overall impact would likely be small.
- Estimate is still technically justified with general understanding.
- More or better data could improve estimate and the overall impact could be meaningful

274 **Greenhouse Gas Emissions Inventory Guiding Questions:**

If you want to leave public comment but don't know where to start, here are some prompting questions to help get you thinking.

Is the document clear and easy to understand?

Are there areas you want more information or clarity?

Are the assumptions used to calculate emissions easy to understand?

Are there any categories/sources of emissions that are missing?

What is the most useful piece of information in the GHG emissions inventory to you?

What would make this document more useful for you?

Public Comment on Sitka's Greenhouse Gas Emissions Inventory is open until December 31st, 2024. Please submit comments to sustainability@cityofsitka.org

If you need additional assistance commenting, please contact (907) 747-1856

Let's require the cruise ships to plug into our grid. This may take some investment however, we can get 3 birds with 1 stone. Ships not running there monster generators, cleaner air and our dam benefitting our city and its tax payers.

At what cost to the city were these studies done?

Thank you, Tyler Green

Sent from my iPhone

The population in Sitka does not have substantial green house gas emissions. The only emission worth addressing is the cruise ships.

Otherwise, however much money we are spending or whatever grant we received is a waste.

Thank you, Tyler Green

Sent from my iPhone

Hello,

Thank you for addressing this important topic. My hope is Sitka can be a beacon of sustainability in the US.

There is a topic that I think needs to be brought up and that is the emissions from healthcare. Hospitals should be included in greenhouse gas emissions tracking because they operate energy-intensive facilities although ours is mitigated since we use renewable energy. There's also the medical equipment waste from single-use materials, healthcare's environmental impact is substantial. Some reports put healthcare above the airline industry in green house gas emissions. Addressing emissions in hospitals promotes sustainability, public health, and climate change mitigation.

Also the cruise ships should absolutely be counted in our GHG.

Thank you, James Taggart

The recent emissions study:

What is missing from the data?

Emissions - Absorption

CO2 is part of the life cycle of both animals, humans, and plants. A complete picture of the entire cycle should have a calculation that includes the entire cycle's data. The biological life on earth is using the 4 elements CHON, Carbon Hydrogen Oxygen Nitrogen. Both humans and plants' basic structure is based on a solid supply of Carbon, as well as the other 3 base elements.

The study of only CO2 "emissions" is incomplete, and as well the emissions of the ocean are a larger data point factor than human emission by a large jump.

All plants need CO2 to collect Carbon to make their tree trunks and stems, they get this from the atmosphere.

Green houses will pump CO₂ into them to increase plant growth. Baranof has a major forest covering.

There is no data as to how much CO₂ this forest needs to stay healthy.

The dangerous form is not CO₂ but CO, carbon monoxide, that is dangerous for humans.

Our cars today have solved this issue already, and do not produce CO anymore.

Another part of this discussion is to ask why we send our garbage so far to be buried or burned in another state? A state that has higher emissions than us.

I personally live in a home that is all electric and does not burn oil for heat. I have both a heat pump and electric hot water baseboards, and all LED lighting. This is becoming very costly with our higher electric rates now. I will have to consider going back to an oil-based heat if this continues. This is one problem that we do have control over, but it has to do with money not chemistry.

Make Electric cheaper than oil, should be our goal.

Other than these points, your study is pretty nice to see, concern for the environment is a good thing!

Thanks, David Lowrance

I'm just gonna jump right in talking about the commercial fishing numbers and how PNNL came to them and how they are wrong. They first derived at the local fleet by using CFEC data and active boat permits. Problem being there are way more active boat permits than are actually being used. Many small recreational boats, cabin cruisers to whalers are registered commercial fishing vessels though they may only be used a few days a year meaning a small fuel burn compared to the "average" that is being applied per active permit. I have three active CFEC vessels with each one having drastic differences in their annual fuel burn, from a 100 gallons on one to 6,000 gallons on another.

PNNL also claim they derived these averages talking with fishermen. Really? Who? I'm one of the biggest fishermen representatives in this town and I havnt heard of one fisherman being asked what their fuel burn was in helping with this project. The differences in fuel burn per gear group and each individual fisherman is going to be drastic so any attempt at a per registered vessel average strictly off active CFEC vessel registrations is laughable. Knowing my fuel burn as a seiner, also my fuel burn when I was a troller, and a little help from a gillnetter friend I roughed out some numbers for these three gear groups. I also roughed out some long line fleet numbers, kinda tough to be accurate considering the variables. Some tough to figure outliers being tenders and smaller fishery operators. All that being said my very rough total commercial fuel burn is dramatically less.

Also what type of diesel engine isn't even considered in the data. There is a huge difference in the amount of carbon produced by an old 2 stroke diesel compared to a modern tier 3, high pressure 4 stroke diesel engine. It's insulting to those who have spent large sums of money to repower to a cleaner more efficient engine, I even feel insulted for the engine manufacturer who spent millions in development of those engines to just have them all lumped together in producing the same amount of emissions. Did PNNL figure out how many 2 strokes, how many 4 strokes,

how many tier 2-3 engines there are? This is more evidence of what a half cocked job PNNL has done.

To say that the charter fleet is primarily using diesel engines goes to show the ignorance of this group. Maybe 20 years ago that was the case but now four stroke outboards are the primary power of choice for the charter fleet. 5 MPG? Cut that in half and your more in the ballpark. Again more evidence of the ignorance of Sitka's fleet.

I raise these issues because it's obvious to me this PNNL doesn't understand Sitka's fleet and doesn't understand how to remotely come close to figuring out its fuel burn or carbon output. Why is this a problem? They are claiming the commercial fleet is the biggest carbon producer by far. This claim puts a huge target on our back that some extreme environmentalists may take aim on. It wouldn't be the first, or even second time that this has happened to an industry in this town. If this claim is going to be continued it needs to be substantiated and confirmed with way better data and methodology. At this point I question the data and claims in all other categories.

Please do not take this as an attack on the sustainability coordinator or commission. They do a great job and provide lots of benefits for this community. I just have serious doubts in this group from Richland Washington that put this report together.

Thanks you for all that you do

Concerned Fisherman

1. I believe it would be helpful to provide more calculation information for the commercial fishing section of 2.5 Marine Activity. This seems to be a vague figure that is difficult to accept without more supporting information. The fuel taken on by commercial fishing boats is not necessarily combusted in "Sitka". The fleet that is listed as Sitka based may fish in many different areas. The fuel used by an "active" permit holder will vary drastically based on their various fishery activities.

2. The figures used for the charter boat section of 2.5 Marine Activity seem to be very conservative. I would estimate the average trip for a charter boat, given the traditional fishing areas for the fleet, is more on the order of 40-50 miles. I am not sure about diesel being the primary fuel source, as many boats now run large outboards that operate on gasoline, but the stated 5 miles/gallon efficiency seems very underestimated. Most charter boats in Sitka will be in the 28-30ft length and are likely to be more in the 1.5-2 miles/gallon efficiency range.

Thank you.

Hello,

Thank you for the opportunity to review the Sitka GHG Inventory report. I have compiled my feedback below, detailed by section and line(s). Overall, I think the document could be significantly improved in clarity and in reporting, as it appears there are errors among tables, figures, and text. I have referenced a few areas that need more information in how emissions were calculated, and I think that all categories and sources of emissions should be included in the inventory (e.g., shipping and cruise ships).

I'm happy to provide more information or clarification as needed.

Thanks, Rhea Ehresmann

1. Purpose

- Lines 23-31 - it would be nice to have more information on the purpose of this inventory. Specifically, what are the decarbonization goals mentioned in line 27? Does Sitka want to reduce emissions, as mentioned in line 28? If so, by how much over what time period?

- I found an old report here:

<https://www.cityofsitka.com/media/Planning%20and%20Community%20Development/Sustainability%20Commission/City-and-Borough-of-Sitka-Greenhouse-Gas-Inventory-Report.pdf> -- how has Sitka improved since this inventory? Has Sitka reduced emissions in any user group? Having more background and context about data from previous years (mentioned in lines 34-35) and progress on reducing emissions would be helpful in this section.

- Similarly, why do we want to reduce emissions? Why should we care? There seems to be a division in the community of those who care about emissions and those who don't. I think it's important to get buy-in from as much of the community as possible if the goal is to reduce emissions, and in order to do that, people need to understand why it's important to reduce emissions.

2. Methodology

- Lines 49-50 - it seems like the cruise ship analysis should be included in scope 3 emissions as air travel is. Unclear why it is not, given the explanation of Air Travel in section 2.4.

- Lines 94-96 - it's unclear how average electricity consumption being 30% greater over summer months than the winter months equates to the building being heated by electricity. It seems the inverse would be true; i.e., we'd expect at least 30% greater average electricity consumption in winter months compared to summer months when the heat would not be on as often.

- Line 97 - I find 82% of residential buildings using electric heating to be quite high. Just looking around my immediate neighborhood, almost every home has a home heating fuel tank. How are you accounting for homes that have both (e.g., baseboard heating or other electric heating sources in addition to one or two monitor/toyo heaters) as many homes do have at least two sources of heating?

- Line 117-118 - this seems way too high. The reported population of Sitka (including those ineligible to drive like babies, children, and people without vehicles) in Line 173 of this document is 8,380 people. This means every person in Sitka regardless of age and legality to drive would have to drive a vehicle every day for 12 miles/day, or many people would have to drive multiple vehicles that much every day. Since diesel, buses, vans, etc. are calculated separately, this doesn't seem logical or plausible.

- Line 120 - check math throughout document. Gas vehicle emissions of 14,750 + diesel vehicle emissions of 1,793 does not equal a total vehicle emissions of 16,532 in line 120. Should be 16,543 as shown in Table 1.

- Lines 128-130 - types of flights listed include commercial, personal, general aviation (medical and CG), and cargo. The FAA data provided in the report in lines 129-130 are split into different types. Are the commercial flights large jets or do those include commercial small plane flights like AK Seaplanes? Are the 9,860 seaplane flights the "personal" type of flight mentioned in line 128? Military flights are listed separately from general aviation flights listed in lines 129-130, but are

those CG flights or other military flights? Hard to follow this section as 10k general aviation flights previously defined as medical and CG seems extremely high compared to commercial flights. Is there an estimate on cargo flights?

- Lines 126-142 - the total air travel emissions of 11,980 MTCO_{2e} per year seems really low. It could be that it's not clear exactly what types of flights are included in this or if the amount of commercial travel emissions has been reduced to what is emitted only in the Sitka city boundary? It's surprising to see that the commercial travel emissions are less than the emissions from sea planes, small personal planes, and helicopters given the size and amount of fuel burned. It would be nice to see cargo plane data reflected in this section as well.

- Lines 148-150 - how many vessels and permits were included for commercial fishing boats? This is clarified for recreational and charter. How does the fuel estimate in line 149 compare with the amount of fuel sold at the Sitka fuel docks? There are only 3 marine fuel docks that I can think of in town and it seems like it would be relatively easy to calculate fuel usage by vessels in Sitka. This seems like a lot of fuel consumption for only Sitka's commercial fishing activity, but it's unclear how this was estimated. Many commercial boats fish offshore in federal waters, or outside of the CBS boundary. Are those included here? It would be helpful to expand on how this number was calculated because it seems unbelievably high when compared to all air travel and vehicle travel.

- Line 161 - you could ask local lodges for an idea of how many miles their boats travel in a given day. It seems like it is much higher than 25 miles. Not sure one can even travel from Sitka to Biorka and back in under 30 miles. Most of the charter fleet fishes at Cape Edgecumbe, outer Kruzof, >3 nm offshore from Kruzof, Biorka, Salisbury Sound, etc. All of these locations are beyond 25 miles in a day. I believe the distance from Sitka harbors to Salisbury Sound is about 30 miles one way for example.

- Line 161-162 - They likely get less than 5 miles per gallon. Have you considered that many charter boats run dual outboards as well?

3. Results

Table 1/Figure 1

- Probably due to rounding but some % do not match between Figure 1 and Table 1. For example, Commercial Fishing Boats shows 31% in Figure 1 but 32% in Table 1 - why the difference?

- Additionally, I can't get the numbers for Recreational and Charter Boats in Table 1 to sum to 2,548 MTCO_{2e} given the numbers in the text - maybe text is missing some numbers? Similarly the numbers in text for Commercial Fishing Boats, Vehicles, etc. don't match what is shown in Table 1 when cross-comparing. It's best to not round at all if not consistently rounding between text and tables and figures.

Figure 4

- Charter boats shown as 888 in this figure and recreational boats shown as 1,660 which when combined equals 2,548 MTCO_{2e}. But the 888 for charter boats does not match what is in text in line 162 (407 MTCO_{2e}).

4. Additional Analyses

- Lines 212-214 - I think shipping and cruise ships should absolutely be included in Sitka's GHG inventory.
- Line 224 - unclear what you mean when you state "barge transport is per gallon more efficient than other forms of shipping, such as trains, trucks, or barges." Do you mean planes?
- Lines 226-233 - yes, this is contentious but I think excluding a major source of emissions from Sitka's Emission Inventory is undermining the science and research behind the point of this project and report. It seems inappropriate to exclude it rather than present the results all together, whether or not we can control the emissions. We cannot control many of the emissions like military air travel or CG air travel, but those are included. Additionally, the goal of this document, as stated in the Purpose section, is "to provide a GHG emissions baseline for the full community of Sitka." Excluding sectors due to contention is not satisfying the goal and integrity of such a document.
- Line 248 - again the math doesn't add up between text and figures. Line 240 states that emissions values for cruise ships are 23,000 MTCO₂e per year and Line 248 states that cruise ships produce 80,600 MTCO₂e. However, Figure 5 also shows 23,000 MTCO₂e per year so it's unclear which is the correct number.

Figure 5

- Figure 5 infographic shows that Sitka's community wide inventory is 56,000 MTCO₂e per year but Table 1 shows the Total Emissions to be 60,459 MTCO₂e - which is the correct total or is Figure 5 excluding some of Table 1 end users? Unclear why there is a disagreement in what Sitka's total inventory is and if either of those totals include the shipping emissions of 3,700 MTCO₂e.
- Line 241 - are waste/wastewater emission increases due to 607,000 people visiting captured?
- Line 253 - double check the total. If I add Table 1 total of 60,459 + 3,700 from shipping + 23,000 from cruise ships, then the total amount of emissions appears to be 87,159 MTCO₂e instead of 84,000 as stated in line 253.
- Line 254 - percent increase is not 31% if total is 87,159 but rather 44% increase when shipping and cruise ships are added into the total from Table 1.

Figure 6

- Figure 6 % will need to be adjusted a bit depending on what the total inventory number ends up being.
- Label for Figure 6 is redundant as written - "Impact of cruise ships and shipping impacts."

5. Next Steps

- Lines 266-268 - as mentioned in the beginning of this review, it would be great to refer back to what Sitka's inventories have been in the past and where we now stand for comparison, especially if the overall goal is to reduce emissions in the future.

6. Appendix

Table 2

- Recreational boat average of 20 miles per trip, 3 times per month, 6 months per year doesn't match the text definition of 4 times per month. See lines 152-153 for in text definition.

Thank you for all the work that has gone into compiling this inventory. It's a good start, and in our best interest to continue working to verify, expand and refine the analyses and data. Having this information, however, is only worthwhile if we use it to inform and guide the decisions, direction and policy changes we need to reduce our emissions as significantly as possible and as soon as possible. The purpose statement notes that "this can help the municipality track progress toward their decarbonization goals..." What are the municipality's specific decarbonization goals? The effects of fossil fuel emissions on our local environment (not to mention global crises) are increasingly jeopardizing our way of life by affecting the health of our eco systems, including the decreasing size and availability of fish and other seafood that is a major part of our economy and local food source. Where are the goals to address this and other critical challenges! Please let's make it our first priority to begin to make changes while we continue to gather the best data we can.

The following comments pertaining to Sect. 2.4 Air Travel and 2.5 Marine Activity stem from my own experience in these fields:

It's stated in 2.4 Air Travel that commercial aircraft aren't fueled onsite. Commercial aircraft are absolutely fueled at the airport. Aero Services has that contract. It's rare that a plane isn't fueled. During my 10-year employment with Alaska Airlines here in Sitka, I worked as an operations (weight and balance) agent and as departure coordinator, and was personally responsible for ordering the fueling for most flights while performing those jobs. That hasn't changed since my time there. Delta Airlines also fuels here—they, and our non-stop round trip Seattle flights) trip without fueling. With a current average of 12 a week (2 flights 5 days a week, and 2 days with one flight each), Alaska cargo flights should be included, as well.

2.5 Marine Activity — The assumptions used for charter boats, unfortunately, result in substantial mischaracterization of the impact of the fleet, I believe. Most fishing charter boats these days are in the 26' – 40' range with, usually, high HP dual engines capable of fast speeds with 5-7 persons aboard. Fuel usage for a 25-mile trip far exceeds 5 miles a gallon (resulting in 5 gal. per day according to the inventory). One charter captain I know responded to my question as to fuel consumption this way: Ha!!! Those numbers would be a dream come true! [his boat] is on the "more efficient" side of things... I average 2.2 statute miles per gallon. I have TWIN 200 Yamaha inline, 4 cylinder, 4-strokes. My average tour burns about 25 gallons. Fishing charters working Cape Edgecumbe or off Salisbury are burning considerably more than that. (It's a 40-mile round trip to Salisbury Sound, further to the west side of Kruzof, around 30 miles to Cape Edgecumbe and back, not counting fuel spent trolling.) My friend does wildlife sightseeing tours, and he, and any other captain booking half-day tours (including cruise ship fishing charters) will frequently do two and sometimes even 3 trips a day. Capturing charter trips using only F&G logbook records will not include the (increasing) numbers of boats engaged in non-fishing trips, wildlife sightseeing and water-taxi. Alaska DMV boat registration is required for any boat over 24' that's not USCG documented (few in this size range are), so more information could be potentially gleaned through use of those records. Sales tax records might also be used. Are Allen Marine's local boats included in the data? Usage of the 2022 USACE's 5-year cargo report, of course, won't reflect the recent rebound, expansion and increased fuel needs of the charter fleet in terms of fuel deliveries. The twin gas engine 28' boat I chartered with in the late 80's and 90's averaged 1 mile per gallon at

15 knots! Marine power options have gotten somewhat more economical than that, thank goodness.

Data in section 2.6 Solid Waste Disposal and Wastewater Treatment is based only on year-round population. Our “population” is significantly larger than that during a good 5 months of the year. Thousands of cruise ship passengers most days and full occupancy short term rentals are likely more than doubling the emissions associated with wastewater treatment, at least, I would think (documented annual costs of shipping waste south will include summer increases but would be good to be noted as to source).

I share the frustration of another commenter (to the inventory) that we aren’t demanding more complete and up to date numbers from our local fuel suppliers. This goes for cruise lines and any other business claiming “proprietary information” on data that would help us measure the largely irreversible environmental and ultimately, economic damage their products or business practices are causing. This is information we need to guide us toward our decarbonization goals!

It’s on us as individuals, certainly, to push for the changes in our current lifestyles and consumption patterns that we need. It’s eye opening (though not surprising, I guess) to see the amount of emissions ascribed to transportation, including cruise ships! Whew! A regularly updated GHG inventory, absolutely including cruise ship visits, along with programs and educational efforts aimed at individuals as to the real costs of our excesses will add to the value of the important onset of mapping our complete emissions and their impacts. It will place more burden on the Sustainability Commission, but I believe many in our community are ready to support such efforts.

Thank you for helping to lead the way.

Barbara Bingham

Sitka

Dear City and Borough of Sitka,

Thank you for drafting a green house gas emissions inventory for the Sitka area. I brought a “climate change emergency” resolution to our ADF&G AC over 5 years ago. I was thrilled that the AC adopted it unanimously. A few months later the C&B of Sitka passed a similar resolution. I was optimistic we would be “recognizing” the emergency and moving quickly, to identify what we could do to address it. I thought forming and appointing a “sustainable energy” commission was a great step.

It has been so frustrating as the years have rolled by to see no meaningful action by city leaders to identify Sitka’s contributions to the problem, the effects of the emergency on Sitka, and then immediately take actions to address the emergency. I do not see the sense of urgency I feel. But, I have been on the ocean making a living and subsisting on our marine ecosystem for over 70 years. It is my opinion that the CBS is not recognizing and adapting to the climate emergency anywhere near as quickly and thoroughly as needed.

I am thrilled the city is moving beyond inventorying C&B of Sitka greenhouse gas emissions (ghg) to a more comprehensive look at emissions in the Sitka area.

But, as we recognize the extent of ghg emissions in the Sitka area, 60,459 MTCO_{2e}, and hopefully our share of those ghg emissions from transport to the SE Alaska region, it is imperative to use that recognition to act as quickly as possible to reduce our emissions.

Change is always tough and often expensive. Sitka has often led the State of Alaska in adapting to the future by recognizing and supporting our indigenous culture, providing subsistence protection, enhancing salmon, developing hydroelectric power, and providing great educational and health care infrastructure.

In answer to your questions guide:

1. I found the document quite detailed and comprehensive but readable.
2. No. I did notice an apparent error in estimating the gallons per day from the charter boat fleet in 2.5 Marine Activity. The draft inventory states: "...we assumed that each trip goes 25 miles, with an average conservative fuel efficiency of 5 miles per gallon consuming a total of 39,600 gallons of diesel. This results in 407 MTCO_{2e} per year from charter boats." My understanding from my charter friend is that they are mostly burning gasoline and consuming 15-30 gallons per hour at 25 mph. That they are often covering 100 miles or more a day fishing. To make it easy lets round down to an estimate of 20 gallons an hour for 5 hours a day or 100 gallons a day. Realizing that some who are fishing closer burn much less and some fishing Whale Bay or Khaz will burn much more. Also the charter boat fleet is often fishing 8 hours or so a day combining running, trolling, and drifting or anchored. So, we are looking at 7920 charter trips @100 gallons of fuel, mostly gasoline, per trip. That is 792,000 gallons of fuel a year. So we are looking at 8,140 MTCO_{2e} if it was all diesel. But since diesel produces 15% more CO₂ per gallon than gasoline the MTCO_{2e} would be somewhat less for the combination.

Finally, I remain optimistic that the C&B of Sitka will act now to address the climate emergency you recognized almost 5 years ago and also use this inventory to encourage individuals, local businesses, and multi-national corporations to reduce emissions by conservation, conversion, and investment in clean energy.

Sincerely,

Eric Jordan

Hi there,

I spent the holidays perusing this document here's some issues and comments I have. It grew, sorry! My biggest concern is the marine calculations they need some more work as I feel they give a false data set.

Line 93

"If the average electricity consumption over the summer months (June, July, August) were 30% greater than the winter months (November, December, January), we conservatively determined the building was heated by electricity. If not, we assumed it's heated by fuel oil and a small percentage by wood."

Is this a typo or (worse) have the calculations been inverted? Surely if a house burns more electricity in the winter when it's cold they are heating by electric hydro not diesel and wood. The above statement says the opposite?

Homes that use more electricity in the summer than the winter are households that are either empty in the winter and/or they are running private Summer businesses. For example seafood processing in the summer (running freezers, storing fish then shipping them out in fish boxes by end of summer).

Line 121

"Sitka has 100 small passenger vans or buses with cruise ship load/unloading permits associated with tourism. 607,000 tourists spend a day in Sitka per year. Assuming each cruise ship tourist is transported via van or bus for an average of 15 miles per day, this results in 460 MTCO_{2e} per year."

No objection with comment above. But the only mention of people moving transport for tourists is for cruise ships. There are many lodge owned (or subcontractor) mini vans. Hotels have them too. These vehicles, like the presence of cruise ships, operate full time in the summer months. Don't know where they are the rest of the time. Most are easily detected by their logos and run on gas not diesel.

Are the lodge/hotel shuttles included under cruise ship tourists transportation or as local registered vehicles? This type of transport deserves a separate mention.

Ooh and as a double check. Do all those Alaskan registered vehicles have combustion engines? Are any of them trailers (both kinds, mobile homes or boat trailers) or skiffs that are also registered with the Alaska DMV?

Line 127

"Sitka has multiple types of flights: commercial, personal, general aviation (e.g. medical, coastguard, etc.), and cargo. FAA data shows there were 1,812 commercial flights, 9,860 seaplane flights, 1,325 military flights, and 10,342 general aviation flights, resulting in a total of 23,339 flights in 2023."

The above statement needs clarification because the FAA breaks down flight data into 4 categories: Commercial, Seaplane, Military, General

While the Sitka report converts this data into a different 4 categories:

Commercial, Personal, General, Cargo"

They don't match up and this causes confusion

i.e

Where do private jets fit in here? Where do float planes fit in? Are they personal, general or seaplane? It would be interesting to know how much private jet flights contribute to emissions.

Are fedex/UPS/Amazon etc included under cargo, general, personal or commercial? How does on/line private consumerism (rather than wholesale) increase emissions? Is it increasing?

How/where are the military flights categorized in the report - general, commercial, cargo?

Coastguard is government so I think it odd that they are included as general aviation. General includes private recreation. Would that be non-seaplane?

Is it possible to separate private jet (non commercial) from float planes and "general" (medical, coast guard etc). Also separate small cargo (fedex etc) from large cargo. Or would it be easier to separate small planes including float planes into commercial and non commercial rather than general and personal. Where would private charter fit in - there are lots of these in the summer?

You read my confusion....?

A clearer definition is required for the categories mentioned. It would be interesting to know how much emission (per person?) small private aviation produces compared to large commercial.

Line 146

"We investigated fuel use in commercial fishing using the State of Alaska CFEC Public Search Application and the calculated averages of tracked fuel usage from Sitka fishermen and fuel usage estimates from the Kempy Energetics analysis tool. Using active fishing permits and the fuel usage estimates, we determined that the commercial fishing fuel consumption is 1,805,600 gallons of diesel per year. The estimated emissions from Sitka's commercial fishing is 18,500 MTCO_{2e} per year"

Sitka is the Troll industry capital of Alaska. Not sure how Kempy Energetics analysis estimates fuel efficiency. Most trollers (hook and line fishery) even those with old diesel engines, are relatively fuel efficient compared to other types of seafood harvesters (seiners and their seine skiff, Bristol bay gillnetters, Bearing sea crabbers, trawlers, longliners)

e.g Our 36 ft wooden troller with a 371 GMC engine burns 100g of diesel per fishing trip (5 days from start to finish). Most trollers do not run back to town daily or even in a month. At night they anchor up near the fishing grounds. Many pitch off fish to packers and don't come back to town all Summer. This improves fuel efficiency. The handful of tender do the running and the supplying of water and goods from town.

Line 151

"Recreational boats include all boats that are not for commercial fishing or charter boats. We assume there to be about 1,000 active recreational boats based on boating registrations, taking an average of 20 miles trips, 4 times per month, 6 months per year, with an average fuel efficiency of 5 miles per gallon (which is approximately the fuel efficiency of a 20-ft recreational aluminum Hewscraft). This results in an estimated emissions of 1,660 MTCO_{2e} 154 per year".

Walking around the harbor 20-ft recreation boats are small boats these days. Boats less than (about) 22 feet are skiffs. Most recreational boats in Sitka are skiffs. Few (if any) skiffs average "...20 miles trips, 4 times per month, 6 months per year,,,". Most skiffs, because they have smaller outboards, average much better than 5miles/gal. For instance I own a 15 ft skiff with a 40 hp gas outboard. I use my skiff only to commute to and from my off the road island cabin home which is about 2 miles from the dock one way. The skiff has a 6 gallon fuel tank. I fill that tank about twice a month in the winter. In the Summer I'm on my commercial fishing boat. I never take long trips in the 15 foot skiff because it's just not safe to run far in Southeast Alaska in a skiff.

Line 156 Here's the kicker

"Charter boats are popular in Sitka, especially during tourist season. The charter boat logbook, provided by Sitka Area Management, documents 7,920 charter boat trips taken in 2023 from 142 active vessels. These are the number of trips that ended in Sitka, and do not include private fishing

trips, which are included in “recreational boating” previous paragraph. Charter boats are assumed to primarily run on diesel based on input from the Sitkan boating industry. Since no further information is documented regarding charter boats (such as size of boat and how long the trip), we assumed that each trip goes 25 miles, with an average conservative fuel efficiency of 5 miles per gallon, consuming a total of 39,600 gallons of diesel. This results in 407 MTCO_{2e} per year from charter boats”.

Most charter boats do not run on diesel! If you walk to any Sitka fuel dock between 3:30pm-5pm in the Summer you'll see lots of charter boats refueling. On average most of these charter boat are over 33ft. They're equipped with large twin outboard gas engines The smallest of which are 150 horsepower but some are as big as twin 450 horsepower. Some have triples. I've checked the fuel meters on the fuel docks and have ask the dock attendants how often these boats buys gas! The smallest charter fishing boats (twin 150s) seem to fill up about every 2 days taking about 175g of gas a fill.

A round trip from Sitka to Cape Edgecumbe and back is a minimum of 30 knotical miles. The Halibut grounds are another 8 miles further out. Shelikof Bay, a popular place to charter fish on Kruzof Island, is at least 25 knotical miles (one way) from Sitka. These are all fishing grounds where Charters fish. Salisbury sound is further another favorite area. When fishing is slow around Sitka its not uncommon for them to go down to Whale Bay or up to Khaz Bay area (Chichagof Island). These trips would be 100 mile round trip. A conservative average trip for a charter would be 60 miles @ (maybe)1.5 miles a gallon of gas! Those huge gas guzzlers on the back of those boats are in plain sight!

Line 226

"Cruise ships Revenue from cruise ships and their passengers account for a large portion of Sitka's economic activity, although do not draw power from Sitka's port, and they do not refuel in Sitka. This means that Sitka has little power to control cruise ship emissions (such as electrifying power), other than reducing the number of cruise ships that enter and leave Sitka. Because they are not being controlled by policy mechanisms within Sitka, cruise ships are not included in this GHG inventory, as is common practice in this situation. However, understanding the impact of cruise ship emissions on Sitka is still important".

There's no mention of the private super yachts (or just plain million dollar yachts) that come to town! What do they contribute to Sitka's emissions?

I'm certain the small cruise ships that berth at the fuel docks and the large tour boats refuel in Sitka (National Geographic, The Boat Company, Allen Marine Tours, etc). They are not mentioned anywhere in this report. They generally burn diesel, the same fuel as commercial fishing boats but a lot more per boat as they are bigger.

The large cruise ships burn bunker crude (thick tar). I'm uncertain if they run on generators or mains while berthed in Sitka. But while they are here during the day they are running a small city on fossil fuels and contributing plenty of emissions while berthed or anchored in Sitka. We must included their pollution while they are in city limits. How much pollution does a city running on fossil fuel with a population of 5K produce? I feel the estimate used is low when compared to Sitka that runs on hydro.

When outside of three miles these Cruz ships dump the accumulated toxic waste from their scrubbers (at times they have been caught dumping toxic waste in town). It's a technology that scrubs their bunker oil fueled exhaust systems to be temporarily stored as waste water. I don't know what they do with the ship's sewage from crew and passengers who collectively constitute a small city.

And Yes Sitka can have control of cruise emissions while here. Cities have passed ordinances that require all cruise ships to plug in while at port. And like subdivisions the cruise ships should pay for the LID installation. However at present (or in the near future) Sitka doesn't have the electric capacity to provide Cruz Ships with shore based power - maybe they can fund a new dam project if they require electricity.

<https://www.seattletimes.com/opinion/editorials/require-cruise-ships-to-plug-into-shore-power-while-docked-in-seattle/>

<https://www.travelweekly.com/Cruise-Travel/Seattle-port-moves-up-cruise-shore-power-requirement>

Fig 4

I struggled to fully comprehend this graph. It's clever but what do the change in colors mean? ie orange-green, purple-blue. A key would be helpful.

What does the wave signify? Why do emissions increase or decrease in the center of the diagram?

Table 2

I like this. It is a clear summary of the whole report particularly if corrected. Remember most Charter boats run on Gas (not diesel) and lots of it!

Wow that took much longer than I planned - the more I read the more I found. Accurate data is important for good results. Will I receive reimbursement for being a diligently concerned resident of Sitka working over the holidays :)?

Well that's all folks looking forward in seeing the next version - Ceri

Hello my name is Chris McGraw. I own and manage the Cruise Ship Terminal in Sitka. I did a quick read of your Sitka GHG Inventory Document and noted the following

I did not see the USCG Jet Fuel used for Helicopters Accounted for in the study. My understanding is that they go through a considerable amount of fuel.

Also the document states "Sitka Rocky Gutierrez airport does not refuel planes onsite" This if not a true statement. A lot of planes take fuel in Sitka.

I believe your calculation for Cruise Ship Passenger Transportation is incorrect: First, During 2024. Of the 600,000 passengers that visited sitka, only 530,000 of them arrived at the dock. The other 70,000 were on ships that tendered to downtown Sitka. Of the 530,000 that dock, only about 70% utilize the shuttle bus to town. This is because many guests end up on boat tours and do not use the shuttle.

I wanted to provide you with more detailed data on the shuttle operations for cruise passengers. We track our mileage and we drove about 140,000 miles last summer. Based on the below article, busses emit about 3.75 lbs of carbon for every mile driven. This would equal 525,000lbs or about 238 MTCO_{2e}.

<https://earth911.com/eco-tech/why-its-time-for-electric-school-buses/#:~:text=Environmental%20Impact%20of%20School%20Buses&text=That's%20the%20equivalent%20of%203.75,all%20U.S.%20buses%20by%2035%25>.

For your charter boat calculations, the document uses a value of 5 miles per gallon and says that most charter boats run on diesel. Based on my experience I see a lot of outboards on charter boats. Even if the majority are diesel, your fuel efficiency of 5 miles per gallon is not accurate for the average charter boat. A typical 30-35 ft charter boat with a diesel would be lucky to get 2.5 miles per gallon. Most outboard boats would be closer to 1 mile per gallon.

In regard to the Cruise Ship Calculations. It appears that you are assuming all of the ships to be the same size. The 332 ships used based on the cruise ship schedule includes ships that range in size from 150 feet with 70 passengers to ships over 1000 feet with 4200 passengers. The emissions from the different size ships obviously varies drastically. Of the 332 ships scheduled. Approximately 275 of them were over 400 passengers. Of these, 202 docked and 73 anchored.

In addition, some of the language is confusing. In the second paragraph under section 4.2 it discusses the calculation for emissions while in Sitka waters and it states "this results in a calculated emissions value of 23,000 MTCO_{2e} per year. ". However in the last paragraph of this section it states "cruise ships while within Sitka's waters produce 80,600 MTCO_{2e}. " Where is the difference of 60,000 MTCO_{2e} coming from?

I think more detail is needed to be shown on how these calculations were derived. I found data in the below article that states ships produce 6 tons of CO₂ per hour while docked in port maintaining a 10MW load. 10MW would be a load typical of the largest ships we see in Sitka and many of the ships likely carrying a load of about 5 MW. With a total of 275 ships calling in Sitka with an average 8 hour port call and using the 6 tons per hour. The total emissions while docked would have been approximately 13,200 Tons if all of the ships were carrying a 10MW load, which many of the ships are smaller and do not carry this size of load. I understand this number does not include transiting time, but it is considerably less than the 23,000 MTCO_{2e} and the 80,600 MTCO_{2e} quoted in the draft document.

<https://blog.ballard.com/marine/fuel-cells-greener-course-cruise-ships-onshore-operations/#:~:text=The%20environmental%20imperative,contribute%20to%20local%20air%20pollution>.

Thank you for the chance to comment on the draft GHG inventory and I do appreciate the sincere efforts made in this draft document. I also think there are opportunities to strengthen this document in revision that can make it more useful as a "benchmark" for targeting and measuring effort towards decarbonization.

I present a list of comments or questions before some concluding statements;

Pg 2. 2 Methodology

Line 34. "GHG Protocol" What is this? Where did it come from? Can a reference or link be provided?

Lines 53-54. "This inventory also does not include fugitive emissions from refrigerants. Since cooling is not needed frequently in Sitka, refrigerant emissions are estimated to be insignificant." This estimate of insignificance might miss that in Sitka we use refrigerants for heating. It also does not recognize that in our fishing industry, both in onshore processing plants and on board cooling systems, we could have above average refrigerant use for a community our size.

Lines 55-56 'The source of combustion fuel data (fuel oil, kerosene, gasoline) comes from

USACE's 2022 5 Year Cargo Report." I think there is an opportunity here to present the limitations of this source and a discussion of how we might seek to gain more accurate data. Such as the imposition of an excise tax on fuels sold in Sitka that would require our distributors to report what is sold.

Pgs. 3&4 2.2.1 Residential Buildings

Lines 93-94. "We processed all the electric utility bills by residential and commercial buildings." I would like to know more about how this processing was done and how the data was compiled. This could be included in an Appendix.

Lines 94-96. Homes heated with electricity should tend to have higher electric bills in the winter than homes heated with oil or gas so this must be written backwards. I must wonder if this is just written in the draft backwards or calculations are also reversed? I am also aware of the American Community Survey conducted by the U.S. Census Bureau that might provide more direct and accurate reporting of heating methods.

Pg. 4. 2.2.2 Commercial Buildings

I assume that determining the heating method in commercial buildings was estimated the same way that residential buildings were and so I am left with the same question about whether it was calculated correctly given the apparent reversal of what makes more sense.

Lines 109-110. "We assume domestic hot water heating is included in this assumption since it is predominately electric water heating." It is not clear to me what this means.

Pg. 4. 2.3 Ground Transportation.

Lines 122-124. I am left wondering how this was calculated and what assumptions it includes. pg . 5. 2.4 Air Travel

Line 27. "occurring with the city boundary" to within the city boundary?

Lines 127-128. "from portions of transboundary journeys outside the city boundary." Would this result, for example, in half of a nonstop Alaska Airlines flight from Seattle to Sitka's emissions?

Lines 129-130. "FAA data shows there were 1,812 commercial flights, 9,860 seaplane flights, 1,325 military flights, and 10,342 general aviation flights, resulting in a total of 23,339 flights in 2023. The 23,339 flights in 2023 yields 64 flights per day every day of the year. This just seems high, high enough to question.

Line 141. What is the rationale for not including cargo flights?

Pgs. 5&6. 2.5 Marine Activity

Lines 56-57. "Charter boats are popular in Sitka, especially during tourist season. The charter boat logbook, provided by Sitka Area Management, documents 7,920 charter boat trips taken in 2023 from 142 active vessels" Is this data from the Alaska Department of Fish and Game? "Sitka Area Management" does not identify a source in a precise way. How can one judge confidence in these numbers with such a description of the data source?

Lines 59-60. "Charter boats are assumed to primarily run on diesel based on input from the Sitkan boating industry." What precisely is this input, where can it be found, and what is referred to by "Sitka boating industry"? From my experience being in the harbors, on the water, and at the fuel docks, the Sitka charter boat industry is clearly dominated by reliance on gasoline and not diesel.

Lines 61-62. "We assumed that each trip goes 25 miles, with an average conservative fuel efficiency of 5 miles per gallon, consuming a total of 39,600 gallons." I suspect this to be a very large underestimate of fuel use by the charter industry. I think there are many local participants in this industry who would help you gain much better estimates.

Pg 6. 2.3 Solid Waste Disposal and Wastewater Treatment

Line 170. I am curious what metals recycling we do on site here in Sitka. Page 6. 3 Results

Line 179. "These calculations were validated against the Cargo Report." I am interested in how this process of validation was done, what it showed, and what limitations were identified.

Line 186. Table 1. Emissions by End Use The total emissions by end use in Table 1(60,459 MTCO₂e) do not match what is shown in Figure 5 (56,000 MTCO₂e)

Pgs. 9&10. 4.1 Shipping

Lines 222-223. ". To improve estimates of shipping emissions, data from official records, manifests, or surveys can be used to determine the apportionment of emissions to Sitka from the overall shipping companies." Was Alaska Marine Lines asked to share data to make this data? This data could also potentially replace the use of calculations based on the Texas A&M Transportation Institute, A modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001-2014. 2017.

Pgs. 10&11. 4.2 Cruise Ships

Lines 228-231. The assumption that cruise ship visitation can not be controlled would seem to be beyond the scope of this inventory and I believe the emissions of this polluting industry should be displayed in full.

Line 236. "Number of emissions they produce" Maybe quantity of emissions? Also in this line is "Sitka's Boundary" and I do not find where this is defined.

Lines 238-240. "We assume the docking load to be ~50% of the total power to power lights, heating, swimming pools, etc. We assume the fraction load of the generation to be 60%." What does "total power" refer to? And what is "the fraction load of the generation"?

Line 248. "Cruise ships while within Sitka's waters produce 80,600 MTCO₂e." What are you defining as "Sitka's waters" here? How was 80,600 MTCO₂e calculated?

Line 250, Figure 5. As mentioned above the 56,000 MTCO₂e does not match the 60,459 MTCO₂e from Table 1. Figure 5, as presented, has a priori decided to exclude cruise ship emissions outside of “transiting to and from the port and while docked”. Figure 5 could also display the 185% increase in emissions if the 80,600 MTCO₂e were also included. Or maybe it is a 144% increase if the docking and docked emissions are included in the 80,600 MTCO₂e “in Sitka waters” number.

Lines 253-256. Including Figure 6..This is a very confusing figure to me. It might be helped by also showing the MTCO₂e numbers next to the percentages, such as 27%(XXX MTCO₂e).

With these numbers it may be possible to trace back where the numbers come from. Pg.12. 5 Next Steps

Line 265. “which mechanisms have highest impact and which (while still useful) may have smaller impacts” Might be better to read something like; greatest potential to reduce emissions, and may have lesser potential to reduce emissions.

In conclusion:

I would like this document to speak very openly about and be framed by its intended use the way I see it. That is primarily to better understand our emissions so we can most quickly and efficiently reduce our emissions concurrent with other city objectives. And secondarily be able to measure progress toward decarbonization.

I believe the cruise industry emissions should be included in full.

I believe we should identify where we can improve our understanding by securing better fuel use data. We should compel our fuel distributors to fully share what is being sold into our community. If not voluntarily shared then otherwise.

Thank you for the opportunity to comment on this draft.

Kent Barkhau

Dear Sustainability Coordinator, Sustainability Commissioners, Assembly Members, and project team members,

I would like to preface my comments by repeating something I have mentioned several times at public meetings on the subject of the SCRES and what it must inform. I believe that an inventory of GHG emissions may be best thought of as providing a proxy for the current reliance of the community on fossil fuels. There has been some discussion of excluding some items because these are not under the ‘control’ of Sitka, however, given the objective of the EITPP, this approach seems less useful as a basis for the community to make plans for greater resilience and self-reliance with respect to energy.

As a remote island community we are currently heavily dependent on fossil fuels for the majority of our food and other household essentials, construction materials, communications equipment, emergency services, transportation to and from the island. We are also dependent to a certain degree, on services and external currency provided by contractors and recreational travelers who travel by boat and plane and may use construction vehicles, passenger vehicles, and ATVs (either for remote access or as part of shore excursions) as well as other recreational transport vehicles such as jet skis, motorcycles, etc. Most of which are currently fuelled by fossil fuels. For this reason, I also believe it is important to engage the community in detailed discussions of their

specific dependencies on fossil fuels for their homes, businesses and recreational activities. An actual survey of energy use would be a valuable asset in any discussion about what needs to be achieved by the SCRES.

Although many sources of GHG emission are not something that Sitka can control or reduce directly, if we are to begin understanding our current vulnerability and exposure to serious energy supply disruptions, we have to include much more than the items that we can “control”. We need to do this so that we can make decisions about how we want to source these services and products in other ways, or by other means. Do we go without them? Do we invest in new systems that can deliver them without the emissions? What will this mean for us economically, socially and environmentally? What resources are available to assist us?

Assumptions that may need to be reconsidered

Baranof Island Housing Authority recently conducted a Tribal Housing Needs Assessment (late 2023 to early 2024) which provides analysis of Sitka’s housing stock. You may find this useful in checking the assumptions of your inventory. The household survey conducted as part of this assessment also provides survey data on several important GHG emission sources. While this survey information is not comprehensive regarding the all households in Sitka, this survey was successful in reaching a statistically significant number of tribal households (confidence level of 95%). It may be worth considering how closely this information conforms to the assumptions currently being used in your analysis. This information is available from Baranof Island Housing Authority. I have provided documents and links to documents that the project team may find useful, and key data points below where it is relevant to the area of concern.

Refrigerants

Alaskan homes and businesses have an astonishing amount of refrigeration. These include the refrigerants that are used for heat pumps whose use is increasing, industrial fish processing, and refrigerated systems on fishing boats. Older systems are more likely to be charged with refrigerants that have higher global warming potential. Sitka Tribal Housing Survey undertaken between October and December in 2023 (n=301 households) indicated that many households had older refrigerators and that many households had both refrigerators and dedicated freezers (chest or upright). See page 11 of the Sitka Tribal Housing Survey.

Heating fuels

Again the Sitka Tribal Housing Survey undertaken between October and December in 2023 provides information about the use of heating fuel in participating households (n=301). This survey found that households were using more than one form of heat, and that more than 50% used fuel oil heaters most often while 6% used it less frequently than another form of heating. See page 9-10 of the Sitka Tribal Housing Survey.

Characterizations of Sitka housing

Analysis of existing research for the Sitka Tribal Housing Needs Assessment provides a useful resource for recent data from the US Census (2020), the American Community Survey (Five year), and various Alaska State Government data sources. You may download this report at:

https://bihasitka.org/wp-content/uploads/2024/04/STHNA_UpdatedFinalReport_April2024_email-1.pdf

Thanks for considering these concerns and please feel free to contact me at if you would like to discuss anything raised here, or have questions about the information sources I have briefly raised. I have not had time to do an exhaustive review of all of the inventory, and appreciate the efforts being made to create a useful resource for the community discussion of Sitka's current vulnerabilities and future needs.

Leah Mason

Resident

From Joel Hanson:

Thank you for the opportunity to review and comment on the Draft Sitka GHG Inventory.

I appreciate all the work that is going into this project. The draft document clearly shows that the team putting it together is genuinely attempting to produce the best emissions estimates possible under circumstances which, unfortunately, require them to make an enormous number of assumptions due to the dearth of hard data on local fuel consumption.

* * *

My first comment is less about the quality of the work and more about how absurd it is that analysts have to contort themselves and use proxy data in order to try to provide the public with information which Sitka's two fuel suppliers, Petro Marine and Delta Western, could easily produce with detailed precision. But these businesses are not cooperating. Considering that they are selling a product that creates a public hazard when used as directed, I think their refusal to disclose information should be made criminal. I say this in all seriousness; I think CBS should sue the businesses for withholding vital public safety information.

Since that's not likely to happen, I think the GHG Inventory document needs to mention the fact—probably somewhere in the Methodology section—that data collection could be made much easier, and analysis much simpler, if researchers had the full cooperation of Sitka's fuel suppliers. These businesses should to be called-out somehow for deliberately, inexcusably and unethically making the inventory process as convoluted and difficult as possible. The document should also mention, incidentally, that if CBS were to levy a motor fuels excise tax on fuel suppliers, then much better data could be collected. I'm a big fan of taxing fuel suppliers for no other reason than to gather data.

* * *

My second comment has to do with what I see as a shortcoming in the document's Purpose section. The nine lines of text inserted there seem wholly inadequate. They include a brief mention of the 'goal' being to provide a baseline which may "help the municipality track progress towards their decarbonization goals." But there is nothing in those nine lines that I would call a 'statement of purpose.' I suggest that some additional text be prepared that says a little something about the fact that the whole reason for conducting a carbon footprint analysis is to try to get more detailed information on how much damage we're doing here in Sitka to our planet's life-support system.

The term 'climate change' doesn't appear anywhere in the entire document. It seems reasonable to expect that it would appear in the Purpose section, at least! The failure to associate GHG data collection with the need to address a rapidly escalating crisis that could lead to the extinction of

millions of species, possibly including Homo sapiens, is quite glaring. It makes the entire document seem like it has been deliberately sterilized and turned into an academic bean-counting exercise. I had hoped to see a little more passion expressed in this important work, if only in the Purpose section!

* * *

My third comment pertains to subsection 4.1 Shipping. I believe that emissions from this source should be included in the GHG inventory. I have professional experience in the maritime trades, and have personally transited the route between Seattle and Sitka many times on vessels with propulsion and auxiliary power systems similar to those aboard the kinds of tugboats which commonly operate on these coastal waterways. My experience suggests that the draft document's shipping emissions assumptions are at the very low end of the probability distribution.

The analysis provided in subsection 4.1 relied on a study from the Texas A&M Transportation Institute. That study looked at tug and barge operations on inland waterways like the Mississippi River. It may appear reasonable to assume that the study's findings would also apply to tug and barge operations on near coastal routes to and from Sitka, but the vessels and the operating conditions here are actually quite different. I suggest that much more accurate fuel consumption information may be collected by directing inquiries to Alaska Marine Lines, which supplies barge service to Sitka. They may be willing to freely divulge their vessels' fuel consumption figures, as well as cargo apportionment estimates for different ports of delivery.

* * *

My fourth comment pertains to subsection 4.2 Cruise Ships. Simply put, cruise ship emissions estimates should definitely be included in the inventory.

Many Sitka residents understand that we need to reduce our consumption of fossil fuels, and we take personal action to 'do our part.' But our community at-large, and our governing institutions in particular, tend to place more value on maintaining the health of our growth-promoting economic system than on the health of our life-giving biophysical system.

Our community's relationship with cruise ship tourism provides a good example of how gaping the chasm has become between the two conflicting priorities. Only a few years ago, the Sitka Assembly declared a "climate emergency" and voted to reestablish a Climate Action Task Force, which eventually became the Sustainability Commission. At the same time, assembly members were made aware of a dock expansion project on privately owned tidelands and failed to take any action whatsoever to prevent or control the development. That project has resulted in an enormous increase in cruise ship visitations to Sitka, with comparably enormous emissions implications. Our local government's failure to consider the climate crisis and focus instead on economic prospects should not go unaccounted-for in the Sitka GHG Inventory.

* * *

My final comment pertains to both the document and the SCRES project in general. The consequences of prioritizing industry interests over ecological concerns should be highlighted in the GHG inventory document. The data should tell a true story which establishes a baseline but doesn't try to obscure the fact that that we are currently on a trajectory away from, not toward, our decarbonization goals.

I understand why the city administration, staff, assembly and boards/commissions might prefer look on the bright side and point out how much progress we're making on sustainability. But the fact is, we're not making any meaningful progress at all. If anything, we're going backwards, just like the rest of the nation and the rest of the world. We need to own up to our failures and resolve to make more meaningful changes. Otherwise, frankly, we're screwed.

I suggest using photos of Sitka for the cover page. The tropical photos are misleading.

I wonder whether excluding refrigerants is a mistake. Because of the freezing/refrigeration used in the fishing industry, Sitka might have refrigerant emissions larger than expected. That said, refrigerants don't show up much with a GWP of 100 since they are short-lived. We might want to connect with the folks who dispose of refrigerators/freezers to learn more about how they neutralize/properly dispose of refrigerants. With more heat pumps being installed, we might want to think about how we deal with the refrigerants in those heat pumps.

Pet peeve...can we please use the subscript 2 in CO₂?

I encourage us to limit acronyms unless absolutely necessary. For example, I don't think we need DHW for domestic hot water. Let's make this as readable/non-jargony as possible.

Do we know how common domestic hot water powered by heating oil is?

I'm a bit confused by line 95. If the utility bill is 30% greater in the winter than in the summer, then the assumption is electric heating, right?

Why is cargo plane data not included in the calculation?

The number of cars seem high, and the assumption of 12 miles/day also seems a bit high.

Do charter boats include things like Allen Marine whale watching tours as well as charter fishing?

Do we count the solid waste shipping in solid waste numbers? I think shipping should be part of this analysis.

It's a bit odd to me to count commercial fishing as transportation. Shouldn't it be considered industry?

Do the ferries factor into this inventory?

Please remove Figure 5.

Overall, I wish each section had a standard layout to make it easy to compare/understand information across sections.

GHG draft comments from Transition Sitka

Some of the assumptions regarding emissions and/or sources of data are not up-to-date, are unreasonable, or do not use the best available sources of data. Some do not adequately take into account the variability of the source data over time, or are insufficiently described in the draft to allow readers to assess the estimates. For example, the American Community Survey conducted by the U.S. Census Bureau indicates that the most prevalent source of heating in Sitka is fossil fuels and not electricity as stated in the draft report. A correction of this error has policy implications. A methods appendix should be added that shows the data, its limitations, and calculations used for each emission category. Some of the estimates do not appear to be reproducible. Comments are provided below on specific sections along with further recommendations.

Page 2, lines 53-53. The comment that refrigerant emissions are considered insignificant because cooling is not needed ignores that heat pumps use refrigerants, as do seafood processing and refrigerators. Is there a rationale for not considering fugitive refrigerant emissions? Most refrigerants (except CO₂) have orders of magnitude higher greenhouse gas equivalent emissions than CO₂ and are being phased out or replaced in regulations for that reason.

Page 2, lines 55-56. Propane is used for heating and cooking in Sitka, with Arrowhead being the supplier. Arrowhead apparently has about 3000 accounts in Sitka. Propane is not mentioned in the report. The U.S. Army Corps of Engineers data about fossil fuels unloaded in the port of Sitka in footnote 6 has data for 2017-2021. These data include "Hydrocarbon fuel, liquified and gaseous", which presumably would cover propane. Inspection of the data gives a zero value for 2021, the year referenced. The most recent data for 2022 also does not list propane. However, it may be included in petroleum products not elsewhere classified (nec). Also, the variability of data for all fossil fuel categories is significant year-to-year. Did the authors use only 2021 data or an average of the 5-year data? Even an average is suspect because of the variability of the data by year. For example, the largest category, 2990, "Petro. Products not elsewhere classified" varies by 20-fold from year to year, suggesting that the latest year, 2021, apparently used in the inventory, has incomplete reporting or summarized data. Fossil fuel use in Sitka has no apparent reason to vary 20-fold by year. The authors need to specify how these data in footnote 6 were used, since the quality of the data for individual years is suspect. Additionally, there appear to be multiple data issues in the data released by the Army Corps of Engineers (see Waterborne Cargo notes at end). It is not clear if the authors used USACE data that included data from both Sitka ports listed in the dataset. Although the gallons of kerosene were calculated from the USACE data, other potential comparisons (e.g., gasoline or fuel oil) for use in calculating emissions were omitted.

Page 3, line 87. The data used for Sitka's residential housing from the 2017 Alaska Housing Finance Corporation is out of date since it is based on the American Community Survey 5-year data from 2010-2014 (2019-2023 is now available, see below). These numbers for number of occupied residences and square footage should be updated.

Page 3, lines 89-92. How the authors averaged the RECS dashboard estimates for AK and WA is not obvious from the RECS data readily available. A simple average of the online state values does not equal 74 mmBtu. It is unclear how meaningful the mmBTU values and subsequent emission amounts for the states of AK or WA (which is primarily heated by natural gas) are applicable to Sitka. This is another key place where detailed methodology would be valuable in an appendix.

Page 3, lines 94-99. The authors' methodology for estimating which homes are heated by electricity seems to be stated backwards. If heated by electricity, then the winter months should be higher not lower. The draft report states "If the average electricity consumption over the summer months (June, July, August) were 30% greater than the winter months (November, December, January), we conservatively determined the building was heated by electricity." Lighting in winter is higher, regardless of heating fuel, because of short daylight hours. Cooking fuel would not change much from season to season. Even if stated backwards incorrectly, this methodology is difficult to justify. It does not reproduce the data obtained by detailed interview by the American Community Survey conducted by the U.S. Census Bureau. The draft report's conclusion that 82% of homes are heated by electricity seems wrong, given that the American Community Survey for the last 15 yrs has indicated that more than half of Sitka's homes use fossil fuels (primarily fuel oil). Delta Western apparently has 450-500 accounts. Petro Marine's number of accounts is not known to us. For this methodology of using utility bills to estimate heating electrification to be perceived as reliable, more details about the distribution of usage by month and the variability among accounts is critical.

The American Community Survey (ACS) is based on actual interviews with random samples of the populace with detailed questions including home heating fuel. From 2019-2023, about 750 Sitkans responded to the ACS survey each year (~3,700 over the 5 yrs). The most recent data from 2019-2023 estimates that there are 3,503 occupied residences in Sitka. The fuel sources of these residences are as follows:

- Utility gas - 2.7%
- Bottled, tank, or LP gas - 4.9%
- Electricity – 41.0%
- Fuel oil, kerosene, etc. – 45.1%
- Coal or coke – 0.0%
- All other fuels – 5.8%
- No fuel used – 0.5%

Thus, fossil fuel-heated homes are 52.8% of the total (not 16% as specified in the draft based on using electricity use as a proxy). These data are more recent and higher quality than the assumption underlying the figures in the draft report. The American Community Survey publishes 5-year rolling averages for comparison, cautioning that single year estimates are unstable. The 5-year average from 2009-2013 indicates that total fossil fuel use for that period was 63.1%. There was a lot of electrification of Sitka homes during that period (mostly resistive

electric heating) because of the high cost of fossil fuel. The following 5-year average, 2014-2018, reflects this electrification, with a decrease in total fossil fuel heating to 54.8% and an increase in electricity use from 30.1% to 41.3%, essentially equivalent to the last 5-year average of 41.0%. (See ACS details in section at end of these comments.)

Page 4, line 115. Delete “in”.

Page 4, lines 113-120. The authors reported that the Alaska Department of Motor Vehicles (ADMV) stated that Sitka had 14,689 registered vehicles in 2024. This is significantly off from the ADMV online published data for 2023 which states that there are 9,482 of which ~7,400 are passenger vehicles, motorcycles, or pickups (not counting 1,233 trailers, commercial trailers, commercial vehicles, buses, or snowmobiles). Why is there a large discrepancy in total registered vehicles? Does the 14, 689 include registered boats?

	PASSENGER	MOTORCYCLE	COMMERCIAL TRAILER	TRAILER	COMMERCIAL TRUCK	PICKUP	BUS	SNOWMOBILE	ALL VEHICLES
MUNI OF ANCHORAGE	186,492	10,200	3,742	24,052	17,289	64,044	882	10,753	317,552
FAIRBANKS N/STAR BOR	53,210	3,778	1,224	11,924	8,047	26,441	386	8,767	113,935
CITY & BOR OF JUNEAU	19,783	995	316	3,546	1,880	7,739	395	234	34,896
KETCHIKAN GATEWAY BOR	7,779	553	123	1,835	877	4,047	144	68	15,644
CITY & BOR OF SITKA	4,472	268	206	1,233	455	2,633	78	52	9,482

It is unclear why all of the vehicles (if non-commercial) would be driven everyday an average of 12 miles/day. We only have 14 miles end-to-end of paved road. Having everyone in town, including kids, drive one of the vehicles does not seem realistic. Moreover, the gas fuel efficiency estimate of 20 mpg is not consistent with the US Bureau of Transportation Statistics. It estimates that from the 1980’s through 2016, the average fuel efficiency (non-new cars) was 10 mpg or less, and only newer vehicles got up into the low to mid-teens (<https://www.bts.gov/content/average-fuel-efficiency-us-passenger-cars-and-light-trucks>). The data assume 55% city and 45% highway driving. Fuel efficiency is higher with highway driving, which hardly exists in Sitka. Additionally, DOE’s www.fueleconomy.gov site indicates that short trips can take twice as much fuel.

Page 4, lines 121-124. What is the assumption underlying the 100 passenger vans and buses in relation to the annual number of tourists? Were the number of trips to transport these passengers used in calculating emissions? The occupancy/bus would be needed here, and diesel bus emissions are much greater than small passenger van emissions. The draft would benefit by giving the methodology used for the sake of transparency.

Page 5, line 127. In editing, replace “with” with “within” the city boundary.

Page 5, line 141. Why are cargo plane data not reflected in this report? Are they not available?

Page 6, section 2.6. The USACE cargo data also includes ~350 tons of outbound waste including metal scrap and paper (see below). It is not clear how the 240 tons recycling (excluding glass & metal) is counted in the USACE data. Metal scrap is shipped out. Those data indicated 7,561 tons of waste and scrap not elsewhere classified matching the Republic Services data.

Page 6, line 173. Waste water emissions based on Sitka's population of 8,300 people do not include tourist emissions. Since approximately 607,000 cruise tourists spend an average of 8 hours/day ashore or in Sitka waters, shouldn't their contribution to waste water be included? Also, there is a significant number of other independent travelers (e.g., charter fishermen, small boat cruise, etc.). These should be included. Is there an enforced prohibition of discharging cruise ship gray water while in Sitka Sound?

Page 6, line 177- 180. The total emissions need to be recalculated to include the much higher emissions derived from more accurate home heating data from the updated American Community Survey. This will change the pie charts and tables included in the report on pages 7-9. This paragraph implies that Army Corps of Engineers data for a single year were used, which is not defensible given the variability of the data from year-to-year, as indicated above. How is "Petro. Products, not elsewhere classified" handled? Starting before the pandemic, the Army Corps of Engineers seemed to omit many specific petroleum products in favor of collapsing them into this category of "Petro. Products, NEC".

Page 9, line 217. The draft refers to 2022 Army Corps of Engineers data, while footnote 6 gives only 2021 data. Which is correct? Again, single year data is unreliable.

Page 10, line 224. This sentence needs editing, since it says "...barge transport is more efficient than...barges". Perhaps the intention was to include air cargo instead?

Page 10, line 233. The draft reads that the Sitka community has to deal with cruise ship emissions but cannot control cruise ship emissions. This latter clause about not being able to control emissions is an overstatement. Communities around the world are beginning to control cruise ship emissions by legal means such as caps on tourism. The federal judge reviewing the Bar Harbor ME ordinance capping cruise tourists at 1000/day ruled that citizen initiatives by ballot in a home rule state (such as in Sitka AK) could limit tourism even though it impacts commercial entities. The newly approved Small Town SOUL ballot initiative reflects this possible means of control. For this reason, cruise ship emissions in Sitka waters should be included in this greenhouse gas emissions inventory.

Page 10, line 239. What is the definition of "fraction load" of 60%? Where do these numbers come from?

Page 10, line 244. The statement that cruise passenger-bearing vans and buses travel 15 miles/day seems an underestimate or mis-statement. These vans and buses make many 15-mile trips/day to accommodate the number of cruise ship passengers. Either the calculation is wrong or the description is wrong. The number of tourists/bus load and number of trips need to be included to be transparent.

Page 13. Residential heating assumptions are not included in this table and need to be redone.

The complexities of the data used in this report are such that transparency in methods and the actual numbers used by including a detailed methods section showing exact calculations is critical. The list of assumptions is not sufficient. This is most apparent in the estimation of heating fuel usage, but is obvious in every category of emission sources. Local updating of this inventory in the future to measure progress toward emissions reduction cannot be done without details of the methodology. This inventory's use in recommending policies to Sitka assembly and municipal staff may result in erroneous conclusions if independent evaluation and review of methodology is not available. It could be produced as a second document that is released simultaneously with the final report. With the number of concerns raised, we recommend that a second draft be made available for public comment before a final report is issued.

American Community Survey Housing Characteristics Supplemental Data

The American Community Survey (ACS) conducted by the US Census Bureau collects survey data continuously throughout the year. It reports on various population parameters including “occupied housing” and “household heating” in 1-year and 5-year estimates. However, data for Sitka City and Borough is only reported as 5-year estimates because our population is too small (e.g., less than 20,000 people). Estimates are produced annually as “rolling averages” of 5 years of data. For example, 2023 data (the most recent data available) are averaged with data from 2019-2023 to produce the “2023” 5-year estimates. Similarly, 2022 5-year estimates included data from 2018-2022. However, for comparison purposes, only 5-year estimates that do not overlap can be reliably compared (per ACS analysis guidelines) such as comparing the 2013 5-year estimate (i.e., 2009-2013) and/or the 2018 5-year estimate (i.e., 2014-2018) to the 2023 5-year estimate (2019-2023).

The ACS home heating fuel question in occupied homes is asked of owners and renters with nine response options. The respondent is to only select one option that is the “fuel used most.” In Sitka, numerous homes may use two sources of heat some or all of the year.

[\(https://www.census.gov/acs/www/about/why-we-ask-each-question/heating/\)](https://www.census.gov/acs/www/about/why-we-ask-each-question/heating/)

13 Which FUEL is used MOST for heating this house, apartment, or mobile home?
Mark (X) one box for the fuel used most.

- Gas: Natural gas from underground pipes serving the neighborhood
- Gas: Bottled or tank (propane, butane, etc.)
- Electricity
- Fuel oil, kerosene, etc.
- Coal or coke
- Wood
- Solar energy
- Other fuel
- No fuel used

American Community Survey 5-Year Occupied Housing and Heating Fuel Estimates for Sitka City and Borough										
	2009-2013*				2014-2018			2019-2023		
	Estimate (%)	Margin of Error (%)	Estimate (count)	Margin of Error (count)	Estimate (%)	Estimate (count)	Margin of Error (count)	Estimate (%)	Estimate (count)	Margin of Error (count)
TOTAL HOUSING UNITS			4,095	±55		4,199	±34		4,167	±68
Occupied Housing Units	86.8%		3,554	±159	84.8%	3,561	±119	84.1%	3,503	±158
Vacant Housing Units	13.2%		541	±147	15.2%	638	±114	15.9%	664	±136
OCCUPIED HOUSING UNITS			3,554	±159		3,561	±119		3,503	±158
UNITS IN STRUCTURE										
1, detached	56.4%	±5.0	2004		47.5%	1,690	±128	52.9%	1,852	±118
1, attached	6.9%	±2.5	245		5.1%	181	±49	6.3%	221	±69
2 apartments	9.0%	±2.3	320		14.0%	498	±92	14.8%	517	±110
3 or 4 apartments	6.5%	±2.0	231		12.4%	442	±87	7.2%	251	±76
5 to 9 apartments	4.4%	±1.4	156		6.2%	221	±61	4.2%	147	±55
10 or more apartments	4.3%	±1.6	153		5.4%	194	±39	7.0%	246	±79
Mobile home or other type of housing	12.5%	±3.3	444		9.4%	335	±79	7.7%	269	±68
HOUSE HEATING FUEL**										
Electricity	30.1%	±4.0	1070		41.3%	1,471	±143	41.0%	1,435	±182
Total Fossil Fuel	63.2%		2246		55.0%	1958		52.8%	1849	
Utility gas	1.9%	±1.3	68		3.3%	117	±58	2.7%	95	±49
Bottled, tank, or LP gas	5.0%	±2.2	178		4.7%	169	±55	4.9%	173	±57
Fuel oil, kerosene, etc.	56.2%	±3.7	1997		46.8%	1,665	±126	45.1%	1,581	±166
Coal or coke	0.1%	±0.3	4		0.2%	7	±12	0.0%	0	±15
All other fuels	6.2%	±1.7	220		3.5%	125	±37	5.8%	202	±76
No fuel used	0.5%	±0.5	18		0.2%	7	±8	0.5%	17	±11

*2009-2013 structure & fuel subcategory estimates and margins of error in file download were reported by ACS as percentages. Counts were calculated. 2014-2018 & 2018-2023 data were reported as counts and percentages were calculated.

**Type of Heating Fuel estimates are only available for Occupied Housing Units.

Data Source: <https://data.census.gov>; **Selected Geography:** Sitka City and Borough; **Selected Table:** DP04: Selected Housing Characteristics;

Data Tables: 2023: ACS 5-Year Estimates Detailed Tables; 2018: ACS 5-Year Estimates Detailed Tables; and 2013: ACS 5-Year Estimates Detailed Tables

USACE Water Cargo Data <https://ndc.ops.usace.army.mil/wcsc/webpub/#/>

INBOUND PETROLEUM PRODUCTS						
Sitka Harbor						
Code	Commodity	CY2022-IN	CY2021-IN	CY2020-IN	CY2019-IN	CY2018-IN
2330	Distillate Fuel Oil	10265	3175	0	2530	0
2211	Gasoline	6102	7230	944	1388	336
2640	Hydrocarbon & Petrol Gases, Liquefied & Gaseous	0	0	0	0	580
2221	Kerosene	2197	536	0	0	0
2990	Petro. Products NEC	189	1239	21601	28140	22212
2340	Residual Fuel Oil	1	4	3	0	0
	Total (short tons)	18754	12184	22548	32058	23128
Sitka Ports & Harbor						
Code	Commodity	CY2022-IN	CY2021-IN	CY2020-IN	CY2019-IN	CY2018-IN
2330	Distillate Fuel Oil	2948	0	0	0	0
2211	Gasoline	640	0	0	0	0
2221	Kerosene	2197	0	0	0	0
2990	Petro. Products NEC	0	0	18513	27877	22122
	Total (short tons)	5785	0	18513	27877	22122
	Grand Total	24539	12184	41061	59935	45250
OUTBOUND WASTE						
Sitka Harbor						
Code	Commodity	CY2022-OUT	CY2021-OUT	CY2020-OUT	CY2019-OUT	CY2018-OUT
4225	Pulp & Waste Paper	150	169	131	279	130
4420	Iron & Steel Scrap	203	125	57	123	95
8900	Waste and Scrap NEC	7561	6165	6350	7280	8045
	Total (short tons)	7914	6459	6538	7682	8270
USACE-WCSC HARBOR DESIGNATIONS						
2022 - Sitka Harbor, AK (PORT)		Waterway code 4796				
Section Included: From the Alaska Lumber & Pulp Co. Mill in Silverbay on the south to Starrigaven Bay on the north including the Sitka Central Waterfront and Japonski Island. Controlling Depth: 22 feet at mlw in western channel and 10 feet in small boat basin. Project Depth: 22 feet in western channel; 10 feet in small boat basin and approach channel. All depths refer to mlw.						
2022 - Sitka Ports and Harbor, AK (PORT)		Waterway code 4808				
Section Included: From the southern point of Crescent Harbor to the southern point of the sitka Airport runway, then north and east along the coast of Alice, Charcoal, and Japonski island, thence west along the breakwater, then following the western coast of Baranof island to the point of completion						

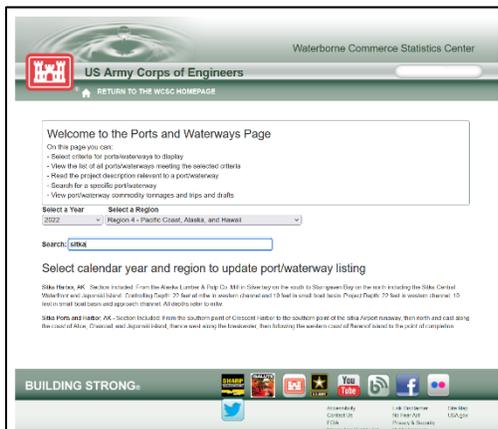
Notes: Although WCSC data site lists 2 Sitka ports, some similarities in data suggest that the Sitka Ports & Harbor (P&H) data may be included in the Sitka Harbor data:

- CY22 kerosene value identical for both data sets
- Fuel oil & Gasoline missing from CY20-18 for P&H data.

- Nothing at all for reported P&H in CY21

- P&H Petro products nec values less than but quite similar in FY20-18 to Habor data

Source: <https://ndc.ops.usace.army.mil/wcsc/webpub/#/?year=2022®ionId=4>



<https://ndc.ops.usace.army.mil/wcsc/webpub/#/report-landing/year/2022/region/4/location/4808>

<https://ndc.ops.usace.army.mil/wcsc/webpub/#/report-landing/year/2022/region/4/location/4796>

Marine Emissions

I don't know who from the Sitka boating community was consulted, but it might be helpful for the ETIPP folks to talk to some folks on the GPIIP board (Chris Ystad or Lauren Mitchell) or folks who own a tourism wildlife viewing charter operation (Gary Downie, Jaren Sumauang) to get some more context. Charter boats primarily run on gas outboard engines, not diesel fuel as stated in the GHG inventory. Diesel engines are widely used in the commercial fishing industry, but charter fishing and wildlife viewing is predominantly gas. There is more information available regarding charter boats, especially if charter lodge owners are talked to. A lot of these boats I would estimate to be 28-32 ft aluminum crafts that run double 150 HP engines or sometimes 200 or 250s HP. Charter trips usually come in 2 hr, 4 hr, and 8 hr increments. The team can look up this information by googling 'Sitka wildlife tours' and seeing what length of tours are offered on what different kinds of boats, which will both usually be listed on the websites.

Regarding the recreational vessels, I don't have enough research to feel secure about judging how accurate or inaccurate these assumptions of 20 mile trips / 4x per year / 6 months per year but I would encourage the ETIPP team to consider the spread of people in Sitka that use recreational vessels. The various constituencies I can think of right now include

- 1) people that live on the surrounding islands of Sitka (available through the city's GPS) and take daily or more than once daily trips back and forth to town throughout the entire year.
- 2) people that come to Sitka and just use their recreational vessels for the ~4 summer months very frequently
- 3) most other recreational boaters in Sitka that use their vessels probably 9 months out of the year (herring eggs/good weather starting in April and hunting ends around December/January)
- 4) 28-32' charter boats that run from May - October and do 2,4,8 hour trips daily, ranging from 20-50+ miles on twin 150 HP engines - twin 250 HP engines
- 5) allen marine charter vessels that would transport more passengers at a time and use diesel. You can look at their website for tour length.

Given that we are a boating community that depends heavily on marine transportation in all its varying forms, I think this section deserves a bit more detail and nuance! Happy to chat with the ETIPP team more about that or potentially point them in the direction of more knowledgeable people if questions can be identified.

Hello.

Thank you very much to all involved in assembling this draft. It is apparent the high levels of effort, coordination, skill and time needed to get to this point. It is seen and appreciated.

Attached is a PDF of the draft with my handwritten comments. Hopefully my penmanship is legible. I'm happy to interpret or clarify anything.

In summary

- thank you

- I've done a mix of line edits for typos and crafting bigger ideas (apologies if you were not seeking copy editing)
- cargo plane data is attainable
- I encourage staying away from saying there is "Sitka's waters" or "Sitka's boundary waters". Salt water is the state of AK up to 12 nautical miles off the coast, then it hits international waters. (a large cruise ship can reach 12 nautical miles off the coast within 1.5 hrs of docking at the sitka sound cruise terminal.)
- USCG buoy tender Kukui, small cruise ships that refuel in Sitka, Alaska Marine Highway?
- Can there be a chart in the Appendix that summarizes the imported combustion fuel data from the USACE's 5 Year Cargo Report?
- I have more but need to stop somewhere ... USCG as its own category ...

Thanks again!

JJ Carlson

Sitka Resident



ENERGY
TRANSITIONS
INITIATIVE

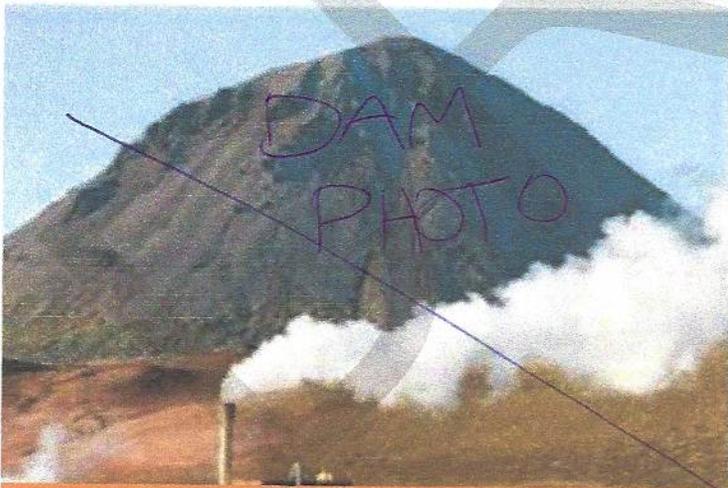
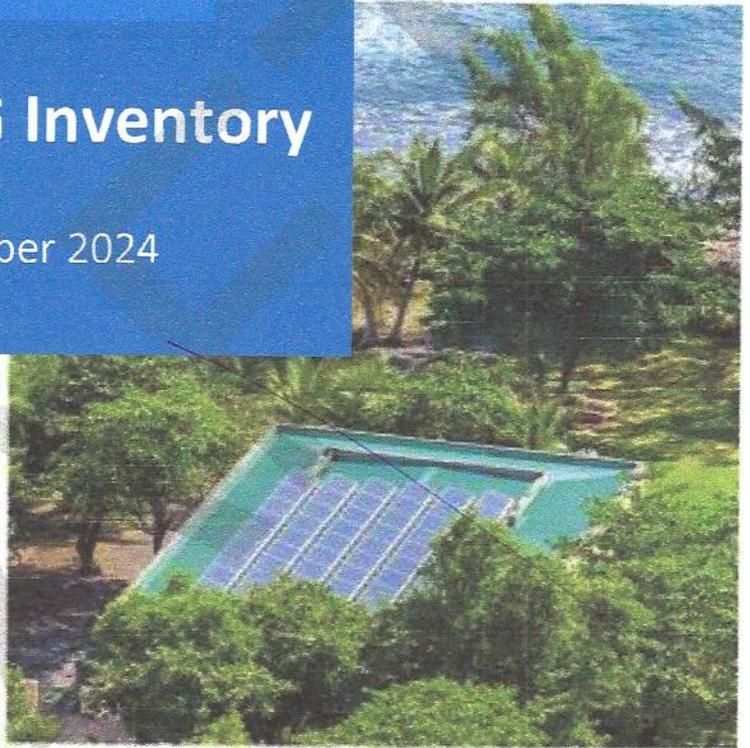
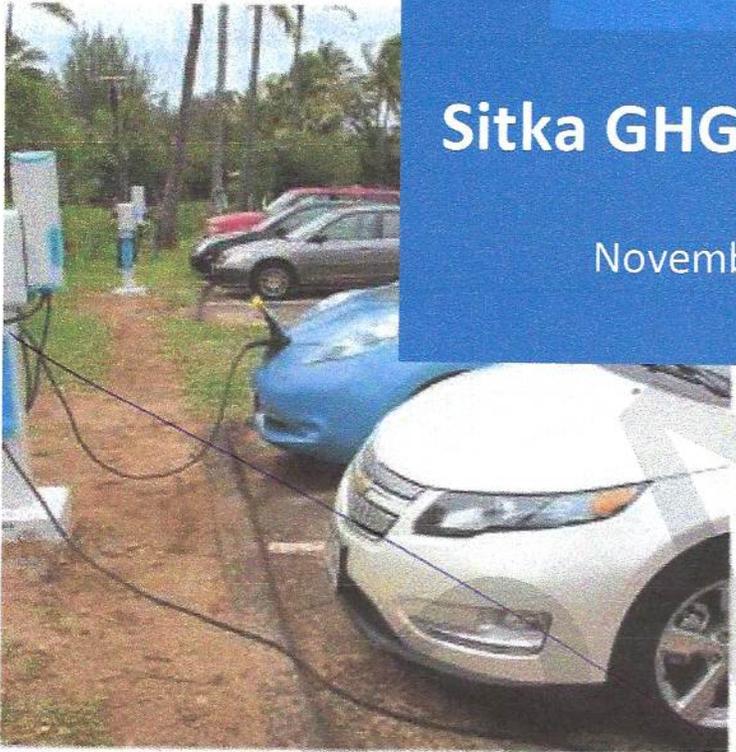
U.S. Department of Energy

Sitka

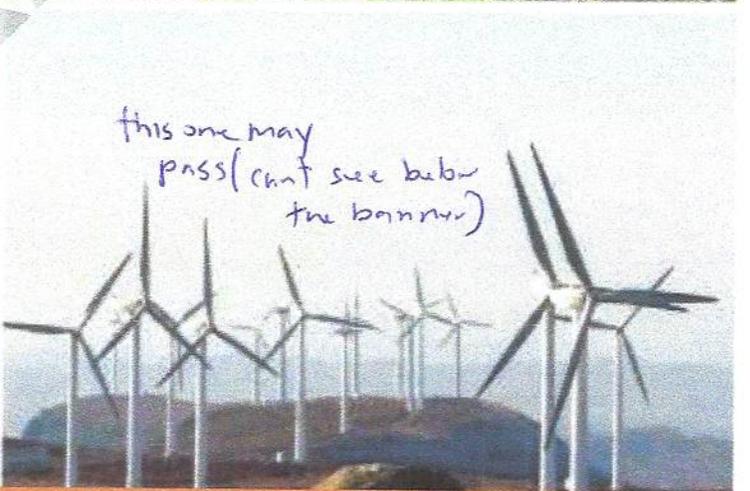
Sitka GHG Inventory

November 2024

*Sitka adjacent
photos, please*



*DAM
PHOTO*



*this one may
pass (can't see below
the banner)*

Public Comment is Open until December 22nd, 2024

Please submit comments to sustainability@cityofsitka.org

If you need additional assistance commenting, please contact (907) 747-1856

Not sure where to start? Guiding questions are on the last page.

Sitka GHG Emissions
Inventory

1

2

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22 1 Purpose

23 This Greenhouse Gas (GHG) inventory was prepared in close collaboration with the City and Borough of Sitka
24 (CBS) under the Energy Transitions Initiative Partnership Project (ETIPP). ETIPP is a Department of Energy
25 program focused on aiding remote and islanded communities in becoming more resilient. The goal of this
26 inventory is to provide a GHG emissions baseline for the full community of Sitka. This can help the municipality
27 track progress towards their decarbonization goals, as well as identify the policy mechanisms that could be
28 implemented to reduce emissions.

29 The City and Borough of Sitka partnered with the Pacific Northwest National Laboratory through the ETIPP
30 program. Pacific Northwest National Laboratory sought input from the Sitka Sustainability Commission to ensure
31 they made acceptable assumptions and used the best data available.

32 2 Methodology

33 This section details the methodology used for calculating the GHG emissions for the full community of Sitka,
34 following guidance from the GHG Protocol. The baseline year for this inventory is 2023, but many of the data
35 sources are from previous years. We used the best available information at the time, and values can be updated as
36 better data becomes available. *This calculations were validated against the Cargo Rept. . .*

*report line
179-180*

37 This report refers to the community in multiple ways. When referring to “Sitka”, that generally means the full
38 community. When CBS is mentioned, that refers to the local municipality, including the municipally owned utility.
39 When referring to the “Sitka Sustainability Commission”, that refers to the group of local community members
40 appointed to a city board to advise CBS on matters of sustainability.

41 GHG inventories are classified by three scopes. Scope 1 emissions are emissions that occur within an
42 organization’s boundaries and within the power of the organization. Scope 2 emissions are indirect emissions that
43 occur outside the organization’s boundaries but consumed by the organization (most commonly through the
44 purchase of electricity). Scope 3 are emissions that are indirect emissions (not included in scope 2) that occur in the
45 value chain of the organization, including both upstream and downstream emissions. The city commission defined
46 the purview of this inventory to be all scope 1 emissions (e.g. electricity generation, stationary fuel combustion,
47 transportation, wastewater) as well as selected scope 3 emissions (e.g. air travel, waste, shipping) that could be
48 calculated and helpful for the municipality. Scope 2 emissions are not relevant to Sitka since their electricity is
49 generated locally. An additional cruise ship analysis was completed and is detailed in the Additional Analyses
50 Methodologies section.

51 Per direction from the Sitka Sustainability Commission, this inventory does not include carbon sequestration (the
52 trees removing CO2 from the atmosphere) or nonanthropogenic emission from decomposition or natural processes.
53 This inventory also does not include fugitive emissions from refrigerants. Since cooling is not needed frequently in
54 Sitka, refrigerant emissions are estimated to be insignificant.

55 The source of combustion fuel data (fuel oil, kerosene, gasoline) comes from USACE’s 2022 5 Year Cargo
56 Report¹. This report provides the amount of gasoline, diesel, and kerosene shipped to Sitka. This is the amount of
57 fuel burned within Sitka, and therefore, the emissions associated with combustion from heating, driving, boating,
58 and backup electricity generation. The following sections break down this total fuel consumption (and therefore,

¹ 5 Year Cargo Report, 2022: <https://ndc.ops.usace.army.mil/wcsc/webpub/#/report-landing/year/2021/region/4/location/4808>

Dream, UnCruise, NG

* Small cruise ships turn (+ refuel) in Sitka

DRAFT

try 40-50%

Wow! thank you

91 average of the RECS's Alaska and Washington state average space heating and DHW load. We did this to avoid
92 overestimating Sitka's residential heating since Sitka often shares similarities with northern Washington's climate.
93 Using utility bills, we determined which residential building's heating systems were electric. We processed all the
94 electric utility bills by residential and commercial buildings. If the average electricity consumption over the
95 summer months (June, July, August) were 30% greater than the winter months (November, December, January),
96 we conservatively determined the building was heated by electricity. If not, we assumed it's heated by fuel oil and
97 a small percentage by wood. This resulted in 82% of residential buildings used electric heating, 16% used fuel oil,
98 and 2% used wood for heating. This results in 3,971 MTCO_{2e} from residential space heating and domestic hot
99 water per year.

this is high

Make mention of ferrying exclusion.

100 2.2.2 Commercial Buildings

101 For commercial buildings, we used the Sitka's 2024 Commercial and Industrial Square Footage data, showing 2.3
102 MSF for Sitka's commercial and industrial buildings. We assume that 25% of these building's square footage is not
103 space conditioned (heated or cooled), from either unoccupancy (especially seasonal), warehouses, or storage. The
104 EIA estimates that commercial buildings use on average 25 kBtu/SF for space heating⁷. The Commercial Building
105 Energy Survey (CBECS) places Sitka, Alaska in the "cold / very cold" region and can be used to estimate Sitka's
106 commercial buildings fuel source⁸. Using Sitka's building utility bills, we determined which commercial building's
107 heating systems were electric. This resulted in 25% of commercial buildings used electric heating, while 75% are
108 dependent on fuel oil. We combine commercial and industrial buildings in this analysis since Sitka doesn't have a
109 large industrial footprint. We assume domestic hot water heating is included in this assumption since it is
110 predominately electric water heating. This results in total commercial building emissions of 2,361 MTCO_{2e} per
111 year.

112 2.3 Ground Transportation

113 Since Sitka is an island, on-road transportation emissions include the fuel combustion emissions that occur from
114 vehicles within the CBS boundary. According to the Alaska Department of Motor Vehicles, Sitka currently has
115 14,689 registered vehicles in 2024. However, we assume that not all vehicles are in driven regularly and that some
116 are electric. Electric vehicles produce zero emissions in Sitka because the electricity is supplied by hydropower.
117 We assume that 8,000 vehicles are driven regularly at an average of 12 miles/day with an average fuel efficiency of
118 20 miles per gallon of gasoline. This results in total gas vehicle emissions of 14,750 MTCO_{2e} in 2024. We also
119 assume that there are 1,000 trucks or vans or recreational vehicles that rely on diesel, resulting in 1,793 MTCO_{2e}.
120 This results in a total vehicle emissions of 16,532 MTCO_{2e}.

is 9,000 vehicles?!

driving an average of _____ miles/day

121 Sitka has 100 small passenger vans or buses with cruise ship load/unloading permits associated with tourism.
122 Assuming the cruise ships are at full capacity (see Cruise Ship section, based on 2024 cruise ship schedule),
123 607,000 tourists spend a day in Sitka per year. Assuming each cruise ship tourist is transported via van or bus for
124 an average of 15 miles per day, this results in 460 MTCO_{2e} per year.

5 months a year

ha! I'll let the others comment on this

⁷ U.S. Energy Information Administration (EIA), Heating U.S. commercial buildings is most energy intensive in cold climates, September 2023:
<https://www.eia.gov/todayinenergy/detail.php?id=60301#:~:text=U.S.%20commercial%20buildings%20in%20cold,heating%20in%20each%20climate%20zone>.

⁸ U.S. EIA, Commercial Buildings Energy Survey (CBECS):
<https://www.eia.gov/consumption/commercial/data/2012/bc/cfm/b29.php>

we're not cooking on 3 stone fires nor with natural gas

59 emissions) into finer resolution categories. Breaking down this data into finer categories helps determine which
60 policy levers can be pulled to best impact Sitka's emissions. Understanding the difference between heating,
61 boating, driving, and cooking emissions can reveal which policy mechanisms has the highest impact on reducing
62 emissions. Policy mechanisms can include incentivizing building energy efficiency measures and electrifying
63 vehicles, building, or boats. Key assumptions and values used for calculating the categories below are summarized
64 in the Appendix, along with classifications of which values should be updated.

65 Emissions are calculated by multiplying activity data (such as gallons of fuel consumed) by an emission factor
66 (emissions per activity unit). Emission factors are taken from the EPA's GHG Factor Hub and converted to metric
67 tons of CO2 equivalent (MTCO2e)². This incorporates emissions from CO2, CH4, and N2O, using the global
68 warming potential (GWP) of 100, as defined by the IPCC report³.

69 2.1 Electricity Generation

70 Sitka's electricity is generated from hydropower, so there are no emissions associated with its primary electricity
71 generation. It should be noted that Department of Energy recognizes that there's some uncertainty to the emissions
72 associated with hydropower from decomposition of organic materials in the reservoir, so this assumption may need
73 to be updated in a future iteration as new science becomes available.⁴ Sitka occasionally uses diesel for backup
74 power. In 2023, 9,975 gallons of diesel fuel were used as backup power, resulting in 102 MTCO2e. We assume
75 that 2023 can be used as a representative year and given the small percentage of emissions related to this year,
76 variations from year-to-year are insignificant. Any longer failures or outages of the dams resulting in diesel being
77 burned for electricity, such as that experienced in late 2016, would lead to increased emissions from this source.

78 2.2 Buildings

79 Buildings have emissions associated with their electricity and fuel consumption. *in Sitka only* Since Sitka's electricity
80 ~~generation is supplied from hydropower which has no emissions associated with its generation, their building~~
81 emissions are solely from the combustion onsite that occurs for space heating, domestic hot water (DHW), and
82 cooking. Electric heat pumps are increasingly common in Sitka, helping to reduce heating emissions. Since we do
83 not have energy data for every building's space heating, DHW, and cooking needs, we estimate their associated
84 emissions based on square footage, electric utility bills, state level energy intensity estimates, and fuel source
85 across buildings.

86 2.2.1 Residential Buildings

87 The 2017 Sitka Borough Housing Assessment⁵ states that Sitka has 3,513 occupied houses with the average square
88 footage of 1,689 SF/house, resulting in Sitka's total residential square footage of 5.9 million SF. The Energy
89 Information Administration's (EIA's) Residential Energy Consumption Survey (RECS) Dashboard⁶ estimates the
90 average space heating and DHW consumption by state. We use the value of 74 mmBtu per household, which is an

² EPA Emission Factors: <https://www.epa.gov/system/files/documents/2024-02/ghg-emission-factors-hub-2024.pdf>

³ GHG Protocol, Global Warming Potential values: https://ghgprotocol.org/sites/default/files/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_0.pdf

⁴ Department of Energy, Tracking the Carbon Footprint of Hydropower: <https://www.energy.gov/eere/water/tracking-carbon-footprint-hydropower>

⁵ Sitka Borough 2017 Alaska Housing Assessment: https://www.ahfc.us/application/files/1215/1510/4582/Final_Sitka_Borough_Summary.pdf

⁶ Residential Energy Consumption Survey (RECS) Dashboard, 2020. [https://experience.arcgis.com/experience/cbf6875974554a74823232f84f563253?src=%E2%80%B9%20Consumption%20%20%20%20%20Residential%20Energy%20Consumption%20Survey%20\(RECS\)-b1](https://experience.arcgis.com/experience/cbf6875974554a74823232f84f563253?src=%E2%80%B9%20Consumption%20%20%20%20%20Residential%20Energy%20Consumption%20Survey%20(RECS)-b1)

2.4 Air Travel

Since Sitka is an island, air travel is a prominent mode of transportation. This inventory includes emissions from fuel combustion for aviation occurring with the city boundary and from portions of transboundary journeys outside the city boundary. Sitka has multiple types of flights: commercial, personal, general aviation (e.g. medical, coastguard, etc.), and cargo. FAA data shows there were 1,812 commercial flights, 9,860 seaplane flights, 1,325 military flights, and 10,342 general aviation flights, resulting in a total of 23,339 flights in 2023.

According to the 5 Year Cargo Report, Sitka imports 658,000 gallons of kerosene, which in its highly refined form is a form of jet-fuel. This jet-fuel is used for smaller air travel such as seaplanes, small personal planes, and helicopters used for coastguard or medical evacuation. Emissions from burning this jet fuel are 6,700 MTCO_{2e}.

what? Sitka's Rocky Gutierrez airport does not refuel planes onsite, but the airlines do. Therefore, these commercial and cargo air travel emissions are not captured as fuel shipped to Sitka in the 5-year Cargo report. This also means that we do not have airport data on the annual jet fuel used at the airport. According to the Bureau of Transportation Statistics T-100 Segment Data for 2023,⁹ Sitka's Rocky Gutierrez airport had 40,586 passenger-miles (number of passengers and the distance they've flown in thousands) in 2023. From this, we can calculate the air travel emissions using the passenger-miles based method. We assume most of these flights are classified as "medium haul" (such as to Seattle - ~850 miles), and therefore we use EPA's "Air Travel - Medium Haul" Emission Factor for passenger-miles. This results in a total of 5,300 MTCO_{2e} from commercial travel. Currently, cargo plane data is not reflected in this calculation. Sitka's total air travel emissions are estimated to be 11,980 MTCO_{2e} per year.

Call Aero Service 747-7222

2.5 Marine Activity

Marine activity includes commercial fishing, recreational fishing and boating, and charter boats. Shipping is discussed in more detail in the Shipping section under Additional Analyses.

fishing and boating

We investigated fuel use in commercial fishing using the State of Alaska CFEC Public Search Application and the calculated averages of tracked fuel usage from Sitka fishermen ^{is fishing fleet} and fuel usage estimates from the Kempy Energetics analysis tool^{10,11}. Using active fishing permits and the fuel usage estimates, we determined that the commercial fishing fuel consumption is 1,805,600 gallons of diesel per year. The estimated emissions from Sitka's commercial fishing is 18,500 MTCO_{2e} per year. _{explain more}

Recreational boats include all boats that are not for commercial fishing or charter boats. We assume there to be about 1,000 active recreational boats based on boating registrations, taking an average of 20 miles trips, 4 times per month, 6 months per year, with an average fuel efficiency of 5 miles per gallon (which is approximately the fuel efficiently of a 20-ft recreational aluminum Hewscraft). This results in an estimated emissions of 1,660 MTCO_{2e} per year. _{we're unfortunately not getting on the water that much. (maybe during COVID)}

match to chart in the appendix
Paragraph after charter paragraph

Charter boats are popular in Sitka, especially during tourist season. The charter boat logbook, provided by Sitka Area Management, documents 7,920 charter boat trips taken in 2023 from 142 active vessels. ^{fishing} These are the number of trips that ended in Sitka, and do not include private fishing trips, which are included in "recreational boating" in the previous paragraph. Charter boats are assumed to primarily run on diesel based on input from the Sitkan charter boating industry. _{6 people} Since no further information is documented regarding charter boats (such as size of boat and how

Citation

⁹ Bureau of Transportation Statistics: https://www.transtats.bts.gov/Data_Elements.aspx?Qn6n=H

¹⁰ CFEC, <https://www.cfec.state.ak.us/plook/#permits>

¹¹ <https://kempyenergetics.com/white-paper/white-paper-example-1/>

¹² guessing this is AD Dept fish and game?

161 long the trip), we assumed that each trip goes 25 miles, with an average conservative fuel efficiency of 5 miles per
162 gallon, consuming a total of 39,600 gallons of diesel. This results in 407 MTCO_{2e} per year from charter boats.

Boats & boats

they go fast

163 **2.6 Solid Waste Disposal and Wastewater Treatment**

this sounds like a result & not a method

164 Solid waste disposal and wastewater account for 8% of Sitka's GHG emissions. Municipal solid waste from Sitka
165 is shipped to Washington. According to Republic Services 2023 Summary, Sitka shipped 7,618 tons of waste to
166 Seattle in 2023. Using EPA's average mixed MSW emission factor, this produces 4,418 MTCO_{2e}. Since this waste
167 is generated within the city boundary but disposed in landfills outside the city, these are considered Scope 3
168 emissions. The city commission determined it is important to include since it reflects Sitka's operations.

Washington State

define

city boundary & jurisdiction sustainability

169 Sitka also ships 240 tons of recycling, which does not include glass or metals, which produces 22 MTCO_{2e}. Glass
170 and metals recycling occurs onsite, but results in a minuscule amount of emissions. While recycling produces a
171 minimal amount of emissions, we include it in "Solid Waste Disposal".

172 Wastewater treatment emissions can be calculated based on the total population served and type of treatment, using
173 the federal GHG wastewater reporting methodology¹². Based on a population of 8,380 people, and a wastewater
174 treatment plant without nitrification or denitrification process, wastewater treatment results in a total of 8
175 MTCO_{2e}.

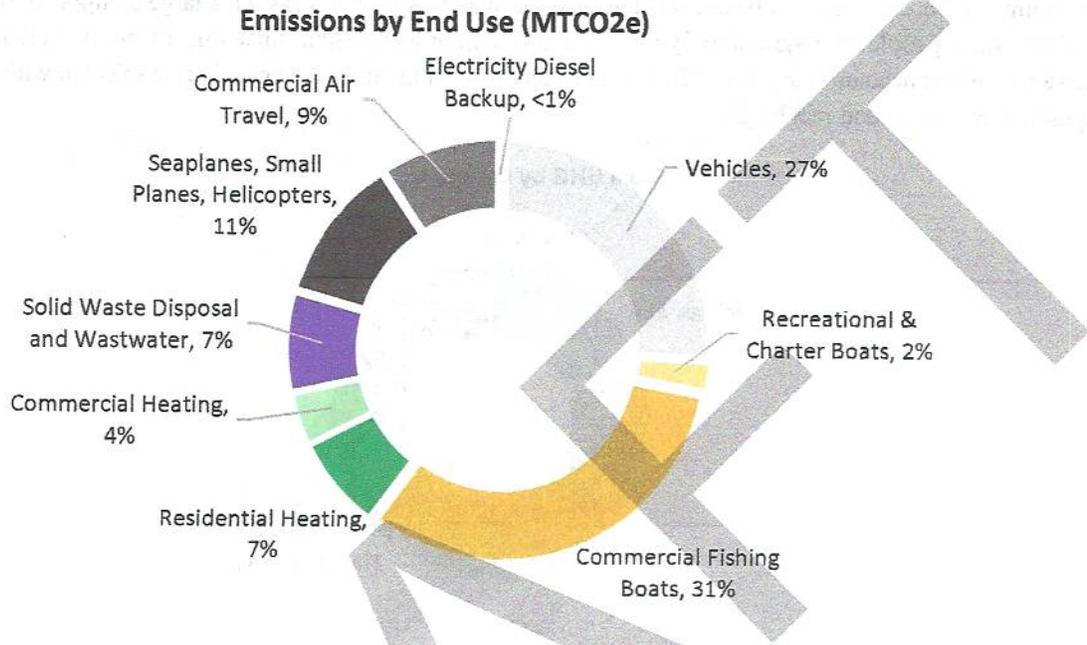
176 **3 Results**

177 Based on our analysis, Sitka produced approximately 60,459 MTCO_{2e} in 2023. The sectors analyzed include
178 vehicles, recreational and charter boats, commercial fishing, residential and commercial heating, waste and
179 wastewater, and air travel. These calculations were validated against the Cargo Report which provide the total
180 amount of fuel shipped to Sitka in a given year. Figure 1 and Table 1 show Sitka's GHG emissions by end use,
181 revealing that the largest end uses of emissions are commercial fishing (31%), ground-based vehicles (27%), and
182 small aircraft (seaplanes, small planes, helicopters) (11%).

Charter fishing

include on line 36

¹² Federal Greenhouse Gas Accounting and Reporting Guidance, Council on Environmental Quality, 2016: https://www.sustainability.gov/pdfs/federal_ghg%20accounting_reporting-guidance.pdf



184
185 Figure 1. Sitka's GHG Emissions by End Use (MTCO2e)

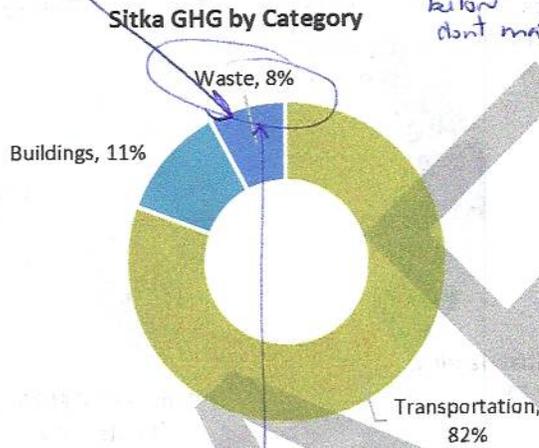
186 **Table 1. Emissions by End Use**

End Use	Emissions (MTCO2e)	% Total Sitka Emissions
Commercial Heating	2,361	4%
Residential Heating	3,971	7%
Commercial Fishing Boats	18,507	32%
Recreational & Charter Boats	2,548	4%
Vehicles	16,543	27%
Seaplanes, Small Planes, Helicopters	6,699	11%
Commercial Air Travel	5,280	9%
Solid Waste Disposal & Wastewater Treatment	4,448	7%
Electricity Diesel Backup	102	<1%
Total Emissions	60,459	

↑↑
↑
organize by emissions
↓

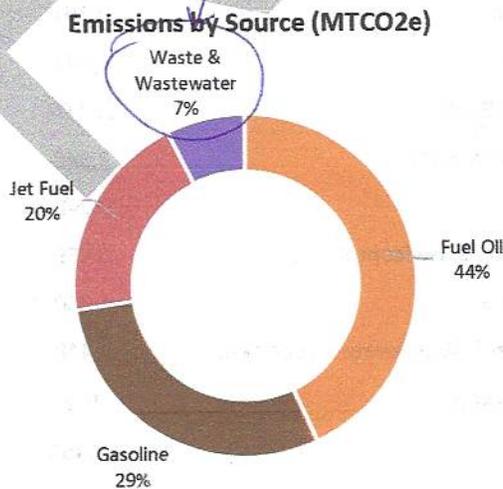
187
188 Transportation is the largest emissions sector, accounting for 81% of Sitka's emissions, as shown in Figure 2. This
189 consists of ground-based, marine, and air travel, including seaplanes, commercial planes, small planes, recreational

190 and commercial boats, cars, and buses. It is unsurprising that transportation is such a large component of Sitka's
191 emissions since people are required to fly or boat to arrive in or leave Sitka, since this inventory includes scope 3
192 emissions. Waste accounts for 7% of Sitka's emissions, which includes the emissions associated with solid waste
193 disposal, wastewater, and recycling.



194
195 Figure 2. Sitka's GHG Emissions by Category (MTCO₂e)

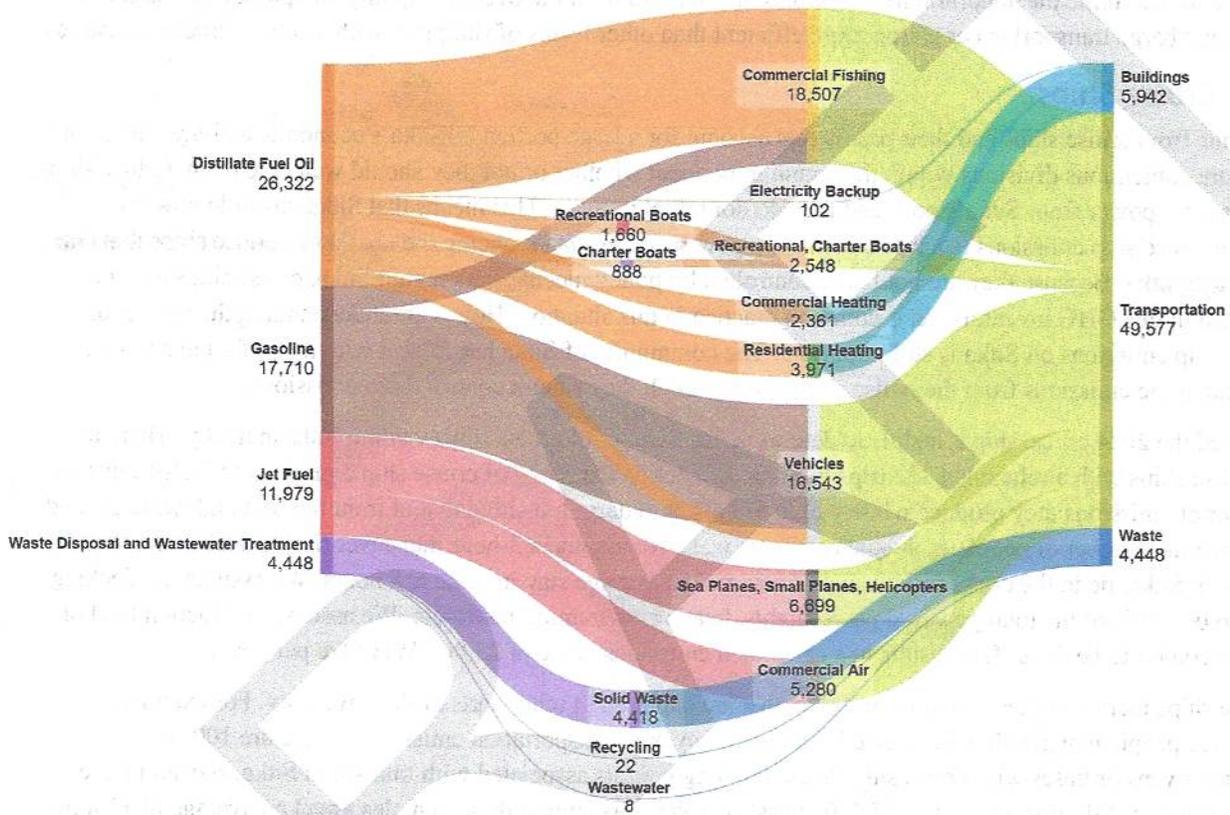
196 Figure 3 displays Sitka's emissions by source. Distillate fuel oil (also known as diesel) is the largest portion at
197 44%, and figure 4 separates these emissions by end use. The largest portion of distillate fuel oil comes from
198 commercial fishing, followed by residential and commercial buildings. Gasoline is the second highest source of
199 emissions at 29%. This reveals that promoting electrification is an impactful policy driver to reducing Sitka's
200 emissions from vehicles, buildings, and boats. Air travel (from jet fuel, or a highly refined version of kerosene)
201 account for 20%.



202
203

204 Figure 3. Sitka's GHG Emissions by Source (MTCO₂e)

205 Figure 4 helps visualize the correlation of emissions source and end use, showing the interconnection of emission
 206 source to end use to general category.



207
 208
 209 Figure 4. Sankey Diagram of Sitka's GHG Emissions by source, end use, and category (MTCO₂e)

211 **4 Additional Analyses**

212 The following sections can either be included or omitted from Sitka's GHG inventory, depending on what policy
 213 levers Sitka would like to consider. GHG Inventories typically include measures that are within the jurisdiction's
 214 control and occurring within the jurisdiction's boundaries.

215 **4.1 Shipping**

216 Sitka is very dependent on marine shipping, which are considered scope 3 emissions and not always included in
 217 GHG inventories. Defining boundaries is important for estimating shipping emissions. According to the 2022
 218 Cargo Report, Sitka ships and receives 235,316 tons of material via barges. A barge can carry one ton about 650

219 miles with one gallon of fuel, according to one study¹³. Assuming that a barge travels to and from Seattle,
220 including stops in Ketchikan and Petersburg, the distance traveled is approximately 1,000 miles. Actual shipping
221 distances may be greater. This results in approximately 362,000 gallons of diesel fuel consumed by the barges, or
222 3,700 MTCO_{2e}. To improve estimates of shipping emissions, data from official records, manifests, or surveys can
223 be used to determine the apportionment of emissions to Sitka from the overall shipping companies. It should be
224 noted that barge transport is per gallon more efficient than other forms of shipping, such as trains, trucks, or barges.

225 4.2 Large Cruise Ships

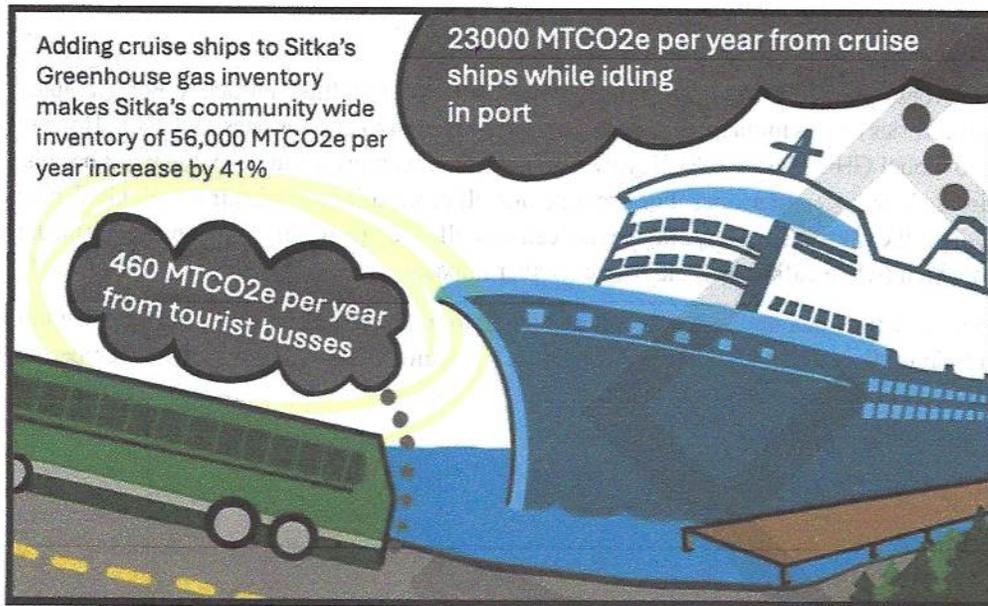
226 Revenue from cruise ships and their passengers account for a large portion of Sitka's economic activity, although
227 there are contentious divisions within the community about whether or not they should welcome them. Cruise ships
228 do not draw power from Sitka's port, and they do not refuel in Sitka. This means that Sitka has little power to
229 control cruise ship emissions (such as electrifying power), other than reducing the number of cruise ships that enter
230 and leave Sitka. Because they are not being controlled by policy mechanisms within Sitka, cruise ships are not
231 included in this GHG inventory, as is common practice in this situation. However, understanding the impact of
232 cruise ship emissions on Sitka is still important. The community of Sitka has to deal with the pollution and local
233 impacts of the emissions from the cruise ships, even though they cannot control those emissions.

234 We used the 2024 cruise ship schedule to determine the number of cruise ships visiting Sitka annually. There are
235 38 cruise ships with a scheduled 332 trips to Sitka. We define the scope of cruise ship emissions to include just the
236 number of emissions they produce while within Sitka's boundary: transiting to and from the port and while docked.
237 We have the number of people each ship carries as well. We assume a 3-hour maneuver time, which is the time to
238 approach Sitka, tie to the dock, and leave. We assume the average stay in Sitka is 8 hours. We assume the docking
239 load to be ~50% of the total power to power lights, heating, swimming pools, etc. We assume the fraction load of
240 the generation to be 60%. This results in a calculated emissions value of 23,000 MTCO_{2e} per year.

241 Cruise ships increase other emissions in Sitka, that are captured in other parts of this inventory. For example,
242 increased people may result in increased building energy and transportation emissions. There are 100 small
243 passenger vans or buses with cruise ship load/unloading permits associated with tourism in Sitka. Assuming the
244 cruise ships are full, this results in 607,000 tourists per year. Assuming these vehicles travel an average of 15 miles
245 per day, this results in an associated emissions of 460 MTCO_{2e} per year. (Note: these emissions from tourist buses
246 are already captured in the vehicle data from the inventory. This analysis is just to separate out the emissions
247 impact from cruises.)

248 If cruise ships are included in the inventory, cruise ships while within Sitka's waters produce 80,600 MTCO_{2e}.
249 Figure 5 shows an infographic communicating the impact of cruise ships on Sitka's GHG emission inventory.

¹³ Texas A&M Transportation Institute, *A modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001-2014*. 2017. <https://nationalwaterwaysfoundation.org/file/31/final%20tti%20report%202001-2014%20approved.pdf>

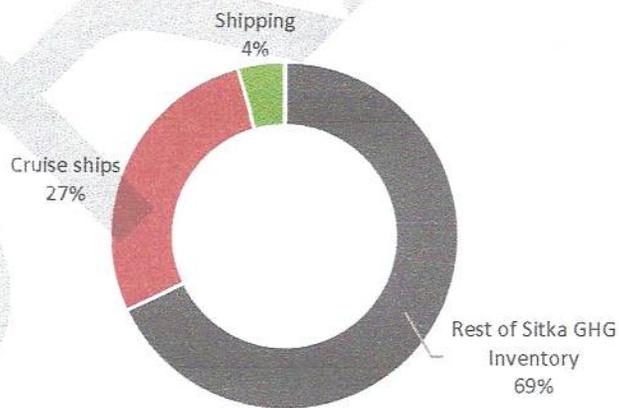


250
251 Figure 5. Infographic displaying cruise ship impacts on Sitka.

252 4.3 Additional Analyses Results

253 Including estimated shipping and cruise ship emissions in the inventory results in 84,000 MTCO₂e. Adding these
254 increase the inventory's GHG emissions by 31%, as shown in Figure 6. This emphasizes the impact cruise ships
255 have on the community's emissions, even when just transiting and idling within their boundary.

Cruise Ships & Shipping Impacts Compared to Rest of Inventory



256
257 Figure 6. Impact of cruise ships and shipping impacts
258

259 **5 Next Steps**

260 Now that the GHG inventory baseline has been created, it can be used for multiple purposes. For example,
261 comparing GHG inventories across municipalities can be useful to begin to answer questions like “How much is
262 Sitka contributing to global GHG emissions?” However, comparing inventories can be challenging because
263 different inventories include different scopes. For example, not all inventories include air travel. GHG inventories
264 can be used to highlight the impact various policy levers can be pulled, emphasizing which mechanisms have
265 highest impact and which (while still useful) may have smaller impacts.

266 A baseline inventory is useful when updated at a regular interval to track progress towards decarbonization targets.
267 We will conduct a training for CBS to update the inventory in the future, either for new years to compare to this
268 baseline, or update values as better data comes available.

269

270 **6 Appendix**

271 **Table 2: Main assumptions**

Add Building Heating Residential
make transportation a headline

Calculation	Building Heating- Commercial		Ground Transportation- Personal				Ground Transportation- Vans and Buses		
Input assumption	Commercial buildings average 25 kBtu/SF for space heating	75% of commercial buildings use fuel oil	14,689 registered vehicles <i>Hot Day!</i> <i>what about the 1000 diesel trucks?</i>	8,000 vehicles driven regularly	Vehicles average 12 miles/day	Average fuel efficiency of 20 miles per gallon	100 vans or buses permitted for tourists	607,000 tourists per year	Each tourist is transported 15 miles <i>increase!</i>
Calculation	Air Travel								
Input assumption	1,812 commercial flights	9,860 sea plane flights	1,325 military flights	10,342 general aviation flights	658,000 gallons kerosene	40,586 passenger-miles at airport	Most commercial flights are "medium-haul"	EPA's "Air Travel - Medium Haul" Emission Factor	Cargo plane data is not reflected in this calculation <i>AK Air was the main contract</i> <i>Call Air Cargo</i>
Calculation	Marine Activity- Commercial		Marine Activity- Recreational		Marine Activity- Charter				
Input assumption	Commercial fishing fuel consumption is 1,805,600 gallons per year, using Kempy Energetics analysis tool <i>Direct</i>	1,000 active recreational boats	Recreational boats average of 20 miles trips, 3 times per month, 6 months per year	Average fuel efficiency of 5 miles per gallon	7,920 charter boat trips taken in 2023 from 142 active vessels	Charter boats are assumed to primarily run on diesel	Each trip goes an average of 25 miles	Average fuel efficiency of 5 miles per gallon <i>less efficient</i>	
Calculation	Waste		Wastewater						
Input assumption	Sitka shipped 7,618 tons of waste to Seattle in 2023	240 tons of recycling	Population of 8,380 people	Wastewater treatment plant without nitrification or denitrification process	Federal GHG wastewater reporting methodology				

272
273

Color Key:

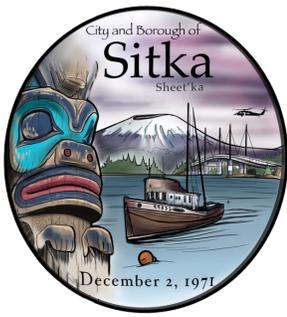
Confident in values and unlikely to need to adjust in the future except in response to major projects or new scientific understanding

Confident in estimate, but numbers will need to be updated in future iterations of the inventory.

Additional, better, or more local data could improve estimate, but the overall impact would likely be small.

Estimate is still technically justified with general understanding.

More or better data could improve estimate and the overall impact could be meaningful



CITY AND BOROUGH OF SITKA

A COAST GUARD CITY

MEMORANDUM

To: Sustainability Commission Members
From: Bri Gabel, Sustainability Coordinator 
Date: January 3, 2025
Subject: Review and Amend Bylaws

Background

In the initial meeting of the Sustainability Commission, the Commission adopted bylaws comprised of sections of the Sitka General Code, the establishing ordinance of the Commission, and other parliamentary procedure resources. The purpose of this document was to act as an accessible way to answer questions pertaining to Commission duties, functions, and procedures.

Article VII; Section C, states: The Commission shall annually review the bylaws at the first regular meeting in January.

Currently the Sustainability Commission has one open seat since March and two open seats since June 2024. In the August 2024 regular meeting, Commissioner recruitment was discussed. The two Commissioners were reappointed in October. Since then, no applications have been received for the remaining vacant seats.

The Commission does not need to amend the bylaws unless they would like to. If a commissioner would like to propose changes, this item allows for that to take place via a motion.

Recommendation

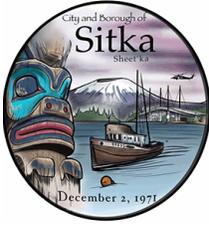
Amend the bylaws as needed, based on discussion of the Commission.

Consider evaluating the Commissioner recruitment and how that might affect the 2025-2026 annual work plan and requirements within the bylaws. If any direction is given on commissioner recruitment, it will come to the Commission as an agenda item in February.

Encl

Sustainability Commission Bylaws

Sustainability Commissioner Recruitment Memo (August 2, 2024)



CITY AND BOROUGH OF SITKA

Bylaws of the Sustainability Commission

Adopted November 14, 2022
Amended April 1, 2024

I. PURPOSE, DUTIES, AND RESPONSIBILITIES

A INTRODUCTION

The Sustainability Commission of the City and Borough of Sitka (respectively “Commission” and “City”) is an advisory body established by Ordinance 2022-16S. This document summarizes the scope of the responsibilities of the Commission and specifies the way those responsibilities shall be performed, including its structure, processes, and reporting requirements, as mandated in its establishing ordinance and within Sitka’s General Code (SGC).

B PURPOSE

It is the intent of the Sustainability Commission to work towards catalyzing a healthy community now and in the future by proposing solutions to environmental, social, and economic concerns of the City and Borough of Sitka, its partners, and community members (Ord. 2022-16S § 3, 2022.).

C DUTIES AND RESPONSIBILITIES

The Commission will act as an advisory body to the Assembly with the purpose of catalyzing and developing municipal and community-focused approaches that support the social, environmental, and economic sustainability of the City. The Commission will accomplish this by working towards the following actions described below (SGC 2.31.060).

- i. Fossil energy use reduction and development of local, renewable energy sources.
- ii. Responsible use of natural resources.
- iii. Diminution of Sitka’s supply-chain fragility.
- iv. Food security enhancement.
- v. Sustainable transportation options that leverage Sitka’s locally generated, renewable energy sources.
- vi. Solid waste consumption, reduction, composting, recycling, and re-use.
- vii. Robust and healthy local ecosystems and natural communities.
- viii. Other matters as the Assembly or Commission may deem beneficial for the City.

II. ORGANIZATION

A MEMBERS

The Commission is composed of seven (7) members appointed by the Assembly and, to the extent deemed advisable by the Assembly and possible from the applicants, include at least one (1) individual with background or training as a sustainability professional and at least one (1) individual of Alaska Native heritage with understanding and appreciation of the historical importance of sustainability on Tlingit Aaní. All voting members of the commission shall be at-large members and representative of a diverse cross-section of the community (SGC 2.31.010).

The Sustainability Coordinator within the Planning and Community Development Department or designee shall be an ex-officio member without a vote (SGC 2.31.010). The Sustainability Coordinator will also serve as the point of contact between Commissioners and City staff through which requests for information can be made.

B TERM

The term of a voting member shall be three (3) years or until a successor is appointed. Terms will have staggered expiration dates (SGC 2.31.020).

C OFFICERS

The Commission will designate a Chair, a Vice Chair and a Secretary, each of whom shall be elected by the voting members of the Commission and shall serve a term to expire upon election of officers at the first meeting of the following year. The Secretary shall provide minutes of all meetings to the Municipal Clerk (SGC 2.14.040).

In addition to the above officers, the Commission, by a majority vote of its voting members, may designate and elect or appoint such other officers, assistant officers, and agents as it deems necessary at such time, in such manner, and upon and for such terms as it shall prescribe. All officers and agents shall serve at the pleasure of the Commission, whenever in its judgment the best interest of the commission will be served (SGC 2.31.050).

D RESIGNATION

Should a member resign from their position prior to expiration of their term, the vacancy on the Commission shall be filled by appointment by the Assembly for any remainder of an unexpired term (SGC 2.31.020).

Should an officer resign from their position prior to expiration of their term, or otherwise is unable or unwilling to perform duties as required of the office, the Commission may elect an officer to serve out the remainder of that term (SGC 2.31.050).

III. CONDUCT AND PARTICIPATION**A PARLIAMENTARY AUTHORITY**

The conduct of the meetings shall be generally guided by the rules contained in the modern (11th) edition of *Robert's Rules of Order*.

B TELECONFERENCE PARTICIPATION

While physical presence of the members and the public is the preferred method of participation at the meetings, teleconference participation is allowed (SGC 2.25.050). Any member may participate in any meeting by teleconference. Teleconference participation is solely at the discretion of the member who requests this method of participation if the member is out of town or incapacitated.

The member shall notify the Sustainability Coordinator to arrange for teleconference participation at least twenty-four (24) hours before any regular meeting, and at least twelve (12) hours before any special meeting. If the member is a presiding officer, they shall not preside over the meeting when participating by teleconference.

Teleconference participation at any meeting is limited to four (4) times a year by each member (SGC 2.25.050 (f)).

C VOTING

Abstention from voting is not allowed (Sitka Charter 2.10, Alaska Statutes 29.29.169(d)) except in cases where a commissioner may have a conflict of interest as defined in the City Charter 1.04.080.

Four (4) affirmative votes shall be necessary to carry any questions (SGC 2.25.020). Vacant memberships shall be counted in determining whether or not this majority requirement is met. (Ord. 74-114 § 3(c), 1974.)

All voting will be done by voice vote unless done by roll call when requested by the Chair. The roll call will be done alphabetically. Roll call votes of every member will be recorded.

All voting at meetings with teleconferencing participants shall be by roll call vote (SGC 2.25.050 (e)).

D ABSENCES

The minutes shall show those in attendance at each meeting, and whether an absent member is excused or not. The members shall notify the Sustainability Coordinator of their absence at least twenty-four (24) hours before any regular meeting, and at least twelve (12) hours before any special meeting.

Three (3) unexcused absences, as determined by the appointed board or commission, in one (1) year by a member shall automatically be cause for forfeiture of membership (SGC 2.25.040).

IV. MEETINGS**A REGULAR MEETINGS**

Meetings will be held once per month at such time as the chair or, in their absence, the vice chair shall determine (SGC 2.31.030). Meetings will normally take place at 6:00 PM on the first Tuesday of each month at Harrigan Centennial Hall. The Commission will give reasonable public notice by advertising its meetings at least one (1) business day in advance and comply in all respects with the Alaska Open Meetings Act.

B QUORUM

A quorum of four (4) members is required to hold a meeting. Vacancies in memberships shall be counted in determining whether or not there is a quorum (SGC 2.25.010).

C SPECIAL MEETINGS

Special meetings may be called with seven (7) days advance notice. Special meetings may be called by the Chair or by request to the Chair. Reasonable public notice will be given by advertising its meetings at least one (1) business day in advance.

D INFORMAL WORKING GROUPS

The Commission may form informal working groups to address key areas that may evolve if needed. To remain in compliance with the Alaska Open Meetings Act, the number of members in an informal working group is limited to three (3) Commissioners. The purpose is to develop operational and engagement plans as well as implementation strategies for review of the entire Commission. Example areas may include but are not limited to electric vehicles and city infrastructure, sustainable tourism, greenhouse gas emissions inventories, and solid waste management.

E ORDER OF BUSINESS

The order of business shall normally be:

- i. Call to Order and Roll Call
- ii. Consideration of the Agenda
- iii. Consideration of the Minutes
- iv. Persons to be Heard (*not to exceed 3 minutes on topics off the agenda*)
- v. Special Reports
- vi. Unfinished Business
- vii. New Business
- viii. Persons to be Heard (*not to exceed 3 minutes on topics on or off the agenda*)
- ix. Reports (*Staff, Chair, Assembly, Commissioners*)
- x. Set Next Meeting Date and Agenda
- xi. Adjournment

V. SETTING THE AGENDA**A ADDING ITEMS TO THE NEXT AGENDA**

The agenda shall normally be set seven (7) days in advance of the regular meeting. To remain in compliance with the Alaska Open Meetings Act, items may not be added after the agenda has been publicly advertised or during a regular or special meeting. Items may be added to the next agenda:

- i. By Commissioner request during a meeting or by contacting and requesting to the Chair.
- ii. As requested by the Assembly, Administrator, and other Department Heads within the City.
- iii. Or the public may request items to be added through public testimony, written correspondence, or verbal request to a member of the Commission. Items requested by the public will be added to agendas at the discretion of the Chair.

B ITEMS NOT ADDED TO THE AGENDA

Item requests made outside of meetings by Commissioners that are not added to the agenda will be published in the monthly meeting packet and accompanied by a rationale for submittal statement and a response from either the Chair or Staff Liaison for Commissioner review. A motion to add denied items to a future agenda may be made under Order of Business IX: Set Next Meeting Date and Agenda.

VI. WORKING PROCEDURES**A ANNUAL WORK CYCLE**

To best utilize Commissioner's time, City resources, align the workflow of the Commission with that of the City's, and meet annual reporting as deemed by the Assembly, the Commission will operate on the Annual Work Cycle outlined below. It should be noted that the City operates on a fiscal year (FY), which begins July 1, and ends on June 30. As such, the adopted timeframes align with City's budgeting process deadlines to minimize time spent waiting for the allocation of resources from the City.

The following dates are to serve as a guide and do not require strict adherence. It is subject to the discretion of the Commission to adjust timelines as needed to meet Assembly goals while remaining in sync with City operations.

SUSTAINABLY COMMISSION ANNUAL WORK CYCLE OUTLINE (APPENDIX A)

July-March: Execute current FY goals.

September-October: Public Input for upcoming FY.

October-December: Brainstorm goals, select, and define outcomes for upcoming FY.

January-March: Prepare annual report for Assembly with updates on the current FY goals and proposing upcoming FY goals.

March-April: Present report to Assembly.

April-June: Conclude work for current FY. Begin preparing for goals of the upcoming FY.

B REPORTING TO THE ASSEMBLY

Annually, the Commission will develop, identify, and present goals to the Assembly for approval. The approved goals shall be the Commission’s primary focus for the following year. Concurrently with presenting goals to the Assembly, the Commission will submit a report to the Assembly on progress towards the previous year’s goals and other activities which were approved and directed by the Assembly (SGC 2.31.060).

C EXTERNAL RESOURCES

With the approval and direction of the Assembly, the Commission will work with designated staff to provide information and outreach to the public, in order to understand community priorities and develop community consensus on matters concerning sustainability. This effort may require the commission to invite participation and technical expertise from community partners and professionals (e.g., engineers, public administration experts, earth system scientists, business leaders, educators, community group leaders, etc.). If City and Borough funds are needed to facilitate participation and technical expertise from community partners and professionals, the commission shall obtain prior approval and the necessary appropriation from the Assembly (SGC 2.31.060).

VII. AMENDMENTS

A COMPLIANCE

The Commission recognizes that these bylaws repeat provisions in the City Charter and SGC and that those provisions take precedence and cannot be altered, amended, or repealed.

B AMENDMENTS

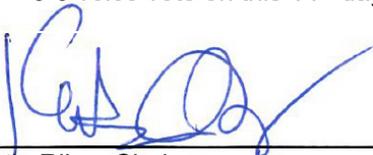
Sections of these bylaws not established by City Charter or SGC may be altered, amended, or repealed by the affirmative vote of a majority of members at any regular or special meeting. Any amendments will be consistent with the Charter and SGC.

C REVIEW OF BYLAWS

The Commission shall annually review the bylaws at the first regular meeting in January.

VIII. ADOPTION

These foregoing bylaws have been **ADOPTED AND APPROVED** by the Sustainability Commission by 6-0 voice vote on this 14th day of November 2022.



Katie Riley, Chair

ATTEST:


Carol Voisin, Secretary

IX. AMENDMENT HISTORY**I. ARTICLE IV: MEETINGS, SECTION A: REGULAR MEETINGS**

Date and time change from 2nd Monday of each month at 6:30 P.M.

Amended: January 9, 2023

II. ARTICLE V: SETTING THE AGENDA

Added clarification to Section A: Adding Items to the Next Agenda and addition of Section B: Items Not Added to the Agenda.

Amended: February 7, 2023

III. MEETINGS, SECTION A: REGULAR MEETINGS

Date and time change from 1st Tuesday of each month at 6:00 P.M.

Amended: February 4, 2024

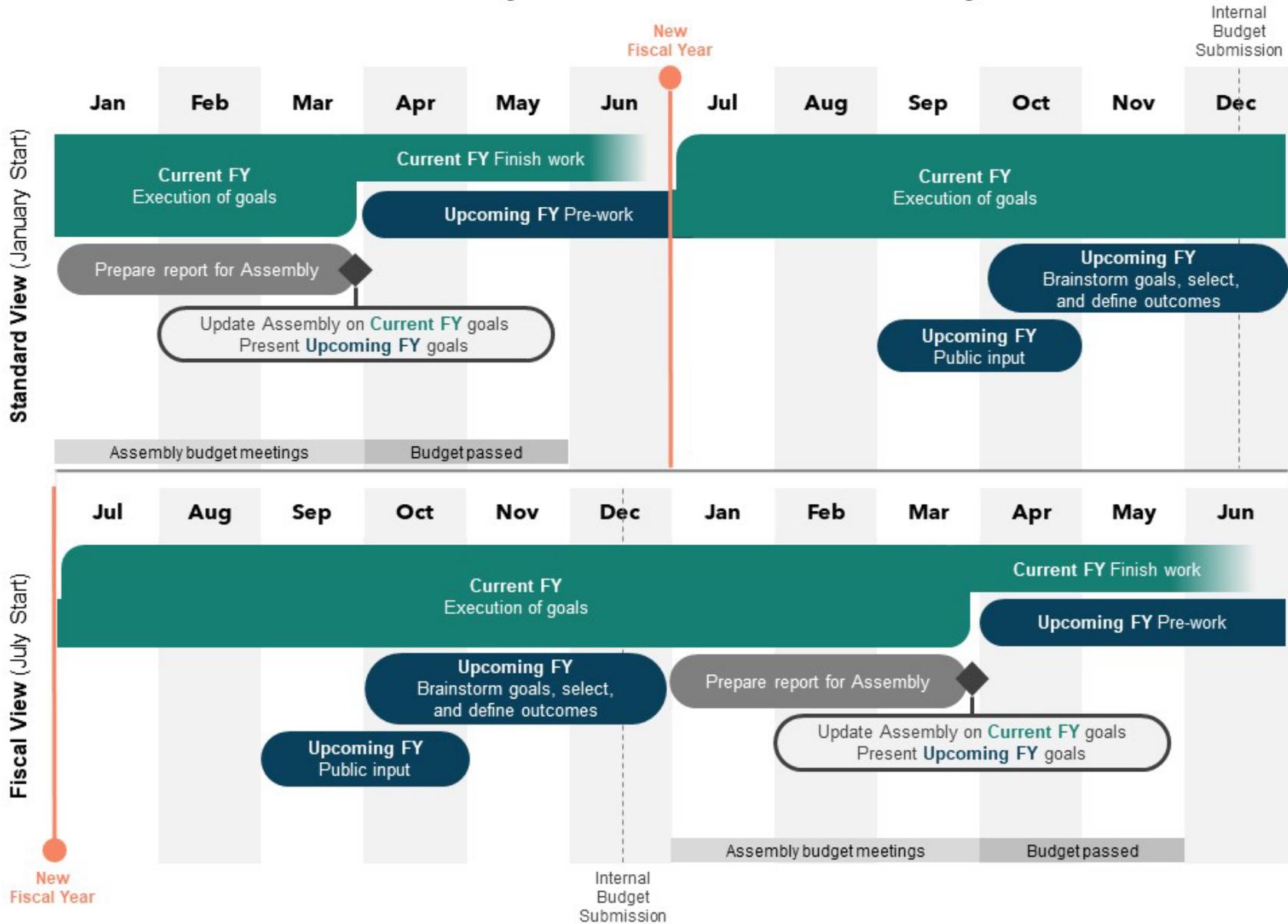
IV. ARTICLE IV: MEETINGS, SECTION B: ORDER OF BUSINESS

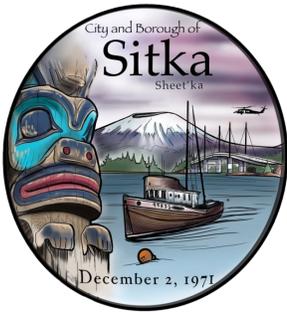
Added V. Special Reports and IX: Reports to order of business.

Amended: April 1, 2024

APPENDIX A

Sustainability Commission Annual Work Cycle





CITY AND BOROUGH OF SITKA

A COAST GUARD CITY

MEMORANDUM

To: Sustainability Commission Members
From: Bri Gabel, Sustainability Coordinator 
Date: August 2, 2024
Subject: Sustainability Commissioner Recruitment

Background

The Commission is composed of seven members appointed by the Assembly and, to the extent deemed advisable by the Assembly and possible from the applicants, include at least one individual with background or training as a sustainability professional and at least one individual of Alaska Native heritage with understanding and appreciation of the historical importance of sustainability on Tlingit Aaní. All voting members of the commission shall be at-large members and representative of a diverse cross-section of the community (SGC 2.31.010, 2022).

Recruitment and retention of volunteers is a challenge across municipal boards, commissions, and committees. In the case of the Sustainability Commission, this has proven to be an exceptional challenge as both a newer commission and one with largely self-driven projects that often require more work outside of monthly regular meetings.

Currently the Sustainability Commission has one open seat since March and two open seats since June 2024 due to Commissioner resignation. Feedback received has partially attributed resignation to lack of clarity of the role and responsibilities of a commissioner.

Three of the twenty-one regular meetings, July 2023 and 2024 and January 2024, were cancelled due to lack of a quorum. Recently, open seats have caused challenges in meeting the quorum requirement of four members to take Commission action as open seats count towards the majority requirement (Ord. 74-114 § 3(c), 1974.). Two Commissioner terms expire in October.

Analysis

Staff have identified two potential courses of action:

- 1. Prioritize Commissioner recruitment and better define the roles and responsibilities of a Commissioner to help educate prospective members and subsequently increase retention.**

This would allow for a more diverse set of voices as in Commission work but would require current Commissioners to assist City staff in recruitment efforts. Additionally, refining roles and responsibilities will require additional input from Commissioners that may slow down ongoing projects.

- 2. Recommend the Sustainability Commission reduce its size from seven members to five.**

Reducing the Commission size from seven members to five would change the quorum requirement to three members rather than four. Additionally, this would mean the current membership would constitute a full commission. Doing so would be simple but would reduce the number of community representatives in Commission decisions.

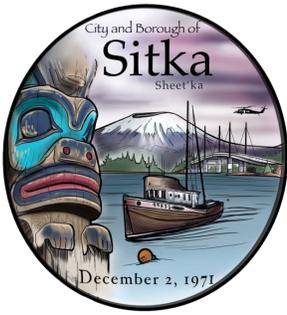
Recommendation

Advise staff on a path forward for Sustainability Commissioner recruitment. The Commission is not required to decide between the two identified courses of action and may propose a different course of action entirely.

POSSIBLE MOTION(S)

I MOVE TO prioritize recruitment efforts of Sustainability Commissioners.

I MOVE TO recommend the Sustainability Commission membership be reduced from seven to five.



CITY AND BOROUGH OF SITKA

A COAST GUARD CITY

MEMORANDUM

To: Sustainability Commission Members
Thru: Bri Gabel, Sustainability Coordinator *Bri Gabel*
From: Transition Sitka Expo Planning Committee
Date: January 3, 2025
Subject: **Discussion/Direction/Decision on Commission Attendance to the Sitka Living Locally Event**

Background¹

Transition Sitka will be holding its third annual expo on Saturday, March 29, 2025 and would like to offer the Sustainability Commission the opportunity to reach interested community members by joining us at this event. Previous events in 2023 and 2024 focused on beneficial electrification. The theme for this year is "Sitka Living Locally" and it has three focus areas - food security, energy security, and emergency preparedness. They believe that our community would benefit from knowing more about the Commission and the City's objectives regarding energy conservation, energy generation, and Sitka's renewable energy future. We are particularly interested in the Commission's current work with the Sitka Community Renewable Energy Strategy, and in any educational projects that the City Electrical Department may have regarding energy conservation and efficiency.

Transition Sitka is providing a limited number of free tables to help organizations to engage even more of the Sitka community. This year they are also hosting panel discussions and a display area for small poster type presentations.

Individuals, organizations and businesses that have attended in previous years have been able to showcase their services and programs, invite feedback on current projects, and recruit participants for programs or assessments. Participants have also gained from the opportunity to network with each other, sharing informed and helpful information, and building relationships.

The Expo planning committee has requested a response by January 10th.

Analysis

In previous years, attendance by the Sustainability Coordinator focused on supporting the Electric Department's educational efforts and simultaneously offered information on the Commission duties and some recruitment efforts. With the current number of electric projects managed by the coordinator in addition to their duties as a communicator for the CBS Electric Department, it is unrealistic for the Coordinator to continue to represent both entities at the expected levels alone. With two vacant seats and additional goals to be determined by the Commission, the presence of the Sustainability Commission at this event would be beneficial.

¹Paraphrased from the invitation email

Recommendation

Consider manning a booth, presenting a poster, or other option as outlined above. Consider a working group of no more than three Commissioners to continue planning specifics of attendance if needed who can provide an update at the February and March meeting.

A motion to attend is requested.

Encl

Sitka Living Locally Event Flyer

¹December 23, 2024 invitation email

POSSIBLE MOTION

I MOVE the Sustainability Commission reserve a table and attend the Sitka Living Locally Event.

Sitka Living Locally

A Transition Sitka Expo Event!

How can Sitka be more self-reliant and thrive in a changing world?

Join the conversation and help your community learn!

Free Event!
Information Tables
Panel Discussions
Q&A

Local Food!

Where does Sitka's food come from? How much could we grow, hunt, forage and fish if we needed to be more self-reliant? What are our local resources for gardening, harvesting, preserving and storing food?

Local Energy!

Sitka has a very strong position to power itself with renewable energy generated right here! What do we use it for? Will we need more? Can we save more? What are our options for powering our land and sea transport as fuel prices continue to rise?

Ready for Anything!

The pandemic shutdown and Sitka's recent communications breakdown showed how reliant we have become on a lot of systems that we can't see or control. What should Sitka be doing to make sure that we can feed our community, communicate with each other, and stay in touch with the world outside? What else should we be doing to be emergency ready?

March 29 2025
Harrigan Centennial Hall 10am-2pm



...a community helping itself towards a future that is stronger, thriving, and carbon free!



Bri Gabel

From: info@transitionsitka.org
Sent: Monday, December 23, 2024 9:51 PM
To: Bri Gabel
Subject: Invitation: Sitka Living Locally Expo 2025
Attachments: SLL_TS_Draft General Interest Flyer.png

Dear Ms. Gabel,

Transition Sitka will be holding its third annual expo on Saturday, March 29, 2025 and we would like to offer Sustainability Commission, and you as the Sustainability Coordinator, the opportunity to reach interested community members by joining us at this event! You have attended one or more of our previous events, in 2023 and 2024 which focussed on beneficial electrification. The theme for this year is "Sitka Living Locally" and it has three focus areas - food security, energy security, and emergency preparedness. We believe that our community would benefit from knowing more about the Commission and the City's objectives regarding energy conservation, energy generation, and Sitka's renewable energy future! We are particularly interested in the Commission's current work with the Sitka Community Renewable Energy Strategy, and in any educational projects that the City Electrical Department may have regarding energy conservation and efficiency.

Transition Sitka is providing a limited number of free tables to help organizations to engage even more of the Sitka community. This year we are also hosting panel discussions and a display area for small poster type presentations. If you would like to reserve one or more tables, or have a poster to display, please let us know before January 10th, 2025.

Individuals, organizations and businesses that have taken advantage of our offer in previous years have been able to showcase their services and programs, invite feedback on current projects, and recruit participants for programs or assessments. Participants have also gained from the opportunity to network with each other, sharing informed and helpful information, and building relationships.

We understand that the holiday season is a busy time for many people and would be happy to hear from you by January 10th, 2025, to reserve a free table, or discuss other ways to showcase the work that you are doing. Please find our introduction flyer attached to this message. It highlights the questions that we face as a community - and we hope that you can see your organization helping to answer the questions in a sustaining way.

Please don't hesitate to contact us if you would like more information about our organization or the expo. Gunalchéesh, Haw'aa, Thankyou!

Leah Mason and Barb Bingham
Expo Organizing Committee
Transition Sitka