Southern Connecticut State University
SCSU

Climate Leadership Commitment: 2019-25

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Executive Summary:

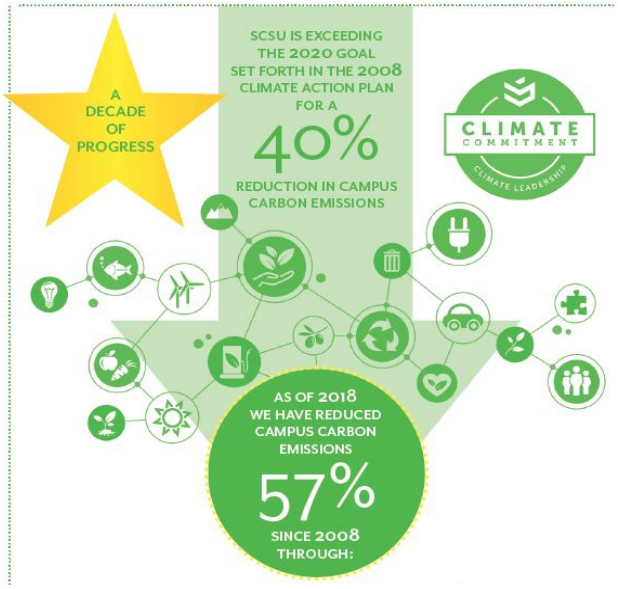
The following report updates Southern CT State University's 2008 Climate Action Plan and provides a six- year plan, 2019-25, to reduce carbon emissions and foster climate resilience as a signatory of the Climate Leadership Commitment for colleges and universities. SCSU will pursue long term goals of net carbon neutrality and climate resilience to reach them as soon as possible and by 2050 at the latest. SCSU recognizes that while it is not feasible to project specific decisions that are decades away, it is essential to set and revisit ambitious and visionary long term goals and to examine interim progress and benchmarking. The first decade of SCSU's Climate Leadership Commitment marked important progress, including a 57% reduction in carbon emissions for buildings, construction of a 1.2 MW solar array on campus as part of a power purchase agreement, commercial scale food recovery and composting in university dining operations, and formal recognition that carbon reduction alone is inadequate as preparation for the changing climate. In 2015, SCSU upgraded its carbon commitment to include resilience, a methodical and collaborative approach to understand and prepare for environmental and societal impacts driven by climate change. The first section of this report introduces steps the university will take in the next five years to further reduce scope 1,2, and 3 carbon emissions, and the second section outlines SCSU's emerging climate resilience strategies as part of a larger community. Scope 1 emissions result from on-site combustion (Campus Energy Center and other natural gas boilers, campus fleet, generators). Scope 2 emissions are associated with purchased electricity, and scope 3 emissions are indirect emissions, associated

with community activities like commuting to and from campus, university air travel, food waste and other consumer products.

I. Greenhouse Gas Emissions Reduction:

a. Summary: Scope 1 and 2 Emissions Reductions, 2008-18

SCSU achieved notable progress reducing carbon emissions 2008-18 for campus buildings. In 2008, SCSU's aspirational goal for 2020 was to reduce scope 1 and 2 carbon emissions 40% below the 2008 benchmark. SCSU exceeded this goal more than two years early, with a 57% reduction in carbon emissions for buildings. More detailed information can be found in annual reports on carbon emissions on the Second Nature reporting platform and in AASHE STARS submissions. 2008-18 projects include:



- Switching from heating oil to natural gas at the Campus Energy Center, SCSU's central heating plant
- Aggressive energy efficiency including extensive lighting retrofits, recommissioning buildings, augmented BAS, sensors/ VAV, HVAC and electrical upgrades, low flow water fixtures, and more
- Conservation: moderating heating and cooling, automated setbacks overnight and during breaks, community awareness, closure of an underutilized practice pool
- Deconstruction of Seabury Hall, the least efficient building on campus

- Collaboration with CSCU system-wide Energy Master Plan
- LEED Gold certification for new construction:
    - Academic and Laboratory Science Building
    - School of Business
- 1.2 MW P/V solar array on Farnham Avenue and Wintergreen Garage* (PPA, did not retain the RECs. No carbon reduction reported for SCSU)
- 100% Green-e certified electricity purchase (five-year contract, 2018-23)

b. Carbon Emissions Reductions at SCSU: 2019-25

SCSU will maintain the 2030 goal from the 2008 Climate Action Plan to reduce carbon emissions 60% below the 2008 benchmark. SCSU recognizes that this is an ambitious goal that will be difficult to achieve. As an additional challenge, SCSU will also continue to expand building square footage in the coming five years with construction of two new buildings: A School of Health and Human Services and a School of Business. While both new buildings will incorporate state-of-the-art energy and resource efficiency into their designs, it will be a continuing challenge for SCSU to reduce overall carbon emissions while expanding overall built square footage. Even though the university purchases 100% green-e certified electricity, it is critically important to reduce electricity consumption through efficiency and conservation to lower operating costs and to ensure that overall societal demand for renewable energy can be met in the future. Future projects:

- Construction of a 1.2 MW P/V solar array on the east side of campus, for a total of 2.5 MW campus-wide* (PPA, RECs are not retained by SCSU)
- New construction:
    - Health and Human Services Building

        - will exceed 21% efficiency compared to code
        - Projected groundbreaking: Late fall, 2019
    - School of Business: Projected net-zero energy design, currently slated to be the first CT state building to achieve this standard. May include ground or air source heat pumps, PV solar or other low/ zero carbon energy sources on site.
- Deconstruction of buildings exceeding their useful life
- Energy efficiency:
    - Continue retrofits for lighting, mechanical, electrical, and controls
    - Expand collaboration with utility to optimize changing energy incentives
    - Maintain and expand collaboration with CSCU systems office to optimize system-wide opportunities for carbon reduction or purchasing
    - Adopt new best practices that balance energy savings with return on investment
    - Study and identify emerging technologies for accelerating carbon reduction
- Conservation: Recommissioning, community awareness, improved space utilization

c. Scope 3 Emissions: Tracking and Goal setting 2019-25

From 2008-18, SCSU focused on planning and action to reduce scope 1,2 and 3 carbon emissions, but did not track certain scope 3 emissions including commuter miles and air travel. Because of the scale of carbon emissions associated with scope 3 indirect carbon emissions, SCSU will prioritize inventorying additional scope 3 emissions in the coming five years in order to inform and improve policies for scope 3, and to create reduction targets and goals as soon as possible.

By the end of 2020, SCSU will report:

- Estimated commuter vehicle emissions and estimated commuter modal split for the campus community (survey)
- Estimated campus air travel miles (travel authorization)
- Refrigerants (in collaboration with Environmental Health and Safety)
- Campus water consumption (utility billing)
- Complete a Bike Friendly University campus assessment

d. Scope 3 Emissions Reductions 2019-25

Transportation:

SCSU is a majority commuter campus. Between 2008 and 2018 the university initiated multiple projects to incentivize alternative transportation: Zip-car, indoor bike storage, NuRide incentives, three EV charging stations, hourly shuttles to Union Station and downtown New Haven, and U-Pass, in which undergraduates are eligible to ride public transit buses and commuter trains for free within the state. In the coming five years, SCSU will:

- Expand U-Pass use through improved awareness and marketing
- Assess feasibility for expanded shuttle service hours to Union Station
- Expand community awareness to encourage walking, biking, mass transit
- Participate in city- and state- level stakeholder processes as part of transportation master plan for New Haven and State of CT

Transportation emissions are a priority for SCSU beyond carbon reduction. Transportation access as a social justice issue is further discussed in the Resilience section of this report. In terms of air quality, Connecticut earned a rating of "F" from the American Lung Association in 2019, among the worst ratings in New England. While CT's poor air quality is partially caused by prevailing westerly winds carrying pollutants from mid-western coal-fired power plants, reducing local vehicle emissions will marginally improve local air quality. Tailpipe emissions are the source of many pollutants including carbon monoxide and ground level ozone, an ingredient of smog. Smog is a trigger for asthma and causes other diseases including cancers and cardiovascular disease. Young children in New Haven suffer substantially higher asthma rates than both the state and national averages. As a university with a dedicated mission for social justice, reducing vehicle emissions in our campus commuter community will contribute to improving New Haven's air quality, and improve chances that some of New Haven's most vulnerable residents will lead healthier lives and thrive.

Composting and Food Recovery

In 2018, SCSU piloted commercial scale composting at the campus dining facility, Connecticut Hall. Throughout the pilot year, SCSU sustainability interns and Chartwell's staff diverted 45 tons of pre-and post- consumer food scrap from the municipal waste stream to be processed at Connecticut's first anaerobic food digester, located in Southington, CT. Year 2 of composting is on track for similar results, and in Fall, 2019, SCSU will expand composting to the food court in the Adanti Student Center. SCSU also diverts excess unserved food and donates it to local soup kitchens and emergency pantries. Since 2016, the university has

donated more than 46,000 meals in the local community. We currently track donations by weight and nutritional category. In the next five years, SCSU will:

- Track volunteer involvement in composting and food recovery as a model for tracking volunteers university-wide
- Assess feasibility for composting at residential and academic buildings
- Monitor and test effectiveness of signage and other messaging to foster participation in composting and to prevent contamination
- Expand external partnerships with compost haulers and processing facilities to "close the loop" on food waste and create SCSU engagement opportunities for research, internships, and site visits.

Waste Reduction and Recycling

SCSU is a leader in recycling and waste reduction, and exceeds state goals for diversion rates set by the CT Department of Energy and Environmental Protection. In 2018, SCSU achieved an overall diversion rate of 28%.

From 2008-18, SCSU set a high priority for reducing waste and increasing recycling of many types including:

- Brush and landscape materials
- Single stream materials
- E-waste
- Batteries, fluorescent tubes, ballasts
- Construction and demolition materials of many types
- Asphalt, concrete, metal
- Mattresses
- Paint
- Ink and toner

- Food scrap/ composting, cooking oil for biofuel

Recent and continuing changes in the international recycled materials trade underscore the importance of reducing and preventing waste, and of eliminating contamination in recycled materials. In the next five years, SCSU will prioritize:

- Expanding composting to academic and residential buildings when possible
- Continued reduction of single use plastic in operations
- Community awareness, education programs, and incentives to reduce waste of different types
- Continued staff training to facilitate recycling success through lower contamination rates
- Expanding reuse of durable goods by students, faculty, and staff (Swap Shop for office supplies, Thrifty Owl for student dorm supplies, campus move out donations, non-perishable food collection in dorms, office furniture storage, reuse, donation)
- Monitoring dumpsters and compactors to reduce numbers and tips when possible
- Assessing feasibility and introducing zero waste catered events

Refrigerants

SCSU is responding to the Kigali Amendment of the Montreal Protocol, the 2017 publication of Paul Hawken's *Drawdown,* and an ample body of peer reviewed scientific data identifying refrigerant management as a top global strategy to lower carbon emissions to safe atmospheric levels. Refrigerants are used at SCSU in air conditioning systems, refrigerators and freezers. Because many widely used refrigerants are stable and nonreactive in the atmosphere, they have exponentially higher greenhouse gas warming potential than CO2, methane, or other

greenhouse gases. In the coming five years, SCSU will move toward scaling down super-polluting refrigerants like hydrofluorocarbons (HFC's) by:

- Assessing refrigerant management and expanding methods of tracking
- Collaborating with local and regional universities that have prioritized managing refrigerants as a climate strategy
- Incorporating new best practices for refrigerants in a manner that is fiscally and socially responsible

II. Climate Resilience at SCSU:

a. Overview

Climate resilience is a community capacity to avoid, minimize, or adapt to challenges and risks associated with global warming, and an ability to recover with minimal damage after climate related events occur. The addition of resilience to SCSU's plan for climate action creates a variety of ongoing opportunities for SCSU, many of which extend beyond direct preparation for weather-related impacts of climate change in our region. SCSU is utilizing master planning processes developed for the CSCU system since 2015 to establish certain climate resilience priorities, and for stakeholder engagement: The CSCU Hazard Mitigation Plan broadly assesses climate risk for SCSU related to weather, and The CSCU Energy and Facility Master Plans include measures to improve climate resilience to flooding, extended power outages, interruptions to regional transportation, extreme heat and extreme weather events. Each of those plans, completed by a third party consultant after extensive stakeholder engagement, is available for reference on the SCSU sustainability web page. SCSU's University Master Plan (2015-25) articulates SCSU's central mission as a social justice university and sustainability is identified as

a central part of that plan's fourth goal "to provide exemplary, ethical stewardship of human, financial, technological, and physical capital."

Across the U.S. and other parts of the world, extreme weather of different types is creating unprecedented damage and comes at high cost: financial burden, environmental and infrastructure damage, harm to human health, suffering, and limitations for communities to be able to recover or rebuild. Recent climate-related damage in the U.S. such as flooding in Houston after Hurricane Harvey, devastation of Puerto Rico's electrical grid by Hurricane Maria, and destruction caused by the Camp wildfire of Paradise, CA, including its fresh water distribution infrastructure, all demonstrate the magnitude of challenges we face as a country responding to the changing climate and remind us of the critical need to explore what we as communities are adapting *toward*.

b. Priorities 2019-25

Closer to home in CT, SCSU has, in addition to master planning processes, established and strengthened certain ties with the city of New Haven's Climate and Sustainability Framework, and additional community ties that support and strengthen resilience in local neighborhoods. SCSU is building momentum for involvement in the campus and broader New Haven community's climate resilience efforts, and efforts in the coming five years will serve the purpose of strengthening those foundations:

- Align, when possible, select initiatives at SCSU with the City of New Haven's Climate and Sustainability Framework and transportation plan priorities
- Assess certain carbon reduction projects such as food recovery, land stewardship practices, and composting according to a range of community "co-benefits," in addition to their carbon reduction potential

- Explore a broader range of initiatives that may indirectly reduce carbon, but have a primary benefit to community health
- Prioritize communication and collaboration as part of a broader community
- Integrate SCSU student outreach, engagement, and professional skill development with New Haven climate action

Existing efforts at SCSU across many academic departments, offices, and student organizations enhance the university's resilience efforts. A top priority of the coming five years is to further unify and support these efforts by improving communication and shared resources to foster interdisciplinary collaboration. While two centers are highlighted below for their work promoting climate resilience, initiatives in many departments and in all four of SCSU's schools include lecture series, workshops, outreach, research, professional development, and awareness building that support or directly focus on climate resilience.

The Werth Center for Coastal and Marine Studies

WCCMS at SCSU provides faculty and student interdisciplinary research opportunities investigating marine health of Long Island Sound across multiple disciplines in the context of the changing climate. Faculty and students from Biology, Chemistry, Physics, and EGMS conduct research at the Werth Center, including studies of shellfish kelp and coral health, water quality, heavy metal sediment contamination, and microplastics in the water column. The SCSU aquaria is home to species native to Long Island Sound and SCSU student fellows learn aquaculture and aquarium

management through a partnership with CT's Norwalk Maritime Aquarium.

SCSU recently established a three-track undergraduate major in Environmental Systems and Sustainability reconfiguring courses from several existing undergraduate minors. The university is also preparing to launch a Master of Science program in Coastal Resilience in Fall 2019, and recently launched a drone certification program with an emphasis on environmental monitoring. All three programs are housed in the Department of Environment, Geography, and Marine Studies, and the priority in the coming five years is to expand enrollment and international collaboration through the Better Futures program with Liverpool John Moores University, Shanghai Normal University, and Mara University in Malaysia.

The Community Alliance for Research and Engagement

In 2018, The Community Alliance for Research and Engagement (CARE) at SCSU's School of Health and Human Services received the largest grant in university history, $3.7 million from the CDC, to improve health outcomes for vulnerable populations in New Haven over

the next five years. The grant includes more than $1 million for community projects focused on low income communities and communities of color to improve food security, transportation access, community stakeholder capacity building, and coordinated access to social services and medical care. CARE's outreach and engagement over the next five years will strengthen Southern's connections with community in ways that will increase community resilience to climate change, namely:

- Conducting stakeholder engagement in low income neighborhoods for New Haven's strategic transportation planning process, 2019-2021
- Establishing a nutritional ranking system for foods at emergency pantries and soup kitchens
- Coordinating access to social services and medical care for low income residents in the communities where they live
- Expanding the Community Health Leaders program, matching SCSU graduate students with trained community health champions in New Haven to address health disparities in their neighborhoods
- Promoting community support for breastfeeding among vulnerable populations

III. Two Priority Challenges: 2019-25

Two priorities to meeting SCSU's short range and long term climate goals are not unique to sustainability: communication and funding. In the next five years, SCSU will prioritize these two areas in order to accelerate carbon reduction and resilience in the campus and broader community.

a. Communication

Because of the focus on community participation in the upcoming five years (scope 3 emissions and resilience), future progress at SCSU will be more dependent on streamlined and effective communication. In order to improve results, 1-2 year goals include:

- Updating and reformatting SCSU's sustainability web page and optimizing navigation for improved visibility
- Optimizing opportunities for broader for campus and community exposure throughout the year
- Continued improvement of social media
- Establishing a fall and spring newsletter providing a general community update and an archive on the web page

3-5 year goals include:

- Establishing and maintaining an SCSU sustainability alumni network
- Increasing attendance by SCSU faculty, staff, and students at sustainability-focused interdisciplinary workshops, conferences, and professional development
- Establishing an interactive guide to SCSU research, creative activity, curriculum and outreach categorized by the United Nations Sustainable Development Goals
- Increasing SCSU participation in city-led initiatives of the New Haven Climate and Sustainability Framework and State of CT (CTDEEP) climate and energy planning

b. Fundraising:

Fundraising through grants and private donations is a priority for SCSU to accelerate progress in the next five years. Southern has established its reputation and track record with climate leadership across all areas of operations and the university is well positioned to propose successful projects with a range of partners. In the coming five years, SCSU will:

- Through the Division of Research and Innovation:
  - Increase research collaboration with business and industry focusing on carbon mitigation, climate resilience, or both
  - Identify strategic opportunities to partner on multi-stakeholder grants where sustainability enhances chances for successful funding awards
- Collaborate with Institutional Advancement to expand SCSU Foundation funding as it relates to sustainability, resilience, and carbon reduction
- Prioritize grant opportunities to increase staffing and student involvement at the Office of Sustainability
- Leverage recent progress and projects as a foundation for scaling larger funded projects

IV Conclusion:

SCSU is cognizant that the next five years and coming decades that lead to SCSU's 2050 long range climate goals will bring unprecedented change for campus sustainability as a sector and for SCSU. Though the complexity of climate issues and the scale of solutions needed to meet those challenges are formidable, the pace of innovation and solutions presently available clarify the need for higher education institutions like SCSU to increase their readiness to adapt as communities, and to base climate leadership strategies on peer reviewed scientific research about climate impacts and solutions. In the last decade, extreme weather, market shifts, community advocacy, policy shifts, and technological innovation have all created challenges and opportunities for SCSU that require a blend of leadership, collaboration, expertise and community capacity building to navigate. In the coming five years, SCSU will combine long range capacity building with campus projects implemented at an ambitious pace. In some cases, as with the net-zero energy design for the School of Business, SCSU will model new types of projects than previously attempted for CT state buildings. As with the 2008 climate action

plan, SCSU will inevitably adjust and change this updated plan for 2019-25. The SCSU community values planning processes as a means for setting ambitious and visionary goals for climate solutions, and as an initial roadmap for meeting those goals.