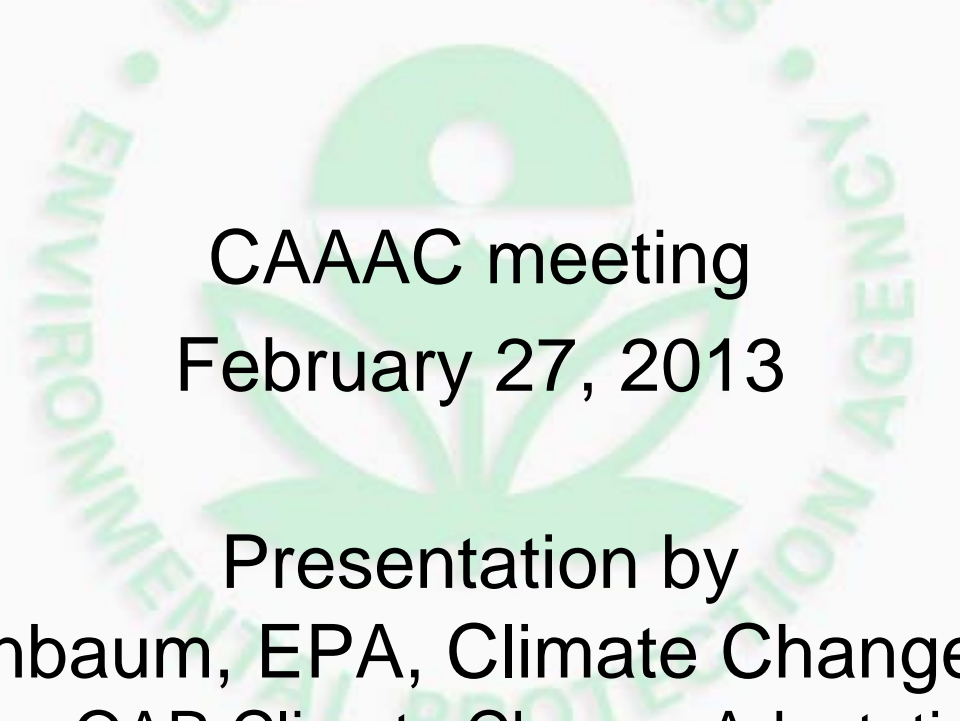




EPA Climate Change Adaptation Plan

Incorporating Climate Change into Air Programs



CAAAC meeting
February 27, 2013

Presentation by
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on behalf of the OAR Climate Change Adaptation Workgroup



Climate Change and EPA's Mission

- Many of the outcomes EPA is trying to attain (e.g., clean air, safe drinking water) are sensitive to changes in climate
- Until now, EPA has assumed climate is relatively stable and future climate will mirror past climate
- But the past is no longer a good predictor of the future
- Climate change is posing new challenges for EPA to attain its goals
- EPA is working to anticipate and plan for future changes in climate



Taking Action to Prepare for Climate Change

“Climate change will affect other parts of our core mission... and we must include those considerations in our future plans.”

*EPA Administrator
Lisa P. Jackson
January 2010*

EPA shall develop and implement a Climate Change Adaptation Plan to integrate climate adaptation into the Agency’s programs, policies, rules and operations.

*EPA Policy Statement on
Climate Change Adaptation
June 2011*



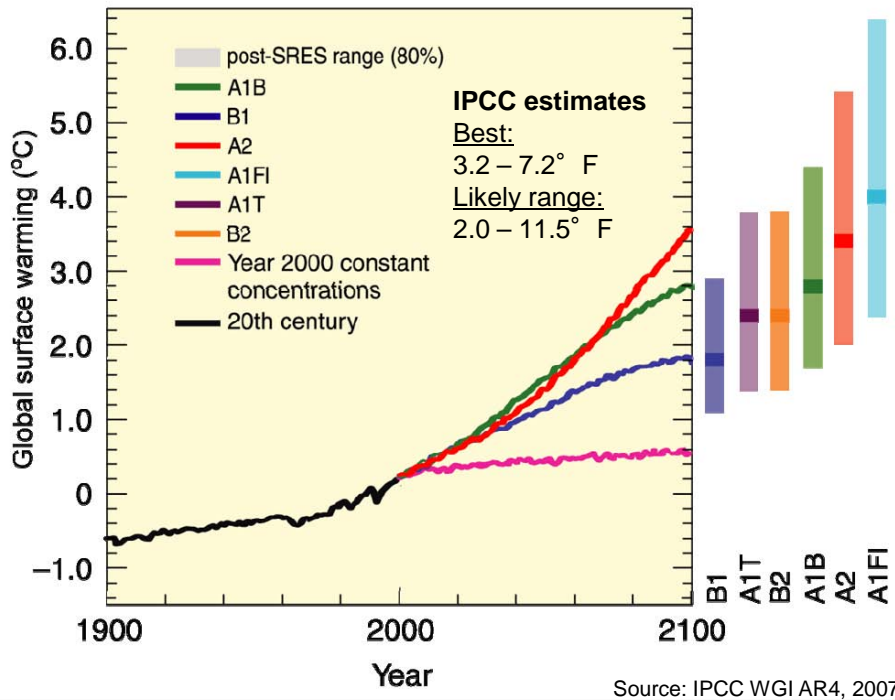
What is Adaptation?

Adaptation is “*an adjustment in natural or human systems to a new or changing environment that exploits beneficial opportunities or moderates negative effects.*” (NAS 2010)

Adaptations vary according to the system in which they occur; who undertakes them, the climatic stimuli that prompts them, and their timing, functions, forms, and effects. Adaptation can be of **two broad types**:

- **Reactive or autonomous adaptation** is the process by which species and ecosystems respond to changed conditions
 - e.g. the northward migration of a species in response to increasing temperature
- **Anticipatory adaptation** is planned and implemented before impacts of climate change are observed
 - e.g. the construction of dikes to prepare for expected sea level rise

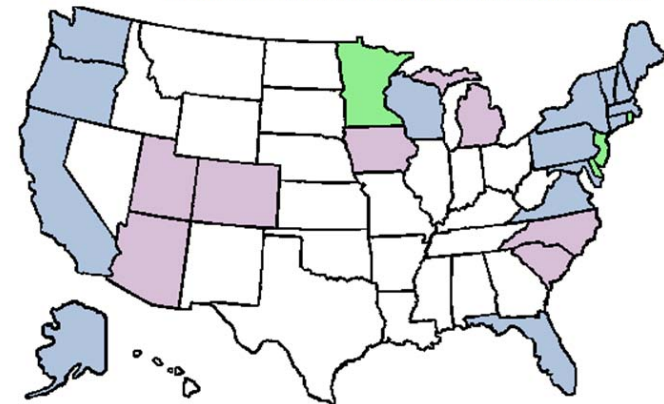
Why is Adaptation Needed?



- Still a relatively emerging area of study and practice
- Rapidly growing efforts at international, state, local levels over the last 5+ years

State Adaptation Plans

From Center for Climate and Energy Solutions (<http://www.c2es.org>)



- Adaptation Plan Completed
- Adaptation Plan In Progress
- Adaptation Plan Recommended in the C.A.P.

*C.A.P. stands for Climate Action Plan

- Even if GHG concentrations leveled today, surface air temperatures would continue to warm (by up to 1.6°F)
- All scenarios depict similar temperature increases for the next several decades
- Under all future scenarios, anthropogenic warming and sea level rise continue



What is the Federal Government doing?

- Executive Order 13514
 - Interagency Climate Change Adaptation Task Force established
 - President called for recommendations for adapting to climate change
 - Ultimate goal: A healthy and prosperous nation resilient to climate change
- Interagency Climate Change Adaptation Task Force
 - Formed in Spring 2009
 - Comprised of over 20 federal agencies
- White House Council on Environmental Quality (CEQ) required all federal agencies to produce an adaptation plan by June 2012



Draft EPA Adaptation Plan: Overview

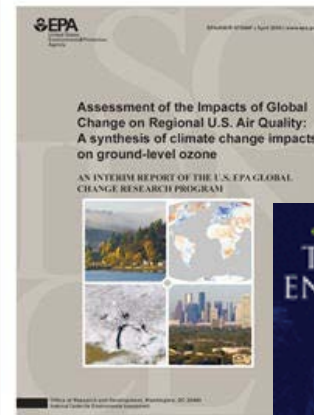
- Released for 60 day public comment period on February 8, 2013
- Key pieces:
 - Programmatic vulnerabilities of EPA mission to climate change
 - Mainstreaming adaptation into EPA programs, policies, rules and operations
 - Includes commitments for Program/Regional Office Implementation Plans



Identified Air Program Vulnerabilities to Climate Change

Program vulnerability is tied to our understanding and certainty of the science. OAR highlights 5 projected impact areas:

- Tropospheric ozone
- Particulate matter (PM)
- Indoor air quality
- Stratospheric ozone
- Environmental improvements





Identified Air Program Vulnerabilities to Climate Change

Tropospheric ozone pollution is likely to increase in certain regions due to the effects of climate change

- The relationship between temperature changes and tropospheric ozone formation is well-established in the scientific literature
- With climate change, higher temperatures and weaker air circulation in the United States will lead to more ozone formation in certain regions even with the same level of emissions of ozone forming chemicals
- Broad areas of US (large metro areas) could see increases
- Could become more difficult to attain NAAQS for ozone in many areas with existing ozone problems

Particulate matter (PM) levels are likely to be affected through changes in the frequency or intensity of wildfires

- The impact on particulate matter remains significantly uncertain (e.g. could produce increases or decreases) but strong indication that PM levels will be affected by frequency/intensity of wildfires



Identified Air Program Vulnerabilities to Climate Change

Climate change may worsen the quality of indoor air

- New National Academy of Sciences' Institute of Medicine (NAS/IOM) report provides initial foundation that climate change may exacerbate existing indoor air quality problems and may introduce new ones
- Heavy precipitation events may contribute to increases in indoor dampness and building deterioration, increasing occupants' exposure to mold and other biological contaminants and emissions from building materials, as well as outdoor environmental pollutants
- The geographic ranges of pests may change, leading to altered patterns of exposure and possibly increased use of pesticides
- Warmer average temperatures may lead to changes in occupant behavior that may create health risks.
 - e.g., residents may spend more time indoors and in so doing, may become more prone to health risks from indoor environmental conditions
 - e.g., residents may weatherize buildings to increase comfort and save energy, which may lead to reductions in ventilation and increases in indoor environmental pollutants
- Increases in indoor public health risk may signal new approaches, and new and revised guidance



Identified Air Program Vulnerabilities to Climate Change

Climate change may alter the effects of and strategic priorities within EPA's regulatory and voluntary programs to help restore the stratospheric ozone layer

- Scientific understanding of interactions between climate change and stratospheric ozone is strong in some areas but incomplete, and impact direction can vary
- Future knowledge is likely to impact stratospheric protection programs

Scientific understanding related to ways that climate change may affect the interactions of sulfur, nitrogen, and mercury deposition with ecosystems is evolving

- Evolving scientific literature highlights interactions between climate change, sulfur/nitrogen/mercury deposition and ecosystems with implications for environmental improvements under current and future programs



Questions to Frame Today's Discussion

- Have we identified the areas of greatest vulnerability?
- As OAR moves onto its implementation plan, do you have any suggested actions we should consider?
- What are your thoughts regarding how to proceed with developing plans as the science further develops?

For more information, including the draft EPA Adaptation Plan and how to submit public comments, go to:

epa.gov/climatechange/impacts-adaptation/fed-programs.html



Appendix: Additional Areas of Interest

- Greenhouse Gas Reporting Program
- Climate Change Indicators in the United States, 2012 Report



GHG Reporting Program

- In 2008 Congress directed EPA to establish a mandatory reporting system for GHG emissions
- EPA finalized the GHG Reporting Program Rule in October 2009
 - Requires reporting of GHG emission data from:
 - GHG suppliers
 - Direct emitting source categories
 - Facilities that inject CO₂ underground
 - Facilities that emit 25,000 metric tons or more of mmtCO₂e per year
- Data can be used to identify sources, help businesses track emissions and find cost-saving efficiencies, inform future policy decisions, and provide information to the finance and investment communities
- Online GHG publication tool called FLIGHT (Facility Level Information on GreenHouse gases Tool) allows users to review information quickly and easily
- First release of GHG data (2010 data) in January 2012 from 29 source categories
- Second release (2011 data) in February 2013 includes 12 new source categories: petroleum and natural gas systems, industrial landfills, underground coal mines and others
 - Approximately 8,000 reports
 - Power plants the largest stationary source; petroleum and natural gas second

Greenhouse Gas Reporting Program: <http://www.epa.gov/ghgreporting/>
FLIGHT: <http://ghgdata.epa.gov/ghgp/main.do>



Climate Change Indicators in the United States, 2012

- Communicates observed data on the causes and effects of climate change in an easy-to-understand way (what climate change 'looks like').
- Consists of 26 indicators in five chapters: Greenhouse Gases, Weather and Climate, Oceans, Snow and Ice, Society and Ecosystems.
- Relies on publicly-available, peer-reviewed data sets from government agencies (e.g. NOAA, NASA, CDC,) research institutions, universities, and NGOs.
- Updates the 2010 Indicators report. Moving forward, EPA plans to continue to update and expand the report and to enhance the online presence.



Highlights and full report available at:
www.epa.gov/climatechange/indicators