WRC

WATER RESOURCES COMMISSIONER

Jim Nash

For more information, visit

www.oakgov.com/water

FRACKING, CLIMATE CHANGE AND LOCAL CITIZEN ACTION

Oakland County Water Resources Commissioner Jim Nash will connect the dots between our local oil drilling, fracking, climate change and a bi-partisan solution.

Heath/environmental risks

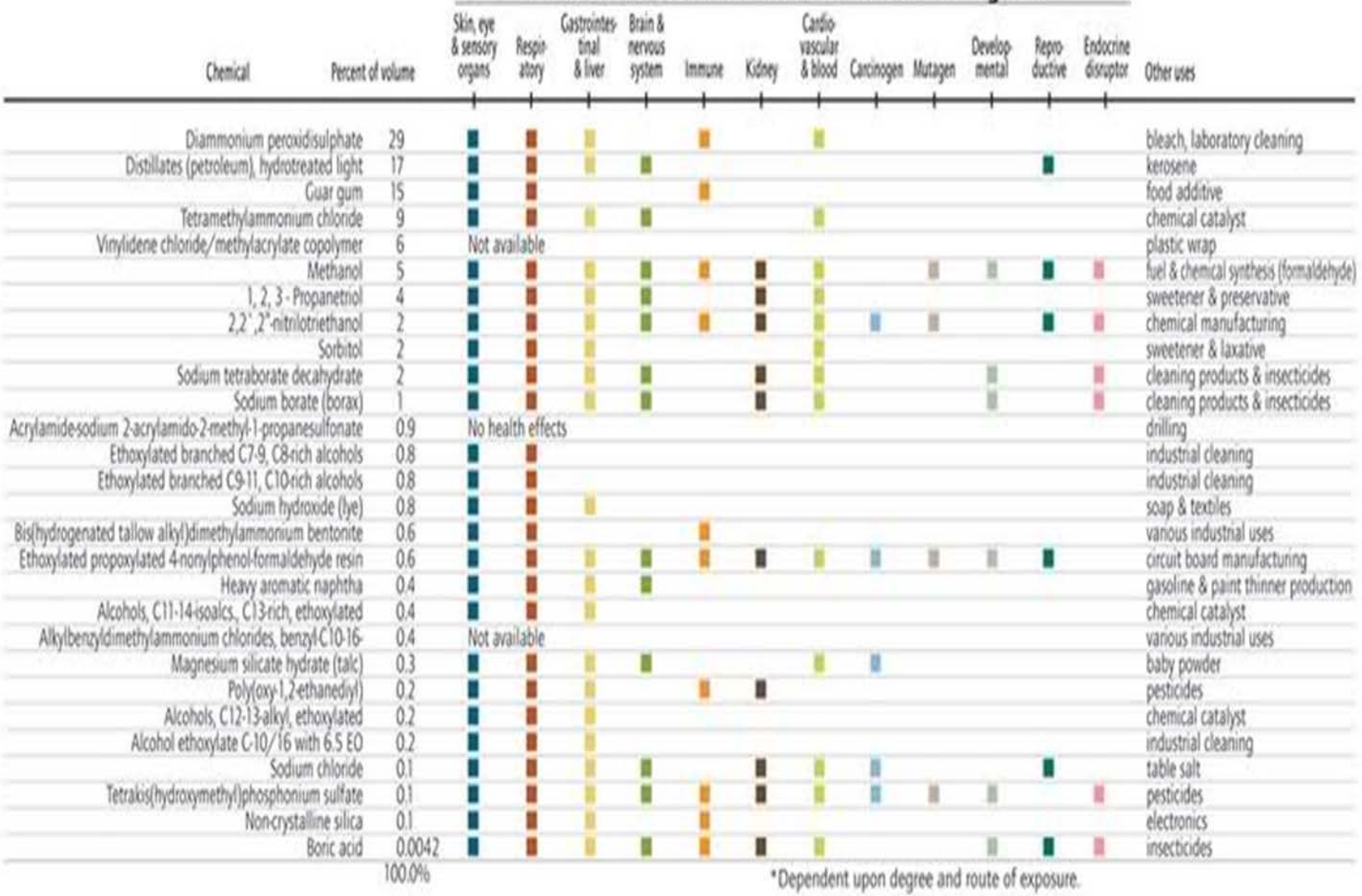
“Hormone-Disrupting Chemicals Found At Fracking Sites Linked To Cancer, Infertility”: University of Missouri Medical School study published in Endocrinology Society. www.medicine.missouri.edu/news/0214.php

“Hydraulic Fracturing Fluids Likely Harmed Threatened Kentucky Fish Species”: United States Geological Survey and National Fish and Wildlife Service report: ***"Our study is a precautionary tale of how entire populations could be put at risk even with small-scale fluid spills,"*** USGS scientist Diana Papoulias, the study's lead author. www.usgs.gov/newsroom/article.asp?ID=3677#.UvGvbvldUaw

National Academy of Science Report Says 'Fracking' Contaminates Water “we document systematic evidence for methane contamination of drinking water associated with shale gas extraction," the report states. http://www.sustainablebusiness.com/index.cfm/go/news.display/id/22379

American Academy of Pediatrics: VOC releases at well heads, pipelines and Tanks combine with traffic exhaust (nitrogen oxides) to **form ground level ozone**, a known contributor to serious respiratory diseases, especially among children. http://aoec.org/pehsu/documents/hydraulic_fracturing_and_children_2011_health_prof.pdf

Health effects associated with chemicals in fracking fluid*



SOURCES: WYOMING OIL AND GAS CONSERVATION COMMISSION; THE ENDOCRINE DISRUPTION EXCHANGE

Fracking Contaminated Drinking Water Wells in Pennsylvania

Pennsylvania DEP recently released details of **243 cases in which companies prospecting for oil or gas were found by state regulators to have contaminated private drinking water wells**. Many cases involved a single drilling operation impacting multiple water wells. Problems include methane gas contamination, spills of wastewater and other pollutants, and wells that went dry or were otherwise undrinkable.

Air Pollution in the Drilling Process

"EPA Needs to Improve Air Emissions Data for the Oil and Natural Gas Production Sector"
EPA Inspector General: **"Harmful pollutants emitted from this industry… can result in serious health impacts such as cancer, respiratory disease, aggravation of respiratory illnesses and premature death."** The article argues for stronger data and study of dangers. http://www.epa.gov/oig/reports/2013/20130220-13-P-0161_glance.pdf

"The oil and gas industry is a large source of VOC emissions.
Overall, VOCs are released to the air at all stages of oil and gas operations… For example, benzene is released during venting and dehydration..." USHHS, Agency for toxic Substances and Disease Registry Colorado Dept Health & Env.

Colorado becomes first state to regulate methane leaks in drilling/supply chain
in 2014. Colorado health officials claim stopping this leakage would be the equivalent of taking all cars off Colorado's roads in terms of heat trapping compounds. http://www.scientificamerican.com/article/colorado-first-state-to-limit-methane-pollution-from-oil-and-gas-wells/

Corporate Malfeasance

March 2014: **“Michigan Attorney General Bill Schuette charged Encana Corp. and Chesapeake Energy Corp. with conspiracy and antitrust violations** (in lease bids) that, if true, would have resulted in 97% less revenue for the Natural Resources Trust Fund, which supports land acquisition and proper land management.” http://www.freep.com/article/20140410/NEWS06/304100148/Michigan-DNR-bars-indicted-energy-companies-from-auctions September 2014:

Encana pled no contest, settled for $5 million and agreed to cooperate against Chesapeake Energy. http://www.mlive.com/business/west-michigan/index.ssf/2014/05/encana_reaches_5_million_plea.html

June 2014**: Additional criminal fraud charges filed against Encana and Chesapeake by Bill Schuette.** Indictment claims companies “obtained uncompensated land options… by false pretenses, and prevented competitors from leasing the land.” http://www.mlive.com/news/grand-rapids/index.ssf/2014/09/chesapeake_energy_ordered_to_t.html

THE WALL STREET JOURNAL

Exxon CEO Joins Suit Citing Fracking Concerns

By Daniel Gilbert Feb. 20, 2014

Exxon CEO Rex Tillerson "has joined a lawsuit that cites fracking's consequences in order to block the construction of a fracking water tower next to his and his wife's Texas home."

"traffic with heavy trucks on FM 407, creating a noise nuisance and traffic hazards," the suit says.

"A lawyer representing him said his concern is about the devaluation of his property…"

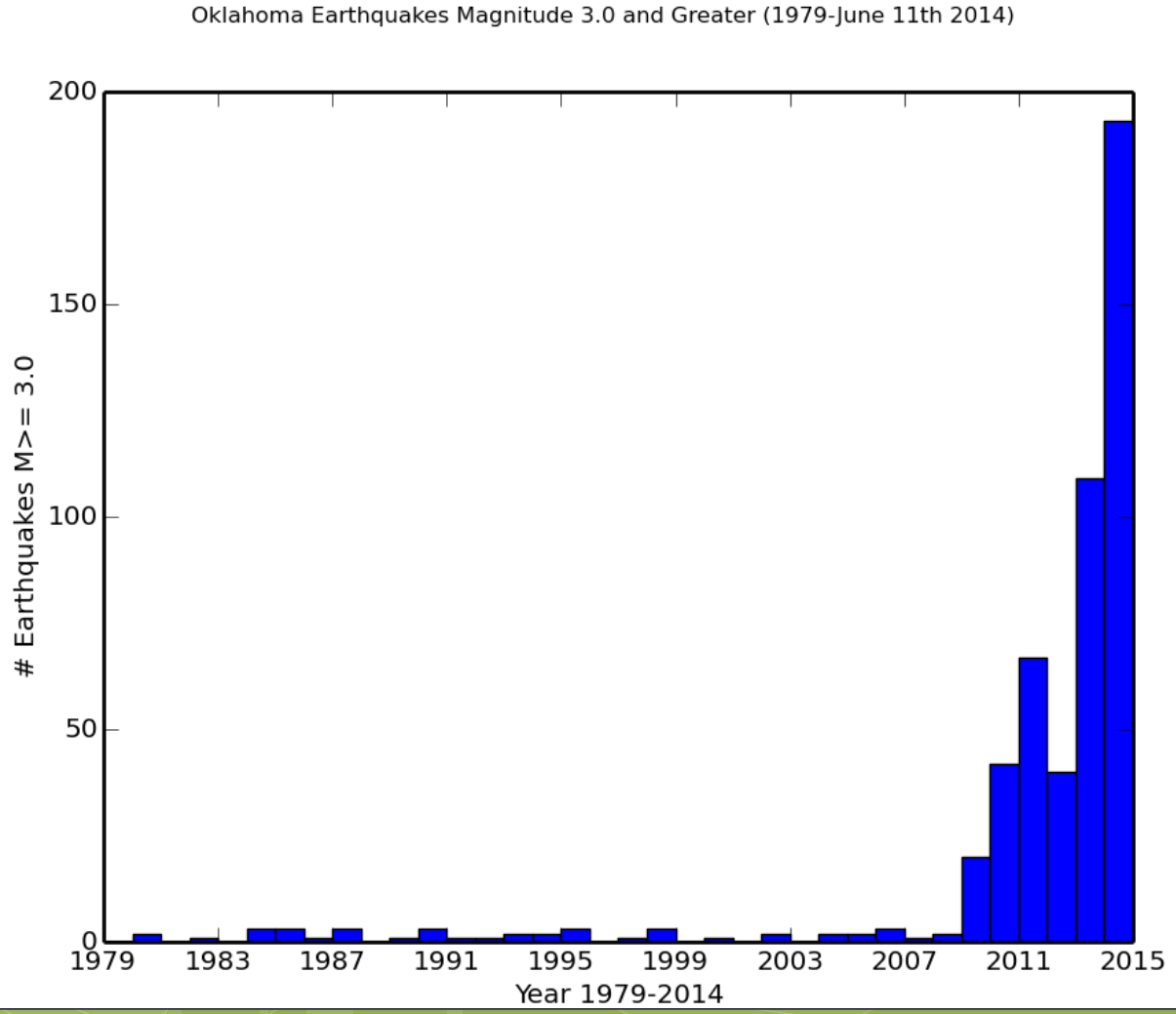
"When he is acting as Exxon CEO, not a homeowner, Tillerson has lashed out at fracking critics and proponents of regulation." Also saying "the risks are very manageable." So why not by his house?

US Bureau of Economic Research: Fracking can have a small to moderate positive property value impact if a home has water department hookup, but it can have **a 20-30% negative property value impact if a home has a private well.**

Man-Made Earthquakes Update

"USGS scientists have found that at some locations the increase in seismicity coincides with the injection of wastewater in deep disposal wells." States recording increase in earthquakes: Oklahoma, Texas, Georgia, Ohio, Pennsylvania…

Oklahoma Earthquake Rate



REGULATE ANCILLARY USES and FACILITIES

Local governments can regulate ancillary uses and facilities

- Water sources, uses, transfers and diversions, flow lines, gathering lines, sweetening facilities.
- Water & chemical mixing stations, treatment & production facilities, pumps, waste treatment, reuse or disposal.
- Air emission equipment (flares, scrubbers), truck transfer and hauling, access roads, wetland impacts.

Addison Township v Gout, 435 Mich 809 (1990)

http://flowforwater.org/

PIPELINE/ROAD ORDINANCES or FRANCHISE AGREEMENTS

- **Application**: Non-MPSC and MPSC Pipelines, but not Federally Approved Pipelines
- **Benefits**: disclosure of site and transportation plan for pipelines or use of roads, emergency response plan, financial assurances, remedies.
- **Authority**: Michigan Constitution, Franchise Agreement, and Police Power Ordinances

http://flowforwater.org/

RECENT TRAIN/TRUCK/PIPELINE SPILLS

- 7/6/13 Canadian train derails outside Quebec, 47 killed, town leveled.
- 1/16/15 train derailment in West Virginia causes fire and oil spill.
- 2010 Kalamazoo River (840,000 gallon) spill of Canadian Tar Sands after pipeline rupture, still being cleaned up. Tar sands oil sinks, hard to clean up.
- 1/17/15 50,000 gallons of crude spilled into the Yellowstone River after pipe rupture.

TransCanada's Existing Keystone Pipeline Has Poor Safety Record.

TransCanada gave assurances, as they do now, about the existing Keystone pipeline, which spilled 12 times in its first year of operation -- including a major leak of about 21,000 gallons in North Dakota.

http://switchboard.nrdc.org/blogs/aswift/yet_another_leak_on_a_new_pipe.html

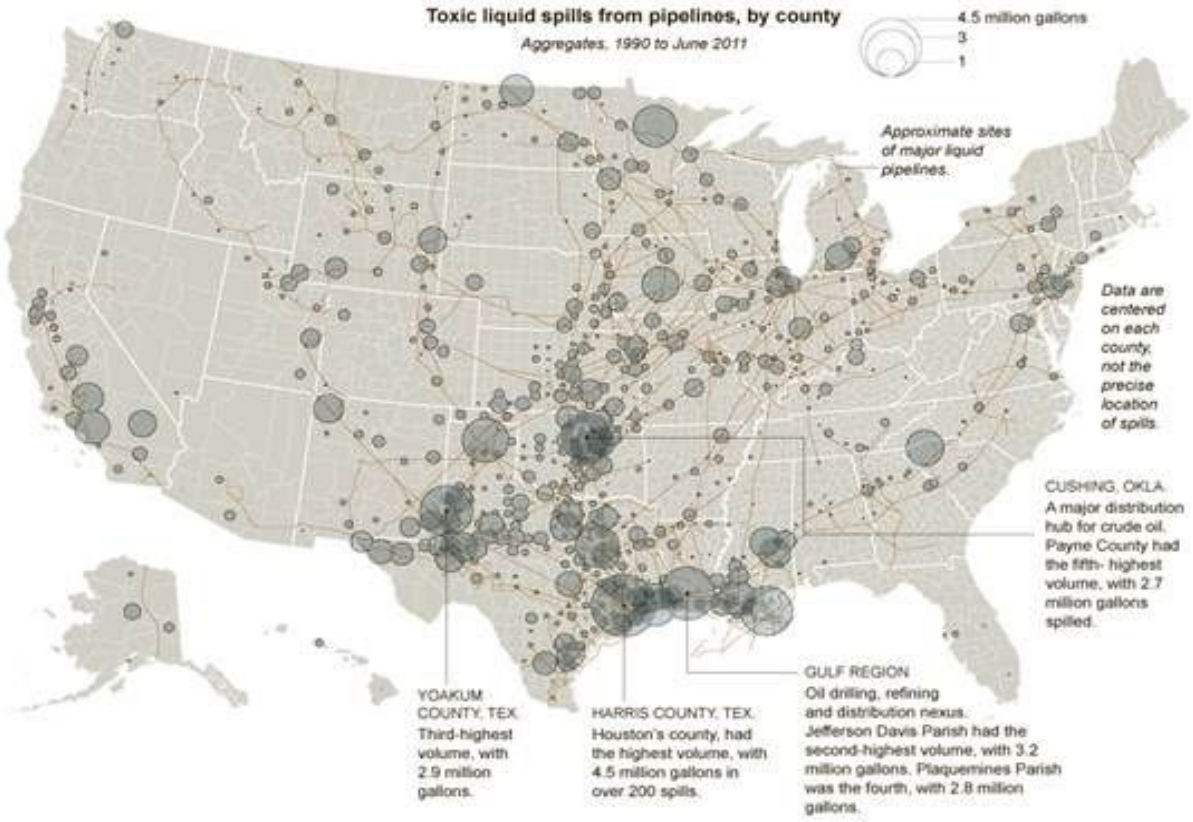
OIL

Medium Term Market Report

International Energy Agency

"pipelines spill 3-times more (than trucks and trains) per 1 billion barrel-miles of crude oil transported, over the 2004-12 period."

Recent History of Pipeline Spills



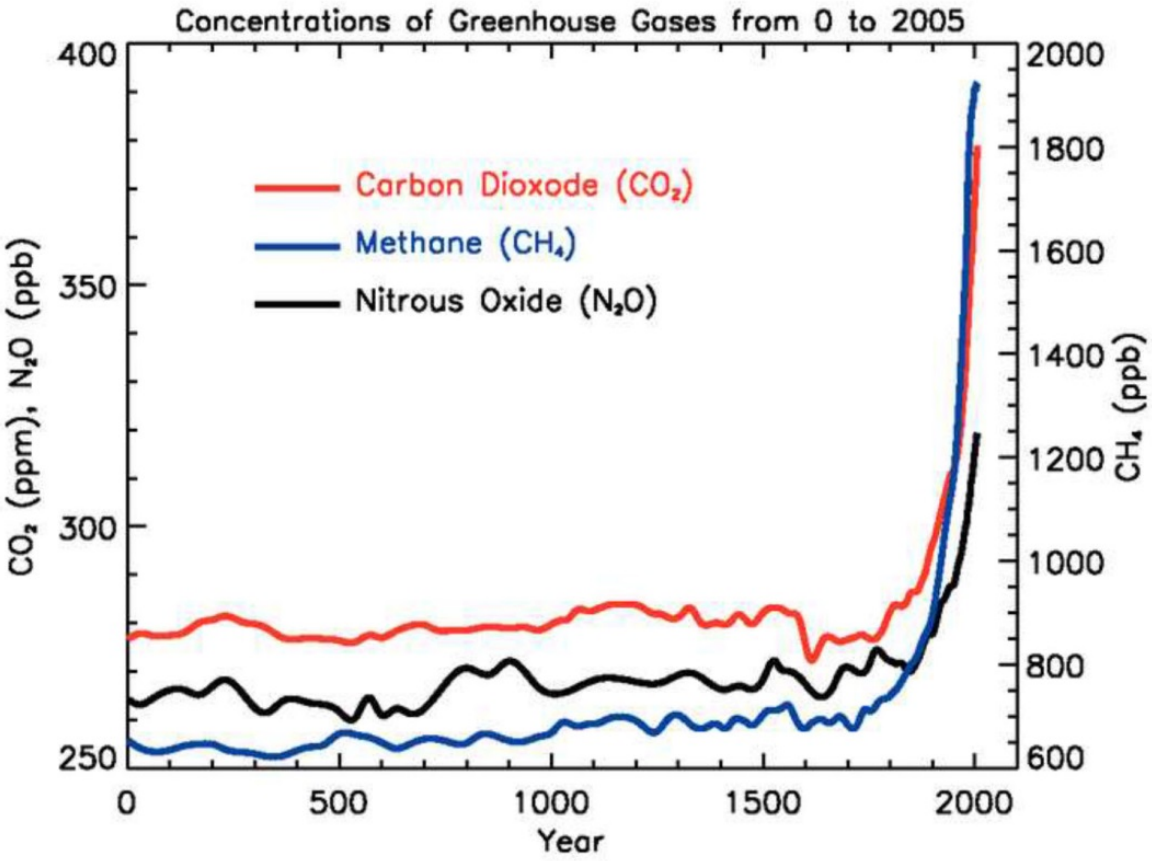
In 2010 alone pipeline spills and explosions killed 25 people and caused nearly $1 billion in property damage. Since 1990, pipelines in the U.S. have spilled more than 110 million gallons of crude and petroleum products

We need safer alternatives

- **Water Resources Commissioner's office** is working to develop a demonstration project to install a power generating turbine in a sewer/stormwater line. The WRC Commerce WWTP uses geothermal (from sewage) in their facility, saving $50,000 in natural gas annually. The WRC is looking at these and other renewable energy projects to reduce our impact on the power grid.
- **Farmington Hills City Hall** installed geothermal heating and solar panels, reducing their gas bill from $30,000 annually to zero, with 70% total energy savings. Other local public and private buildings have also done the same, and more are being converted daily. Net Zero energy buildings, making as much energy as they use, are the future.
- **Nationally**, the US added 835 megawatts of wind generators in first half of 2014 and 1,354 megawatts in new solar installations in just the 4th quarter 2014.

We need safer alternatives

- **Cost of solar panels has fallen 60% since 2010.** Solar leasing/purchasing agreements and new financing plans like PACE, making solar installations more affordable and common for businesses/homeowners.
- **Michigan 4th in nation in green jobs growth**: *Echotech Institute Clean Jobs Index.* Nationally, the solar industry added 50% more US jobs than the oil pipeline and oil/gas extraction industries: *The Solar Foundation*.
- **173,807 US solar jobs in 2014**, 21.8% growth over 2013: *2014 National Solar Jobs Index*. Energy efficiency and energy audits (saving energy for business and homeowners nationally) employing 380,000: *Lawrence Berkeley National Laboratory report*
- **LEED Certification is growing**: Leadership in Energy and Environmental Design is a third party measure of building efficiency and is now the Industry standard for architects, engineers and the construction industry.



Errata

FAQ 2.1, Figure 1. Atmospheric concentrations of important long-lived greenhouse gases over the last 2,000 years. Increases since about 1750 are attributed to human activities in the industrial era. Concentration units are parts per million (ppm) or parts per billion (ppb), indicating the number of molecules of the greenhouse gas per million or billion air molecules, respectively, in an atmospheric sample. (Data combined and simplified from Chapters 6 and 2 of this report.)

Figure SPM.1a

Observed globally averaged combined land and ocean surface temperature anomaly 1850-2012

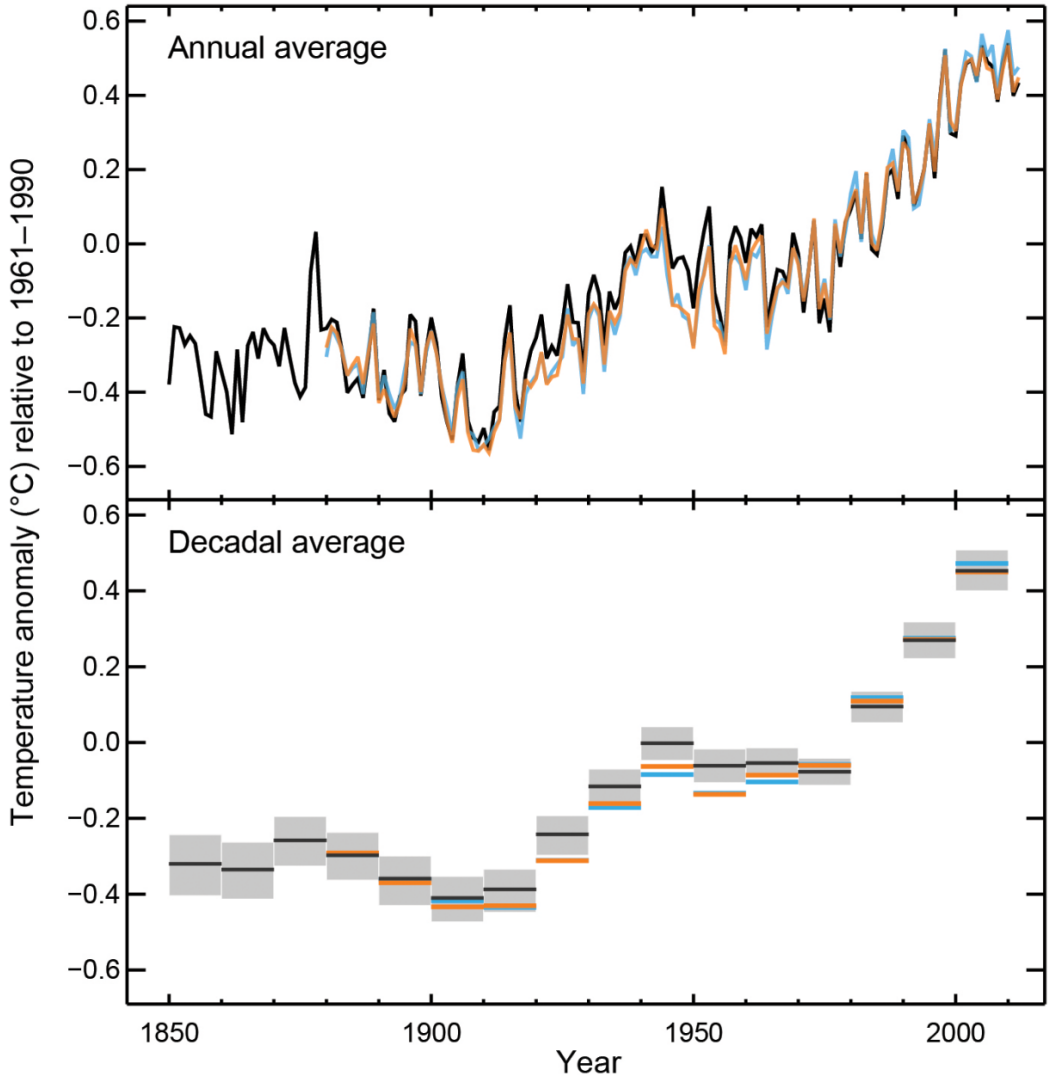


Figure SPM.1b

Observed change in surface temperature 1901-2012

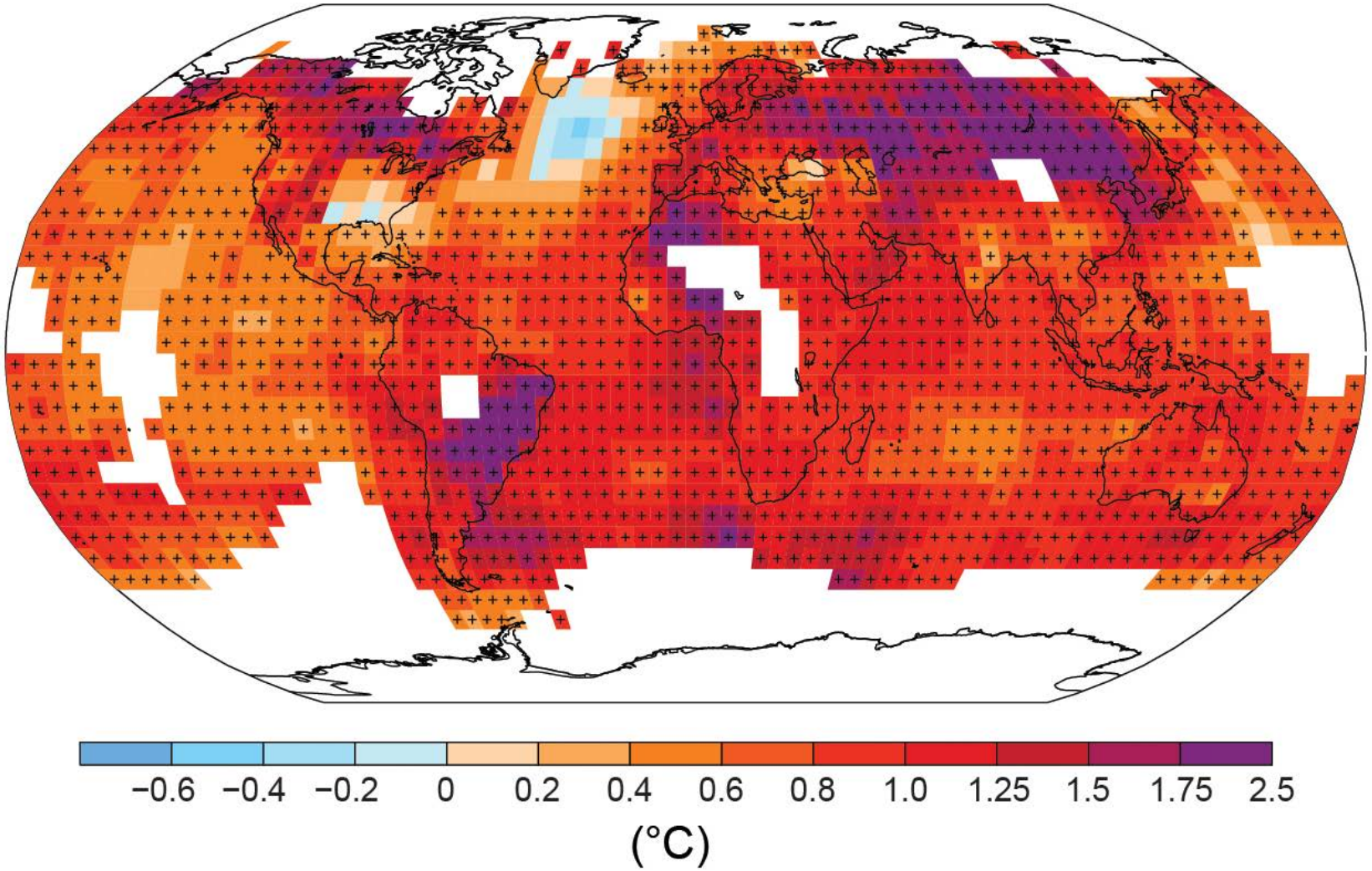


Figure SPM.2
Observed change in annual precipitation over land

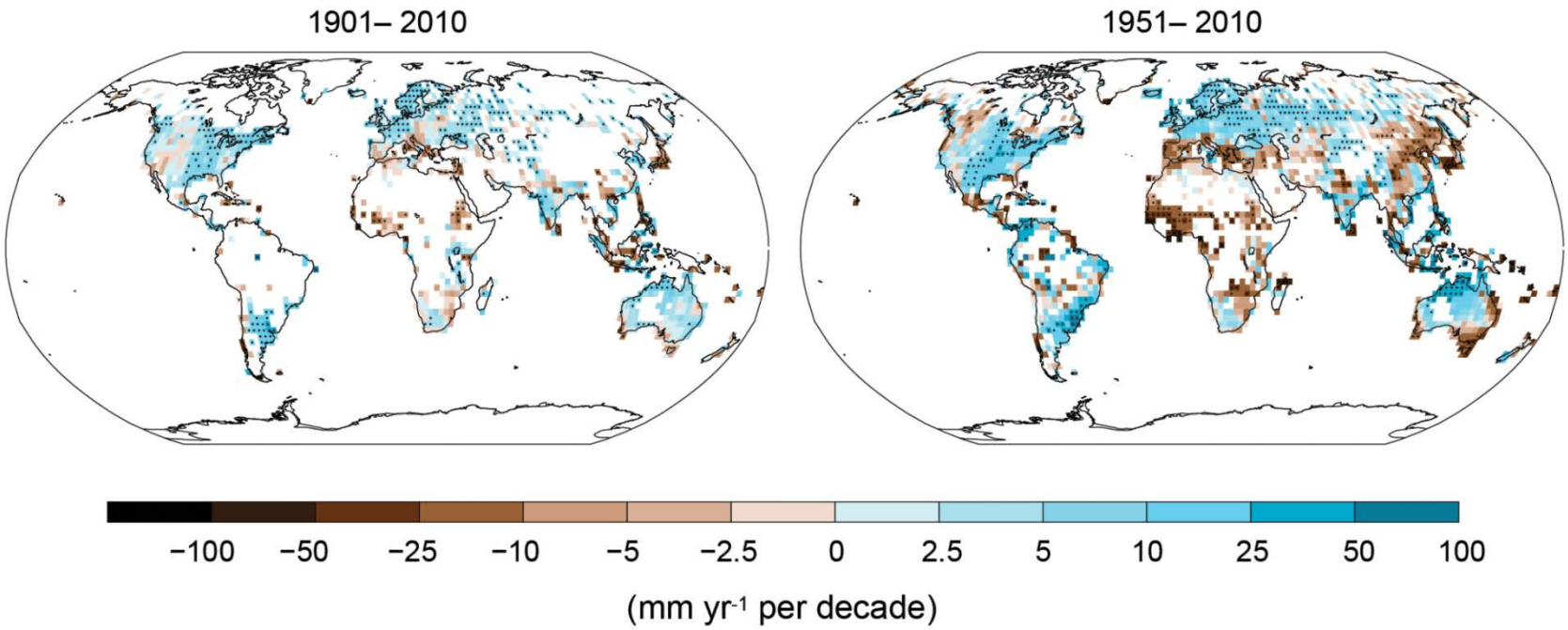


Figure SPM.3
Multiple observed indicators of a changing global climate

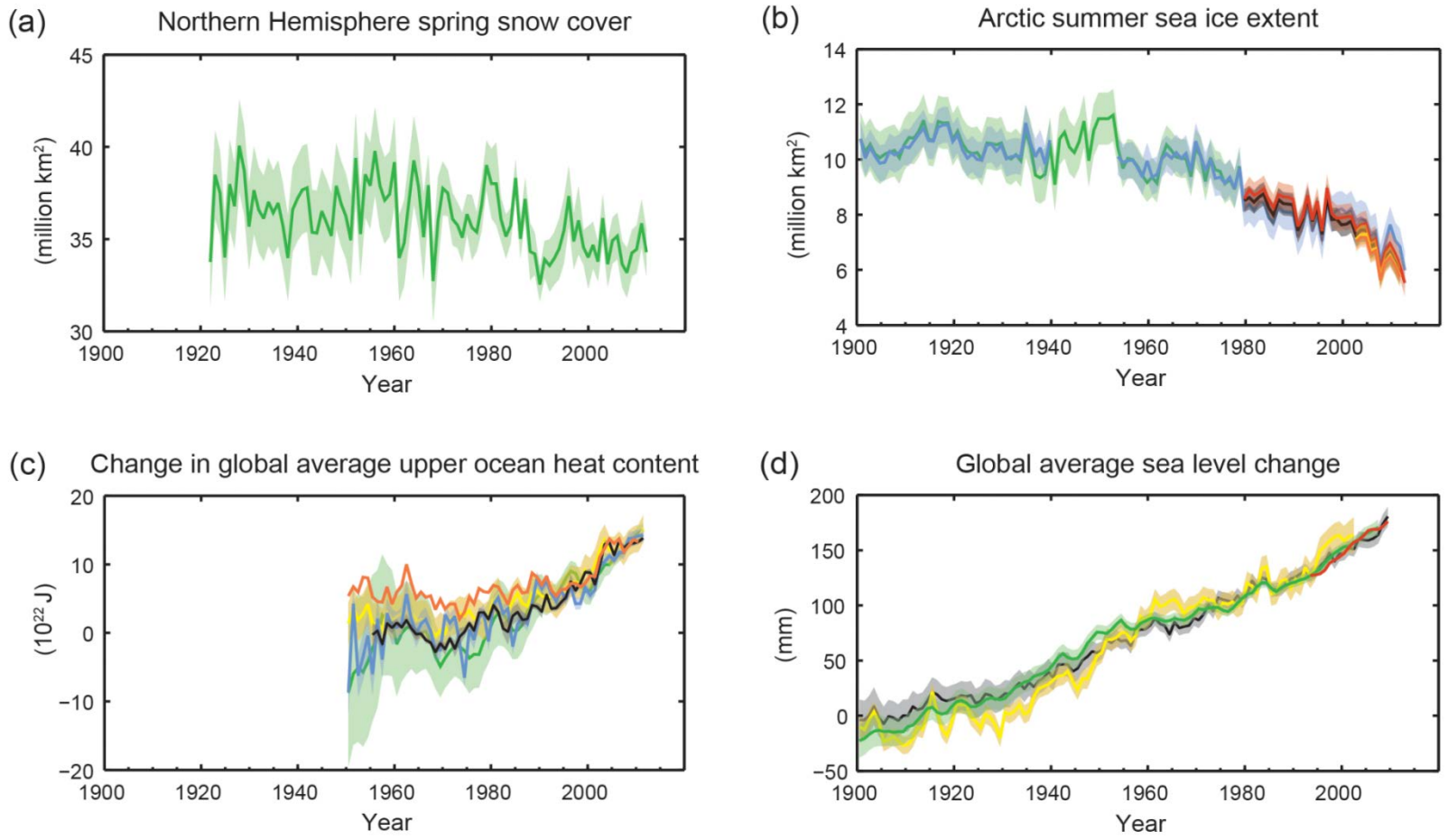


Figure SPM.7b
Northern Hemisphere September sea ice extent

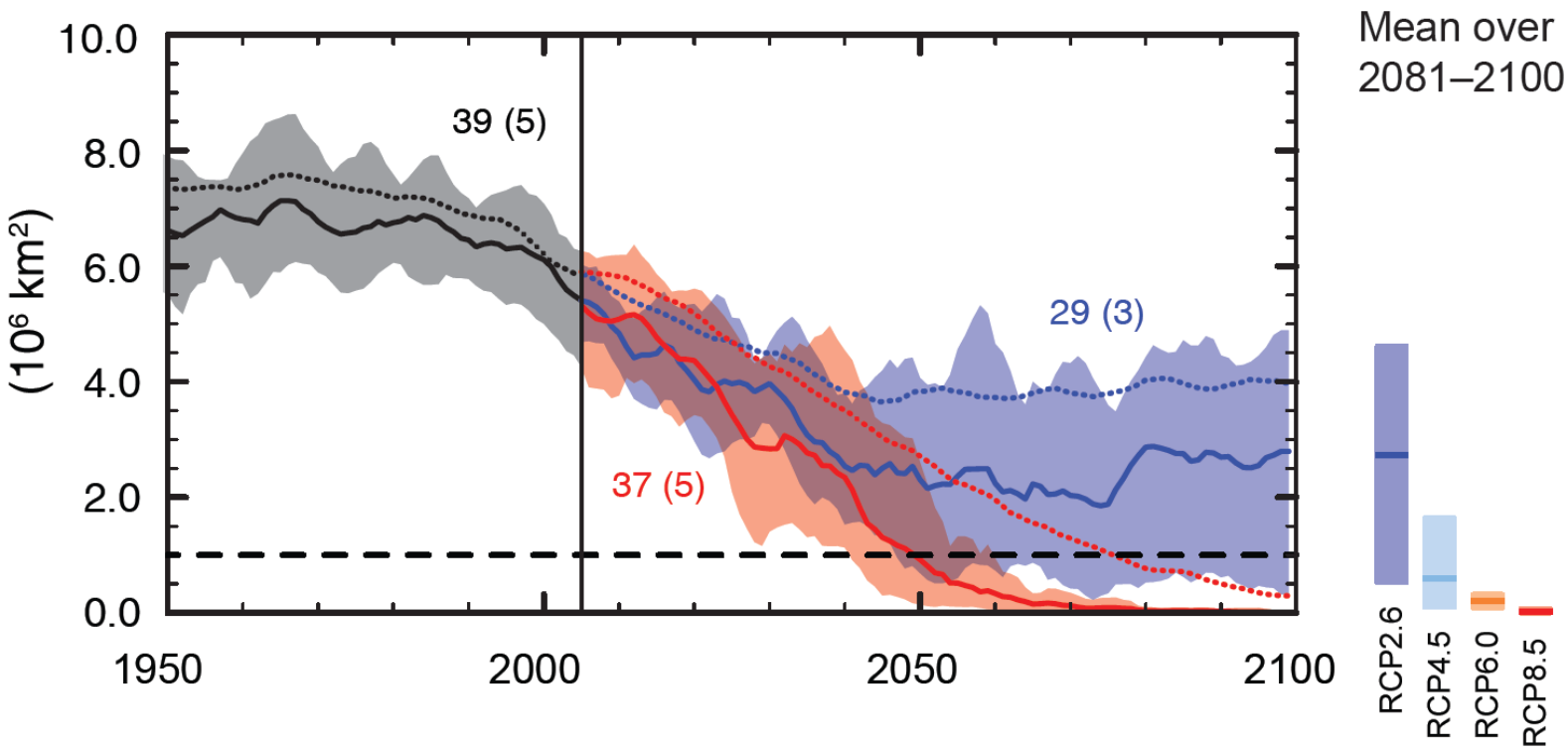
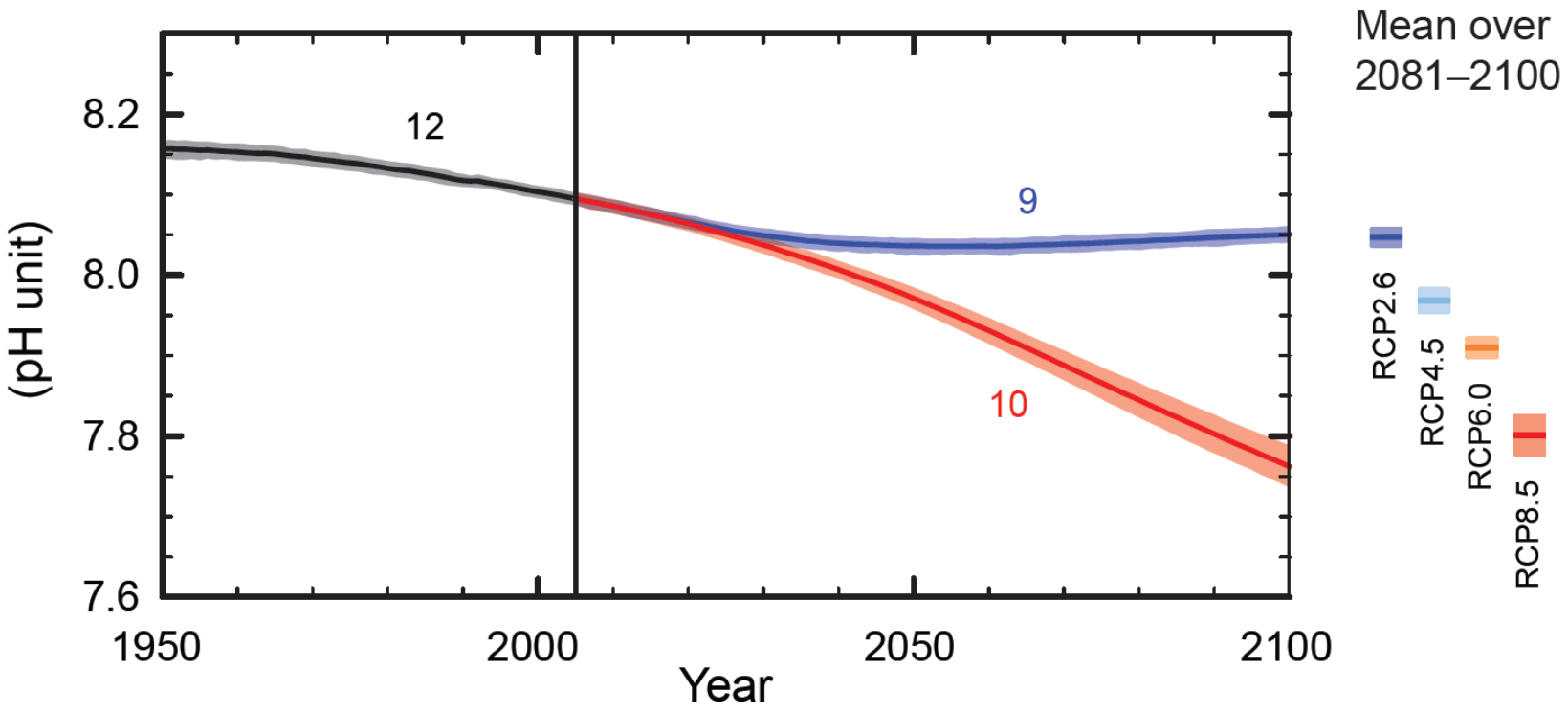
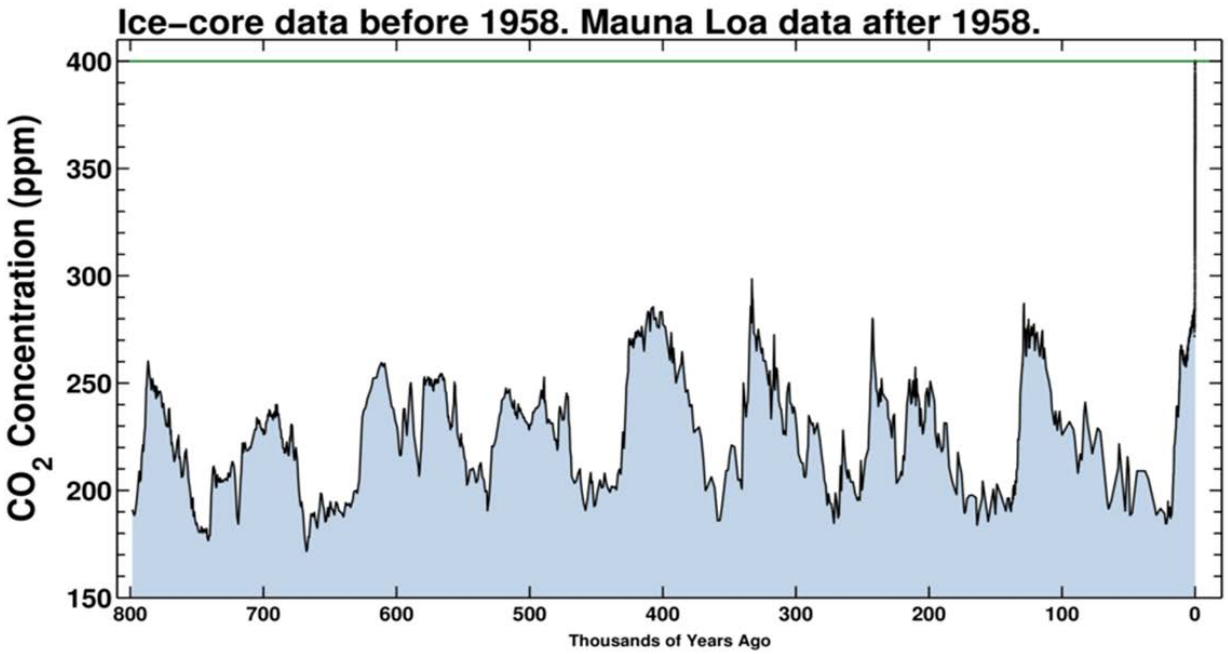


Figure SPM.7c
Global ocean surface pH



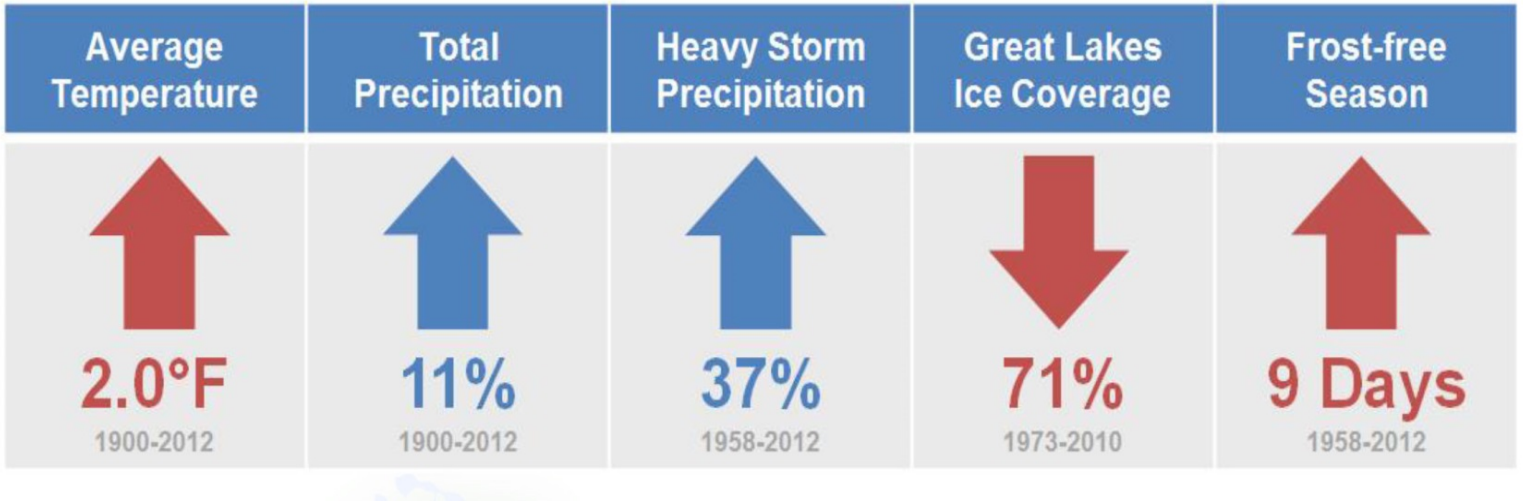
We're Adding to Our Greenhouse



We're now rapidly adding CO2 to the relatively stable amount we've had in our atmosphere for hundreds of thousands of years.

Climate Change in the Great Lakes Region

GLISA
GREAT LAKES INTEGRATED SCIENCES + ASSESSMENTS



Temperature

- Since 1900, annual average temperatures have increased by 2.0°F (1.1°C) in the U.S. Great Lakes region.
- By 2050, average air temperatures are projected to increase by 1.8 to 5.4°F (1 to 3°C).
- By 2100, average air temperatures are projected to increase by 3.6 to 11.2°F (2 to 6.2°C).

Precipitation

- Since 1900, total annual precipitation has increased by 10.8% in the U.S. Great Lakes Region, and is expected to continue to increase, though projections of future precipitation vary.
- Precipitation will increase during wet seasons but may remain nearly stable or decrease during the summer.
- Reduced lake ice coverage will result in more exposed water and more opportunity for lake-effect precipitation.

Snow, Ice Cover and Lake Temperature

- Lake temperatures have been increasing faster than surrounding air temperatures.
- From 1973 to 2010, annual average ice coverage on the Great Lakes declined by 71%.
- From 1975 to 2004, the annual number of days with land snow cover decreased by 15 and the average snow depth decreased by 2 inches (5.1 cm).
- Snow and ice levels on the Great Lakes and on land will likely continue to decrease, with little significant ice cover on Lake Superior by mid-century in a typical year.

Extreme Weather

- The frequency and intensity of severe storms has increased. This trend will likely continue as the effects of climate change become more pronounced.
- The amount of precipitation falling in the heaviest 1% of storms increased by 37% in the Midwest and 71% in the Northeast from 1958 through 2012.
- More severe storms may have a negative economic impact due to resulting damages and increased costs of preparation, clean up, and business disruption.

Water Quality and Stormwater Management

- Increased risk of droughts, severe storms, and flooding events may increase the risk of erosion, sewage overflow, lead to more interference with transportation, and more flood damage.
- Future changes in land use could have a far greater impact on water quality than climate change. The coupling of climate change and land use change could therefore result in even stronger effects in some areas.

Lake Levels

- Long-term water levels in the Great Lakes have fallen since reaching record highs in the 1980s.
- While most models project continued, long-term declines in lake levels, shorter-term variations will remain large, and periods of high lake levels are probable.
- Other factors, such as lake regulations, also affect lake levels, though no major management changes have occurred since 2000.

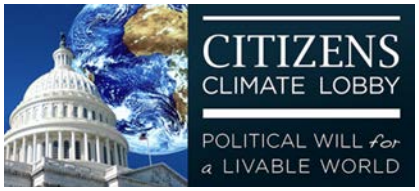
Introduction to carbon fee and dividend

Original presentation by : San Francisco CCL chapter

Citizens' Climate Lobby

Who we are:

- Founded in 2007 in San Diego, CA
- Growing rapidly – 238 chapters worldwide (210 in the U.S.)
- An organization of citizens, not paid lobbyists
- To create the political will for a stable climate



Carbon Fee and Dividend

How it works

- Apply a fee to carbon-based fuels
- Steadily increase fee each year
- Base fee on CO2 released when burned
- Collect fee as far upstream in the economy as practical
- Border adjustments level playing field (WTO compliant)

Carbon Fee and Dividend

How it works

- 100% of fee revenue is returned to households
- Monthly dividends are in equal shares
- 2/3 Americans break even or come out ahead

CITIZENS CLIMATE LOBBY

POLITICAL WILL *for* *a* LIVABLE WORLD

Carbon Fee and Dividend

Provides a Price Incentive

- Rising private investment in clean energy and energy efficiency
- Falling investments in fossil fuels
- Consumers switch to energy efficient products

CITIZENS CLIMATE LOBBY

POLITICAL WILL *for* *a* LIVABLE WORLD

Carbon Fee and Dividend

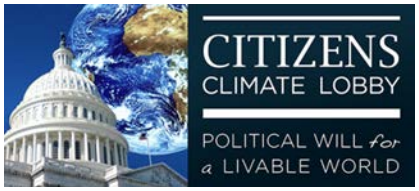
…and business

- Predictable fee simplifies business planning
- Businesses pass along increased costs
- Tariffs protect domestic manufacturers
- Carbon fee refunds protect exporters

Carbon Fee and Dividend

…and government

- "Revenue neutral" with respect to federal budget
- Administered by existing government agencies
- Does not increase the size of government



Carbon Fee and Dividend

Bipartisan Appeal

- Democrats increasingly favor a carbon fee/tax
- Republicans like revenue neutrality
- Democrats accept revenue neutrality
- Republicans avoid more EPA regulation

CITIZENS CLIMATE LOBBY

POLITICAL WILL *for* *a* LIVABLE WORLD