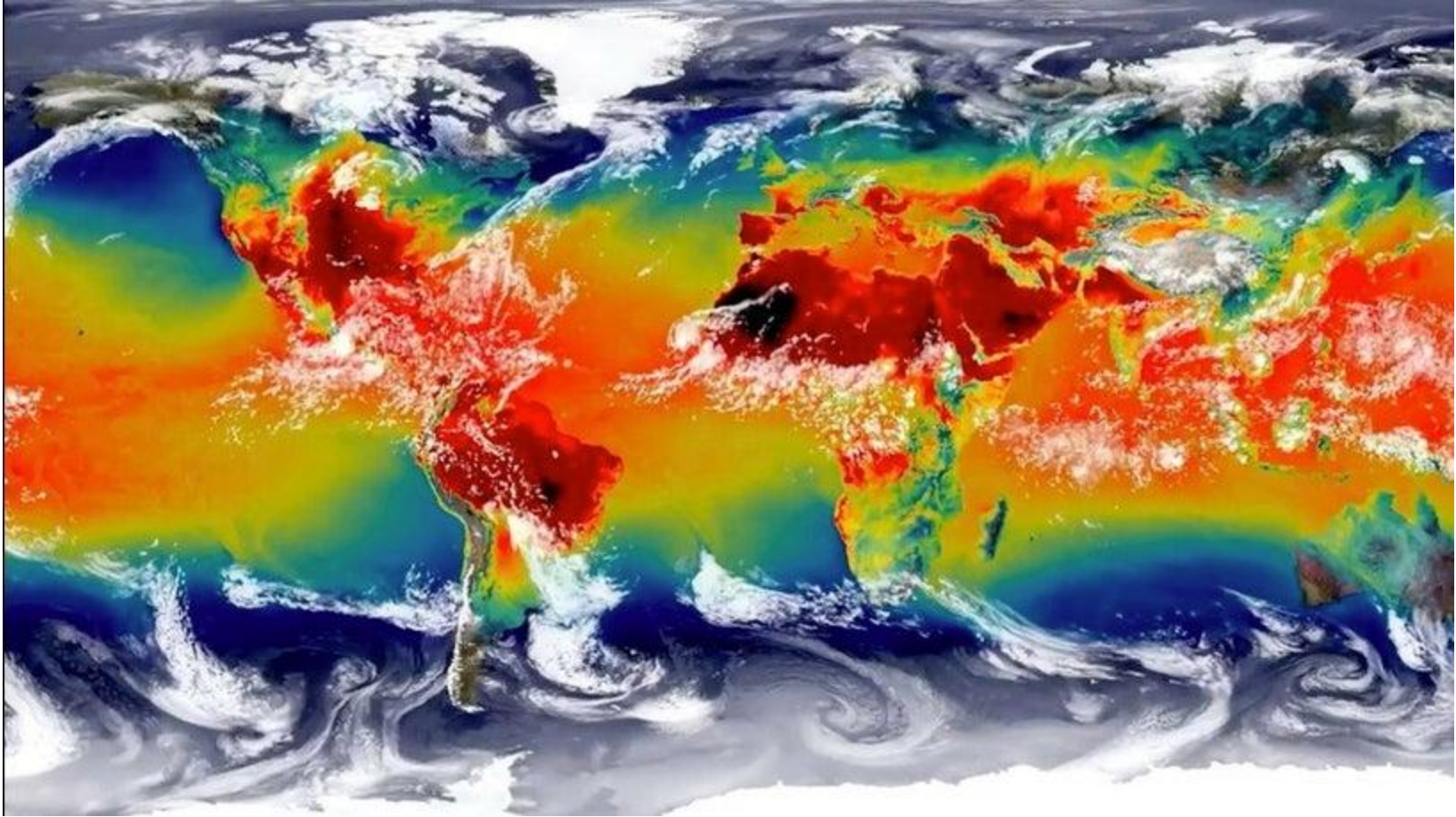


A Climate Emergency Resolution for White Salmon



Columbia River Basin - Beauty & Biodiversity



- Supports great biodiversity – over 700 species
- Attracts those who love nature & an outdoor lifestyle
- It's why we love it here!



Why does this matter to White Salmon?



Local Impacts

Wozniak, O., Land Trust Alliance (2019). *Principal impacts to National Scenic Area resources*. Summary of Climate Change Effects in the Columbia River Gorge National Scenic Area.

A Glimpse into the Future

Warm temps in 2015 considered a prelude of what's to come

Salmon Die-Off

- Half of the anticipated 500,000-fish sockeye run was wiped out as the result of unusually warm water temperatures
- Scientists expect about 1/3 of the Northwest's current habitat for salmon and other cold-water fish unsuitable by the end of the century if no action is taken



<https://nca2018.globalchange.gov/chapter/24/>

<https://www.nwcouncil.org/news/warm-water-blamed-huge-columbia-river-sockeye-die>



A Glimpse into the Future

Warm temps in 2015 considered a prelude of what's to come

Agricultural Losses Widespread drought and irrigation shortages

Agricultural losses up to \$773 million in Washington, including:

- \$7.7 million in blueberries
- \$14 million in red raspberries
- \$500 million in other crops that make up more than 75% of WA's cultivated acreage



<https://cms.agr.wa.gov/WSDAKentico/Imported/495-2015DroughtReport.pdf> <https://nca2018.globalchange.gov/chapter/24/>

A Glimpse into the Future

Warm temps in 2015 considered a prelude of what's to come

Recreation Losses

- Snowpack was the lowest on record, with Oregon and Washington 89% and 70% below average respectively
- Limited snow- and water-based recreation opportunities leading to significant economic harm
- Reduced fishing seasons



Mt Hood from Trillium Lake, nearly bare (2015). Photo Credit: Josh Kulla

<https://nca2018.globalchange.gov/chapter/24/>

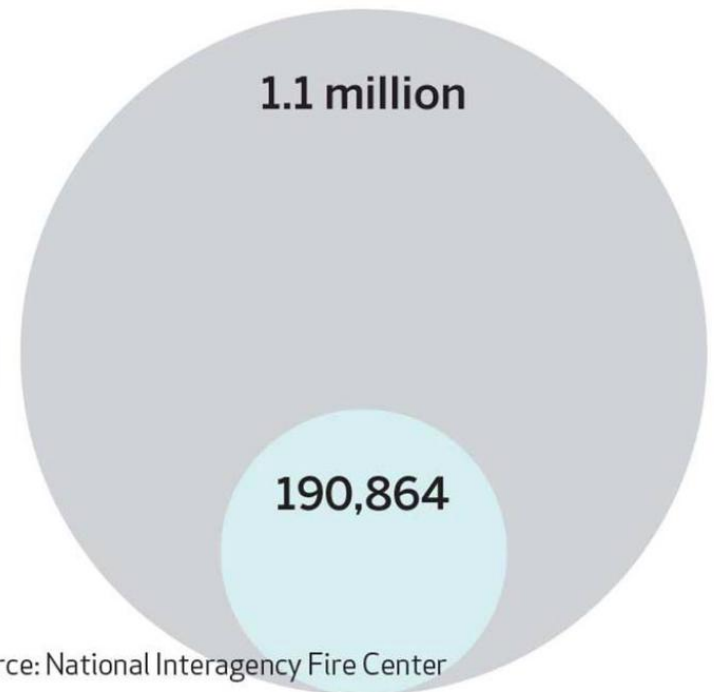
A Glimpse into the Future

Warm temps in 2015 considered a prelude of what's to come

Threats to Life/Property/Infrastructure

- 2015 was the most severe wildfire season in the Northwest's recorded history (1.6m acres burned in OR/WA)
- Surpassed in 2020

WASHINGTON'S WILDFIRE WOES The acres burned in 2015 in Washington State compared to the average annual number of acres burned in the state from 2005–2014:



Source: National Interagency Fire Center



<https://nca2018.globalchange.gov/chapter/24/>

A Glimpse into the Future

Warm temps in 2015 considered a prelude of what's to come

Community Health Impacts

- Significant impacts from smoke and heat
- Drinking water quality concerns
- Spikes in cases of Salmonella and *E. coli*
- Increased Lyme's disease



<https://nca2018.globalchange.gov/chapter/24/>

Natural Resource Sector Job Loss & Decreased Revenue

Job Losses

- Natural resources are a key part of our economy (fisheries, timber, orchards, vineyards, addition farm/agriculture).
- Climate change puts our natural resource sector at risk.



Hydropower shortages

- 40% of the nation's hydropower is generated in the Northwest.
- Lower stream flows will likely reduce hydroelectric supply and could lead to large economic losses in the region.

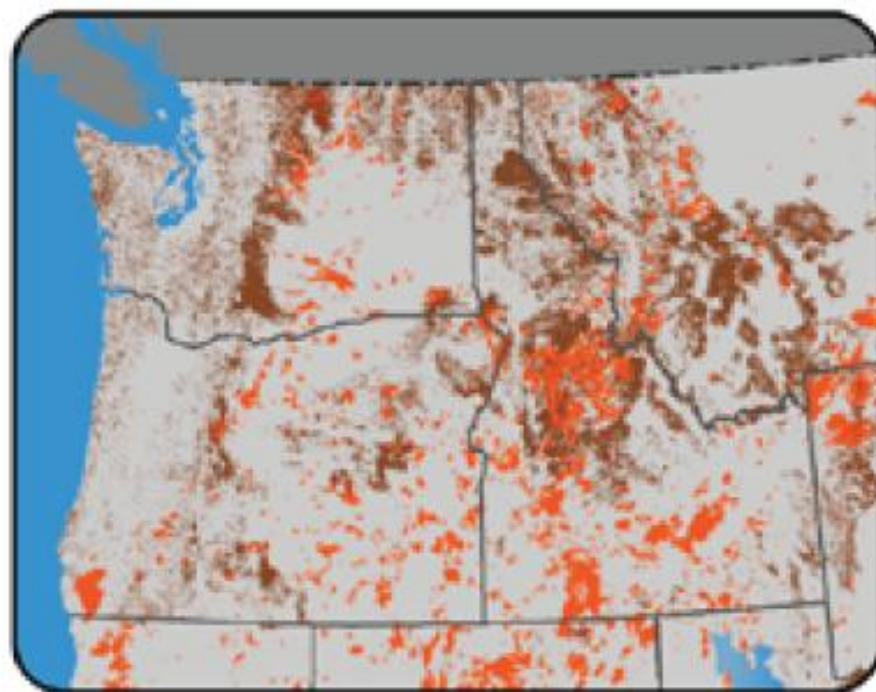


https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-northwest_.html#Reference%202

http://www.gorgecommission.org/images/uploads/meetings/Wozniak_Climate_Change_Report_October2019-corrected.pdf

Forest Impacts: Fires, Insects, Diseases

- Pine beetles spread when temps too warm
- Fire area spreads when temps too warm



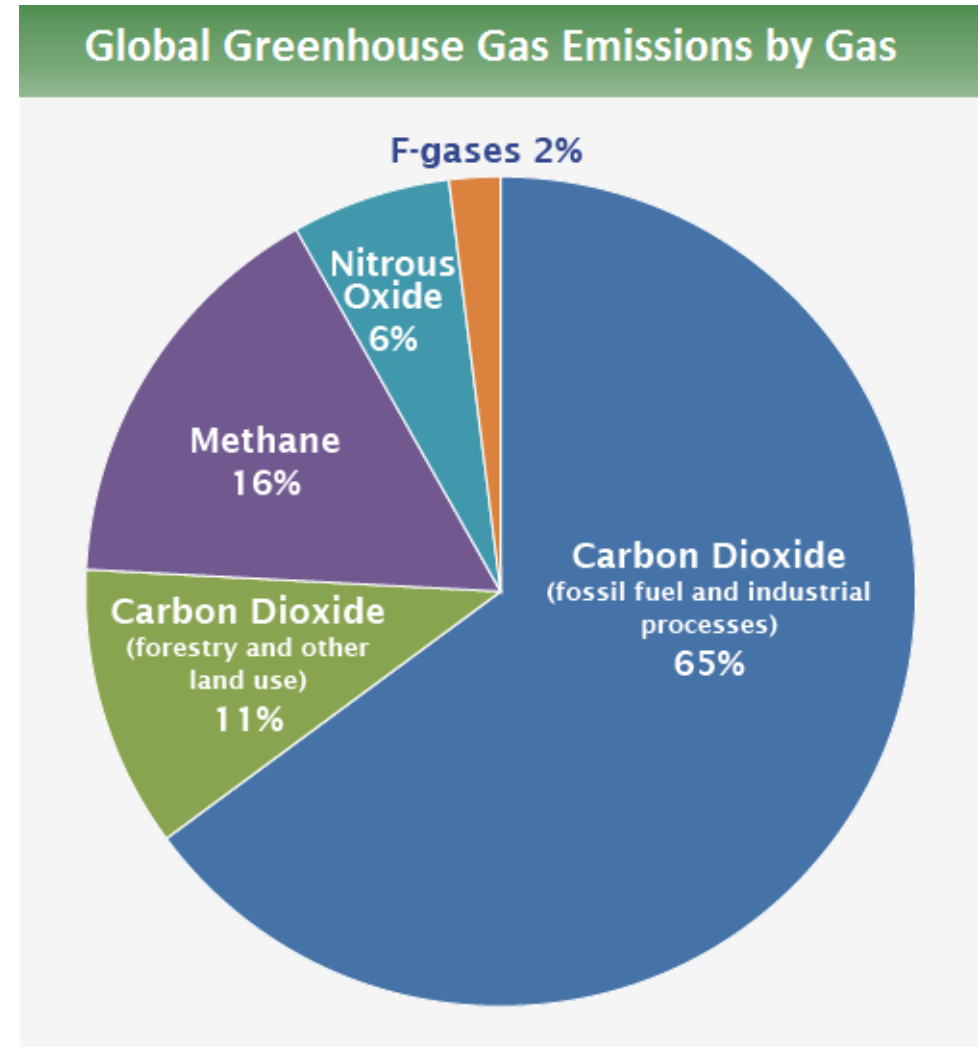
https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-northwest_.html#Reference%202

Greenhouse gases (GHG) in Earth's atmosphere are

- water vapor (H_2O),
- carbon dioxide (CO_2)
- methane (CH_4) *84 times more potent than CO_2*
- nitrous oxide (N_2O)
- ozone (O_3)

Too little **greenhouse gas**
makes Earth too cold,

Too much **greenhouse gas**
makes Earth too warm.



<https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

The Carbon Cycle

- Naturally-generated CO₂ is a part of a very natural Carbon Cycle in the atmosphere.
- The Earth has been able to generate, absorb, and cycle through carbon dioxide naturally for millennia in a self-balancing system.

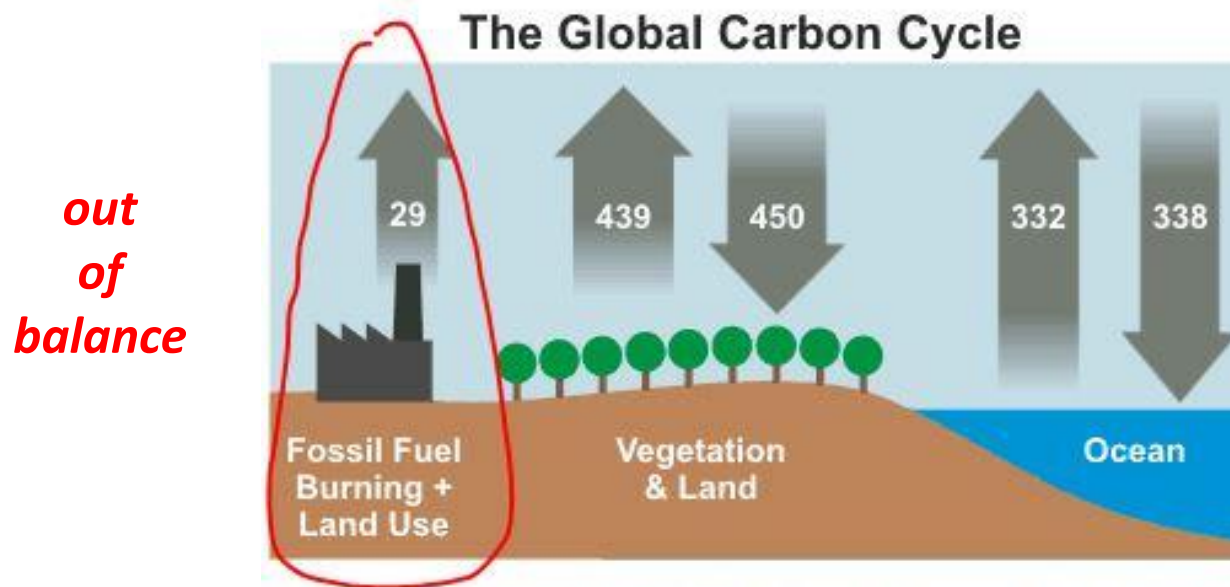


Figure 1: Global carbon cycle. Numbers represent flux of carbon dioxide in gigatons (Source: Figure 7.3, IPCC AR4).

- Since the industrial revolution, anthropogenic GHG emissions generated by human activity exert extra pressure on the once self-balancing Earth system.



350 ppm is the Safe Level

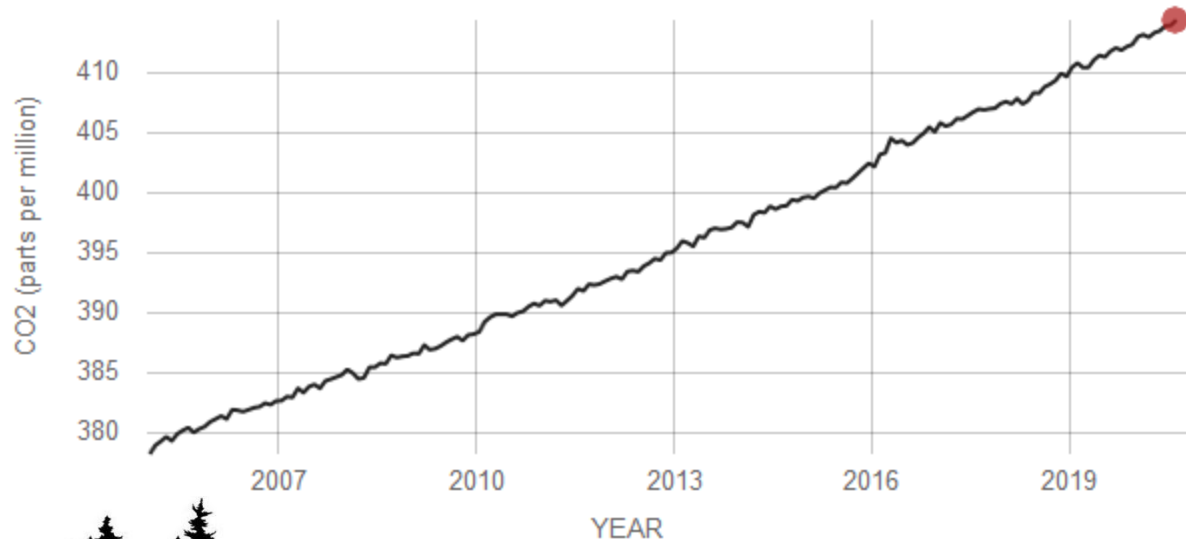
CO₂ is released through

- Human activities such as **deforestation and burning fossil fuels**, as well as
- Natural processes such as **respiration and volcanic eruptions**

The graph shows atmospheric CO₂ levels

DIRECT MEASUREMENTS: 2005-PRESENT

Data source: Monthly measurements (average seasonal cycle removed). Credit: [NOAA](#)



OK, yeah, it's going up...

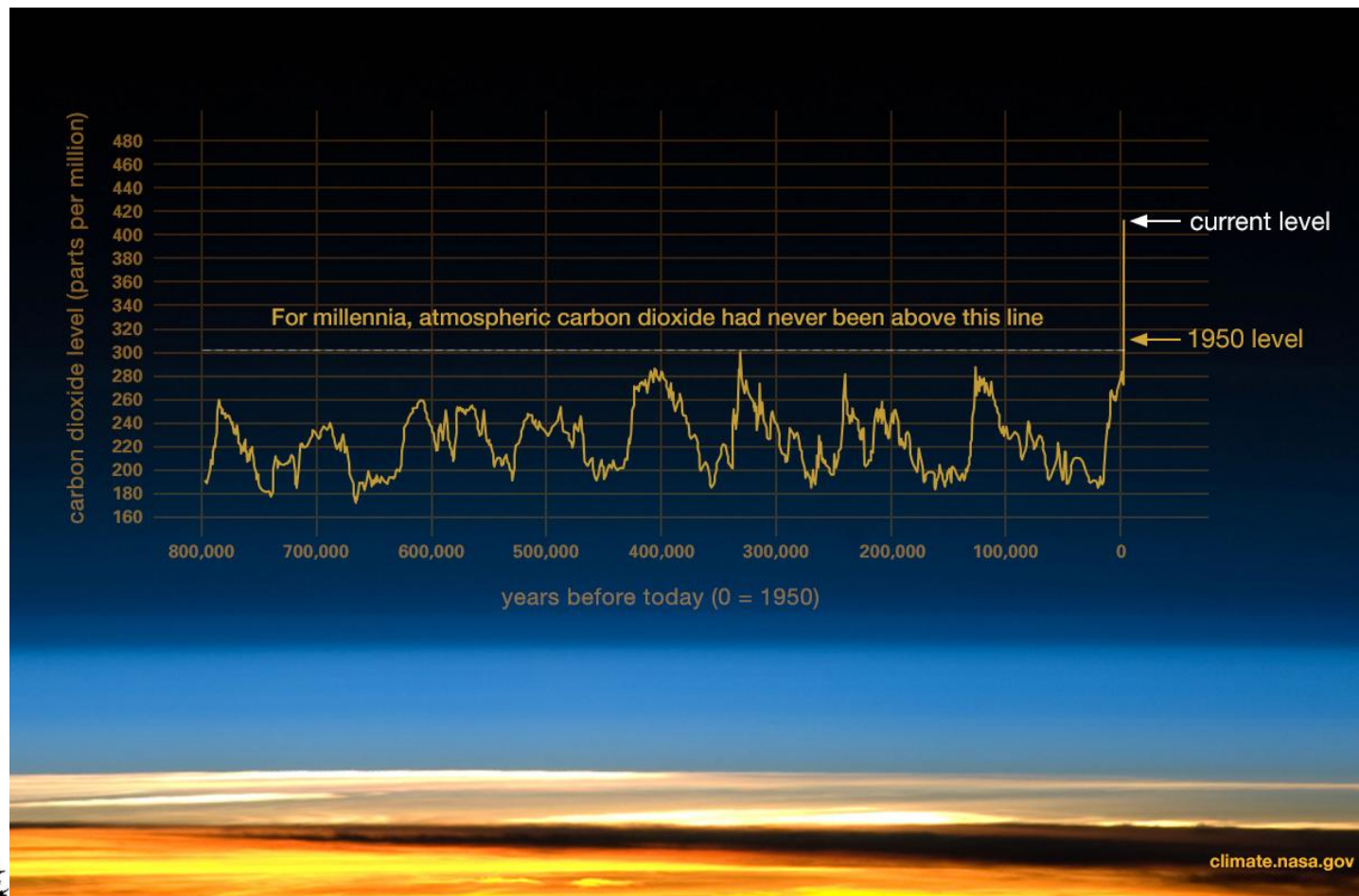
Human activities emit 60 or more times the amount of carbon dioxide released by volcanoes each year. ... On the scale of CO₂ emissions, human sources far outweigh volcanoes.

[NOAA Climate.gov](#)



Lets put it in perspective...

- You can see 1,000,000+ years of relative stability
- Natural fluctuations ranged from 185 ppm to 280 ppm
- In 2013, CO₂ levels surpassed 400 ppm for the first time in recorded history



<https://climate.nasa.gov/vital-signs/carbon-dioxide/>

The biggest GHG emitting fuels

Coal generates the most CO₂ emissions of any fossil fuel and yet remains the world's dominant energy source

Gasoline & Diesel (oil) for transportation

Natural Gas is marketed as clean energy but it is highly polluting

- Methane 84 times more potent than CO₂ over a 20 year period
- Methane leaks a lot – leaked methane cancels out CO₂ reduction brought about by replacing coal with natural gas



Wildhorse Wind Farm, Ellensburg WA

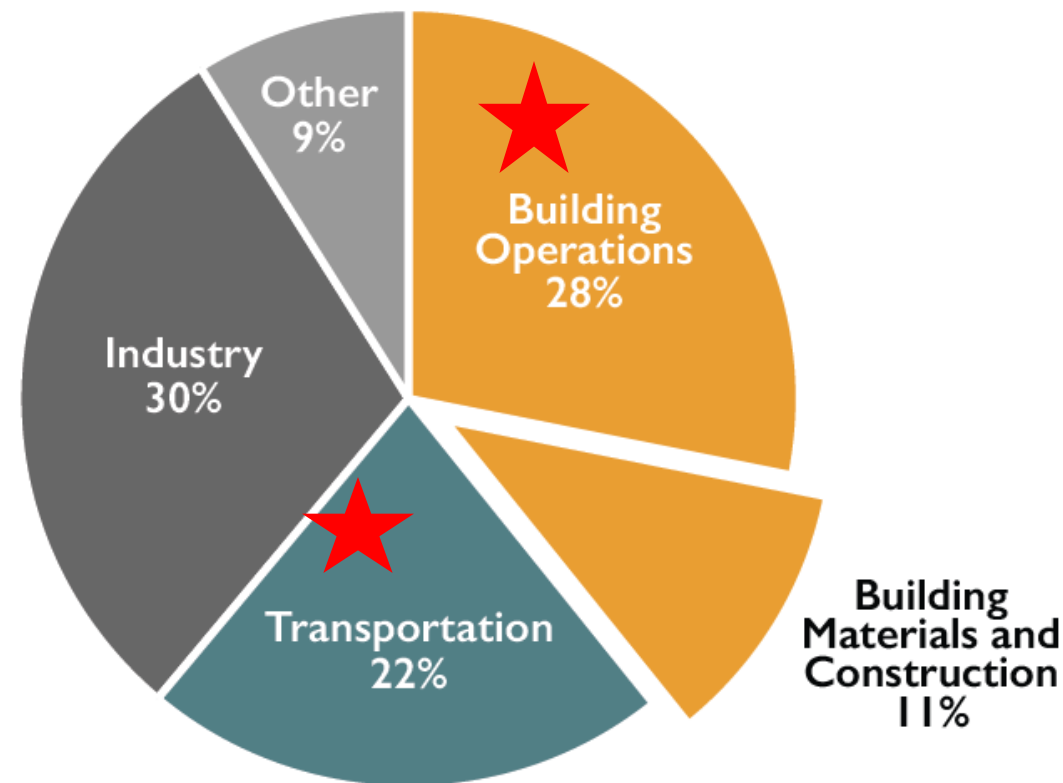
<https://www.greenamerica.org/fight-dirty-energy/amazon-build-cleaner-cloud/natural-gas-why-it-dirty>

Largest source of greenhouse gas emissions

in the United States are from burning of fossil fuels

- Planes Trains & Automobiles
- Electricity for Buildings
- Heat for Buildings

Global CO₂ Emissions by Sector



Source: © 2018 2030, Inc. / Architecture 2030. All Rights Reserved. Data Sources: UN Environment Global Status Report 2017; EIA International Energy Outlook 2017



Solutions

- We can see the implications of inaction.
- How do we take action? And what would that look like?
- The proposed declaration provides a framework for this, with guidelines for solutions to help save our local economy, lifestyle, and resources.
- We can work toward change by targeting the biggest offenders...



Sustainability (the three E's)

Meeting our own needs without compromising the ability of future generations to meet their own needs

- **Environment**

Sustainability aims to protect the environment by minimizing the use of non-renewable resources, and using renewable resources at a rate they can be sustained

- **Economy**

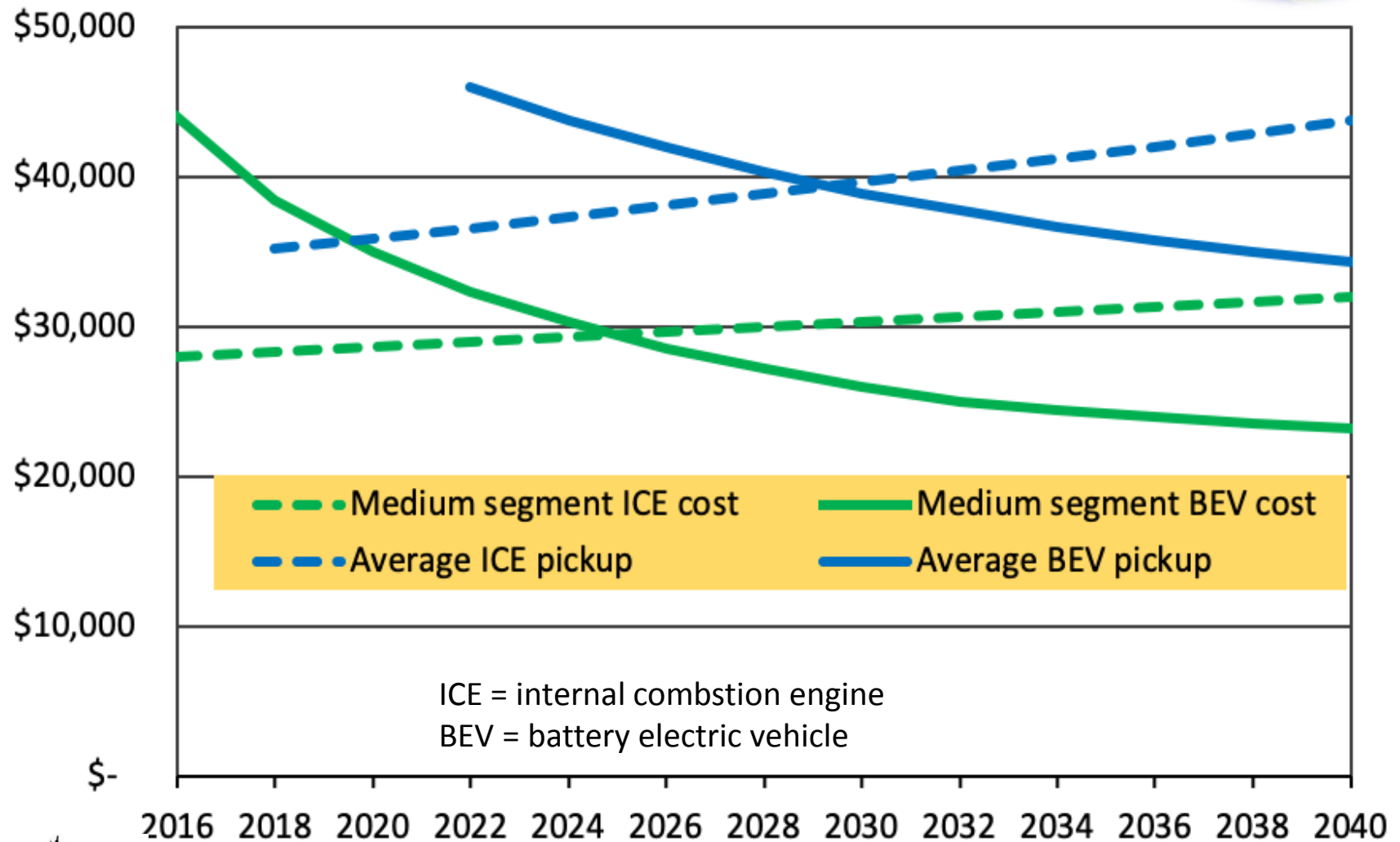
Sustainability aims at developing an *economy* that is vital and dynamic and *integrated with environmental goals*

- **Equity/Social Benefit**

Sustainability aims at ensuring that while achieving environmental and economic goals, *all aspects of society are benefited, and no aspects of society are harmed*



Electric Vehicles becoming Cheaper to purchase than Gasoline/Diesel



And they're cheaper to operate too!

White Salmon can save millions by DeCarbonizing Infrastructure



Sector	Annual fuel costs (\$M)	2030 target (\$M)	2050 target (\$M)	New policies
Transportation fuels	5.2	2.6	0	- Accelerate EVs with carrots and sticks at city & state level - EV-ready building code - Provide more public chargers
Electricity use	2.3	3.0	3.7	- Utilities finance EVs & chargers - Expand for ~60% load growth
Natural gas use	0.5	0.25	0	No new hookups until utility is on IPCC 2030 GHG trajectory.
Total	8	5.85	3.7	<i>million saved!!</i>

Source: Rough estimate scaled from Hood River County energy inventory

The sooner we transition, the more money we save.



Microgrids offer Resilience



- Wildfire severity increasing faster than predicted
- A microgrid is locally controlled, & functions with the grid or alone
- Typically uses solar generation and battery storage
- Homes, businesses, city and county response centers
- Microgrids can include other types of generation and storage, charge and discharge vehicles, & be scaled for a small town
- **Provides power during an emergency**

Blue Lake Rancheria
microgrid (CA) kept the lights
on during Public Safety
Power Shutoff in 2019



Traditional Buildings are Big Users

- They produce 40% of GHG emissions
- They use 70% of electricity produced in the US

But Green Buildings can

- Drastically cut energy use, decreased utility bills
- Cost <2%, but yield over 10 times that over the building's life! (Life Cycle Cost)
- Reduce GHG emissions
- Increase worker productivity

Tofurkey Plant Hood River Waterfront

- The Tofurkey Plant in Hood River is rated LEED Platinum, the highest rating available.
- **This facility is 34% more efficient than the current Oregon building code standard**



Tofurkey Plant Hood River



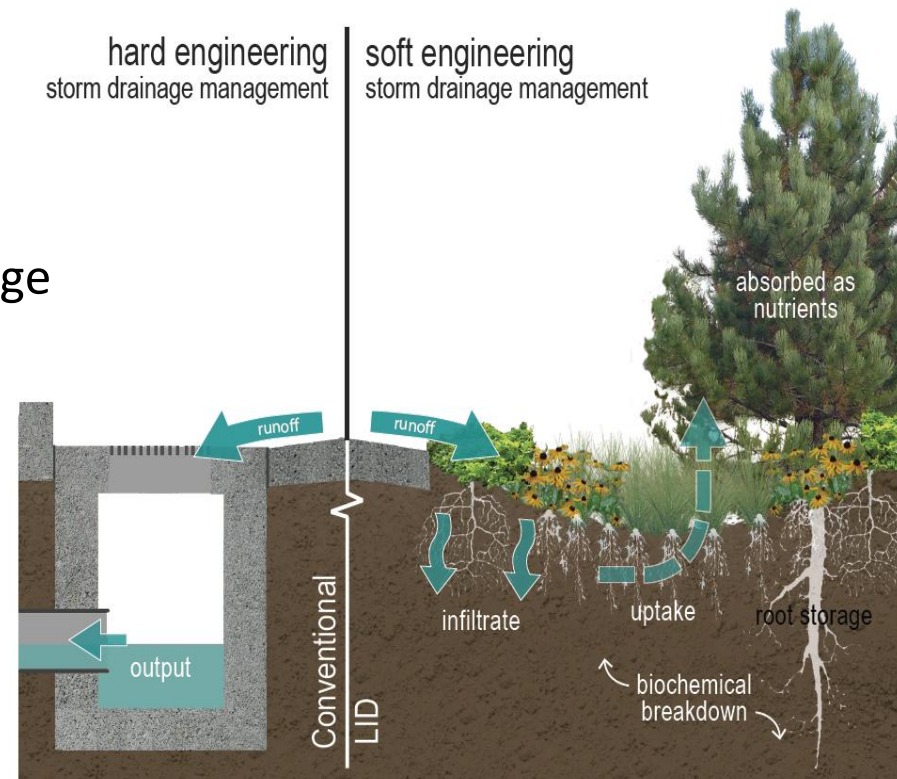
https://en.wikipedia.org/wiki/Green_building

Low-impact development

Helps replace Nature's Carbon Cycle

(LID) emphasizes conservation and use of on-site natural features to manage stormwater & protect water quality.

- Treat it where it falls - **saves on \$ infrastructure**
- Reduce run-off volume, less strain on infrastructure
- Reduces water needing treatment - **saves \$**
- Reduce heat island - **save electricity**
- Green aesthetics is good for business
- Pervious surface allows storm water to recharge aquifers
- Cleanses storm water of pollutants naturally
- Improve air quality & provide habitat



Can we fix it?

Think Globally, Act Locally

Social movements that originate in the grassroots of society contain the potential to shape history

- Work with citizen Task Force
- Utilize outside expertise
- Educate & Include our Community
- Incorporate into Comprehensive Plan
- Take first steps, it will evolve over time



Let's Get Busy!

- We're in a Climate Crisis
- Prepare, Mitigate, & Stop Further Damage
- Save Money in the process
- White Salmon has always faced challenges head on
 - We can do this -
- The **White Salmon Climate Emergency Resolution** is the place to start.

