

Assessing 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

November, 2020

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About Preside	nt Barchi University Strategy Leadership Team Communications Events and Reports						
le Community	President's Task Force on Carbon Neutrality and Climate Resilience						
rticles	RELATED: We Need You to Help Create Our Climate Action Plan (January 2020)						
	September 24, 2019						
	Human-caused climate change is a scientifically validated reality that is already harming lives and livelihoods in New Jersey and around the world. The nations of the world have agreed to take actions to limit further warming, including bringing net global carbon dioxide emissions to zero in the second half of this century. Achieving these objectives requires active participation from all major institutions. Rutgers is already a national leader in the scholarly study of climate change, but as a university community, we can and must do more. It is our duty to leverage our collective expertise as scholars and educators to address the climate crisis in New Jersey and around the world, including in our own operations. Today I am announcing the creation of the President's Task Force on Carbon Neutrality and Climate Resilience. I am charging this task force to develop a comprehensive climate action plan for the university to consider. It will analyze greenhouse gas emissions at Rutgers University and advise the university on solutions to reduce the University's greenhouse gas footprint that are environmentally sustainable, fiscally responsible scalable, and engage the broader community.						
	I expect this task force to develop and recommend a plan for Rutgers to achieve carbon neutrality across our institution. The task force must first define carbon neutrality within the context of the university community. Then, it is tasked with outlining scenarios, timelines, and key benchmarks for achieving this goal on as rapid a timeframe as is possible.						
	In addition, the Task Force will examine Rutgers' own exposure to climate change impacts. I expect it to look especially for approaches to reducing the university's vulnerability to these impacts.						
	As representatives of the State University of New Jersey, this task force is also charged with engaging the broader community in its work. Scholars, students, staff, state and local government, alumni, and business partners—all these groups present insight and perspectives that can contribute to achieving the goal of carbon neutrality and enhancing Rutgers' contribution to climate-positive economic development in New Jersey.						
	In developing its recommendations, this task force must give careful consideration to fiscal responsibility and to achieving our goal in a manner that balances the urgency of emissions reduction against the viability of our educational mission as a public university.						
	The committee will be responsible for recommendations across the scope of greenhouse gas emissions reduction, including carbon emissions, sources of energy, institutional practices, facilities, transportation, and behavioral change. Its work will consider greenhouse gas emission reductions at all university locations.						
	To lead this important task force, I have appointed Professors Robert Kopp and Kevin Lyons as co-chairs. Dr. Kopp is a professor in the Department of Earth and Planetary Science at the School of Arts and Sciences—New Brunswick and director of the Rutgers Institute of Earth, Ocean, and Atmospheric Sciences. Dr. Lyons is associate professor of professional practices at Rutgers Business School–Newark and New Brunswick and an associate director of the Rutgers Energy Institute. They will work closely with Senior Vice President for Academic Affairs Barbara Lee and Executive Vice President of Planning and Operations Tony Calcado to constitute the membership of the Task Force. I have requested that they report back on their preliminary findings by Spring 2020.						
	report back on their preliminary findings by Spring 2020.						

Task Force Goals

1. Carbon Neutrality: contributing to achieving global netzero 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

September 24, 2019: **Task Force Established**

Develop Rutgers' strategies for



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Rutgers faces distinctive challenges and opportunities

- Population of nearly 100,000 students, faculty, and staff the size of a small city, spread out overly nearly 10 square miles across the state of New Jersey
- 60 miles of underground water and sewer lines
- Nearly 950 buildings, with 29 million square feet of floor space, 42% over 50 years old
- One of the largest dining/food service operations in higher education
- One of the largest residence hall systems (16,000 beds) in the country lacksquare
- One of the largest campus bus systems in the US (second largest in New Jersey)
- \$4.4 billion operational budget, including \$245 million spent on supplies and \$123 million • on plant operations and maintenance
- \$5.1 billion deferred maintenance liability
- Thin operating margin (even before COVID-19)







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	Under evaluation	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 Timeline

TASK NAME	Duration
Phase 2: Sectoral Analyses	May - Oct 2020
Development of final working group reports	May - Oct 2020
Rutgers Climate Institute Symposium	Oct 23, 2020
Integration of working group reports	Nov 2020
Town hall on integrated working group reports	Nov 2020
Phase 3: Climate Action Scenarios Development	Nov - Feb 2021
Develeopment of Climate Action Scenarios report	Nov - Jan 2021
Public comment on Climate Action Scenarios report	Jan 2021
Town halls on Climate Action Scenarios report	Feb 2021
Phase 4: Climate Action Plan	Mar - Jun 2021
Development of Climate Action Plan	Mar - Jun 2021







Town Hall Goals

- Update on the sectoral analyses of the different Phase 2 working groups (the "lego blocks") \bullet Help come up with visions for the endpoint for Phase 3 scenario analysis \bullet What is the carbon-neutral, more climate-resilient Rutgers we are aiming for? - In phase 3, the Task Force will figure out how to put the lego blocks together to get to
- - these endpoints.







Transportation Working Group

Working Group Membership

Angie Bonilla Jon Carnegie **Amy Davidow Anne Gutsick Robert Laumbach RJ Palladino** Jeff Perlman

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Robert Noland and Jack Molenaar, co-chairs

Benedetto Piccoli Kelcie Ralph Mike Smart Jenn Stuart Hao Wang Sicheng Wang **Ellen White**

November, 2020





Inventory of Baseline Emissions

- Estimated total CO2 emissions from transportation: 91,974 metric
 tonnes
- Commuting: **77,831 mt**
- University fleets: **4,889 mt**
- University business travel: **9057 mt**
- Study abroad travel: **7.19 mt**
- Athletics travel: **10 mt**







Potential Solutions

- Expand telecommuting (working at home and remote instruction) •
- Incentives for purchasing battery-electric vehicles (EVs) •
- Reduce business travel and/or purchase carbon off-sets
- Create safe bicycle and pedestrian infrastructure \bullet
- Enhance public transit discount programs or free transit
- Provide a cash out to Rutgers faculty, staff and students who do not use parking
- Electrifying the University's bus fleet and other University-owned or \bullet operated vehicles
- Parking cash-out





- Expand telecommuting (working at home and remote instruction)
- instruction

	CO2 (metric tonnes)
Faculty	2,595
Staff	12,324
Students	6,272
Total	21,191

• Reduction in CO2 emissions associated with working at home/increased remote





• Incentives for purchasing battery-electric vehicles (EVs)

	25% p	arking (CO2	price ree metric (duction tonnes)	50%	barking (CO2	price re metric	duction tonnes)
	NB	NWK	CAM	Total	NB	NWK	CAM	Total
Faculty	507	289	30	826	I,433	613	91	2,137
Staff	I,380	392	65	I,837	4,017	I,545	196	5,758
Students	689	241	85	1,015	1,711	602	169	2,482
Total	2,575	923	180	3,678	7,162	2,760	456	10,378





• Enhance public transit discount programs or free transit



CO2 (metric tonnes)
1,396
I,843
I,906
5,145





Food and Water Systems Xenia Morin and Joe Charette, co-chairs

Working Group Membership

AJ Both, SEBS/NJAES, Environmental Science Anna Agbotse, Graduate Student, Newark Shauna Downs, School of Public Health, Newark Matan Dubnikov, Student, New Brunswick Lauren Errickson, SEBS/NJAES Staff Amanda Ketterer, Student, Camden Lisa Tenore, Rutgers Dining Serpil Guran, NJAES, EcoComplex Elizabeth Demaray, Camden, Art

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November 12, 2020



Additional Research Assistance from Rutgers staff, faculty and students:

Wes Coleman, Procurement and WG4 **Kevin Lyons**, Procurement and WG4 **Dennis Demarino,** Procurement Pam McElwee, SEBS Mark McLean, REHS **David Tulloch**, SEBS **Peggy Policastro**, Rutgers Dining

Rachael Shwom, Climate Task Force Member (SIMAP calculations) **Summer Research Interns** (supervised by Rachael Shwom and Xenia Morin): • Water Group: Mia Weinberg, Amulya Nagella, Nilam Kalawadia, Antionette Pauwels • Food Waste Group: Gagana Yaskhi, Keiana Castellanos, Annabelle Simhon, Jennifer Schug, Lisa

- Giangrande

Lamia Abdallah, student research assistant Kajal Talele, graduate student research assistant

Outside Consultants

Brian Conway, Gourmet Dining Services, LLC. **Richard Waite**, World Resources Institute (WRI)



Rutgers Food and Water Systems

https://climatetaskforce.rutgers.edu/wp-content/uploads/sites/332/2020/07/2020-07-17-Interim-Report-FINAL.pdf see page 59 for a overview

Rutgers:

- Dining including all operations Rutgers controls
- Food and beverage supply chain \bullet
- Contract Vendor: Gourmet Dining, LLC
- Snack and beverage vending machines
- Rutgers farms and community gardens
- Farmers markets \bullet
- Food Innovation Centers
- Hydration stations

Community:

- Farms and fisheries in NJ, PA, NY and beyond
- Value-added processors, wholesalers
- **Outside Vendors and Caterer**
- Restaurants on and near our campus
- Grocery stores
- Food systems workers (which include our students)





Newark Food System







Strategies for Reducing Food GHGs (Project Drawdown)



Address Waste and Diets

By shifting diets and addressing food waste, the global demand for food can significantly drop. Eating lower on the food chain and ensuring what's grown gets eaten is a powerful combination that lowers farming inputs, land-clearing, and all associated emissions.

Protect Ecosystems

When land and ecosystems are deliberately protected, activities that release carbon from vegetation and soil are stopped before they start. In addition, improving food production on existing farmland may reduce the pressure on other, nearby landscapes, thereby sparing them from clearing.

Shift Agriculture Practices

Better agriculture practices can lower emissions from cropland and pastures, including methane generated by growing rice and raising ruminants, nitrous oxide emitted from manure and overusing fertilizers, and carbon dioxide released by disturbing soils.





Inventory of Baseline Emissions So Far What we purchase (Scope 3):

- Current estimate: 4% Rutgers total emissions come from the food purchased by RU Dining (New Brunswick)
 - 6,267,210 million meals served in FY19 in dining, retails and catering operations (33,000 meals per day)
 - Beef (40%) and Chicken (28%) GHGs ____
 - Still need carbon emissions for:
 - Gourmet Dining, LLC for Newark, Camden, and Athletics
 - Beverage consumption
 - Caterer and vendors
 - Off-campus food-related GHGs
 - GHGs from plastic bags
 - Refrigeration

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food that fall in multiple ategories

Over 70% of the food CO2 emissions are a by- product of meats such as beef and chicken.

You can do your part by consuming less meat and consuming more grains, fruits and vegetables.

Sp Adobe Spark















What we already do...

Sustainability measures from Rutgers Dining

- ✓ New menu choices e.g. blended burger
- ✓ Sustainable Food Sourcing and Purchasing
 - ✓ 81% local food purchases (<250 miles)
 - ✓ By-catch seafood purchases
- ✓ Food purchasing inventory control
- ✓ Tracking Food-Related GHG Emissions
- ✓ Food donations to Rutgers Student Food Pantry (NB) and local food insecurity partners
- ✓ Food waste from Busch Dining feeds pigs
- ✓ Reusable Bag + Bottle Program (Meal Plans)
 - ✓ Over 1,500,000 cups, straws and lids have been saved from the landfill
- ✓ Vegawatt Generator
 - ✓ waste cooking oil is converted to electricity and heat (hot water for cleaning dishes)
- ✓ Food Waste Aerobic Digesters at Neilson Dining Hall, Busch Dining Hall, Henry's Diner and Harvest Cafe
 - ✓ waste food trimmings and leftover food broken down by microorganisms and converted into environmentally friendly "wastewater" and discarded to sewer system; reduces need to take waste to landfill
- ✓ Packaging Reduction and Recycling
- \checkmark Pilot for food waste tracking and student education campaign
- ✓ LED Light Bulbs
- ✓ Better refrigeration design in new facilities

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Food Recovery Hierarchy

www.epa.gov/foodscraps

Source Reduction Reduce the volume of surplus food generated

Feed Hungry People Donate extra food to food banks, soup kitchens and shelters

> **Feed Animals** Divert food scraps to animal feed

Industrial Uses

Provide waste oils for rendering and fuel conversion and food scraps for digestion to recover energy

> Composting Create a nutrient-rich soil amendment

Landfill/ ncineration Last resort to disposal





Sustainability measures from Gourmet Dining, LLC.

(Source: Brain Conway, Dining Director, Rutgers Newark).

The Rutgers Newark Dining Program has always been driven to become an efficient, sustainable and vital component of our Rutgers Newark community. Included below are only some of the sustainable practices we execute on a daily basis.

- \checkmark We are trayless dining water reduction, reduces food waste
- ✓ Plastic Bag free We have removed all plastic bags from our campus
- ✓ Weekly Food Donations to campus and surrounding pantries
- \checkmark Recycling of all used cooking oil
- \checkmark All our to-go containers are reusable and recyclable
- \checkmark Plastic utensils are made from fully recyclable products
- \checkmark Dish Washer is energy efficient
- ✓ Trim Trax Program Utilized in our kitchens to monitor food waste from yield. All food donated to composting initiatives
- Compass Group WASTE NOT program to track, measure and reduce food waste at the unit level to save on hauling costs, production costs and food waste.
- ✓ Imperfectly Delicious Produce rescued produce which helps reduce the emissions of methane gas that is produced from decomposing produce
- \checkmark Save the Food Root to Stem cooking training
- \checkmark STOP FOOD WASTE DAY we weigh all wasted food in our dining program so our guests can see a tangible fact on the amount of food that is actually wasted daily
- ✓ We buy from local farmers Here in Newark we utilize the COMMON MARKET a contingency of 12 NEWARK based farms and farmers
- ✓ Shared composting program with NJIT, a sister university across the street
- Ve have water dispensers in our dining areas for our staff, reducing the amount of single use bottles used
- \checkmark We give special consideration to Newark residents when we hire for a position

These are some of the items the team at Rutgers Newark utilizes in our fight for sustainable practices and against Climate change





Water Systems and Hydration Stations

Installation of hydration stations





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Potential Solutions, among many

- Shift to a more "Plant Forward" (Plant Rich) Diet \bullet - Co-benefits: health, environmental health, landscapes
- Reduce Food Waste (ReFED lists 27 different solutions)
 - Explore with community need for Anaerobic digestor and commercial composting
- Reduce single use plastic (post-COVID)
 - **Increase use of re-useable water bottles and** hydration stations
 - Tap water has 1/300th to 1/1000th carbon footprint compared to a single use plastic bottle of water
 - Replace single use plastic bags with reusable bags
- **Continue supporting locally sourced fresh products**

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Refrigeration management

Highlight climate friendly refrigeration management

- Student leasing of climate-friendly refrigerators
 - Make recommendations
 - Reuse
 - Correct disposal
- > New buildings
 - Design cold-chain with best refrigeration practices
- \succ Consumer education

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ALTERNATIVE REFRIGERANTS

REDUCE SOURCES > Industry > Address Refrigerants REDUCE SOURCES > Buildings > Address Refrigerants

43.53-50.53

GIGATONS CO2 EQUIVALENT **REDUCED / SEQUESTERED** (2020-2050)

Fluorinated gases are not the only refrigerants available. Alternatives, such as ammonia or captured carbon dioxide, can replace these powerful greenhouse gases over time.

IMPACT: Pursuant to the Kigali accord signed in 2016, the replacement of HFC refrigerants with a mix of alternatives can result in a range of emissions reductions equivalent to 43.5-50.5 gigatons of carbon dioxide from 2020-2050. Although the exact mix of alternatives is not projected and so the cost of adoption is not yet modeled, current and emerging refrigerants and appliances (including ammonia, carbon dioxide, and propane) can replace between 67%-82% of HFC refrigerants by 2050.







Evaluate and Change Recipes and Menus

- 2019 Rutgers Dining:
- $\geq 25\%$ reduction in GHGs by 2030

- Lead with taste
- Menus of Change University • Research collaborative

We are thrilled by the tremendous enthusiasm and support this initiative has received, and want to express our gratitude for Rutgers University's continued participation. In 2019 this initiative aggregated over 100 million pounds of food purchases, representing 26 member institutions! This resource provides analysis of Rutgers University's food purchases across the protein portfolio for 2019 as compared to protein portfolio purchases in 2018 (see back). Data is included for both pounds of foods purchased and food-related greenhouse gas emissions across the protein portfolio.

Shared Target for Food-Related Greenhouse Gas Reductions:

In fall of 2019 MCURC set the collective target of a 25% reduction in food-related greenhouse gas emissions from protein portfolio purchases by 2030, aggregated across all participating MCURC institutions. This reduction will be driven by changes over time in the ratios of the various protein sources in the collective protein portfolio, aligning with the following MOC principles:

- Make Whole, Intact Grains the New Norm
- Move Legumes and Nuts to Center of the Plate
- Serve More Kinds of Seafood More Often
- Use Poultry and Eggs in Moderation
- Serve Less Red Meat, Less Often
- Reimagine Dairy in a Supporting Role







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Impact unknown but worth doing

Consumer Education Campaigns

Rutgers Dining:

- Healthy Dining Team
- Climate Friendly Food Labels for online menus
- Food Waste Reduction
- Plastic bags elimination
- Cutlery by request
 - Data collection and sharing

Partner with Gourmet Dining, LLC Partner with vendors and supply chain Teaching & research via our 50+ academic programs Continue to work with student groups Rutgers Cooperative Extension for Community Outreach and Research





Top Solutions

• Solution 3.1: Menu enhancements and recipe changes

- Rutgers dining committed to 25% reduction in protein associated GHGs by 2030 (MCURC target); 20% reduction possible in next few years.
- Add more plant-forward/plant-rich recipes and dining options
- Promote meatless Mondays but continue to provide meatless and meat options on all days so customers can decide on which meatless meats
- Work with campus catering vendors to enhance plant-rich food options

• Solution 3.2: Climate-friendly food labeling

- Adoption of a climate-friendly labeling system for on online menus
- Explore labeling options at point of service
- Promote climate friendly food products for sale in retail locations
- Encourage vendors to label climate-friendly food options on online menus

Solution 3.3: Education and awareness campaigns around:

- Food choices on campus: Lead with taste and the rest will follow
- Measurement and data sharing
- Food waste reduction including reduce plate waste and source reduction
 - Broadly adopt "Stop Food Waste Day" during Earth Month, starting 28 April 2021
 - "Save the Food"
- Continue to promote Meatless Mondays
- \circ Promote water refillable bottles (potential to reduce GHG to 1-10% of single use plastic bottles)
- Use farmers markets for outreach
- Build Rutgers Dining demonstration facilities for teaching cooking skills
- Solution 3.4: Reduction of consumable goods especially those associated with food takeout/convenience or catering
 - Plastic cutlery only available if requested (not by default)
 - Promote reusable bags
- Solution 3.5: Refrigeration management
 - Comply with Federal Rules for refrigeration and decommissioning of refrigeration/cooling units Encourage students to only rent Rutgers-approved student fridge/microwaves in student housing (approval process should included GHG considerations)
- Solution 3.6: Continue to support purchased from local supply chain when in season
- Solution 3.7: Enhance outreach and explore incentives for better farming systems, food production systems, local food products, delivery methods with local supply chains, and cooking for Rutgers sourced-food
- Solution 3.8: Food demonstration facilities that address sustainable solutions Rutgers Food Innovation Center
 - Extension Faculty research and development



Extra slides





Note: Greenhouse gas emissions are given as global average values based on data across 38,700 commercially viable farms in 119 countries. Data source: Poore and Nemecek (2018). Reducing lood's environmental impacts through producers and consumers. Science Images sourced from the Noun Project. OurWorldinData.org - Research and data to make progress against the world's largest problems.

Son	ne sources of Greenh	ouse Gases
	Decomposition of food waste in landfills	Methane, nitrous oxide H
	Use of nitrogen-based fertilizer on crops	Nitrous oxide
	Transporting food products	Carbon dioxide, nitrous oxide, methane
	Bacterial decomposition in rice paddies	Methane, nitrous oxide
	Livestock manure	Methane, nitrous oxide
	Clearing forests for farmland	Carbon dioxide
	Cattle belching	Methane, carbon dioxide, nitrous oxide
	Running agricultural machinery	Carbon dioxide, nitrous oxide, methane







Greenhouse Emissions Across the Supply Chain



Note: Greenhouse gas emissions are given as global average values based on data across 38,700 commercially viable farms in 119 countries. Data source: Poore and Nemecek (2018). Reducing lood's environmental Impacts through producers and consumers. Science Images sourced from the Noun Project. OurWorldinData.org - Research and data to make progress against the world's largest problems. Licensed under CC BY by the author Hannah Ritchie





Examples of Our Food System -Camden



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e.g. Busch Campus



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e.g. New Brunswick Campuses

Beverage Vending Machines \bullet



Snack Vending Machines





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Climate Preparedness (WG 6)

Robin Leichenko and Dave Robinson, co-chairs

Working Group Membership

Lisa Auermuller **Ric Marlink** Mark McLane Francisco Artigas Tony Broccoli Kathe Newman Brian Buckley Nancy Pontes David Bushek Ashaki Rouff Patricia Findley Alejandro Ruiz Jennifer Schrum* Panos Georgopulos Jeffrey Issle Soko Setoguchi Natalie Teale* Marjorie Kaplan Steven Keleman **Ruo-Qian Wang** Laura Landau* Roger Wang Rory Langan* *Section research and writing lead November 2020



Figure 2.1. Landing Lane, Piscataway, May 1, 2014. Photo credit: Mathieu Gerbush, Office of the New Jersey State Climatologist.



Climate Risks for Rutgers Campuses

Short term risks	Long term risks		
Temperature: • Increased risk of extreme heat and heat waves, particularly in urban areas	Temperature: Mean temperatures increased in all seasons 		
 Hydrological: Increased frequency of extreme preciptiation Flood risk complicated by hydroclimatological and land cover change Tropical storms and storm surge impacts Changing frequency of ice storms 	 Hydrological: More frequent droughts Rising sea levels affect water quality and flooding in coastal areas 		

Compound risks: Each climate impact interacts with other environmental or social stresses

- Increased tropical storm precipitation with rising sea levels --> increased fluvial and estuarine flooding and storm surge
- Simultaneous drought and heat waves --> exacerbate water resources
- Simultaneous drought and sea level rise --> water quality issues



Climate Risks by Sector

Climate Ri	sks by Sector							
		Sectors						
		WG1	WG2	WG3	WG4	WG5	Health	Water Supply
		- Energy	-	- Food Supply	- Supply Chain	s - Land Use &		
		& Buildings	Transportation		& Waste	Carbon Offsets		
					Management			
	Heat wave	x		X		x	Х	х
Short term risks	Heavy Precipitation		х			x		х
	Flooding		X	Х	X		X	
	Storm Surge		X	Х				
	Ice Storms		X	Х				
Long term	Mean Temp	X				х		
	Sea Level Rise		X				X	
	Drought			X		x		X



Climate Risks by Group

Students	Climate Change Risks/COVID Lessons
Students living on or off-campus in buildings without air conditioning	 Increased risk of dehydration and heat stroke during heat waves Possible need to relocate
Students that commute	 Challenges getting to campus in severe weather conditions e.g. road flooding Public transit delays or schedule changes during an emergency
Students with physical and mental health concerns	 Increased likelihood of trauma following an emergency event Challenges accessing necessary health care
Students experiencing food insecurity	 Inability to access food on campus in the event of campus closures Increased health risks, other adverse impacts from lack of healthy balanced diet
Students experiencing housing insecurity	 Lack of safe and stable setting in which to shelter in place, work from home, etc. Few options when University housing is closed
Students supporting children or other family members	 Lack of adequate and affordable childcare or home health support Challenges finding quiet/private spaces to work from home
Black, Indigenous, and people of color (BIPOC) students	 Increased likelihood to face above challenges due to systemic racism and existing environmental injustices Reduced likelihood of accessing support due to institutional racism
International students	 Inability to go home in the event of campus closures or emergencies Visa challenges; potential loss of funding if out of the country



Climate Preparedness: Next Steps

- Climate risks affect the teaching, research and service missions of Rutgers
- Carbon neutrality plans must take into account present and future climate change risks
- Many opportunities where resiliency action and carbon neutrality can be complimentary
- Need for a more comprehensive assessment of climate impacts and vulnerabilities for campus communities



Climate Positive Equitable Economic Development

Carl Van Horn, Peggy Brennan-Tonetta, and Jessica Paolini, co-chairs

Jeanne Fox Noa Gafni Gregory Gamble Jeanne Herb Elayne McClaine

November, 2020

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Working Group Membership

Melanie McDermott Gary Minkoff Amy Rowe Lynne Trabachino Henry Turner





Definition

- This concept informed the activities of all working groups.
- In pursuit of climate-positive, equitable economic development, Rutgers University will transformation of New Jersey's economy to one that is powered by clean, renewable energy, produces net-negative carbon emissions, and is resilient to climate and related impacts and shocks.

implement policies, programs, and projects that accelerate the socially equitable and inclusive





Rutgers Program Assessment

- Rutgers has many established programs and initiatives that are relevant to developing a climate-positive, socially equitable set of institutional policies and actions.
- These resources vary in scale and scope.
- There are less than a dozen programs of 50+ included in our assessment that cross-over/cover two or more topics (such as social equity and economic development or climate change and economic development).





Community Program Assessment

- There are initiatives at the local-level in our host communities that are working towards the broad goals of climate-positive equitable economic development.
- The organizations leading these initiatives are potential partners and resources to the Task Force.
- Pursuit of in-depth engagement with host-community programs is needed. •





State Policies

- There are significant opportunities to link Rutgers' efforts to larger state policy goals, and effect transformation towards a climate-positive equitable economy.
- The Task Force should become engaged in the development/ implementation of such state policies, such as the Energy Master Plan and New Jersey's Global Warming Response Act 80x50.





National and International Programs

- Climate-positive actions at selected universities, cities, and states were identified and evaluated for their successes and failures.
- Useful examples of solutions are found among the APLU Innovation & Economic Prosperity award winners and within localities that pursue climate change goals Angeles).
- Several trends were observed internationally such as: universities are engaged in economic development, attracting new companies to their host communities and developing infrastructure to withstand climate shocks; many projects are aimed at transitioning the biggest polluters (heavy industries) towards climate-friendly practices/policies.

through an equity lens and in partnership with academic institutions (ex. Resilient Los





Recommendations

- Based on extensive research, we proposed three areas of potential climate solutions for the Task Force to explore:
 - Resiliency (encompassing environmental justice and public health);
 - Business/Economic Development; and
 - Integration/ Coalition Building.





Resiliency

- Undertake collaborative climate change planning and implementation in partnership with the urban communities that host our three primary campuses, which:
 - advances the university's plan on carbon neutrality and climate resilience;
 - advances the state Energy Master Plan to support Community Energy Planning and Action in Underserved Communities; and
 - results in improved health equity outcomes, particularly for goals associated with Healthy New Jersey 2030.







Business/Economic Development

- Build on our role as an anchor institution through investments in infrastructure, research, and programs and partnerships with locally-based businesses to support a climate-positive transition.
- Specific economic development initiatives may encompass but are not limited to: green business incubation, clean energy workforce development, student entrepreneurship, impact investing.





Integration/Coalition Building

- Establishment of a Rutgers Sustainability Office is recommended to organize and oversee implementation of actions recommended by the Task Force.
- Office could play a role in bringing together existing Rutgers programs that are focused on climate change, social equity, inclusion and diversity, and economic development.
- This can foster greater disciplinary cross-over that broadens program scope to include climate-positive equitable economic development considerations.



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