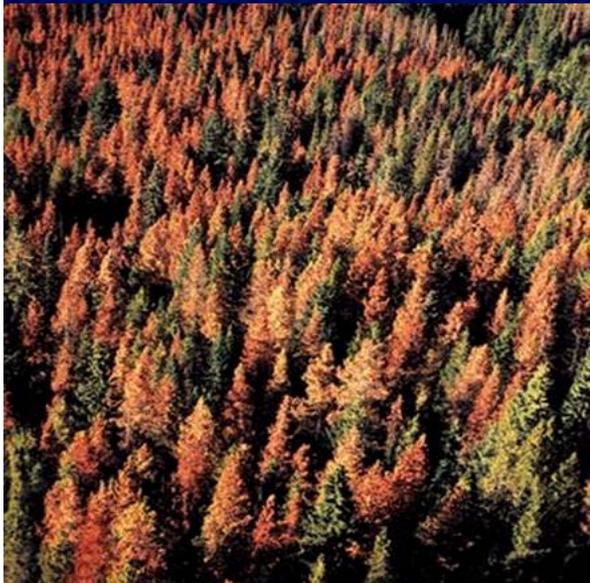




Climate Solutions

Healthier communities
Prosperous economies

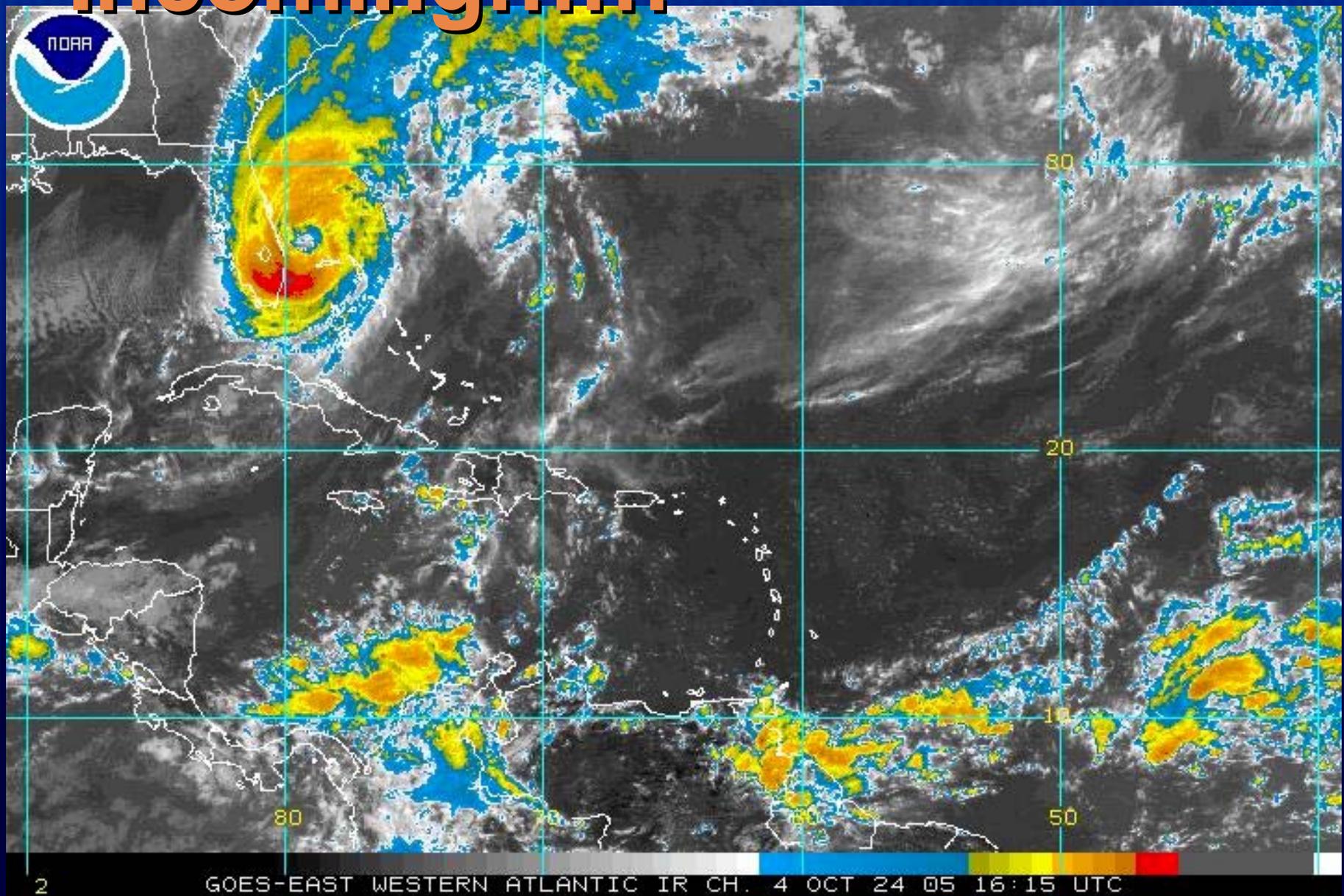


Seattle City Light Climate Change Series

Oct. 24, 2005
Patrick Mazza,
Research Director,
Climate Solutions

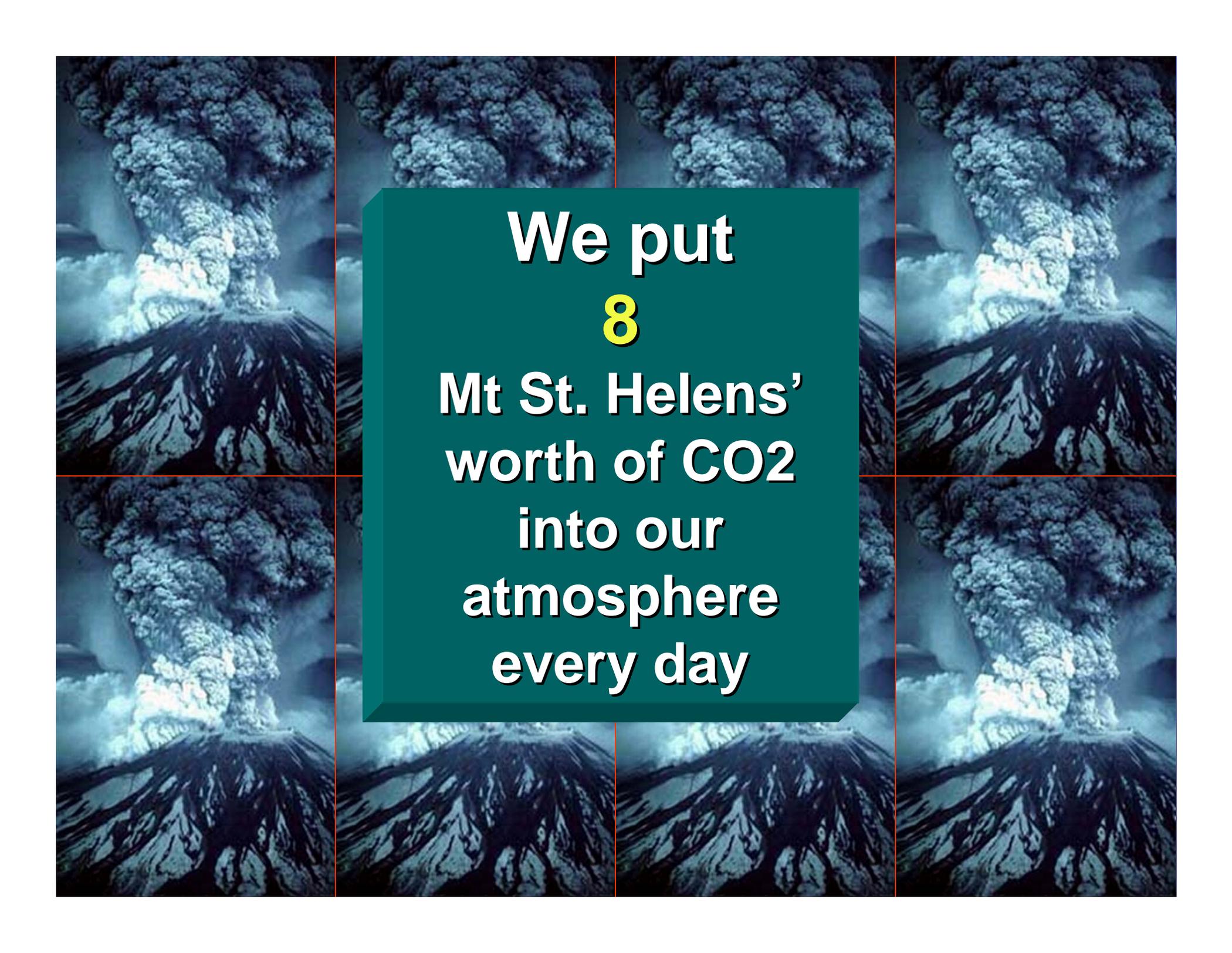


Incoming.....



Our Responsibility

- **More intense storm regime projected with heating ocean waters**
- **So this season a foretaste**
- **Overall, mainstream scientific consensus - most of the warming caused by human emissions**
- **Fossil fuels the major culprit – 80% of U.S. global warming emissions**

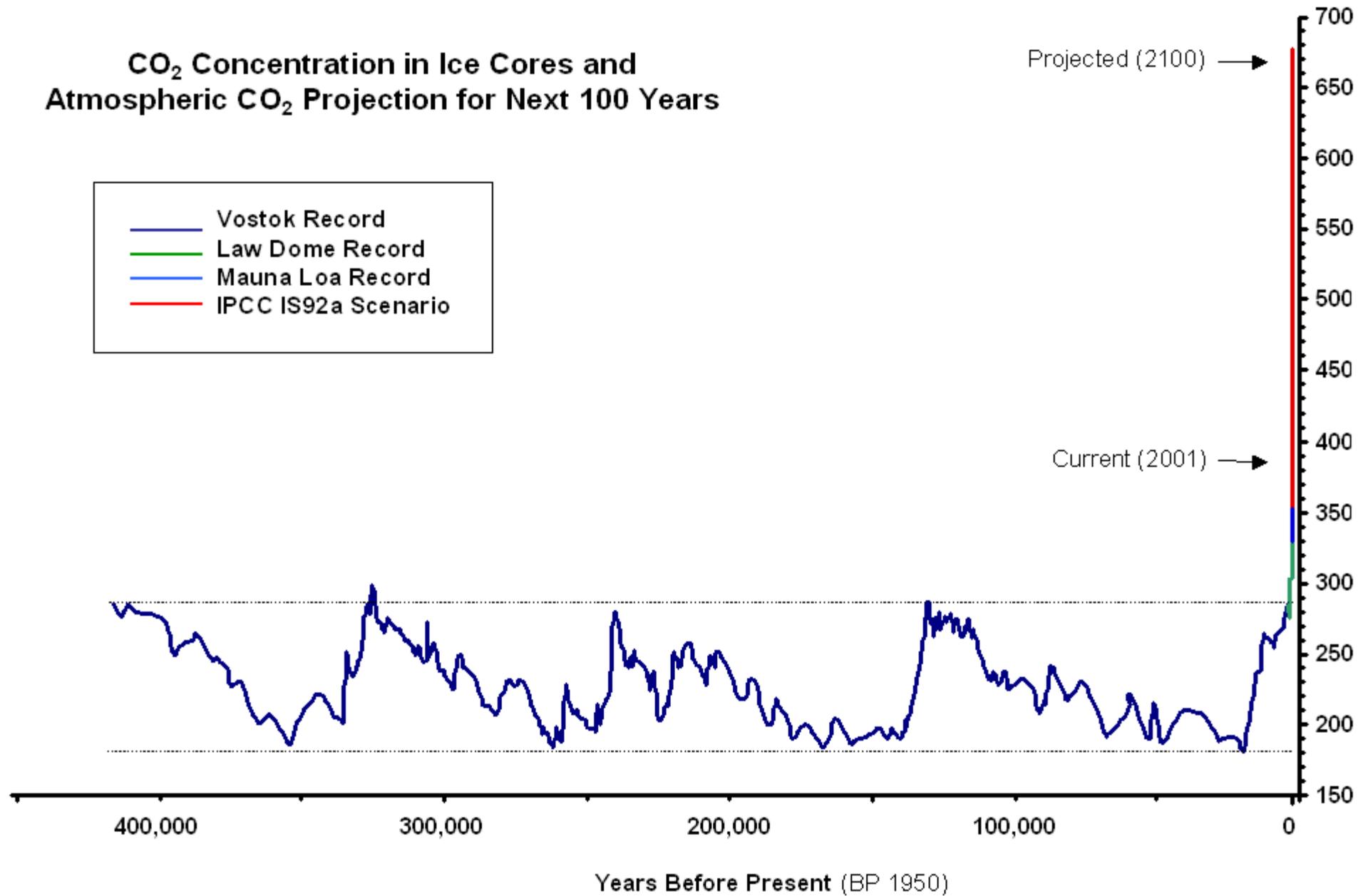


We put

8

**Mt St. Helens'
worth of CO₂
into our
atmosphere
every day**

CO₂ Concentration in Ice Cores and Atmospheric CO₂ Projection for Next 100 Years



Source: C. D. Keeling and T. P. Whorf; Etheridge *et al.*; Barnola *et al.*; (PAGES / IGBP); IPCC

We cause it – We can fix it

- **Promising solutions are within reach**
- **Solutions address other key challenges**
 - **Energy security - \$200B plus oil import bill, increasing reliance on Persian Gulf, economic and military drain**
 - **Health – fossil fuel burning by far the largest source of air pollution**
 - **Economic development – creation of new energy technology sectors**

Clean Energy Blastoff



Approaching the Tipping Point: Clean energy transition drivers

- Clean energy technology emerging to mass market status
 - Hybrid vehicles
 - Biofuels, plug-in hybrids
 - Wind power



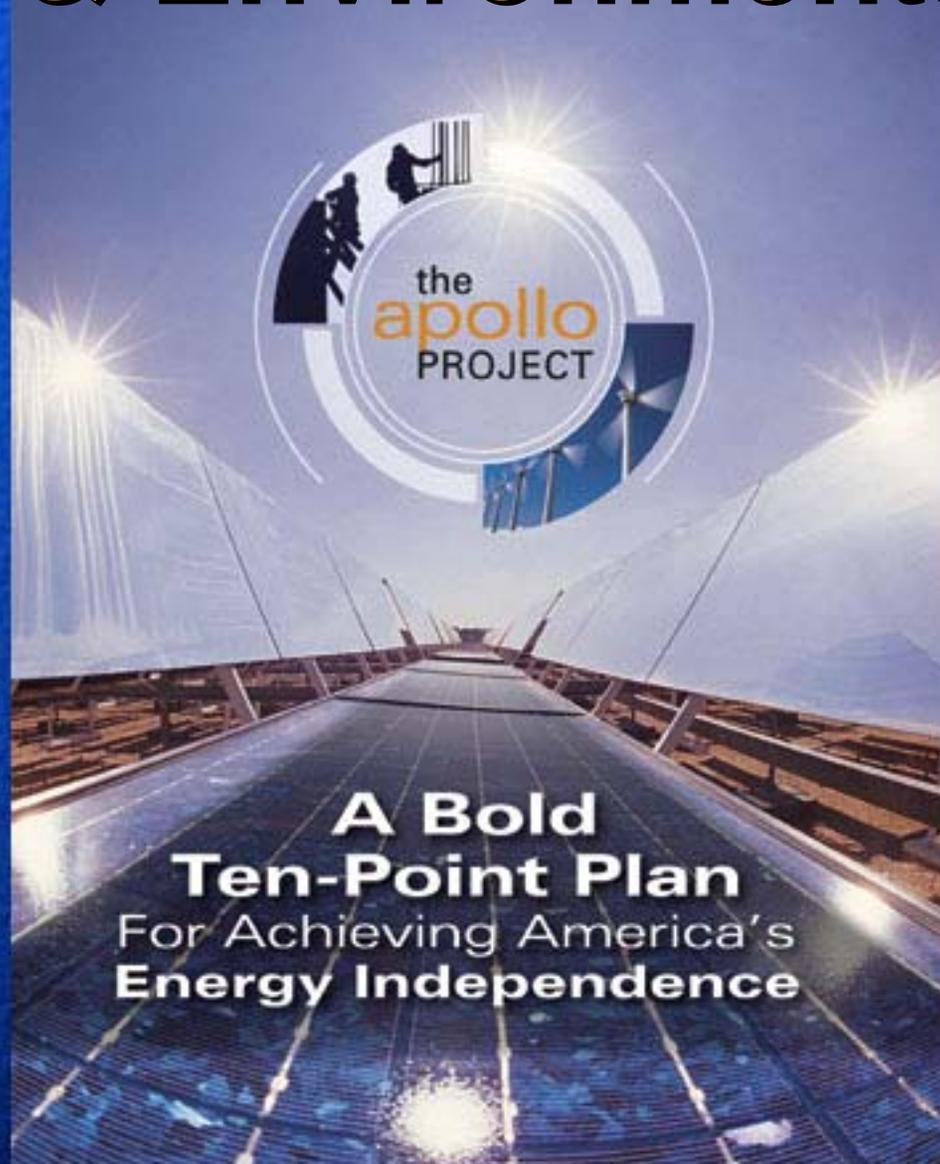
Approaching the Tipping Point: Clean energy transition drivers

- **Broad consensus emerging on energy independence crossing political spectrum**
 - **Hawks**
 - **Labor, enviros**
 - **Corporate CEOs**

National Security Hawks...



Labor & Environmentalists



Corporate CEOs



Corporate CEOs

Jeffrey Immelt, CEO, General Electric -

- **"There has been a massive discrepancy between people talking about climate change and the people who could actually do something about it. It's technology that brings them together. We think we can make money out of environmental technology."**
- **"For 125 years GE has profited from solving some of the world's toughest problems. . . I'm preparing my company and our customers for the day that there might be caps on carbon emissions."**

Corporate CEOs

**Frank Cassidy, President and COO of PSEG
Power**

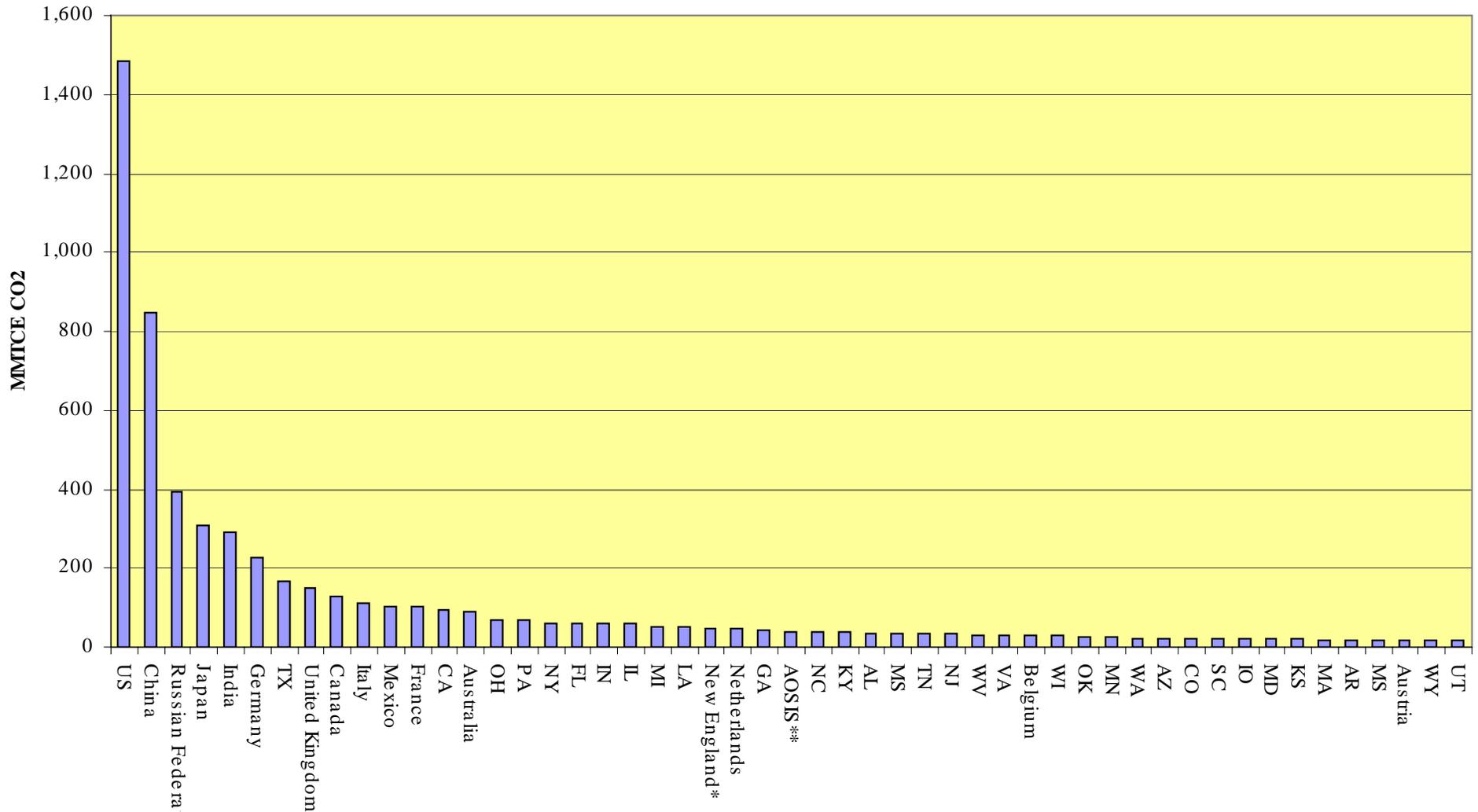
- **“There is....one great, unknown element that will have a profound impact on the...direction of our industry, and this is the public policy response to climate change and future requirements for controlling GHG emissions.**
- **I can tell you as a business leader this makes me very uncomfortable. I prefer an environmental policy that is clearly defined and one that establishes precise emissions targets and timetables. I believe that such a program... must include a sound, mandatory program for reducing greenhouse gas emissions.”**



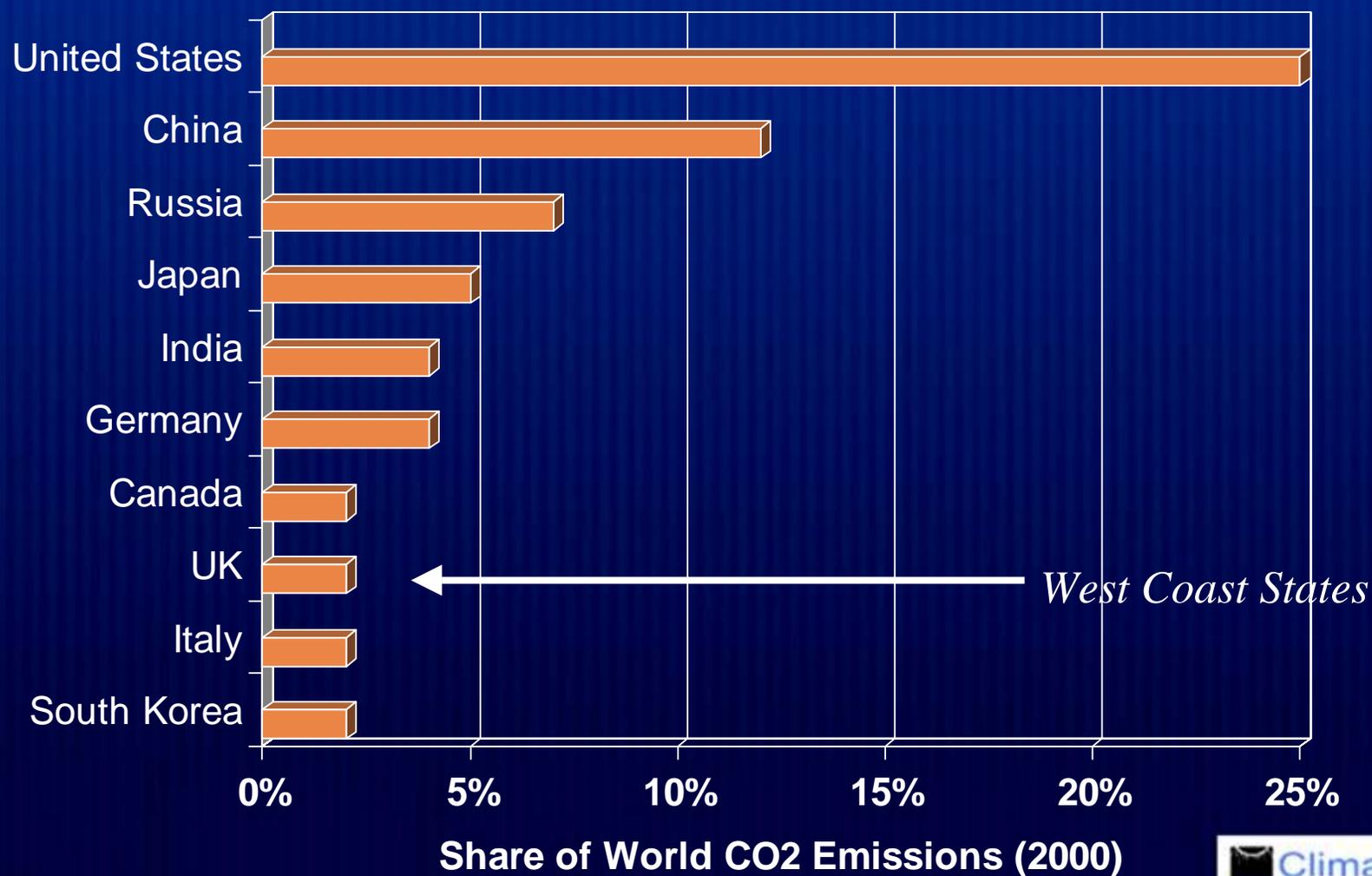
States are players

Top 50 Global GHG Emitters

Global GHG Emissions



World's Top 10 CO₂ Emitters:



Sources: UCS, EIA, EPA, CEC, NESCAUM

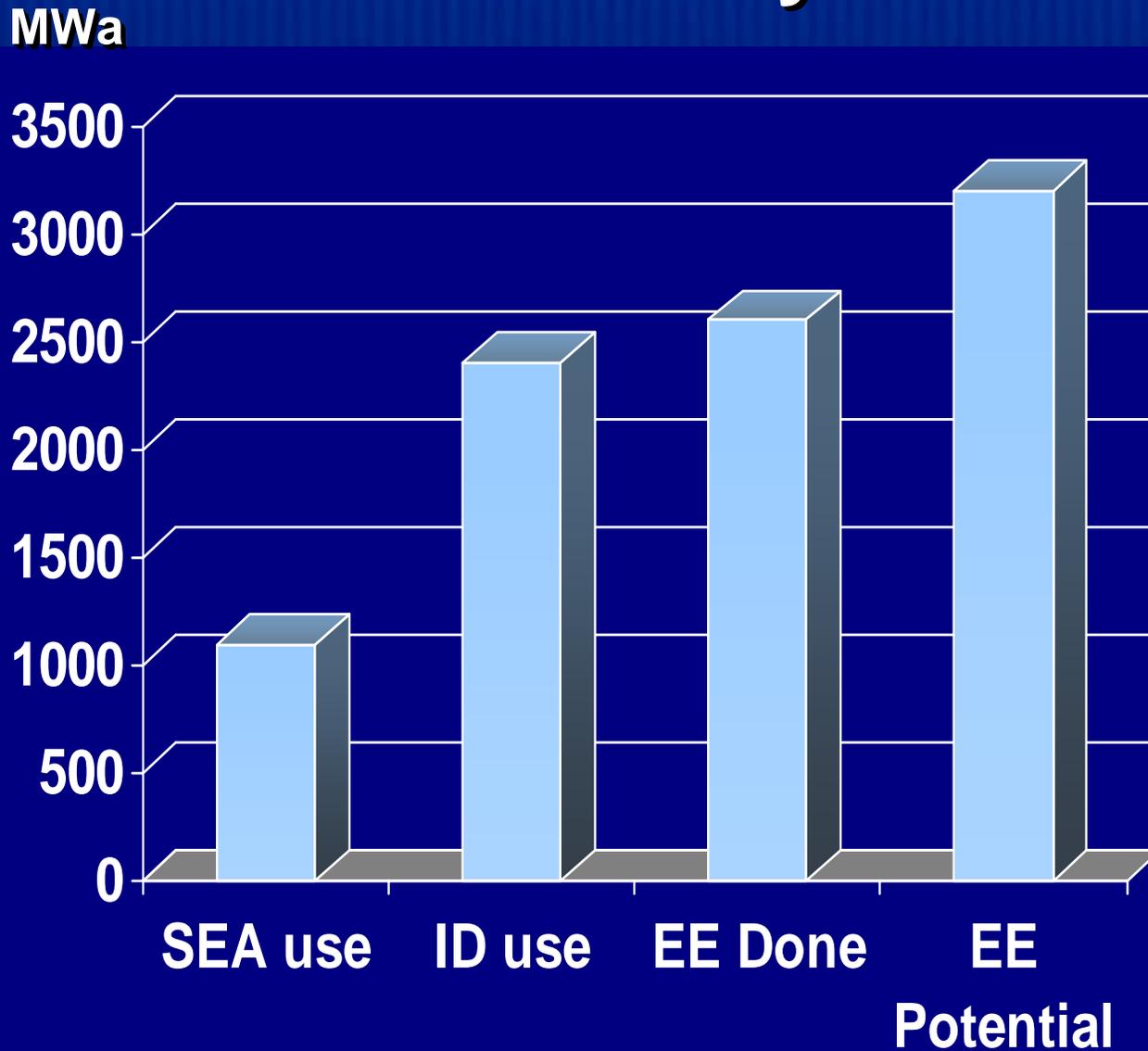
Solutions = Opportunities

Clean cars; clean fuels;
renewable power; energy
and resource efficiency;
transportation choices



Clean energy = Economic opportunity

Efficiency: Job #1



**We've saved
more than
Idaho uses**

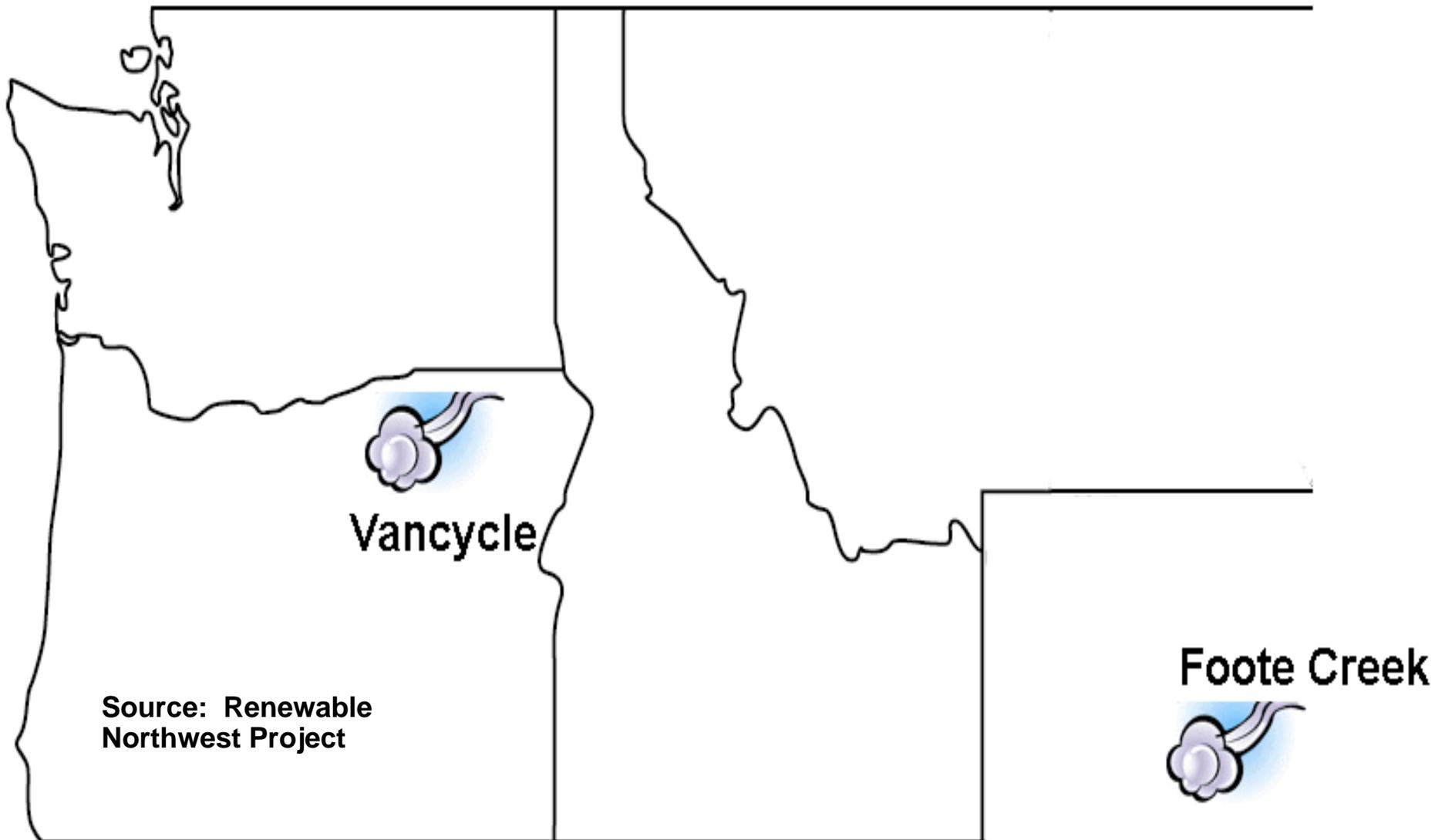
**We can save 3
times what
Seattle uses**

**Annual savings:
> \$500 million**





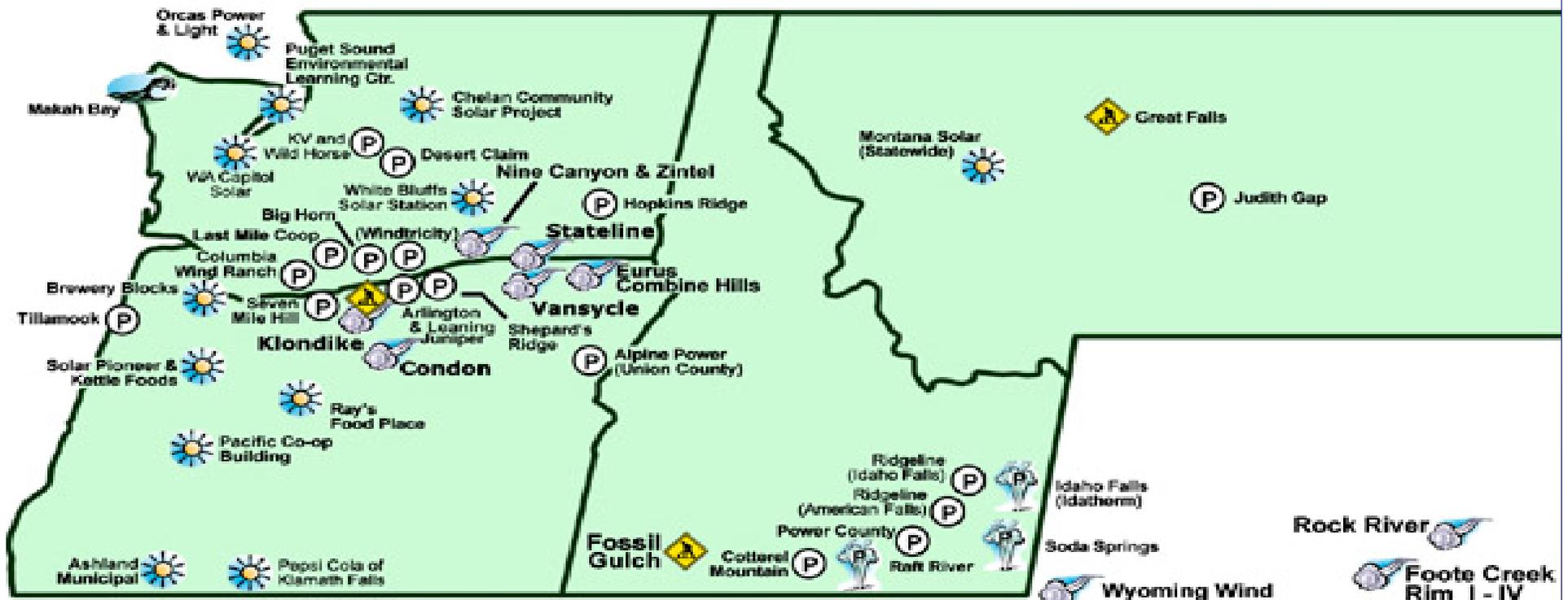
NW New Renewable Projects: 1998





New Renewable Projects: 2005

Renewable Energy Projects in the Northwest 2005



Glass Mountain

Legend



Wind - Operating



Wind - Construction



Wind - Proposed / Env Review



Geothermal



Wave/Tidal

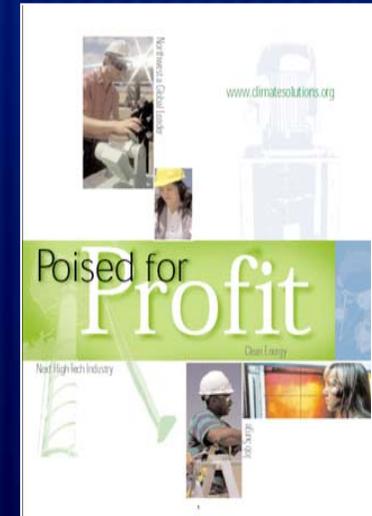


Solar

Last Updated 02/01/05

Poised for Profit I: The market for clean energy

Relative Size of Clean Energy Industry



Sources: Rolls Royce, IEA, AAAADI, ONL, EREN, EU, ATLAS – “Poised for Profit”

Poised for Profit II:

Targeting smart energy

- PFP II – 3-5 year opportunities
- Smart energy emerges on top
- Application of digital information technology to power grid
- Global smart energy industry - \$15 B
- Northwest smart energy cluster - \$2B
- Industry leaders including Itron, Areva, Schweitzer

Harvesting clean energy for rural development – www.harvestcleanenergy.org

Wind, sun, fuel crops, biogas, and geothermal



- ☀ **Farm income**
- ☀ **Employment**
- ☀ **Tax base**
- ☀ **Environmental improvement**

Local and state actions feed momentum, international resolve

- **2000 – City Light aims to zero out GHGs**
 - **Efficiency and renewables meet growth**
 - **Carbon trading >> biodiesel market**
- **2003 – State adopts first climate policy**
- **2003-4 West Coast Governors initiative**
- **2005 -- Clean car standards**
- **2005 – Kyoto enters into force;
Mayors Climate Challenge**

Next Public Policy Steps

- **Biofuels Legislation –**
 - **10% Renewable Fuel Standard**
 - **2005 Washington, Idaho**
 - **Play key role in founding advanced cellulose-based biofuels industry**
 - **Idaho lined up for logen Plant**
 - **Replacing gasoline by 2050 – “Growing Energy” plan**

Next Public Policy Steps

- **Renewable Portfolio Standard – 2006 ballot initiative in the works**
- **Smart grid initiatives – Toward a grid with distributed energy resources and intelligence**
 - **Demand response/Baseload efficiency**
 - **Distributed Generation**
 - **Non-wires initiatives saving on traditional utility infrastructure – BPA, SCL, PNW GridWise Testbed**

Isn't that enough?

No.

1979



2003



Climate policy framework:

The essential role of goals and limits

- **Public and private roles:** Government sets the limits; markets invest.
- **Economics:** With limits, right to emit becomes scarce and valuable; markets allocate resources more efficiently and signal for acceleration of solutions.
- **NW utilities invest in renewables as least-cost in anticipation of carbon cost.**

Climate policy framework:

The essential role of goals and limits

- **Public and private roles: Government sets the limits; markets invest**
- **Economics: With limits, right to emit becomes scarce and valuable; markets allocate resources more efficiently and signal for acceleration of solutions.**
- **West Coast utilities now investing in renewables in anticipation of carbon cost**

What can you do now?

1. Be aware and engaged – sign up for the



2. Be part of the solution

- Clean, efficient energy
- Transportation choices
- Reduce, reuse, recycle

3. Be a **VOICE**

- Virtual march:

www.stopglobalwarming.org

