



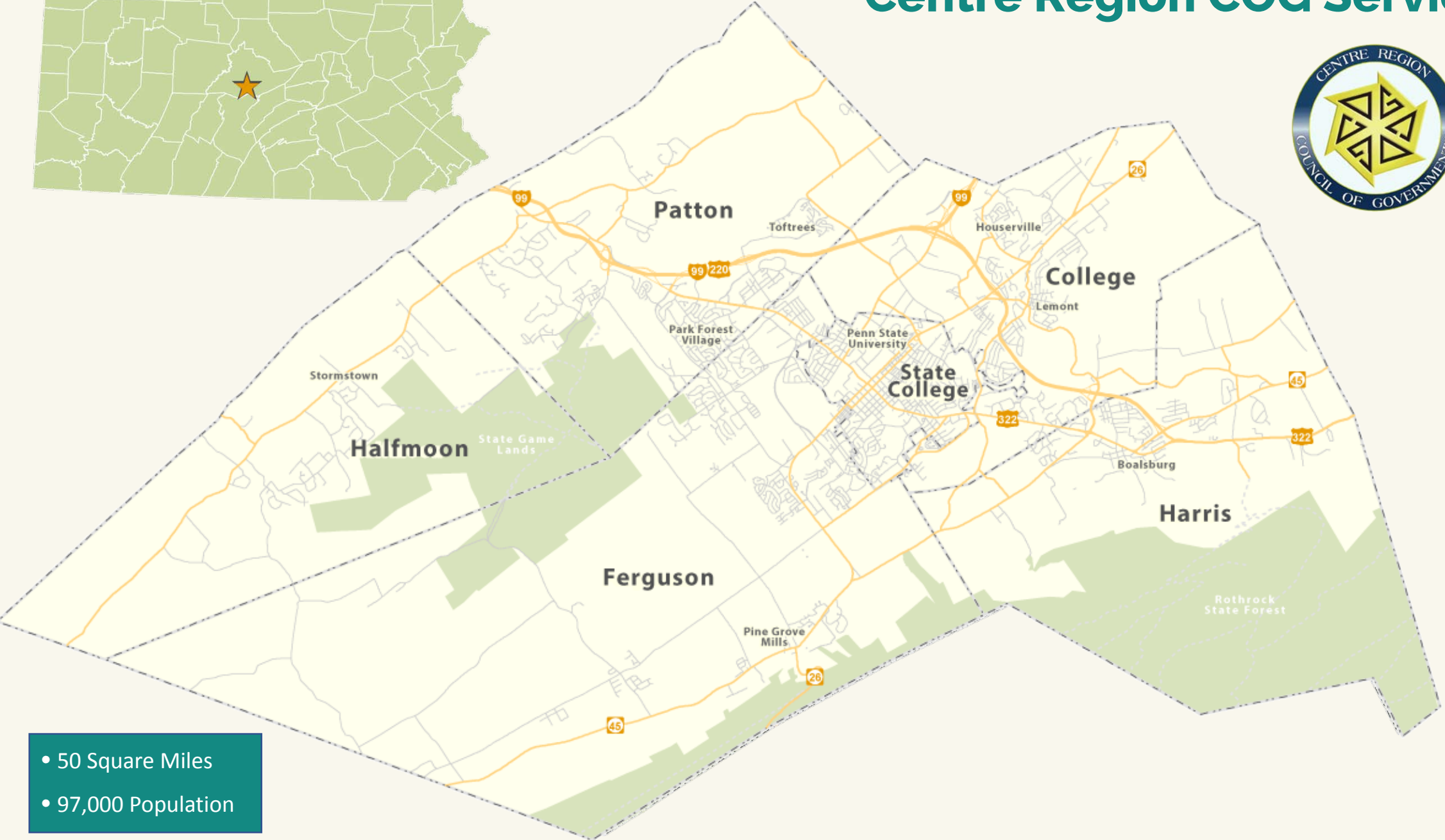
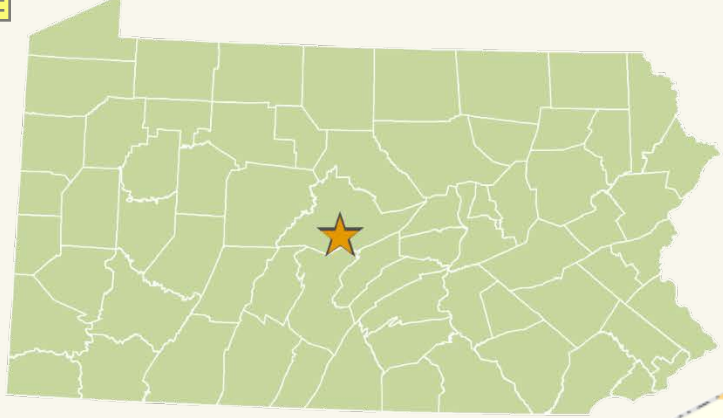
CLIMATE ACTION & ADAPTION PLANNING

July 13, 2020

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Sustainability Planner



Centre Region COG Service Area



- 50 Square Miles
- 97,000 Population



SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS

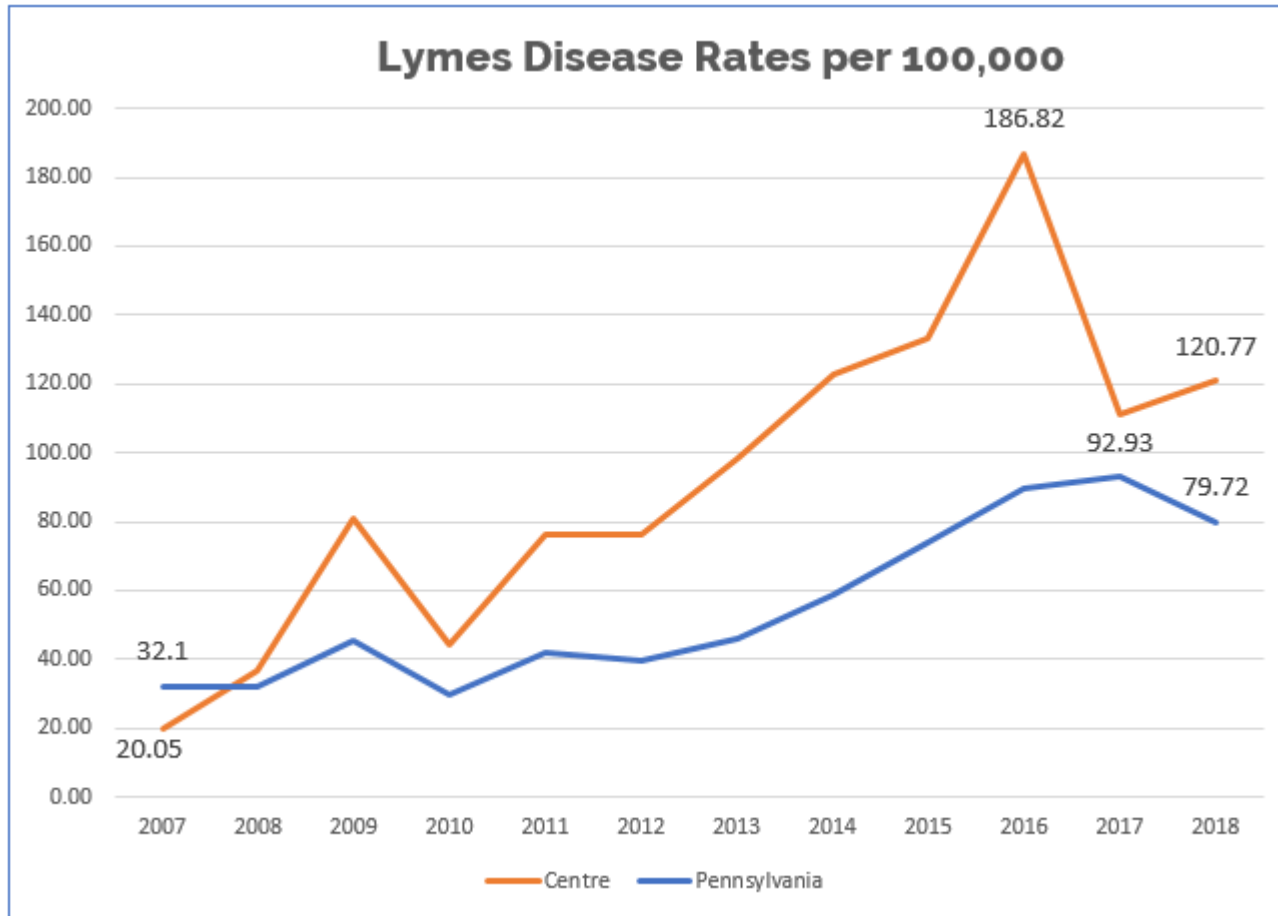
SUSTAINABLE DEVELOPMENT GOALS

Observed Regional Changes

- **71% increase in extreme rain events ($\geq 2''$)** since 1898 in State College.
- PennDOT spending \$125.7 million extra for **flood and landslide infrastructure** replacement in 2018 alone.
- Farmers experiencing **crop damage**.



Observed Regional Changes



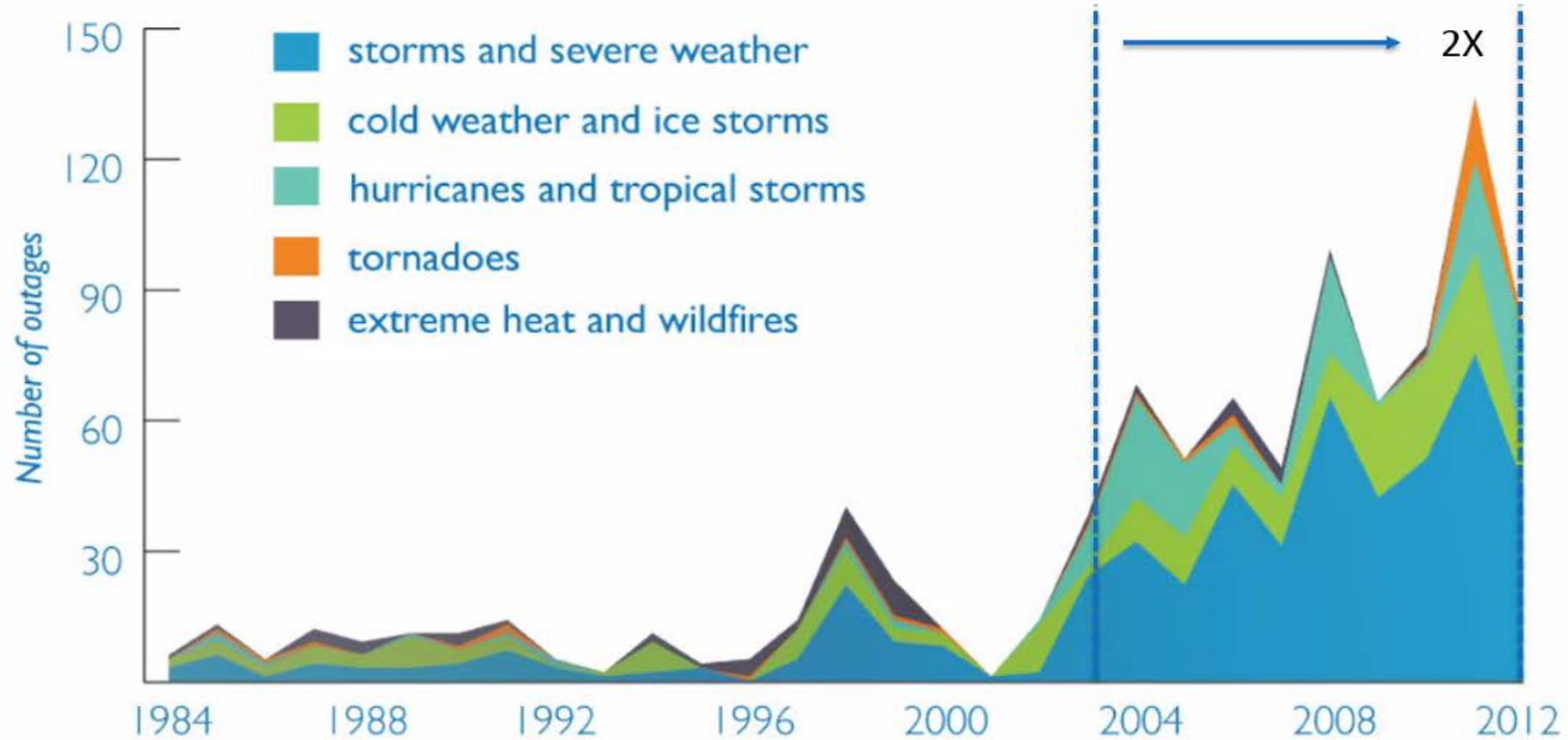
Source: PA Department of Health



- Number of Lyme disease cases **tripled** in PA over the past 10 years.
- Mosquito borne illnesses

Extreme Weather Is Causing More Major Power Outages

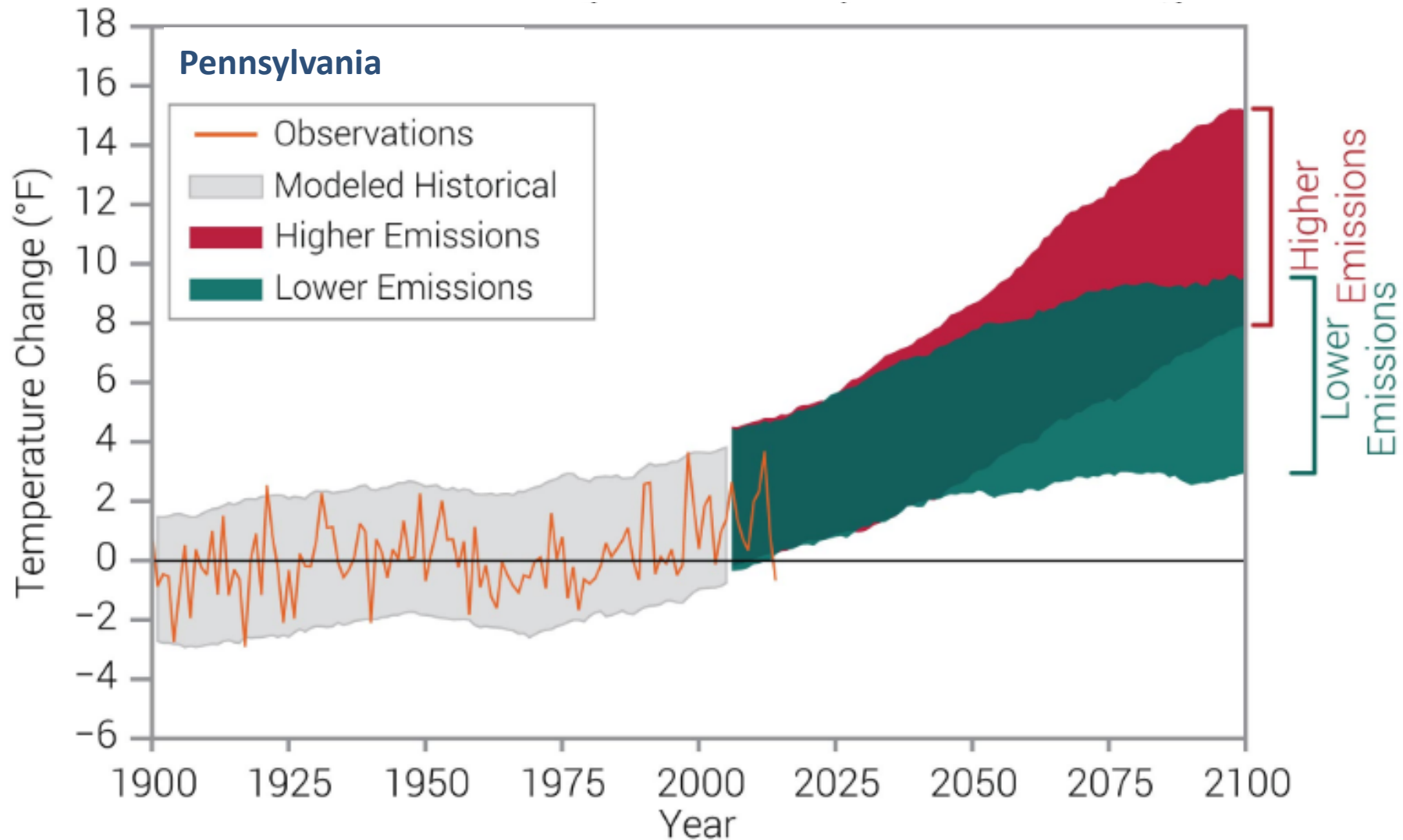
(major = at least 50,000 customers affected)



Pennsylvania had the fourth most in the country

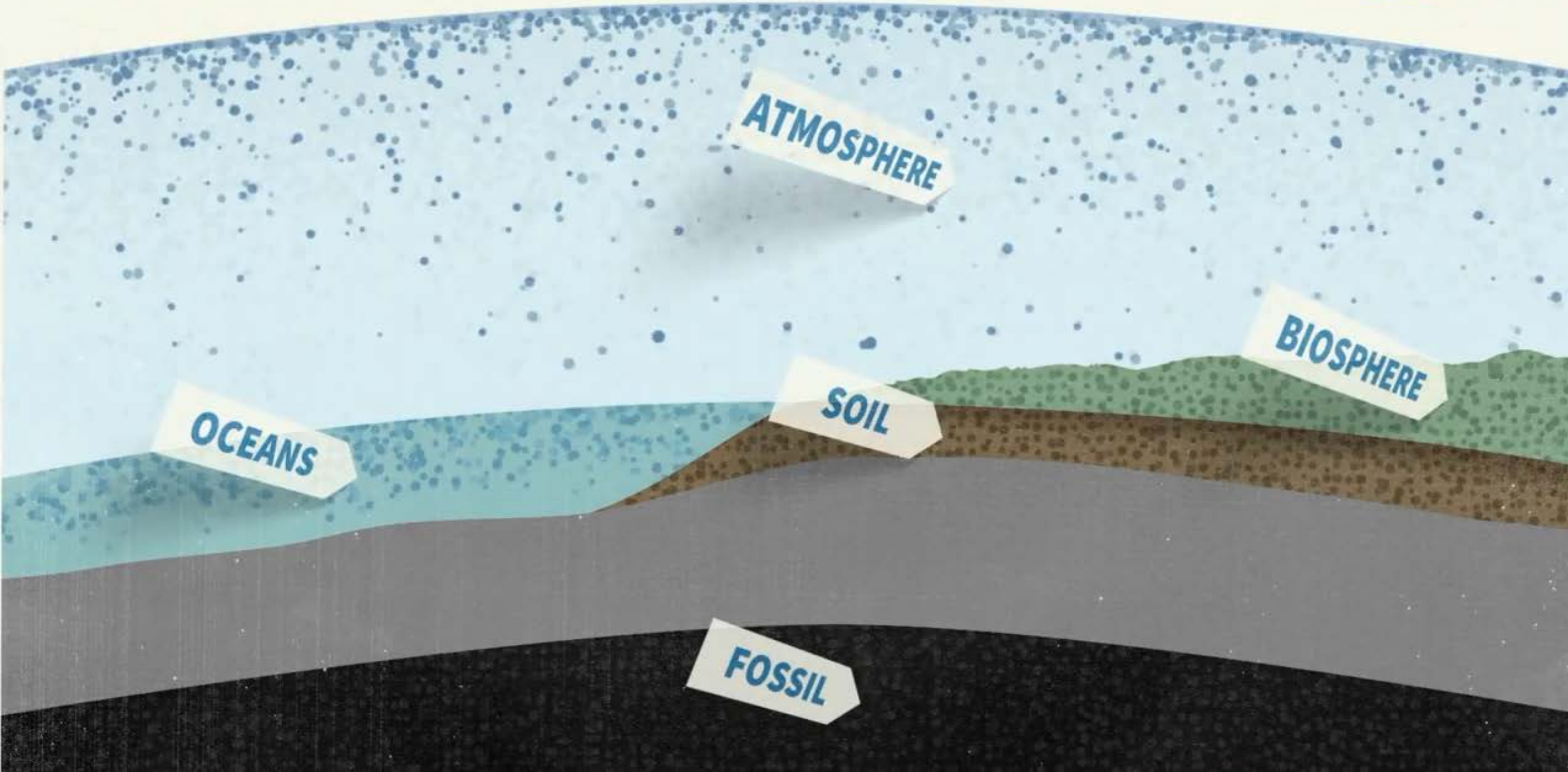
CLIMATE CENTRAL

Observed & Projected Temperature Change



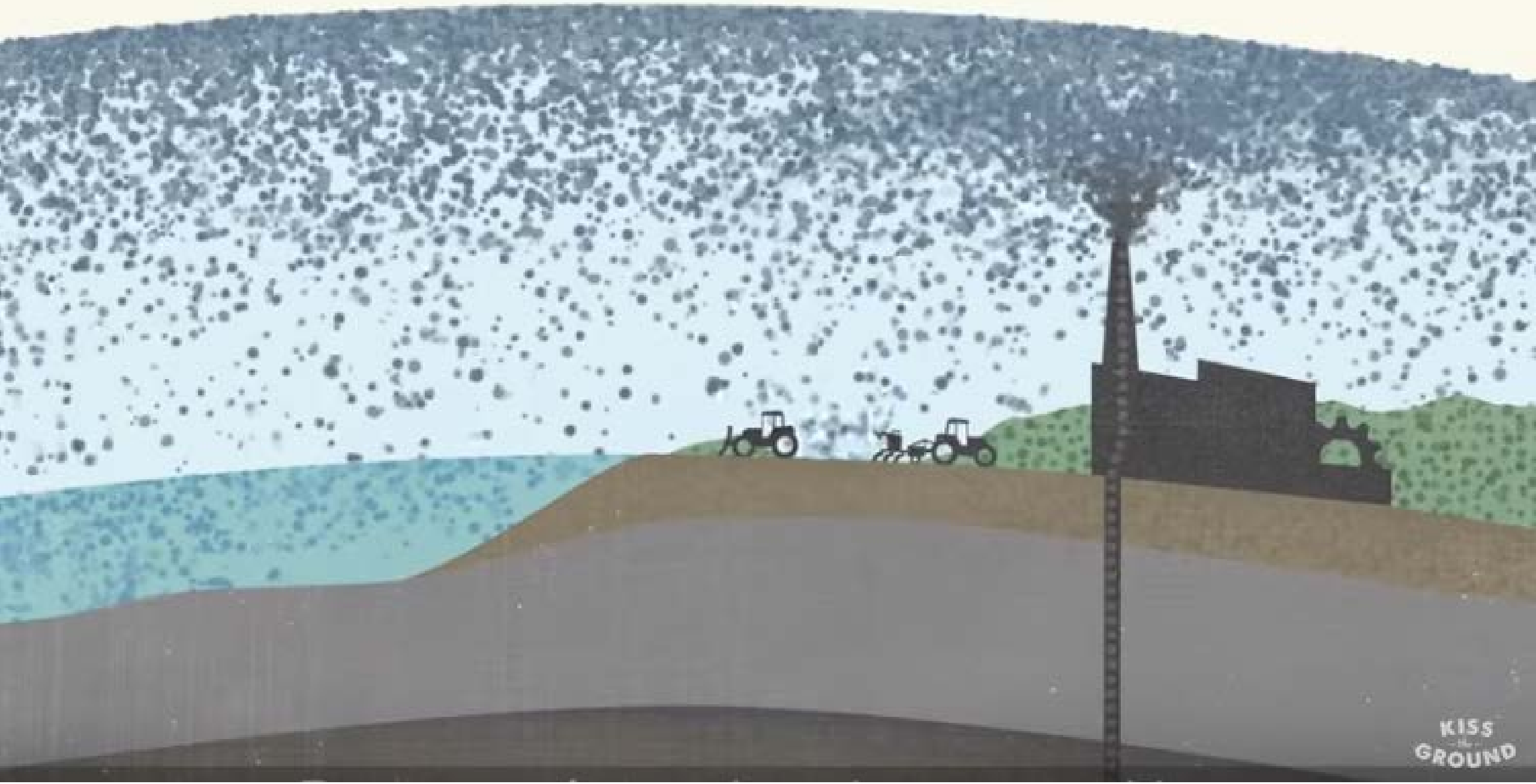


NATURAL CARBON STORAGE AND CYCLE: IN BALANCE

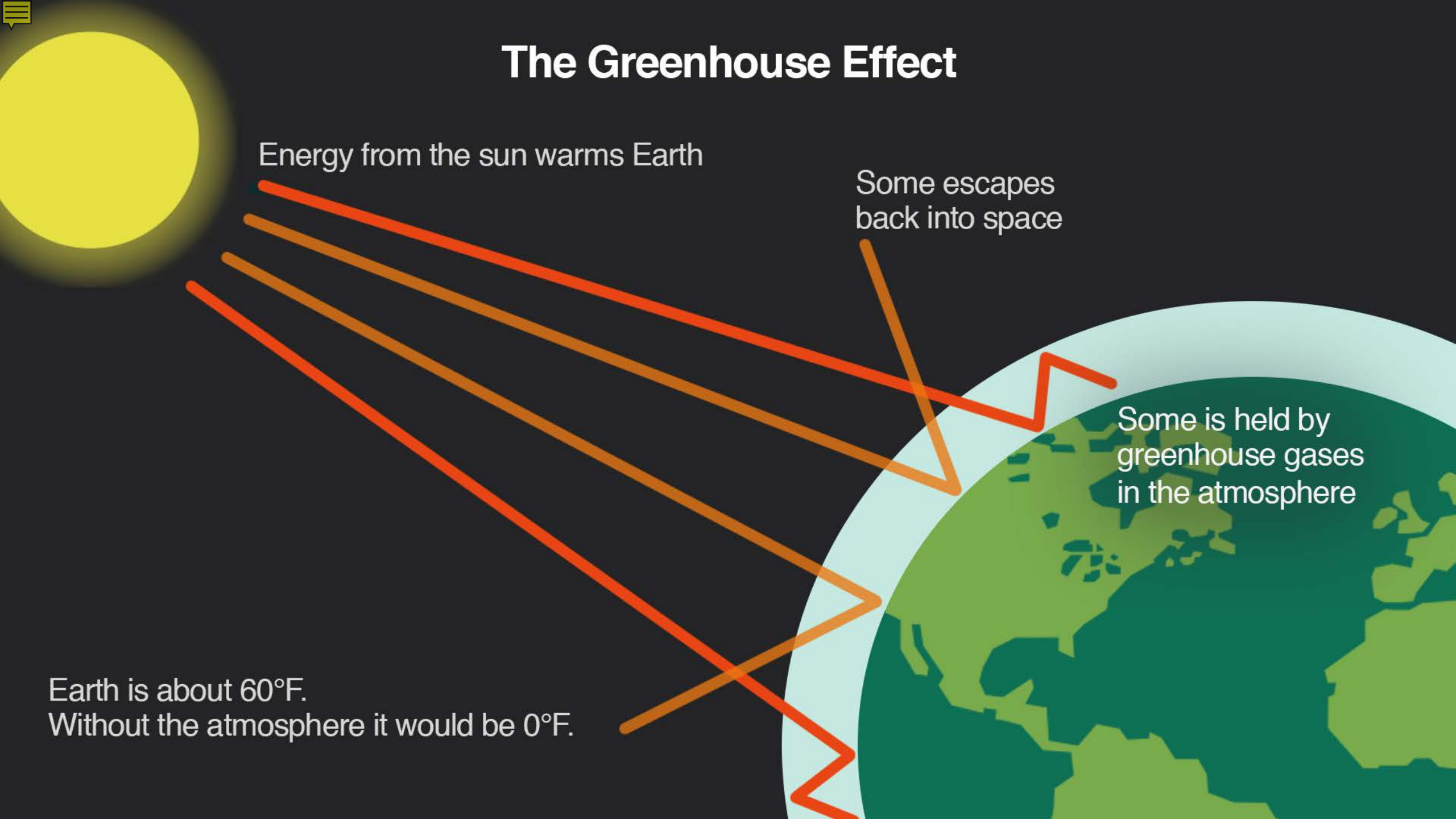




CURRENT CARBON CYCLE: OUT OF BALANCE



The Greenhouse Effect



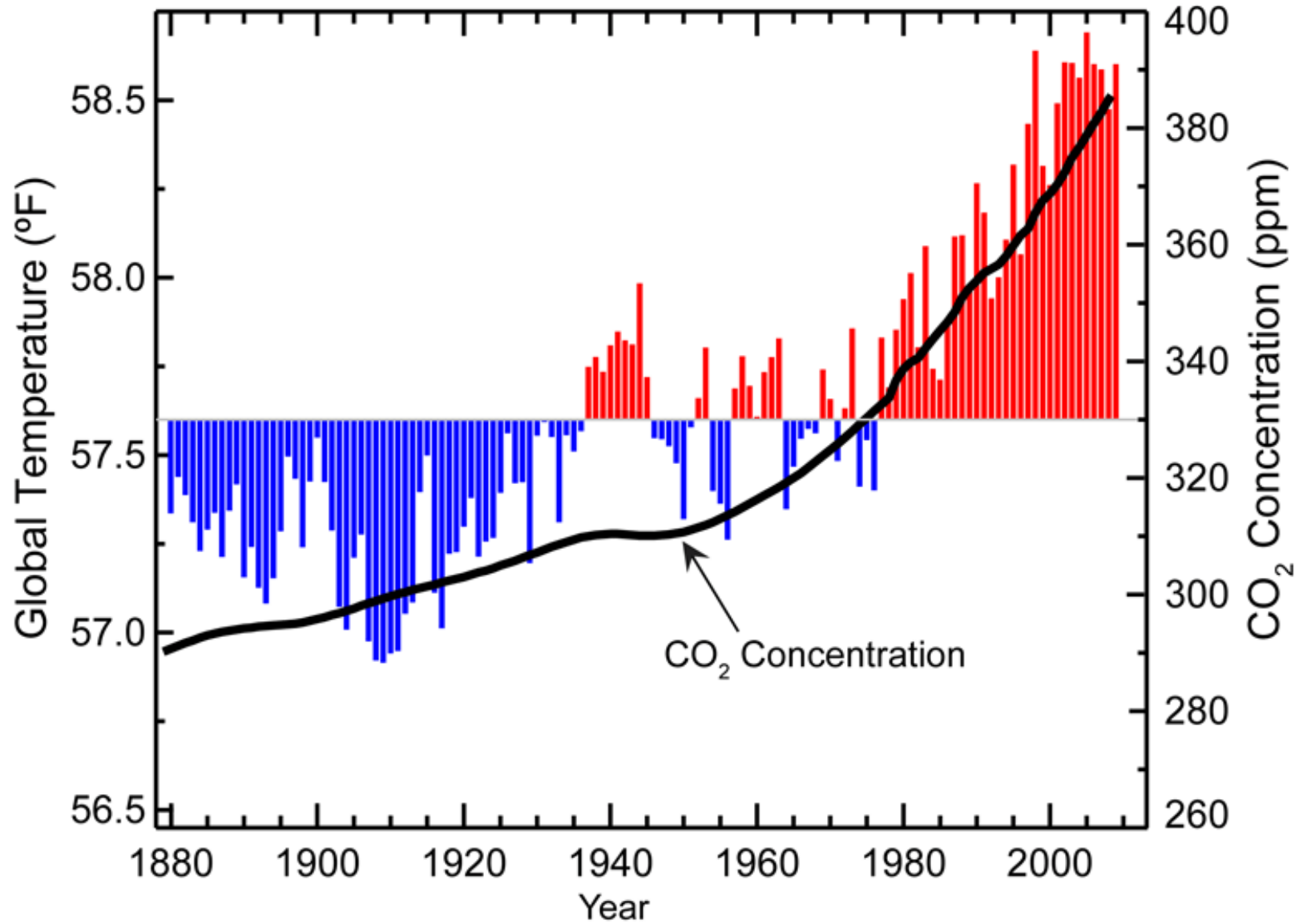
Energy from the sun warms Earth

Some escapes back into space

Some is held by greenhouse gases in the atmosphere

Earth is about 60°F.
Without the atmosphere it would be 0°F.

Global Temperature and Carbon Dioxide



Source: NOAA



Climate Action & Adaptation Plan Objective

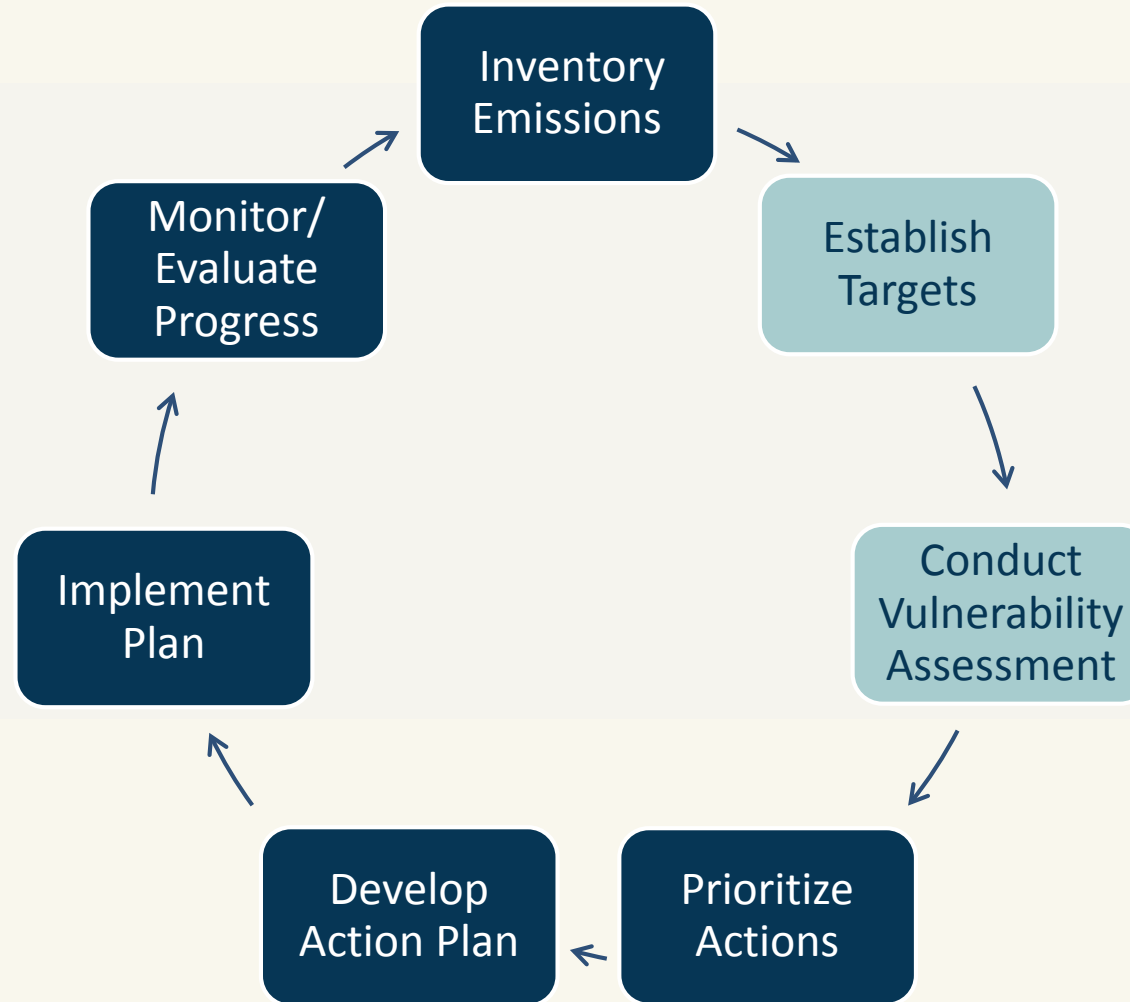
Identify pragmatic, fiscally responsible actions for local municipalities to consider in order to:

- **mitigate** the region's contribution to greenhouse gas (GHG) emissions and
- **adapt** to changing climate conditions.



Climate Action and Adaptation Plan Process

- Collaboration efforts
- Prioritization
- Financial resources
- Local and Regional Action



- Identify current sustainability practices
- Research best practices
- Stakeholder engagement
- Public Outreach

5 Basic Emission Generating Activities

Use of electricity by the Community

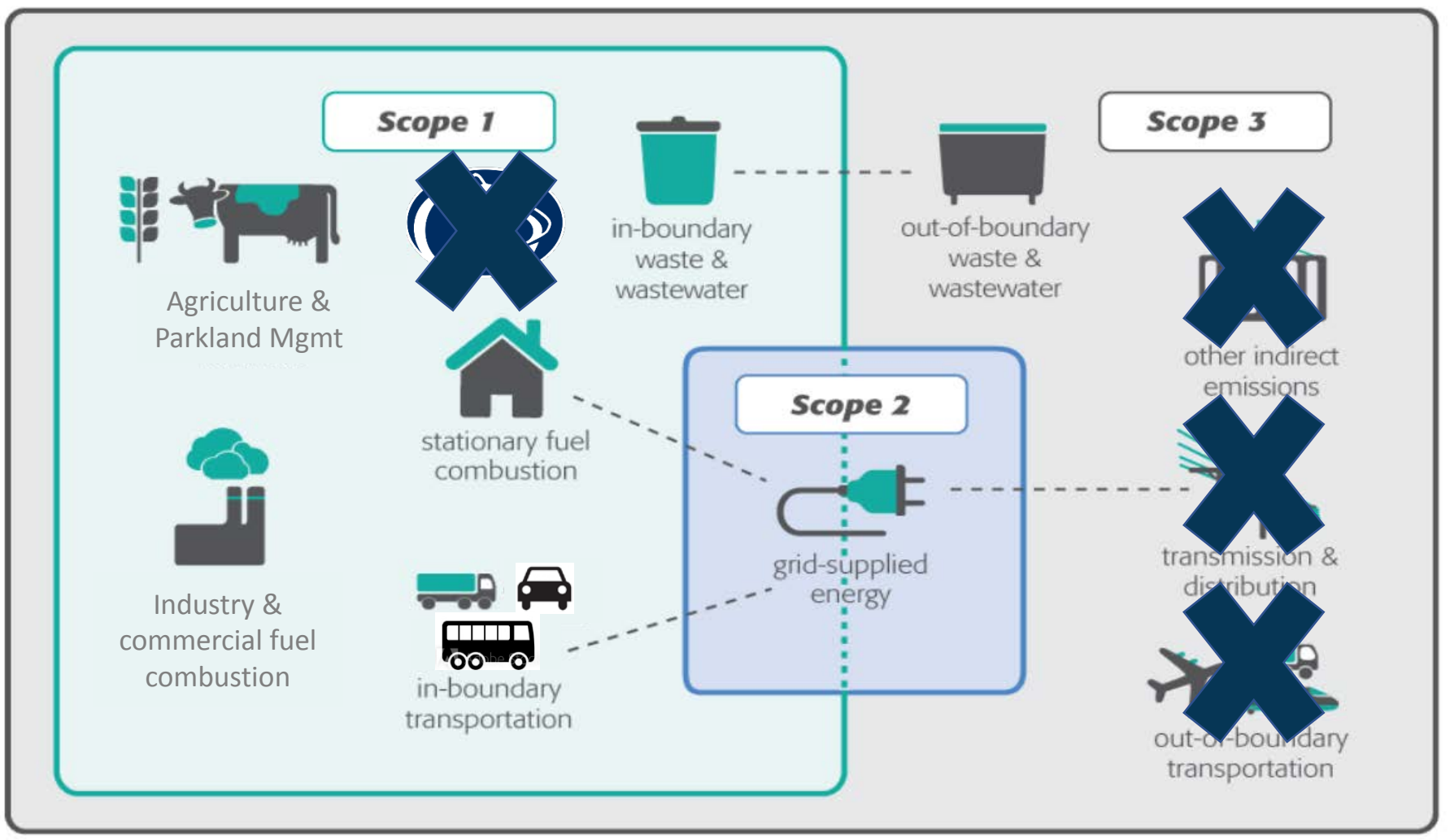
Use of fuel in Residential and Commercial Stationary Combustion Equipment

On-Road Passenger and Freight Motor Vehicle Travel

Use of Energy in Potable Water and Wastewater Treatment and Distribution

Generation of Solid Waste

What GHG emissions are measured?





CENTRE REGION'S EMISSIONS PROFILE

Total 2016 Emissions
824,209 MT CO₂e

100%



2% Water & Wastewater
5% Agriculture & Parkland
6% Solid Waste

20%
Transportation &
Mobile Sources

32%
Commercial Energy

35%
Residential Energy

What does 824,209 MT CO₂e mean?

2,045,183,623

Miles driven by an average passenger vehicle

0.212

Coal-fired power plants in one year

1,076,379

Acres of U.S. forests in one year

www.crcog.net/climate

GHG Inventory

Centre Region Council of Governments
2016 Community Wide
GHG Inventory and Methodology Report

Produced by Centre Regional Planning Agency
With Assistance From PA Department of Environmental Protection and
ECLER - Local Governments for Sustainability USA
March 31, 2020

CRPA
Centre Regional
Planning Agency

Centre Region Council of Governments
2016 Community Wide GHG Inventory
and Methodology Report
Executive Summary

CRPA
Centre Regional
Planning Agency

Overview

Based on a changing climate and its impacts on the region, the Centre Region Council of Governments intends to develop a climate action and adaptation plan which identifies pragmatic, fiscally responsible actions to consider in order to

- 1) mitigate the region's contribution to greenhouse gas (GHG) emissions and
- 2) adapt to changing climate conditions.

The first step of managing emissions is to complete a greenhouse gas emissions inventory which determines baseline emissions levels and the sources and activities generating emissions in the community. Centre Region COG will rely on the GHG emissions inventory to set emissions reduction targets, identify tangible actions aimed at reducing greenhouse gas emissions, and measure progress toward achieving those targets.

The impacts of a changing climate will have effects on infrastructure, the economy, public health and quality of life for Centre Region residents. Since the beginning of the 20th century, temperatures in Pennsylvania have risen around 2°F and temperatures in the 2000s have been higher than any other historical period (Figure 1).

Figure 1: Observed & Projected Temperatures in Pennsylvania

The greenhouse gas GHG emissions inventory calculates the GHG emissions for the Centre Region community in 2016 were 824,209 metric tons of carbon dioxide equivalent (MTCO₂e). The inventory estimates the greenhouse gas emissions resulting from activities and sources in 2016 for the Centre Region COG community, which includes College, Ferguson, Halfmoon, Harris and Patton Townships and State College Borough. The 824,209 MTCO₂e equates to an annual average carbon footprint of 10.21 MTCO₂e per person.

3.31.20

CENTRE REGION COMMUNITY GREENHOUSE GAS EMISSIONS INVENTORY
COLLEGE, FERGUSON, HALFMOON, HARRIS, PATTON, STATE COLLEGE BOROUGHS

Greenhouse Gas Emissions Profile

824,209 metric tons CO₂e* emissions

Category	Percentage
Energy	67%
Transportation	20%
Solid Waste	6%
Agriculture	5%
Water	2%

Transportation Emissions Split

Category	Percentage
Passenger Vehicles	79%
Freight & Service Trucks	17%
Transit (CATA & other buses)	4%

Building Energy Emissions Split

Category	Percentage
Residential	52%
Commercial	48%

COMMUNITY CARBON FOOTPRINT

Our annual emissions of 824,209 MTCO₂e equates to a per person emission rate more than **2X** the global average:

- Annual average carbon footprint: **10.21 MT CO₂/person**
- Global average carbon footprint: **4.35 MT CO₂/person**

LEARN MORE
GHG Emissions Inventory: <https://bit.ly/2R1E0eL>

NEXT STEPS
Develop a climate action and adaptation plan

*Inventory was compiled with 2016 data. MTCO₂e: metric tons carbon dioxide equivalents - measurement used to compare the emissions from different greenhouse gases based upon their global warming potential (GWP).

Establishing Targets


Pennsylvania Goals: Reduce GHG emission from 2005 levels: 26% by 2025
80% by 2050

Ferguson Township passed a resolution to develop and implement a strategy achieve net zero GHG emissions as quickly as feasible, but no later than 2050. *(June 2017)*

Harris Township passed a resolution to achieve net zero greenhouse gas emissions as soon as practical. *(August 2017)*

State College Borough passed a resolution to achieve net zero GHG emissions and 100% renewable energy as quickly as feasible, but no later than 2050. *(June 2019)*

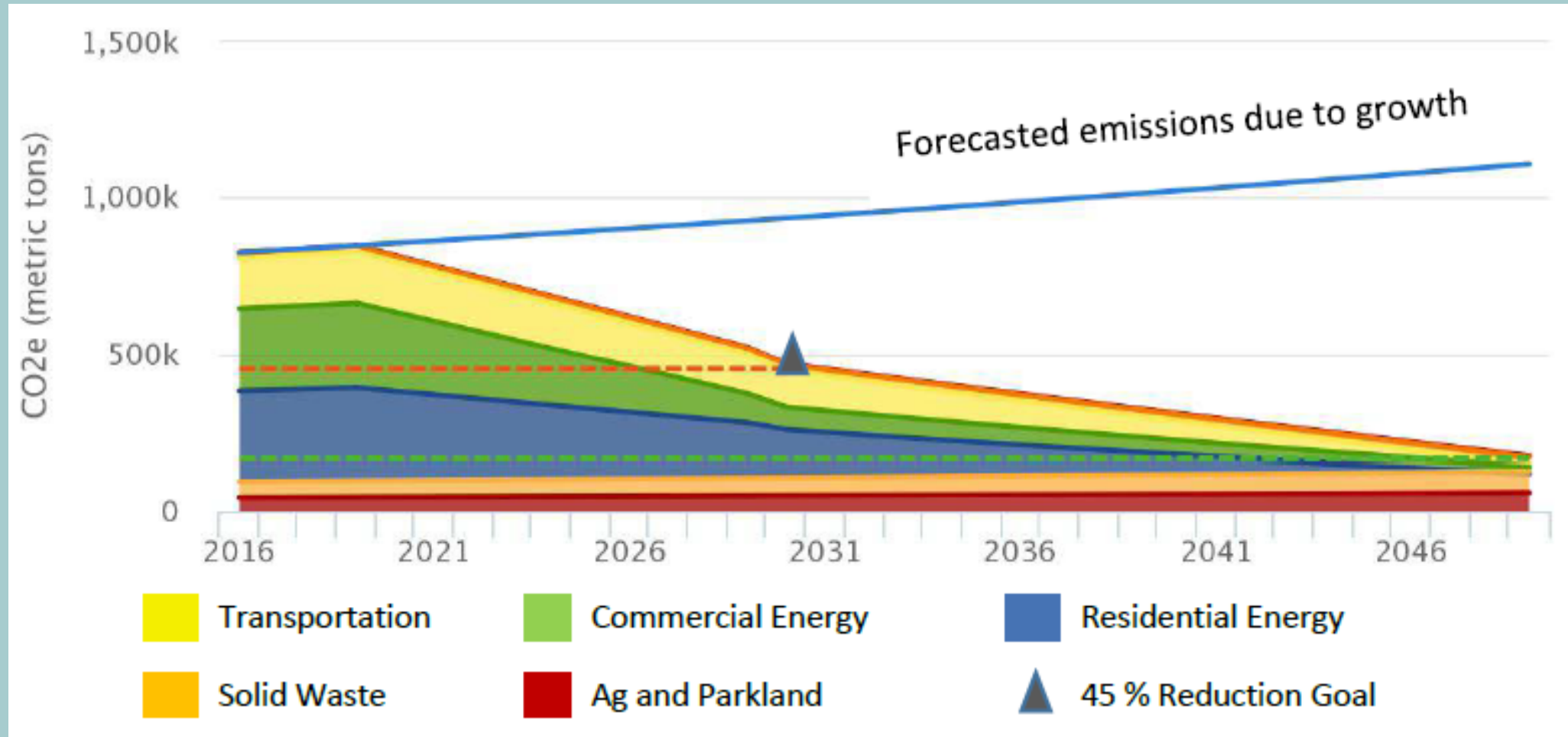




Recommended GHG emissions reduction targets

- 45% reduction in GHG emissions by 2030 based on 2010 levels
- 80% reduction in GHG emissions by 2050 based on 2010 levels
- Offset the remaining 20% of GHG emissions in 2050 with carbon offset projects to be carbon neutral in 2050

Projected GHG Emissions with High-Level Goals



Residential Energy Goals:

- Reduce energy usage 30% energy in electricity and natural gas
- Replace grid electricity with 10% zero carbon generation

Commercial Energy Goals:

- Reduce energy usage 25% energy in electricity and natural gas
- Replace grid electricity with 5% zero carbon generation

**Projected
High-Level
Goals
to
45% GHG
Reduction**

Transportation Goals:



- Reduce vehicle miles traveled by doubling walk, cycle, carpool and transit modes
- Replace 25% of the current vehicles with electric vehicles

Other Goals:



- Reduce waste sent to the landfill by 5 – 20%
- Increase the “carbon farming” practices in the region
- Align and organize partnerships



**Projected
High-Level
Goals
to
45% GHG
Reduction**



Goals, Objectives and Strategies

A1. Identify and develop partnerships with governmental entities, businesses, community organizations, schools and residents to encourage local action across the community.

A2. Develop equitable solutions

T1. Encourage driving cleaner, more efficient vehicles and traffic operations

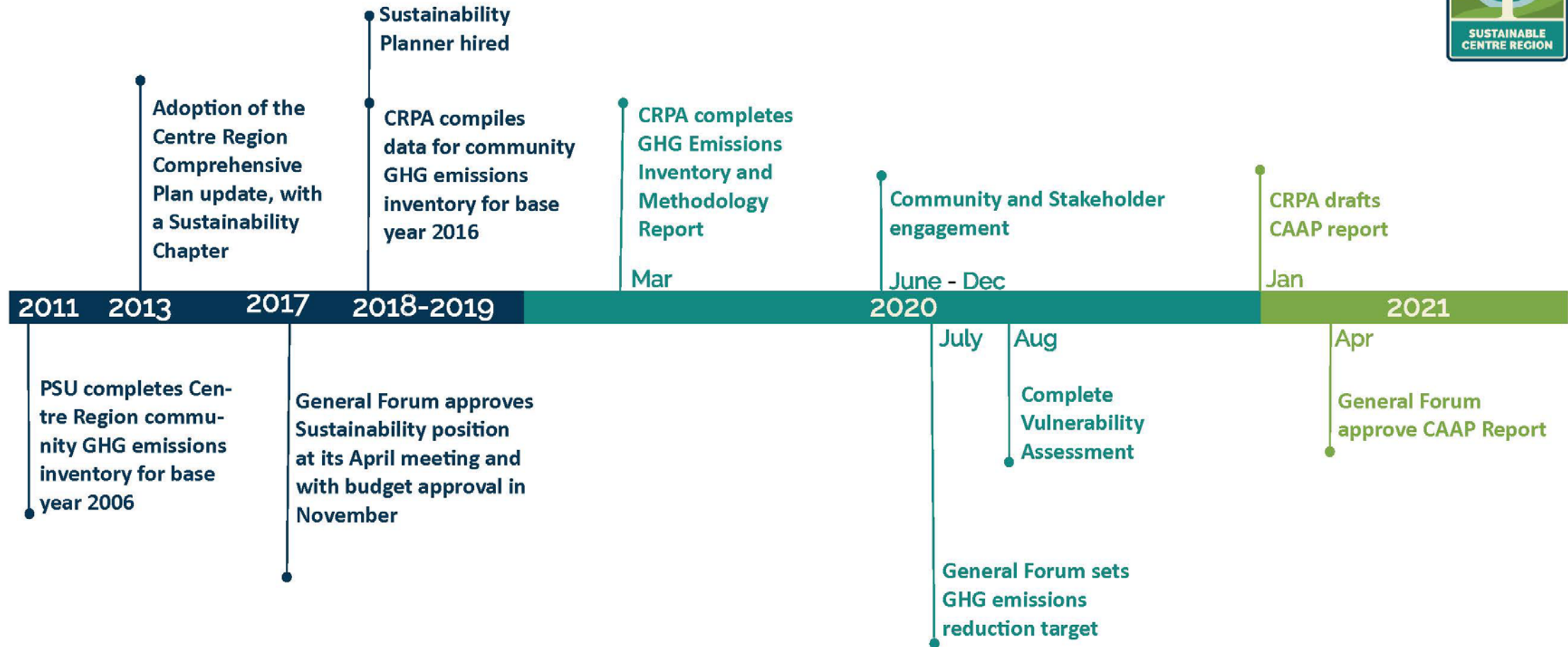
T2. Improve and build resilience into our transportation systems

E1. Encourage increased building efficiency and conservation

E2. Maximize the efficiency of municipal facilities, equipment and operations



Climate Action and Adaptation Plan

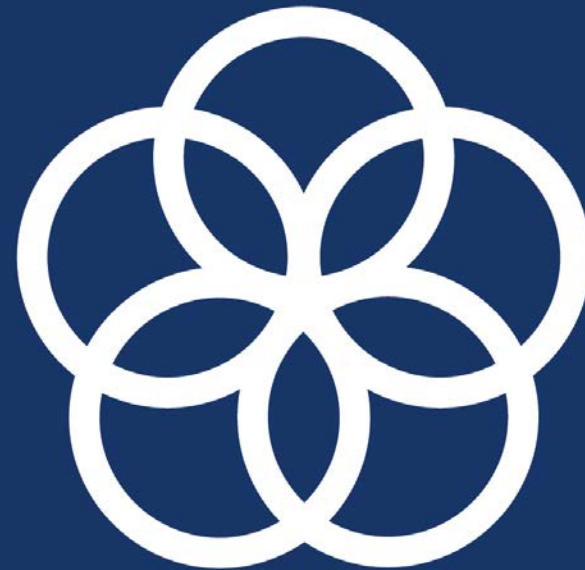


PROJECT TIMELINE

COG Public Services and Environmental Committee reviews at these milestones



17 PARTNERSHIPS FOR THE GOALS





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