TESTIMONY IN SUPPORT OF HB 2633

Goal 7 Natural Hazards

Feb. 12, 2015

Tom Bender

I am a coastal architect, former Building Official of Cannon Beach,

and past energy researcher in Gov. Tom McCall's office.

I've been working with coastal, geologic, tsunami and other hazards for almost 40 years.

Natural hazards legislation is urgently needed.
local jurisdictions are WAY behind on these issues.

Much of the following material is from a global warming presentation I gave in 2008.
Science on these issues is constantly changing, so the numbers are inexact.

OREGON COAST

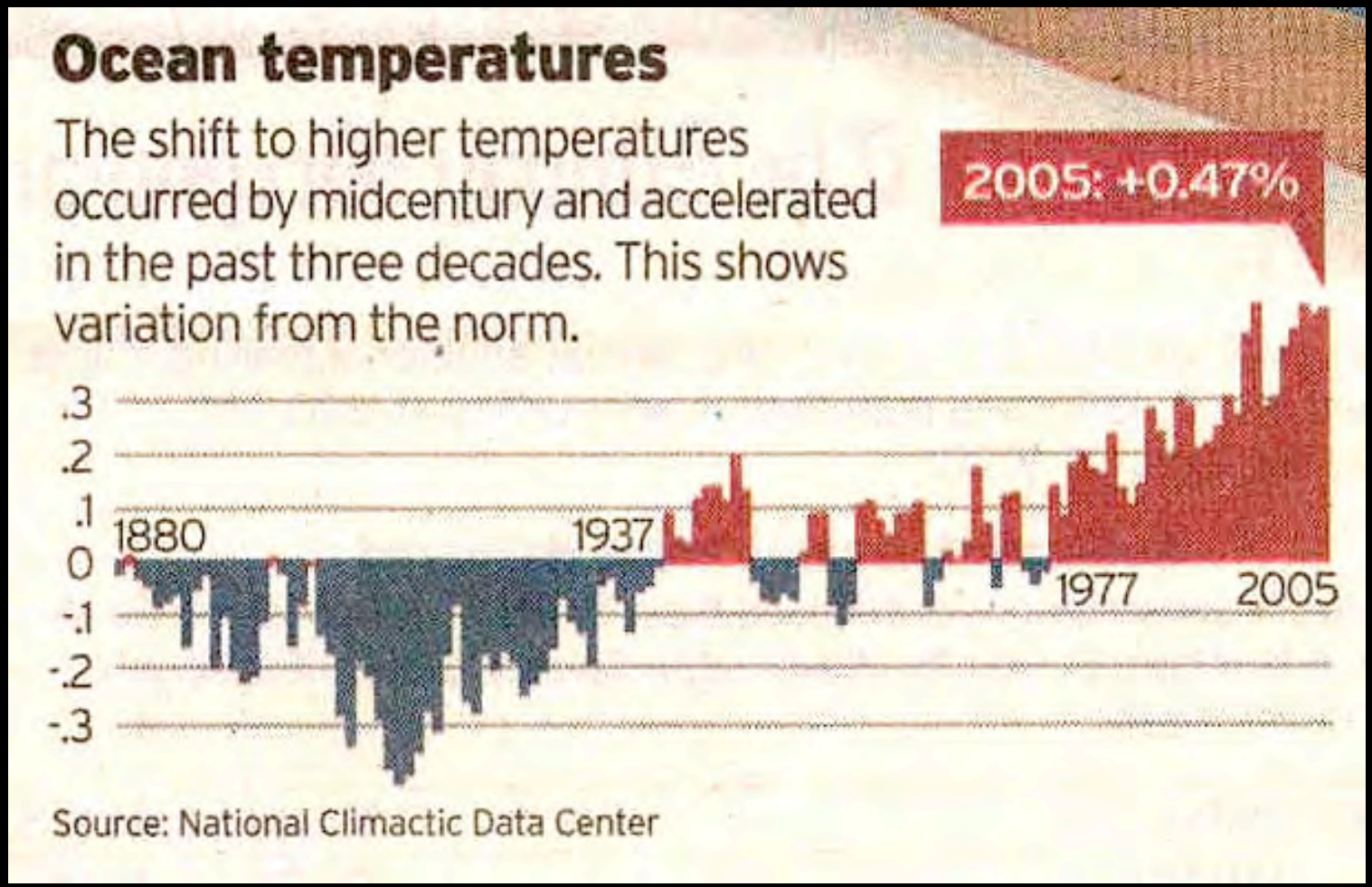
Impacts of Global Warming

Sea Level Rise is only ONE expected natural hazard event.

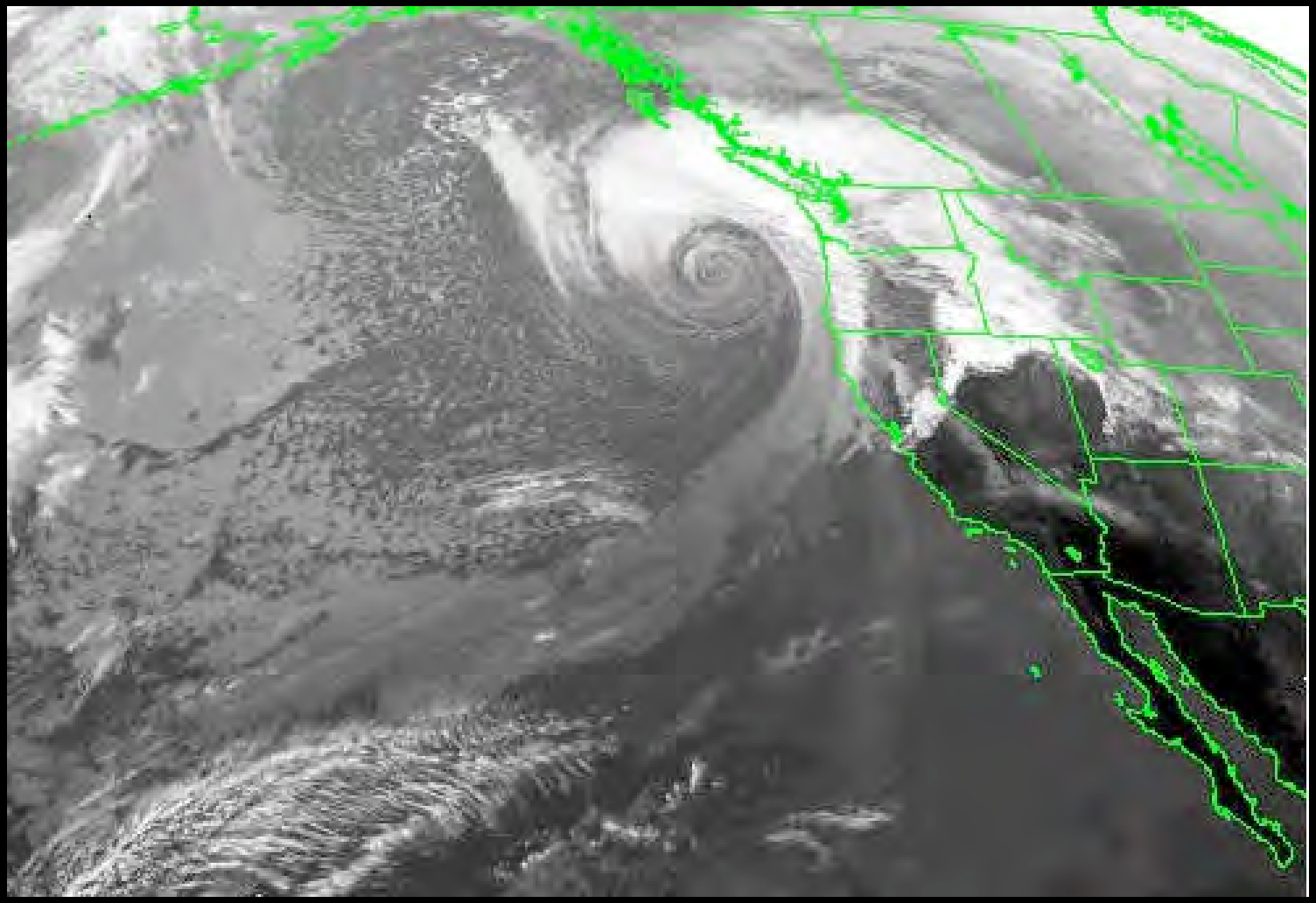
These images can help give a sense of the REAL impact of natural hazards. Current (2015) projections of potential tsunami runups in Manzanita are to +80'MSL, greater than that shown for sea level rise.

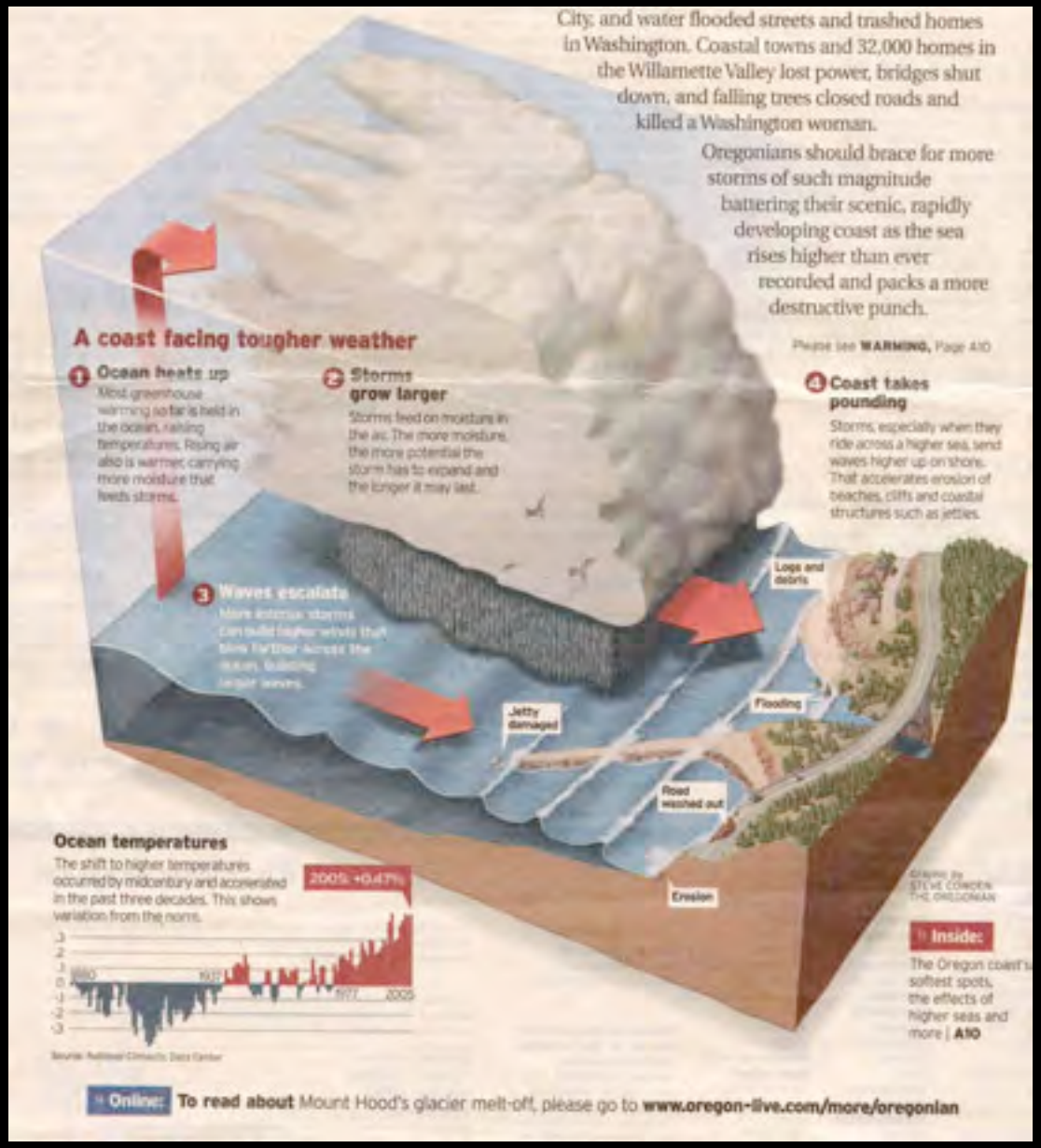
CLIMATE CHANGE IMPACTS ARE HAPPENING HERE NOW

OCEAN TEMPERATURES ARE RISING



WARMER OCEANS GENERATE MORE POWERFUL STORMS





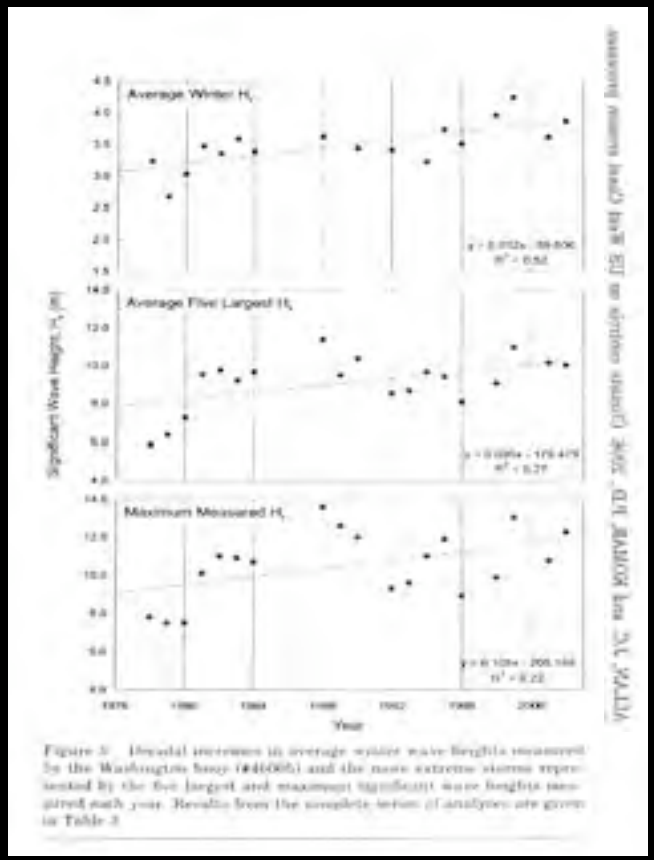
MORE POWERFUL STORMS

=

* Higher winds
* More intense rainfall
* Higher waves
* More beach erosion

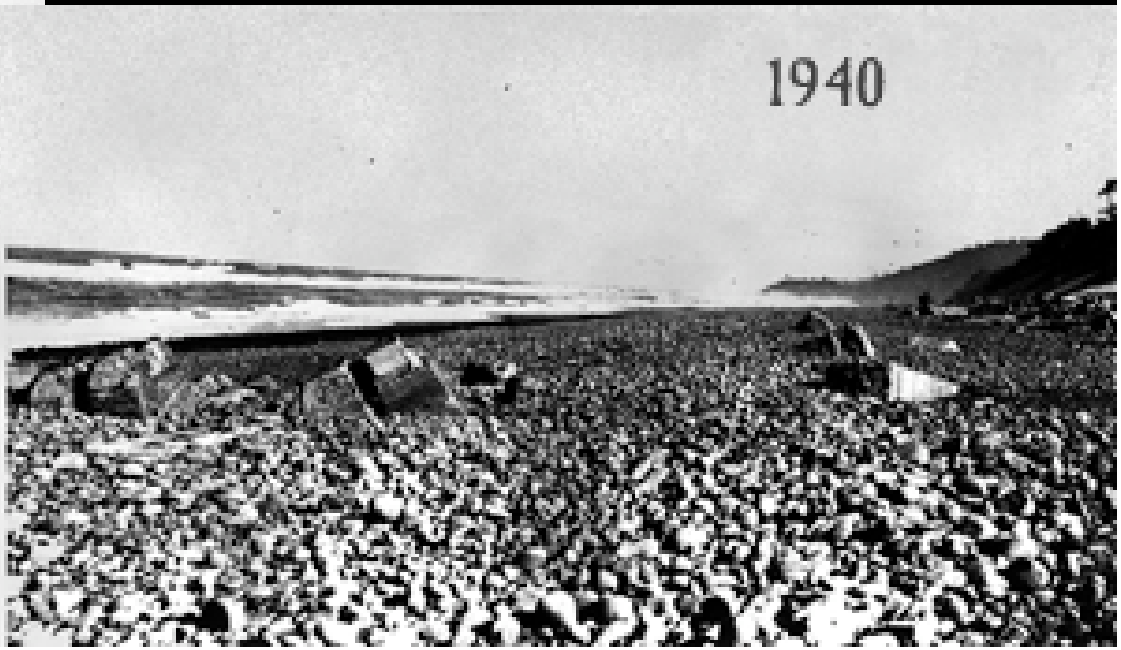
LOSING 15,000 ACRES OF FOREST IN ONE NIGHT FROM 159 MPH WINDS IS NOT BUSINESS AS USUAL.

WAVE HEIGHTS HAVE INCREASED 25% SINCE 1976.
Extremes have increased 33%



MORE POWERFUL STORMS CAUSE GREATER BEACH EROSION

REMEMBER BAYOCEAN?



MORE POWERFUL STORMS

- More power outages
- More highway closures
- Business disruption
- School closures
- Floods

Remember Katrina
Remember 1996
Remember ‘06
And Dec ‘07.

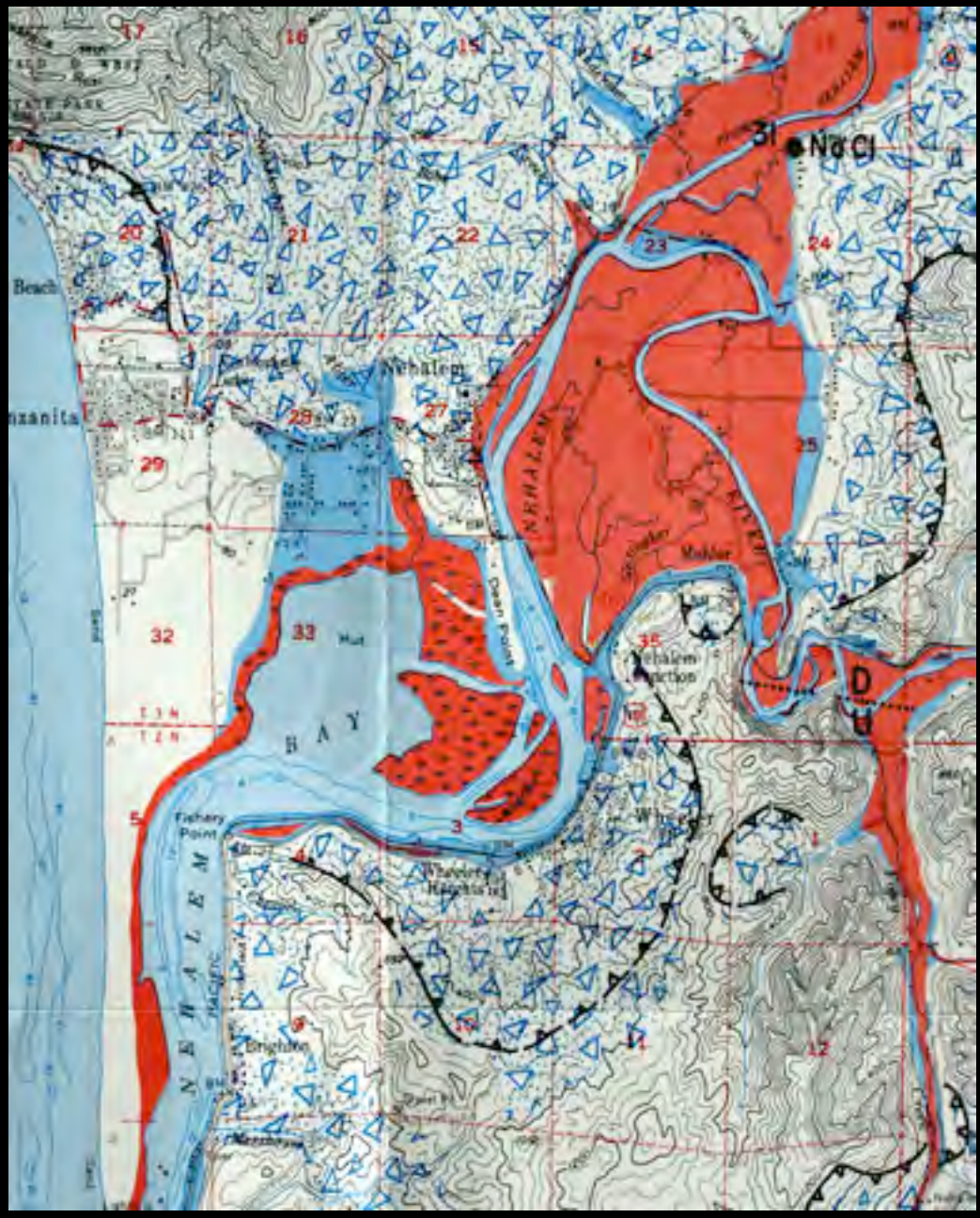
THE FLOOD OF ‘96 WAS BUT A SAMPLE

MORE INTENSE RAINS
mean greater landslide impacts

LANDSLIDES CAN HAVE HUGE ECONOMIC IMPACTS

Brighton Beach lost 90% of its value from one landslide.

THE ENTIRE
OREGON
COAST
IS
LANDSLIDE
TERRAIN



Clearcut logging can cause major landslides. ALL of western Oregon is already geohazard/ landslide terrain because of volcanic ash falling on existing clopes, forming slippery, impermeable blue-clay. The OSO landslide has shown inadequacy of local jurisdictions dealing with these potentials.

- **The massive costs of clearcut-caused landslides impacting our communities and transportation systems are ignored in Oregon forestry and land-use planning practices.**
  - Class-action lawsuits related to the Washington Oso landslide are showing the financial risks of ignoring such issues.
    - Oct. 27, 2014 Seattle Times Oso Landslide Lawsuit
    - "Landslide in Oso - Don't Blame Nature"
  - New mega-quake R9.5 landslides with five times the lateral movement of R-9 earthquakes are now expected, with far greater risk and need for change in practices:
  - There has been no update of data, zoning restrictions, or development of policies informing communities, residents, or property purchasers of potential impacts and risks. Even existing geological hazard maps show the ubiquity of hazards tied with Oregon's geology.
    - Wheeler Citizens for Responsible Development's reports on issues of logging, landslides, and community development are valuable:
      - "Ross Report and Wheeler Landslides" 5/17/14
      - "Oso Landslide, Logging, and Geer Report" 8/19/14
      - "Wheeler Landslides Photo Essay" 10/29/14
      - "Supplement to October 2014 Newsletter" (GeoReports) 10/29/14
- The Oso Report is an outstanding analysis of a long technical report showing the long-term issues with groundwater and landslides lasting 20+ years after logging.

For copies and more information, contact: Ralph Thomas <wheelercitizens@comcast.net>

OCEAN IMPACTS:

* Impacts on Shipping and Fishing

* Expanded Dead Zones

FORESTRY IMPACTS: Changed rainfall patterns, disease resistance, fire frequency

NBC News 7/21/13

John Roach, NBC News

11 hours ago

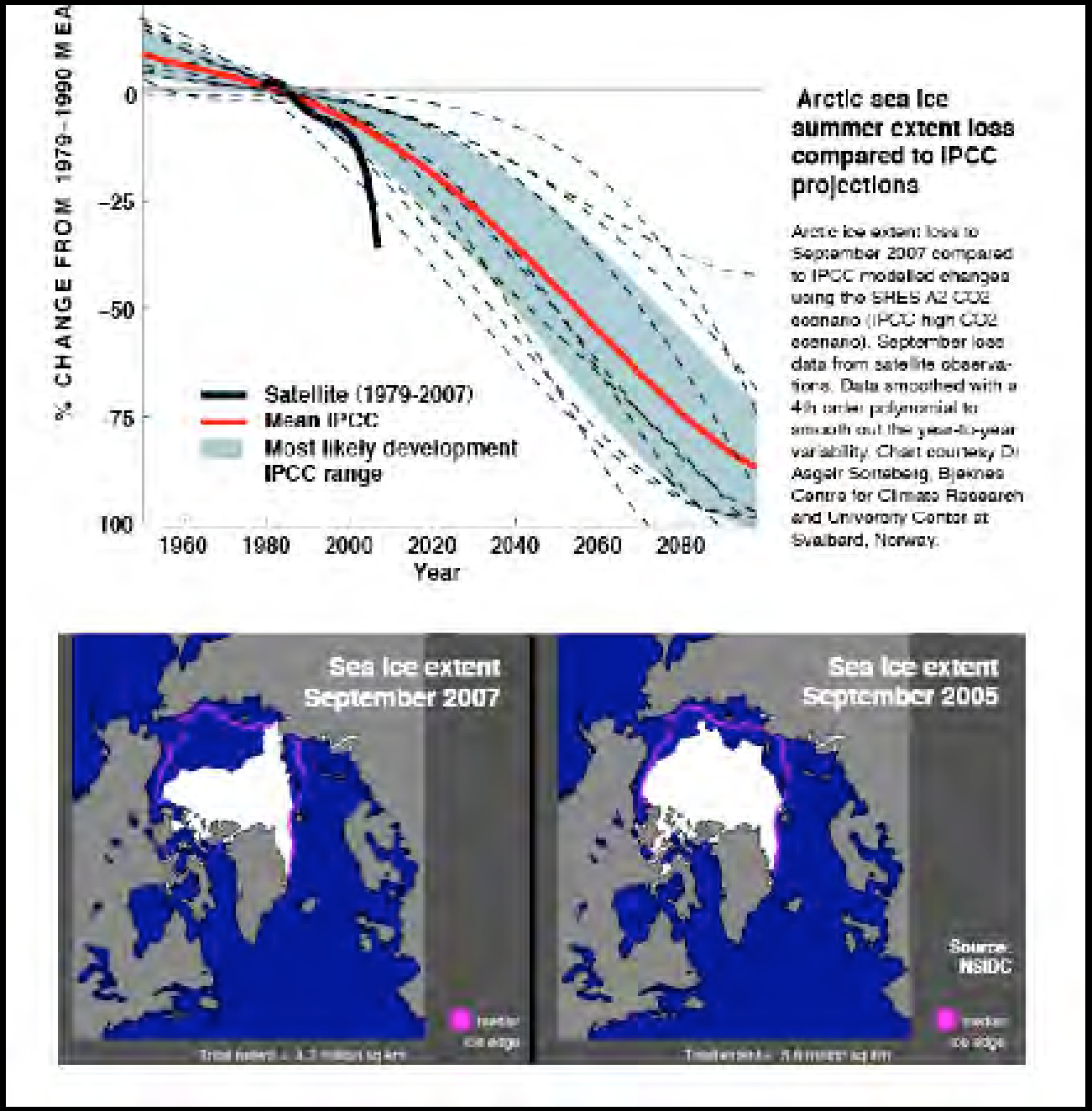
Rob Dunbar

Southern Ocean icebergs are shown here close to the East Antarctic continent. New research says the ice sheet there is vulnerable to melting as the climate continues to warm.

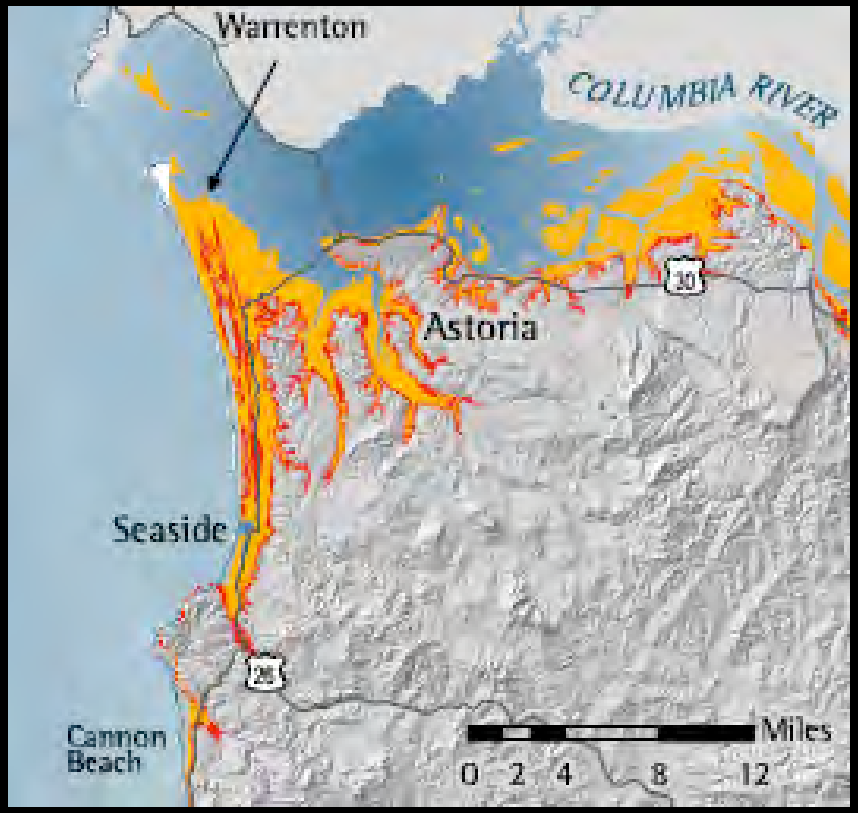
The last time concentrations of the greenhouse gas carbon dioxide were as high as they are today, big chunks of the seemingly stable East Antarctic ice sheet melted and helped raise global sea levels more than 65 feet higher than they are now, a new study suggests.

Scientists have long known that seas were higher during the Pliocene, a geological epoch that ran from 5.3 million to 2.6 million years ago. At the time, atmospheric carbon dioxide levels were similar to today's 400 parts per million (ppm).

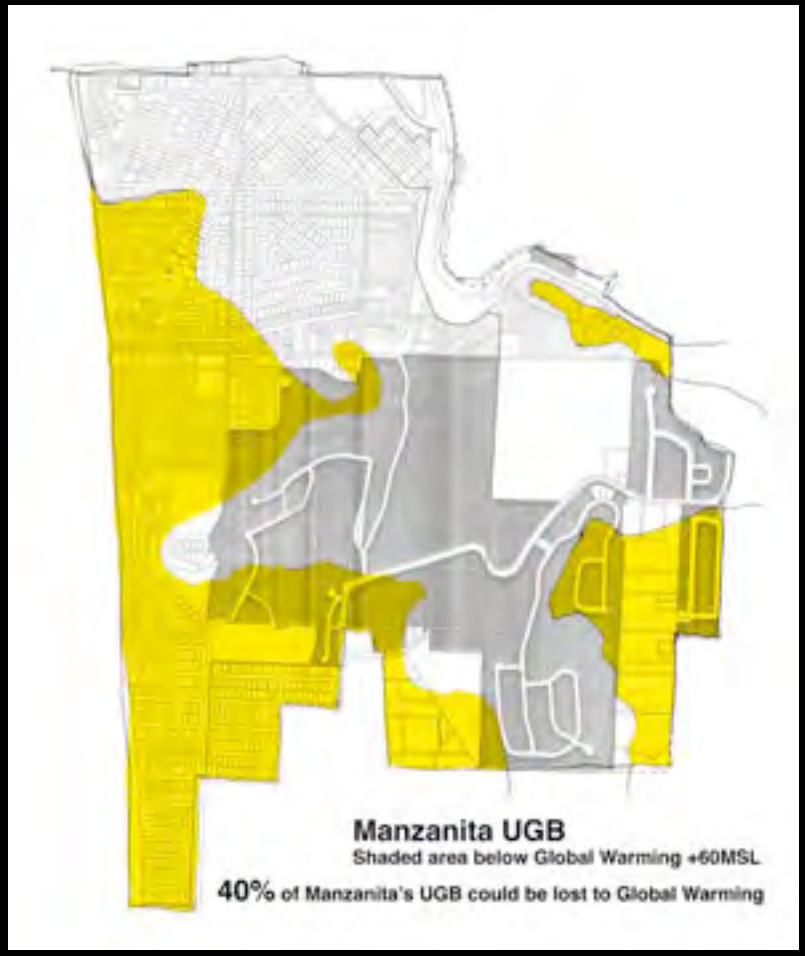
Changes are happening way faster than projected.



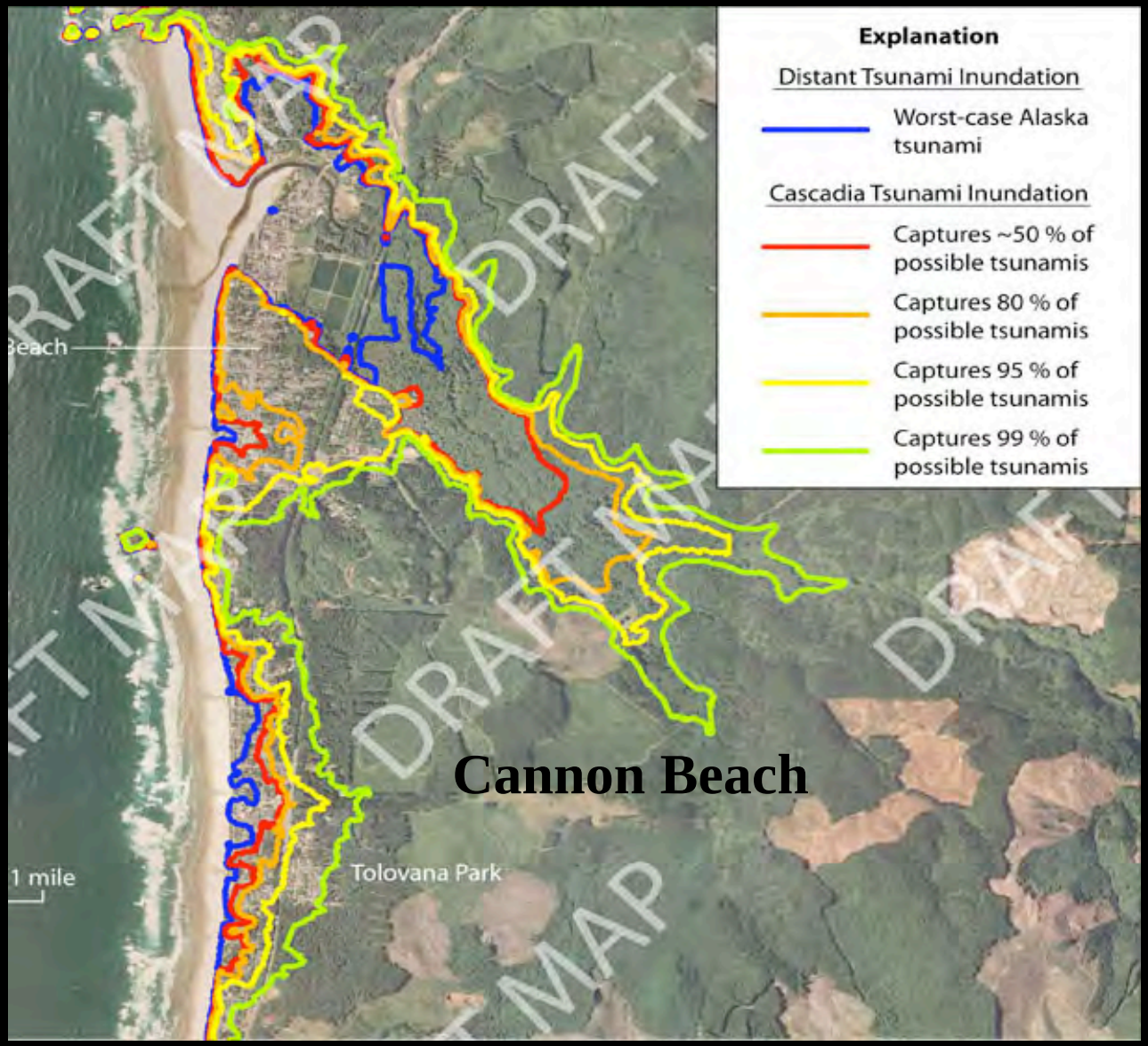
AFFECTED OREGON COAST AREA: 379,000 acres



HUGE AREAS OF OUR CITIES will be inundated



New tsunami inundation maps show similar inundation heights - but will be added to sea level rise impacts, along with shoreline regression. (2008)



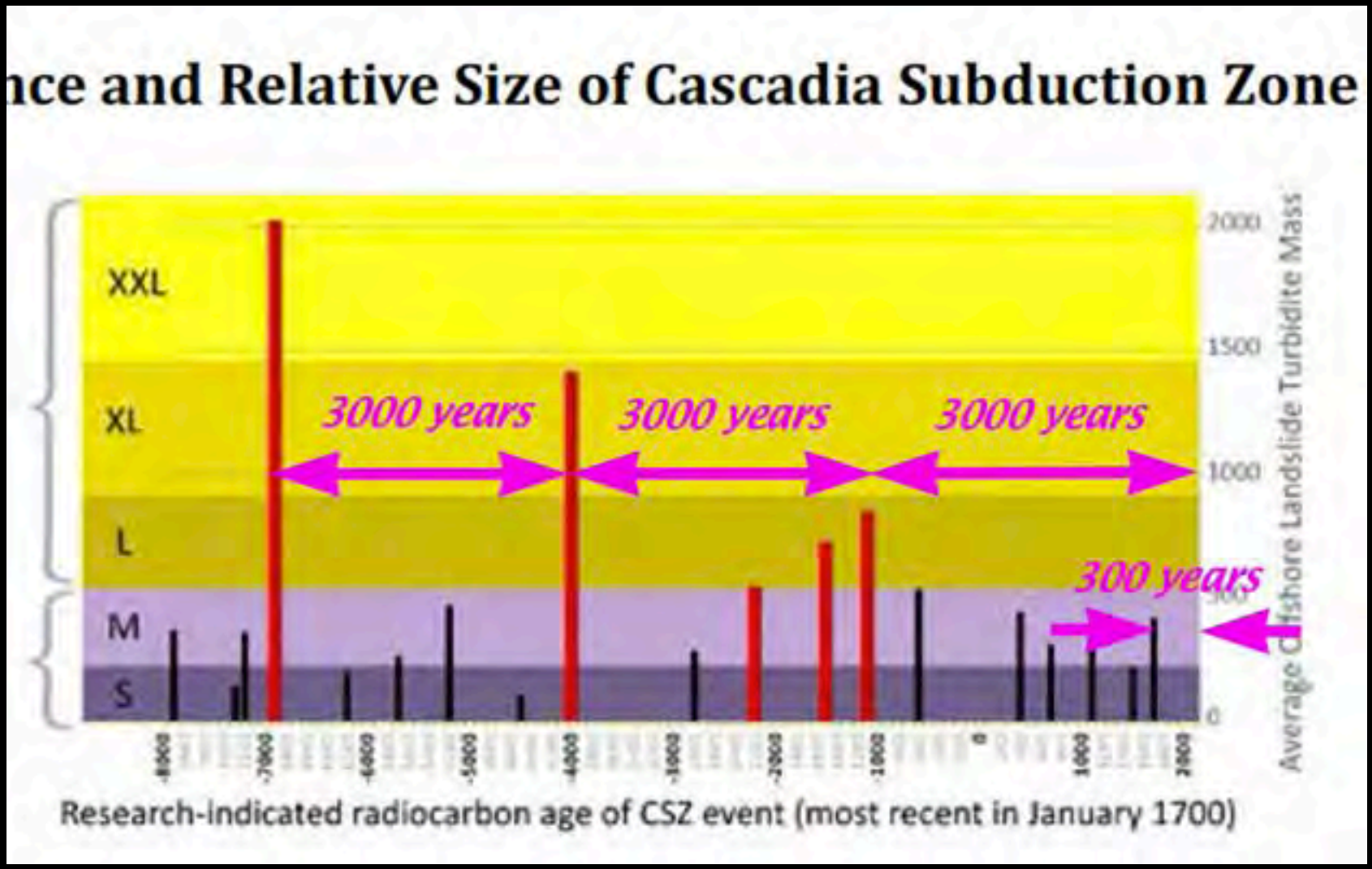
The Oregon Resilience Plan
shows the magnitude of expected regional impacts:

The Oregon Coast is due/overdue for a major R-9 subduction zone earthquake and resultant tsunami. We've known that for years. Most recent tsunami maps show the last one, 300 years ago, similar in size to the devastation that recently hit Sendai, Japan. Recent research now considers that to be only a "medium-sized event". Vastly larger earthquakes have occurred on a 3000-year cycle. And guess what, the last one, of course, was 3000 years ago. So we're due for a big shakeup, and it's time to get prepared as much as we can.

The recent release of the draft Oregon Resilience Plan, dealing with earthquake preparedness, is sobering. The Coast will be last to get access to assistance and rebuilding. Current projections suggest 1 – 3 *years* to get just the non-tsunami-impacted parts of the Coast operational again. 3-6 months to restore electricity, 4 months for governmental facilities, 1-3 years for water, sewer, and healthcare. And those rosy numbers are not for getting service everywhere.

The report states very simply and clearly, "Given the expected problems of energy delivery following a Cascadia event, coastal communities should explore alternatives to the statewide utility grid and, to the extent possible, work towards greater self-sufficiency."

The 3000 year quakes (one, of course, is now due)
are *magnitudes* more powerful
than the 300 year R-9 quakes previously expected.



Oregon Building Codes DO NOT reflect this dramatic new magnitude of seismic action.

There is no reason to believe that construction to today's codes can survive expected earthquakes.

ESTIMATED INUNDATION OF CITIES:

Astoria 10%
Warrenton 100%
Seaside 90%
Cannon Beach 80%
Manzanita 40%
Nehalem 66%
Wheeler 55%
Rockaway 80%
Bay City 40%
Tillamook 100%

Allowing development
in areas of known natural hazard
has huge costs, usually borne by the public.

These images - of same scale -
show the magnitude of hazards such as offshore energy projects,
where tsunami runup can be higher
than the building to the right:

VALUE OF HOMES DESTROYED - $16 billion

ONE-THIRD OF THE ENTIRE COAST HIGHWAY COULD BE INUNDATED.

MILES OF HWY 101 AFFECTED:

122 miles

Cost of replacing Hwy 101:

$700 million

Miles of major roads affected:

570 miles

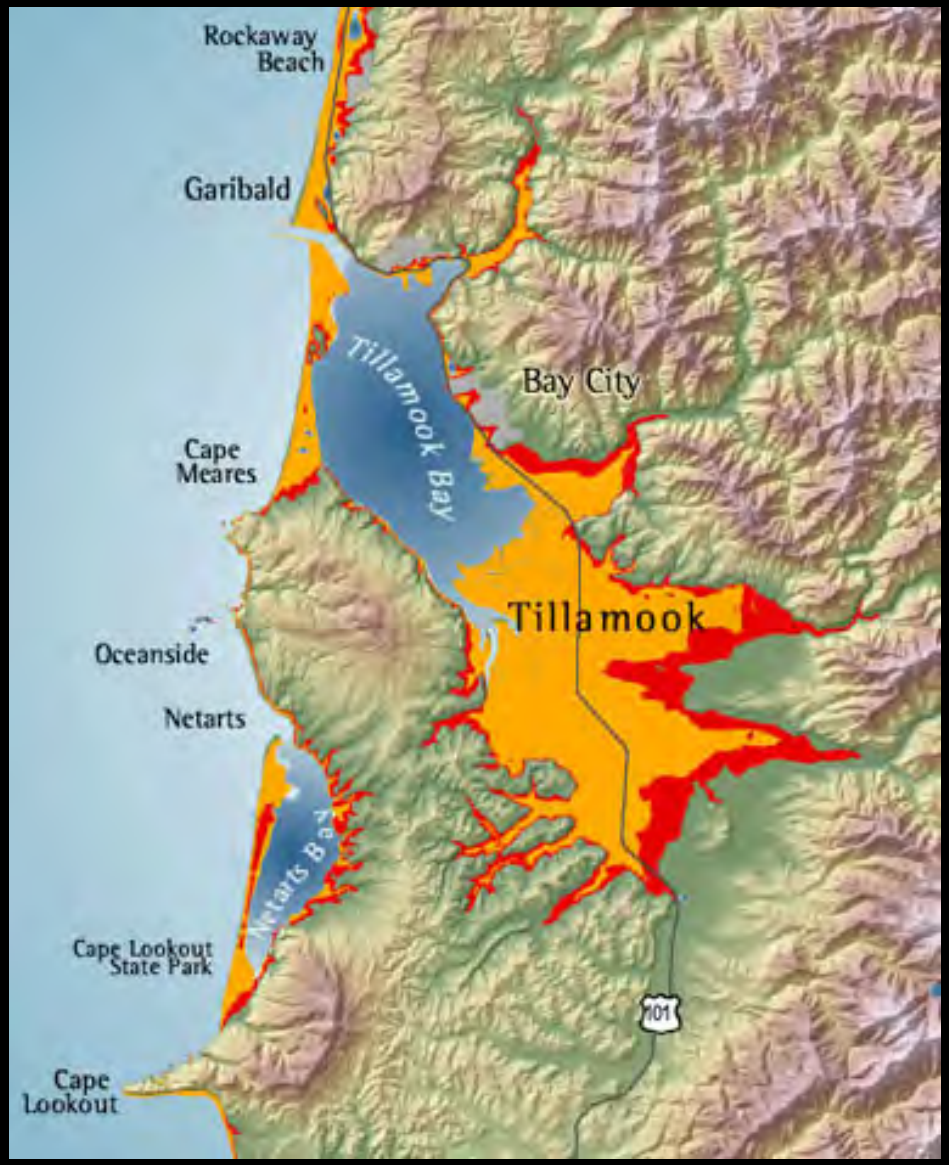
Miles of minor roads affected:

2170 miles

FAMILY LIVLIHOODS LOST :

$700 million/year
including

most coastal agricultural land



ECONOMIC INFRASTRUCTURE LOST:

520 miles of railways

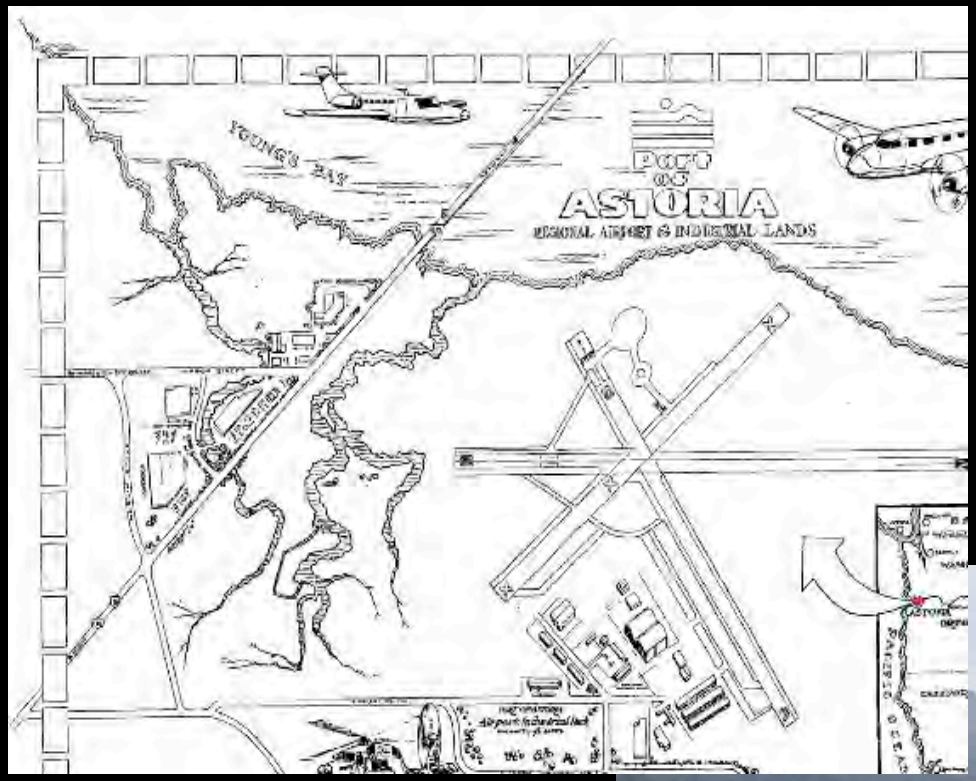
ECONOMIC INFRASTRUCTURE LOST:

* Ports, jetties, harbor facilities
* Beaches/tourism ($5 billion/year)
* Virtually all transportation
* Virtually all utilities
* Majority of developed land

ECONOMIC INFRASTRUCTURE LOST: Utility Systems

Economic infrastructure lost: Sewage Treatment Plants

Economic Infrastructure Lost: State Parks



ECONOMIC INFRASTRUCTURE LOST:

Coastal Airports

CULTURAL LOSS:
Homes, Cemeteries, Churches, History

GLOBAL WARMING, PEAK OIL, AND FOREIGN DEBT ARE FLIP SIDES OF THE SAME THING

FOREIGN TRADE DEFICIT $$$$$$

THE HUGE U.S. FOREIGN DEBT INBALANCE IS TIED TO OUR DEPENDENCE ON FOREIGN OIL

“Technical Fixes”

are

NOT

the answer.

THIS REQUIRES LEADERSHIP

THAT MEANS

ACTING NOW!

THIS IS OREGON

WE'VE DONE IT BEFORE, WE CAN DO IT…

AGAIN!

DECLARE DEVELOPMENT AND BUILDING MORATORIUMS

IN SEA-RISE IMPACTED AREAS - NOW!

The insurance industry has already stopped issuing new residential policies near the Atlantic, Gulf, and Oregon coasts.

New awareness of

INSURANCE RISKS

is transforming development regulations

Excellent document - 9/19/13

Insurance companies are refusing to write new policies, or withdrawing totally from coastal areas.

Union of Concerned Scientists

Insurance is a tool to help manage the risk of potentially costly damages in an uncertain world.

How Risk Builds

Artificially low flood insurance rates and other aspects of subsidized coastal insurance programs have allowed, even reinforced, risky patterns of land development, such as homes built in Duck, along the Outer Banks of North Carolina. This beachfront home has been badly damaged due to erosion of sand dunes following a nor'easter in 2012. Federal and state-backed insurance programs have also created an unsustainable level of financial exposure for all taxpayers, who ultimately help pay for insurance claims and disaster relief in the event of a major storm.

BAN INCANDESCENT LIGHT BULBS - NOW!

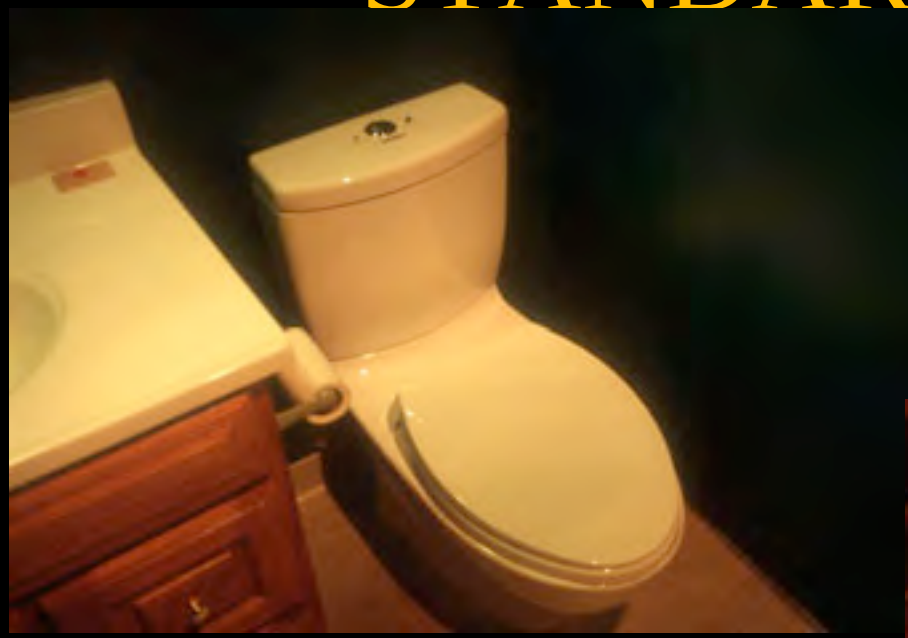
Australia and Canada already have!

REQUIRE NET-ZERO-ENERGY HOME CONSTRUCTION - NOW!

Great Britain and France have already mandated net-zero-energy construction.

Portland OR is developing NZE" feebates" to implement NZE homes.

RAISE ENERGY-EFFICIENCY STANDARDS - NOW!



THE "EFFICIENT" FUTURE IS ALSO ONE THAT CAN HAVE A SOUL

We've already shown we can create world-class efficient buildings on the Coast.

IMPLEMENT GAS-GUZZLER FEEBATES - NOW!

Canada already has!

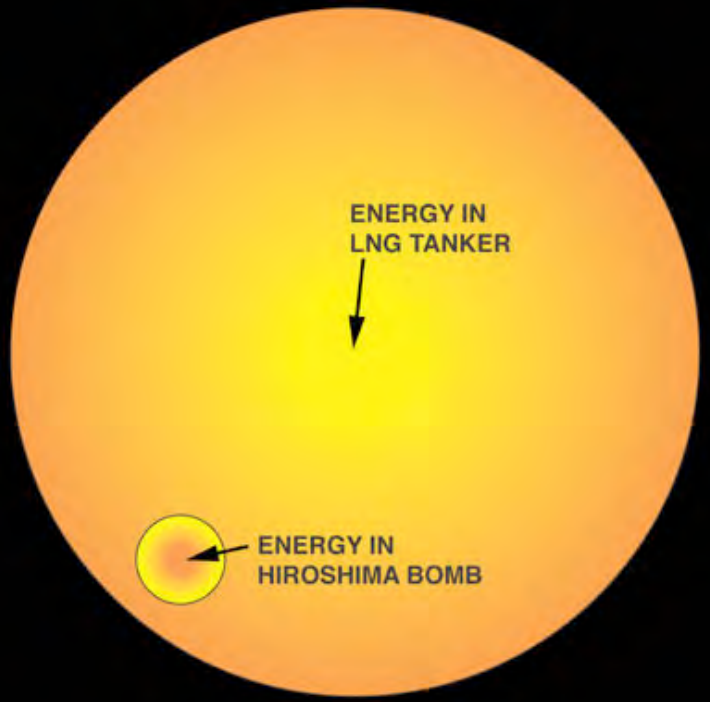
FUND EFFICIENT VEHICLES FOR WORKING PEOPLE - NOT JUST THE RICH.

TAX FOSSIL FUELS - NOW!

It’s way more effective than CAFÉ Standards, and can be done locally.

Use the $$ to fund efficiency and renewables, and get us out of debt.

BAN USE OF FOSSIL FUELS



FOR NEW ELECTRICAL GENERATION

75-80% of the energy in LNG is lost in transport and conversion to electricity.

TAX HYDRO-ELECTRICITY

MAKE EXISTING USE MORE EFFICIENT

NOW!

Raise our RATES, not our BILLS!

- Our current "below-market" electric rates allow us to be careless about energy use, and encourage big energy users to move into our area.

- Raising our hydro-electric rates can provide funding for deep energy retrofits of homes and businesses and for installing distributed renewable energy facilities of particular benefit after natural hazard events.

REVISE THE STATE FORESTRY ACT

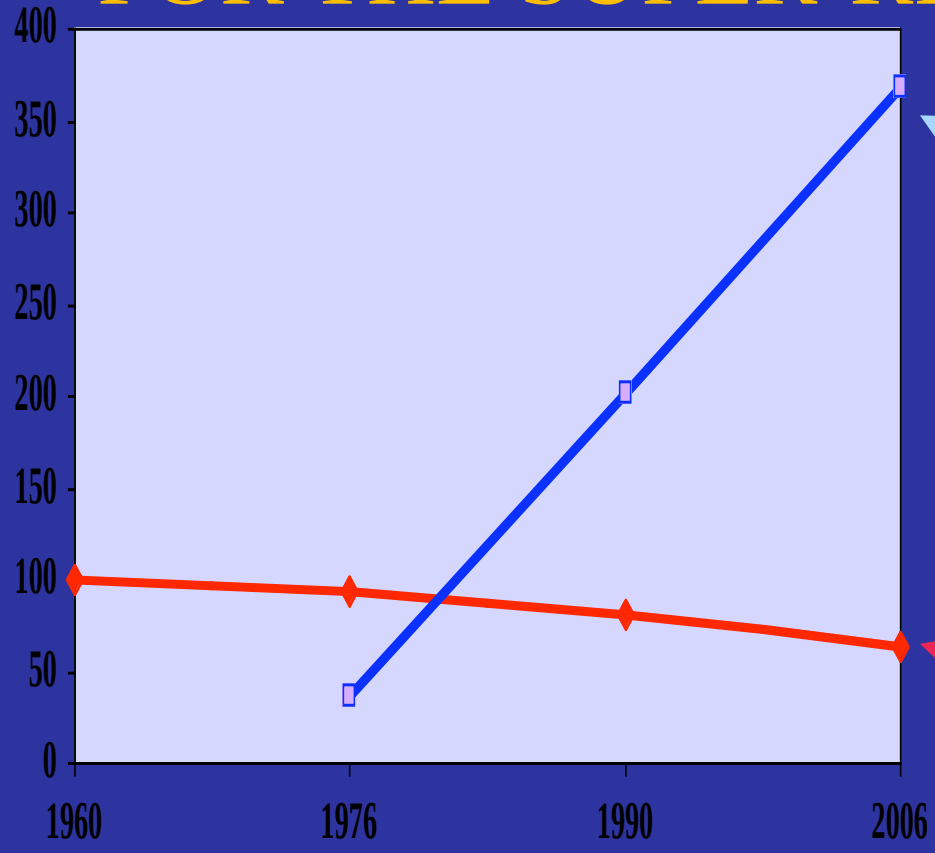
LONGER ROTATIONS = BETTER ECONOMICS
+ CARBON SEQUESTERING

IMPROVE RECYCLING AND MATERIAL ENERGY USE - NOW!

EAT LOCAL FOOD - NOW!

BAN BILLBOARDS, BUY LESS - NOW!

REQUIRE LIVING WAGES, AND ELIMINATE TAXE LOOPHOLES FOR THE SUPER-RICH – NOW!



Average CEO earnings are now 369 times as much as the average worker, compared with 36 times as much in 1976.

U.S. Minimum Wage has decreased by 37% since 1960.

Skyrocketing income disparity is destroying our communities.
Reasonable equity is the foundation of democracy.

There are MANY issues that need to be addressed. A few of them:

- Need for Tsunami Inundation Overlay Zones, prohibiting any NEW construction.
- Dealing with what happens AFTER an event such as a tsunami. Should rebuilding be permitted?
- How jurisdictions can require changes in “approved but not developed” developments that ignore slope and geohazard issues.
- Upgrading earthquake resistance and/or relocating existing vital structures.
- Update building codes to reflect new earthquake resistance needs.
- Requirements that property purchasers be notified of hazards, unavailability of insurance, etc.