
THE CLIMATE CHANGE ADVISORY COMMITTEE WILL HOLD THIS MEETING
USING A VIRTUAL, ZOOM WEBINAR, PER GOVERNOR INSLEE'S
"STAY HOME, STAY HEALTHY" ORDERS

MEMBERS OF THE PUBLIC WILL BE ABLE TO CALL IN TO THE ZOOM MEETING.

PLEASE CLICK THE LINK BELOW TO JOIN THE WEBINAR:

[HTTPS://BAINBRIDGEWA.ZOOM.US/J/94721406938](https://bainbridgewa.zoom.us/j/94721406938)

TELEPHONE: 1-253-215-8782

WEBINAR ID: 947 2140 6938

AGENDA

- 5:30 CALL MEETING TO ORDER/ROLL CALL/ACCEPT OF MODIFY AGENDA/CONFLICT OF INTEREST DISCLOSURE
- 5:35 APPROVE MAY 19TH MINUTES
- 5:40 PUBLIC COMMENT
- 5:45 WELCOME NEW MEMBERS AND APPRECIATION FOR DEPARTING MEMBERS
- 5:55 ELECTRIC DOWNTOWN SHUTTLE (GREG DRONKERT, PACIFIC MOBILITY GROUP)
- 6:15 LEARN TOOL AND MUNICIPAL GHG INVENTORY RESULTS (CHRISTINE BERG)
- 6:35 CLIMATE ACTION PLAN UPDATES
 - CITY COUNCIL MEETING
 - LR AND SMP
 - CLIMATE EQUITY WITH REAC
 - PSE FRANCHISE
 - CLIMATE OFFICER
 - CLIMATE LENS PILOT SITE AT SENIOR CENTER
- 7:00 ELECTION OF CHAIR, VICE CHAIR, AND SECRETARY
- 7:30 ADJOURN

MATERIALS

1. MARCH MINUTES
2. BI ELECTRIC SHUTTLE – COUNCIL SUMMARY
3. SLIDES FOR COUNCIL – BI ELECTRIC SHUTTLE
4. RESULTS FROM LEARN TOOL

**Climate Change Advisory Committee
Meeting Minutes
Wednesday May 19, 2021**

Present: Committee members Michael Cox, David McCaughey, Deborah Rudnick, Julie Matthews, Derik Broekhoff, Lara Hansen, Gary Lagerloef, Jens Boemer (briefly, had to leave early)

Council Liaison: Joe Deets, Kirsten Hytopoulos

City staff: Ron Logghe, Peter Best, Christian Berg

Additional attendees: Tom Herrod, ICLEI

5:31 pm: **Call meeting to Order**

Conflict of Interest: none

Approve April 20 minutes: Lara moved to approve, David seconded, approved as written.

Public Comment - none.

Discussion

- SMP And Sea Level Rise
 - o Peter Best reviewing work done on Sea Level Rise and council direction on this issue, as well as how CCAC may be of assistance.
 - Aquaculture amendment includes emerging recs from staff to use aquaculture as a carbon sequestration tool. Incorporating kelp restoration.
 - SLR and flood risk was brought before council given concerns from planning council about how much work was likely to be involved, was removed from amendment process and redirected to the climate change officer working with CCAC, "Direct staff to remove this topic from the periodic review. Have new climate change staff, with assistance from climate change advisory committee, take up this work in 2022". CCAC members discussed the importance of this remains with planning staff for development as it is very unlikely the climate officer will have the bandwidth or expertise to take this on in its entirety. Group agreed that we need to clarify with council in June meeting, that we do not think the climate officer is appropriate to do this work and the work should continue, continue to move this forward as an independent priority. Discussion around the sensitivity of this issue in terms of property issues, and the need to have a conversation around what people want decoupled from the SMP regulatory sphere.
- ICLEI: Tom Herrod presenting on resources and opportunities.
 - o ICLEI started 30 years ago in CA to be a voice for local government. Now a global nonprofit with 3500 worldwide local government members, 1500 in the US. Looking to be more proactive with membership. Tom reviewed science-based targets. We discussed given our 90% target and our distaste for offsets, how we would work with ICLEI's language around net neutrality, as well as language around consistency with a 2030 goal. Tom mentioned several priorities including circular economy and closing the loop on

- o waste, resilience, a LEARN (Land emissions and removal navigator) program that helps communities better understand their forest and farm carbon sequestration.
 - o Derik offered to present more information to our group on ICLEI's race to zero and how our current path aligns with that program.
- CC Communication Strategy – Mike reviewed UW programs for climate change interest in having a capstone person focused on communication, and she is on island. Possibility of having a speaker series in fall with hands-on aspects. Committee members think it's a great idea to pursue further. Possibly will run through Sustainable Bainbridge sponsorship.
- CAP Updates
 - o Climate equity- meeting with REAC last week. Good exchange about goals of both groups, left REAC with some offers of assistance and we asked them for a copy of anything they have on the equity plan they're working on so we can look for alignments. Lara Deb and Mike have worked in a couple new categories of harms and benefits to the climate change checklist.
 - o June 15 CCAC going to council to give an update on status and REAC updates.
 - o Forestry and climate change conference – recordings now available islandwood.org/conference
 - o PSE franchise meeting – meeting today at 4 to lay out franchise and partnership agreements. Beginning of discussion, legal boundaries around franchise agreement pretty firmly drawn- we should see a first draft in June or July. Lara asked that we reiterate our support for the joint task force recommendations moving forward.
 - o Climate Officer- it is out as an ad in multiple forums, has been out at least a week. ICLEI is another good place to put it. Closes June 2.
 - o GHG Municipal Emissions inventory – Christian reported in that this is going well, troubleshooting with staff on some data, and will share at next meeting for 2019 data.
 - o Climate Lens pilot site: senior Center – Lara and Mike working with Mike Epstein on this. Meeting with developer to be set up to discuss. Just hired architect and will loop Lara and Mike.
 - o Vashon Biodigester tour- Joe, Julie, Mike and a few zero waste folks attended. Great field trip. Co-located with island tofu factory so tofu waste is the feedstock and no transport emissions. Nice-looking, not smelly or noisy, compact. Compost generated by it is used in the greenhouse grown on site. Discussing funding a feasibility analysis- discussed bringing this as a recommendation to council on June 15 with suggestions for consultants if possible.
 - o CCAC appointment – coming up Mike and Lara are re-signing; Derik is re-upping. Gary is stepping back for now but may re-apply later. Three additional people who have applied, interviews next week.
 - o CWMA: Ron brought back to Ellen, and she is discussing with City Manager King.
 - o Plastics ordinance- initial discussion, next study session for returning with more policy language.
 - o Greg Dronkert came to council to discuss doing an EV shuttle service around the Winslow area, starting in 2022. Wanted help from staff in helping develop a plan, perhaps beyond capacity, want to hear from CCAC- we can coordinate to have him present to us.

7:40 Adjourn

Michael Cox, Chair

Date

TOPIC

Bainbridge Island Electric Shuttle Demonstration Project.

WHO

Mobility for All, is a Bainbridge Island non-profit offering to assist with the project.

PROBLEM

There are limited options to address the gaps in Bainbridge Island's existing public transit service.

Because of this, Bainbridge Island residents and visitors choose single occupancy vehicles as their primary mode of transportation.

The vast majority of existing transit services and other transportation options utilize internal combustion engines which emit harmful particulates and gases into the atmosphere.

PROPOSAL

Mobility for All respectfully requests Bainbridge Island City Council approve the following:

- 1. Assemble a project team consisting of**
 - Appropriate City staff
 - A representative of the Climate Change Advisory Committee
 - Mobility for All
- 2. Invite Kitsap Transit to work with the team (critical)**
- 3. Investigate existing Transportation Benefit District (TBD)**
 - Ask City staff to research how the City's existing TBD designation can be used to support this project

INITIAL TASK

The project team will complete the following task:

- Define the scope, schedule, and budget for a 1-year demonstration of a demand-responsive, first mile / last mile, electric shuttle.
- Identify and engage key stakeholders and potential project partners (such as):
 - Washington State Ferries, Puget Sound Energy, BI Chamber, BI Senior Community Center, Visit BI, Island Volunteer Caregivers, Puget Sound Clean Air Agency, BI Downtown Association, Western Washington Clean Cities Coalition, Sustainable Bainbridge, and others.
- Investigate grants and other funding mechanisms, including user fees. Identify a funding strategy for the demonstration project.
- Summarize findings and recommendations, and present to Council in 60 days.

WHY NOW

Bainbridge Island congestion, harmful emissions, and wasteful activities are getting worse. The City has developed a climate action plan and is working on a sustainable transportation plan.

This electric shuttle project would help mitigate problems identified by the community while making real progress toward Bainbridge Island's climate and sustainability goals. This project is consistent with Washington State's Climate Commitment Act and various funding opportunities are emerging making this an ideal time to take action.



Bainbridge Island Electric Shuttle



May 18, 2021

Concept

- Electric passenger service
- Focused on downtown core
- 7 days per week
- 1-year demonstration
- First mile, last mile, connections and fills service gaps
- Demand-responsive
- Possible demonstration of autonomous technology
- Fare based
- Target commencement of service April 2022

Area



Benefits

- Improved access to the downtown businesses and services
- Local economic recovery
- Improved first mile, last mile, connections with Kitsap Transit and WSF
- Emissions reduction
- Congestion reduction
- Noise reduction
- Increased normalization of electric and shared solutions
- Consistent with Climate Change Advisory Committee and Sustainable Transportation Plan activities

Equipment (example)

Ram ProMaster "Airporter" shuttle
12-15 passenger
Converted to electric by EV Works
Tesla Model 3 drive unit and battery
150 mile range
DC Fast Charging



Equipment (autonomous shuttle)

Local Motors “Olli”

12 passenger

Electric and shared

Level 3+ autonomous

Fixed route, geo-fenced

LiDAR, RADAR, GPS, Proximity



Project Team & Partners

- City of Bainbridge Island
- Mobility for All
- Kitsap Transit

Other possible partners:

- Puget Sound Energy
- Puget Sound Clean Air Agency
- Western WA Clean Cities Coalition
- Washington State Ferries

Example Community Stakeholders:

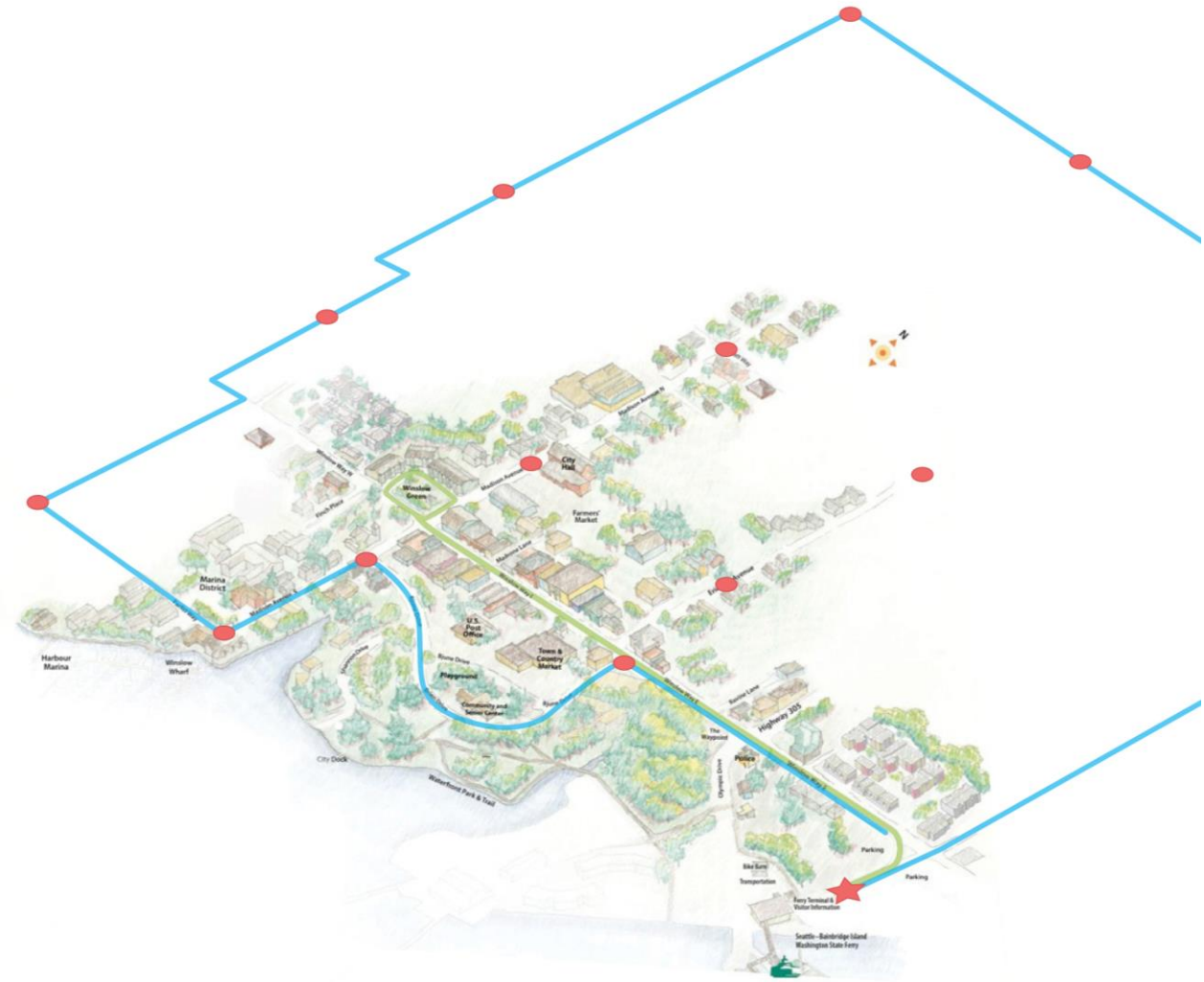
- BI Chamber
- Island Volunteer Caregivers
- BI Downtown Association
- Visit Bainbridge
- BI Senior Community Center
- Sustainable Bainbridge
- And more

Cost

The analysis of project costs and the development of a budget are part of the initial planning activities.

The cost for a 3 month, fixed route, single van service is estimated to be less than \$100,000

A more comprehensive, demand-responsive, multi-van project could be capped under \$1MM.



Bainbridge Living Laboratory



Information Sheet

Mobility for All

Washington State Non-Profit Corporation
Tax-Exempt Status 501(c)(3)

Federal ID # **84-2339732**
WA UBI # **604-478-518**

PURPOSE (why we exist):

Mobility for All (m4a) advances mobility solutions that improve people's lives. Solutions must be safe, reliable, sustainable, and accessible for all users.



SAFE



RELIABLE



SUSTAINABLE



ACCESSIBLE

MISSION (what we seek to accomplish):



SHARED-USE
ALTERNATIVES



ZERO
EMISSION



ADVOCATE FOR
TRANSIT



COMMUNITY
ENGAGEMENT



FOSTER
INTERCONNECTIVITY



EQUITABLE
MOBILITY



IMPLEMENT
SOLUTIONS



INFORM AND
EDUCATE

GOVERNANCE

Mobility For All is governed by a Board of Directors who also serve as its corporate officers:

Gregory A. Dronkert
Wendy Clark-Getzin
Michael Rimoin
Bruce Agnew
Alejandro Henao
Yolanka Wulff

President and Board Chair
Vice President
Secretary
Treasurer



Summary Report

GHG Inventory for Forests and Trees Outside Forests, 2011 to 2016

Custom uploaded polygon County, N/A

Summary

Forests and trees play a key role in mitigating climate change, yet they are often not included in local greenhouse gas (GHG) inventories or climate action plans. Custom uploaded polygon County, N/A has taken the first step towards understanding how local changes in land use and tree canopy have contributed to the county's net greenhouse gas profile. Unlike other sectors, land use (in this case, forests and trees) not only emit GHGs, they also remove CO₂ from the atmosphere through photosynthesis, and play a critical role in regulating the planet's climate. The information contained in this summary report can be useful when designing climate actions that reduce GHG emissions and/or increase removals of GHGs from the atmosphere.

Key findings:

- Over the period 2011 to 2016, emissions from forests and trees were 5,105 t CO₂e per year.
- Over the period 2011 to 2016, the Net GHG balance of forests and trees was -58,510 t CO₂e per year.
- Roughly 58% of Custom uploaded polygon County's total land base of 7,040 hectares (17,395 acres) is forest. Many areas outside of forests are also covered by trees, including an average of nearly 36.9 percent tree canopy on lands outside of forest areas
- Over the same period, annual CO₂ removals from forests and trees were -63,615 t CO₂e per year. (Carbon removals are represented by negative values.)
- Total GHG emissions for Custom uploaded polygon County across all sectors could be reduced if additional forests/trees were added to its land base, and/or if losses of trees were reduced further.

Table 1. Custom uploaded polygon county's GHG fluxes from forests and trees for inventory period 2011 – 2016, all values reported in t CO₂e per year

	Removals(t CO ₂ e/yr)	Emissions(t CO ₂ e/yr)
Undisturbed Forest	-52,036	
Forest Disturbances		2,858
Non-Forest to Forest	-306	
Forest to Settlement		1,544
Forest to Grassland		527
Forest to other non-forest lands		12
Trees outside of forests	-11,273	165
Harvested Wood Products	0	
TOTAL	-63,615	5,105
Net GHG balance	-58,510	

Data Inputs

Data used as inputs into the GHG emission and removal calculations are described below.

Land and Forest Cover

GHG inventories for lands are reported in six “land use” categories which were defined by data on land cover—forest land, grassland, cropland, wetland, settlement and other land (barren, snow, ice). Custom uploaded polygon County’s total land base is approximately 7,040 hectares (17,395 acres), with nearly 37.9% Settlement (i.e. developed areas of varying intensity), around 57.7% forest, 2.3% Grassland (which includes hay/pasture, shrub/scrub and other herbaceous cover), 0% cropland, 0.7% wetland and 1.3% other land.

Figure 1. Land cover in Custom uploaded polygon from the National Land Cover Database, 2016

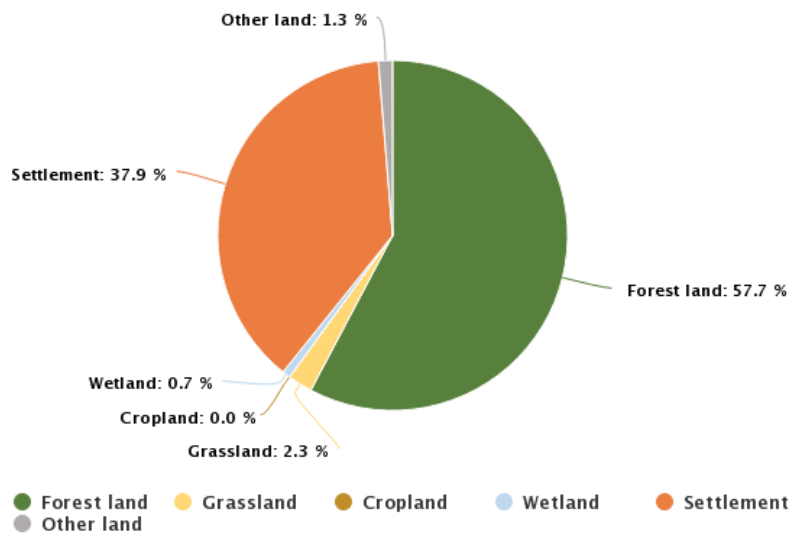
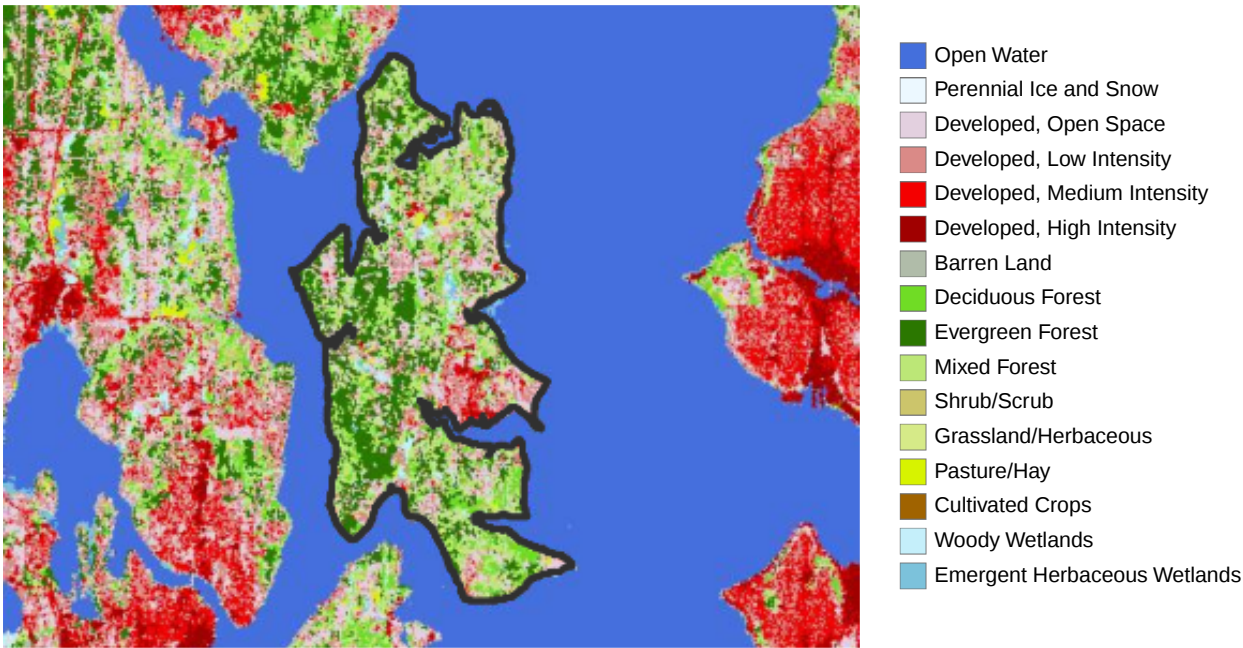
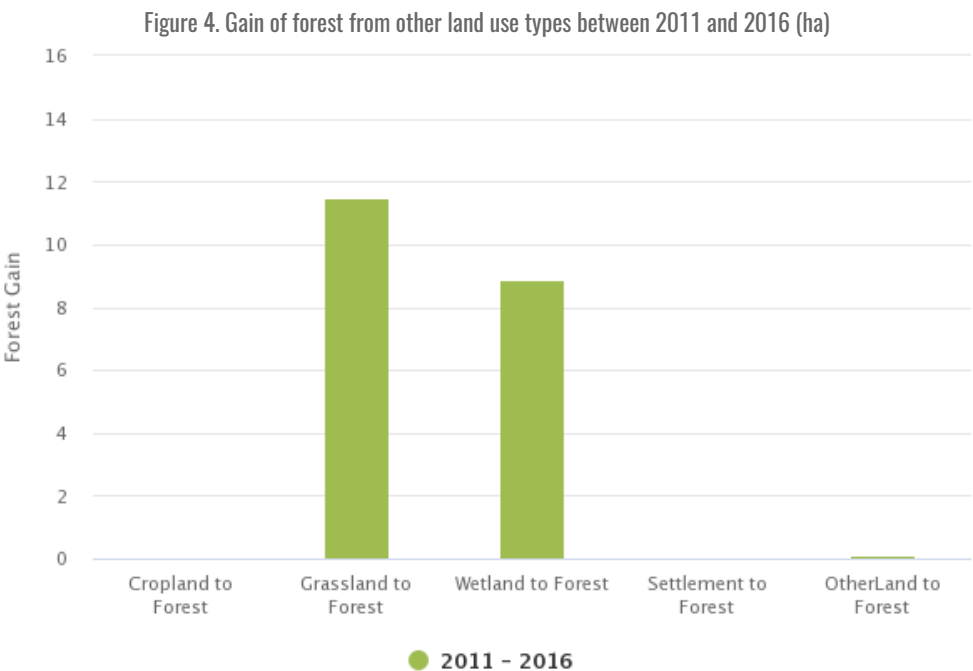
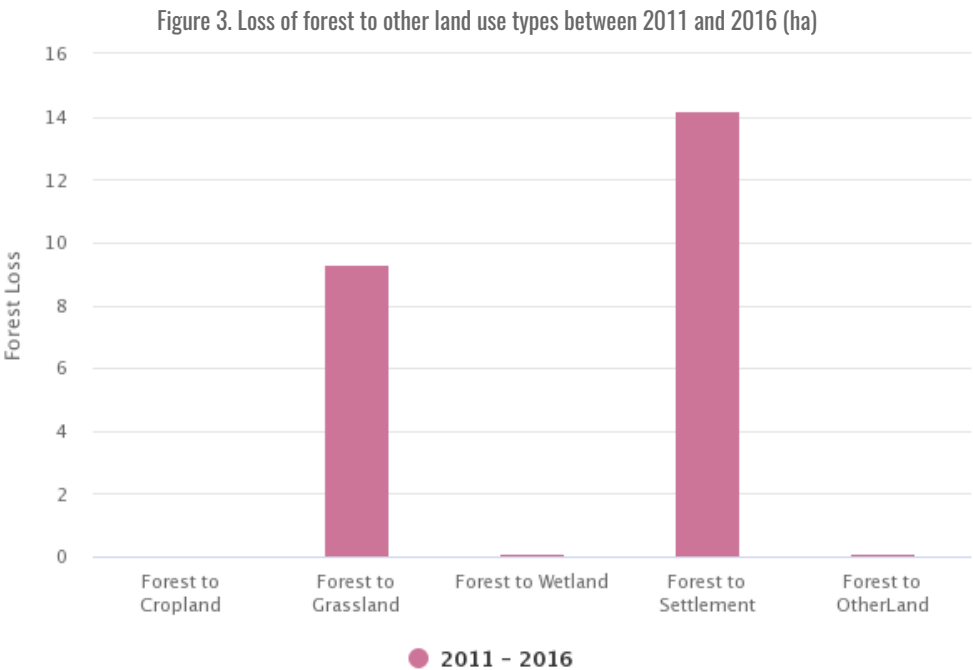


Figure 2. Land cover in Custom uploaded polygon from the National Land Cover Database, 2016



Forest Cover Change

Generating GHG estimates requires data not just on areas of land use, but also data on how land use has changed over time. Between 2011 and 2016, the county lost around 24 hectares (59 acres) of forest land, largely conversion to Settlement. Over the same period, the county gained around 21 hectares (51 acres) of forest land, largely from Grassland.



Forest Disturbances

Over the inventory period 2011 to 2016, forest disturbance from insects was the most significant in Custom uploaded polygon County, affecting 36.9 hectares (91 acres), followed by harvests, which affected 28 hectares (69 acres) and fires, which affected 0 hectares (0 acres).

Trees Outside Forests

Figure 5 shows tree canopy captured by the NLCD tree canopy data. (Note that some areas with high tree canopy in Figure 5 overlap with the NLCD forest class shown in Figure 2.)

This data are available only for the years 2011 and 2016. Over this time period, Custom uploaded polygon County had an average of 1,089 hectares (2,691 acres) of tree canopy outside forests. Between 2011 and 2016, 0 hectares per year of tree canopy were lost, for a total of 2 hectares (6 acres) of tree canopy loss over the 5 year period. Most of this loss occurred within the Settlement class.

Figure 5. Tree canopy 2016 (Source: National Land Cover Database)

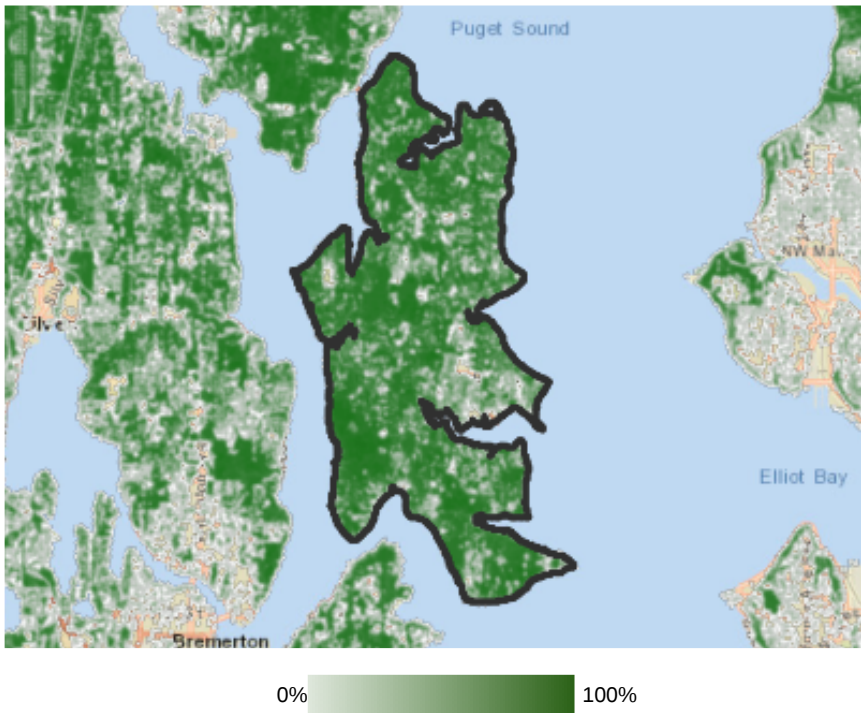


Figure 6: Average tree canopy (in hectares) and % tree canopy in different non-forest land use categories in Custom uploaded polygon County for the period 2011-2016. Note: bars relate to tree canopy area (left vertical-axis, hectares) and dots are the % tree cover per land use category (right vertical-axis). “Other” category not shown due to very low area.

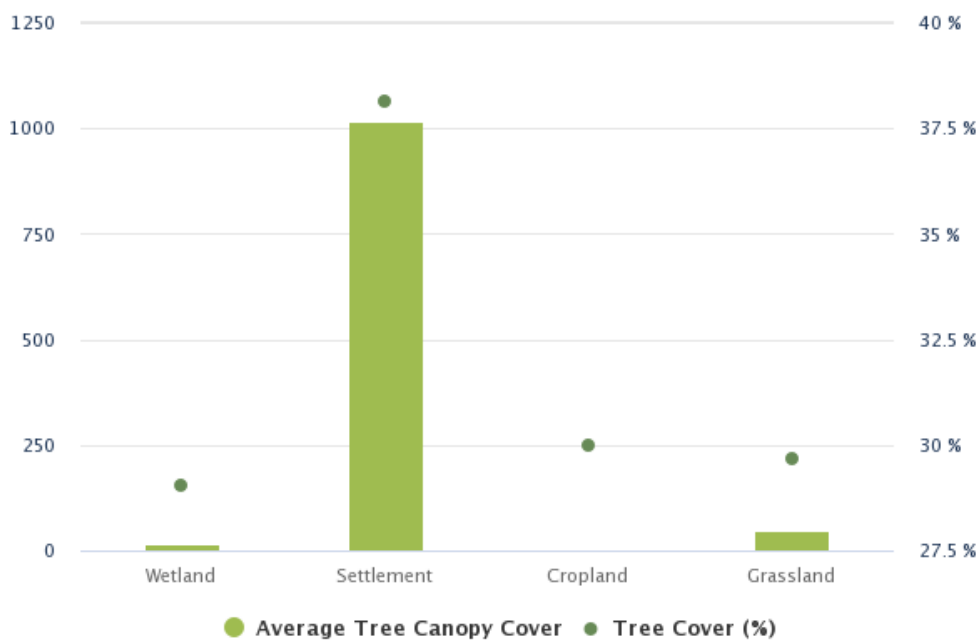


Figure 7: Average area of tree canopy loss in different non-forest land use categories in Custom uploaded polygon County over the period 2011 to 2016 (hectares per year). Note: other category not shown due to very low area.



Land Cover Change Matrix

Table 2. Full NLCD land cover change matrix for 2011 to 2016. All areas are in hectares.

Top Left	Deciduous Forest	Evergreen Forest	Mixed Forest	Woody Wetlands	Cultivated Crops	Pasture/Hay	Grassland/Herbaceous	Shrub/Scrub	Open Water	Emergent Herbaceous Wetlands	Developed, Open Space	Developed, Low Intensity	Developed, Medium Intensity	Developed, High Intensity	Barren Land	Perennial Ice/Snow	Total
Deciduous Forest	563	0.2	0	0	0	0	0.3	0.5	0	0	0.7	0.7	0.7	0.3	0	0	566
Evergreen Forest	0	1,934	0	0	0	0.1	2	1	0	0	3	2	2	1	0	0	1,946
Mixed Forest	0	0.4	1,402	0	0	0.2	3	2	0	0	2	1	0.4	0.3	0.1	0	1,411
Woody Wetlands	0	0	0	148	0	0	0	0	0	0.1	0	0	0	0	0	0	148
Cultivated Crops	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Pasture/Hay	0	0	0	0	0	41	0	0.1	0	0	0	0.2	0	0	0	0	41
Grassland/Herbaceous	0	0.1	0	0	0	0.7	45	4	0	0	0	0	0.1	0	0	0	50
Shrub/Scrub	0.2	8	3	0	0	0	3	57	0	0	0	0.4	0.4	0	0.1	0	72
Open Water	2	4	1	1	0	0	0.3	0.1	7	0.7	0	0	0.1	0	0.2	0	17
Emergent Herbaceous Wetlands	0	0.3	0	0.2	0	0	0	0	0	43	0	0	0	0	0	0	44
Developed, Open Space	0	0	0	0	0	0	0	0	0	0	1,558	3	8	0.7	0	0	1,569
Developed, Low Intensity	0	0	0	0	0	0	0	0	0	0	0	878	0	0	0	0	878
Developed, Medium Intensity	0	0	0	0	0	0	0	0	0	0	0	0	167	0	0	0	167
Developed, High Intensity	0	0	0	0	0	0	0	0	0	0	0	0	0	41	0	0	41
Barren Land	0	0.1	0	0	0	0	0.3	0	0.1	0.7	0	0.2	0	0	91	0	93
Perennial Ice/Snow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	565	1,947	1,406	149	1	42	54	65	7	45	1,564	885	179	43	92	0	0

Table 3. Simplified land cover change matrix for 2011 to 2016. All areas are in hectares.

Top Left	Forest Land	Cropland	Grassland	Wetland	Settlement	Other Land	Total
Forest Land	4,048	0	9	0.1	14	0.1	4,071
Cropland	0	1	0	0	0	0	1
Grassland	11	0	150	0	1	0.1	163
Wetland	9	0	0.4	51	0.1	0.2	61
Settlement	0	0	0	0	2,655	0	2,655
Other Land	0.1	0	0.3	0.8	0.2	91	93
	4,068	1	160	52	2,671	92	0

Emission and Removal Factors

A summary of the emission and removal factors used in the calculations is provided in Table 4.

	Emission Factor (t C/ha)	Removal Factor (t C/ha/yr)
Forest Change		
Deforestation		
To Cropland	0.00	
To Grassland	77.38	
To Settlement	148.86	
To Wetland	134.73	
To Other	39.36	
Reforestation (Non-Forest to Forest)		
		-4.10
Forest Remaining Forest		
Undisturbed		
		-3.56
Disturbed		
Fire	0	
Insect/Disease	-18.87	
Harvest/Other	163.92	
Trees Outside Forest		
Tree canopy loss	95.86	
Canopy maintained/gained		-2.82

Harvested Wood Products

Harvested wood products (HWP) temporarily store carbon from the forest ecosystem as the wood goes through a series of production processes and end-uses, with eventual disposal (and emission to the atmosphere). The delay represents a net benefit to the atmosphere. The period of storage varies from long-lived solid wood products that remain in use for long periods of time to products that are quickly disposed of in landfills.

In the web tool, the HWP Calculator tracks carbon in harvested wood through four different “fates,” from harvest to timber products to primary wood products to end-use to disposal, applying best estimates for product ratios and half-lives at each stage. Based on user inputs entered about annual harvest volumes in Custom uploaded polygon County, the change in the harvested wood pool over the inventory period 2011 to 2016 is estimated as 0 t CO₂e per year.

Caveats

Information presented here represents a snapshot in time of the net GHG balance and many of the factors contributing to that balance. The estimates can help identify where policies may be designed to reduce net GHG emissions. This inventory currently uses a simplifying assumption that a loss of forest or trees results in immediate emissions to the atmosphere (rather than delayed emissions in the case of various use cases from long-term storage to shorter decay timelines if sent to landfills). In general, it is important to consider that these estimates represent a relatively short period of time compared with the long-term consequences of policy decisions and land management actions. For example, a forest converted to settlement represents a permanent loss of removal capacity. Over the long term, maintaining forests will sustain a higher rate of carbon removal, depending on age-related growth rates and occurrence of disturbances.

There are significant uncertainties in the estimates. Although not quantified here, typical greenhouse gas inventories of forests using similar approaches, including the national GHG inventory, report uncertainties in the net GHG balance that can be as high as $\pm 45\%$ (with 95% confidence). In the results presented here, the most uncertain estimates involve emissions from land-use change which are based on well-documented remote-sensing products, but relatively few field observations from a statistical sampling of county forests. While uncertainties can be high, the estimates can still provide useful information on the relative magnitude and importance of such GHGs; subsequent analyses can also provide information on the directionality of emissions and removals from land management.

Finally, it is recommended that additional analyses be done using models that project impacts of alternatives over coming decades. Such models are available and have been used in other studies at county scale. The GHG inventory presented here is only the first step to providing science-based information to support policy decisions. To more fully explore the potential impacts of alternate policies, projection models can be used to compare long-term results among the alternatives which typically include a “business as usual” (i.e. no change in policy) alternative. This feature may be added into the web tool in the future.