

# Climate on Tap

## How Green are We?

A greenhouse gas emissions inventory for Jefferson County

*Facilitator:* Laura Tucker

*Guest Speaker:*  
Cindy Jayne, Chair  
Climate Action Committee

*Sponsored by:*



# How Green are We?

A greenhouse gas emissions inventory  
for Jefferson County, Washington





## Agenda for tonight:

- **Poll:** What is the largest contributor to GHG in Jefferson County?
- Summary of the GHG Inventory findings
- Vision of our climate future
- Next steps for community climate actions
- Questions and discussion
- How to engage locally with climate action work?

# Poll:

## What is the largest contributor to GHG in Jefferson County?

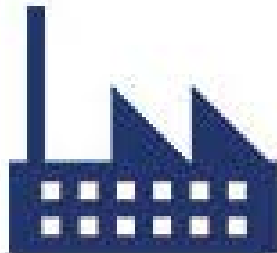
Stationary Energy



Residential



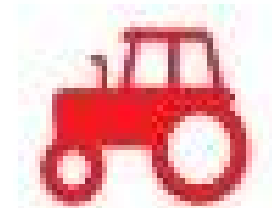
Commercial



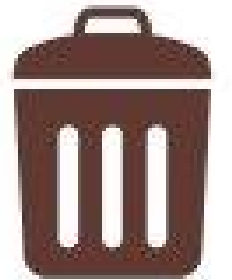
Industrial



Transportation



Agriculture



Waste

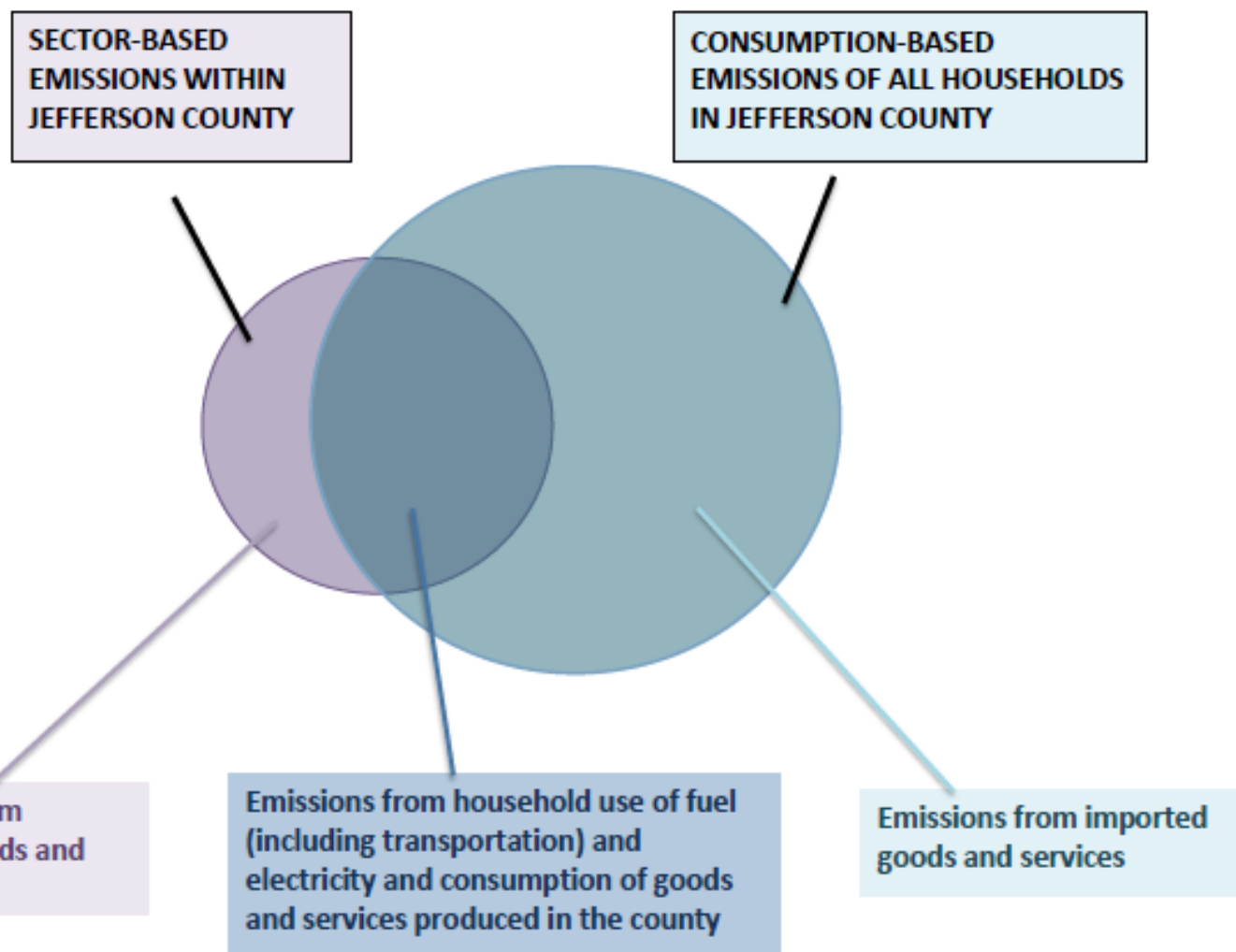
# The Climate Action Committee: Who are we?

- 2008: Citizens publish *Inventory of Energy Usage and Associated Greenhouse Gas Emissions*, based on 2005 data.
- 2009: City of Port Townsend & Jefferson County form Climate Action Committee (CAC) to help combat climate change in the county.

## Current Members include:

- City of Port Townsend
  - Jefferson County
  - Port of Port Townsend
  - Jefferson Transit
  - Jefferson County Public Utility District #1
  - Jefferson Healthcare
  - Port Townsend Paper Corporation
  - Citizen representatives
- 2009: City and County adopt greenhouse gas emission reduction goals.
  - 2020: 2nd greenhouse gas emissions inventory published. Local 20/20 volunteers perform the study, based on 2018 data:
    - Marion Huxtable, Bill Wise, Cindy Jayne, Karen Steinmaus & Tom Engel.
    - Two volunteers, Marion Huxtable and Bill Wise, also participated in the first inventory.
    - Rick Jahnke produced the Consumption-Based Model estimate

**Sector-Based and Consumption-Based  
Greenhouse Gas Emissions  
in Jefferson County, Washington 2018**



## 2018 Inventory

Measures the smaller sector circle: GHG emissions generated within Jefferson County; and

Estimates the larger consumption circle: GHG emissions consumers are responsible for generated within Jefferson County and elsewhere.

Inventory  
Results:  
First, the  
good news!

- Jefferson County reduced its sector-based greenhouse gas emissions by **40%** since 2005.

	2005 Metric Tons CO <sub>2</sub> e	2018 Metric Tons CO <sub>2</sub> e	% Change
<b>Stationary Energy</b>	<b>289,174</b>	<b>86,523</b>	
Residential	107,214	12,792	-88.1%
Commercial	44,066	6,286	-85.7%
Industrial	137,894	67,445	-51.1%
<b>Transportation</b>	<b>161,589</b>	<b>181,972</b>	+12.6%
<b>Solid Waste</b>	<b>2,271</b>	<b>1,846</b>	-18.7%
<b>Total</b>	<b>453,034</b>	<b>270,341</b>	<b>-40.3%</b>

How did  
Jefferson  
County  
reduce sector  
emissions so  
dramatically  
from 2005 -  
2018?

---

The change from  
Puget Sound Energy to  
Jefferson PUD #1

---

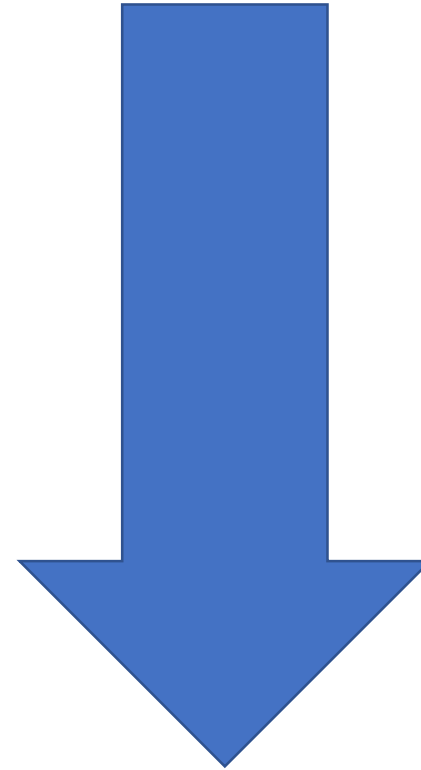
Port Townend Paper  
Mill efficiency  
improvements



## Change from PSE to PUD

- In 2013, Jefferson PUD became the primary electricity supplier for East Jefferson County, acquiring its power from Bonneville Power Association.
- This change was based on an initiative approved by county voters in 2008.
- BPA electricity is primarily hydropower, a renewable resource.
- The change created a 98% reduction in the GHG emissions intensity of our electricity.

GHG emissions intensity from generating electricity



-98%

## Port Townsend Paper Corporation

- Many operational efficiencies reduced emissions from Port Townsend Paper Corporation (PTPC) by 52%.
- Note that PTPC used BPA power in 2005; thus the changes are not related to changes in the electricity supplier.

Fuel Type	2005	2018	% Change
Electricity (KWh)	6,249	1,911	-69%
Propane (Gallons)	912	38,425	4113%
Fuel Oil (Gallons)	116,905	22,706	-81%
Wood (BDT)	13,012	3,234	-75%
Totals	137,078	66,276	-52%

# Jefferson County

- The 2018 emissions from Jefferson County government operations decreased **28%** from 2005.
- This is well ahead of the goal established for the county operations for 2020 of an 18% decrease in emissions from 2005 levels.

Metric Tons CO2e	2005	2018	% Change
Buildings & Facilities	1,695	1,278	-25%
Street Lights & Traffic Signals	19	0.1	-99%
Vehicle Fleet	1,046	616	-41%
Employee Commute	500	446	-11%
Total	3,260	2,340	-28%

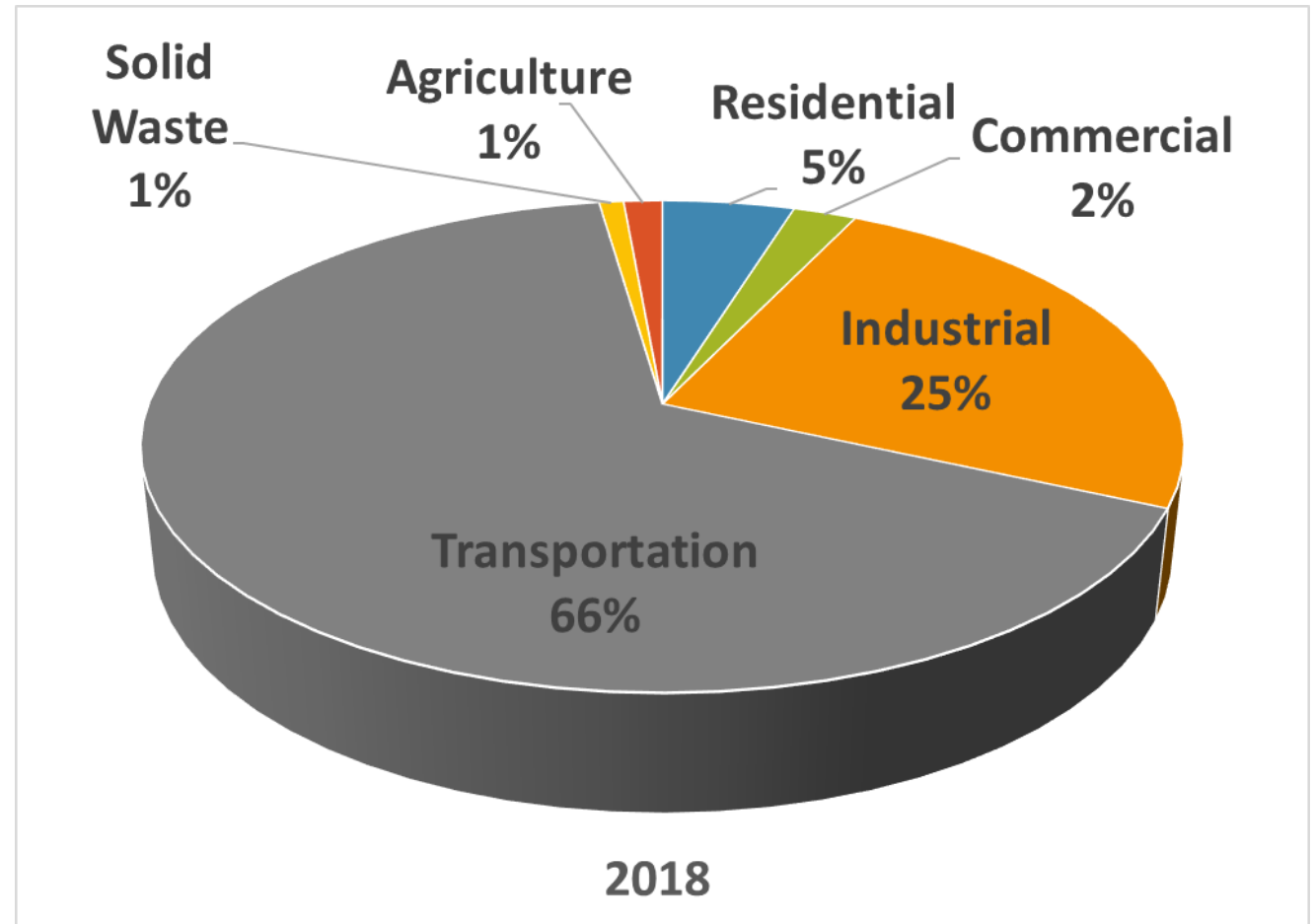
# City Of Port Townsend

- The 2018 emissions from the City of Port Townsend government operations decreased **55%** from 2005.
- This is well ahead of the goal for city operations for 2020 of an 18% decrease in emissions from 2005 levels.
- The City worked with Jefferson County, Port Townsend School District and Fort Worden to hire a resource conservation manager to identify areas for facilities improvements.

City of Port Townsend - 2nd IPCC Assessment			
Metric Tons CO2e	2005	2018	% Change
Buildings & Facilities	579	365	-37%
Water & Wastewater Treatment	730	26	-96%
Street Lights & Traffic Signals	134	0.2	-100%
Vehicle Fleet	280	284	2%
Employee Commute	148	160	8%
Total	1,870	835	-55%

## Now, the challenging news

- Transportation accounts for **66%** of current GHG emissions.
- Future reductions in GHG emissions will require a focus on transportation, a difficult challenge in a rural county.



# A closer look at transportation stats . . .

- We're driving more, and there are more of us since 2005:
  - 12% increase in population
  - 19% increase in licensed drivers
  - 25% increase in registered vehicles
  - 6.3% increase in miles driven per capita
  - Most common number of motorized vehicles per household: 2 followed by 3

Majority  
drive gas or  
diesel-  
powered  
vehicles

## Vehicle % for Apportioning Miles

<b>Passenger Diesel</b>	0.3%
<b>Passenger Gas</b>	59.9%
<b>Motorcycle</b>	0.4%
<b>Light Truck Gas</b>	32.4%
<b>Heavy Truck Diesel</b>	5.2%
<b>Light Truck Diesel</b>	1.5%
<b>Electric Vehicles</b>	0.3%



# Solid waste – contributes less than 1%

*Community Solid Waste Emissions - 2018*

Location	Solid Waste (tons)	CO <sub>2</sub> e (metric tons)	Metric Tons CO <sub>2</sub> e per ton of Waste
Roosevelt Landfill	20,672	2462	0.119
Commercial collection	11,058	401	0.036
Self-delivery to Transfer Station	9,615	196	0.020
Truck to Tacoma <sup>2</sup> (wet short tons)	20,672	366	0.018
Rail to Landfill <sup>2</sup> (wet short tons)	20,672	128	0.006
Total		3553	

- Our garbage is transported to the Roosevelt Landfill in Klickitat County where the methane produced is largely recovered as an electricity-generating feedstock.
- Recycling and composting removes 26% of the community's waste from the amount sent to the landfill.





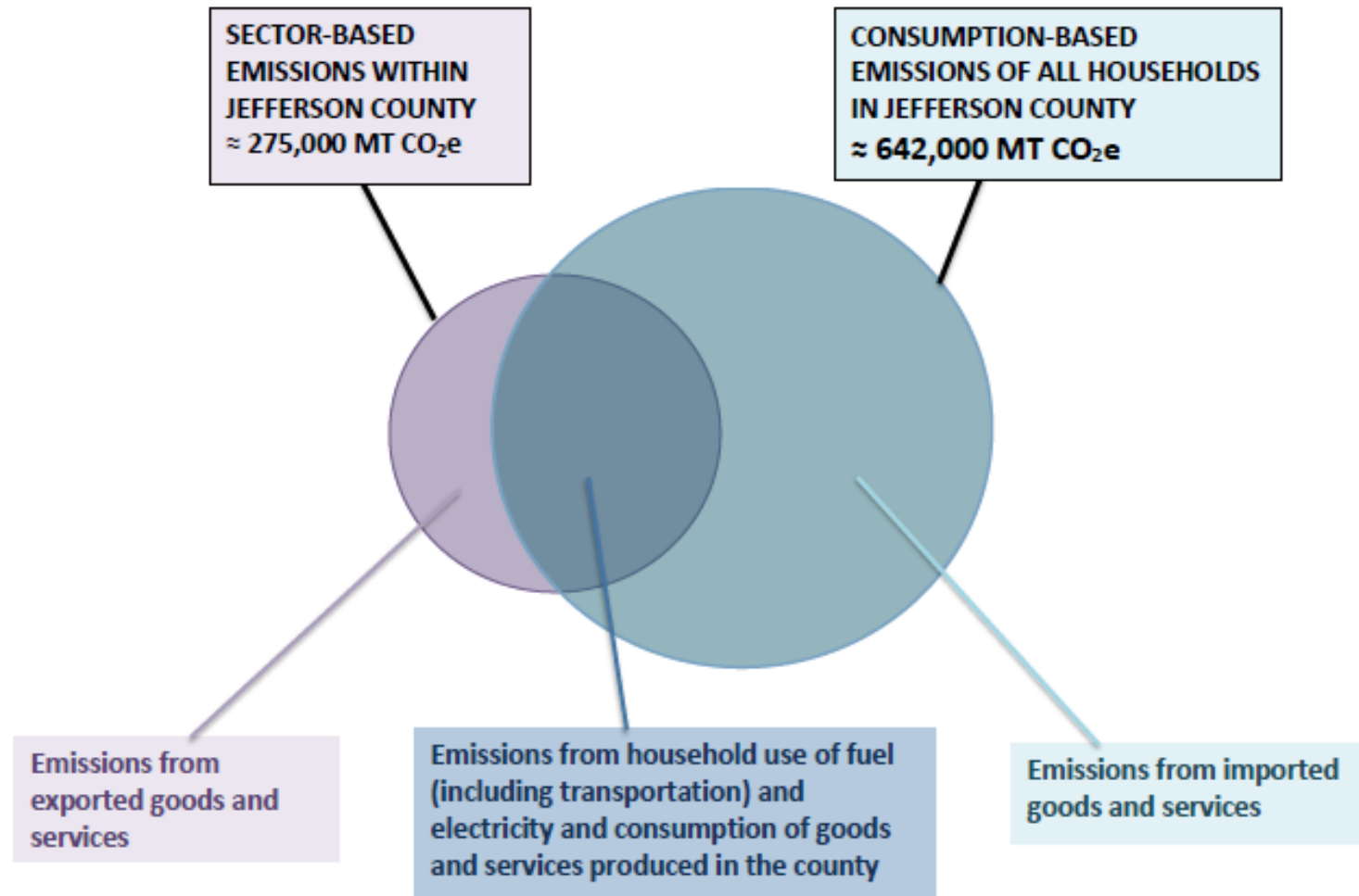
## Agriculture/Forestry

- The report did not measure GHG associated with growing crops, only animal husbandry.
- Agriculture contributes 1% of GHG emissions, with over 90% of those emissions from beef cattle and calves, the rest from sheep, goats, horses and swine.
- Jefferson County is comprised primarily of forest lands. Forests can serve as sources of GHGs (fires, land use changes, harvesting) or sinks of GHGs (carbon stored in trees).
- The 2018 inventory was not able to accurately determine the extent to which our forests are either emitting carbon or sequestering carbon, due to the lack of detailed county-level forestry data.

# Consumption Based Model - A more complete estimate of residential emissions

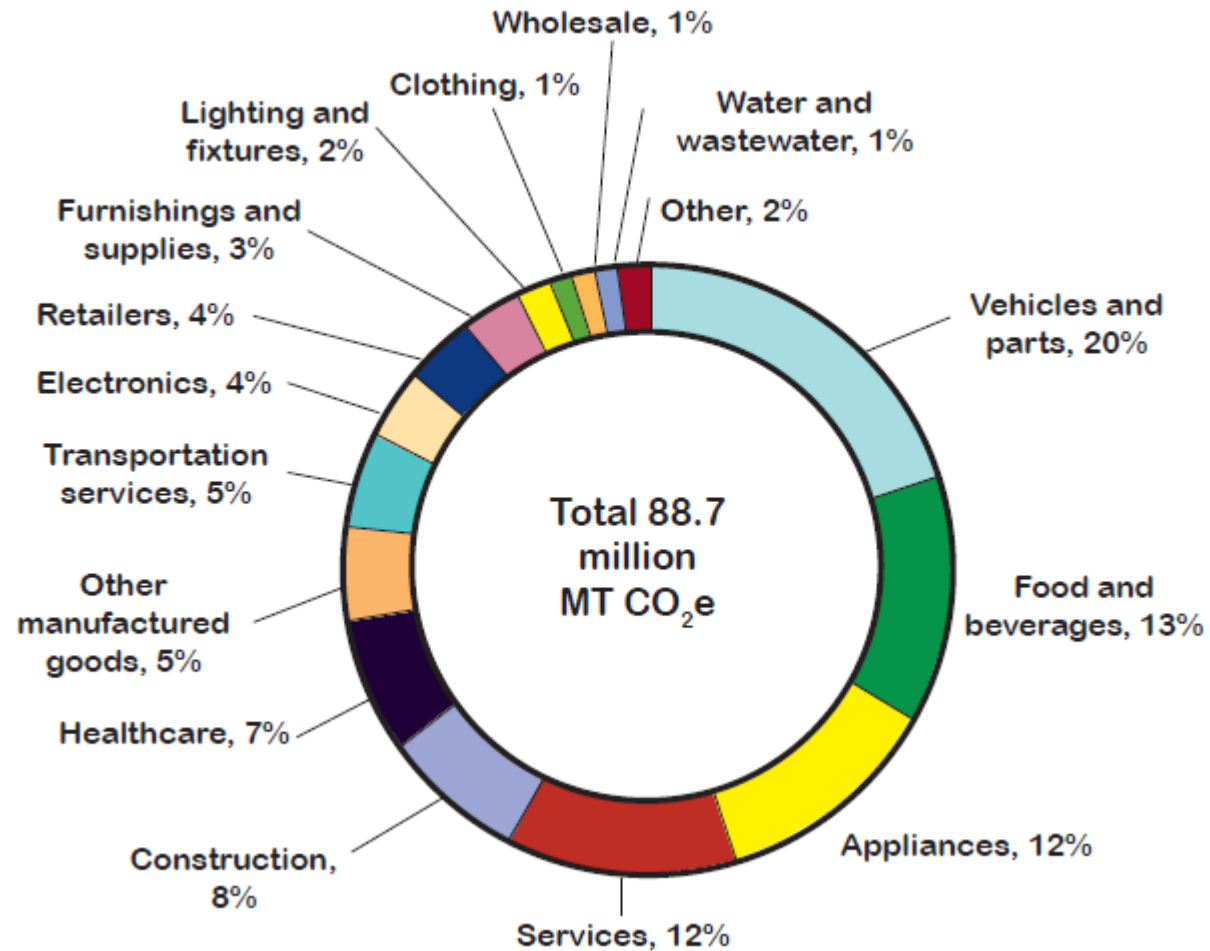
- Uses national data on household energy, transportation, consumer expenditures + local census, weather and other data.
- Approximates GHG emissions resulting from goods and services consumed by households. Data is available by zip codes.
- It also includes the energy & transportation emissions counted in our residential sector inventory.
- Jefferson County residents are associated with consumption-based emissions of 20.2 metric tons/person.
- This value exceeds the sector-based emissions estimate by a factor of 2.3.

**Sector-Based and Consumption-Based  
Greenhouse Gas Emissions  
in Jefferson County, Washington 2018**



2018 Estimate:

Jefferson  
County  
consumption  
emissions are  
**more than twice**  
our sector  
emissions.



## 2015 Oregon consumption-based greenhouse gas emissions – category view

2015 Oregon statewide study:  
An estimate of how consumption of goods & services, by category, contribute to greenhouse gas emissions

# Jefferson County Greenhouse Gas Emissions Reduction Goals

- City of Port Townsend and Jefferson County set goals to reduce emissions from 1990 levels.
  - 1990 emissions levels were estimated to be 3% below 2005 levels.
- Our 2050 goal: **80% reduction from 1990 levels.**
- Results: Today we are 39% below our 1990 emission levels, nearly half-way to our 2050 goal.
- We still have to reduce by another 41% to reach the 2050 goal.



# Recent CAC Actions since Inventory Completion

- A team of volunteers have been modeling potential greenhouse gas emissions reduction strategies to estimate their impact
  - They are looking at strategies for the community as a whole, and
  - Steve King is leading an effort focused specifically the City of Port Townsend governmental operations
- Another set of volunteers are being trained on a new US Protocol and related tools to measure the impact of forests on greenhouse gases; due to complete in Spring 2021
- The North Olympic Development Council has received a grant for climate planning (both reducing GHG and preparing for impacts) on the North Olympic Peninsula.

# What Climate Future Might We Envision?

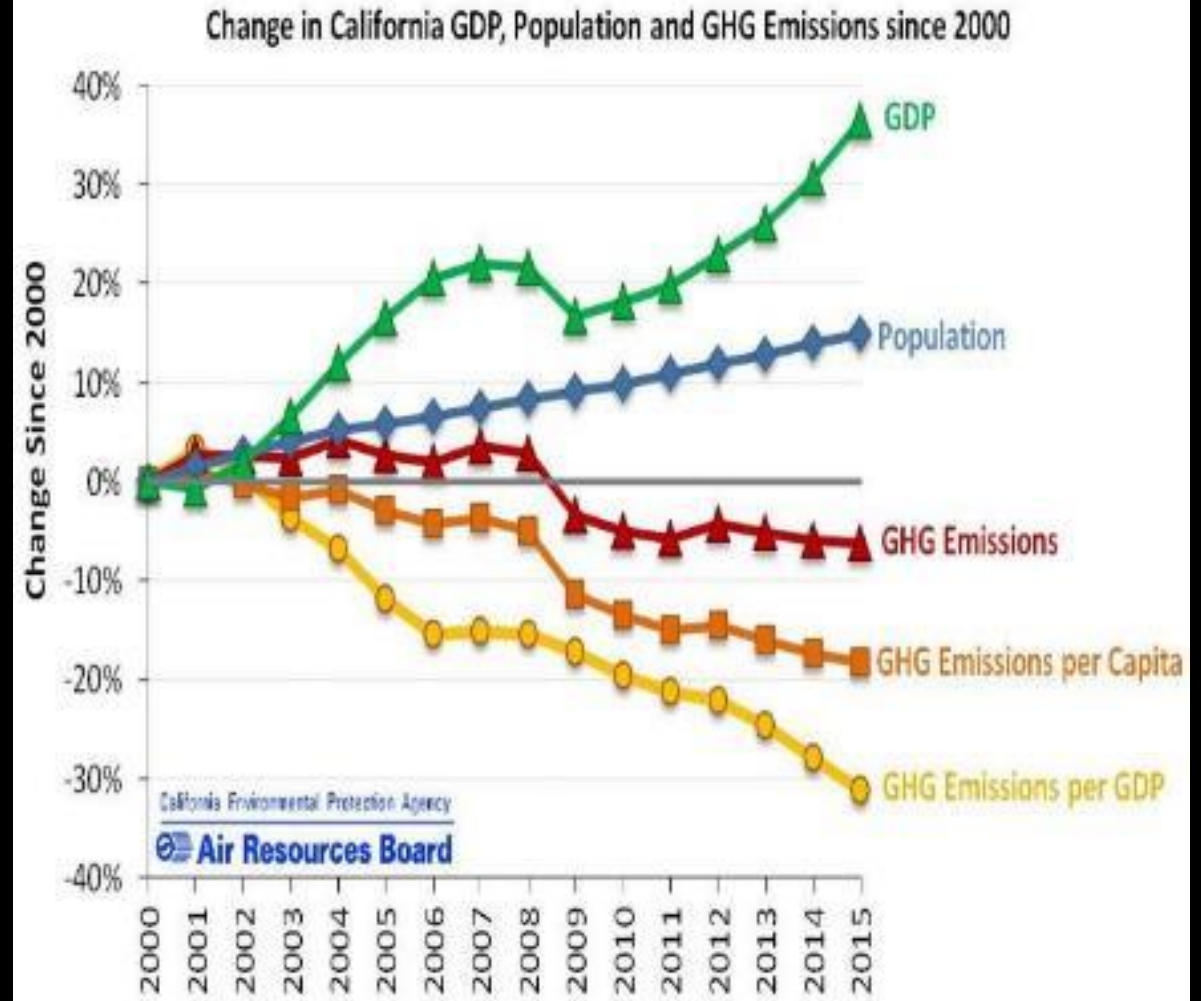




# Getting it Right: *This. Is. Possible.*

Since 2000, More Than 20 Countries Have Reduced Annual GHG Emissions While Growing Their Economies

COUNTRY	CHANGE IN CO <sub>2</sub> (2000–2014)	CHANGE IN GDP (2000–2014)
Austria	-3%	21%
Belgium	-12%	21%
Bulgaria	-5%	62%
Czech Republic	-14%	40%
Denmark	-30%	8%
Finland	-18%	18%
France	-19%	16%
Germany	-12%	16%
Hungary	-24%	29%
Ireland	-16%	47%





*“An advanced city is not where the poor drive cars, but where the rich use the bus”*  
– Mayor Enrique Peñalosa



*Bogotá*  
*Transmilenio Bus Rapid Transit*




*1km by bike instead of car provides 1€ benefits  
62% Copenhageners bike to work/study*



*Copenhagen*  
City of Cycles





*Carbon emissions was 5.3 ton/capita in 1990  
Now at 2.5. The goal: fossil fuel free by 2040*

*Stockholm*  
*The Walkable City & "Sustainable Democracy"*






*2003: 20% reduction in car traffic, better safety  
2018 aims: 4 of 5 trips by transit, walking, cycling*

# *London*

*Congestion charge & low emission zones*






*Seattle values its urban forest at USD \$6.8 billion  
Forest canopy cover is 28% with aims for 30%*

*Seattle*

*The Emerald City & GSI Laboratory*




An aerial photograph of Melbourne, Australia, showing a wide, tree-lined laneway. The laneway is flanked by lush green trees and manicured hedges. In the background, the Melbourne city skyline is visible, including the Eureka Tower and other high-rise buildings. The sky is blue with some clouds.

*“We’ve converted these laneways from a place for  
garbage trucks... to green community spaces”  
– Councillor Cathy Oke*

# Melbourne

*Laneways and Urban Forests*





*First city in North America with a green roof bylaw  
Most green roof area of all North American cities*

*Toronto*

*Green roofs and urban rooftop agriculture*




The image shows a modern building facade with a grid of glass panels. The upper section of the building has a green textured facade. The glass panels are arranged in a grid, with some panels being larger than others. The building is located in an urban setting, with other buildings and a street visible in the background.

*Over 120 “bioreactors” capture warmth  
Algae harvested & converted to biogas or products*

*Hamburg*  
*Green buildings – including algae-power*

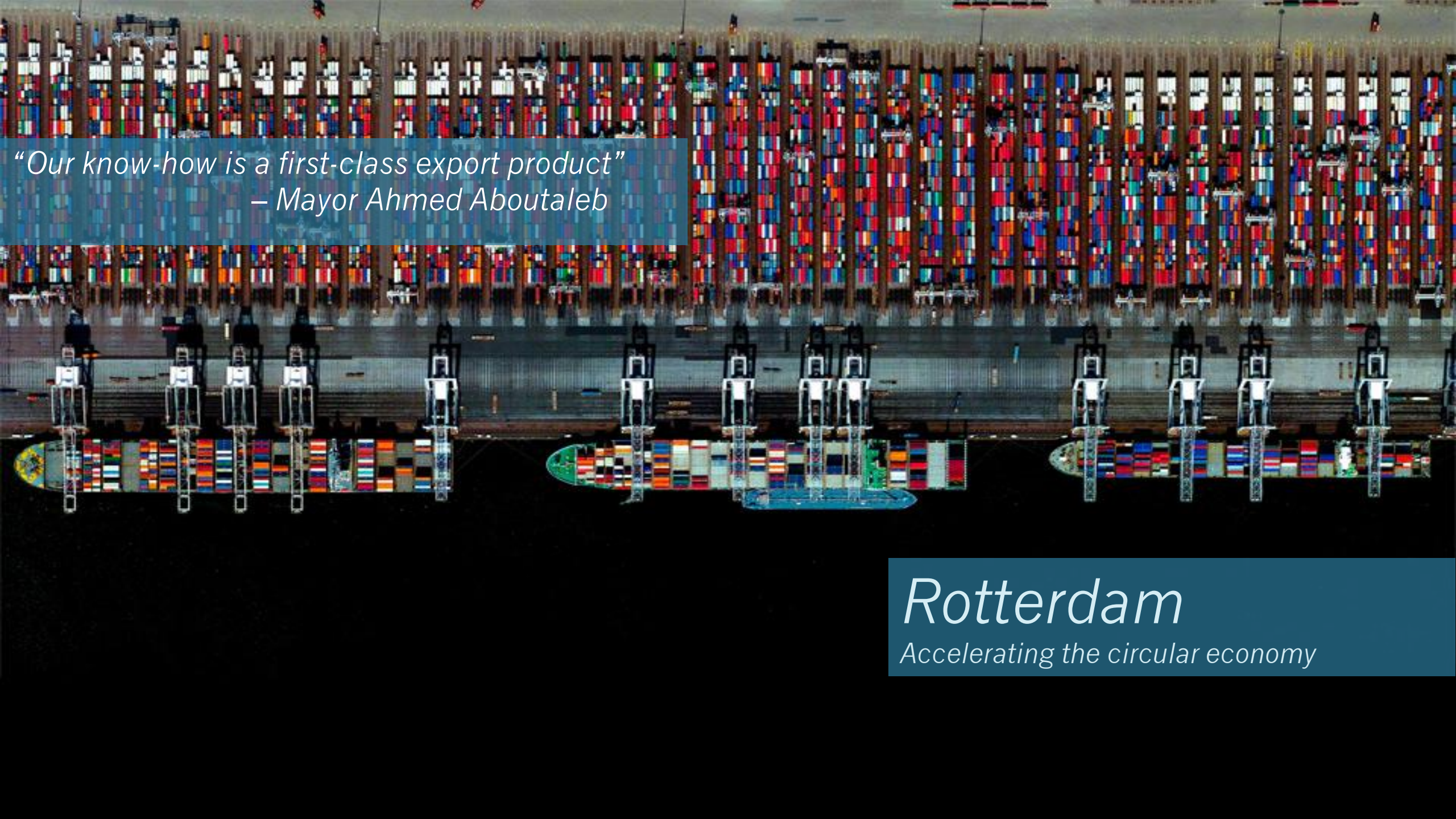




*Social enterprises help finance “Solar Home Systems” for millions of low-income households*

*Bangalore/Karnataka*  
*Rural solar micro-grids and micro-loans*





*“Our know-how is a first-class export product”  
– Mayor Ahmed Aboutaleb*

*Rotterdam*  
*Accelerating the circular economy*

# Global Solar Energy Progress

- How Do Projections Compare With Reality?

## 2002 Projection

The solar energy market will grow one gigawatt per year by 2010

## Reality

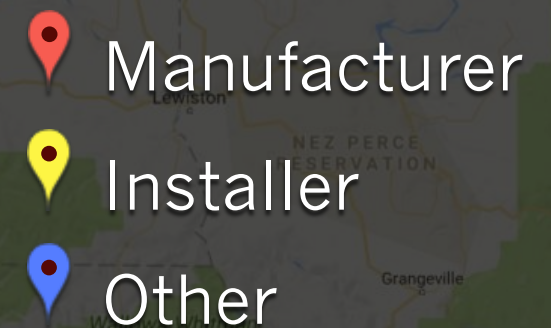
The reality is that goal was exceeded by

17.5x

Washington could generate 23  
times its current electricity  
consumption from solar



There are **161**  
solar employers and  
3,681 solar jobs in  
Washington.



Data: Solar Energy Industries  
Association  
Image: © 2017 Google Maps





# Roof of the Bullitt Center, Seattle, Washington



These 575 solar panels produce as much energy as the building uses each year.





Seattle's Bullitt Center  
is the greenest commercial building the world!

# Vantage, Washington

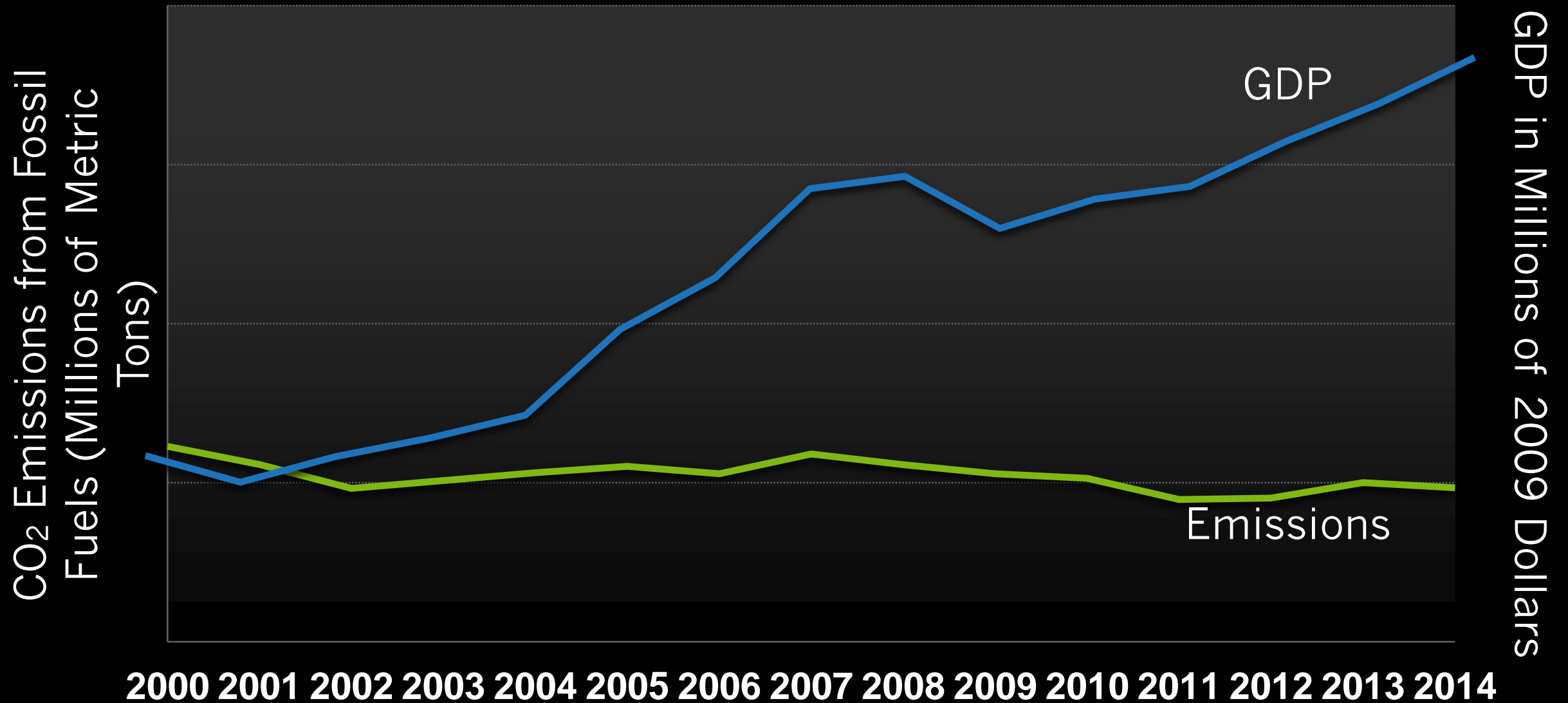
A photograph showing four wind turbines in the foreground, their lower sections obscured by a thick layer of white clouds. The turbines are silhouetted against the bright clouds. In the background, dark, rolling hills or mountains are visible under a blue sky with some light clouds. The overall scene is a landscape view of a wind farm.

**Washington produces  
enough wind energy to  
power 746,000 homes.**

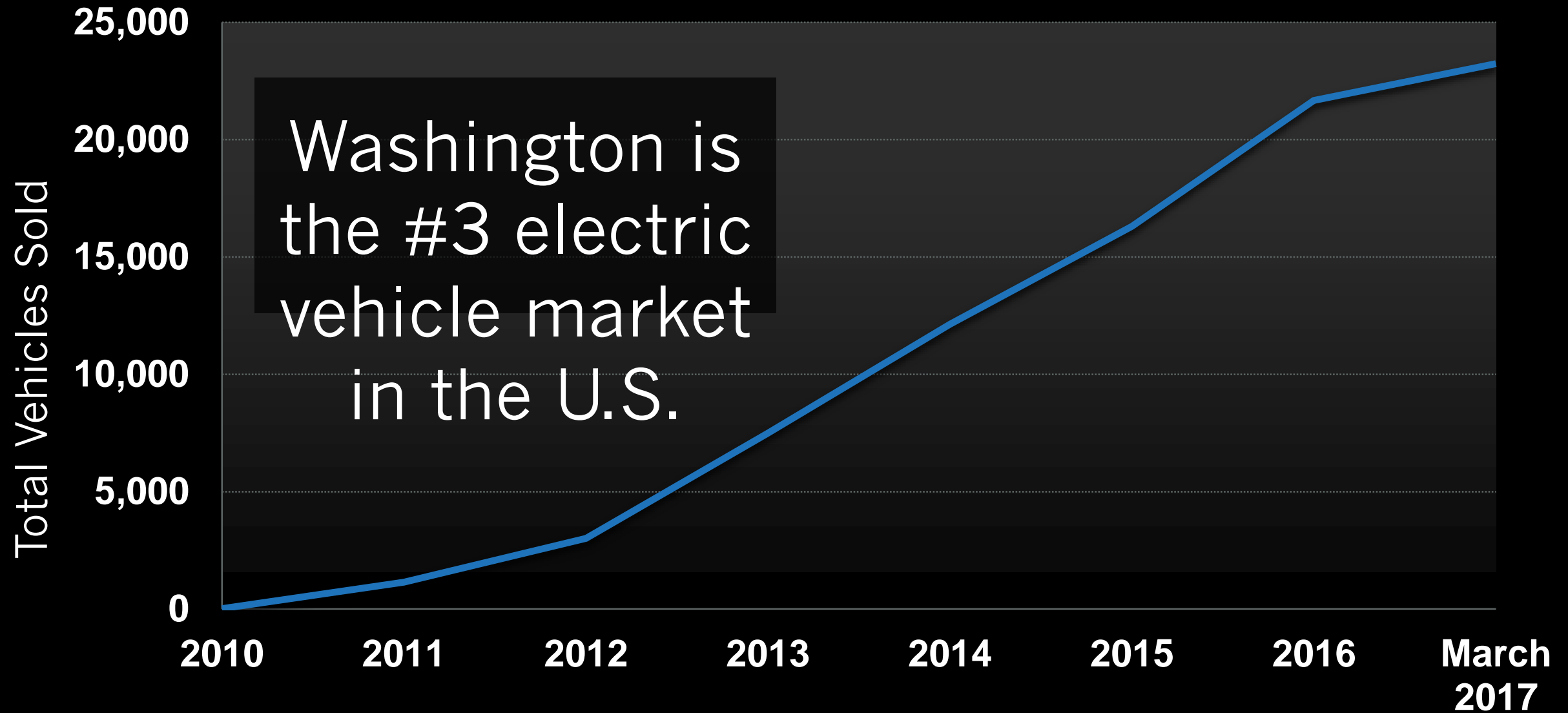


Pacific Northwest energy  
efficiency policies over the  
past 30 years have saved  
enough electricity to power five  
Seattle-sized cities

# Washington's Emissions and GDP



# Washington State Cumulative EV Sales





# What Climate Future Might We Envision?

“Up to all of us to decide...together.”  
— CAC

*Port Townsend, Washington*

*An integrated, innovative & inclusive approach to investing in our positive climate future*



# What Climate Future Might We Envision?



Think for a moment about what types of measures we can take as individuals and as a community. We'll split into small groups for about 10 minutes. Have someone from your group take notes to share when we come back together.



# What's Next?

## Setting New Goals

- Jefferson County has made good progress on reducing our GHG emissions locally.
- Further reductions rely on solutions, particularly in transportation.
- What new goals and timetable should be set?
- It will be up to all of us to decide that together.
- The Climate Action Committee hopes to conduct an online Climate Charette to discuss these questions in depth in the coming months.
- What else makes sense to prioritize now?

# How can I engage with Climate Action work?

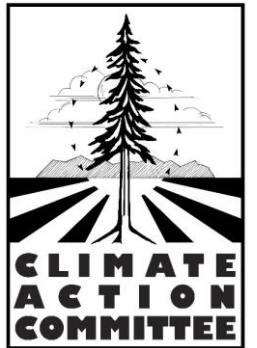
- **Attend CAC meetings. All meetings are 3:30-5:30PM and will continue to be held virtually until further notice.**

**2020:** December 9

**2021:** February 24      April 28      June 23      August 25      October 27

- **Read more about the CAC's work and meetings info**

<https://www.co.jefferson.wa.us/637/Climate-Action-Committee>



- **Read the Greenhouse Gas Inventory**

[https://www.co.jefferson.wa.us/DocumentCenter/View/10166/2018\\_JeffCo\\_GHG\\_Inventory\\_Report\\_approved\\_062420](https://www.co.jefferson.wa.us/DocumentCenter/View/10166/2018_JeffCo_GHG_Inventory_Report_approved_062420)

# How can I engage with Climate Action work?

- **Participate in local climate action groups**

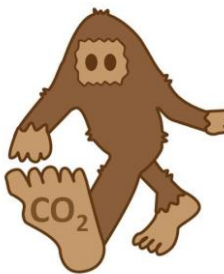
- ❖ Become active in one of many community organizations dedicated to reducing greenhouse gas emissions and preparing for climate change (adaptation)
- ❖ See <https://l2020.org/taking-action-on-climate-change>



- **Participate in the upcoming Taming Bigfoot GHG reduction competition**

- ❖ Create a team and work together to reduce your **BIG** carbon **FOOT**print
  - ❖ Sign up for alerts with L2020's announcements of weekly events
- See <https://l2020.org/event-announcements/>

**“Taming Bigfoot 2021 – Recovering Greener” begins in January, 2021!**





# Climate on Tap

**Thank you for coming!**

***Facilitator:*** Laura Tucker  
Ltucker@berkeley.edu

***Guest Speaker:***  
Cindy Jayne, Chair  
Climate Action Committee  
cindyj911@yahoo.com

***Sponsored by:***

