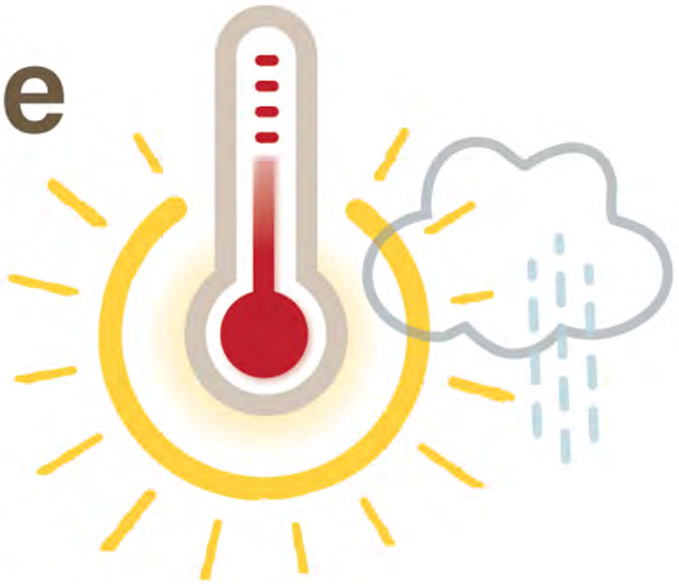
Climate Adaptation Forum

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION



Floods, Roads, and Infrastructure: Payback to Planning and Protection

Please be sure to get a copy of the agenda and bios and sign in for APA CM Credits

We will start promptly at 9:30

About DVRPC

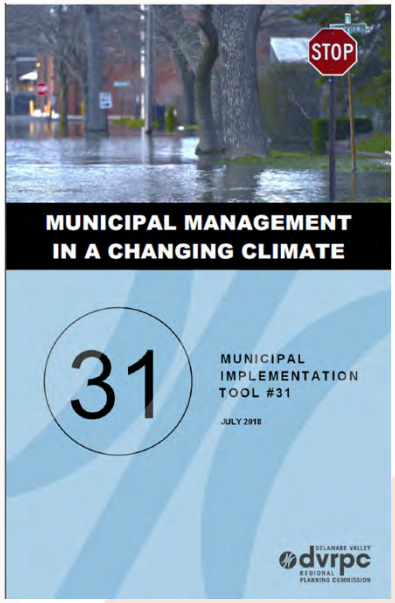
- **Metropolitan Planning Organization (MPO) for the 9-county, bi-state Philadelphia region.**
- **18-Member Board made up of counties, major cities, and state representatives.**
- **Staff develops planning tools, conducts planning projects, and collects data for the region to encourage and support good thinking and planning practice.**

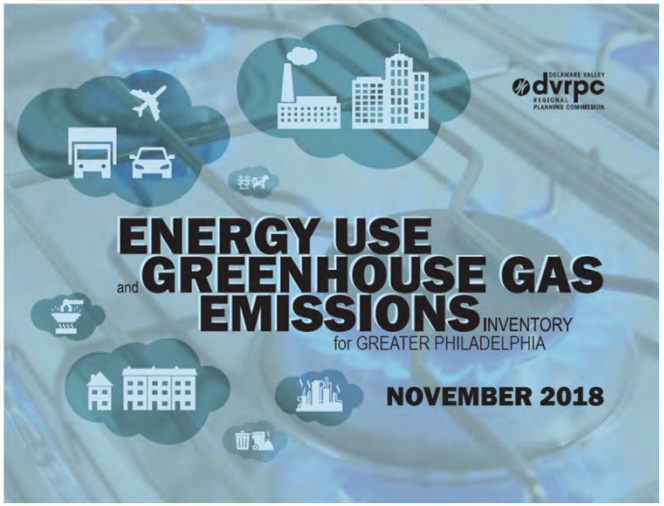
Logistics for Today

- Women's room to L of elevator; men's room to R
- WiFi: DVRPC-WIFI; PW: Connections2045
- No scheduled breaks. Coffee is in anteroom.
- Lunch will be served at noon in anteroom.
- AICP Continuing Education.
- Attendance certificates for other CE will be sent on request. E-mail rgraff@dvrpc.org.
- Summary and slides will be posted to DVRPC'S web site.
- Who is in the room?

Resiliency Planning at DVRPC

- NJ Climate Change Projections and Trends Summary (2011)
- NJ DOT – Climate Change Vulnerability Assessment Pilot (2012)
- PennDOT – Climate Change Vulnerability Assessment Pilot (2014)
- City of Chester Climate Adaptation Plan (2014)
- Integrating Hazard Mitigation and Comprehensive Planning (2016)
- New Jersey Resilient Coastal Communities Initiative (2018)
- New Jersey Coastal Resilience Collaborative (on-going)
- Sustainable Jersey Climate Adaptation Task Force (on-going)
- PA Municipal Coastal Resiliency Planning (current)
- Municipal Implementation Tool Brochure on Municipal Management in a Changing Climate (July 2018)
- Regional Resiliency Planning (on-going)





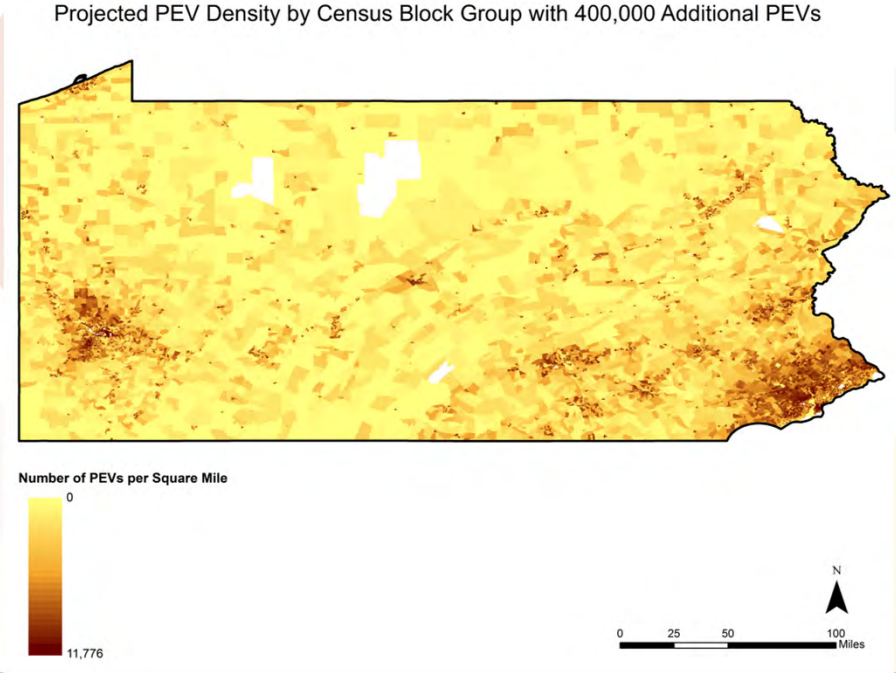
New Products

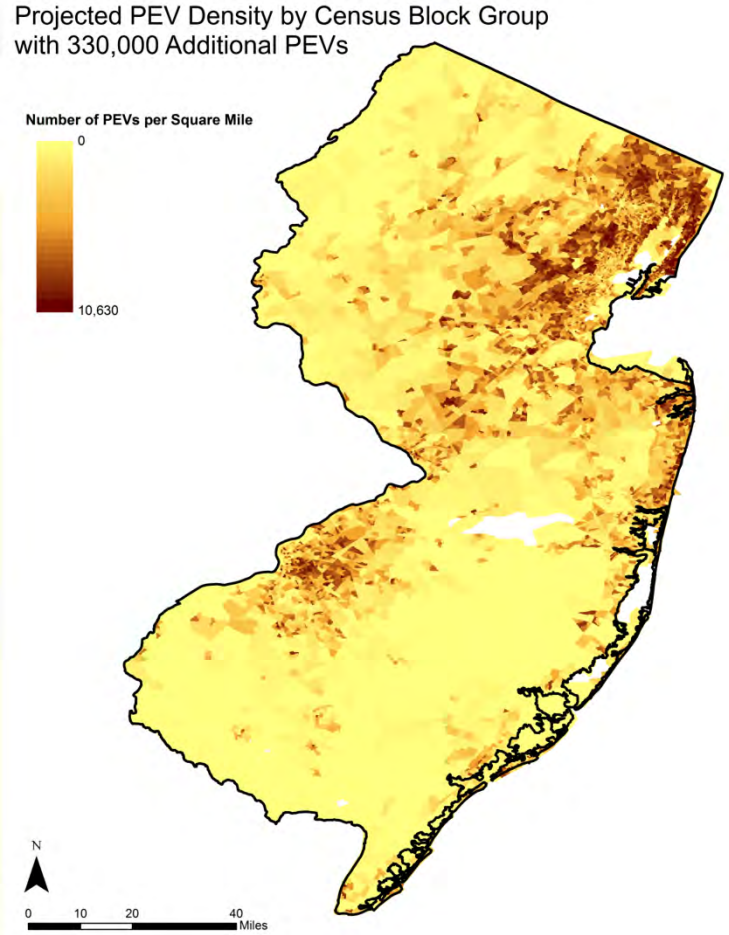
- *Municipal Management in a Changing Climate*
- *Regional Energy Use and Greenhouse Gas Emissions Inventory*
- Web-based municipal energy use and GHG emissions report generator

Upcoming

Spatial Evolution of Electric Vehicles

- Where EV owners will live
- Demand for workplace charging at various price points.
- At census block group resolution.

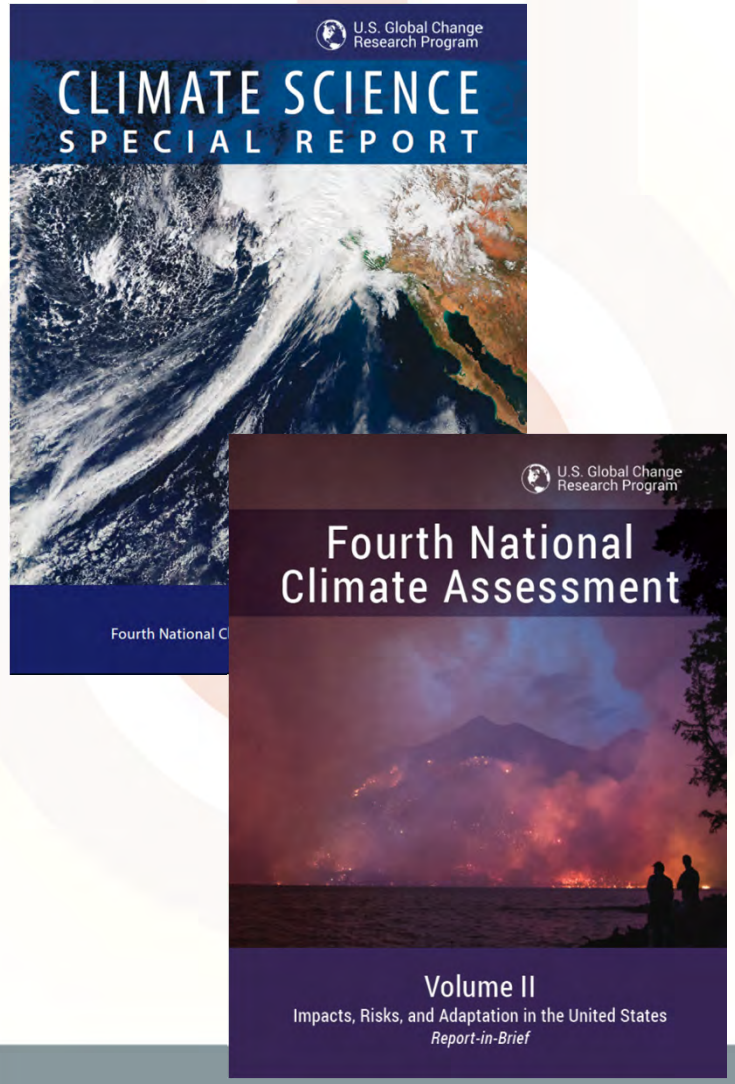




Past Climate Adaptation Forums

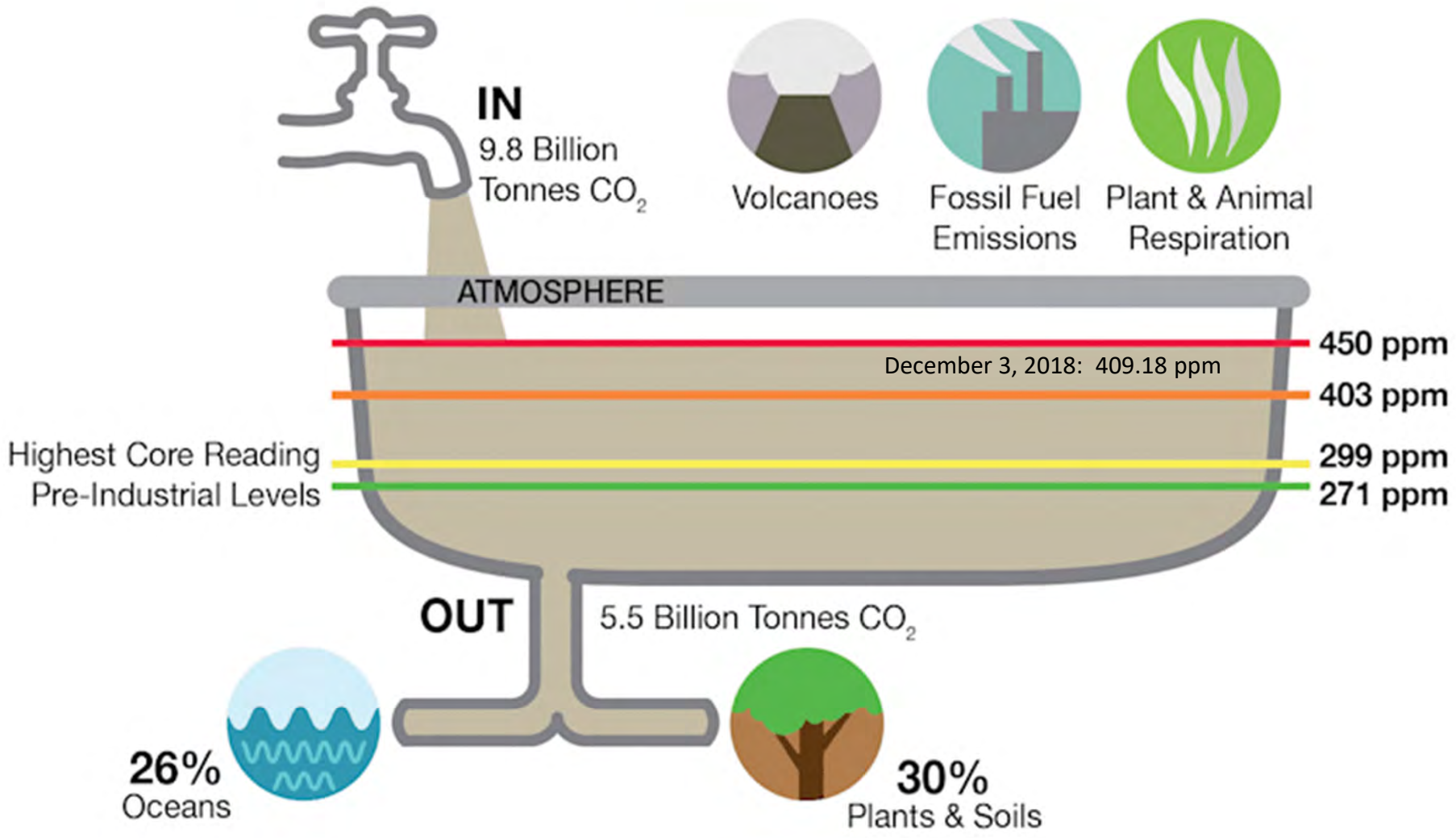
- Forests, Urban Trees, and Climate Change (October 2016)
- Climate Change and Public Health (February 2017)
- Waterfront Development in a Changing Climate (June 2017)
- Preparing Transit Systems for Extreme Weather (October 2017)
- The Game of Floods (March 2018)
- Climate Change and Flood Insurance (June 2018)

Key Sources for Climate Data

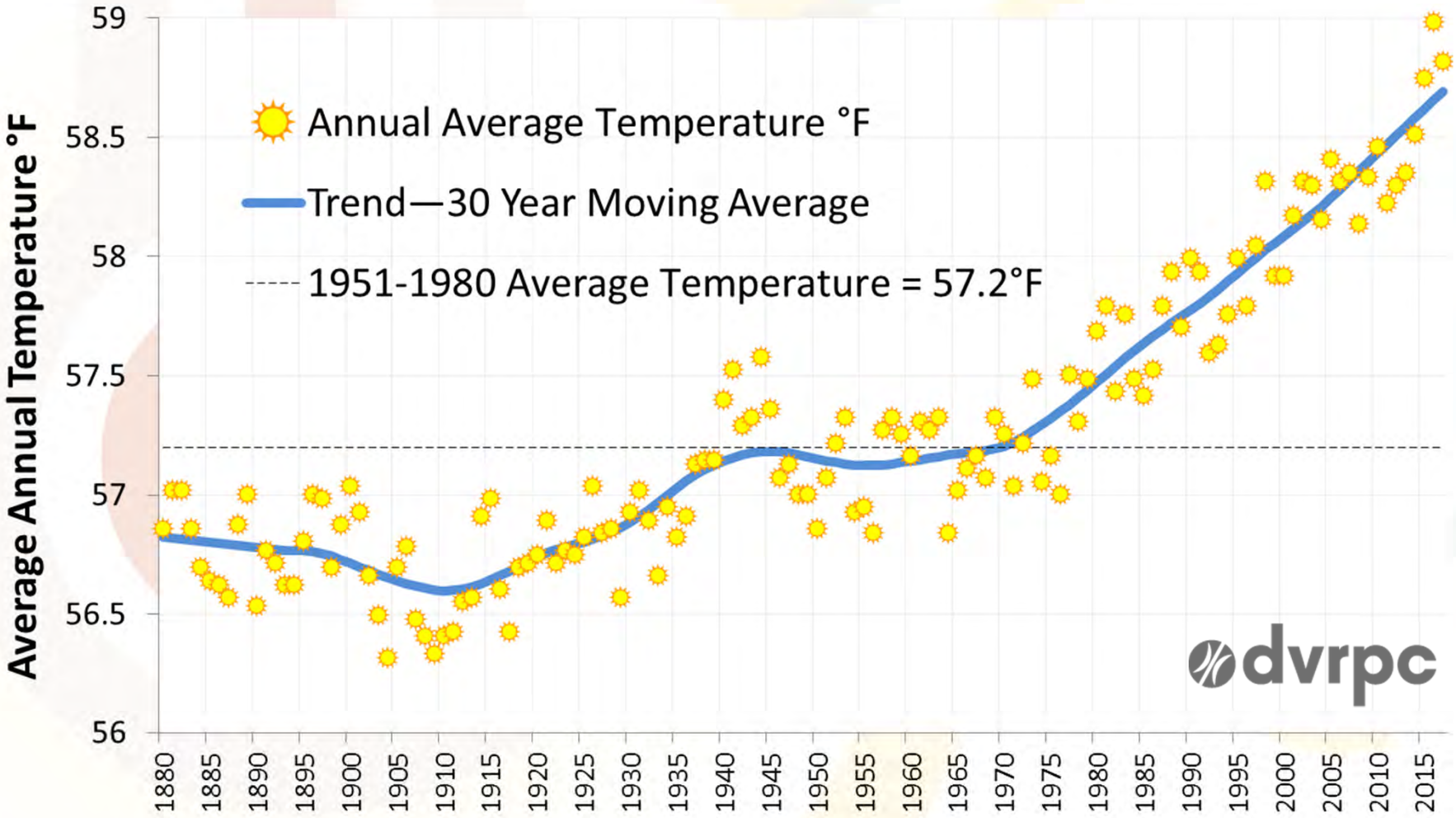


- Fourth National Climate Assessment (NCA4)
  - Volume I: CSSR science2017.globalchange.gov
  - Volume II: Impacts, Risks, and Adaptation in the United States Released Black Friday, 2018 nca2018.globalchange.gov/
- NOAA's National Centers for Environmental Information (NCEI)*
- US DOT CMIP Climate Data Processing Tool

*Formerly the National Climatic Data Center (NCDC)

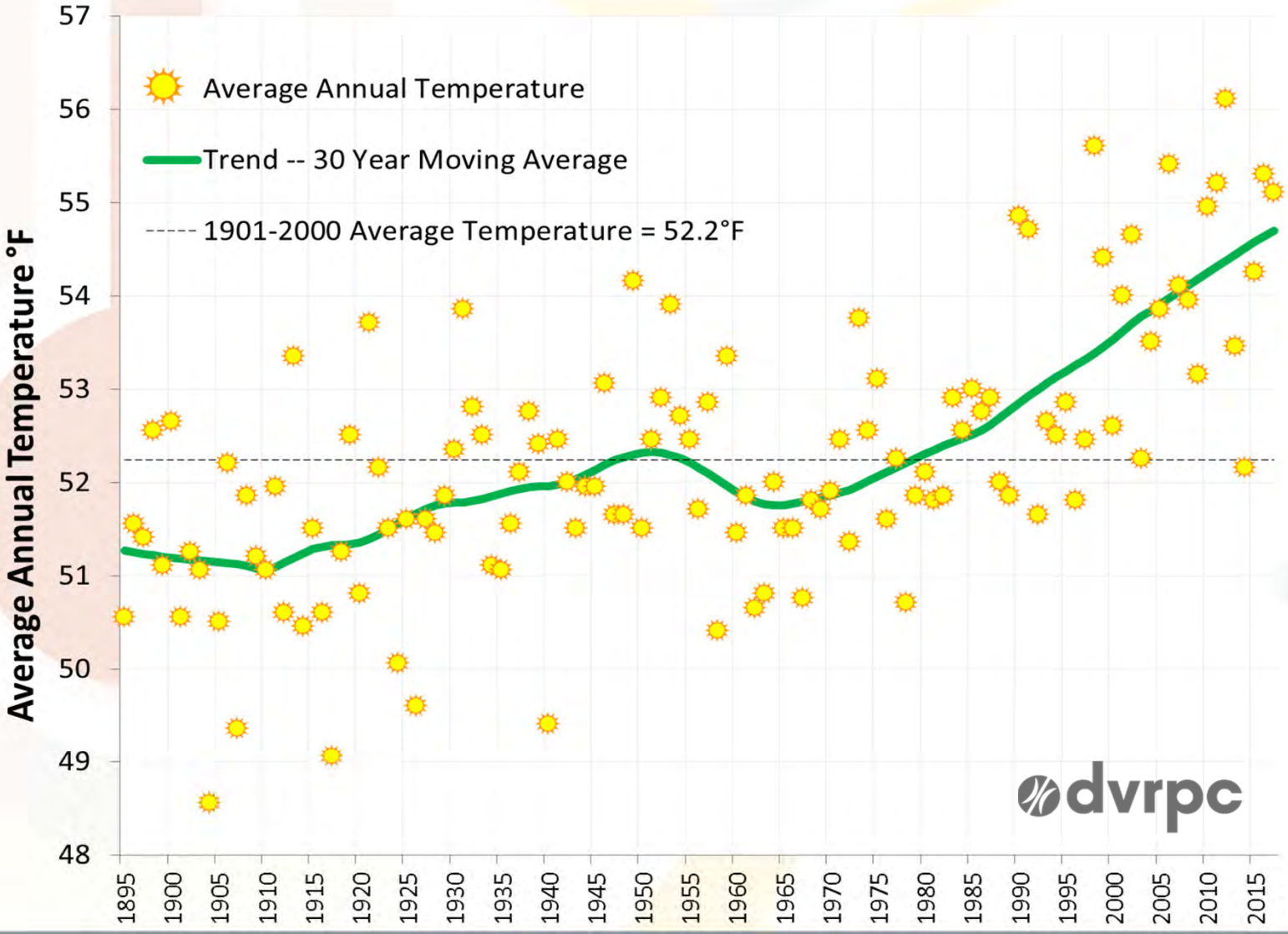

IN
9.8 Billion
Tonnes CO_2
Volcanoes
Fossil Fuel
Emissions
Plant & Animal
Respiration
ATMOSPHERE
450 ppm
December 3, 2018: 409.18 ppm
403 ppm
Highest Core Reading
Pre-Industrial Levels
299 ppm
271 ppm
OUT
5.5 Billion Tonnes CO_2
26%
Oceans
30%
Plants & Soils

Average Global Temperature: 1880–2017



Source: DVRPC chart using data accessed 24 May 2018 from www.ncdc.noaa.gov/cag/.

Average Regional Temperature: 1895–2017



Source: DVRPC chart using data accessed 24 May 2018 from www.ncdc.noaa.gov/cag/. Data reflects the average of two regions: Southeastern PA (Climate Div.3) and Southern NJ (Climate Div.2).

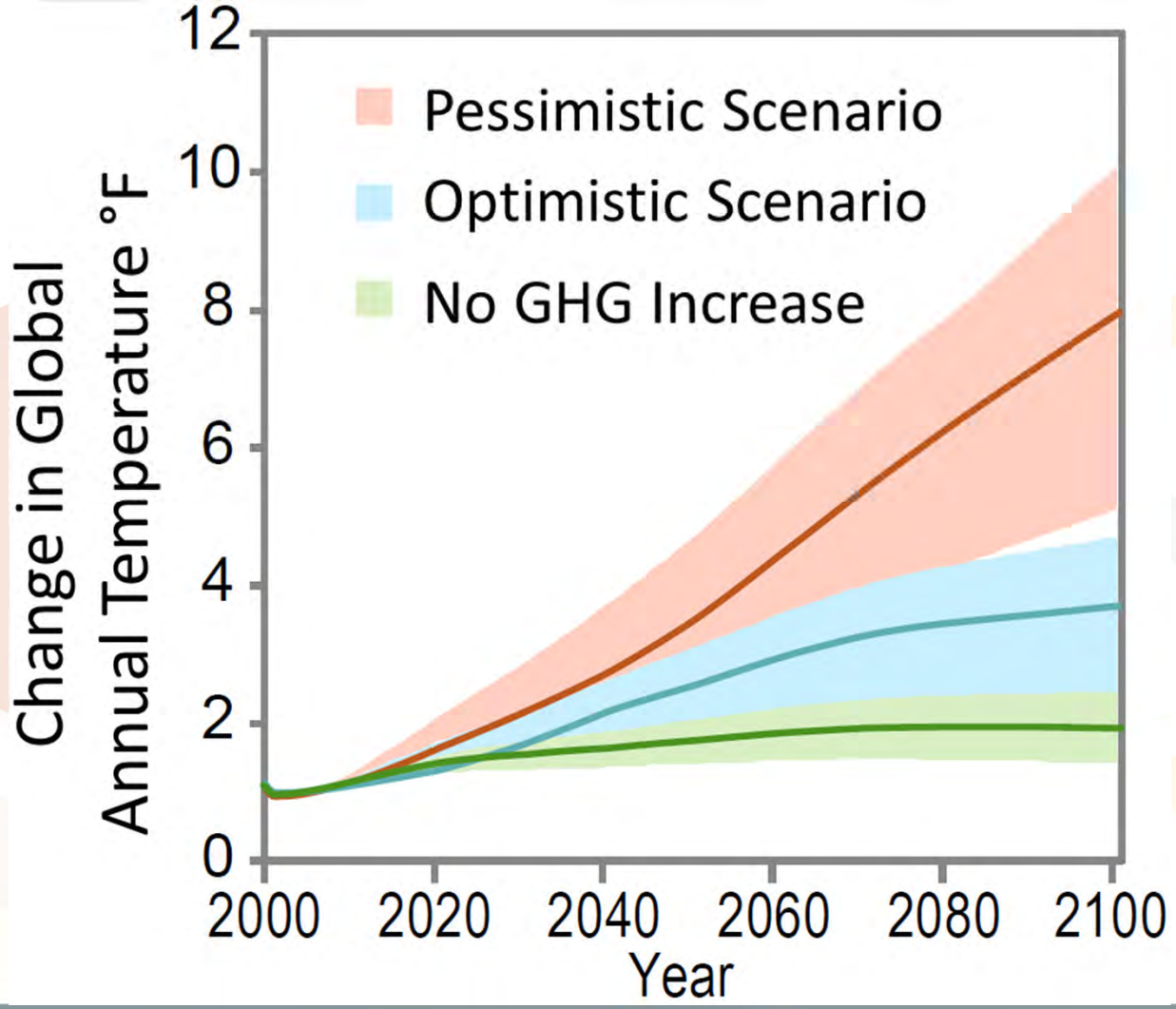
dvrpc

Since 2010, Philadelphia has experienced:

The two wettest years on record
The three hottest summers on record
The two snowiest winters on record
The most days over 90 degrees on record
The wettest day on record
Two hurricanes
And a derecho.

Projected Global Temperature

vs. 1960-2000 Average

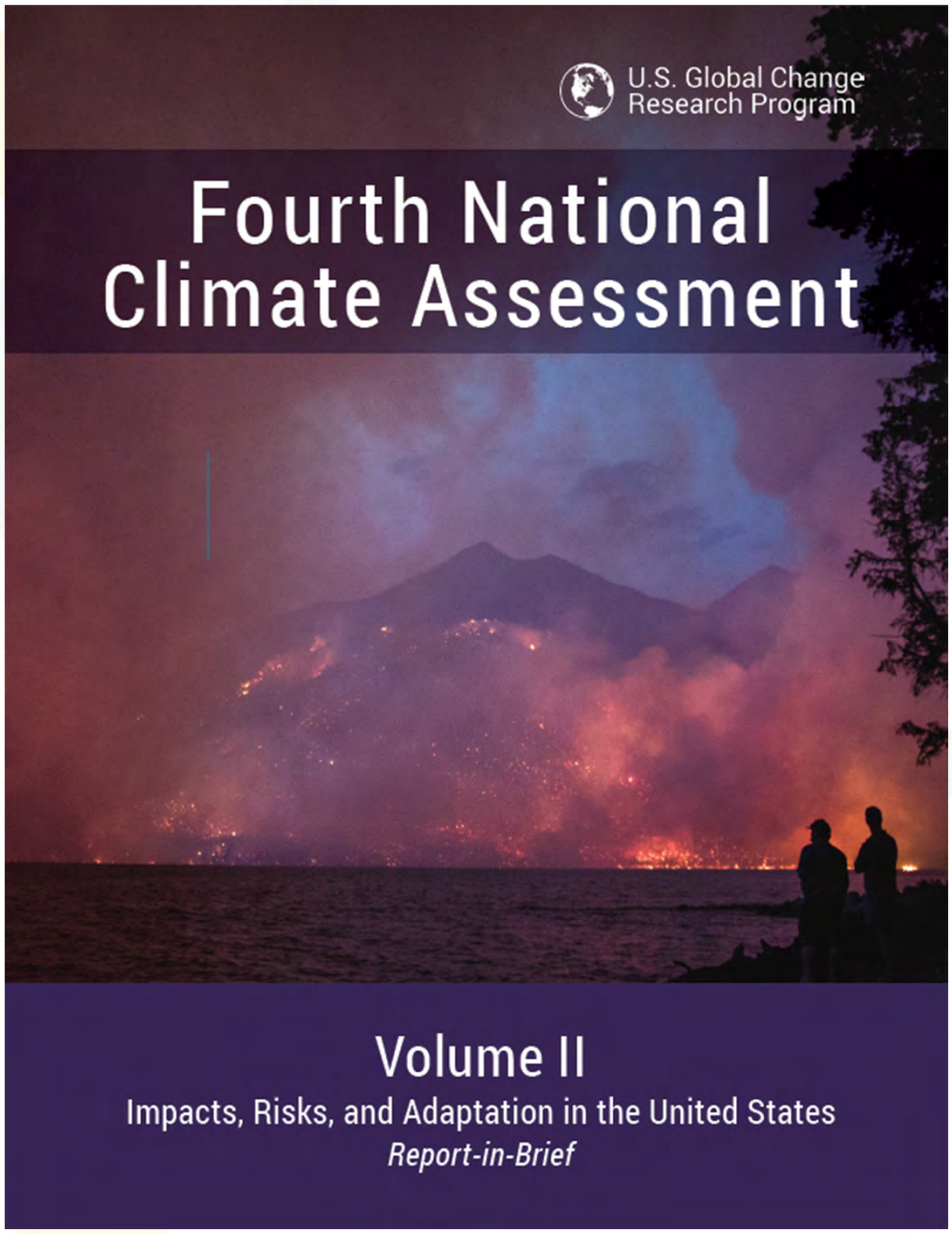


Source: *CSSR*, p. 138.

Summary Finding on Infrastructure

10. Infrastructure

Our Nation's aging and deteriorating infrastructure is further stressed by increases in heavy precipitation events, coastal flooding, heat, wildfires, and other extreme events, as well as changes to average precipitation and temperature. Without adaptation, climate change will continue to degrade infrastructure performance over the rest of the century, with the potential for cascading impacts that threaten our economy, national security, essential services, and health and well-being.



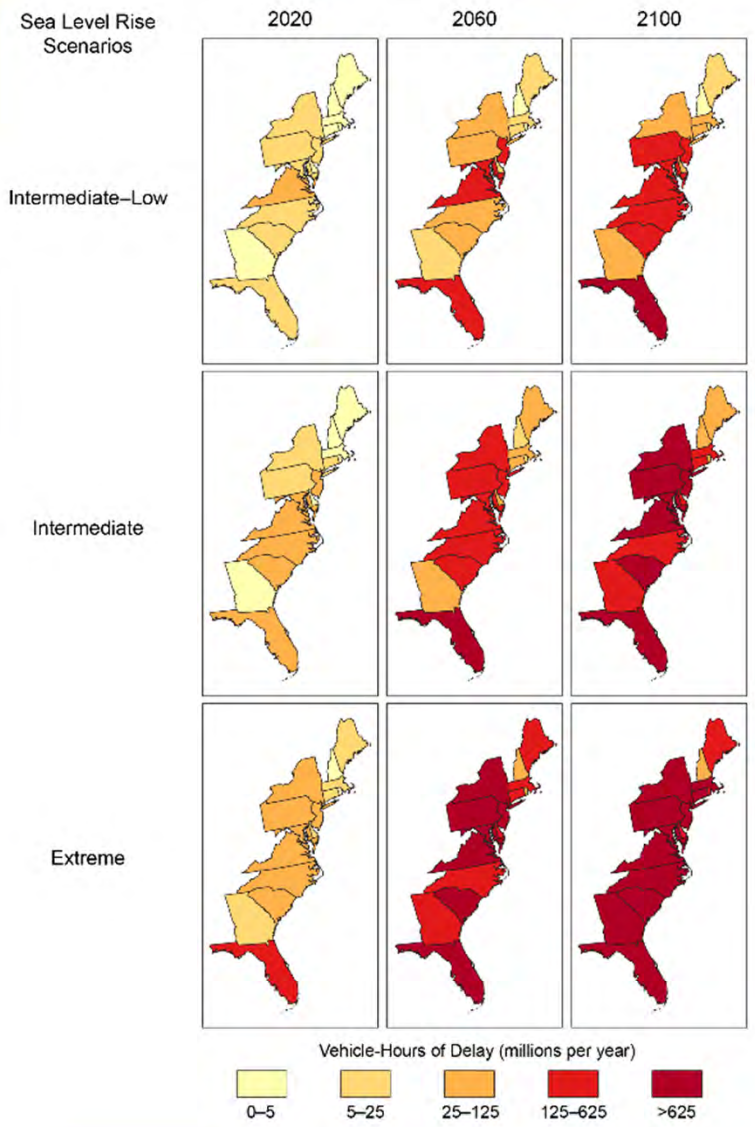
12 Key Message #1

Transportation at Risk

A reliable, safe, and efficient U.S. transportation system is at risk from increases in heavy precipitation, coastal flooding, heat, wildfires, and other extreme events, as well as changes to average temperature. Throughout this century, climate change will continue to pose a risk to U.S. transportation infrastructure, with regional differences.

Fig. 12.2: Annual Vehicle-Hours of Delay Due to High Tide Flooding

The figure shows annual vehicle-hours of delay for major roads (principal arterials, minor arterials, and major collectors) due to high tide flooding by state, year, and sea level rise scenario (from Sweet et al. 2017).[59] Years are shown using decadal average (10-year) values (that is, 2020 is 2016–2025), except 2100, which is a 5-year average (2096–2100). One vehicle-hour of delay is equivalent to one vehicle delayed for one hour. *Source: Jacobs et al. 2018,[61] Figure 3, reproduced with permission of the Transportation Research Board.*



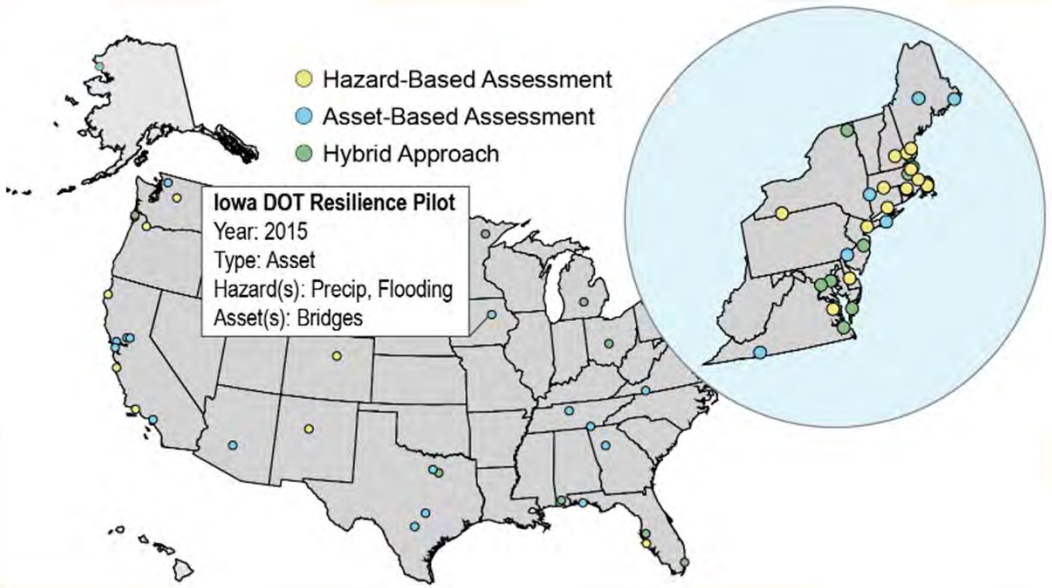


Fig. 12.3: Transportation Vulnerability and Risk Assessments

This figure shows transportation vulnerability and/or risk assessments from 2012 to 2016 by location. Cumulatively, these vulnerability assessments elucidate national-scale vulnerabilities and progress. Data for the U.S. Caribbean region were not available. See the online version of this map at http://nca2018.globalchange.gov/chapter/12#fig-12-3 to access the complete set of vulnerability and risk assessments. *Sources: ICF and U.S. Department of Transportation.*

Fig. 12.4: Flood Impacts on Colorado Highway

Flooding events can result in serious damage to road infrastructure. Here, debris flow covers US Highway 14 (Poudre Canyon) after the High Park Fire in 2012. *Photo credit: Justin Pipe, Colorado Department of Transportation.*

Agenda

PANEL OF EXPERTS:

Michael Scott, Ph.D., Interim Dean, Henson School of Science and Technology; Professor, Department of Geography and Geosciences; Director, Eastern Shore Regional GIS Cooperative—Salisbury University (Salisbury, MD).

Elkins Green, Director of Environmental Resources, NJ DOT

Dan Szekeres, Senior Associate at Michael Baker International

Moderated Panel Discussion and Audience Q&A

WRAP -UP

12:00 NOON: NETWORKING LUNCH

1:00pm: EVENT ENDS