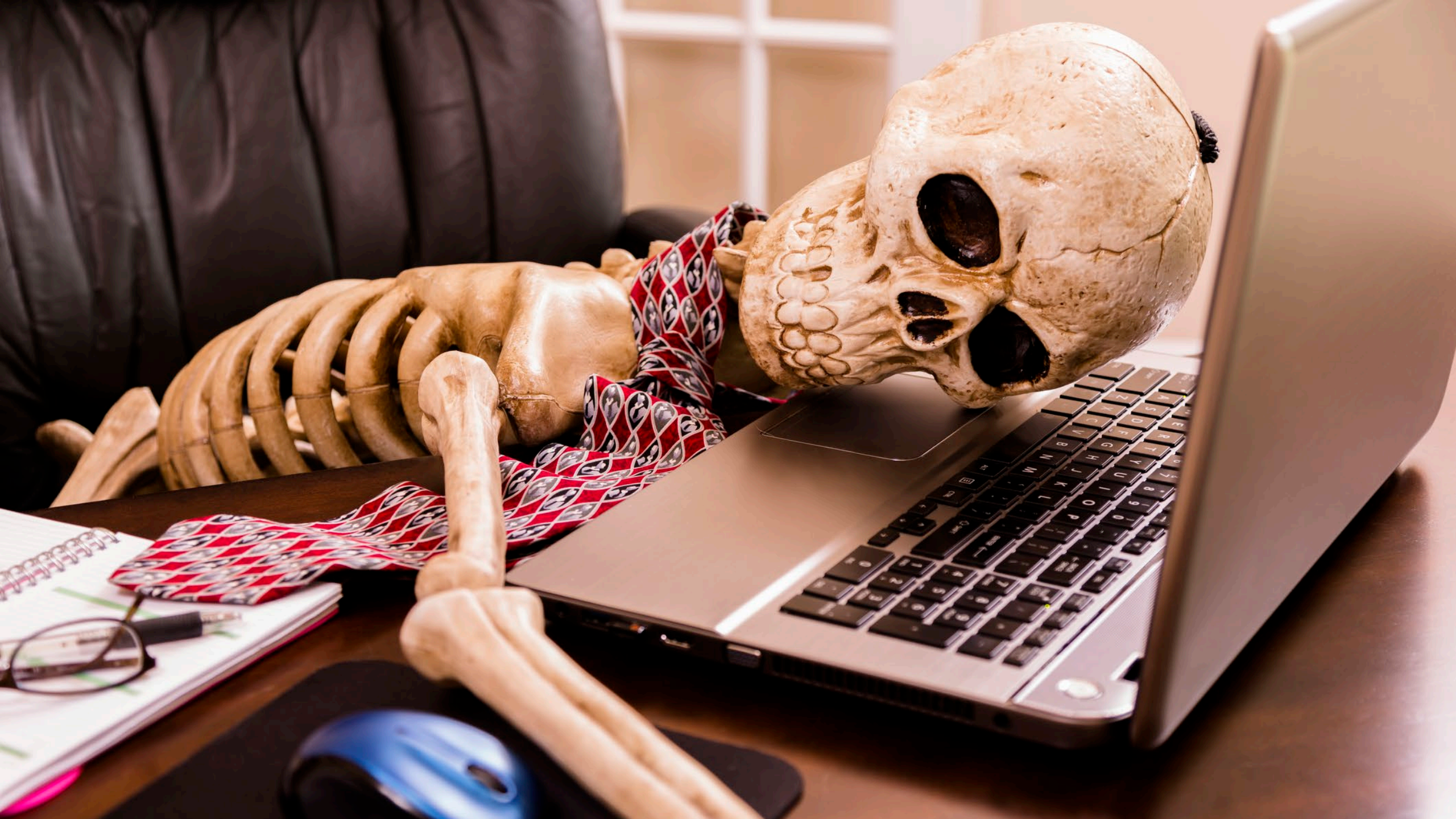
University at Buffalo The State University of New York

THIS IS WHERE CHANGE BEGINS

Why Integrating Climate Action Into Our Business Work is Key for Higher Education & How We Can Do It

UB Business Day
October 24, 2024




PROTECT
OUR
PLANET

Agenda

PRELUDE…you are in a special place

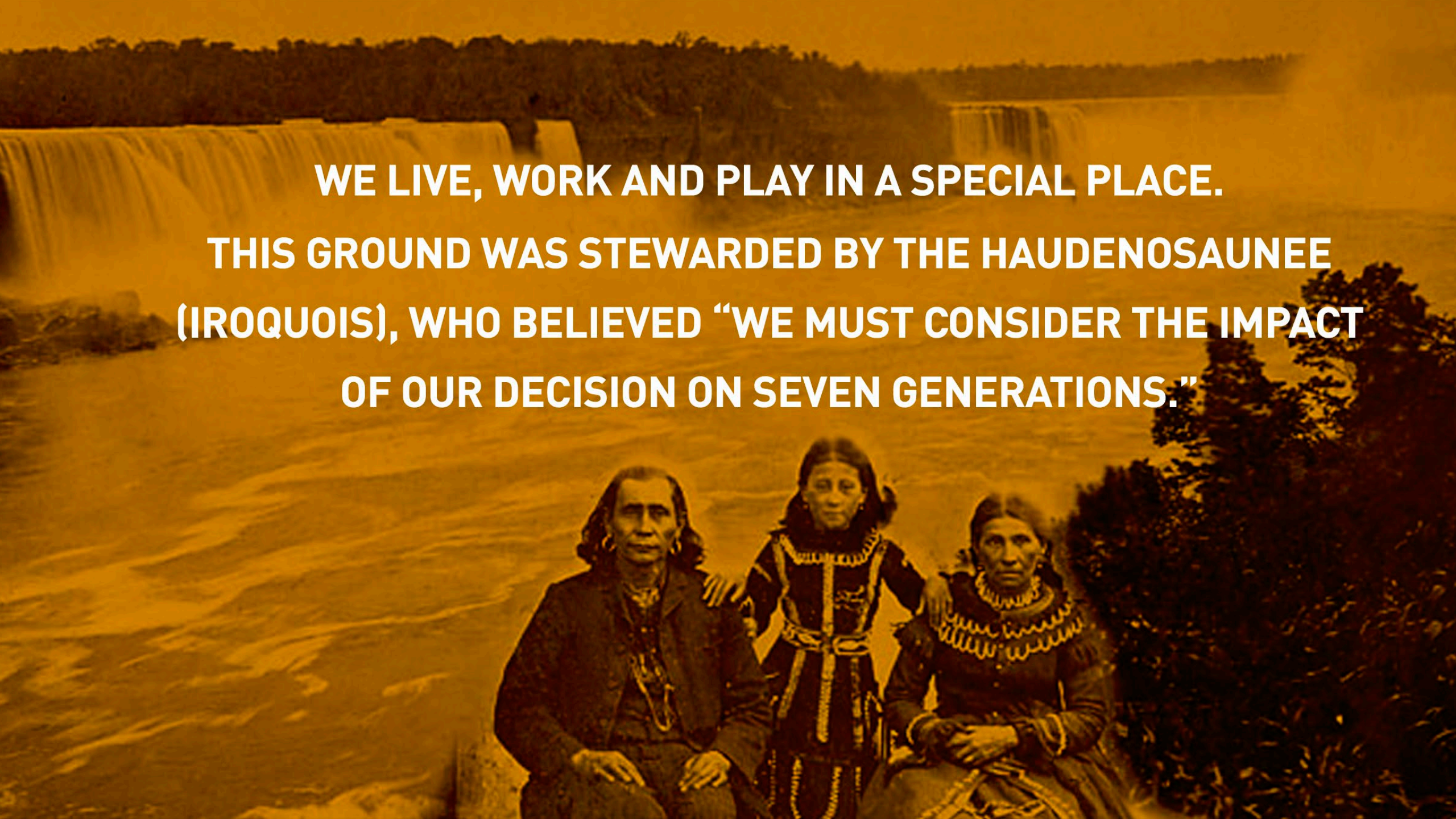
WHAT…is our sustainability frame

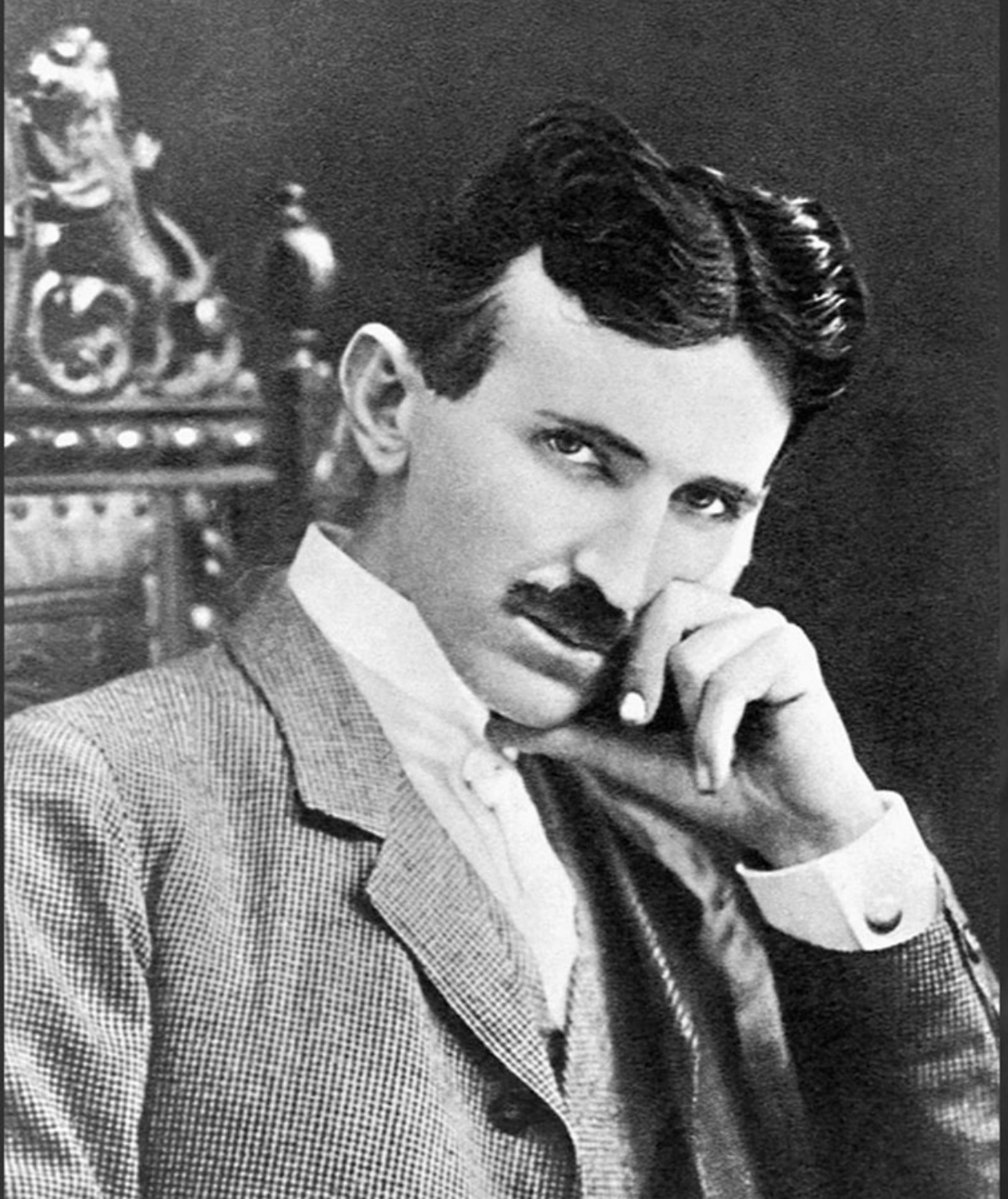
WHY…are we doing this work

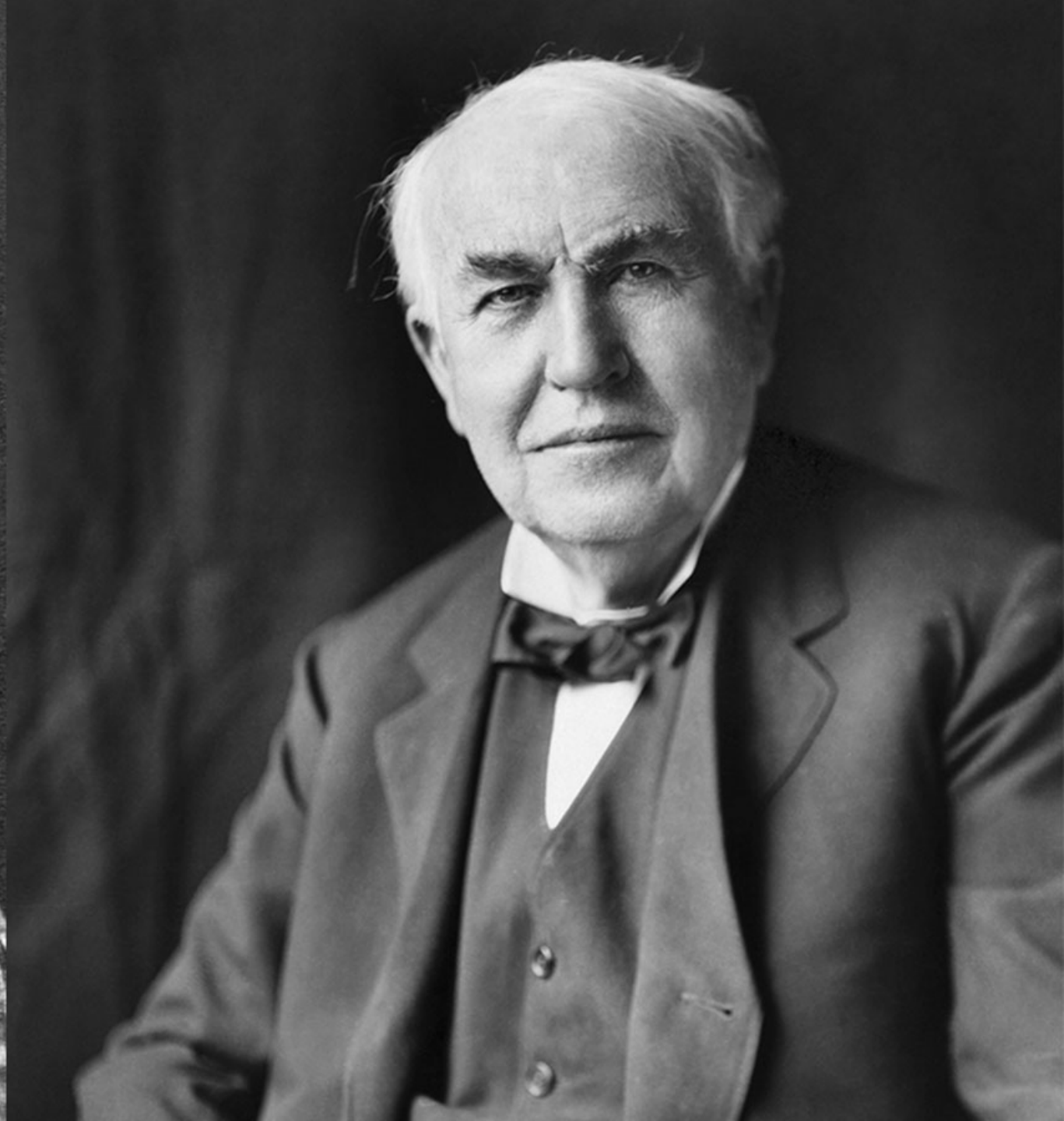
HOW…do we advance the impact

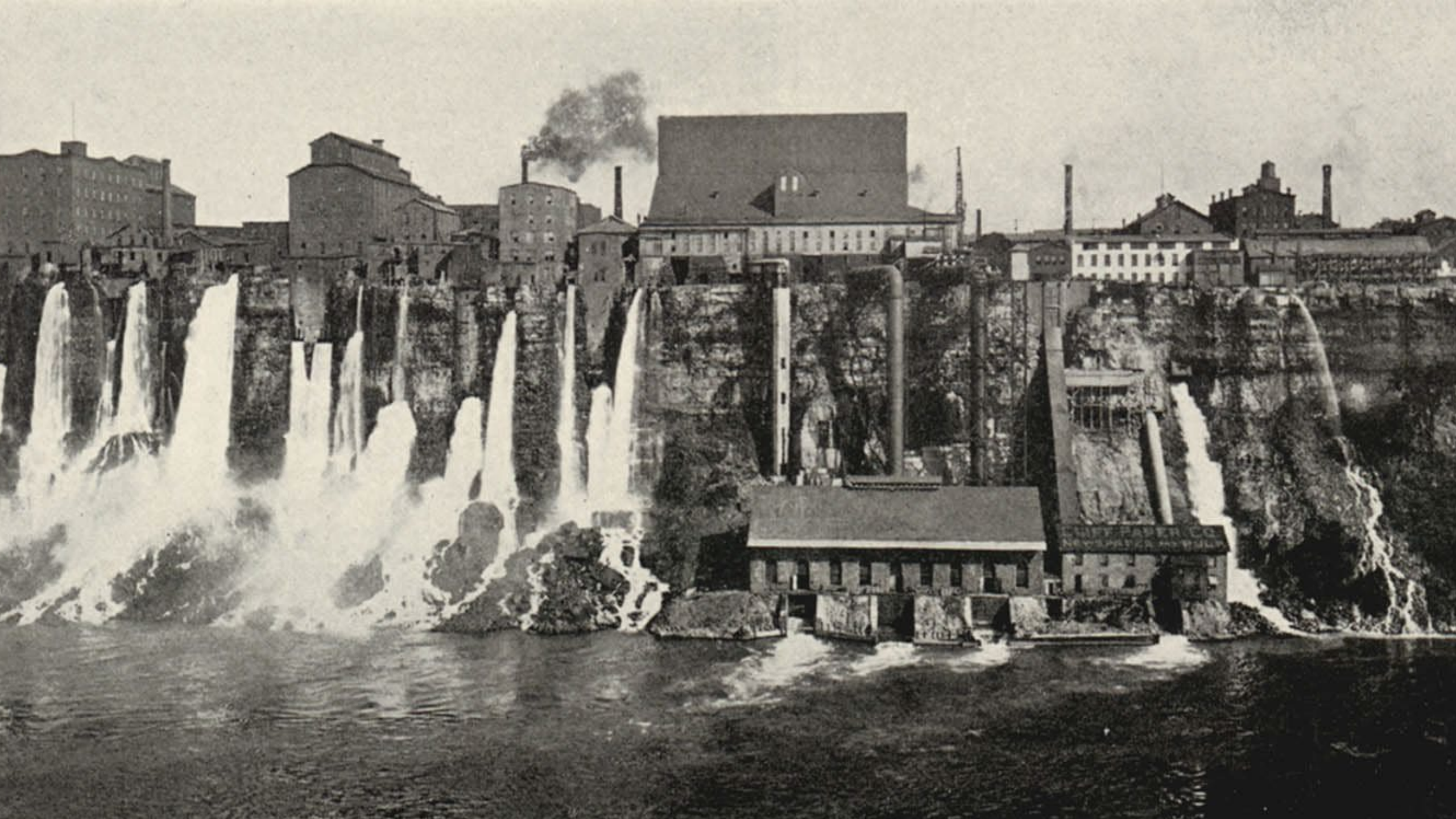
WHAT…are the details, cost and path forward

WHAT (again)…role can you play


WE LIVE, WORK AND PLAY IN A SPECIAL PLACE.
THIS GROUND WAS STEWARDED BY THE HAUDENOSAUNEE
(IROQUOIS), WHO BELIEVED “WE MUST CONSIDER THE IMPACT
OF OUR DECISION ON SEVEN GENERATIONS.”








EVACUATE
ALL OF US
NOT JUST
LITTLE KIDS
STOP
EVACUATE US ALL
NOT
JUST LITTLE
KIDS!
I want a swimming pool in my back yard, not a
Cesspool!
THANKS HOOKER!
PLEASE
DON'T
LET ME
DIE


MAID OF THE MIST

WHAT | IS OUR SUSTAINABILITY FRAME?

The Tripple Bottom Line

A framework with four integrated aspects: social, environmental, financial and mission

Planet

People

Prosperity

The Proper Lens Needed to Make Balanced and Sustainable Decisions

Sustainability is a Strategy not a Goal

WHY | ARE WE DOING THIS WORK?

Why Should We Advance Climate Action?

Science Dummy	40
Right Thing to Do	25
Gen Z Wants to Act	20
Stay out of jail	8
Business/Economic	4
Other	3

The Science

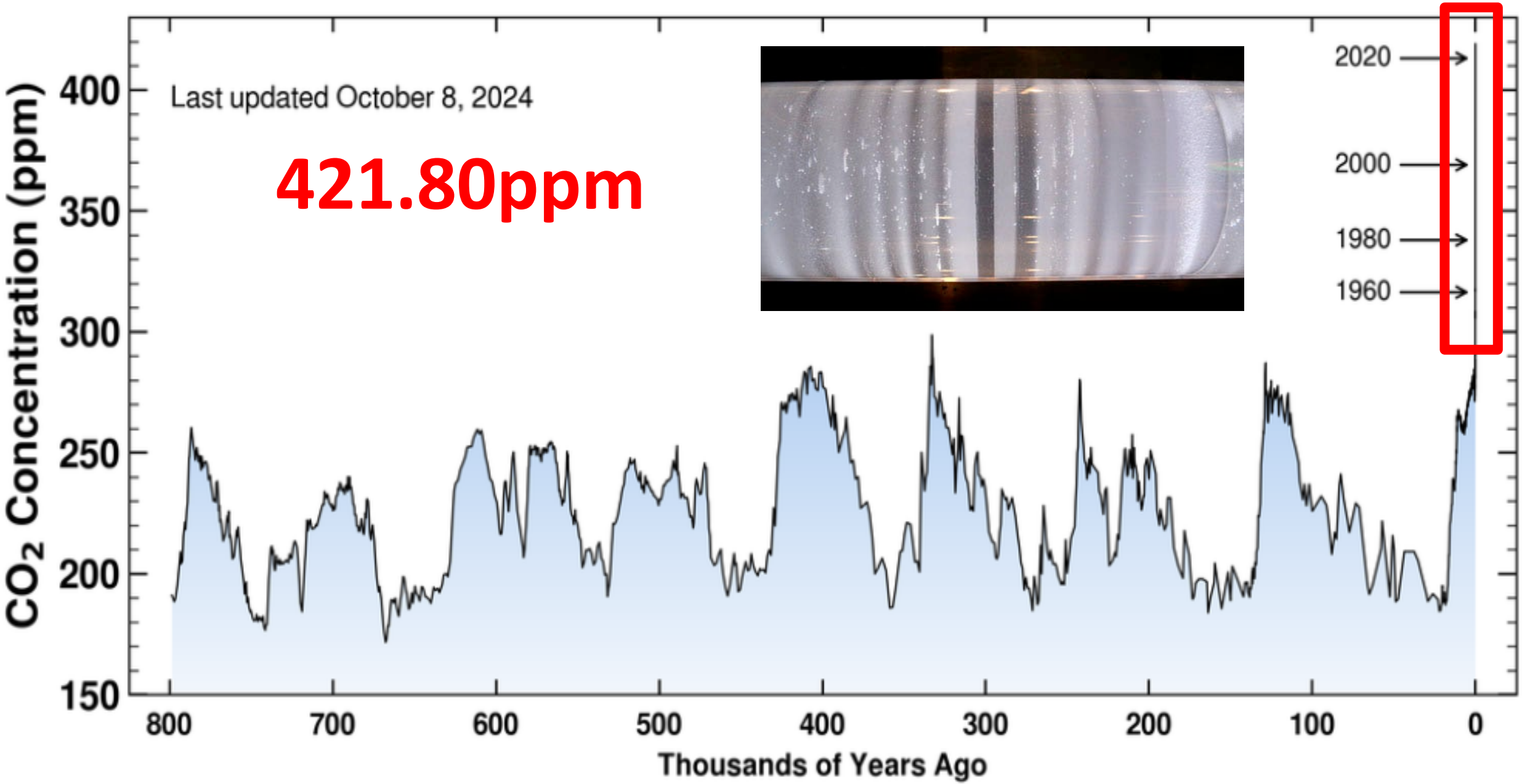
Policy Shift

Business Case

Why Are We Engaged In This Work…

The Science…

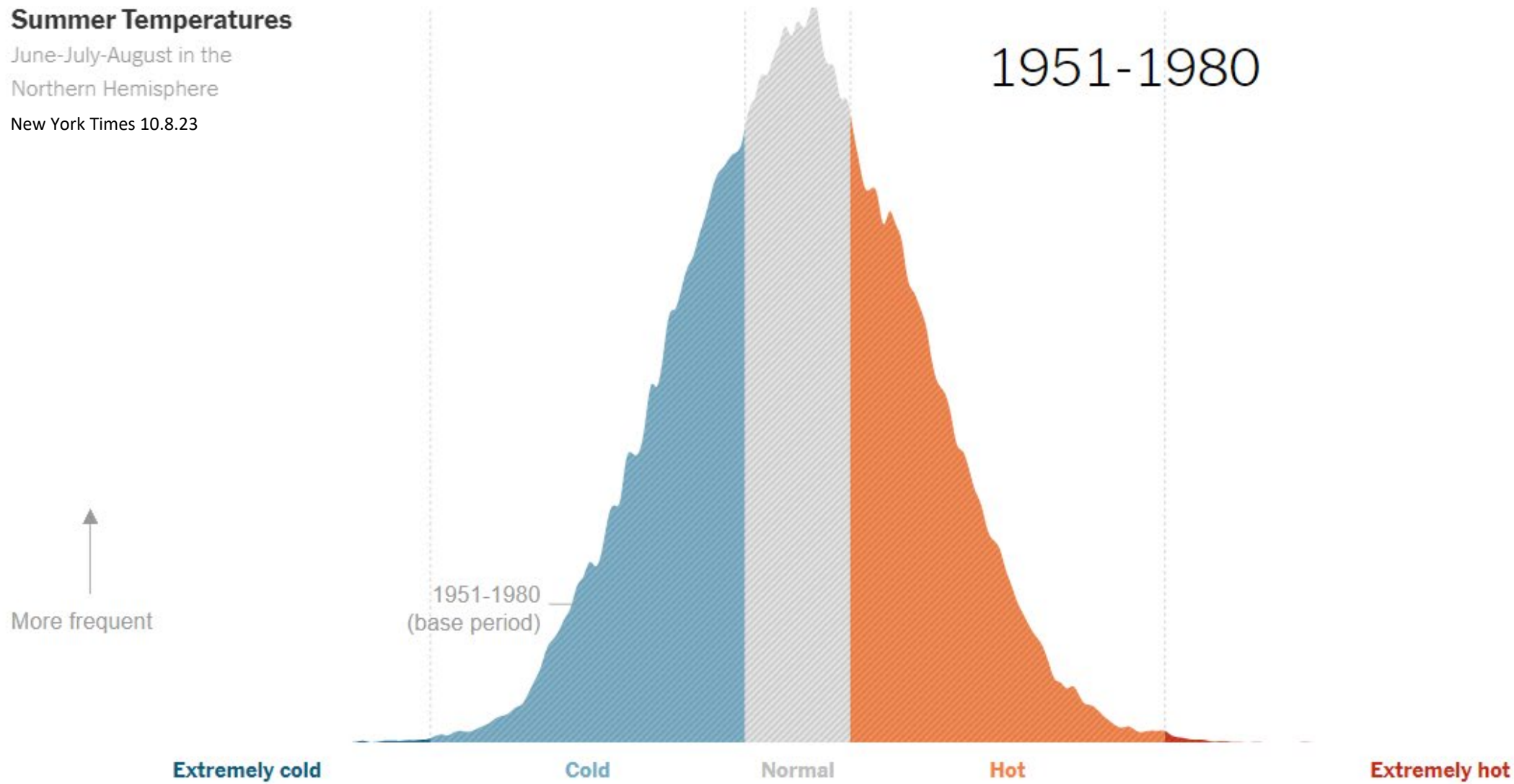
Ice-core data before 1958, Mauna Loa Data after 1958



Summer Temperatures

June-July-August in the Northern Hemisphere

New York Times 10.8.23



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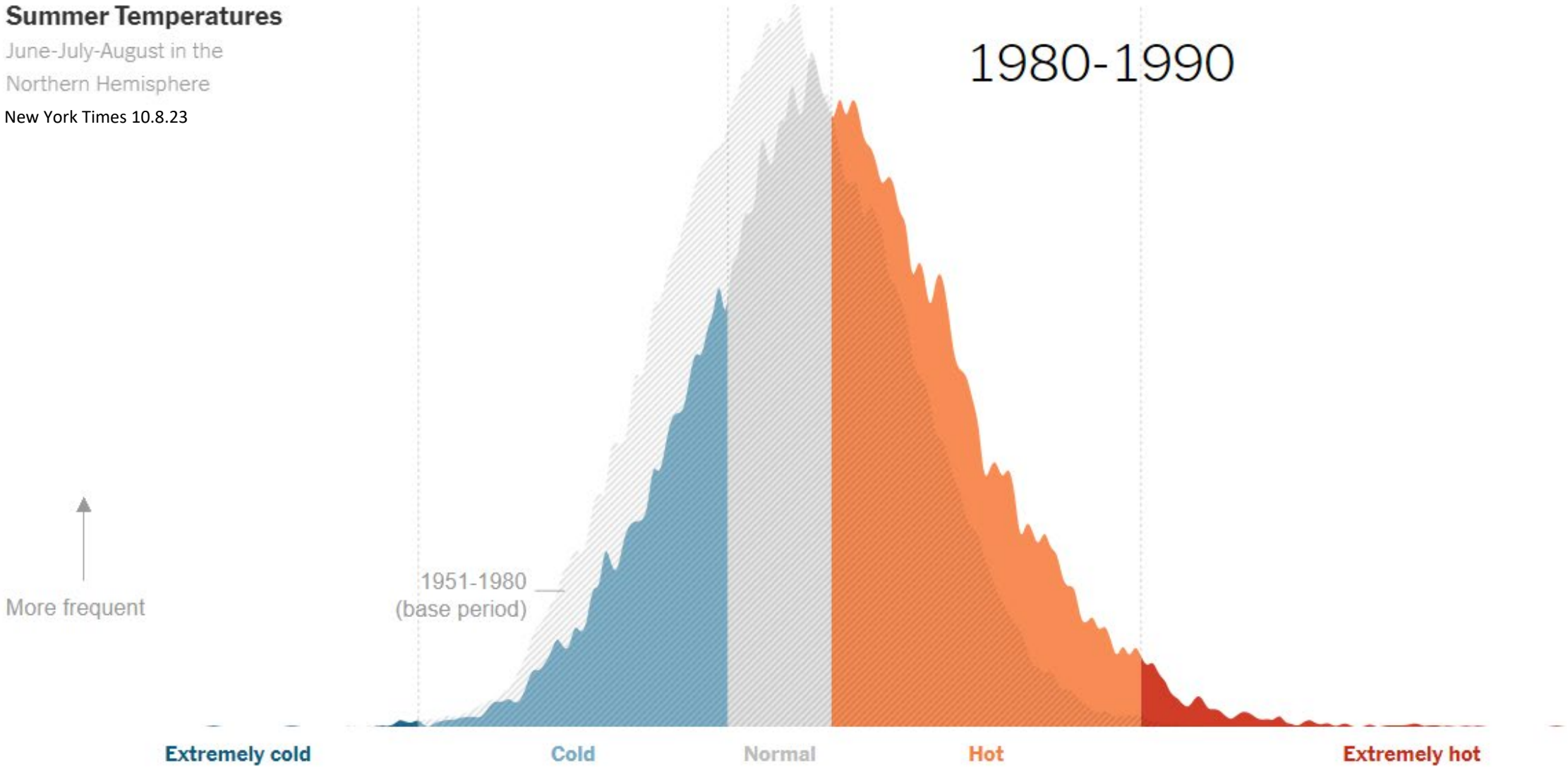
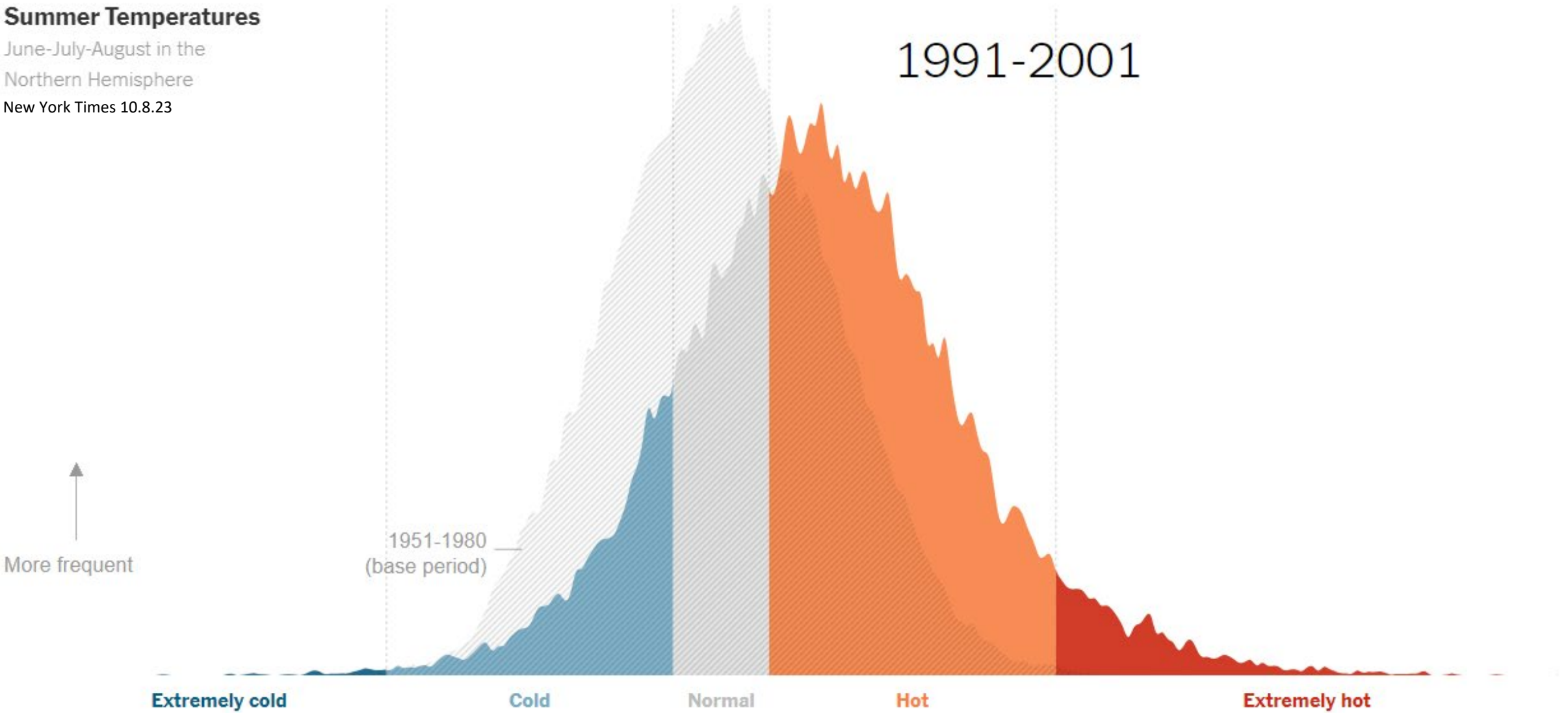
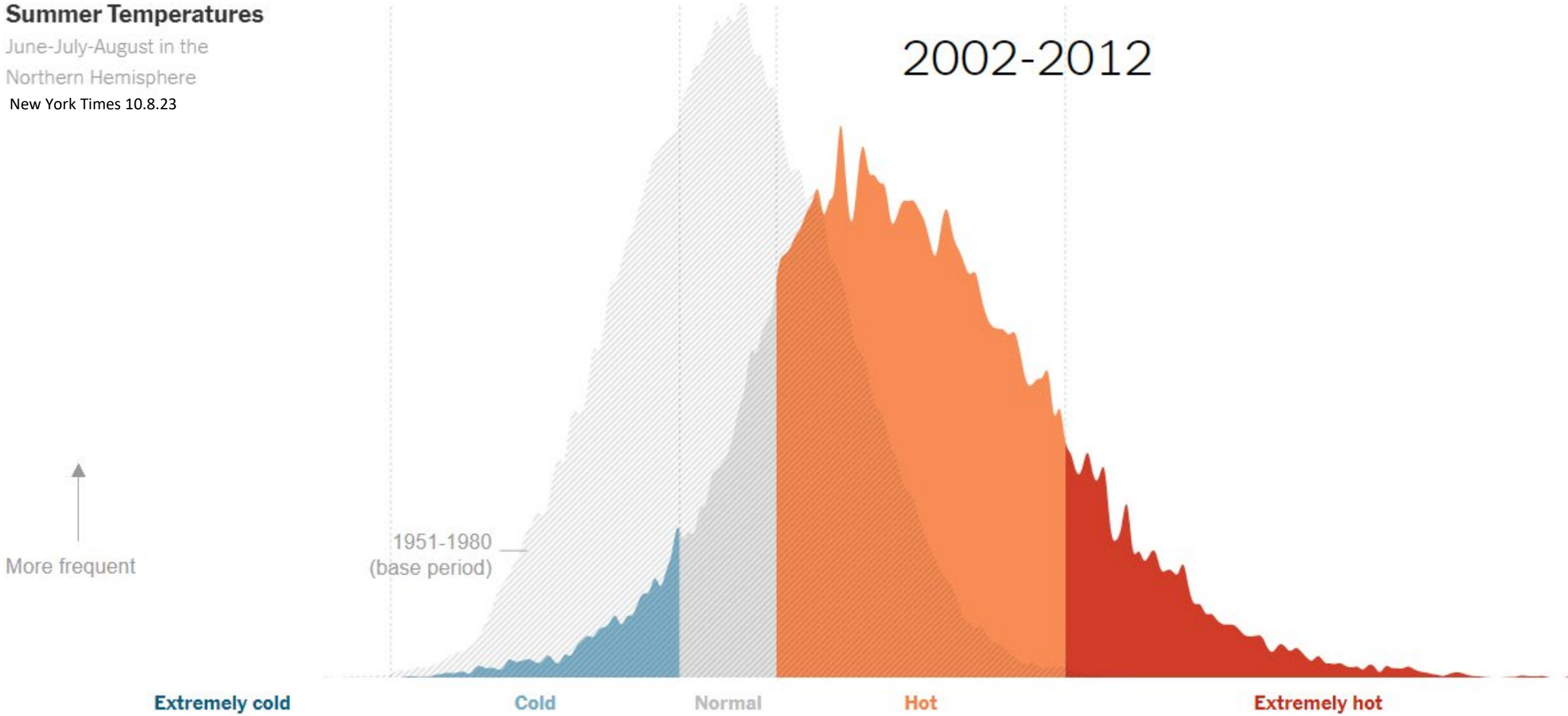



Summer Temperatures
June-July-August in the Northern Hemisphere
New York Times 10.8.23
1991-2001
1951-1980
(base period)
More frequent
Extremely cold
Cold
Normal
Hot
Extremely hot

Summer Temperatures

June-July-August in the Northern Hemisphere

New York Times 10.8.23



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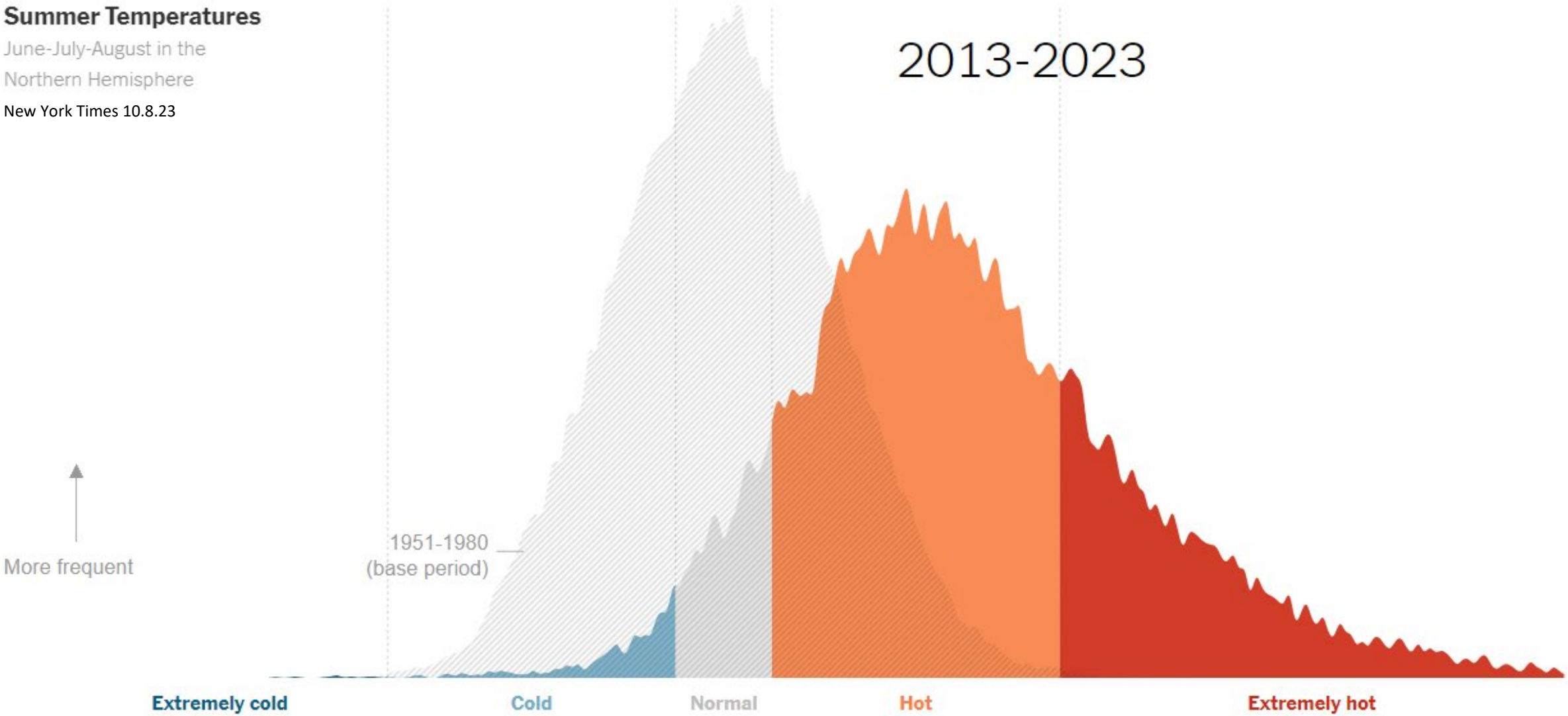
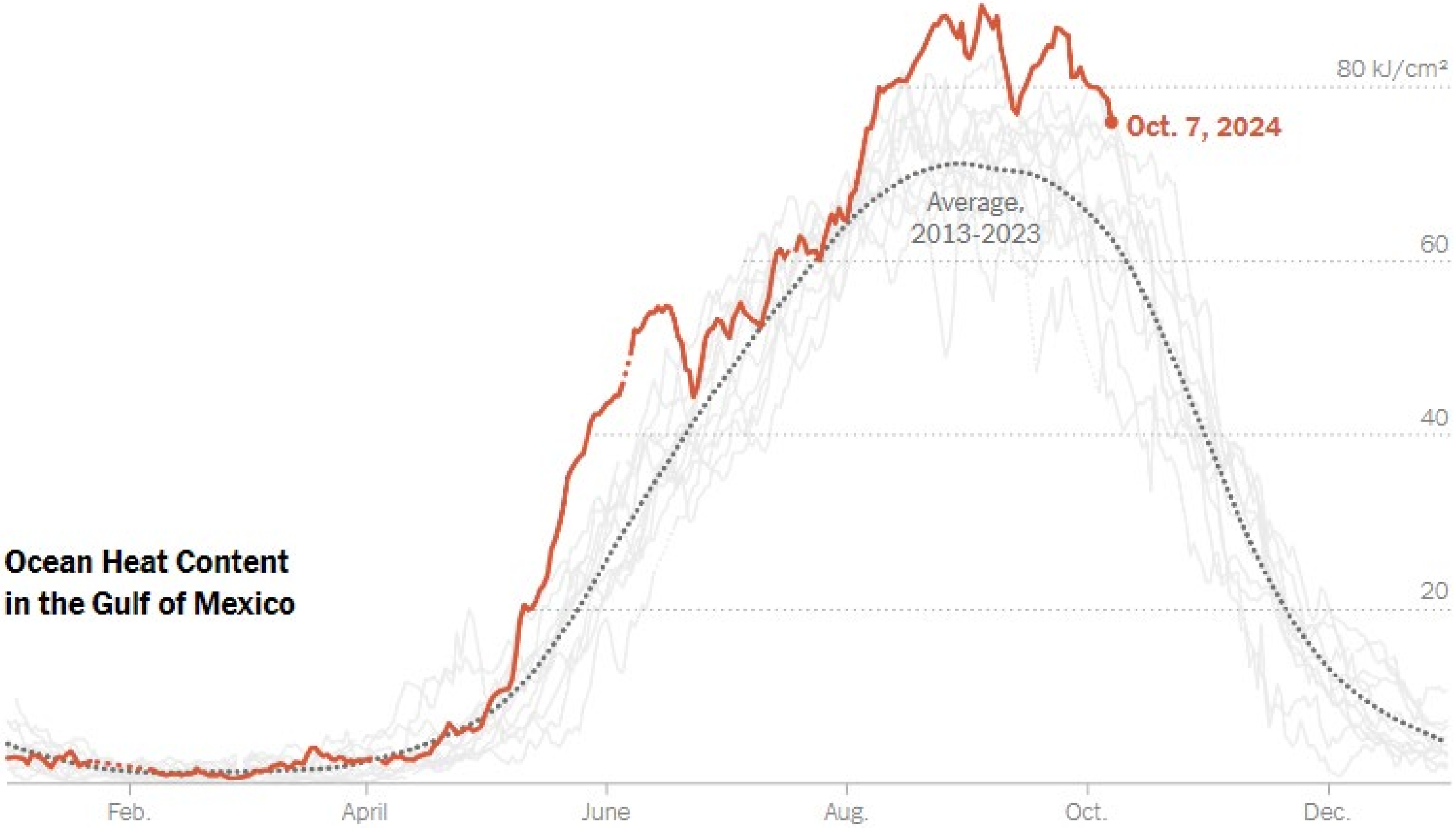


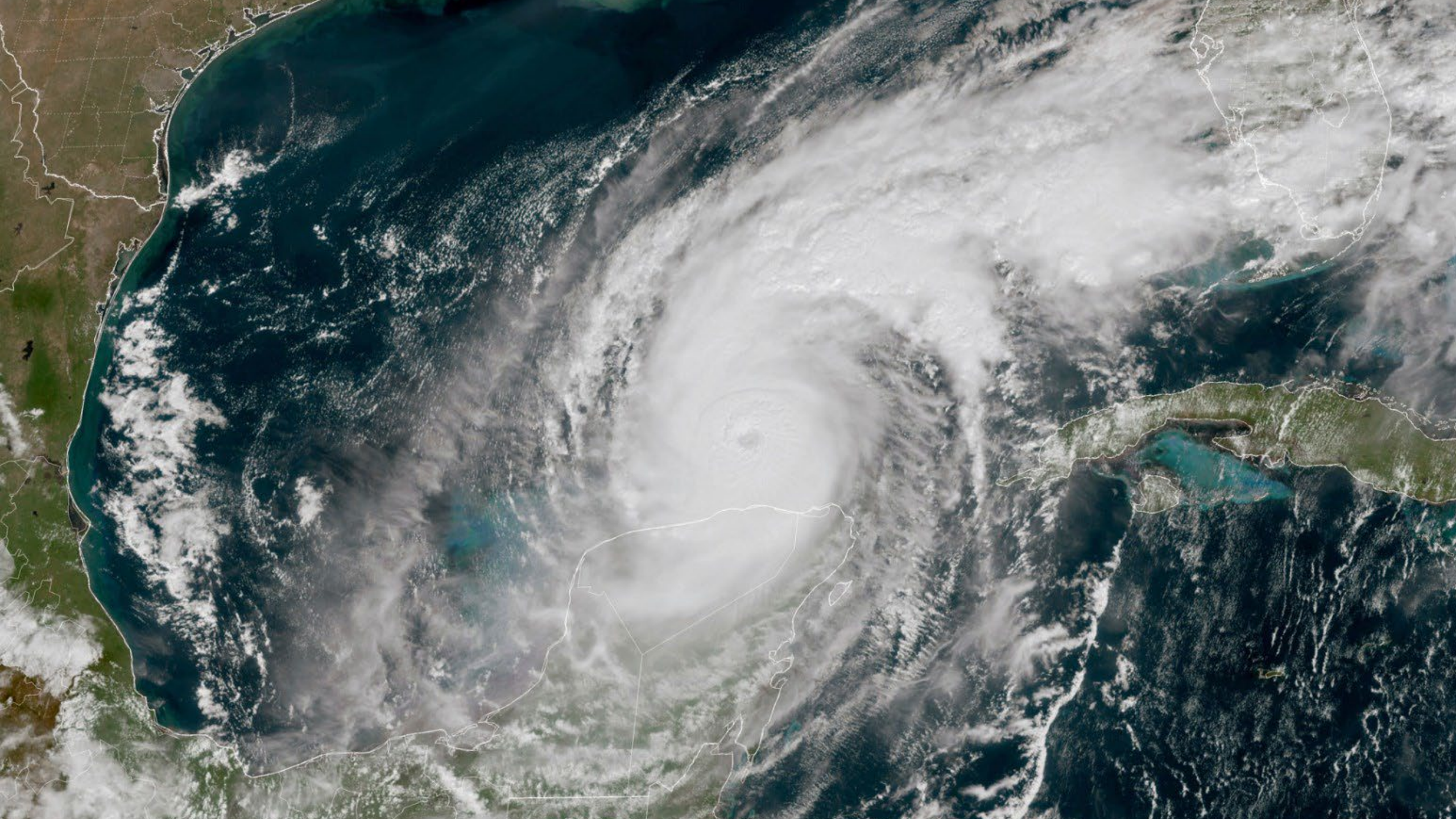
Since last May, the average person experienced 26 more days of abnormal warmth than they would have without global warming !

New York Times 5.28.24


Paradise Community
1001 Village Parkway
530-872-1210



Source: Brian McNoldy; University of Miami Upper Ocean Dynamics Lab




28
IT'S GAME TIME!
RPM
RACE PLAY MORE
STAMFORD, CT | JERSEY CITY, NJ
LONG ISLAND, NY

New York State Climate Action Policy & Funding Shift

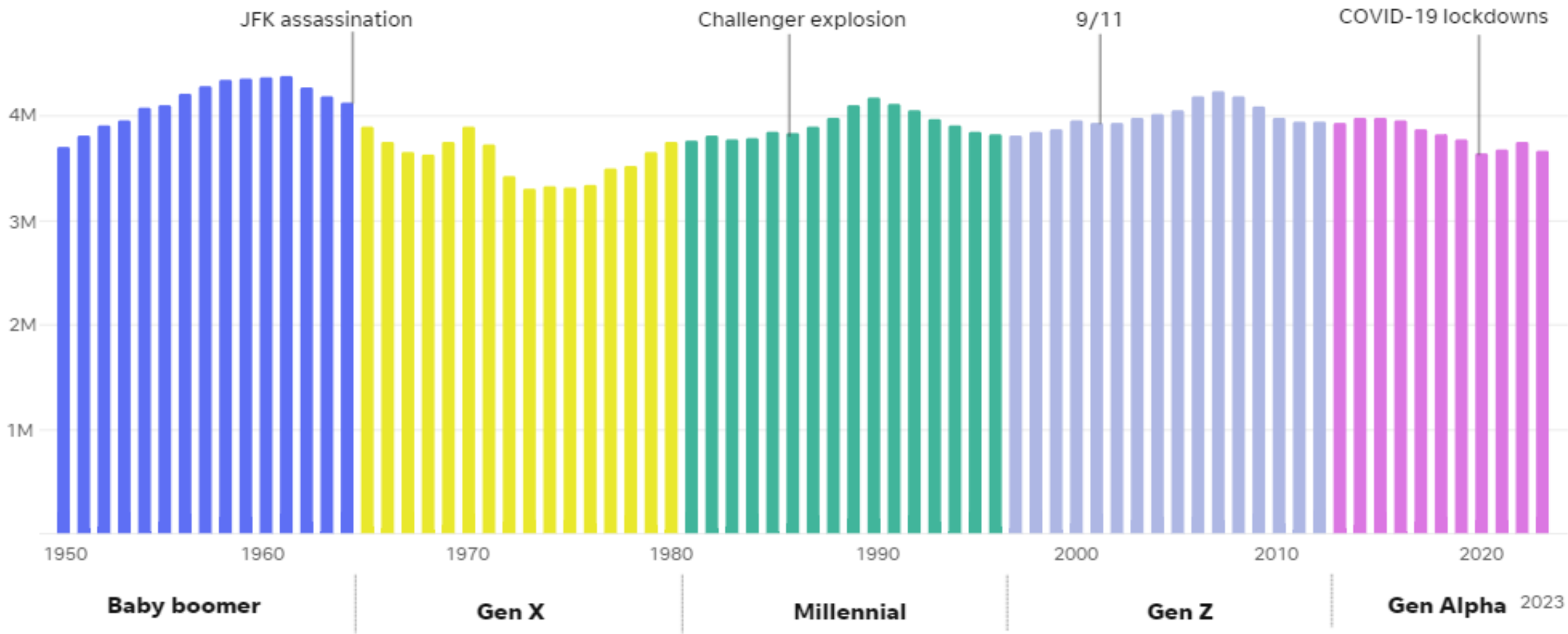
- Achieve Climate Neutrality by 2050 (Climate Leadership Community Protection Act)
- Mandate 70% Renewable Power by 2030
- Phased out Coal Power in 2020
- State Agencies to Decarbonize their Investment Funds and Investment in Clean Energy
- Phase out of Fossil-Fueled Vehicles Banning Sales after 2035 in NYS
- Zero Waste Initiatives (compost mandate and phasing out of single use plastics)
- Leveraging Low Carbon Concrete and Building Materials

Executive Order 22

A Once-in-a-Generation Federal Investment

Demand & Business Case

U.S. births per year:



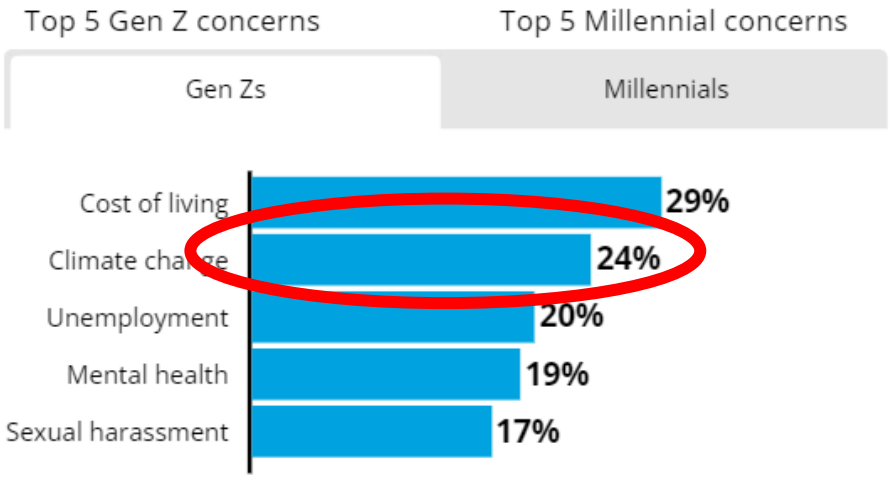
SOURCE Census Bureau

Deloitte Global 2022 Gen Z and Millennial Survey

Top concerns among Gen Zs and millennials

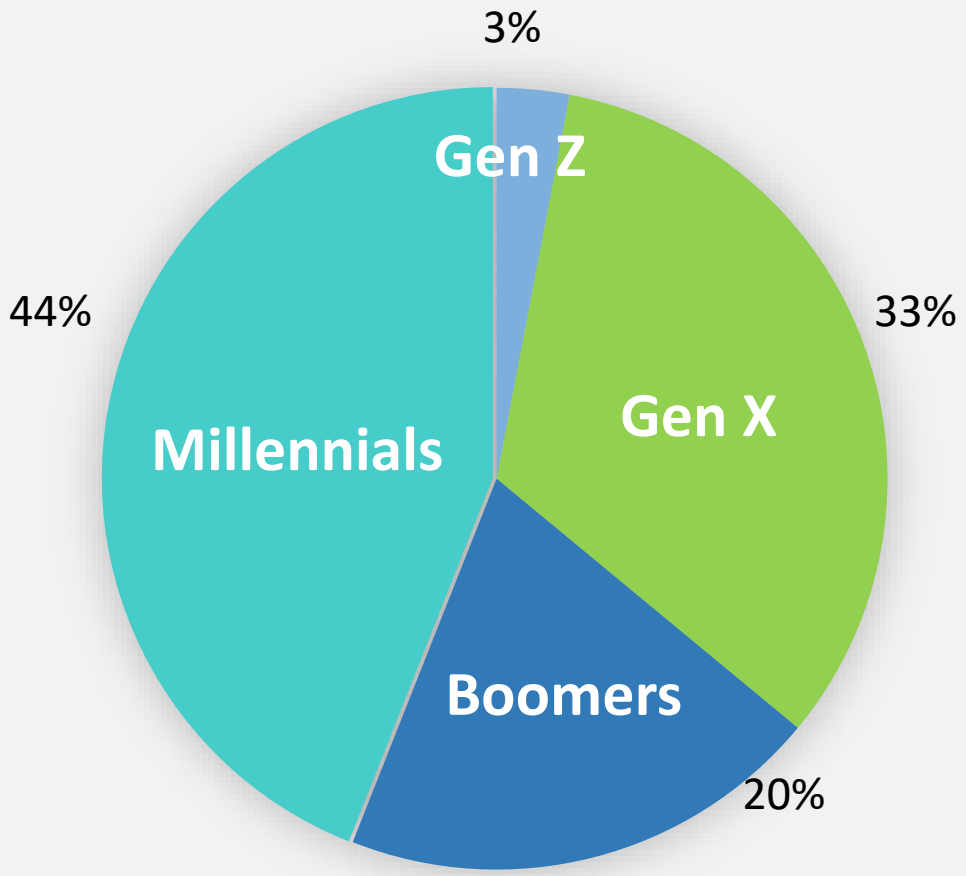
This year's survey finds Gen Zs and millennials deeply concerned about the state of the world, and actively trying to balance the challenges of their everyday lives with their desire to drive societal change.

They are struggling with financial concerns, while trying to invest in environmentally sustainable choices. They feel burned out, but many are taking on second jobs, while pushing for more purposeful—and more flexible—work. They press their employers to tackle climate change, particularly when it comes to efforts they can get directly involved in, but businesses may still be missing opportunities to drive deeper and broader climate action. And they have inspired organizations to take action to address workplace mental health challenges, but many don't feel this is resulting in any tangible change for employees.

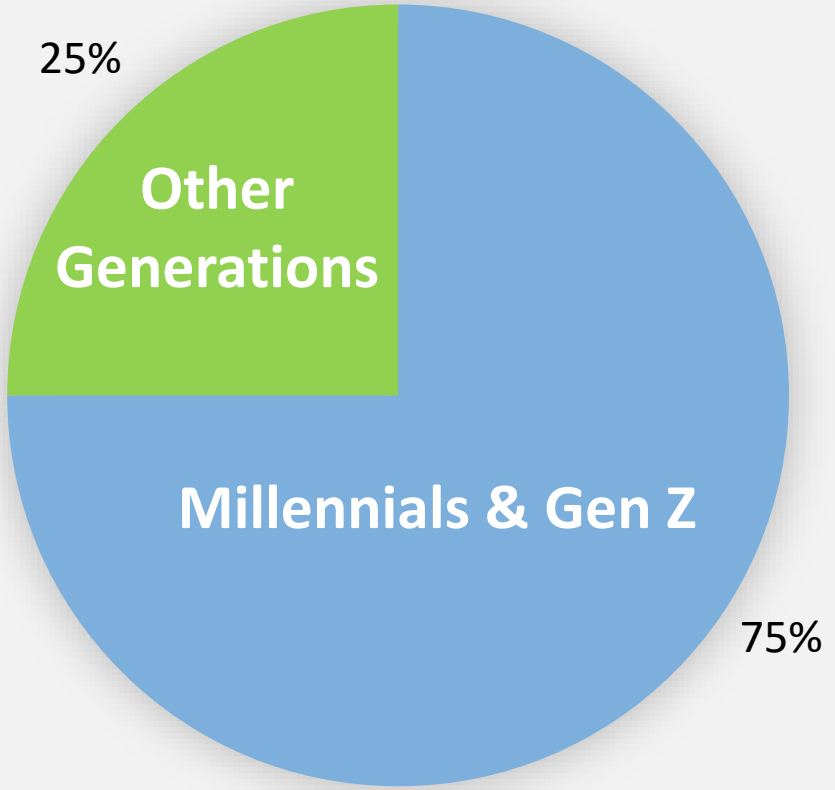


GENERATIONS IN

THE WORKFORCE



2019



2025

72% of top students think how a university is working to take climate action is an important factor in deciding where to go to school!

“70% of US workers said that a firm’s environmental record is important to them and is a consideration when deciding whether to take a job with a company.”

--Gallup Poll 10/21

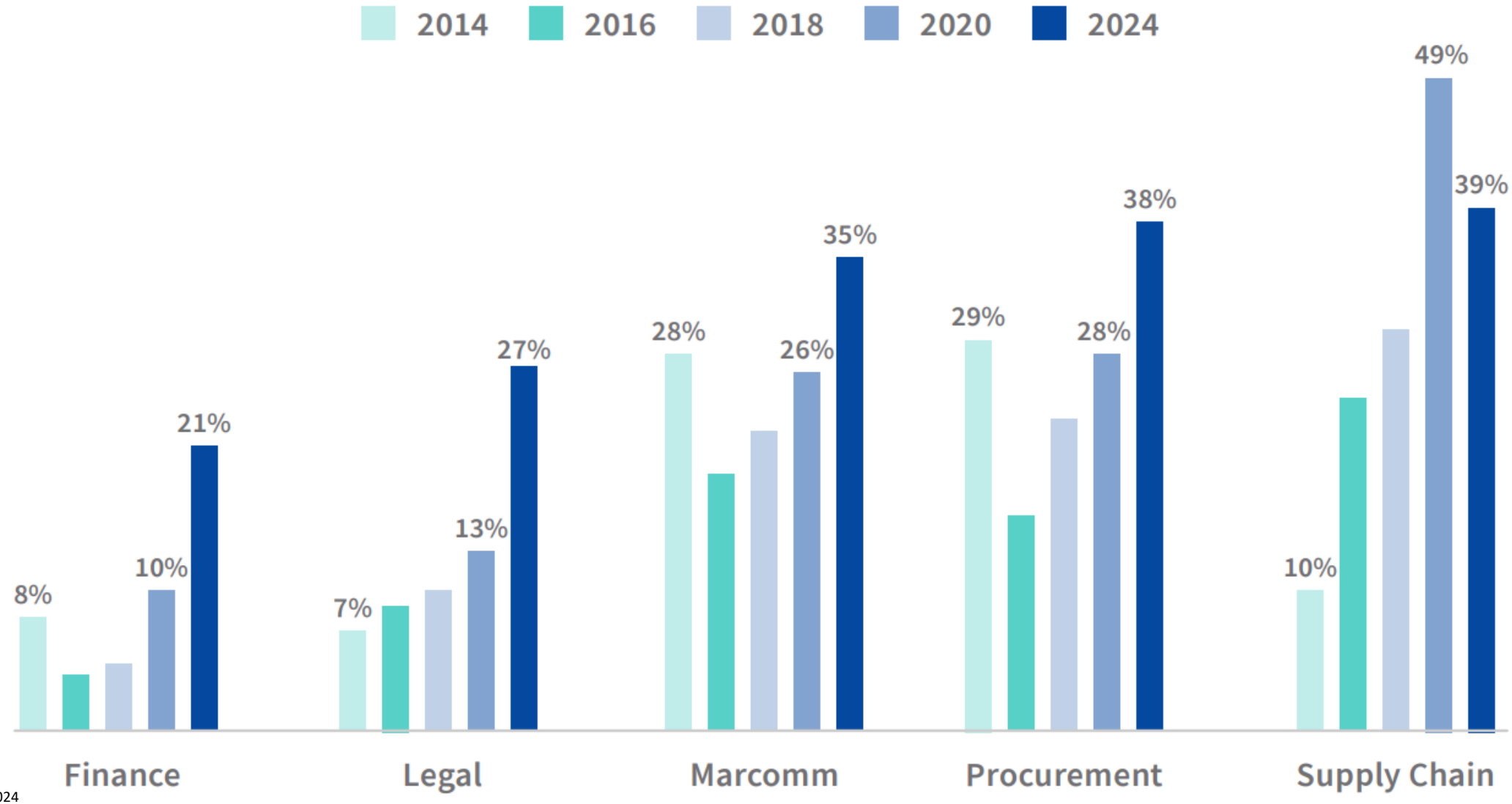
Business Sustainability Trends

- In 2021, **74%** of institutional investors said they were more likely to divest from companies with poor sustainability performance. - IMD
- **46%** have begun requiring business partners across their supply chain/value chain to meet specific sustainability criteria. - Deloitte
- **44%** of companies are updating/relocating facilities to make them more resistant to climate impacts. - Deloitte
- In a 2022 study of 850 companies worldwide, **80%** said they plan to increase their investments in sustainability. - WeWork
- **37%** are tying senior leader's compensation to environmental sustainability performance. - Deloitte
- Companies that combine high levels of innovation with 'sustainability and trust' outperform their industry peers, with **3.1%** higher operating profits and greater returns for shareholders. Companies that excel at innovating alone see a negligible impact on operating performance. - Accenture

Workforce Sustainability Trends

- **More than a third** said that they've given more time and effort to a job because of their employer's sustainability goals. - Fast Company
- **More than 70%** of employees at large U.S. companies say they are more likely to choose to work at a company with a strong environmental agenda. - Fast Company
- **Nearly 70%** of respondents said that if a company had a strong sustainability plan, it would affect their decision to stay with that company long term. - Fast Company
- **Nearly 40%** said that they've chosen a job in the past because the company performed better on sustainability than their alternative options. - Fast Company

Departments That Added One or More Dedicated Sustainability Resources, Either Full-Time or Part-Time



Trellis, State of Sustainability Report 2024

CASUALTY ACTUARIAL SOCIETY

Canadian Institute of Actuaries / Institut canadien des actuaires

SOCIETY OF ACTUARIES

Seventeenth Annual Survey of Emerging Risks: Summary of Findings

TOP FIVE EMERGING RISKS, 2020–2023

	2023	2022	2021	2020
1	Climate change	Climate change	Climate change	Climate change
2	Wars (including civil wars)	Wars (including civil wars)	Cyber/networks	Cyber/networks
3	Disruptive technology	Cyber/networks	Pandemics/infectious diseases	Pandemics/infectious diseases
4	Demographic shift	Financial volatility	Disruptive technology	Disruptive technology
5	Cyber/networks	Demographic shift	Financial volatility	Financial volatility

Climate change surpassed cyber risk, wars and pandemics as the top current risk, and top emerging risk combinations.

HOW

ARE WE TAKING ACTION & ADVANCING STRATEGY?

UB 10 in 10

Clean Energy

Increasing Efficiency

Climate Justice

Electrification

for Challenging Emissions

Behavior Change

Pricing

Zero Carbon Mobility

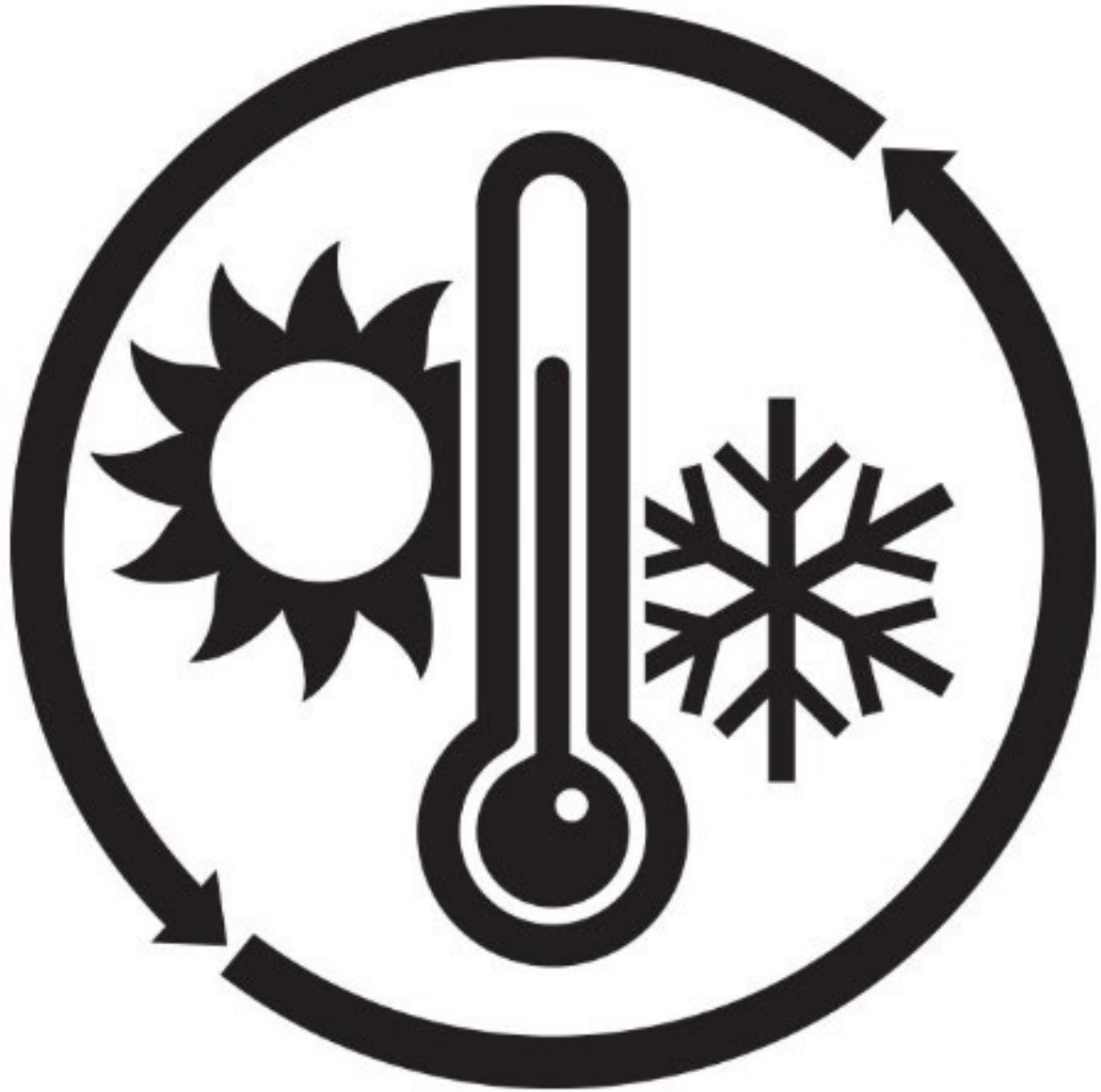
Resilience

Making it Happen

Circularity

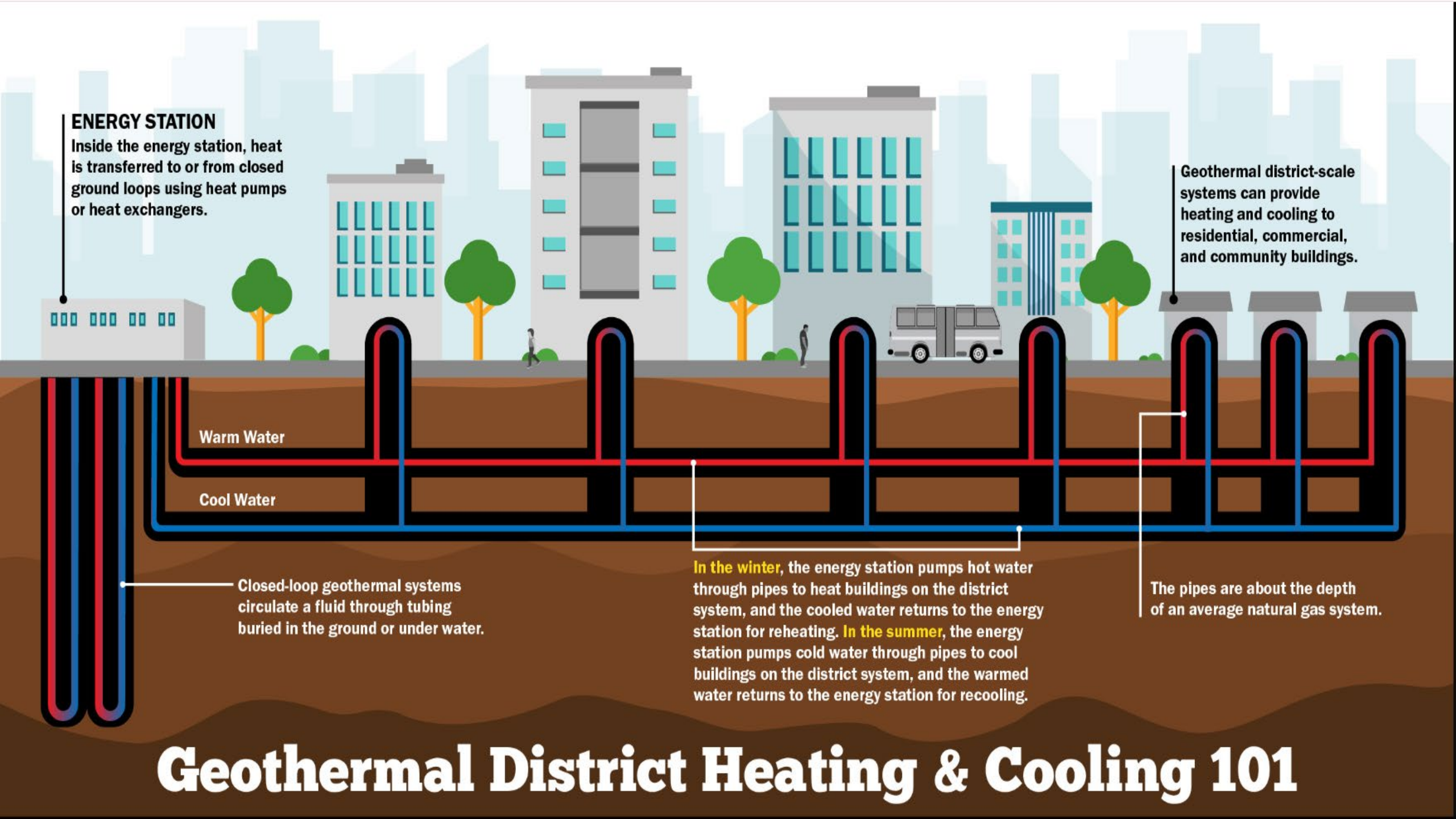
Responsible Investing

Taking Stock of Our Food System



OBJECTIVE

1. Identify projects for near term energy savings
2. Provide a path / solution for electrification of heating systems on the campus
3. Provide a path / solution for a 30% reduction in energy usage for the campus
4. Provide a path / solution for a carbon neutral campus


ENERGY STATION
Inside the energy station, heat is transferred to or from closed ground loops using heat pumps or heat exchangers.
Geothermal district-scale systems can provide heating and cooling to residential, commercial, and community buildings.
Warm Water
Cool Water
Closed-loop geothermal systems circulate a fluid through tubing buried in the ground or under water.
In the winter, the energy station pumps hot water through pipes to heat buildings on the district system, and the cooled water returns to the energy station for reheating. In the summer, the energy station pumps cold water through pipes to cool buildings on the district system, and the warmed water returns to the energy station for recooling.
The pipes are about the depth of an average natural gas system.
Geothermal District Heating & Cooling 101

July 2023

CLEAN ENERGY MASTER PLAN
overview report

UNIVERSITY AT BUFFALO SOUTH CAMPUS

Prepared By wendel

VISION

The University at Buffalo understands the existential threat that climate change poses to our institution, our region, state, country and planet. That is why we have doubled down on our commitment to become climate neutral. To achieve this, we are standing on the shoulders of five decades of environmental leadership and focusing our climate action work on a holistic solutions-orientated approach.

Over the past five years, the University at Buffalo has reduced its carbon footprint by an average of 33% (as measured in metric tons of carbon dioxide equivalents) by replacing 671,594,561 kilowatt hours of electricity to renewable sources. This leadership was recently recognized by the Times Higher Education Impact Rankings, which rated UB #1 among U.S. universities in taking urgent action to combat climate change. This progress has been made possible through a series of innovative renewable energy projects that now provide 100% clean electricity to our campus. From our early on campus work with the creation of the most publicly accessible renewable energy landscape in the country (the UB Solar Strand) to our current REV Campus Challenge clean energy scaling work, we have methodically learned, continue to build upon our experiences and advance climate action across New York State and the nation. However, we recognize that these success stories are not the end, rather the foundation to build upon as we progress to a carbon neutral future.

UB's *10 in 10* is our roadmap of 10 innovative, engaging and digestible steps we are advancing to increase climate action throughout the University and put us on a path to net zero emissions by 2030. The strategy is holistic, inclusive, engages our broader community and leverages both a triple bottom line approach as well as the Sustainable Development Goals.

MISSION

This Clean Energy Master Plan focused on a key strategy of UB's *10 in 10 Climate Action Plan* at the University at Buffalo's South Campus. The South Campus, or Main Street Campus, is a Western New York landmark dating back to the 1920s. Situated in a residential neighborhood in North Buffalo, the 153-acre parcel is home to classic ivy-covered buildings, as well as residence halls and cutting-edge research and teaching facilities. The schools of Architecture and Planning, Dental Medicine, Public Health and Health Professions, and Nursing are located here. In addition, the campus is heated centrally by the MacKay heating facility which is the largest central source of Scope 1 Greenhouse Gas (GHG)[1] emissions at UB. South Campus comprises of 46 Buildings totaling more than 2.8 million square feet with an annual energy cost of more than $3.8 Million. Like all entities seeking to achieve long-term impacts on our environment, our desire for sustainable results is balanced by the scarcity of capital funding. This plan seeks to develop a strategy that will maximize the amount of construction that can be done by cost effectively implementing sustainable improvements, aligned with campus planning, that maximize the life cycle cost value to the University.

GOAL

We entered into this Clean Energy Master Plan with the goal of developing a strategy that will:

1. Lead to near term energy savings.
2. Provide a solution for electrification of heating systems on the South Campus.
3. Provide a solution for a 30% reduction in energy usage for the South Campus.
4. Provide a solution for a carbon neutral campus.

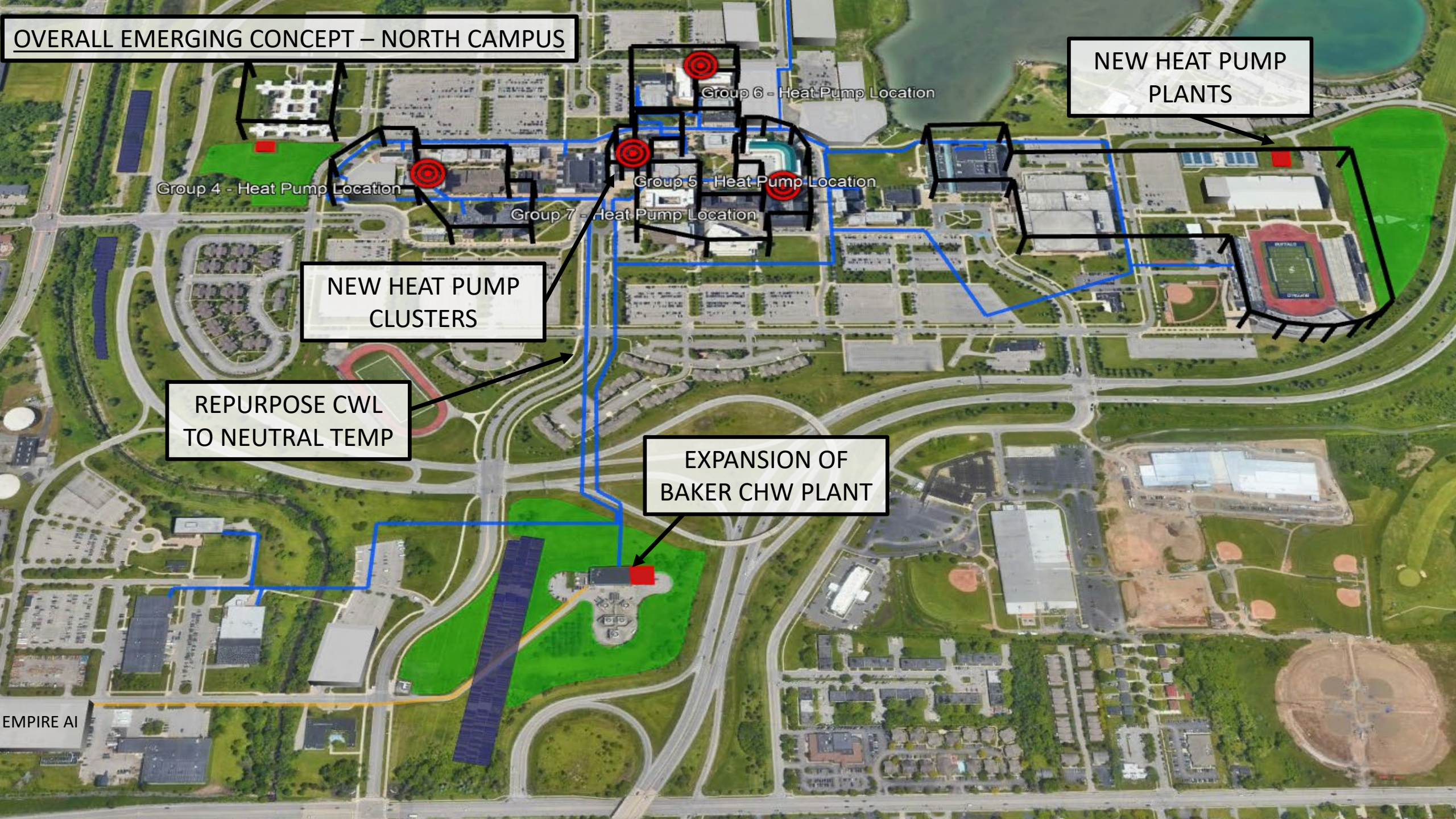
DISTRICT HEAT PUMP | PHASE 5

NORTH CAMPUS SCHEDULE OVERVIEW

Walkthrough of all N.Campus building systems, about 8M sqft.

Accelerate district system concepts that will help inform planning efforts on other projects. Looking to have this ready by the end of 2024.

Final report will incorporate interactive elements between the building and district systems.

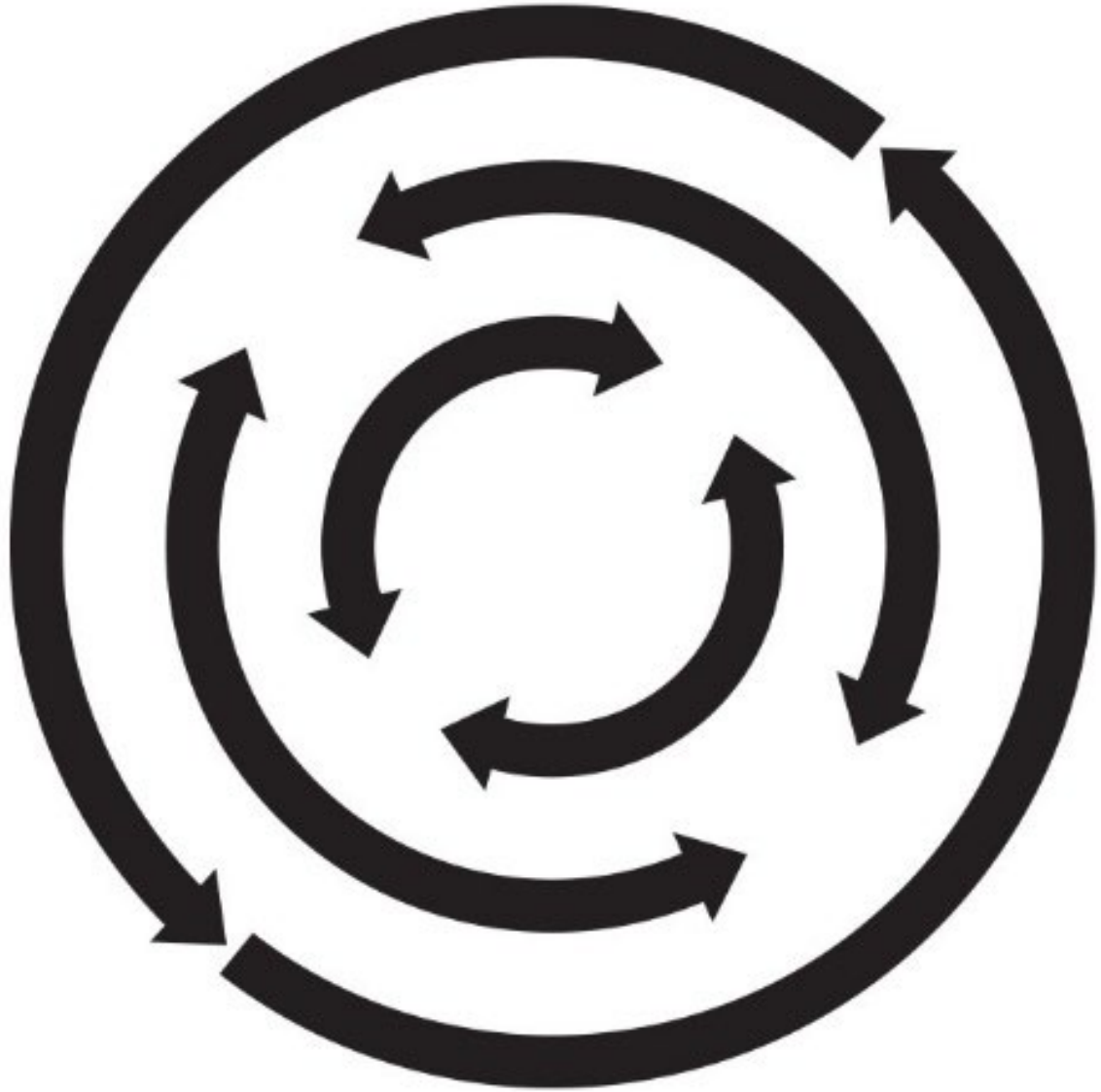

OVERALL EMERGING CONCEPT – NORTH CAMPUS
Group 6 - Heat Pump Location
NEW HEAT PUMP PLANTS
Group 4 - Heat Pump Location
Group 5 - Heat Pump Location
Group 7 - Heat Pump Location
NEW HEAT PUMP CLUSTERS
REPURPOSE CWL TO NEUTRAL TEMP
EXPANSION OF BAKER CHW PLANT
EMPIRE AI


VEHICLE
PARKING
ONLY WHILE
CHARGING


UB STAMPED
xcelsior
CHARGE


University at Buffalo
FOR OFFICIAL USE ONLY
NEW YORK
BF3929
ERIE


CAUTION
ferguson
GREIF
EASY POUR
18"
24"




RECYCLE
Cans and Bottles, #1, #2 Plastics,
Aluminum Foil, Clean Paper and Cardboard
ORGANICS
All Food Scraps, Meat, Dairy and Cheese,
Compostable #7 PLA Containers, Compostable Cups and Dining Ware.
TRASH
EXIT
RGANIC
TRAS


OUTFINE

ZERO WASTE STRATEGIC PRIORITIES

Management & Metrics

Zero Waste Design Standards

Forward Facing Collection Infrastructure

Recycle Organics

Zero Waste Toolbox

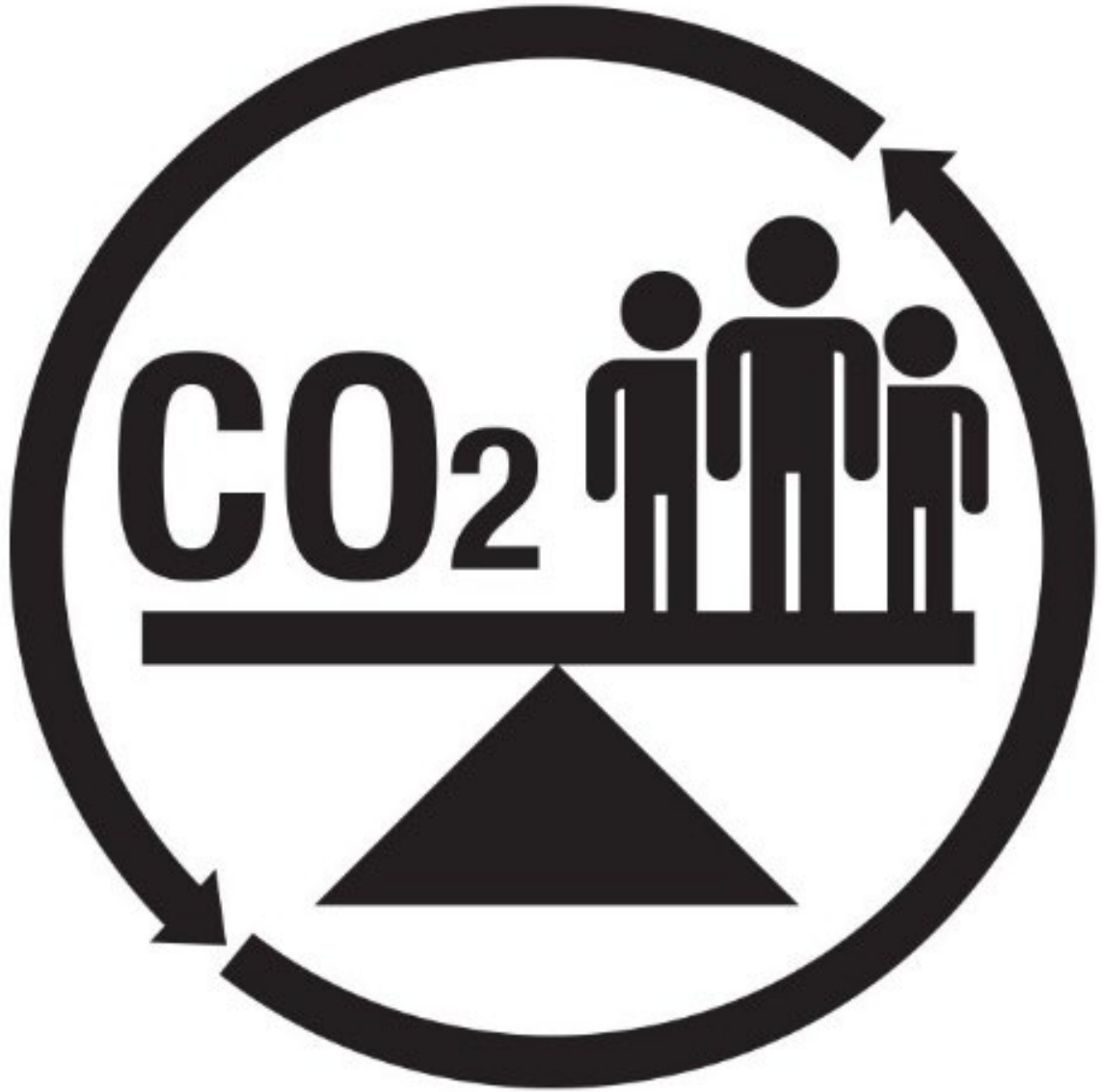
Policy Recommendations

Campus Participation

Custodial Practices

Back of House Speciality Waste

Compostable To-Go Dining


CO2

The Offset Strategy

1. A certified market purchase aligning with UB values
2. Investing in a localized offset program with community partners
3. A campus/university experiential offset initiative


CO2
$

Travel


Capital
Construction

Buildings

Commuting

WHAT | ARE THE DETAILS, COST & PATH FORWARD?

B&D and Sustainability in Higher Education

MATCHING RESOURCES WITH AMBITION

Select Energy and Sustainability Client List

- California Institute of Technology
- Carnegie Mellon University
- Case Western University
- Cornell University
- Michigan State University
- University of Arizona
- University of California, System (all 10 campuses)
- University of Illinois, Chicago
- University of North Carolina, Chapel Hill
- University of South Florida
- University of Texas at Austin
- University of Utah
- University of Washington

Energy & Sustainability Practice

30

Years in the industry

90+

Climate Action / Utility Master Plans

Firm-wide

$40B+

In developed projects

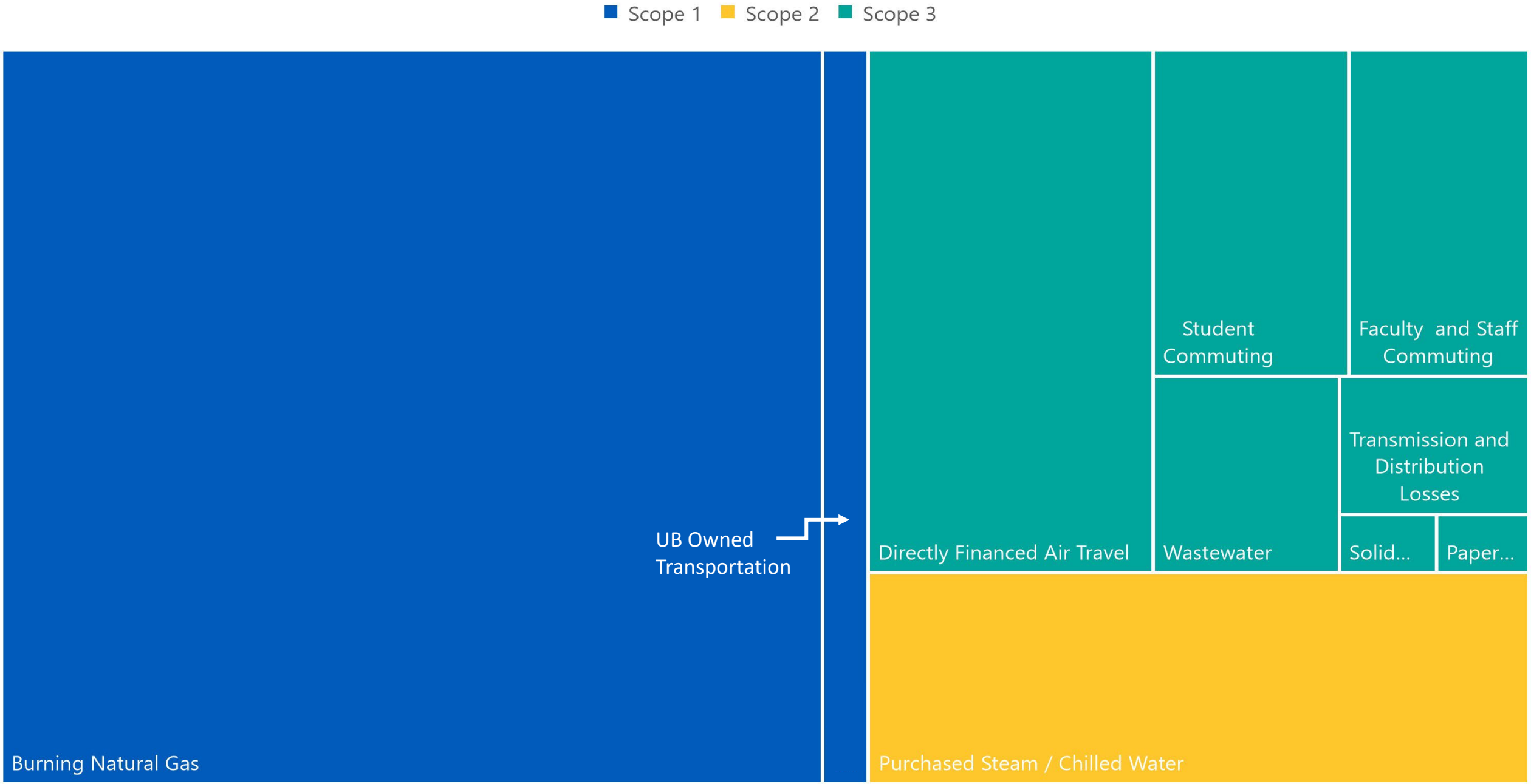
1,500+

Completed projects

Top 50

Program Management Firm in the US as ranked by *Engineering News-Record*

2023 Greenhouse Gas Emissions



Decarbonization

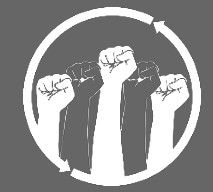
vs

Climate Neutrality

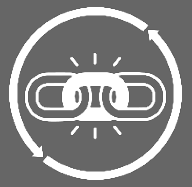
6 in 10 Decarbonization Roadmap

Put a Price on Pollution	Not All Electricity is Created Equal	Zero Carbon Mobility	Keep it Cozy and Green	Circularity
Increasing Efficiency	Every Action Counts	Taking Stock of Our Food	Investing Locally to Provide Flexibility	Responsible Investing

The Integrators



Climate Justice



Climate Resilience

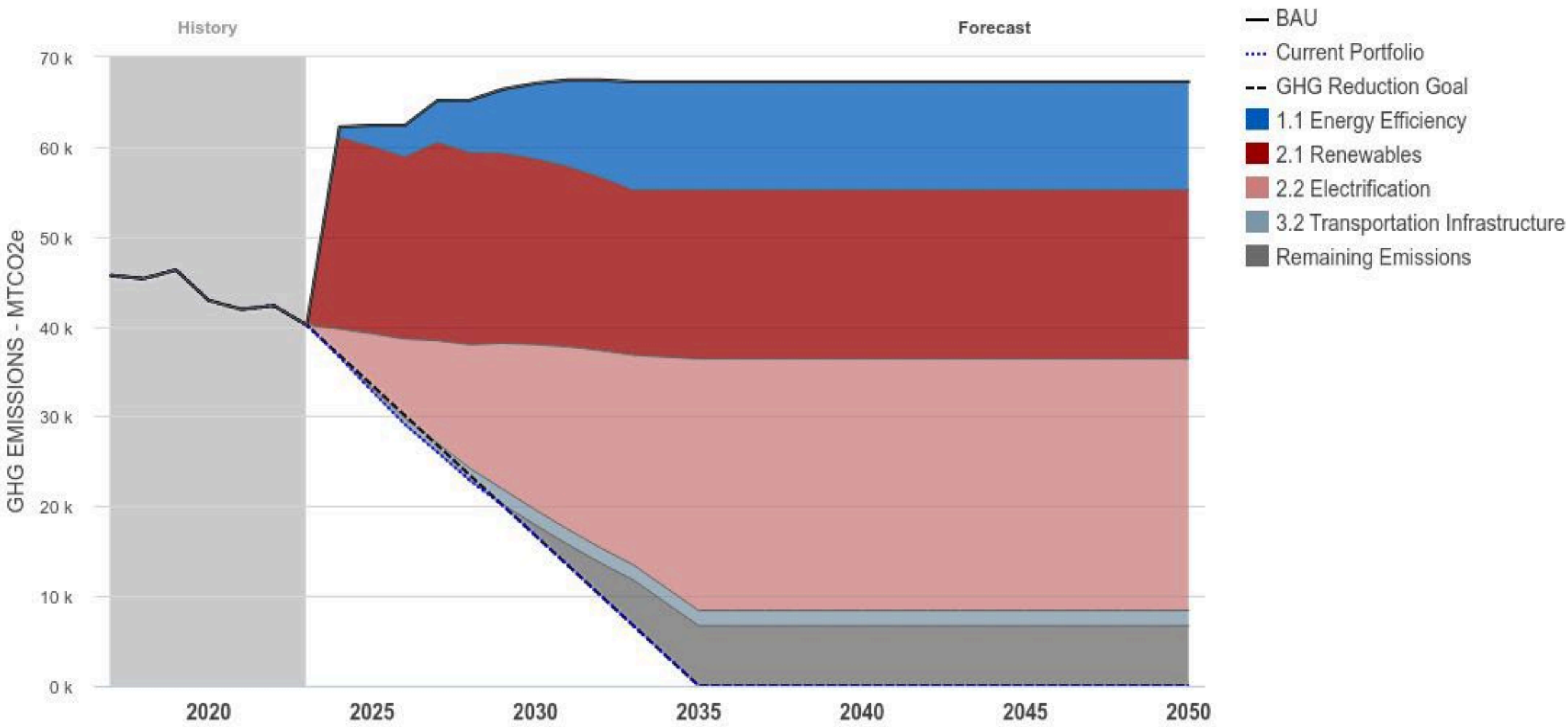
Leveraging the Academy

Decarbonization Roadmap

1 Clean Energy	1.1 Renewables	1.2 Electrification & Eliminating Fossil Fuel	1.3 Partnerships & Reforms
2 Efficient Systems	2.1 Efficiency Program	2.2 Building Decarbonization	2.3 Planning & Institutionalizing Decarbonization
3 Zero Carbon Mobility	3.1 University-Funded Travel	3.2 Transportation Infrastructure	3.3 Commuting
4 Materials Management & Procurement	4.1 Waste	4.2 Food & Beverage	4.3 Supplies & Equipment
Integrators	**Climate Justice**	**Climate Resilience**	**Leveraging the Academy**

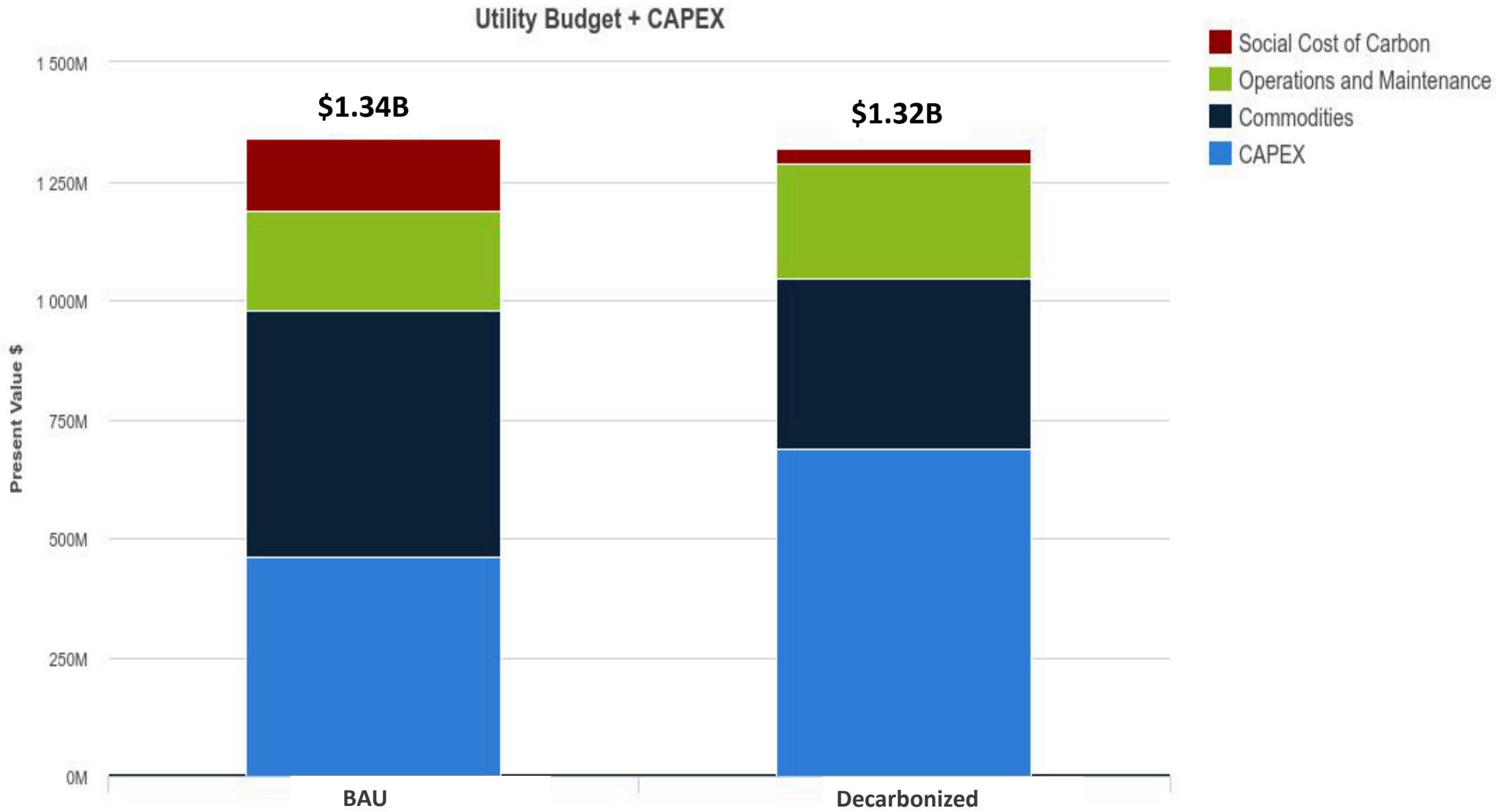
Getting to Zero - 2035

SOLUTIONS IN ACTION – Scopes 1 & 2 Only



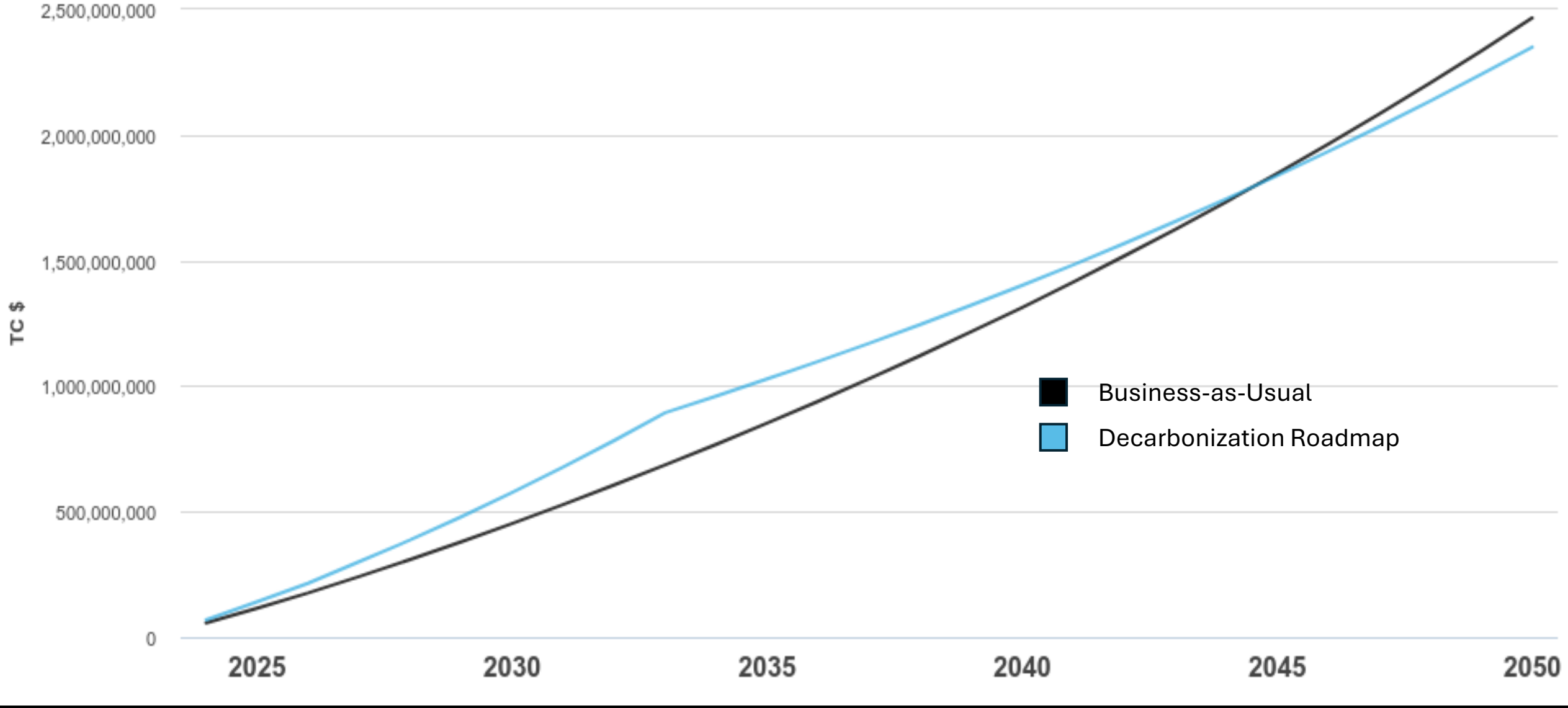
Business Case

PRELIMINARY LIFE CYCLE COST ANALYSIS (2024-2050) – SCOPE 1 & 2 ONLY



Cumulative Cashflow with Cost of Carbon

BUSINESS-AS-USUAL VS. DECARBONIZATION ROADMAP



Key Takeaways

1	**UB must lead climate action.**	Our plan is achievable, actionable, legally mandated, and what is expected of us by our peers and students.
2	**The time to invest is now.**	There have never been more incentives available and the gap between business-as-usual and the recommended portfolio is minimal.
3	**All funds approach.**	We cannot rely on the SUNY Construction Fund alone. Proactive funding strategies will be required for success.
4	**A cohesive strategy is key.**	Rethink CapEx to create a cohesive campus-wide infrastructure strategy and leverage P3s.
5	**Fundamental to the UB mission.**	It is our responsibility to build the modern campus of the future to fulfill mission-critical activities.

WHAT | ROLE CAN YOU PLAY?

Three Spheres:

1. Your Professional Role
2. As a University Citizen
3. In Your Personal World

Professional Examples

1. As a procurer of goods and services
2. As a recruiter or search committee member
3. As an office manger

University Citizen Engagement

1. Socialize yourself with UB's climate action strategy and work
2. Be the change we seek
3. Reinforce and push the messaging across our "silos of excellence"
4. Lead!

Personal Examples

1. Understand your own footprint & identify areas to advance that are strategic
2. Food is a big deal but probably not why you think it is!
3. Celebrate your victories and milestones

Discussion & Questions