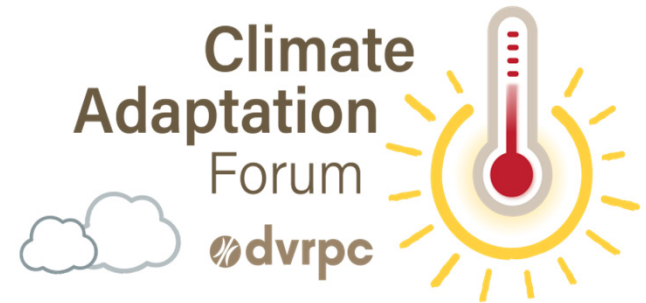


# Philadelphia Climate Change Resiliency Initiatives



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*The eighth in an ongoing*  
Climate Adaptation Forum

*Please be sure to get a copy of the agenda and bios and sign in for AICP CM Credits*  
*We will start promptly at 9:30*

# 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)
- Floods, Roads and Infrastructure (December 2018)

Philly's Best New Bars / Another Story Jim Kenney Won't Like / The Pastor vs. Poverty  
BY JASON SHEEHAN & ALEX TEWFIK BY ROBERT HUBER BY CHRISTINE SPEER LEJEUNE

# Philadelphia

WHAT CAN A CITY DO ABOUT

# CLIMATE CHANGE?

10 Steps We Need  
to Take to Prepare for  
What's Coming\*

NOVEMBER 2019 \$5.99  
0 73361 87367 5 11 >

*\*The airport under water. Neighborhoods baking. The Shore wiped out. See more doom on page 68.*

# PA Coastal Resiliency Story Map

Now live!

The screenshot shows the website for the Delaware Valley Regional Planning Commission (dvrpc). The header includes the dvrpc logo, a search bar, and social media icons for Facebook, Twitter, Instagram, LinkedIn, YouTube, and Google+. Below the header is a navigation bar with tabs for Announcements, Products, Events, and Twitter. The main content area features a sidebar on the left with various links under categories like About Us, Data and Products, Long-Range Plan and TIP, Transportation, Land Use and Environment, Pennsylvania Coastal Resiliency, Climate Adaptation Forum, Integrating Hazard Mitigation and Comprehensive Planning, New Jersey Resilient Coastal Community Initiative, Planning Assistance Center, Commuter Services, and Get Involved. The main content area is titled "Pennsylvania Coastal Resiliency" and features a dark blue header for "PA Coastal Resiliency Story Map". Below this header is a text block announcing a new resource: "New resource! This story map shows current and future flood scenarios in the PA DECZ, as well as potential impacts to property value and critical municipal facilities. Information on the benefits that municipalities and property owners may receive by participating in the Community Rating System, a voluntary national program incentivizing flood prevention while reducing flood insurance premiums for property owners, is also included." Below the text is a thumbnail image of the story map interface, which shows a scenic view of the Delaware River with the title "Introduction and Project Background" and the date "November 5, 2019". Below the thumbnail is a short description: "View current and future flood scenarios along the tidal Delaware River in Pennsylvania, as well as potential impacts to property value and critical municipal facilities." and a small icon for external linking.

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[Climate Adaptation Forum](#)  
[Integrating Hazard Mitigation and Comprehensive Planning](#)  
[New Jersey Resilient Coastal Community Initiative](#)  
**Planning Assistance Center**  
**Commuter Services**  
**Get Involved**

## Pennsylvania Coastal Resiliency

### PA Coastal Resiliency Story Map

**New resource!** This story map shows current and future flood scenarios in the PA DECZ, as well as potential impacts to property value and critical municipal facilities. Information on the benefits that municipalities and property owners may receive by participating in the Community Rating System, a voluntary national program incentivizing flood prevention while reducing flood insurance premiums for property owners, is also included.

View current and future flood scenarios along the tidal Delaware River in Pennsylvania, as well as potential impacts to property value and critical municipal facilities.

<https://www.dvrpc.org/Resiliency/Coastal/>

# PA Coastal Resiliency Story Map

## Coastal Effects of Climate Change in Southeastern PA

- Introduction
- Flooding Scenarios**
- Chronic Inundation
- Infrastructure Risk
- Property Value Risk
- Community Rating System

### Projected Sea Level Rise

rates throughout the 21st century.

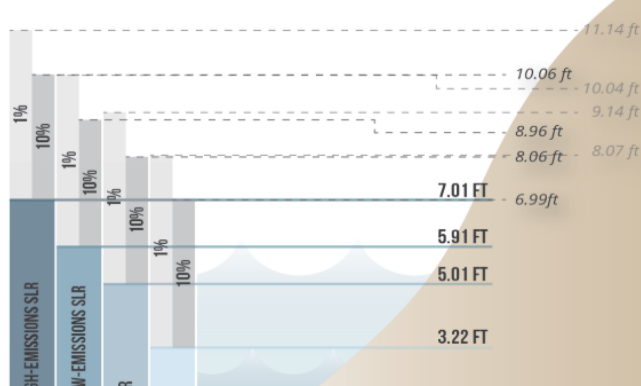
#### 2100 High-Emissions Scenario

- High Tide
- 10% Storm Flooding
- 1% Storm Flooding

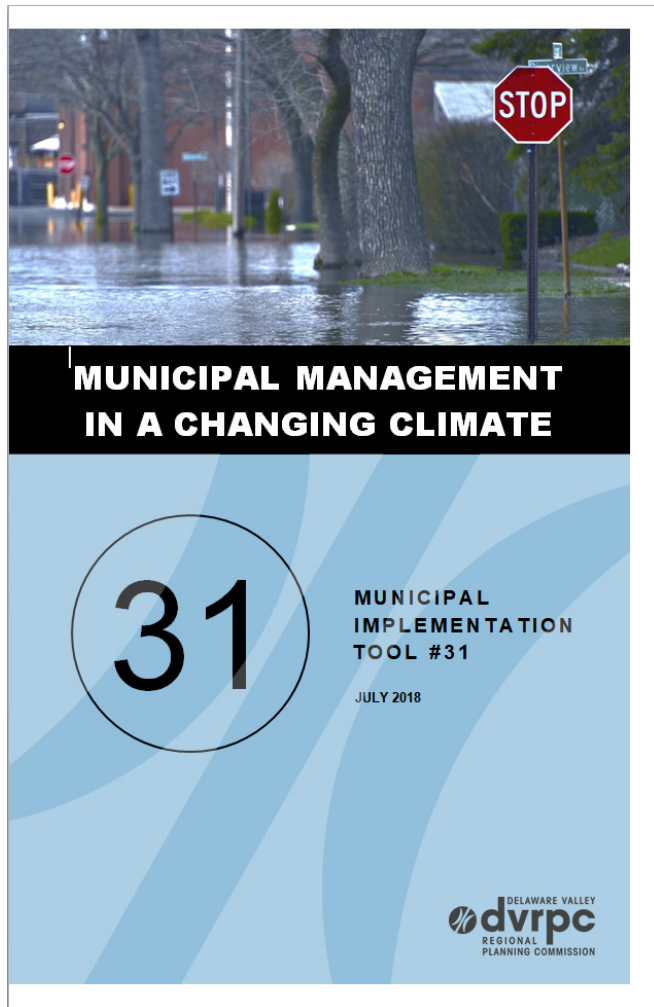
Sources: DVRPC, NOAA (2018), Kopp, et al. (2014)

In this scenario, greenhouse gas emissions are expected to raise the global mean temperature by between 5.76°F and 9.72°F, and **sea level would likely rise by between 2.4 and 5.4 feet in southeastern Pennsylvania** between the years of 2000 and 2100.<sup>(4)</sup> The **central estimate of this range is 3.4 feet** and all the map layers you see to the right are based on this central estimate.<sup>(2)</sup>

**FIGURE 2.1**  
WATER LEVELS ABOVE MEAN SEA LEVEL: SEA LEVEL RISE, 10% AND 1% STORMS

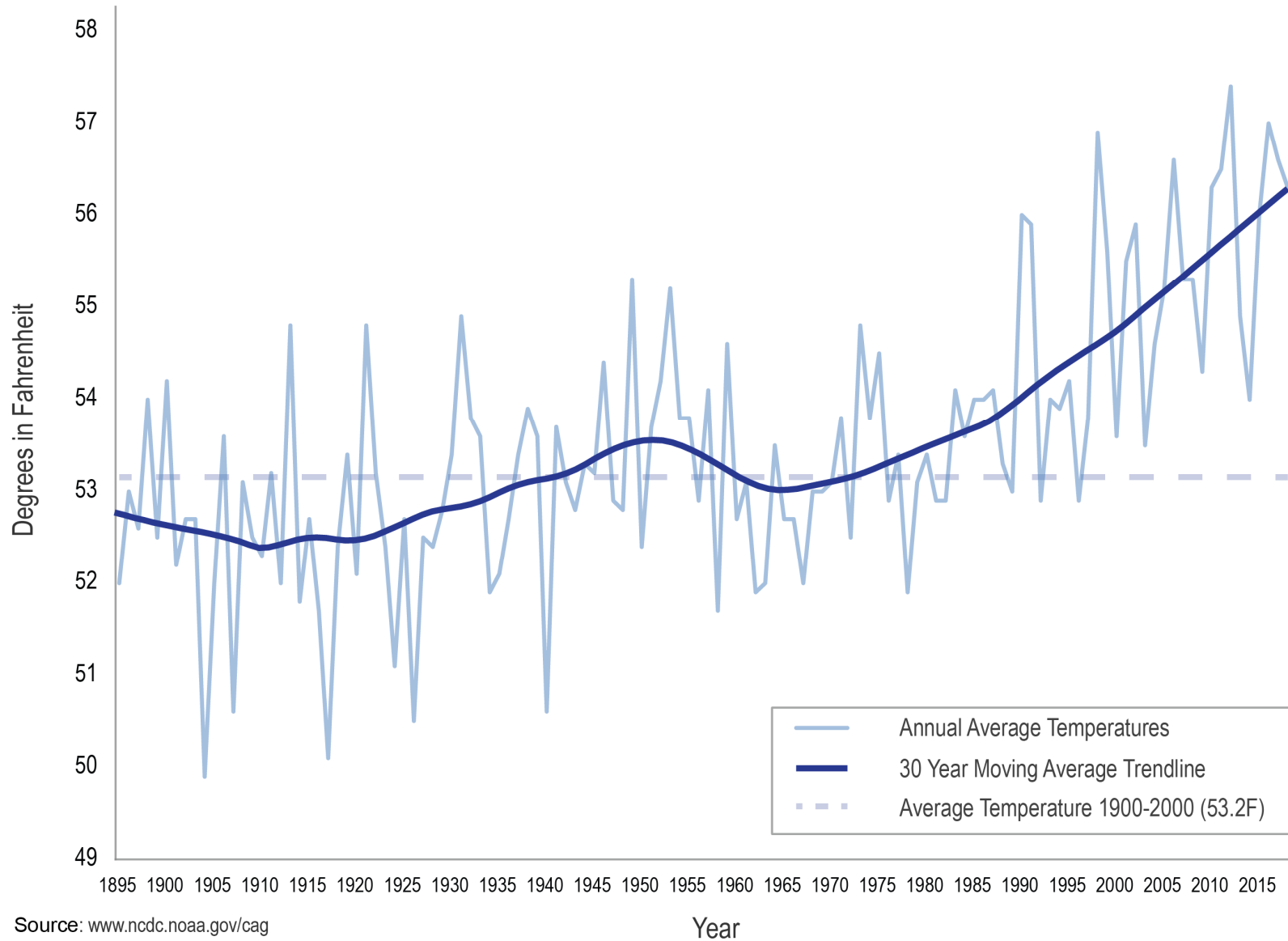


# Municipal Management in a Changing Climate



- Overview of historic and projected changes to the climate in Greater Philadelphia
- Data Sources:
  - CMIP5 Climate Data Processing Tool (suite of global climate models (GCMs)) run by ICF
  - Climate Science Special Report – Fourth National Climate Assessment (NCA4)
- Warmer and Wetter

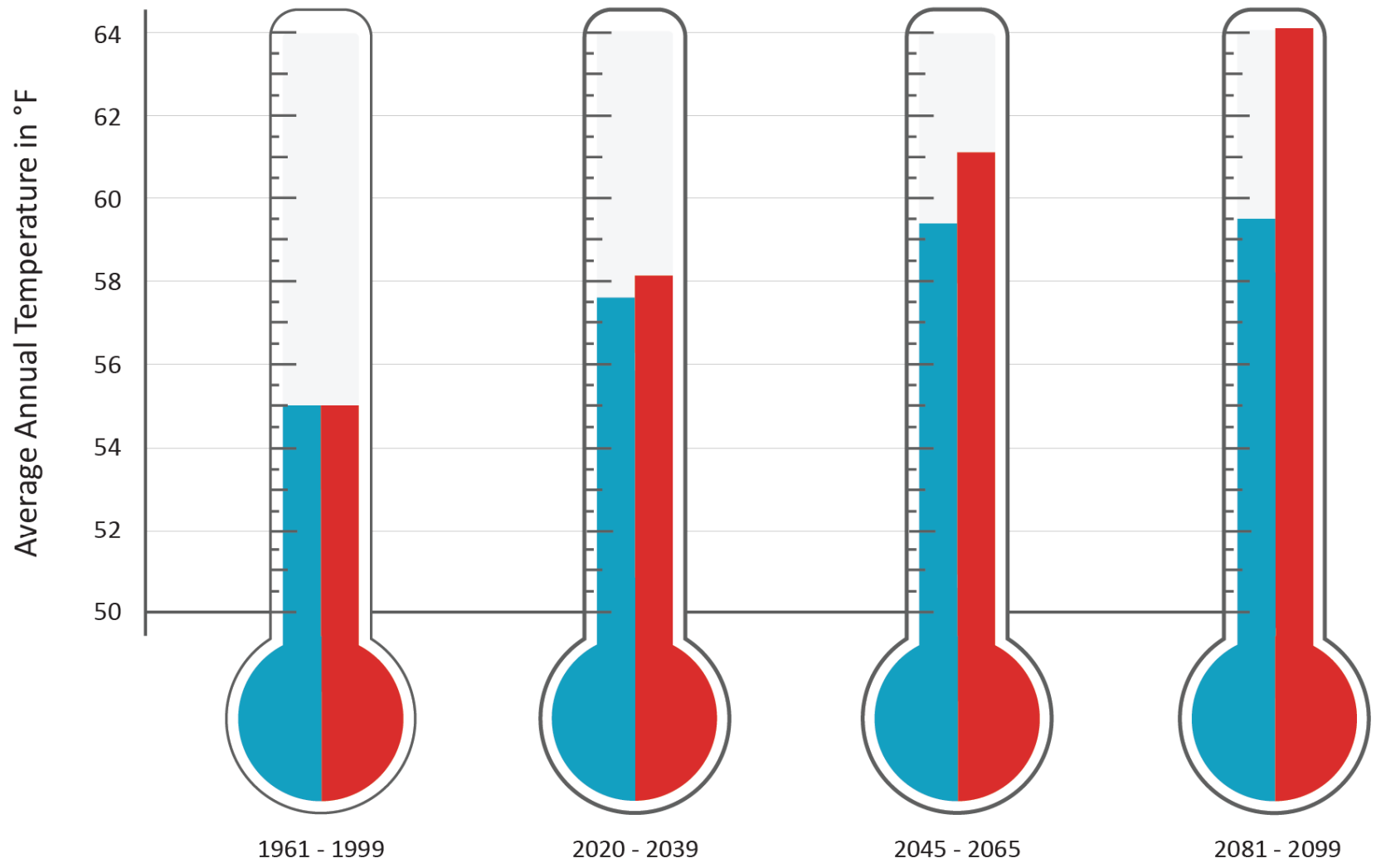
# Philadelphia Annual Average Temps: 1895 - 2018



Source: [www.ncdc.noaa.gov/cag](http://www.ncdc.noaa.gov/cag)

# Average Annual Temperature in °F -- Historic and Projected Philadelphia

Optimistic Pessimistic

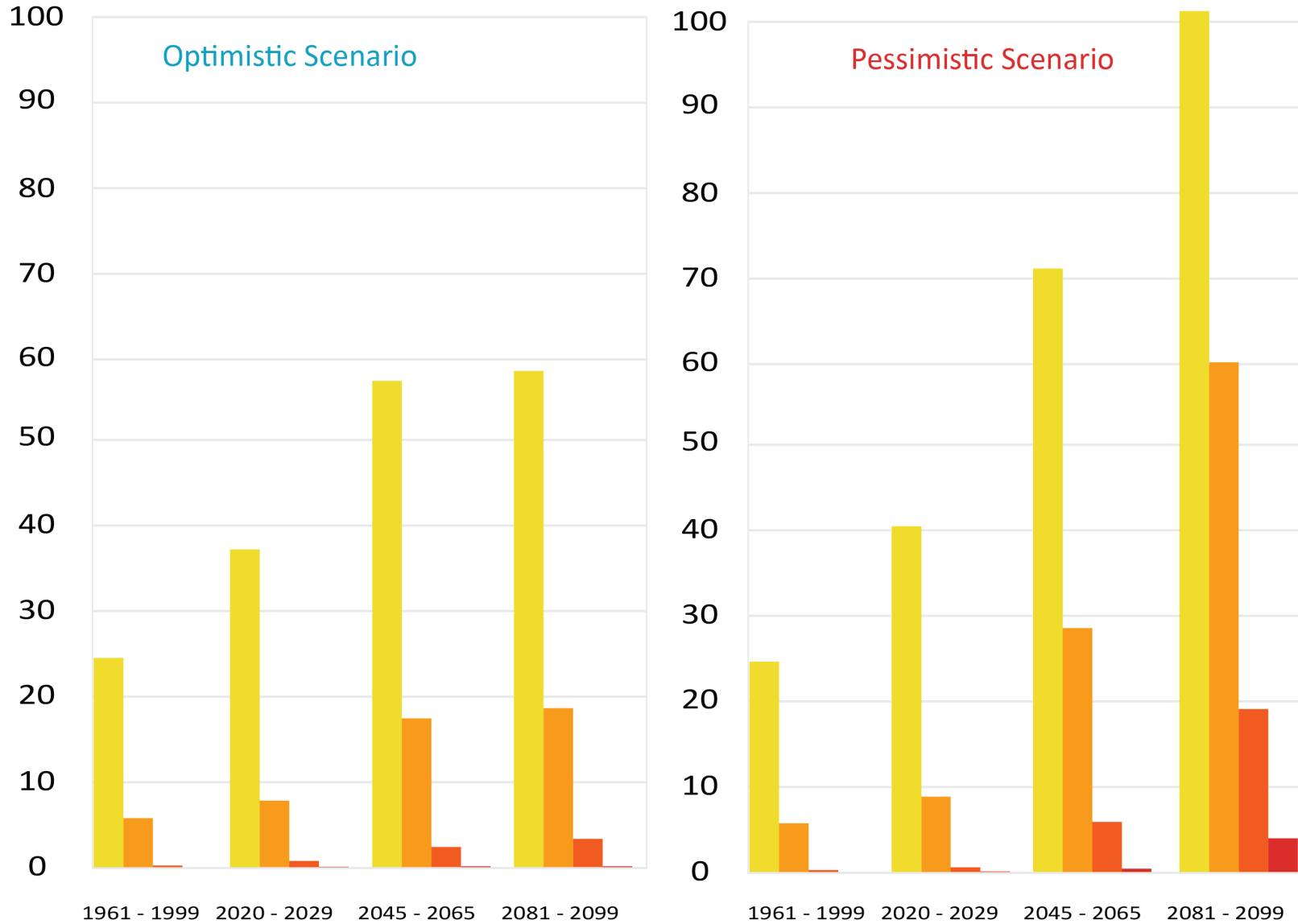


Source: DVRPC chart using data provided by ICF.



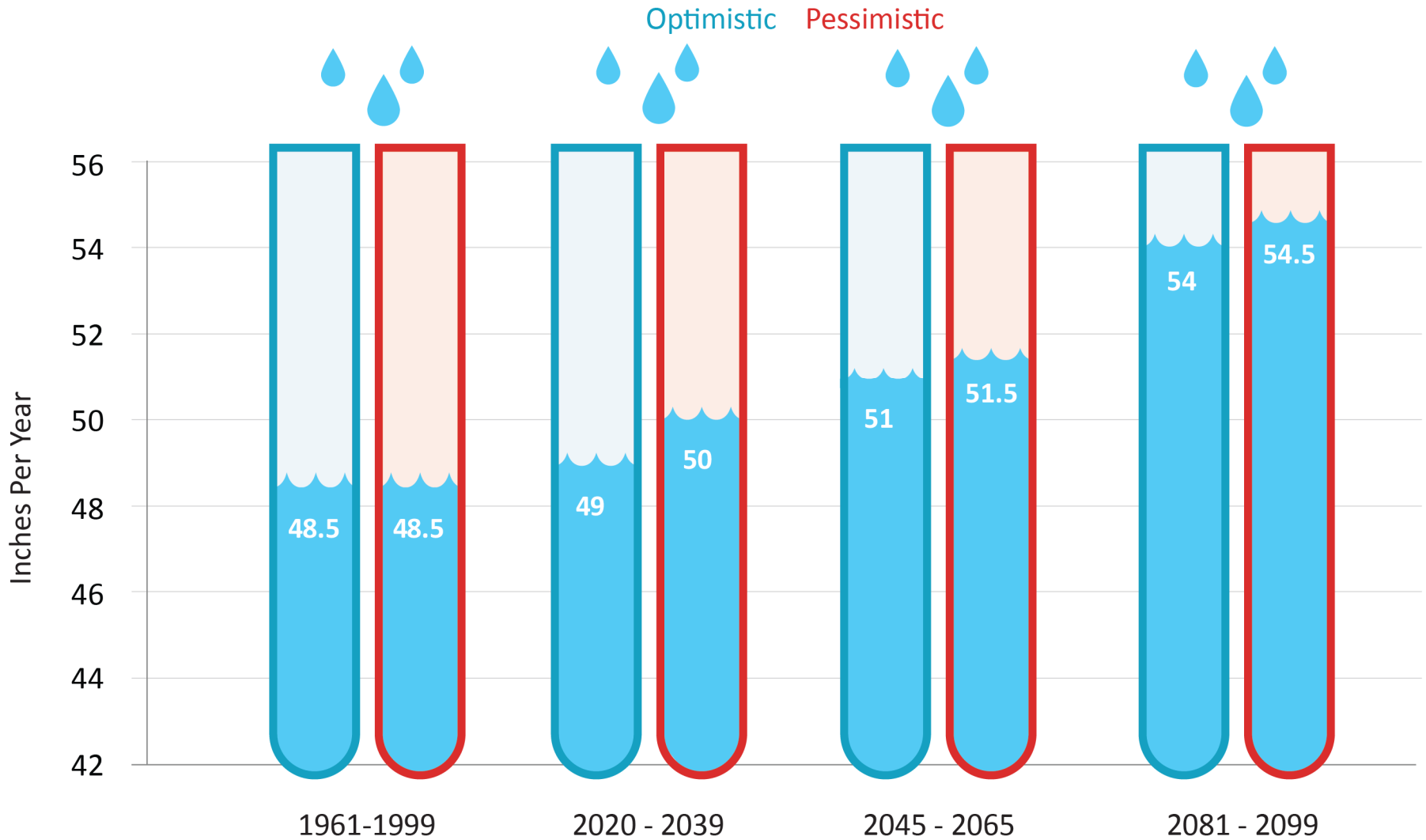
# Days per Year Above Specified Temperatures in Philadelphia - Historic & Projected

Days over 90°F Days over 95°F Days over 100°F Days over 105°F



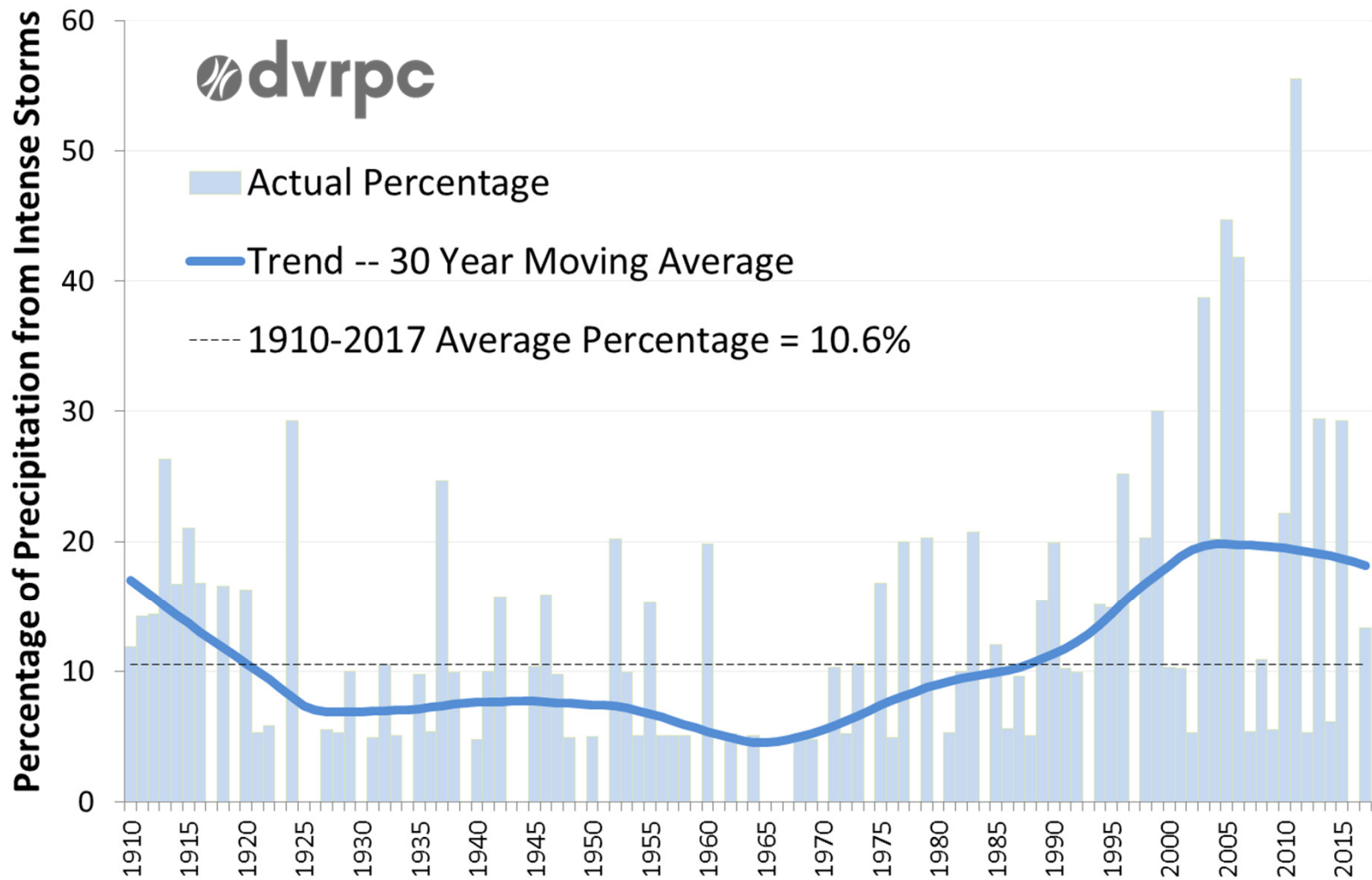
Source: DVRPC chart using data provided by ICF

# Average Annual Precipitation -- Historic and Projected Philadelphia



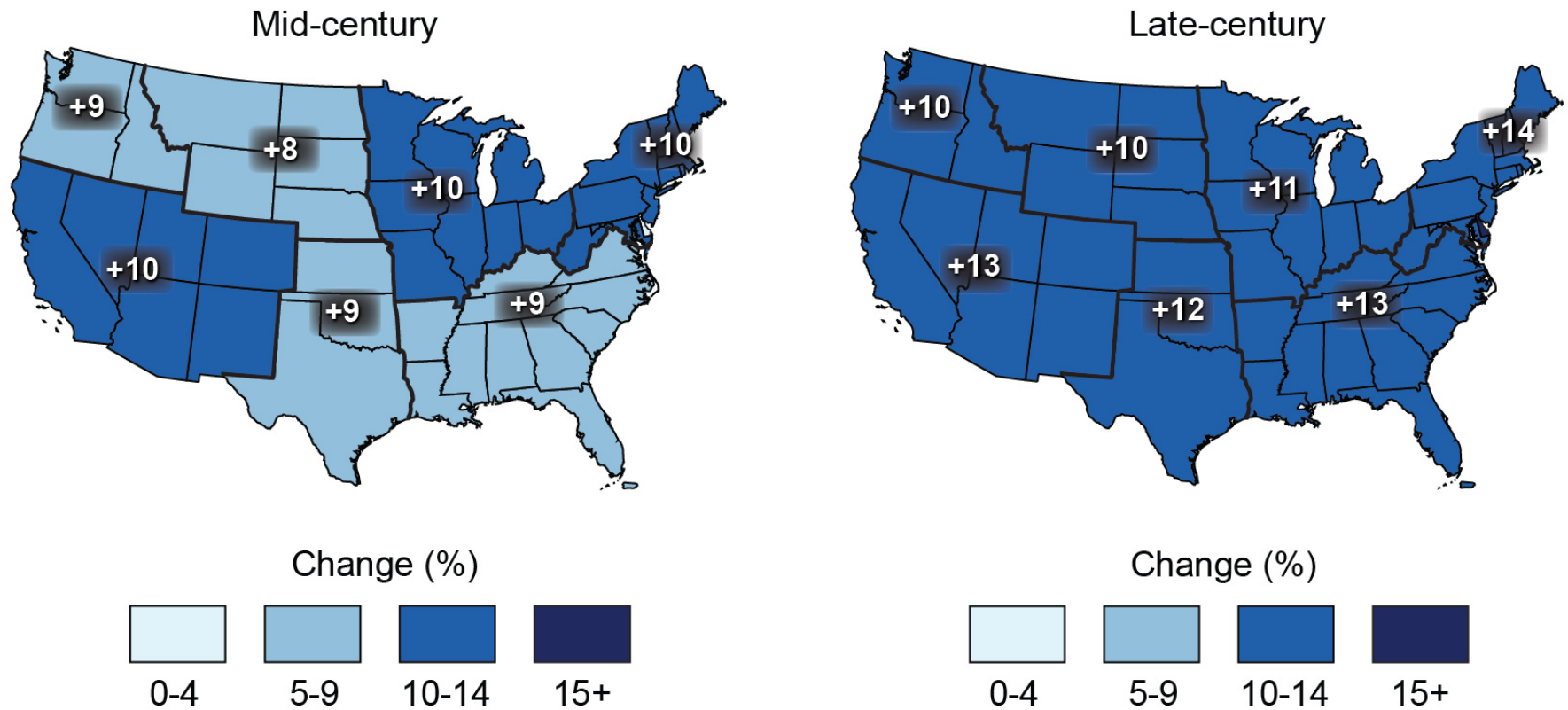
Source: DVRPC chart using data provided by ICF.

# Precipitation from Intense Storms: 1910 - 2017



Source: DVRPC chart using data accessed 24 May 2018 from [www.ncdc.noaa.gov/cag/](http://www.ncdc.noaa.gov/cag/).

# Projected Change in Daily, 20-year Extreme Precipitation (Low Emissions Scenario)



Source: Kenneth Kunkle, CSSR

# Sea Level Rise



**FIGURE 6.1**

PROJECTED SEA LEVEL RISE PROJECTIONS FOR NEW JERSEY (FT.)

	CENTRAL ESTIMATE	'LIKELY RANGE'	1-IN-20 CHANCE	1-IN-200 CHANCE	1-IN-1000 CHANCE
YEAR	50% PROBABILITY SLR MEETS OR EXCEEDS...	67% PROBABILITY SLR IS BETWEEN...	5% PROBABILITY SLR MEETS OR EXCEEDS...	0.5% PROBABILITY SLR MEETS OR EXCEEDS...	0.1% PROBABILITY SLR MEETS OR EXCEEDS...
2030	0.8 ft	0.6–1.0 ft	1.1 ft	1.3 ft	1.5 ft
2050	1.4 ft	1.0–1.8 ft	2.0 ft	2.4 ft	2.8 ft
2100 LOW EMISSIONS	2.3 ft	1.7–3.1 ft	3.8 ft	5.9 ft	8.3 ft
2100 HIGH EMISSIONS	3.4 ft	2.4–4.5 ft	5.3 ft	7.2 ft	10 ft

Estimates are based on (Kopp et al., 2014). Columns correspond to different projection probabilities. For example, the 'Likely Range' column corresponds to the range between the 17<sup>th</sup> and 83<sup>rd</sup> percentile; consistent with the terms used by the Intergovernmental Panel on Climate Change (Mastrandrea et al., 2010). All values are with respect to a 1991–2009 baseline. Note that these results represent a single way of estimating the probability of different levels of SLR; alternative methods may yield higher or lower estimates of the probability of high-end outcomes.

Source: Kopp et al, 2016

# Philadelphia Climate Change Resiliency Initiatives



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*215.238.2873*

**Thank You!**  
**LUNCHTIME!**

**AICP CM Credits:** Sign in, complete evaluation