

# Oregon's Critical Energy Infrastructure (CEI) Hub

## Finding the Nexus Between Seismic Risk & Climate Change Adaptation

**Seismic  
Policy**



**Climate  
Policy**

# The Oregon Resilience Plan

## The Oregon Resilience Plan

Reducing Risk and Improving Recovery  
for the Next Cascadia Earthquake and Tsunami

Report to the  
77<sup>th</sup> Legislative Assembly

from  
Oregon Seismic Safety Policy  
Advisory Commission (OSSPAC)



Salem, Oregon  
February 2013

50-year Comprehensive Plan

- Cascadia Earthquake Scenario
- Business/Workforce Continuity
- Coastal Communities
- Information and Communication
- Critical & Essential Buildings
- Water & Wastewater
- Transportation
- Energy



October 2013

### The Oregon Resilience Plan

Reducing Risk and Improving Recovery  
for the Next Cascadia Earthquake and Tsunami

Report to the  
77<sup>th</sup> Legislative Assembly

from  
Oregon Seismic Safety Policy  
Advisory Commission (OSSPAC)



Salem, Oregon  
February 2013

# Pacific Coast COLLABORATIVE

Alaska  
British Columbia  
California  
Oregon  
Washington

Leadership now  
for a sustainable tomorrow

## Home

### Member Jurisdictions

- Alaska
- British Columbia
- California
- Oregon
- Washington

## Vision

### Agreements

### Priorities

- Clean Energy
  - Low-Carbon Energy
  - Energy Efficiency
- Emergency Management
- Regional Transportation
  - Green Ports
  - Green Highways
  - Rail
- Research and Innovation
- Sustainable Regional Economy
  - Jobs



With a combined population of 52 million and a GDP of \$2.5 trillion, Alaska, British Columbia, California, Oregon and Washington are poised to emerge as a mega-region and global economic powerhouse driven by innovation, energy, geographic location and sustainable resource management, attracting new jobs and investment while enhancing an already unparalleled quality of life.

On June 30, 2008, the leaders of the five jurisdictions signed the Pacific Coast Collaborative Agreement, the first agreement that brings together the Pacific leaders as a common front to set a cooperative direction into the Pacific Century. Out of this agreement was born the Pacific Coast Collaborative -- a formal basis for cooperative action, a forum for leadership and information sharing, and a common voice on issues facing Pacific North America.

November 2013

the WHITE HOUSE PRESIDENT BARACK OBAMA



BLOG

PHOTOS & VIDEO

BRIEFING ROOM

ISSUES

the ADMINISTRATION

[Home](#) • [Briefing Room](#) • [Statements & Releases](#)

The White House

Office of the Press Secretary



For Immediate Release

November 01, 2013

## FACT SHEET: Executive Order on Climate Preparedness

*President Obama Establishes a Task Force on Climate*

*"We're going to need to get prepared. And that's why this plan will also protect critical sectors of our economy and prepare the United States for the impacts of climate change that we cannot avoid. States and cities across the country are already taking it upon themselves to get ready... And we'll partner with communities seeking help to prepare for droughts and floods, reduce the risk of wildfires, protect the dunes and wetlands that pull double duty as green space and as natural storm barriers." – President Barack Obama, June 25, 2013*

Today, President Obama established a Task Force on Climate Preparedness and Resilience to advise the Administration on how the Federal Government can respond to the needs of communities nationwide that are dealing with the impacts of climate change. The Task Force members include state, local and tribal leaders from across the country who will use their first-hand experiences in building climate preparedness and resilience in their communities to inform their recommendations to the Administration.

### The Oregon Resilience Plan

Reducing Risk and Improving Recovery  
for the Next Cascadia Earthquake and Tsunami

Report to the  
77<sup>th</sup> Legislative Assembly

from  
Oregon Seismic Safety Policy  
Advisory Commission (OSSPAC)



Salem, Oregon  
February 2013

# 30 Year Anniversary - Loma Prieta Earthquake

## October 17, 1989



Source: Mercury News



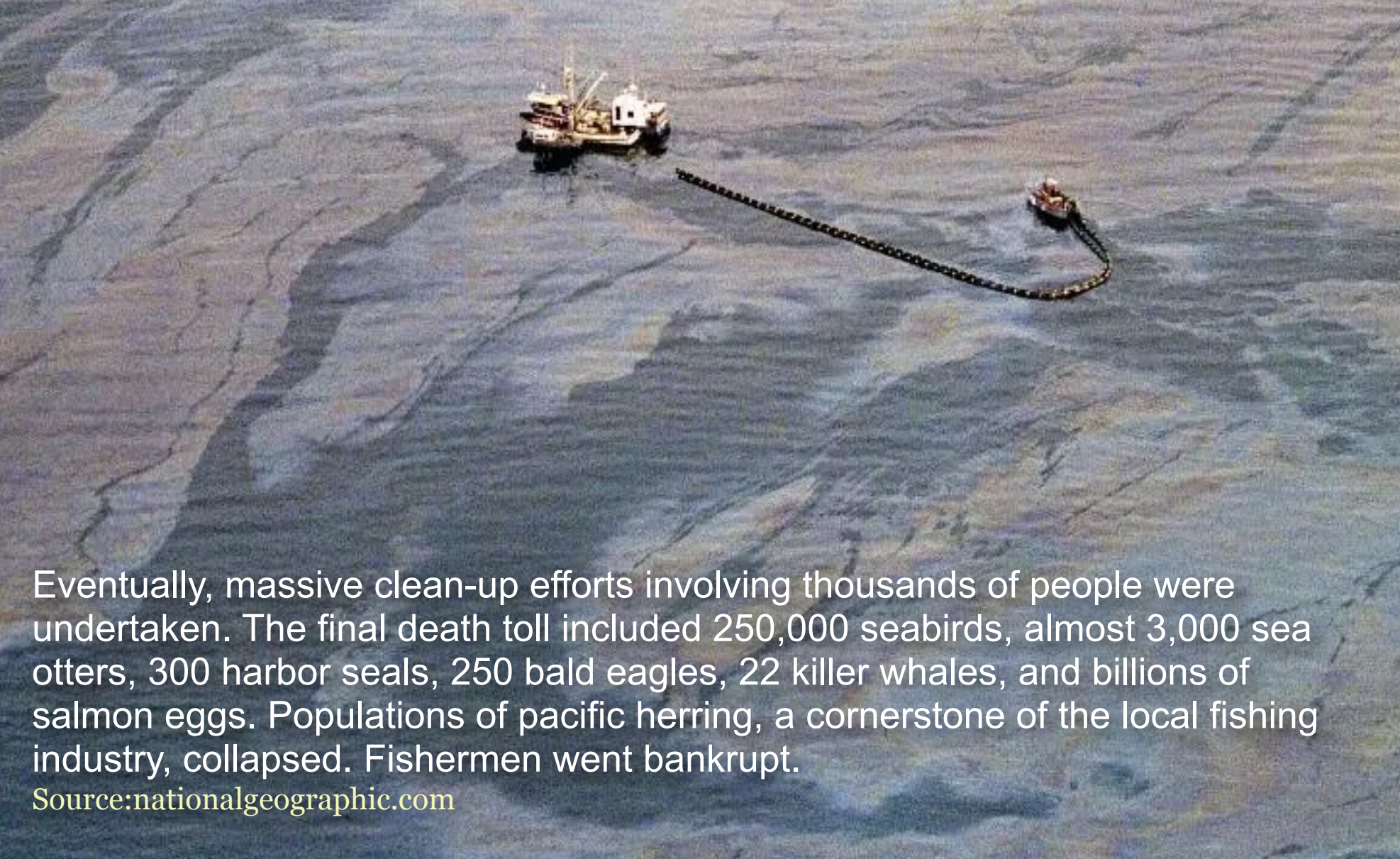
Source: ABC



Source: The Chronicle

# 30 Year Anniversary of the Exxon Valdez Spill

## 10.8 million gallons of crude oil - March 24, 1989



Eventually, massive clean-up efforts involving thousands of people were undertaken. The final death toll included 250,000 seabirds, almost 3,000 sea otters, 300 harbor seals, 250 bald eagles, 22 killer whales, and billions of salmon eggs. Populations of pacific herring, a cornerstone of the local fishing industry, collapsed. Fishermen went bankrupt.

Source:[nationalgeographic.com](http://nationalgeographic.com)

# 30 Years from Now – 2050?



## Controversial cap & trade bill heads to Oregon House

Updated Jun 12, 2019; Posted Jun 12, 2019



AP

FILE - In this July 1, 2013 file photo, smoke rises from the Colstrip Steam Electric Station, a coal power plant in Colstrip, Montana. The plant's operator said Tuesday, June 11, 2019, that it plans to shut down two of the plant's four units about 2 ½ years early, citing costs and the unwillingness of a coal supplier to lower

HB 2020 - Reduction of greenhouse gas emissions to **80 percent below 1990 levels by 2050.**



Home > Articles > Biofuel > Oregon Enacts New Renewable Natural Gas Law

Articles Biofuel Policy & Regulations

## Oregon Enacts New Renewable Natural Gas Law

Posted by Betsy Lillian - September 23, 2019

0



Gov. Kate Brown, D-Ore., recently gathered with NW Natural and other renewable natural gas (RNG) stakeholders to ceremoniously sign a bill that will allow Oregon utilities to acquire RNG on behalf of their customers.

NW Natural, a subsidiary of NW Natural Holding Co. and a natural gas service provider in Oregon and southwest Washington, worked with

legislators to propose S.B.98 to create the path for RNG to become an increasing part of Oregon's energy supply.

Allows utility investment in the inter-connection of RNG production; supports targets of 15% by 2030, 20% by 2035 and **80 percent by 2050;**

Visioning . . .

30 Years from Now – 2050?



Electric Buses



Electric and Plug-in Hybrid Automobiles



Electric Bicycles and Scooters



Electric Vans, Trucks and Delivery Vehicles



# 30 Years from Now – 2050?

## 2017 CITY OF PORTLAND ELECTRIC VEHICLE STRATEGY

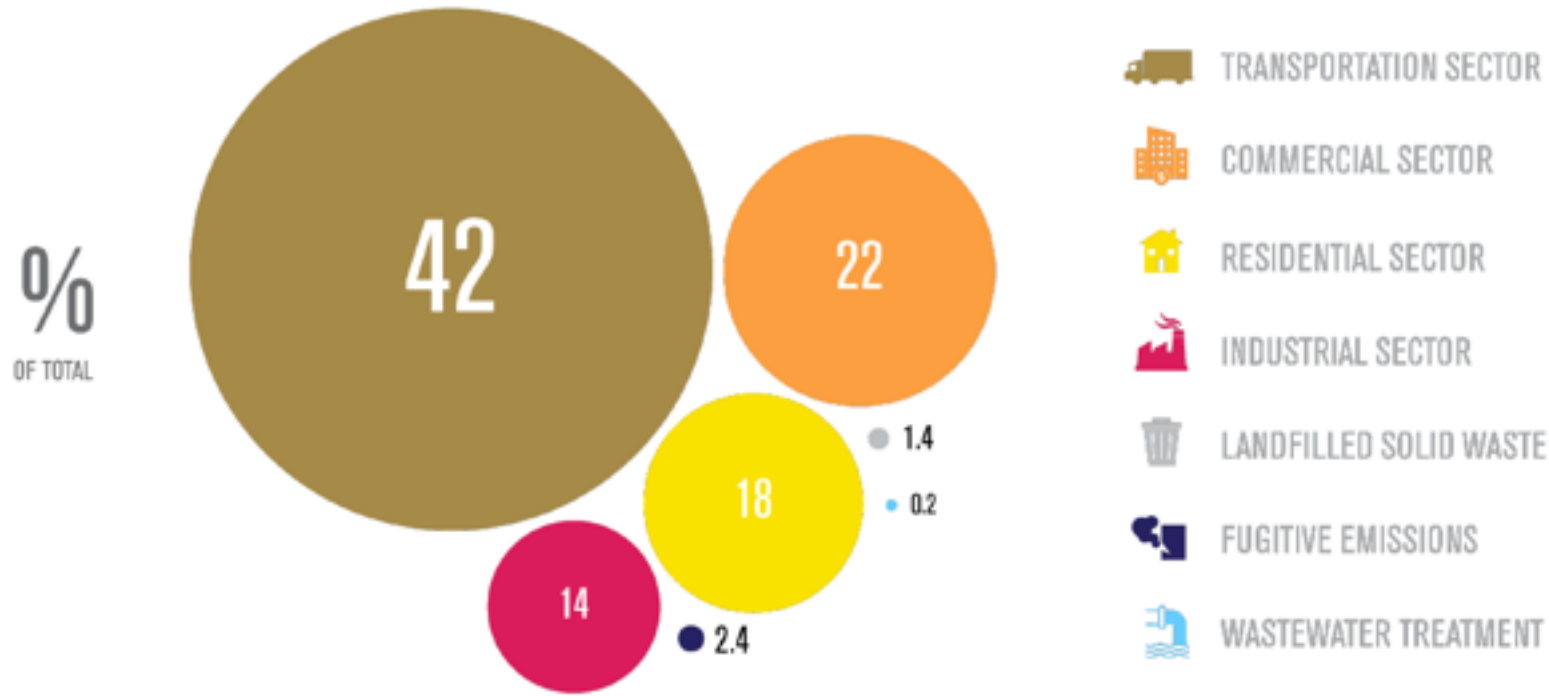


City of Portland  
The City That Works  
Call 823-4000  
Planning & Sustainability  
Vehicle No. 111027

Portland's Climate Action Plan provides a road map to reduce carbon emissions 40 percent by 2030 and **80 percent by 2050**.

Land use planning, transportation policies and investments are among the most important strategies to address climate change.

Where do Portland's carbon emissions come from?



2017 MULTNOMAH COUNTY CARBON EMISSIONS BY SECTOR

Figure 2: 40 percent of local emissions come from the energy used to run, heat and cool our homes and businesses, and over 40 percent come from transporting people and goods. These proportions have changed as the transportation sector share of local emissions has increased significantly since 2013, when they only accounted for 38 percent of emissions.

## POPULATION AND JOBS UP / EMISSIONS DOWN

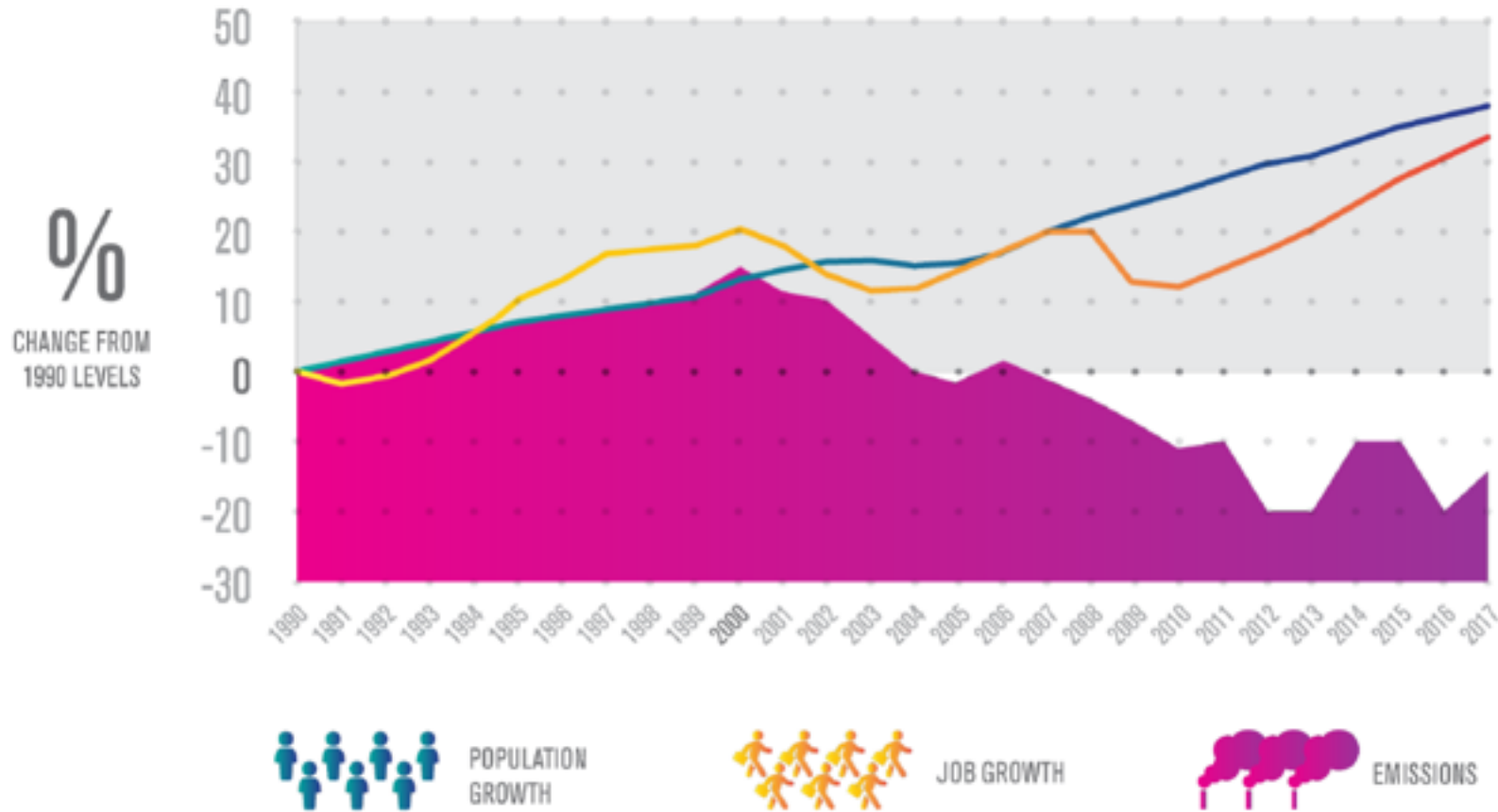


Figure 1: Emissions continue to decline from their peak in 2000, despite significant population growth and increase in jobs. Portland has maintained the decoupling of emissions from growth. However, reductions have reached a plateau in recent years.

Portlanders are buying fewer gallons of gasoline today than they did in 1990.

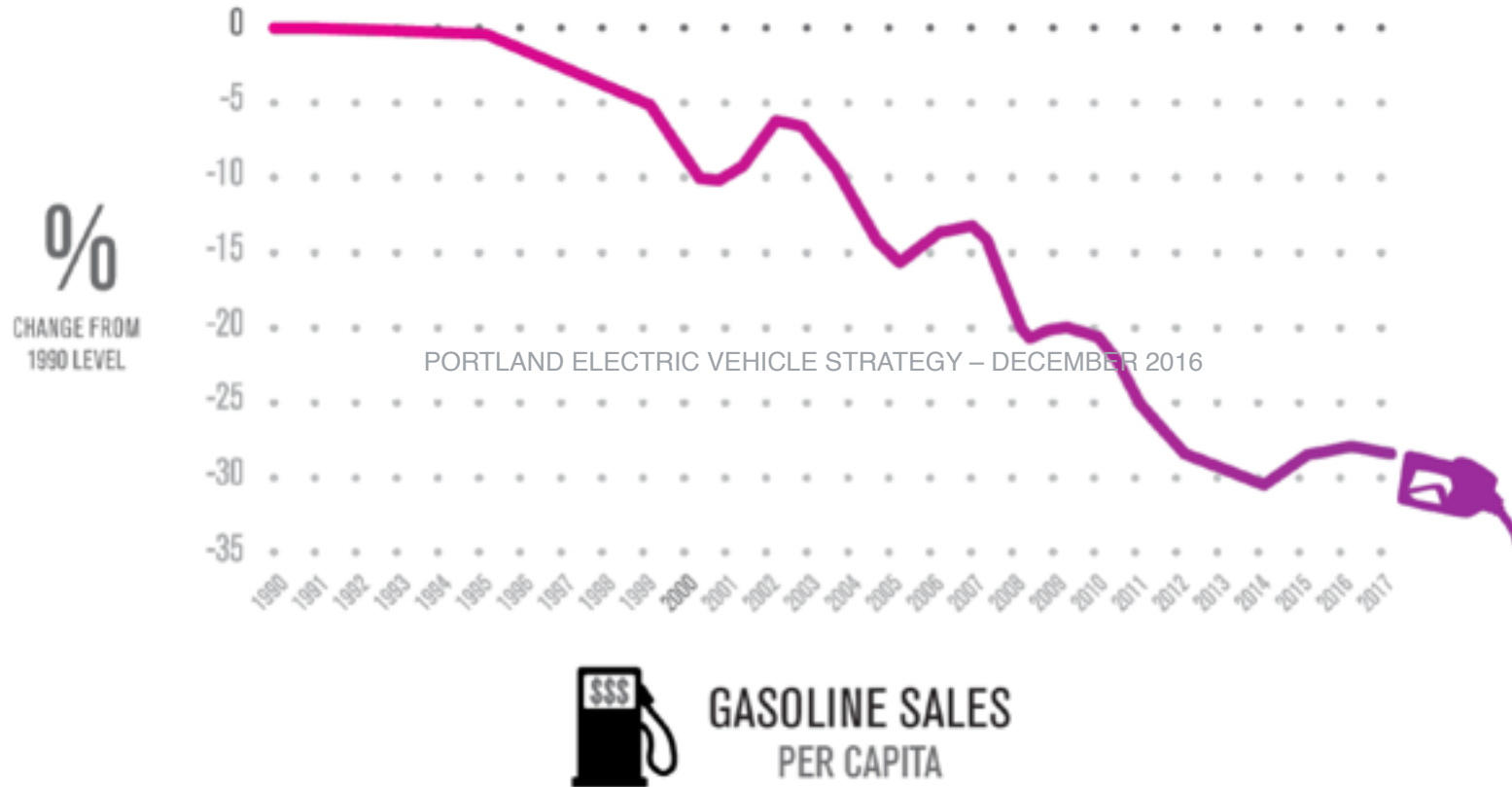


Figure 8: Since 1990 sales of gasoline per person have declined rapidly, the result of more efficient vehicles and more complete and connected neighborhoods that enable better walking, biking, and access to public transit.

# Climate Change Student Walkout Protest Portland - Sept 20, 2019



2020 is the 50th Anniversary of Earth Day

# Now - Oregon Resilience 2025

KGW8

WATCH LIVE  
On Air 2:55PM

Gov. Brown releases new earthquake plan



LOCAL

## Gov. Brown unveils earthquake survival plan

Brown released her plan, called Resiliency 2025.

Author: Christine Pitawanich, Keely Chalmers  
Published: 1:21 PM PDT October 16, 2018  
Updated: 6:35 PM PDT October 16, 2018

PORTLAND, Ore. — In Portland you'd be hard pressed to find someone who doesn't know about the possibility of the Cascadia Subduction Zone earthquake, also known as the "Big One."

"I have a kit in my basement. I think I've got 10 gallons of water, probably not enough," said Portlander Adam Clegg.

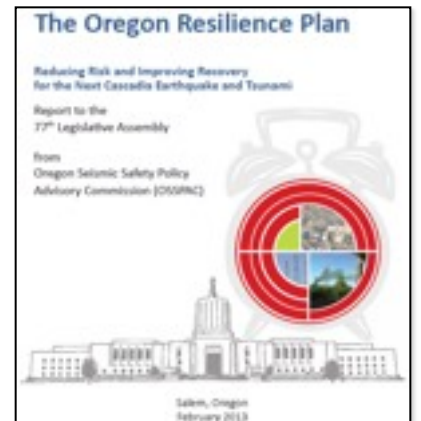
But at least he's doing something to prepare. That kind of thinking is exactly what Oregon Governor Kate

## Strategy 2 of 6

Develop a plan for the **Critical Energy Infrastructure Hub** to prevent and mitigate catastrophic failure and ensure fuel supplies and alternative energy resources are available to responders and the public.

OSSPAC to deliver report by end of 2019

2013 Oregon Resilience Plan  
50-Year Plan



# CEI Hub Natural Hazards

Liquefaction  
Shoreline

Portland Hills Fault

Landslides

Population's  
HazMat  
Exposure

Wildland  
Urban  
Interface

Image Landsat / Copernicus  
© 2018 Google

Google Earth

# Risk - Over 500 Tanks with ~ 360 in Use

Numerous in-service large tanks built prior to 1930s  
Majority of fuel tank capacity built prior to 1970s

PBEM/PSU, May 2019

© 2018 Google  
Image Landsat / Copernicus

Google Earth



# Risk - 360 Million Gallons Storage Capacity

## Refined Petroleum

- Gasoline
- Diesel
- Aviation Fuel
- Jet Fuel
- Marine Fuel Oils
- Motor Oils
- Asphalt Oil
- Kerosene
- Naptha
- Fuel Additives

## Crude Oils

- Canadian Tar Sands
- Bakken

## Gases

- Butane
- Propane
- Liquefied Natural Gas

## Other

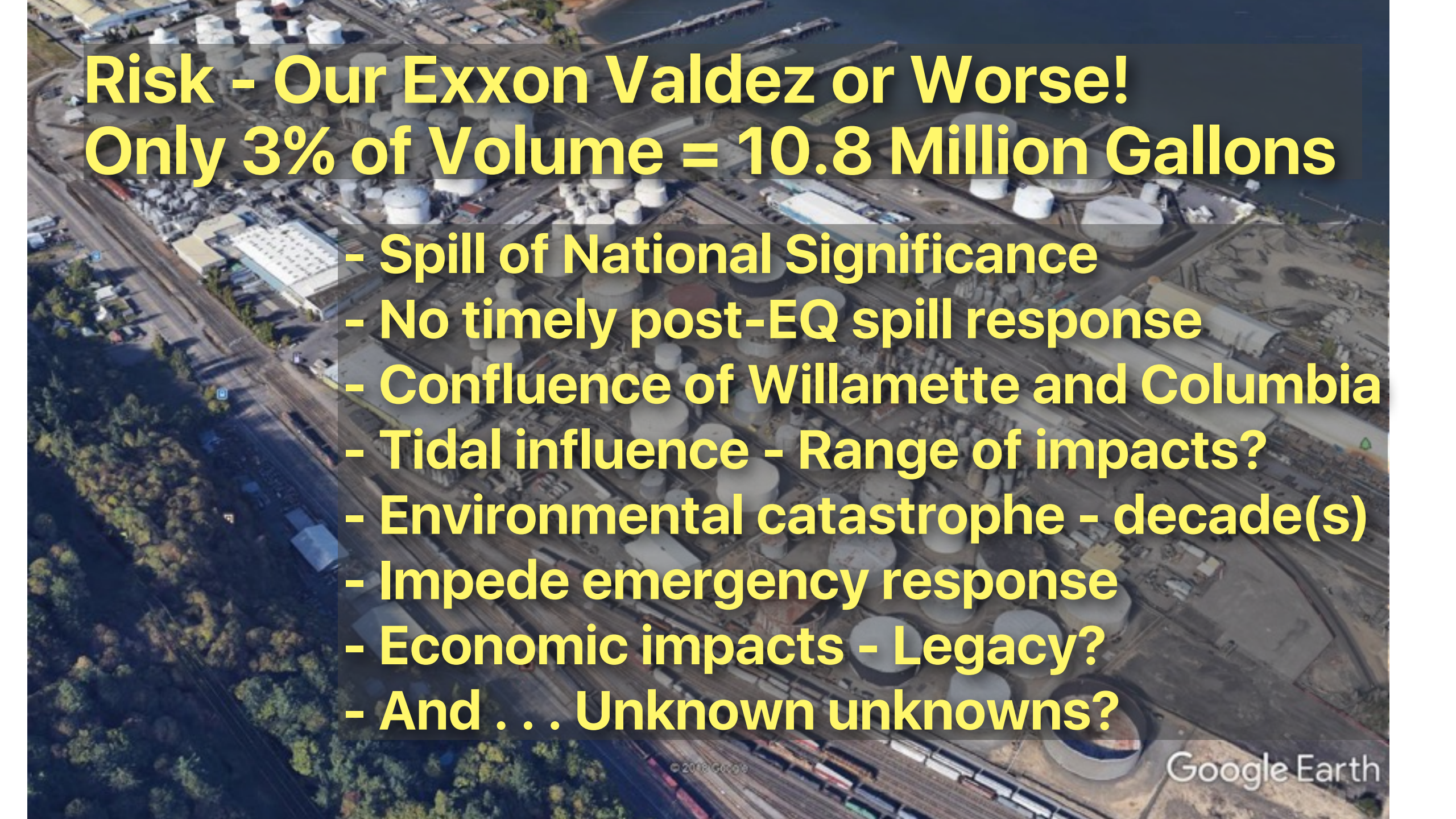
- Ethanol
- Green Oil/Bio Oil

**Also:**

- Ammonia
- Chlorine



Google Earth



# **Risk - Our Exxon Valdez or Worse!**

## **Only 3% of Volume = 10.8 Million Gallons**

- **Spill of National Significance**
- **No timely post-EQ spill response**
- **Confluence of Willamette and Columbia**
- **Tidal influence - Range of impacts?**
- **Environmental catastrophe - decade(s)**
- **Impede emergency response**
- **Economic impacts - Legacy?**
- **And . . . Unknown unknowns?**

# The Unknown Unknowns?

- No Environmental Impact Analysis Exists
- No Worst-Case Planning for Cascadia

Consulted: July - September 2019

- EPA – Richard Franklin, Federal On-Scene Coordinator
- NOAA – Gary Shigenaka, Marine Biologist, Office of Response & Restoration
- DEQ – Mike Zollitsch, Emergency Response Unit Leader
- DEQ – Paul Seidel, Clean Up Program Manager
- WA Ecology – Ken Esplin, Facility Engineer, Spills Program
- Portland BES – Annie Von Burg, Portland Harbor Superfund
- Portland Water Bureau – Mike Stuhr, Director
- Willamette River Keeper – Travis Williams, Director



Wheat barge on the inland Columbia Snake River System



Grain vessel loading on the deep draft Columbia river



Longshore workers unloading Subaru from a Roll-on, Roll-off "RoRo" vessel at the Port of Vancouver USA

## PNWA MEMBER LOWER COLUMBIA RIVER PORTS

### Columbia Snake River System

The nation's number one wheat export gateway and number two soybean export gateway is fed by a 365-mile, 14-foot draft inland barge system which stretches from Portland, OR to Lewiston, ID. The system exported over 50 million tons of cargo in 2016. It is also the west coast's number one wood and mineral bulks export gateway and a rising importer/exporter of vehicles. In all, over \$21 billion worth of cargo moves on the Columbia Snake River System each year.

### River System Highlights

- #1 U.S. wheat exports
- #2 U.S. corn and soy exports
- #1 West Coast wood exports
- #1 West Coast mineral exports
- #1 West Coast auto exports



### Deep Draft Channel Facts:

- 105 miles, 43 feet deep
- Over 52 million tons of international trade in 2017
- At least \$21 billion in cargo value
- 40,000 local jobs are dependent on this trade

Source: Pacific Northwest Waterways Association

# Oregon Critical Energy Infrastructure Hub

## Silos of Stakeholders



### State

PUC  
DEQ  
DOE  
SFM  
DSL  
DOGAMI  
OSSPAC  
DCBS  
OEM  
ODOT  
OHA  
DLCD

### Portland Multnomah County

Other  
Oregon  
Solutions  
City Club  
Salem  
Eugene  
Metro

### Private Fuel

Kinder Morgan  
BP  
Chevron  
Shell  
ConocoPhillips  
McCall Oil  
Star Oil  
Nu Star  
Williams NW  
Pipeline  
NW Natural  
Zenith

### Fuel Organizations

Western  
States  
Petroleum  
Assoc.  
American  
Petroleum  
Industry  
Oregon  
Fuels  
Assoc.

### Federal

EPA  
PHMSA  
FERC  
USCG  
BPA  
DHS  
USGS  
FEMA  
USACE  
NOAA

### Regional

Tribes  
RDPO  
Port of  
Portland  
Union  
Pacific  
Audubon  
Willamette  
River  
Keepers

Public  
Interest  
Linnton  
LEPC  
350.Org  
OSPIRG  
Center  
for a  
Sustainable  
Economy

Bloomberg  
Green

# PEAK OIL IS SUDDENLY UPON US

By [Tom Randall](#) and [Hayley Warren](#)  
November 30, 2020

Cyber Week Exclusive: Get 50% off an entire first year. Cancel anytime >

Already a subscriber or Bloomberg Anywhere client? [Sign In](#)

[https://www.bloomberg.com/graphics/2020-peak-oil-era-is-suddenly-upon-us/?  
utm\\_source=pocket-newtab](https://www.bloomberg.com/graphics/2020-peak-oil-era-is-suddenly-upon-us/?utm_source=pocket-newtab)

# RESILIENCE IMPERATIVE

## How Do We Leverage the CEI Hub Risk in Order to Achieve the 2050 Vision?

- Role of Emergency Managers and Local Officials
- Roles of State and Federal Agencies
- Inform Public Officials and Motivate Public Interest
- Natural Hazard Mitigation Plans
- Pre-Disaster Recovery Planning
- Economic Opportunities
- Environmental Justice
- Social Equity

—————→ **Community Values**