CITY OF
BAINBRIDGE ISLAND

CLIMATE CHANGE
ADVISORY COMMITTEE
REGULAR MEETING
WEDNESDAY, SEPTEMBER 18, 2019
6:30 – 8:30 PM
CITY HALL
COUNCIL CONFERENCE ROOM
280 MADISON AVENUE NORTH
BAINBRIDGE ISLAND, WA 98110

AGENDA

Members:	Jens Boemer	Lara Hansen	David McCaughey (Co-Chair)
	Derik Broekhoff	Gary Lagerloef	Nora Ferm Nickum
	Michael Cox (Co-Chair)	Julie Matthews	Deborah Rudnick
Liaison:	Joe Deets		

6:30: Call meeting to Order/Roll Call/Accept of Modify Agenda/Conflict of Interest Disclosure

6:35: Approve August 29, 2019 Minutes

6:40: Public Comment

6:50: GHG Inventory Discussion with Cascadia

7:35: Updates/Report Outs/Discussion

- Climate Action Goals (All)
- Community Survey (Mike)
- Community Workshop (Deb/Mike)
- October 1st City Council Study Session (Mike)
- Draft path to 90% GHG reductions by 2040 (Mike)
- UAC/CCAC PSE Franchise Report (David)

8:15: Other Business

8:30: Adjourn

Materials

1. August minutes
2. Comments and questions on GHG Inventory Report
3. Climate Action Plan Goals
4. Community Survey Announcement Options
5. Draft BI Path to 90% GHG reductions by 2040

CITY OF
BAINBRIDGE ISLAND

CLIMATE CHANGE ADVISORY COMMITTE AUGUST 29, 2019

MINUTES

Present: Committee members Jens Boemer, Michael Cox, Lara Hansen, Gary Lagerloef, Julie Matthews, Nora Ferm Nickum, Deborah Rudnick
On the phone: Committee member David McCaughey
Absent: Committee members Derik Broekhoff; Council Liaison Joe Deets
Public: James Halbrook, Andy Swain (PSE), Gloria Saylor

The meeting was called to order at 6:30 pm.

- Conflict of interest disclosure: This is Jens Boemer's first official meeting as a Committee member. He said that Electric Power Research Institute works closely with power utilities like Puget Sound Energy, but everything he says in these meetings is not at all associated with the EPRI; he is only here as a citizen of Bainbridge Island.

Minutes from the previous meeting (July 17, 2019) were approved.

Public Comment

- James Halbrook said it seems like the Planning Commission and the Council are not taking climate change seriously enough. He urged the Committee to address growth as a critical part of reducing greenhouse gas emissions.

City Council study session and follow-up

- At the recent Council study session there was discussion about how our planned survey is important to get input from more people in the community beyond those who can come to a workshop.
- The Council wants to review the draft targets before the draft Climate Action Plan is sent out.

Survey, workshop, and Climate Action Plan

- We discussed comments on the draft community survey. We aim to get it out by Sept. 16. Distribution ideas: City Manager's email, COBI Connects, school district, Bainbridge Review, Farmers Market booth, ask other groups on the island to send it out through their distribution lists, ferry rides, faith communities.
- Timeline: We aim to do the survey in Sept/Oct, the workshop in Oct/Nov, a draft plan in January, and then have an approved plan in the spring.
- We reviewed a proposed template for the focus area write-ups, as well as the overall plan outline.

GHG Inventory Report/Fact Sheet

- Committee members will discuss the greenhouse gas inventory draft report at the Sept. 18 Committee meeting, and then consolidate comments and questions for the City to send to the consultants.
- The consultants are on the Oct. 1 Council agenda to present the inventory results.

CITY OF
BAINBRIDGE ISLAND

CLIMATE CHANGE ADVISORY COMMITTE AUGUST 29, 2019

Shoreline Master Program

- We are offering comments on ways that climate change elements like sea level rise should be considered in the SMP.

Sea Level Rise Preliminary Assessment for Bainbridge Island

- We received a partial draft and expect to have a full draft by the next Committee meeting.

Green Building Memo from Design Review Board and CCAC

- We discussed a draft joint letter that urges the City Council to embrace its stated goal of establishing a Green Building Code, and to have a dialogue with stakeholders about how to advance green building in the residential/commercial sector.

Greenhouse gas inventory curriculum

- Jessie Sheldon did great work this summer. ICLEI was excited. But it has been difficult to get access to the City's ICLEI account to be able to access key tools. Hopefully there can be a Memorandum of Understanding soon between the City and BISD so that a future intern can complete the curriculum.

Other Discussions

- David is working on the UAC/CCAC PSE Franchise Report.
- We need Council's instruction in order to have further conversations about the police station.
- We could do a briefing for the Planning Commission.
- We could have a booth at the Farmers Market and include opportunities to take the survey there.
- PSE had a call-in Town Hall answering community questions. The recording should be posted on PSE's Bainbridge Island website. PSE also did a survey to understand what people are thinking about. This fall, PSE will be sharing ideas about how they could help improve service reliability.

The meeting was adjourned at 8:31 pm.

Co-Chair 09/18/19

Climate Change Advisory Committee: Questions for Cascadia on the Bainbridge Island Greenhouse Gas Inventory (September 13th 2019)

We have included several questions we would like to discuss at our Wednesday September 18th Climate Change Advisory Committee meeting. We have also provided other more specific comments.

Executive Summary (not called this but assume that is what it is)

1. Could you put the data methods sections in front of the results? We think this would increase the report's clarity?

2. Why are emissions expressed on a total and per capita basis, for the community survey but for the consumption emissions, they are expressed on a per household basis. What does per household mean? Can we use a consistent basis of comparison between the surveys?

Introduction

3. Can you provide a graphic that helps visualize the intersection between community, municipal, and consumption-based surveys? We think this is very important to show how the three inventories you performed intersect and what each covers.

4. Why did you use 2014 as the baseline? As you know many GHG inventories and/or targets use either 1990 or 2005.

5. Do you have any suggestions how we can obtain the commercial and industrial propane consumption data (e.g., the report appears to make assumptions about residential usage, so why not for commercial and industrial?

Communitywide Emissions

6. In Table 4, what does "potable water use energy" mean? Is this from wells and what does "included in commercial energy consumption sector" mean in the footnote? Don't residents consume electricity for potable water use? Given that we have multiple large and many smaller well systems on the Island, how was any of that sector calculated - it does not appear to be described in the report?

7. On page 17 you state that "increases in emissions are due to changes in electricity fuel sources (e.g., from renewables versus coal). Could you explain what this means?

8. Did you consider the PSE Green Power Program in your calculations? It is unclear from pages 21 and 22?

9. Is the ferry travel divided out by number of people from Bainbridge Island and outside Bainbridge Island? This could make a big difference.

10. Is it possible to get boat registration data rather than use downscaled information from the county?

11. Could you explain how you determined that about ¼ of our waste is food scraps and is it food scraps as stated, or is it all organic and compostable materials (page 26)?

12. Can you determine the proportion of our population that is associated with areas that are sewered vs on septic? Because of the high emissions associated with this sector we wanted to better understand how you arrived at this calculation.

13. Where did you get the data for the agricultural section on page 28? Based on outreach to several organizations we believe the values used maybe substantially lower. Please see comments on page 5 of our comments under agriculture.

14. Could you explain how local data comes into play when differentiating between the quality of low and medium data?

15. Can you discuss in more detail the overall uncertainties and how this might over or underestimate emissions? In the report, you make a statement that the residential energy consumption "may be an overestimate" but do not make this judgement for other sectors (page 35).

16. Could you explain how the Community Contribution Analysis has been used by other communities and how you anticipate it could be used for Bainbridge Island?

Municipal Operations Emissions

17. What accounts for the ⅓ increase in solid waste from city operations in 4 years?

18. What are the emissions savings by diverting the 20 tons of waste from landfill as cited in the report?

Consumption-Based Emissions

19. What does "household mean" in the context of this analysis versus using the term people (e.g., the carbon footprint of a retired couple is going to be quite different than a family of 5)?

Tree Carbon Sequestration

20. We would like to discuss the utility of this analysis and whether it should be in the report and if yes, how we would characterize the results?

The comments that follows are from: Deb Rudnick, Lara Hansen, Michael Cox, and Gary Lagerloef. Nora Ferm Nickum provided a marked-up copy of the inventory.

Greenhouse Gas Emissions Inventory Review
D Rudnick comments
9/8/18

Overall comments:

- Please check page formatting. When I printed out this document, most of the pagination all reverted to “page 6”. Hopefully this was just a problem on my end, but please double-check there isn’t a formatting issue.
- Table formatting needs attention: several tables where numbers in cells are split into two lines in a row, which makes them extremely hard to read. Check for consistency in the presentation of the display of charts and tables.
- I think this report’s clarity would be increased by putting the data methods sections in front of the results for each inventory. It is very confusing to read the results before understanding how the data were obtained.

P5 - 9 Executive Summary

- IS this an executive summary? It isn’t referred to in this way in the table of contents. Please make titles consistent.
- Please list the inventories in the order they are addressed in the body of the report: community, municipal, and consumption based. Use consistent terminology: for example, this table says “government operations”, and the TOC and text uses “municipal operations”. I prefer the latter as it is more specific.
- Here in this table, and more thoroughly in the introduction, it needs to be made very clear what the purpose of these inventories are. A brief statement in this table, and more description later, should speak to the fact that:

  -a community survey helps communities discern different categories of GHGEs which can be used for creating policies, incentives, and educational efforts to reduce those emissions

  -a municipal operations survey helps cities identify the GHGEs over which they have direct control through purchasing and administrative decisions

  -a consumption survey: a) is typically more generic and less specific in its sourcing of data, unless substantial additional efforts are undertaken b) can help individuals understand how their activities and behaviors contribute to greenhouse gas emissions and c) may overlap with some of the components of a community survey, but also capture emissions that happen beyond community borders (eg, the carbon footprint of the food you eat that is sourced from other places).

  These explanations are vital to our city and community understanding the scope and relevance of each of the surveys.
- When summarizing emissions, please do not use exclamation points (e.g., “emissions from burning over 10,000 pounds of coal!”), and reconsider this comparison point. No one understands what their emissions in pounds of coal means. Plus, we are all burning coal in our electricity portfolio, so there’s some redundancy there. It would be more

useful to provide a comparison to a few other relative points: relative to Kitsap per capita emissions, relative to Seattle, relative to national averages.

- According to your pie chart, the majority of emissions are not from electricity, but you say in the text that they are. That comprises 49% of the total in the pie chart. It may be appropriate to say that electricity is the largest single sector contributing to emissions.
- Figure 2 should be footnoted to indicate that the residential electricity number provided in the 2018 bar graph is from 2017 data.
- For consumption emissions- and this comment is relevant to the body of the report as well- it is extremely confusing that for the community survey, emissions are expressed on a total and per capita basis, but for consumption emissions, they are expressed on a per household basis. What does per household mean? Can we use a consistent basis of comparison between the surveys?
- The consumption summary should say right up front that consumption emissions are based entirely on downscaled, general data and there were no local data that were used in these calculations. This will help explain why some of the overlapping categories- e.g. "car fuel" are not the same as they are in the community inventory, and also make it really clear that this is a generalized inventory.
- We need to discuss the appropriateness of the tree sequestration section in general. But if it remains, it is extremely important that we do not refer to our forests as offsetting the carbon emissions of our vehicles. This is both technically inaccurate and wildly inappropriate as a message to decisionmakers and the public.

P10 -15 Introduction

- When you are describing the methodology in the intro, clarify that methods for obtaining data for specific sectors are described further in each sector's discussion.
- Please provide a graphic that helps visualize the intersection between community, municipal, and consumption-based surveys. I think the Scope 1,2,3 explanation is too in the weeds, and not nearly as relevant or as useful as focusing on how the three inventories you performed intersect and what each covers. I favor eliminating some of the Scope discussion in favor of a more thorough explanation of the inventory types and how they should be used- please see my comments on the summary above.
- Could you briefly touch upon why earlier years of data weren't evaluated? We see targets written in terms of "X% of 1990 levels" etc.- I think its fine to simply say "it's too hard to pull the data from back then or "those targets are before the city was incorporated"- but something that speaks to this.

P15-30 Community Wide Results

OVERVIEW

- Why does anyone care what sectors are required by the US community protocol? I think some explanation would be useful to readers as to why it matters. Again, I really do not think the scope identification is particularly useful or enlightening information.
- You state that "commercial and industrial propane consumption data were not available" and recommend that future inventories investigate methods for obtaining that information. Any suggestions as to how one might obtain that data?

- In the table: I don't understand what "potable water use energy" is- do you mean from wells? - and what it means that it is "included in commercial energy consumption sector"? Don't residents consume electricity for potable water use? Given that we have multiple large and many smaller well systems on the Island, how was any of that sector calculated- it does not appear to be described in the report?
- Please provide both total and per capita emissions in the overview.
- It is stated that increases in emissions are due to changes in electricity fuel sources (e.g., from renewables versus coal). If *from* renewables *to* coal (I don't understand the use of the word "versus" here), one would expect emissions to drop, not increase. It needs to be explicitly described either here or in the electricity section what the fuel mix is that lead to this change in emissions between the two years.
- On p17 you have a "error reference source not found".
- Could figures 8 and 9, which are largely redundant, be combined? And could the %change be added to the sectors in the 2018 bar graph, and then the table eliminated?
- Figure 10 can be removed without losing anything from the discussion.

RESIDENTIAL ENERGY

- Figure 11: propane and fuel oil are a very small component of this- like 10% or less, correct? This should be identified in the figure. Why does the total emissions for 2014 float in the middle of the top of the bar graph rather than being at the top? And why does the top of the 2014 bar graph not look like its sitting at the 105,101 identified as the total emissions? And why do the totals not equal the totals from table 5 (2014: 86,214 + 31162 = 117,676, not 105,101; 2018: 96,154 + 33277 = 129,431, not 117, 823)? Please check this figure for accuracy.
- If energy consumption increased by 2%, but the Island population increased by 8%, doesn't this represent a 5% decrease on a per capita basis? Would be worth mentioning and also possibly including in Figure 11.
- Please see my earlier note regarding Puget Sound Energy's fuel mix: we need to understand the percent composition of the various fuels for 2014 as well as 2018 in order to understand the source of the emissions increase.
- The propane and fuel oil data are troubling - again, why we need the data methods up front. We have NO IDEA if Bainbridge is on the same trajectory as EPA national data. At the very least, a recommendation to understand how many households have propane and how large the tanks are would be useful. This limitation should be clearly noted in Table 5.
- Please explain more clearly what is meant by the "grid loss factor" and how that affects electricity emissions: it is ascribed to the slight increase in residential energy emissions, but then below it is also ascribed to the 5% decrease in non-residential emissions, and I do not understand how the same thing can be contributing to changes in opposite directions.

TRANSPORTATION

- I do not understand the sentence "in 2014, most transportation emissions came from road vehicles, followed by on-road vehicles". Do you mean off-road vehicles?

- Table 6: can you please provide this data not only as vehicle miles but also as number of vehicles? That would be informative.
- Please define the acronym VMT on first use (page 24)
- Why did transit vehicle emissions increase by 32% over the inventory? Please explain.
- Air travel: please make explicit, up front, that this data is NOT specific to Bainbridge Island, but was calculated by assigning us a proportion of flights (which I think may be reasonably thought to be a substantial underestimate). This is another example of where putting methods up front would be useful.
- It's hard to believe that we can't get information about boat ownership rates on this Island- don't they all have to be registered with the DMV? How hard would it be to get this? Rather than downscaling from the county, this seems like a place where we could straightforwardly obtain better data.

SOLID WASTE AND WASTEWATER

- It is not true that "all of Bainbridge Island's waste… is transported via train to the Columbia landfill." All our solid, non-recyclable waste is transported there. Our recyclables go to the Tacoma MRF, and our yard waste goes to North Mason Fibers. This should be clarified.
- In order to understand the potential for emissions reductions, we need more clarity on that estimate that ¼ of our waste is organic (and is it food scraps as stated, or is it all organic and compostable materials?) it is exceedingly important that we understand:
    - how much green waste we generate as a community - you have the average from waste audits, but is this of total waste? Is this accounting for the yard waste service as a proportion of that total? You talk about the tonnage separately, so this is unclear.
    - Are the emissions of our green waste, which is transported to North Mason, including the emissions associated with the transportation of the waste? If not, they should be.
    - Please express Table 7 on a kg/kg basis so that it is easier to understand the relative contributions of landfill and composted waste to our total emissions.
- It is disappointing to see that there was no attempt to discern what proportion of our population growth is associated with areas that are sewered vs on septic. My guess would be, given our growth patterns, much of our additional growth occurred in sewered areas of the Island, and that given how large the emissions associated with septic are relative to wastewater, this could substantively alter the populations assigned to each and therefore the emissions. I think if you have not done this analysis, it should be done, and then expressed on a MTCO2e/pp or hh basis, which would help us in examining the potential for emissions reductions based on these two categories.

OTHER PROCESS AND FUGITIVE EMISSIONS

- Estimates of refrigerants are just that- estimates, done on a national basis, and we have no local data for this. As you note, of course your estimates of emissions would go up, because it's an EF multiplied by a population value, which went up. We don't know if this is meaningful or accurate or not, though I would guess things like lower rate of air

conditioning given our climate, and newer appliances given our general affluence, could substantially depart us from these averages, and may be worth mentioning or at least emphasizing the uncertainty around these values.

AGRICULTURE

- Is this section about agriculture, or is it about livestock? It would seem to be the latter, as none of the discussion covers any kind of farming except for pasturing for livestock. It is stated that “livestock accounts for more than ⅔ of our agricultural land”, but what is the source of that data? When I think about the large parcels such as Suyematsu and public farmlands, as well as smaller pea patches, it’s hard to believe this. At the least it would be useful to add some information about non-livestock agriculture (Friends of the Farms would be an excellent source of information).
- I have serious concerns about the accuracy of the data presented in this section. In reading that “there were 196 landowners with a total of 1303 acres of land in 2014” (and nowhere does it say these are “livestock owners” or “farming operations” or any other descriptor, it just says landowners and acres, so this should be clarified) I checked these values with both Friends of the Farms and KCD. Friends of the farms said this was a substantive overestimate in their opinion and in speaking with KCD, my understanding is that this 1303 acres is the TOTAL LAND AREA OF ALL THE PARCELS that are associated with livestock- so, if a landowner owns 10 acres, but only 2 are under pasture, it’s the 10 acres that this estimate is based on. In fact, Friends of the Farms guesstimated that the true acreage being farmed on the Island is probably a few hundred- not 1300. The livestock numbers also are in some cases a substantial overestimate; KCD suggested to me the cattle numbers were close to 100 at most for the Island, and that swine and sheep were also both overestimated. These numbers need to be revisited and revised to be more accurate. Also, you need to provide the basis for which you are stating that there have been “no changes to manure management” in this time period, and a brief description of what that might mean for decisionmakers would be helpful.

DATA SOURCES AND METHODOLOGY

- It would be extremely helpful to readers if you could include a column in this table not only in terms of the “quality” of the data, but very specifically on the point of whether local data, or regional or national data were used. I realize this is somehow “embedded” in the quality ranking, but it would be clearer to have it pulled out into its own indicator.
- To the above point, I look at some of the categories that are denoted as Medium quality, and i don’t see what moves them out of the “Low” ranking. For example, on-road and off-road vehicles have zero local information, other than our population size, that would give that data any specificity if you are relying on a national model and downscaling it.
- Unless you revisit your agricultural data with better numbers for Bainbridge- which should be done- the quality of that data is definitely Low, not Medium.

CONSIDERATIONS

- This inventory did not account for participation in Green Power, and it is recommended future inventories do so. Yet you say specifically that protocols recommend you do NOT do so because of their complexity. So, which is it, and if it should be done, why hasn't it been done, and what would it mean to include it?
- If you did not have a 2018 scaling factor for air travel emissions, you should have noted this on the appropriate tables and graphs.

COMMUNITY CONTRIBUTION ANALYSIS

- I personally don't find these step charts very enlightening, it feels like trying to turn apples and oranges into a mixed data smoothie, but at the very least, I recommend shifting the X axis from zero to a higher number, e.g. 200,000 for Figure 15, so we can actually see what these steps mean on a meaningful vertical scale.
- Please explain what the changes in the PSE Electricity fuel mix were that contributed so substantively to emissions increases.

P 38-54 Municipal Operations Emissions

- I could not follow the link to the WSDOT commute reduction survey. Could you please provide that link again? Was this a survey specific to Bainbridge employees, or is this a state survey?
- Please provide the PSE fuel mix associated with both these years of inventory.
- Please express the energy use savings for the highest electricity users between 2014 and 2018 (e.g. wwtp) as a percent decrease.
- What accounts for the ⅓ increase in solid waste from city operations in 4 years? That increase seems huge and it is hard to imagine it tracks with staff increases?
- There was an increase in yard waste composting which "contributed to a slight increase in emissions with the diverted waste category". But this isn't really the relevant point- the relevancy to the inventory is that this waste should be creating far fewer emissions as compost relative to landfill waste, so what are the emissions savings by diverting this 20 tons of waste from landfill?
- In the data sources table, under wastewater treatment, it says that the population served by the WWTP facility was "estimated by public works staff". They don't have utility bills from which this information could be fairly accurately assessed, at least on a hh basis?
- It is stated that you "hand transcribed individual monthly Bainbridge Disposal bills for COBI." This sounds like a waste of time and resources, and, as noted, increases the potential for error. Could Bainbridge disposal not simply share their data for the billing history for the City? Will we have to continue to do this moving forward?
- You state you used a King County waste characterization study to estimate relative proportions of materials in the waste stream (p51)- I could not find this study in your reference list.

P 55 - 56 CONSUMPTION BASED EMISSIONS

- As I commented on the introduction: The consumption summary should say right up front that consumption emissions are based entirely on downscaled, general data and

there were no local data that were used in these calculations. This will help explain why some of the overlapping categories- e.g. “car fuel” are not the same as they are in the community inventory, and also make it really clear that this is a generalized inventory.

- Please create consistency, or explain why there cannot be consistency, in how this survey describes “households” rather than people, and what that means? The carbon footprint of a retired couple is going to be quite different than a family of 5. What does “household” mean in this context?
- This section ends by suggesting that the calculator may be slightly overestimating household emissions because the PSE fuel mix is different than the national average. Other than nuclear, I don’t know that it’s too different, but regardless, that really has VERY little to do with a consumption-based survey, which emphasizes transportation and goods and services, does it? We really have NO idea how this estimate may be applicable to Bainbridge. My guess is as an affluent Island, we are more likely to have a consumption footprint that is higher than the national average. But regardless, we really don’t know, so conjecture isn’t appropriate here.

P57-61 TREE CARBON SEQUESTRATION

This section is incredibly problematic, from the generality of the data sources used, to the complete lack of ground truthing involved, to the conclusions that are drawn. At its best, this is a desktop exercise that might give us a very rough idea of the amount of carbon stored in trees (of one amalgamated species with no accounting for understory or soil carbon storage in grass or pasturelands), and should be expressed as such, up front, not at the end in considerations. Some things that should NOT be done with this survey:

- It should NOT be used to draw any kind of conclusions about how our forest carbon functions as an “offset” for our emissions. This is absolutely inappropriate and inaccurate. It has been used this way in the introduction, and the same principle, of offsets via investment in forest carbon, is erroneously perpetuated in the fact sheet. Both references should be removed.
- Please see comment in next section regarding the conclusions drawn from this analysis.

CONCLUSION AND NEXT STEPS

- The conclusion that is drawn that the importance of tree carbon sequestration and its benefit should lead to Bainbridge Island planting more trees may sound nice, but it is an unhelpful and misleading oversimplification of our forest community, for a whole number of reasons that relate to our overstocked density of second and third growth forests, tree disease and health, wildfire risk, changes in climate and hydrology that will drive community forest changes, and many other factors. Bainbridge needs to wrap its head around all of these factors in making wise decisions about managing its forest resources, and some of our Island stakeholders are trying to start to do that. It is extremely important to understand that this does not simply equate with “tree planting” and this is not the message we should be sharing with our community about how we steward these resources.

BI GHG Inventory: Comments by Michael Cox, September 6th 2019

Executive Summary

Inventory Quick Facts (page 5)

- Which years: I would suggest adding a sentence why other years often used in GHG inventories like 2005 and 1990 were not used.
- What types: I would list in the order that you present in the report: Community, City, and Consumption based. Seems to be some missing words for "Government operations"
- Consumption Based: I would break these into a category labeled something like "other analysis". I think it is quite different from the first two in terms of the specificity of the data. I think the impressions that is left is that all of the inventories are equal. As is stated later, the consumption-based inventory is coarse.
- Tree Carbon Sequestration: Is this a standard "type" of emission methodology or is this specific to this analysis. Seems it should be a separate category or maybe a footnote. It does not seem to fit with the first two. Or maybe not even include?

Inventory Results: Community Results

- Page 6: I would add a footnote explaining what carbon dioxide equivalent means. Many people may not understand this.
- Page 6: I would provide a comparison with other communities so people get a sense of where Bainbridge stands.
- Page 6 second paragraph: I would add something more descriptive instead of the e.g., renewables versus coal, like "changes in the electricity fuel source (e.g., x% increase in coal for fuel mix" or whatever the reason is.

City Government Emissions

- Page 7 – first paragraph: I would add "Municipal emissions in 2018 increased 11% to 2,3000 MTCO2e from 2014 totals". Forgot to include 2014.

Consumption Emissions

- Page 9: Is this just for one year or do you have for 2014 and 2018. I assume just for 2018 but good to state this.
- Page 9: I would include pie chart so it is more obvious what actions contribute the highest emissions.

Actions and Next Steps

- I would suggest adding an actions or next steps section. I think it is important to conclude with ideas on what can be done. I would suggest looking at what you had on page 62 and included some of that here. Many people may never get past the executive summary.

Introduction

Description of inventories (page 10)

- I would suggest having a few sentences of how the consumption-based inventory is different and/or similar to the community inventory. Maybe include a chart.
- Tables 1,2, and 3 try to show the differences but I would suggest some graphic form.
- I think you need to address the question of what is the difference between the two as I think the reader will ask.

Inventory Boundaries

- Scope 2 (page 11): Provide an example of this type of emissions.
- Scope 3 (page 11): Provide an example of this type of emission.
- Footnote (page 11): Provide an example of biogenic sources.

Table 1 (page 13)

- Define what required means? I assume required by the specific protocols but good to have a footnote. Also, why the "?" mark?
- Commercial and industrial propane:
    - Have they collected commercial and industrial propane consumption before and if yes could they use this data as a surrogate?
    - Could they speculate given all the other inventories they have done what this usage maybe?
- Residential propane: You used assumptions for residential usage, why not for commercial and industrial?

Inventory years (page 14)

- Please add why you could not use 1990 or 2005 for example as baseline years?
- These are years often used as baseline years for comparison.

Community wide emissions

Table 4 (page 16)

- I would suggest including air travel and ferries to those activities that are "outside of Bainbridge Island" in the first paragraph so it is clear that these are included.
- Also, suggest they add a sentence of why these are included here.

Results (page 17)

- First paragraph: I would include a footnote or add a sentence after the first sentence that provides the emissions from other communities of similar size to BI. I think this is important to provide context.
- First paragraph: I would also include the per capita emissions in the first paragraph again with a comparison to other communities.
- First paragraph: In a footnote I would define what MTCO2e means. I assume many people will not know what this means.

- First paragraph: This is the first time non-residential is discussed or included. It is not in the previous tables. Need to define what this encompasses (I assume commercial and industrial energy but would be good to clarify).
- Second paragraph: I am not clear what changes in electricity fuel sources means. This implies that the energy supply is shifting from renewables to coal. Is that correct?
- Second paragraph: This is the first-time per capita emissions are included. As suggested above I would include per capita in the first paragraph so it has come context here and indicate what other communities' per capita emission are.

Figure 10 (page 20)

- I would suggest adding a sentence about why you have Figure 10. Of course, it breaks it out by Scope but why is this important and does it have any implications.

Residential Energy (page 21 and 22)

- Electricity – First paragraph: I would add a sentence on the per capita increase along with the absolute increase.
- Electricity – Second paragraph: I am not understanding how the fuel mix contributed to increases. If people increased their participation in Green Power program, I would think the emissions would have gone down not up. Seems for this statement to be true PSE would have had to use more fossil fuel generated electricity. Please clarify.
- Electricity – Second paragraph: You say the Protocol discourages consideration of renewable energy participation. Not clear to me if you did consider or did not consider. I would suggest stating if you did or did not and why.

Non-Residential Energy (page 22 and 23)

- First paragraph: For residential propane use you estimated using EIA data. I would state here that data similar to residential were not available. Also, given you experience is there anything you could say about the potential use of propane and fuel oil on the Island in order to get a reality check that this could be a big area or not so big. Also, would be good to provide some suggestions on how we could get this information in the future.

Transportation (page 24 – 26)

- Figure 12: I would suggest adding a pie chart for 2014 in order to compare and to support the sentence in the first paragraph about 2014 emissions.
- Page 25 – first paragraph: Spell out VMT as using first time.
- Page 25 – second paragraph: I would suggest providing some ideas on why emissions increased 32% but revenue miles remained relatively constant – 1% increase. Does not make sense.
- Page 25 – Ferry travel: Is the ferry travel divided out by number of people from Bainbridge Island and outside Bainbridge Island. I do not think you can assume all of the ferry travel on Bainbridge boat is from Bainbridge Island.

Data Sources and Methodology

- Page 31 – Ferry travel: For activity data seems like you would need to have number of riders from Bainbridge Island.

Considerations

- Page 35: I understand that it would be difficult but could they include a discussion of overall uncertainty. I think this section details the potential uncertainties but with the exception of residential energy consumption does not make a judgement of whether they are over or underestimated.

Community Contribution Analysis

- Introduction (page 36): I would add the per capita numbers for 2014 and 2018.
- Page 37: Electricity fuel mix: I would add a sentence what the change in electricity fuel mix was. Did they use more coal, more natural gas, etc.

Municipal Operation Emissions

- Electricity (page 42): I would suggest adding a sentence on the solar power at City Hall and provide any data here. While they were installed in 2012, I think it would be interesting to document (if available) the amount of energy generated by the solar array.

Solid Waste and Wastewater (pages 46-47)

- I am trying to reconcile the analysis for the Community Emissions and the Municipal Operation Emissions. I assume the Municipal Operations are for that waste generated by City Operations but not entirely clear.

Refrigerant leakage

- Page 47: I would include a similar discussion on refrigerant leakage in the Community assessment or maybe a footnote in the Community section.

Consumption Based Emissions

- First paragraph: I would add a sentence discussing how you might use the information in a consumption-based emissions analysis.
- First paragraph: I would include more discussion of about what is included and not included in a consumption-based emissions analysis. It appears ferry travel is not included, but airplanes, cars, and public transit is included.
- First paragraph: I would explain in a few sentences the differences between a consumption-based inventory and a community-based inventory.
- Results – Overview: I would suggest providing additional information in the overview.
    - Is the 52 MTCO2e for what year (2014 or 2018)?
    - I would include the comparison year also.
    - Provide examples of other communities to give a comparison.

- I would suggest a pie chart in addition or instead of figure 29 that shows the highest overall areas for consumption. It appears that it is car fuel, but difficult to tell.
- I would make the areas larger in figure 29. I cannot read them.

Data Sources and Methodology (page 57)

- A more general comment. Given the coarse nature of the analysis, I am wondering the utility of this analysis.
- I think we need to discuss how this analysis can be used. This maybe beyond the scope of this analysis but I think it could include how other communities have used the consumption-based emissions analysis.

Considerations

- Page 57: There is a statement that the "calculator is slightly overestimating household emissions, since the PSE electricity fuel mix is different..." The fuel mix for PSE is almost 65% fossil fuels. It would be good to know the fuel mix that is used to develop the assumptions for the consumption-based emissions.

Tree Carbon Sequestration

- I think we will need to discuss in more depth the utility of this analysis.
- Is this a standard analysis as a part of GHG inventories?

Comments by Lara Hansen concerning the section on Tree Carbon Sequestration (pp 57-60) 12 Sep 2019

I did review the section on "Tree Carbon Sequestration" and believe that it should be removed from the report. First, it conflates biological and fossil carbon which are two different carbon budgets. Second, the tool that is used to make this assessment is probably not comparable to the level of data used for the other assessments, therefore making suppositions as it does that it would "offset" the "emissions of all of the vehicles on Bainbridge Island in a year" seems spurious or at least misleading. Third, they did not do a similar analysis in the Kitsap County report, have they done this for any other locale? Has it ever passed any sort of peer review?

Review comments by Gary Lagerloef (13 Sep 2019)

2-Page cover sheet summary **"Understanding our Impact"**

Page 1:

- **What are our emissions**: Delete the sentence "Offsetting those emissions would require every Bainbridge resident to grow 11.5 acres of forest land for one year". The Tree Carbon Sequestration analysis in the report is not sufficiently mature to support such a definitive conclusion.
- What purpose does this statement serve?
- **Include the definition of Metric Ton (MT)**
  - 1 MT = 1000 Kilograms
  - 1 MT = 2204.6 pounds
- **Define CO_2e**

Page 2:

- What is the proportion of the emissions 245,234 $MTCO_2e$ compared with all Kitsap County, the Puget Sound region and Statewide? A small table can be inserted here.
- Why is "3% Residential Propane and Fuel" included with "Building Electricity Use"? It is not electrical use, so why does it not show in the category "Other" instead? The correct proportion of "Building Electricity Use" segment is evidently 50% not 53%.
- Tree Carbon Sequestration:
  - What does "high-level" analysis mean?
  - Your comparison to offsetting vehicles emissions is incorrect. The pie chart indicates on-road vehicles=11% and off-road=4%, for a sum vehicle emission=15% of the total. This is 36,785 $MTCO_2e$, and not close to the 59,000 $MTCO_2e$ tree sequestration estimate. These calculations must be re-evaluated.
  - Avoid comparing tree sequestration to specific emission categories. The purpose of the tree sequestration analysis is much broader, such as informing COBI on the climate impact of growth management, land conservation and other relevant issues. I will provide additional comments below on the tree sequestration assessment.

General comment: Compare each component of the inventory to the sum of the overall emissions. This will provide a more useful benchmark to plan mitigation strategies. Please avoid all comparisons to "pounds of burning coal", and the like, which has little technical value for us.

Residential Energy and Electricity (pg. 21-22)

Figure 11: The 2018 bar graph actually displays year 2017 data, because 2018 PSE data were not yet available. My subsequent comments refer to 2017, yet would apply to 2018 if they are consistent.

- The electricity analysis should be updated with 2018 data as soon as available.
- When will PSE release these data?

Trend: The electricity use increased slightly between 2014 and 2017, yet the GHG emissions increased by a significantly greater proportion. The draft report attributes this disparity to changes in the PSE electricity generation fuel mix.

- How did the PSE fuel mix change from 2014 to 2017, and does this account for the GHG emission differences relative to kWh use?

Green Power: It is noted that Bainbridge Island's participation rate is 10%, and that this is among the highest in the region. As such, it is evident that *Green Power* should factor into the inventory, even as a crude estimate.

- Does 10% indicate that 10% of the island ratepayers are enrolled at some level, or does it signify that 10% of the power delivered to the island is *Green Power*?
- Do the energy assessments include all PSE usage, including *Green Power*?

Regardless of complications to include such renewable participation programs in the Protocol, the island residents do have a right to know what proportion of the total PSE power consumed on the island is accounted for by *Green Power*.

- Does COBI have data from PSE on the proportion of *Green Power* consumption on Bainbridge?
- If not, then I recommend that COBI make a direct request to PSE for this information.

Tree Carbon Sequestration (pg. 57-60)

Note that I advocated for this analysis when the CCAC defined the scope of the GHG Emissions Inventory. This was for multiple motives. It was not simply to search for offsets, but intended to define a *Net* communitywide emissions assessment. Furthermore, the results may provide a tool for COBI to evaluate climate impacts for future planning land use options and regulatory codes.

Considering this, I find that this section is a reasonable first step. I also find apparent flaws and have numerous questions. I believe the results must be considered only very cautiously, and with much uncertainty. More work is needed to achieve a rigorous and reliable assessment.

Results (pg. 57):

- The *i-Tree* appears to be a viable tool, developed in concert with the US Forest Service. The results presented, evidently, are based only on use of this one tool.
- Has Cascadia evaluated any other online tools for consistency of results with *i-Tree*?
- Why is the year 2019 used?
- Delete the phrase about monetary carbon benefits, and instead state the ratio of the sequestration estimate to the total emission inventory.

Data Sources and Methodology (pg. 58):

- What is the pixel resolution of the Google Map image?
- Random Sampling: This part was confusing concerning the mean and error margin.
    - The *i-Tree* tool documentation describes how to estimate standard error.
    - Was the analysis a single survey with 100 locations randomly sampled in the project area, or was it 100 surveys with N random locations each?
    - Please describe how the range of 46% to 56% tree coverage was obtained?

- End of review

Bainbridge Island Climate Action Plan: Draft Goals (September 17th, 2019)

We are proposing three goals for the Bainbridge Island Climate Action Plan (CAP).

Mitigation Goal: By 2040 Bainbridge Island will reduce its greenhouse gas emissions by 90% compared to 2014 levels with interim goals of reducing greenhouse gases by 25% by 2023 and 60% by 2033 compared to 2014 levels

Adaptation Goal: Bainbridge Island is climate savvy, and can withstand the impacts of climate change (e.g., sea level rise, warming temperatures, changing precipitation patterns, and changing vegetation).

Community Engagement/Citizen Action Goal: The City of Bainbridge Island inspires action across the community and partners with local and regional organizations to take meaningful climate change mitigation and adaptation actions.

The CAP will focus on six areas. Each area will have the following information:

- Sub-goals (included below).
- Strategies and actions for mitigation, adaptation, and community engagement/citizen action; and
- Targets and milestones

<u>Energy</u>

- Increase energy conservation and efficiency across all energy sectors
- Eliminate carbon-based energy sources from all energy sectors
- Increase / Create energy self-sufficiency for emergency preparedness and resilience

<u>Transportation and Land-Use</u>

- Reduce motorized vehicle miles traveled by:
    - Developing infrastructure to improve safety and expand options to increase biking and walking on the Island; and
    - Promoting mixed-use development that enables greater use of non-motorized transportation options.
- Increase use of public transportation by working with Kitsap Transit to encourage use of existing transit and expanding service on the Island and encouraging greater use of school buses.
- Increase use of electric cars, bikes, and buses and supporting development of electric ferries by developing infrastructure to support this transition.

<u>Buildings</u>

For all newly constructed and existing residential[1], commercial, industrial and municipal buildings:

[1] This may include boats docked in one of the Bainbridge Island's ports.

- Reduce energy use, water consumption, and greenhouse gas emissions associated with their materials and construction.
- Reduce energy use, water consumption, and greenhouse gas emissions associated with the operation throughout their lifetime.
- Increase reuse and recycling of materials from their deconstruction.

Forests, Shorelines, and Agriculture.

- Manage Bainbridge Island's forested lands to function as healthy, resilient ecosystems that can continue to provide multiple ecological functions including provision of habitat, maintaining the hydrologic cycle, and storing carbon, and are resilient to climate change.
- Maintain the integrity of our Island's surface and groundwater resources to continue to provide clean and sufficient water for people, wildlife, and all the Island's natural systems.
- Manage the City's shoreline assets and infrastructure to adapt to sea level rise
- Use strategic planning, outreach and education, and other tools to assist homeowners in preparing for and adapting to sea level rise
- Support an agricultural system that prioritizes local food production, ecosystem services including soil carbon storage, and crops that are resilient to climate change

Waste Reduction and Consumption

- Reduce City, residential, and commercial waste generation.
- Increase diversion of waste from the landfill.
- Optimize collection and disposal systems to minimize GHG emissions.
- Ensure that any new waste-related infrastructure is not sited in current or future hazard areas.

Community Engagement/Citizen Action

- The Bainbridge community is educated and aware of potential climate change related impacts and knowledgeable about ways to reduce their individual contributions.
- The City of Bainbridge Island inspires action across the community and partners with local and regional organizations to take meaningful climate change mitigation and adaptation actions.
- The City of Bainbridge, and Bainbridge Island residents, are empowered and prepared for climate impacts and emergencies.

Seeking Community Input on Climate Change!

The climate is changing on Bainbridge Island

What do you know about it?
What do you think about it?
What should we do about it?

The Bainbridge Island Climate Change Advisory Committee (CCAC) wants your ideas.

Please take the community climate survey online

The short survey (< 5 minutes) is open from September 19th to October 14th.

For additional information about the CCAC and climate change on Bainbridge Island, visit the CCAC website.

Thank you!

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Thank you!

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https://www.surveymonkey.com/r/BainbridgeClimateSurvey
Climate Change Advisory Committee: https://www.bainbridgewa.gov/922/Climate-Change-Advisory-Committee

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The Bainbridge Island Climate Change Advisory Committee (CCAC) is working with the community to create the first-ever Climate Action Plan (CAP) for the Island. The CCAC, is seeking community input on the plan and has developed a short Community survey.

The survey results will help inform the CCAC about Bainbridge Island residences' knowledge about potential local impacts from climate change, their level of concerns and their willingness to support local action by the city and broader Island community. The CCAC will consider responses to the survey in developing the Plan's goals and strategies to respond to our changing climate.

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What should we do about it?

The City of Bainbridge Island established a Climate Change Advisory Committee (CCAC) in 2017. The purpose of the CCAC is to assist the City in implementing the climate related goals and policies contained within the Comprehensive Plan.

The CCAC is working with the community to create our first-ever Climate Action Plan (CAP). The purpose of the CAP is to help reduce the Island's greenhouse gas emissions and help prepare residents, businesses and the city services for a changing climate. The plan will establish a clear road map of priority actions and projects that make sense for Bainbridge Island.

The CCAC, is seeking community input on the plan and has developed a short Community survey. The survey results will help inform the CCAC about Bainbridge Island residences' existing knowledge about potential local impacts from climate change, their level of concerns and their willingness to support local action by the city and broader Island community. The CCAC will consider responses to the survey in developing the Plan's goals and strategies to respond to our changing climate.

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Bainbridge Island Greenhouse Gas Inventory: How to achieve a 90% reduction by 2040 from 2014 levels

2014 Total Emissions: 222,463 MTCO2e

2040 Target: 22,246 MTCO2e

Area	Subarea	2014 Emissions	2040 Emissions	Rationale
Residential Energy	Electricity	75,363	0	State legislation requires electricity to be fossil fuel free by 2045
	Propane/Fuel oil	7,241	3,621	50% reduction in use as people shift to electric
	Losses from Transmission	3,610	1,805	50% reduction as electricity is generated closer to home and improvements in grid.
Non-Residential Energy	Electricity	29,738	0	State legislation requires electricity to be fossil free by 2045
	Propane	NA	NA	Missing data.
	Losses from Transmission	1,424	712	50% reduction as electricity is generated closer to home and improvements in grid.
Transportation	On-Road Passenger	27,524	5,505	80% reduction due to more efficient cars, shift to electric, greater use of public transportation, and less road miles
	On-Road Transit	590	118	80% reduction due to more efficient buses; shift to electric.
	Air Travel	24,023	4,800	80% reduction due to increased efficiency.
	Ferry Travel	14,051	0	Ferries shifting to all electric boats.
	Other Off-Road	9,204	1,840	80% reduction due to shift to electric equipment and more efficient machines.
Solid Waste and Wastewater Treatment	Solid Waste	8,423	4,212	50% reduction due to capture of methane at landfill and reduction in solid waste.
	Wastewater Treatment	64	32	50% reduction due to capture of methane at wastewater treatment plant.
	Septic Tanks	7,680	3,840	Fewer septic tanks and more efficient.
Other Processes and Fugitive Emissions	HFC	12,058	0	Phase out of HFCs over next several years
	PFC	3	0	Phase out of PFCs over next several years.
	SF6	147	74	Reducing leaks in electricity transmission equipment

Area	Subarea	2014 Emissions	2040 Emissions	Rationale
Agriculture	Enteric Fermentation	1200	600	Total in draft inventory was not accurate. Many less animals.
	Manure Management	120	60	Total in draft inventory was not accurate. Many less animals.
Totals		**222,463**	**21,793**	