

Climate Change Mitigation & Adaptation

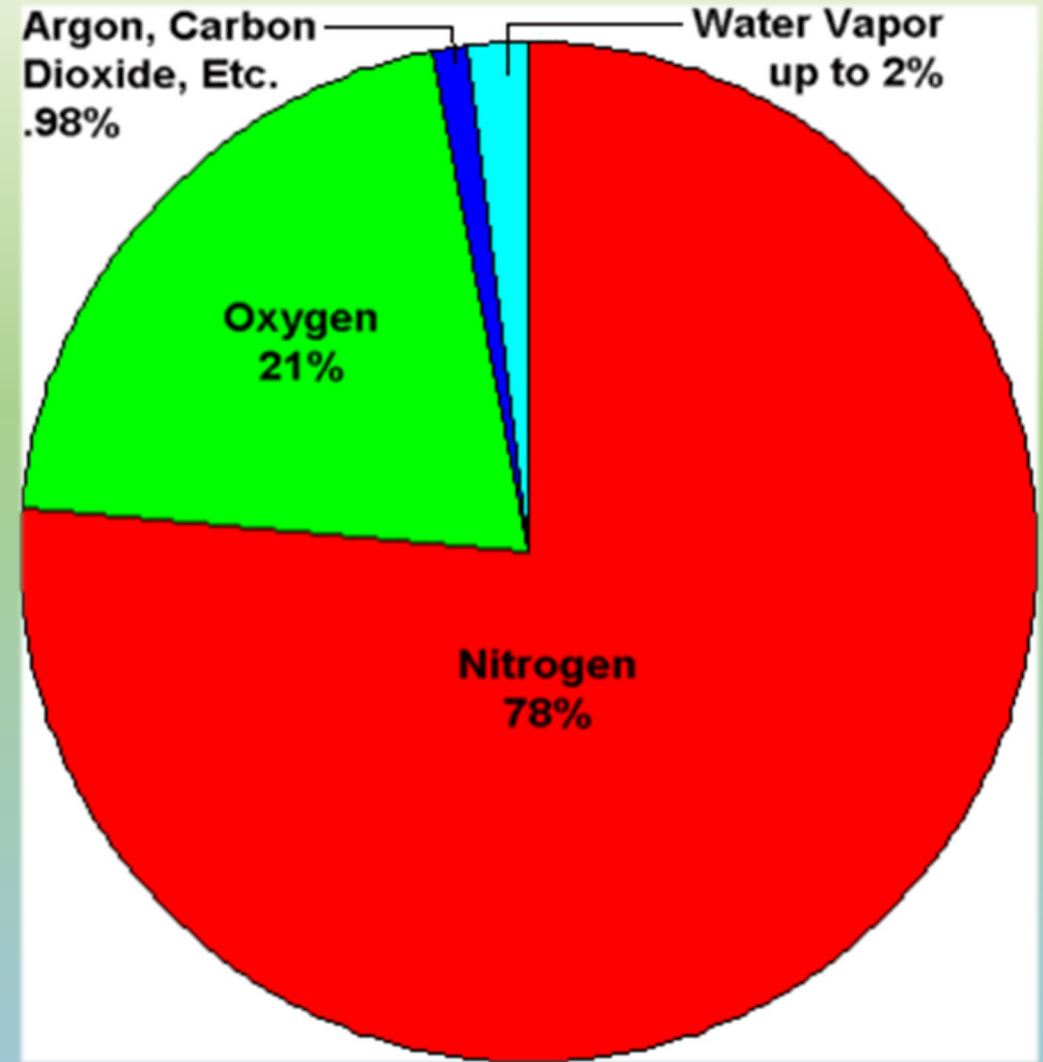
*Should the Port Adopt Additional
Goals & Policies Concerning
Greenhouse Gas (GHG)
Emissions Reductions?*

Port Commission Retreat

March 1, 2024

HS Science Refresher

- Most of earth's atmosphere is composed of N₂ and O₂
- The concentrations of atmospheric gases change over time
- CO₂ is a trace gas (.04% of total atmospheric volume)
- H₂O & CO₂ are the most important trace gasses – critical for life



Carbon Dioxide - Sources

- Atmospheric CO₂ comes from both natural and human sources
- Natural Sources:
 - Ocean outgassing
 - Decomposing biomass
 - Volcanos
 - Wildfires
 - Animals
- Anthropogenic (Human) Sources:
 - Energy generation (coal fired power plants)
 - Transportation
 - Industrial processes



Carbon Dioxide - Sinks

- Forests
- Soils
- Oceans



Why is Carbon Dioxide an Issue Now?

- CO₂ and H₂O can absorb infrared radiation, trapping heat in the atmosphere (the “greenhouse effect”)
- Before about 1750 atmospheric CO₂ was about 288ppm
- Today atmospheric CO₂ stands at 421ppm
- The **UN IPCC** has concluded that **human activity** is chiefly responsible for this rapid increase and is irreversibly damaging the biosphere

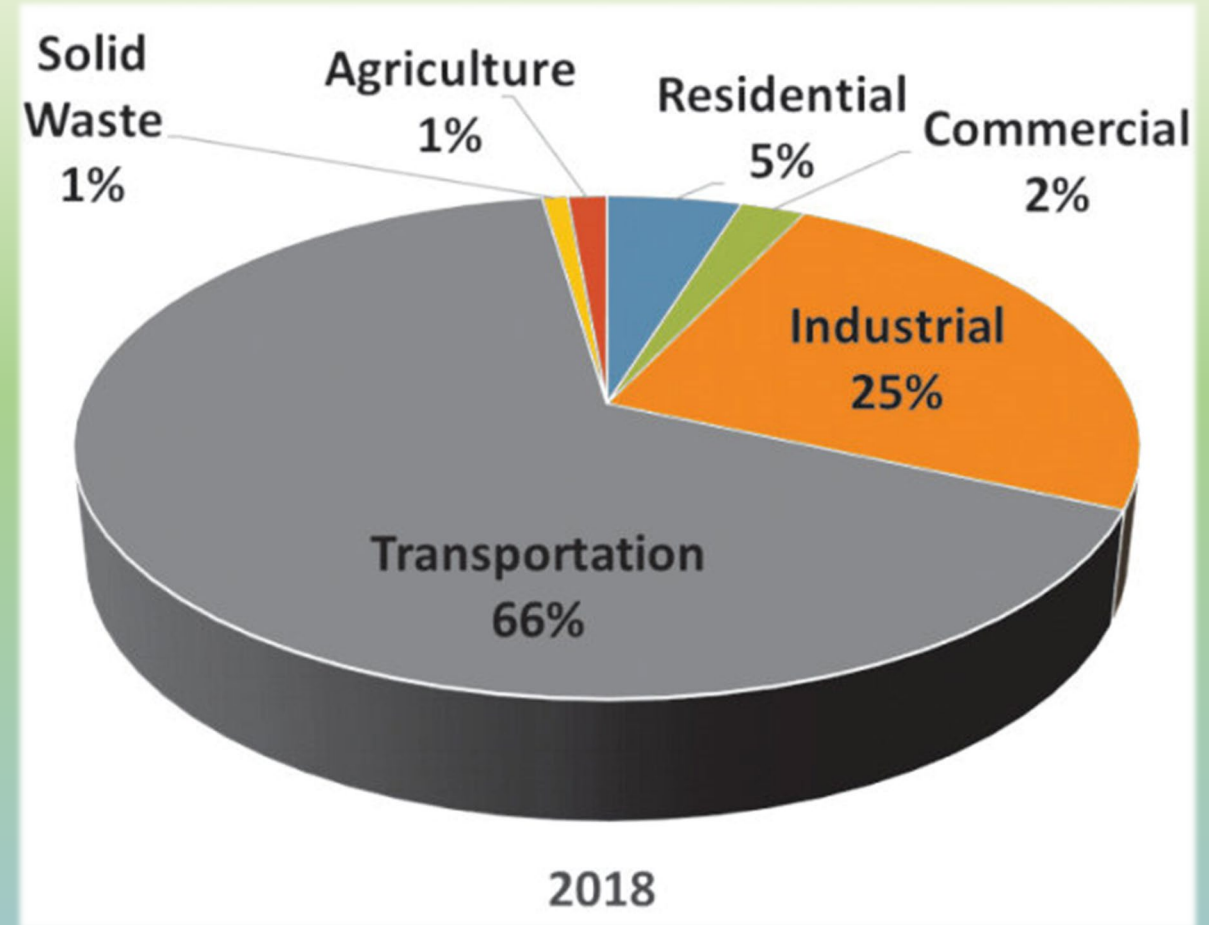
Port Townsend/Jefferson County Climate Action Committee (CAC)

- A Joint County/City Advisory Committee formed in 2009
- Developed a “Climate Action Plan” adopted by the City and County in 2011
- Established a goal to reduce GHG emissions by 80% below 1990 levels
- Outlined strategies to achieve the goal:
 - Specific measures to reduce emissions from government operations
 - Community engagement
 - Land use and transportation changes



Port CAC Participation

- The Port has participated since the CAC's inception
- Larry Crockett was the first Port's first CAC representative – succeeded by yours truly – and now Commissioner Haase
- The Port has previously adopted resolutions in support of CAC goals:
 - Resolution 610-14 Committing to Collaborate to Reduce Emissions and Promote Energy Efficiency
 - Resolution 700-19 Committing to Climate Mitigation and Adaptation Measures



Sources of Jefferson County GHGs in 2018

Resolution No. 610-14

- Established a policy to collaborate in a program to reduce emissions and promote efficiency
- Expressed support for efforts to implement the Climate Action Plan
- Committed to actively participate in the activities of the CAC to achieve the GHG reduction goals
- Pledged the Port to exploring, developing and implementing measures to achieve the GHG reduction targets of the Plan

Resolution No. 700-19

*“it shall be the policy of the Port of Port Townsend to reduce greenhouse gas emissions and prepare for human induced climate impacts by implementing the following **mitigation** and **adaptation** measures . . . ”*

RESOLUTION NO. 700-19

A Resolution of the Commission of the Port of Port Townsend

A RESOLUTION COMMITTING TO CLIMATE MITIGATION & ADAPTATION MEASURES

The Port Commission for the Port of Port Townsend, Washington resolves as follows:

WHEREAS: numerous scientific organizations, including the Intergovernmental Panel on Climate Change, have determined that human induced changes to the earth's climate system are unequivocal as evidenced by increases in global average air and ocean temperatures, receding glaciers, decreasing snow pack, ocean acidification and coral bleaching, and by rising global mean sea levels, and further, are damaging to the biosphere, including human systems; and

WHEREAS: energy consumption, specifically the burning of fossil fuels (e.g., coal, oil and natural gas) accounts for more than 80% of U.S. greenhouse gas emissions, and the U.S. produces nearly one quarter of global greenhouse gas emissions; and

WHEREAS: in response to this issue, Jefferson County and the City of Port Townsend have established a Climate Action Committee (CAC) by way of a joint resolution adopted in 2009 (County Resolution No. 06-09 and City Resolution No. 09-0002) to develop a Climate Action Plan and provide recommendations to implement the Plan; and

WHEREAS: the Port of Port Townsend is a participant in the proceedings of the fifteen (15) member CAC, together with representatives from the County, City, PUD, Public Health, Jefferson Healthcare, Jefferson Transit, the Port Townsend Paper Company, as well as citizen representatives; and

WHEREAS: the CAC has unanimously recommended that participating members demonstrate environmental leadership and stewardship by adopting organizational goals to reduce (mitigate) greenhouse gas emissions and to take steps to prepare for the biophysical changes occasioned by climate change (adaptation); and

WHEREAS: the Port of Port Townsend can influence land use, building construction, waste management, and reduce energy use within its facilities; and

WHEREAS: the Port can also provide leadership by motivating and supporting its tenants in efficiently using energy within Port facilities, and encouraging and supporting citizens throughout the County in improving energy use within businesses, industries, schools, churches and homes; and

WHEREAS: the Port of Port Townsend recognizes that the adverse effects of human induced climate change on the biosphere pose serious and increasing risks to our community's future economy and livability; and

WHEREAS: actions taken to reduce greenhouse gas emissions and efficiently use energy are required, and provide multiple local benefits by decreasing air pollution, supporting employment, reducing energy expenditures, saving money, and reducing tax burdens for governments, businesses and citizens; and

NOW, THEREFORE BE IT HEREBY RESOLVED: by the Commission of the Port of Port Townsend, that it shall be the policy of the Port of Port Townsend to reduce greenhouse gas emissions and prepare for human induced climate impacts by implementing the following mitigation and adaptation measures:

Port-Adopted Mitigation Measures

- Prioritize energy efficiency repairs and upgrades to Port-owned buildings
- Prioritize fuel efficiency, durability and long-term reliability in the purchase of all Port vehicles/equipment
- Consider the use of biofuels and electrification in all future procurement decisions (consider total lifecycle operational costs)
- Establish/document adherence to a fleet vehicle maintenance schedule to optimize long service life
- Ensure all office equipment purchases are ENERGY STAR certified
- Progressively replace all lighting at Port facilities with energy efficient fixtures

Port-Adopted Adaptation Measures



- Seek to diversify Port operations and lines of business in preparation for physical, environmental and economic dislocations
- Continue to explore opportunities to support expansion of the agricultural sector (e.g., processing, storage and distribution facility)
- Focus capital on maintaining the Boatyard – recognizing that the practical skills hosted there are vital to the community – both now, and in a future likely to be simpler and more local

CAC Recommends New Goals



- To achieve no more than 1.5C warming, the IPCC now recommends a 50% reduction from 1990 levels by 2030, and “net zero” emissions by 2050 (Paris Climate Agreement)
- In 2018 – a new Jefferson County GHG inventory was completed establishing new “baseline” emission levels
- A new “fair share” target is recommended for Jefferson County using Local Governments for Sustainability (ICLEI) software
 - **58.7% reduction from 2018 levels by 2030**
 - **95% reduction from 2018 levels by 2050** (note: less than “net zero” (100%) due to carbon sequestration off-sets provided by peninsula forests)

Questions Presented



Stern laws of thermodynamics – Ex #1 – Hadrian's Wall

- *Does the Commission wish to consider formally adopting the updated GHG emissions reductions goals recommended by the CAC?*
 - 58.7% below 2018 baseline levels by 2030
 - 95% below 2018 baseline levels by 2050
- *If “yes”, what types of GHG mitigation measures would the Commission want to contemplate in pursuit of such reductions?*
 - Solar arrays on Port-owned buildings?
 - EV charging stations?
 - EV fleet vehicles?
 - Other?
- *If “no”, does the Commission believe current Port policy is adequate in support of the Climate Action Plan? Or is additional policy guidance necessary?*

Even Bigger (Heterodox) Questions Presented

- *Are "renewable" technologies that require extraction/exploitation of finite resources sustainable?*
- *Can renewable technologies support themselves outside the cocoon of a hydrocarbon-fueled economy? Or are they non-renewable renewable energy harvesting systems?*
- *Is perpetual economic growth threatened (or worse) if the last "cheap" and easily accessed hydrocarbon resources go into permanent and irreversible decline?*
- *Do renewable technologies provide sufficient surplus net energy to maintain current **economic and financial systems** founded on eternal growth (i.e., debt with interest repaid)?*
- *Could permanent and irreversible energy descent and economic contraction occur as the Permian Basin in the US and Ghawar Oil Field in Saudi Arabia reach "peak" and decline? Might this happen soon?*
- *As stewards of a special purpose government charged with ensuring the economic vitality of our community – will we be able to do so in coming decades if our economy largely de-couples from fossil hydrocarbons?*
- *Should we be preparing for permanent contraction and a simpler, more local future?*