

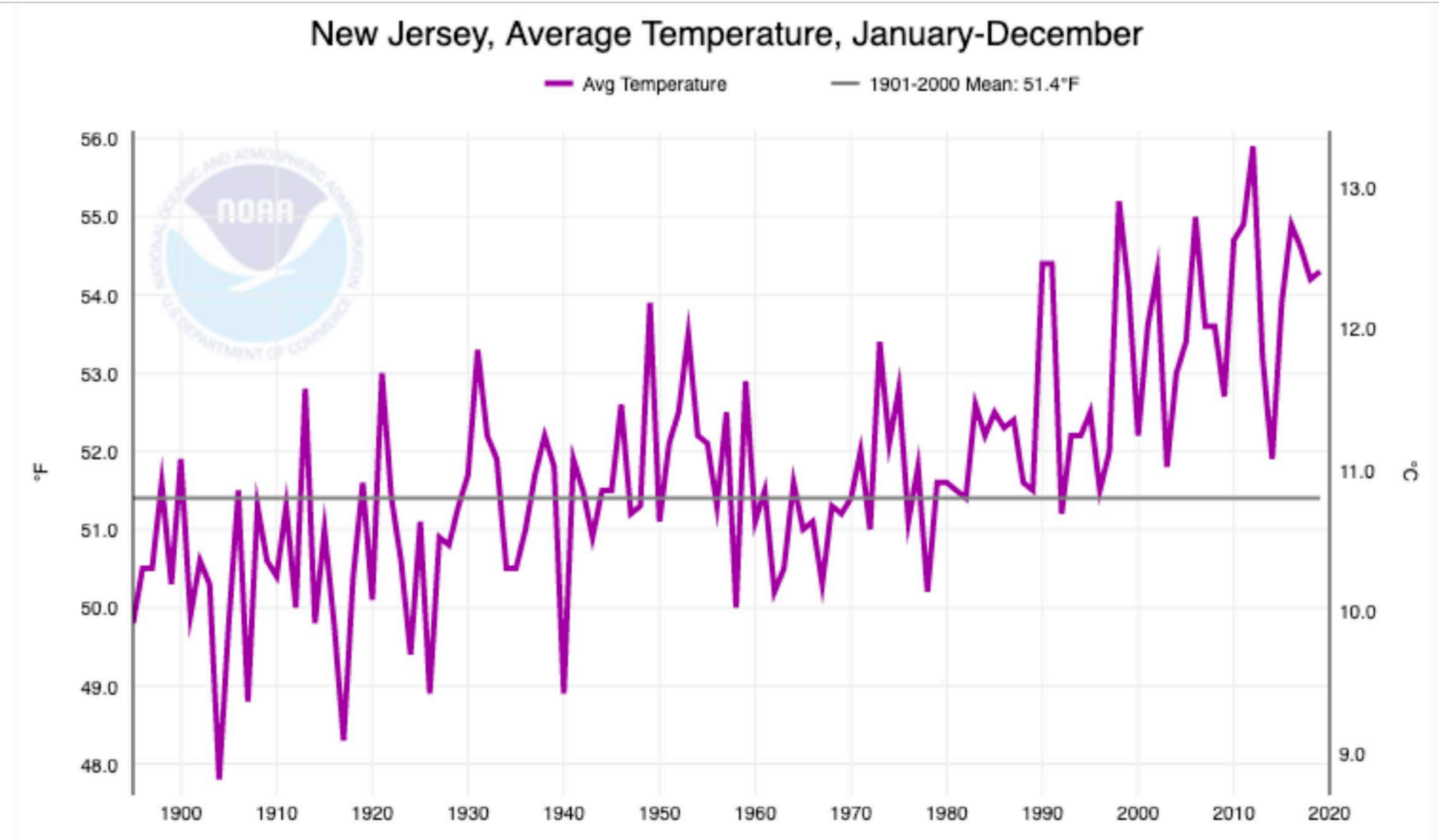
# **Identifying Pathways toward a Carbon Neutral, Climate Resilient Rutgers**

**Prof. Robert Kopp and Prof. Kevin Lyons, co-chairs**

**President's Task Force on Carbon Neutrality and Climate Resilience**

**Climate change  
isn't an issue for the  
distant future – it's  
already affecting  
people throughout  
the world, including  
here in New Jersey.**

**Climate change isn't an issue for the distant future – it's already affecting people throughout the world, including here in New Jersey.**



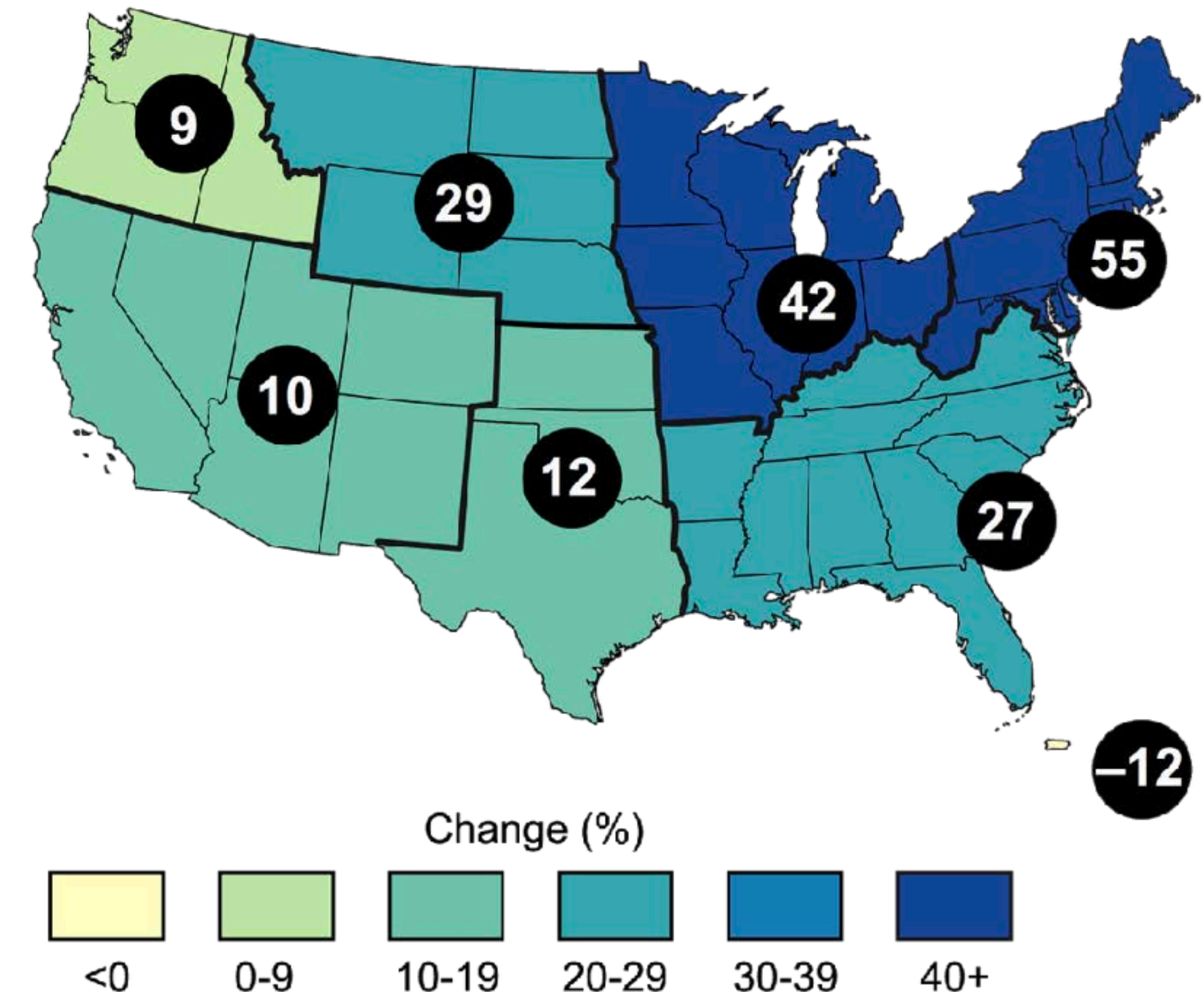
New Jersey has warmed by about 4°F since the late nineteenth century.



**Climate change isn't an issue for the distant future – it's already affecting people throughout the world, including here in New Jersey.**

Increase in precipitation falling in wettest one percent of days, 1958-2016

(source: National Climate Assessment, 2017)



Rainfall is become more intense across the contiguous United States.



**Climate change isn't an issue for the distant future – it's already affecting people throughout the world, including here in New Jersey.**



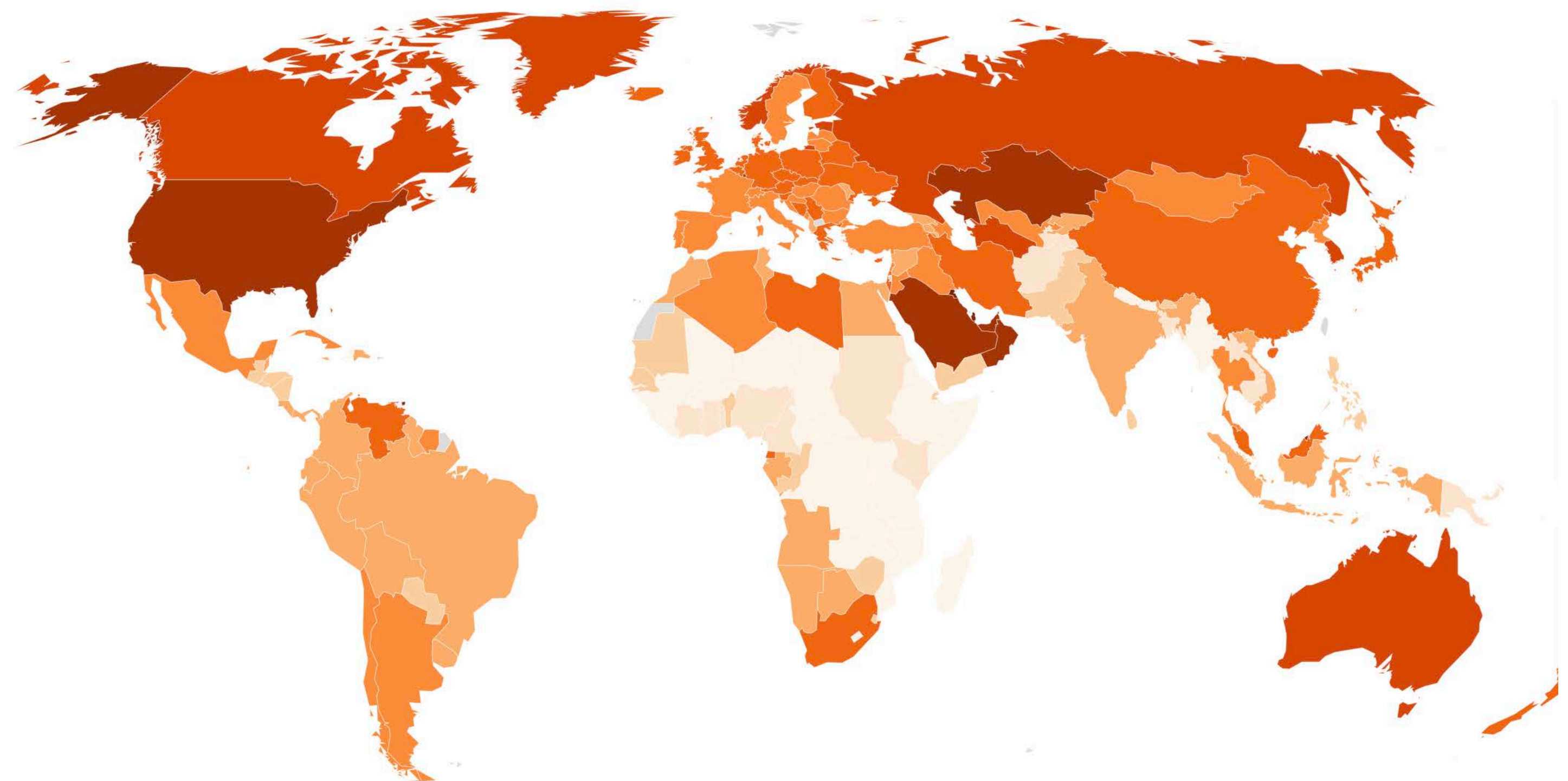
Sea-level rise associated with global warming is now responsible for about 70% of tidal floods along the Shore.

**To stabilize global climate, we net to bring net human-caused carbon dioxide emissions to zero, and sharply reduce emissions of other greenhouse gases.**

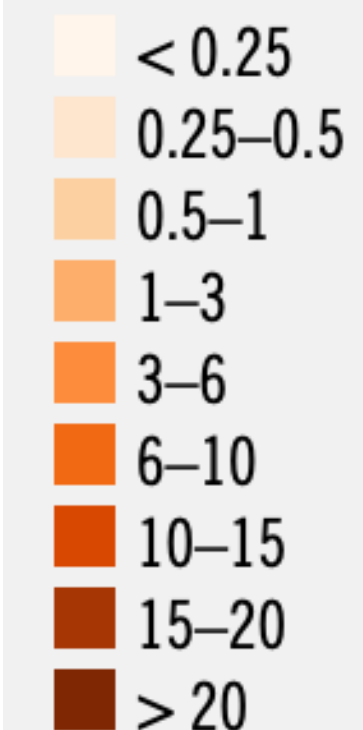


**To stabilize global climate, we net to bring net human-caused carbon dioxide emissions to zero, and sharply reduce emissions of other greenhouse gases.**

This is a global challenge.



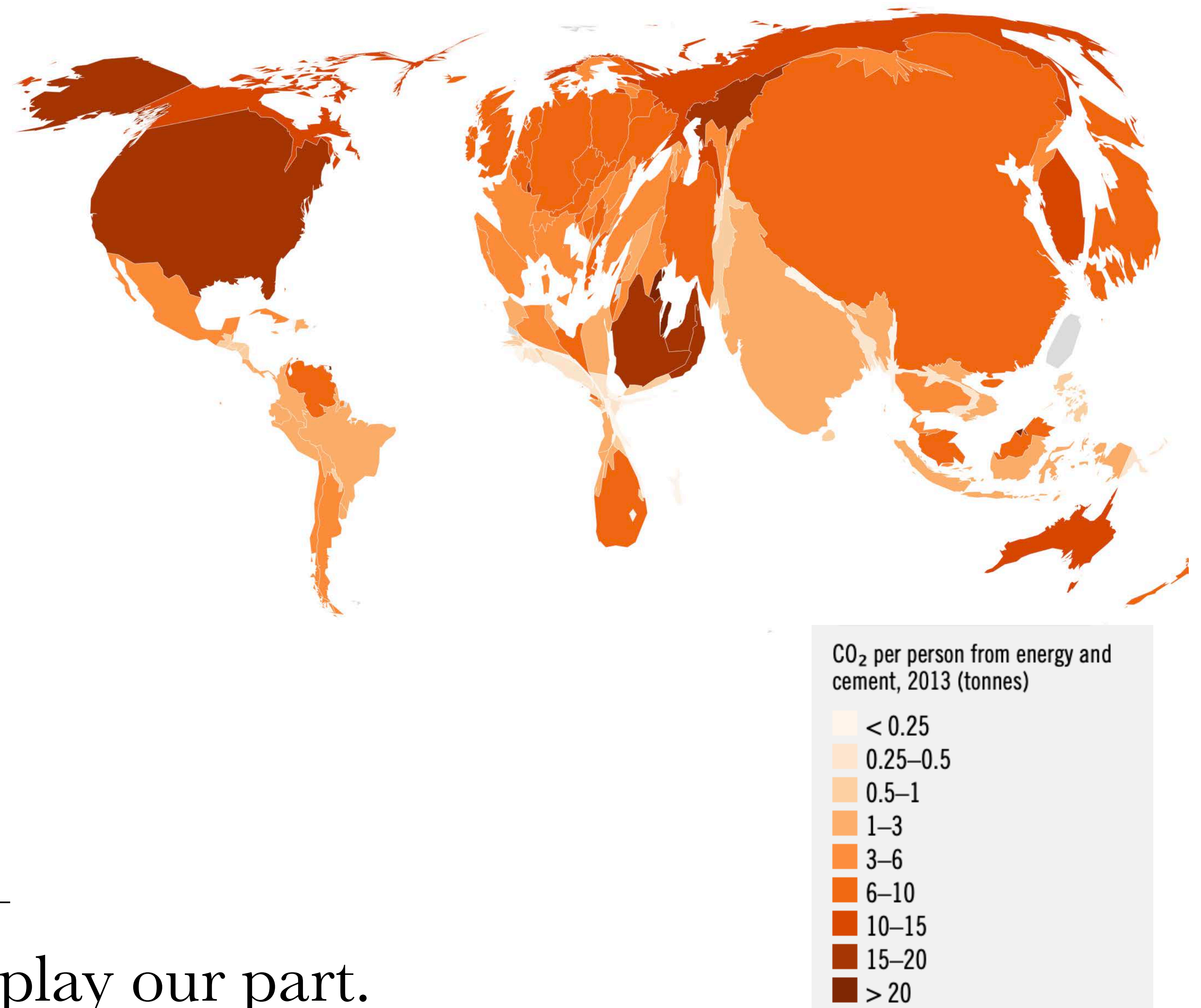
CO<sub>2</sub> per person from energy and cement, 2013 (tonnes)





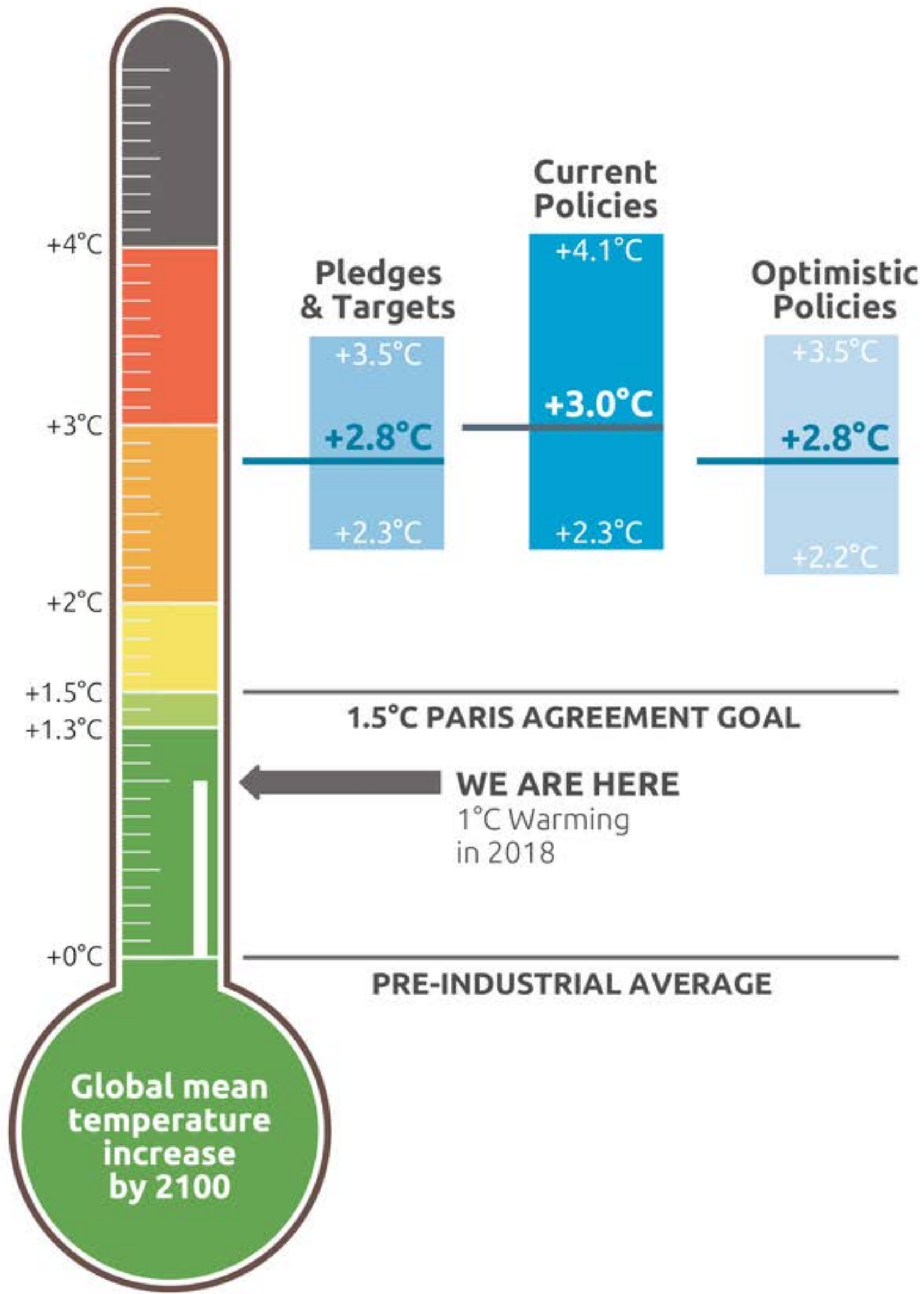
**To stabilize global climate, we net to bring net human-caused carbon dioxide emissions to zero, and sharply reduce emissions of other greenhouse gases.**

This is a global challenge —  
and we at Rutgers need to play our part.





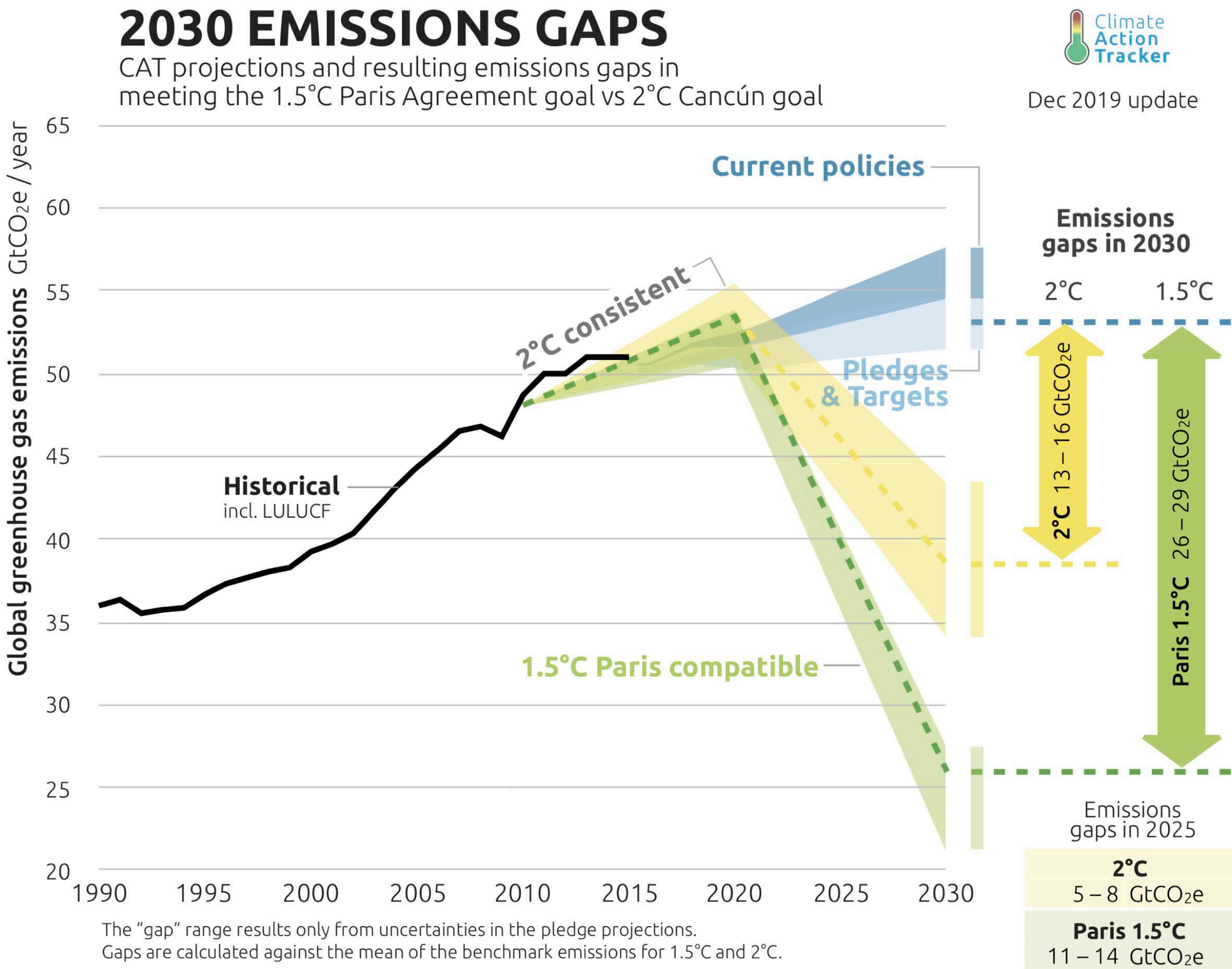
The faster  
humanity gets our  
carbon dioxide  
emissions to zero,  
the less the climate  
change we have to  
deal with.



CAT warming  
projections  
**Global temperature  
increase by 2100**

December 2019 Update

The faster  
humanity gets our  
carbon dioxide  
emissions to zero,  
the less the climate  
change we have to  
deal with.





**Even in a world  
with a stabilized  
climate, we still  
have to manage the  
risks we don't  
avoid.**



Woodbridge, NJ  
Photo credit: Grant Delin, Scientific American



# **Rutgers is already a leader in climate change research & engagement**

- The Rutgers Institute of Earth, Ocean, and Atmospheric Sciences, the Rutgers Climate Institute, and the Rutgers Energy Institute bring together over 200 faculty working to understand our planet and how to live on it in a more sustainable and resilient manner.
- Among top four Big 10 schools in Earth, ocean, and atmospheric science research
- Faculty active in efforts like UN Intergovernmental Panel on Climate Change, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, and the National Climate Assessment
- Pioneering efforts in community-engaged climate research and engagement, through initiatives like New Jersey Climate Change Alliance, Getting to Resilience, and the Coastal Climate Risk & Resilience graduate program
- Host of the new New Jersey Climate Change Resource Center
- New Jersey Agricultural Experiment Station working to promote climate-smart agriculture



# Rutgers has already taken actions to reduce its emissions

- 10.2MW of on-campus solar capacity
- New facilities are built to LEED Silver or Gold standard
- Sustainability is key objective of 2015 Master Plan
- Working with NJDOT and Middlesex County on bike paths and bike lanes
- 25% discounted NJ Transit monthly passes for Rutgers students since 2004
- Energy efficiency improvements to fleet vehicles and Busch, Newark cogeneration plants
- Tree replantings and stormwater management wetlands





# Rutgers faces distinctive challenges and opportunities

- Nearly 100,000 students, faculty, and staff – the size of New Jersey’s 7th largest city, spread out over nearly 10 square miles across the state
- More than 960 owned structures, 29 million square feet floor space, 42% over 50 years old, as well as 375 leased facilities
- 315 miles of underground water and sewer lines
- One of the largest dining service operations in higher education
- One of the largest residence hall systems in the country (16,000 beds)
- One of the largest campus bus systems in the US; 2nd largest transit system in New Jersey
- \$4.4 billion operational budget
  - \$245 million spent on supplies, \$123 million on plant operations, maintenance
- \$5.1 billion deferred maintenance liability



# Big 10 Schools with Climate Action Plans

University	Plan Date	Neutrality Target	Actual Reduction
Michigan State University	2012	-	28% from 2010-2016
Northwestern University	2017	2050	
Ohio State University	2011	2050	6% from 2006-2018
Pennsylvania State University	2002	-	32% from 2005-2019
University of Illinois at Urbana-Champaign*	2010, 2015	2050	32% from 2007-2018
University of Maryland-College Park	2009, 2017	2050	28% from 2005-2016
University of Michigan	2015, ongoing	Under evaluation	8% scope 1 & 2 from 2015-2018
University of Minnesota-Twin Cities	2010	2050	37% from 2008-2018

# Task Force Goals

Develop Rutgers' strategies for

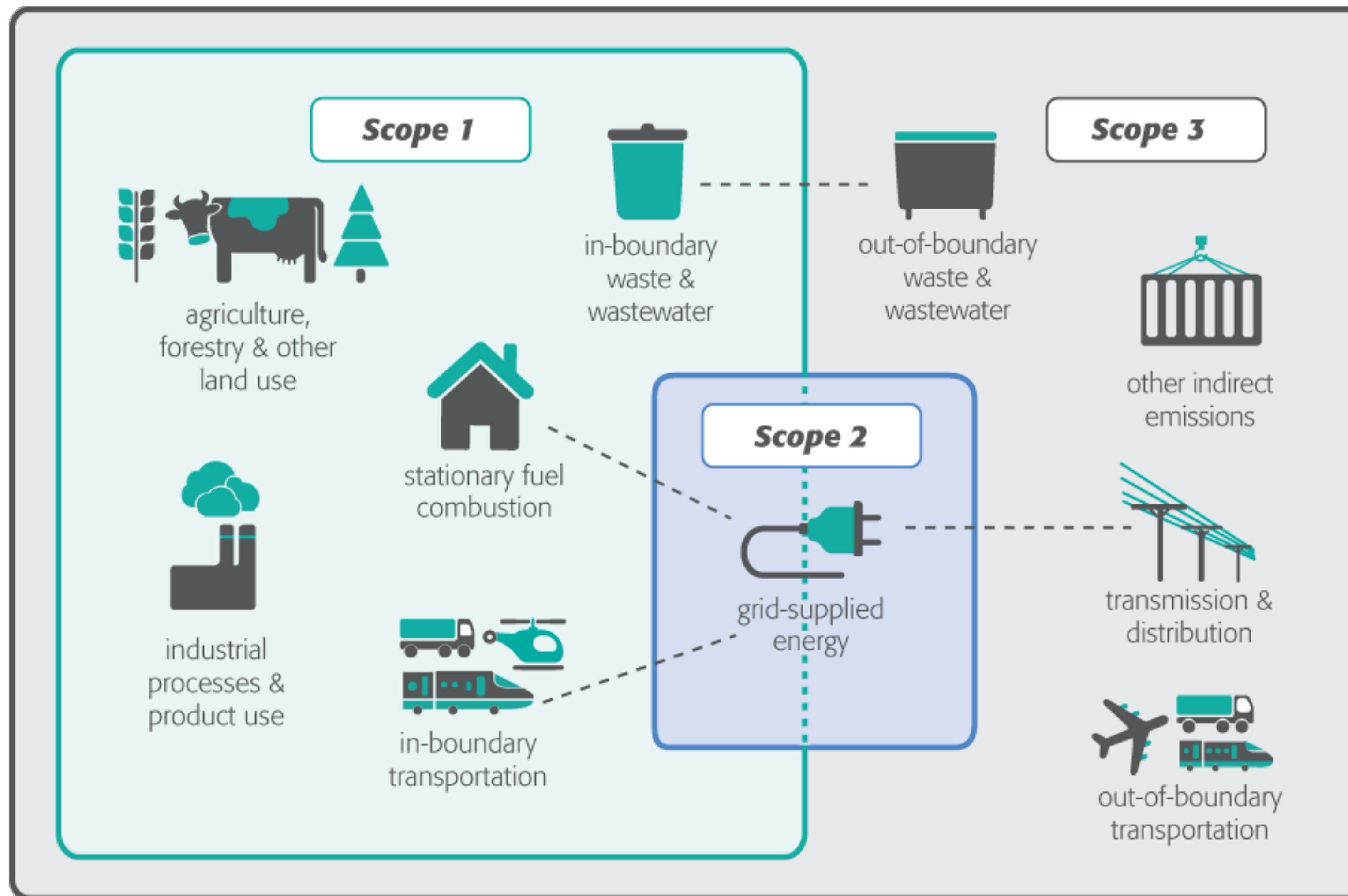
1. *Carbon Neutrality*: contributing to achieving global net-zero carbon dioxide emissions
2. *Climate Resilience*: Enhancing the capacity of the university and the State of New Jersey to manage the risks of a changing climate



# Scope of Work

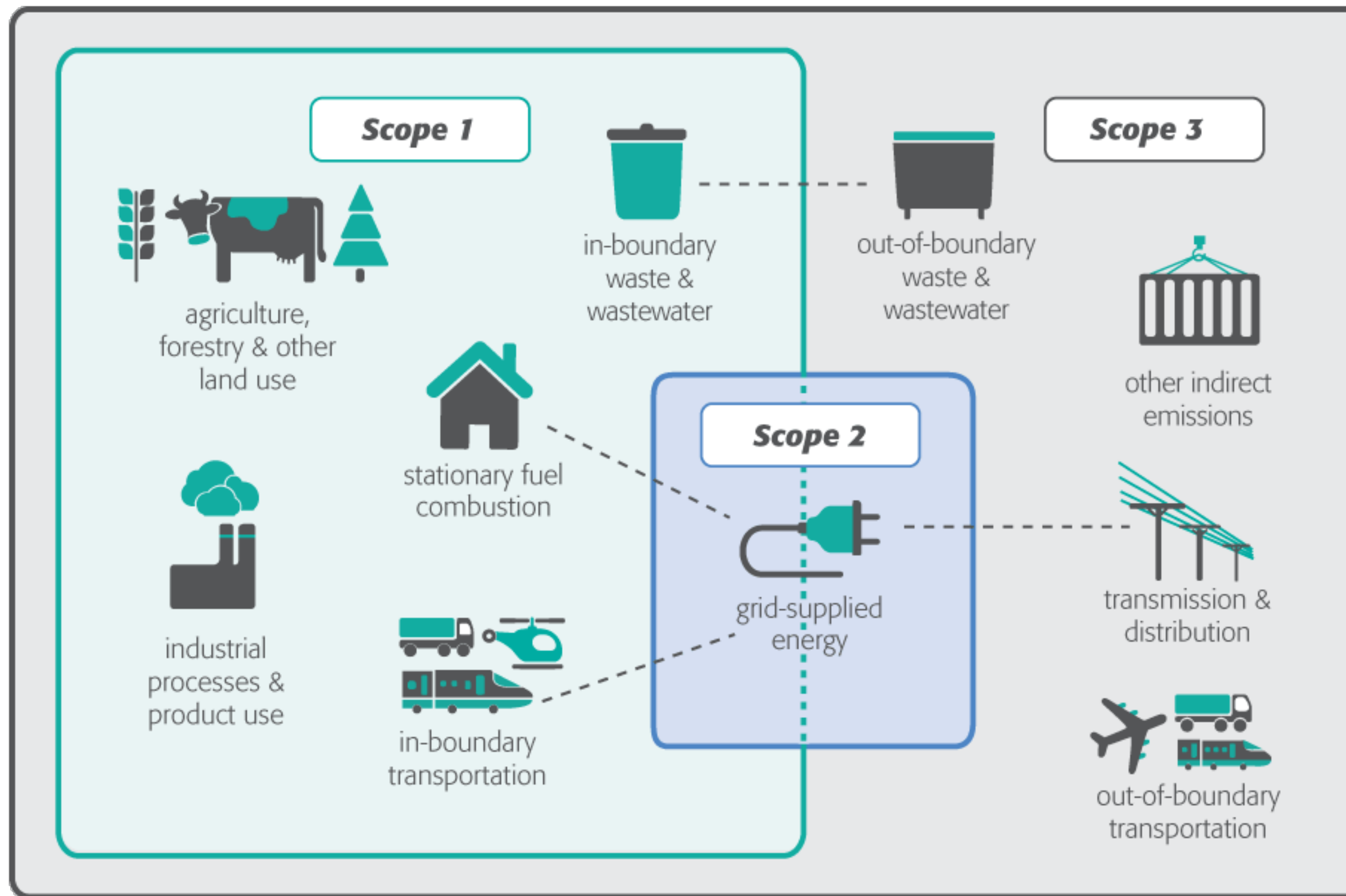
- Both climate change mitigation and climate change adaptation
- Operations, teaching, research, campus culture, climate-positive economic development
- Topics including:
  - Compelling and impactful approaches Rutgers could pursue, along with their associated emissions reductions, resilience improvements, financial costs and savings, and co-benefits
  - Implementation pathways, timescales, and progress metrics
  - Roles of different parts of the University, including approaches to overcoming institutional, organizational and cultural challenges
  - Strategies for ensuring participation and accountability of the full university community and, as appropriate, external stakeholders
  - Nexus to catalyzing broader, climate-positive economic development in New Jersey and incorporating equity considerations
  - Key unknowns and gaps that require more analysis

# Emissions come from a variety of sources





# Emissions come from a variety of sources



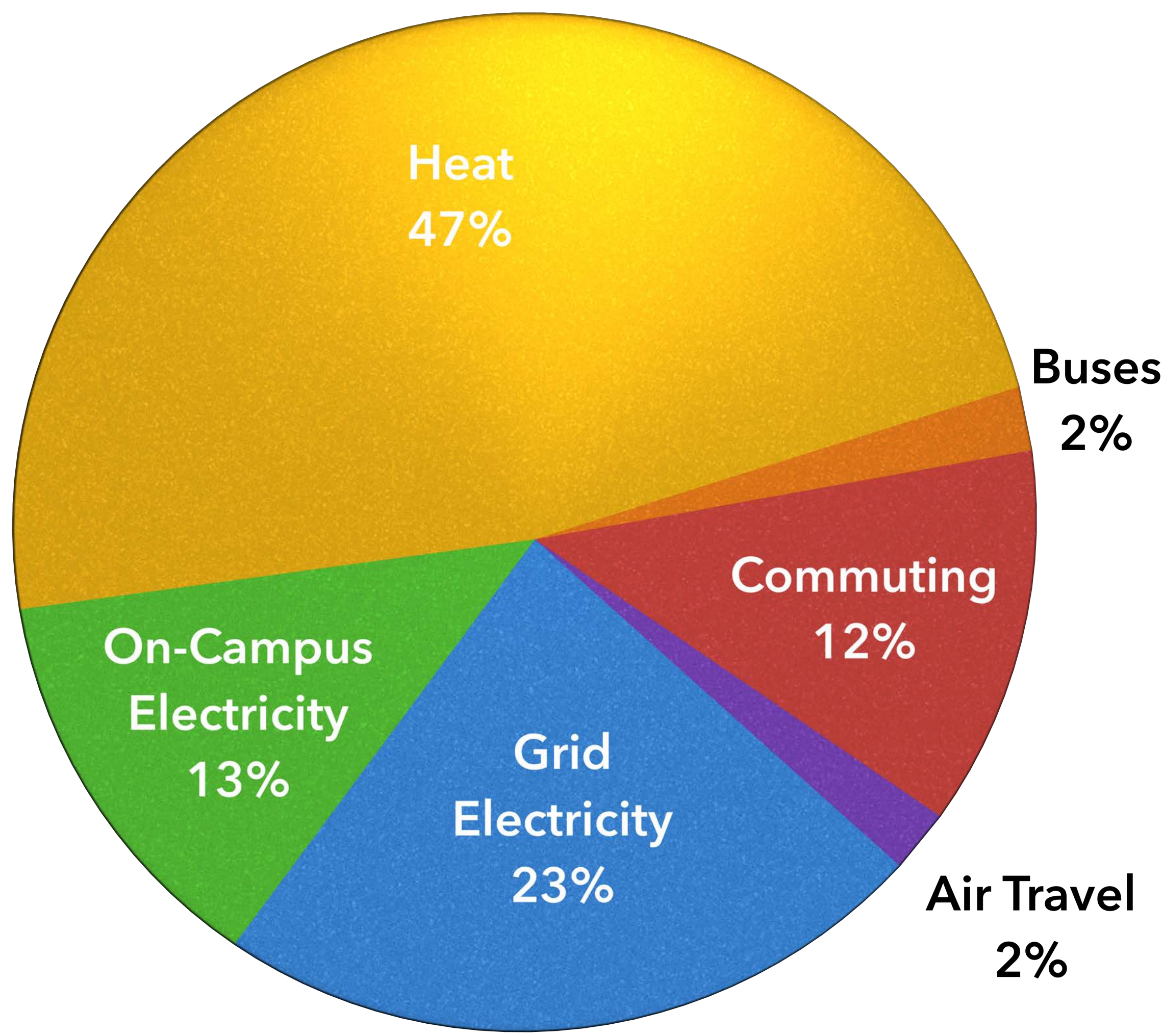
**"Scope 4"**

broader economic  
impacts



# Where do Rutgers' greenhouse gas emissions come from?

Case Study: Rutgers-New Brunswick, FY 2019, preliminary analysis with travel approximations



**Scope 1 (on-campus electricity, heat, transit):** 151 thousand tonnes

**Scope 2 (grid electricity):** 57 thousand tonnes

**Scope 3 indirect travel emissions:** roughly 35 thousand tonnes

**Scope 3 supply chain emissions:** currently unquantified

*By comparison: New Jersey in 2018 emitted 97 million tonnes, so Rutgers-New Brunswick's scope 1 and 2 emissions are about 1/500th of statewide emissions.*



# Timeline of Climate Action Planning process

- **September 2019:** President Barchi inaugurated faculty task force
- **October 2019:** first faculty task force meeting
- **January 2020:** release of pre-planning report, transition to planning phase
- **February 2020:** town halls, start of working group work
- **May 2020:** interim report release
- **June-Sept 2020:** continue working group work
- **Oct-Dec 2020:** report integration and scenario development, additional town halls
- **Jan-Feb 2021:** public draft of final report
- **Mar-May 2021:** report revision
- **June 2021:** public release of final report



# Plenary Discussion



## Working Groups (Tables)

- 1. Energy and Buildings** (Rachael Shwom and Mike Kornitas, co-chairs)
- 2. Transportation** (Bob Noland and Jack Molenaar, co-chairs)
- 3. Food System** (Xenia Morin and Joe Charette, co-chairs)
- 4. Supply Chain and Waste Management** (Kevin Lyons and Nimish Patel, co-chairs)
- 5. Land Use and Offsets** (Rick Lathrop and David Schulz, co-chairs)
- 6. Climate Preparedness** (Robin Leichenko and Steven Keleman, co-chairs)
- 7. Climate-Positive Economic Development** (Carl Van Horn and Peggy Brennan, co-chairs)

## Supplemental Questions (Easels)

- 1. Big Ideas**
- 2. Things to do in the next six months**
- 3. Things I want to tell President-Designate Holloway**
- 4. Things every member of the Rutgers community should do**



# Climate Task Force Membership

- **Robert Kopp**, Co-Chair, SAS, R-NB
- **Kevin Lyons**, Co-Chair, RBS, R-N/R-NB
- **Clint Andrews**, BSPPP, R-NB
- **Elizabeth Demaray**, CCAS, R-C
- **Panos Georgopoulos**, SPH, RBHS
- **Rick Lathrop**, SEBS, R-NB
- **Robin Leichenko**, SAS, R-NB
- **Xenia Morin**, SEBS, R-NB
- **Robert Noland**, BSPPP, R-NB
- **Ashaki Rouff**, SASN, R-N
- **Rachael Shwom**, SEBS, R-NB
- **Carl Van Horn**, BSPPP, R-NB
- **Roger Wang**, SOE, R-NB
- **Brian Ballantine**, Chief of Staff, Office of the President
- **Peggy Brennan**, Associate Director and Executive Director for Economic Development and Innovation, NJAES, R-NB
- **Joe Charette**, Executive Director, Rutgers Dining Services, R-NB
- **Jeanne Herb**, BSPPP and Co-Director, New Jersey Climate Change Resource Center, R-NB
- **Marjorie Kaplan**, Associate Director, Rutgers Climate Institute and Co-Director, New Jersey Climate Change Resource Center, R-NB
- **Steve Keleman**, Director of the Office of Emergency Management
- **Mike Kornitas**, Director of Sustainability and Energy, Facilities
- **Jack Molenaar**, Senior Director of Transportation Services
- **Nimish Patel**, Chief Procurement Officer
- **David Schulz**, Vice President and University Architect
- Student members being identified through Chancellors

# Task Force Administrative Director



***Prof. Angie Oberg, MLA, PhD***

Assistant Teaching Professor, Department of Human Ecology

Email: [climatetaskforce@rutgers.edu](mailto:climatetaskforce@rutgers.edu)



# Upcoming Town Halls

- **February 12, 4-6pm** – Cook Student Center Multipurpose Room ABC, New Brunswick
- **February 17, 4-6pm** – Busch Student Center Multipurpose Room, Piscataway
- **February 18, 4-6pm** – Camden Campus Center MPR, Camden
- **February 25, 4-6pm** – Paul Robeson Campus Center Essex Room, Newark

Watch our website: [climatetaskforce.rutgers.edu](https://climatetaskforce.rutgers.edu)