Kirkwood
COMMUNITY COLLEGE

CLIMATE ACTION PLAN

JUNE 2024

Prepared by

verdis GROUP

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

Kirkwood Community College would like to thank the following faculty, staff, students, and community members for dedicating their time and expertise to the college's first Climate Action Plan.

Core Team

The Core Team was responsible for leading the climate action planning process. They made crucial decisions, held regular meetings, and identified key parties.

- **Troy McQuillen**, Vice President, Facilities & Public Safety
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- **Mitchell Hlavacek**, Construction Operations Coordinator

Project Team

The Project Team was a large group of individuals from across Kirkwood's campus. Project team members participated in multiple workshops focusing on visioning, barriers, climate consequences, and strategic directions. The Project Team was also broken into eight strategic direction focus teams to set targets and goals. Further individuals have been included in this list for their expertise and participation in interviews.

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Verdis Group is a sustainability and climate action consulting firm that facilitated Kirkwood's climate action planning process.

- **Grace Thomas**, Manager
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- **Joey Gruber**, Associate
- **Molly Coghlan**, Associate

LETTER FROM THE PRESIDENT

Ensuring access to quality education, training, and lifelong learning is at the center of everything we do at Kirkwood Community College. This climate action plan is an extension of that mission, reflecting our dedication to leaving behind the best world for future generations by examining our own resource use and enhancing resilience within our communities.

Globally, climate change poses significant threats to agriculture production, vulnerable communities, and human health. We recognize that the climate is already changing, and this plan demonstrates our leadership in Eastern Iowa as we face increasing extreme heat and more frequent severe storms. Our college has already felt the impacts of climate change with the devastating derecho of 2020. But in the aftermath, our campus community demonstrated incredible resilience and came together to assist the college in recovering from that extreme weather event. That's why I'm very confident that our students, faculty, and staff are ready to help the institution implement this climate action plan that will ensure the college is enabled to face these challenges in the future.

The college has meticulously developed this plan to outline how we will conserve resources to mitigate climate change effects and adapt to the local impacts we face. This plan takes a comprehensive look at our community's climate impacts and identifies strategies to proactively adjust our operations. Initiatives such as integrating additional renewable energy into our campus infrastructure, seizing opportunities to reduce waste, creating a thoughtful strategy around land use, and incorporating sustainability issues into course curriculums, not only aim to reduce our campus's carbon footprint but also prepare us for the coming impacts of climate change.

Kirkwood has a proud history of being a leader in sustainability, from our past commitments to renewable energy and eco-friendly building practices, to our student Sustainability Club, to our dedicated Sustainability Committee on campus. The strategies outlined in this plan strive to ensure that our college will remain a welcoming place for everyone, while demonstrating our leadership and commitment to regional, national, and global education for decades to come.

Sincerely,

Kristie Fisher
President
Kirkwood Community College

EXECUTIVE SUMMARY

Directions

This plan will guide Kirkwood Community College in efforts to mitigate the effects of climate change and adapt to the already existing impacts of climate change. Strategies within this plan strive to build resilience within Kirkwood and the communities it occupies.

This plan, created through a participatory planning process, contains tactics that fall within the following categories:

- **Dedicate Resources to Climate Action**
- **Commission Sustainable Infrastructure**
- **Reduce Waste and Increase Sustainable Purchasing**
- **Engage the Kirkwood Community in Climate Action**
- **Enhance Land Resources**
- **Integrate Sustainability into Curriculum**
- **Foster Community Resilience**

Eastern Iowa's Changing Climate

Kirkwood Community College joins the global scientific community in acknowledging climate change as one of the greatest long-term threats to life on earth, with significant consequences for our local community. Greenhouse gas emissions released by the burning of fossil fuels trap heat in the atmosphere, creating a blanket effect that increases global average temperatures and causes a higher frequency of extreme weather events. Since the industrial revolution (1880s) the average global temperature has increased by at least 1.9°F.

Specific impacts of climate change vary by geographic region, and vulnerability of an organization or community depends on a variety of factors, including the type and intensity of extreme weather events and a community's adaptive capacity and resilience.

Warmer temperatures

Average annual temperatures will increase, including winter minimum temperatures as well as extreme summer heat. Projections show that the average number of days in Eastern Iowa at or above 90°F will increase more than two times, from 30 days to 76 by the 2050s from the 1990s.

Days at or above 100°F will increase from 7 days to 36 by the 2050s from the 1990s, an increase of over 5 times.

January - December Precipitations

Cedar Rapids, Higher Emissions (RCP8.5)

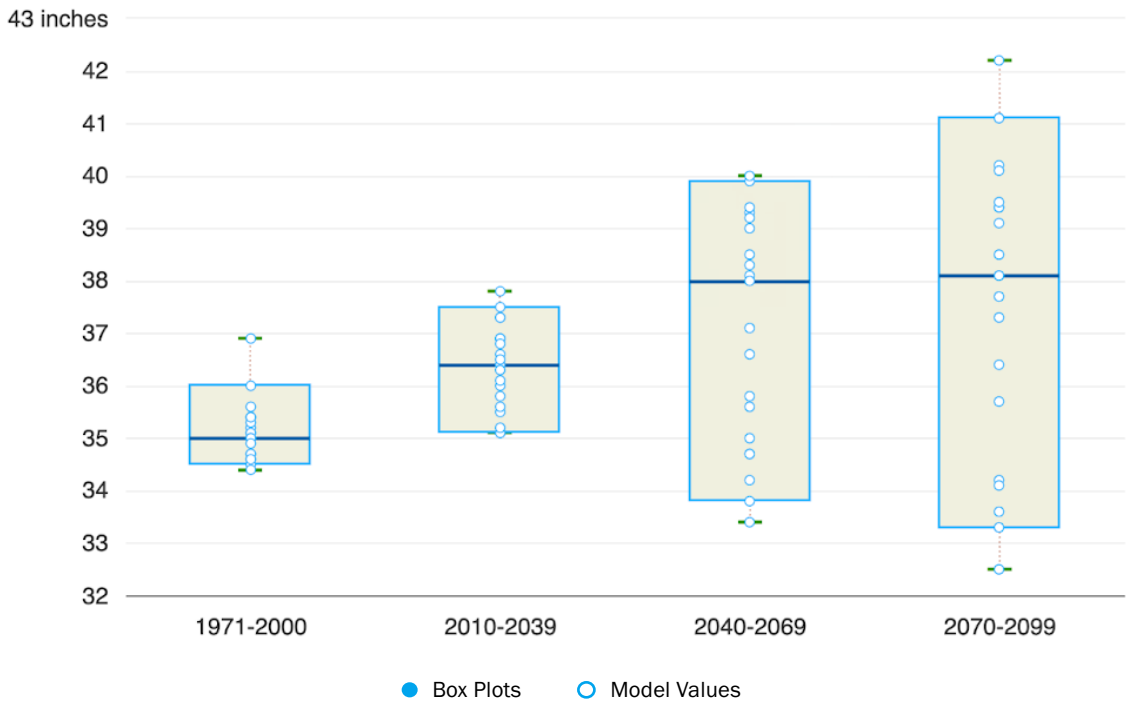


Figure 1: Projected annual precipitation in a higher emissions scenario[2]

Extreme precipitation

Extreme precipitation events will become the norm, including hail events, resulting in an increase in flooding in the spring and fall, along with extended periods of drought in the summer.

While total rainfall quantities are not expected to significantly increase in Cedar Rapids and Eastern Iowa, the timing and intensity of precipitation events are expected to shift; rainfall will increasingly become more unpredictable and extreme, with ranges increasing from approximately 2.5 inches a year to 7 inches (Figure 1).[1] As more frequent, heavy rainfall events are projected to occur in the Cedar Rapids area, riverine, flash, and surface flooding will continue to occur, posing risks to community-wide property damage and disruptions to everyday life activities.

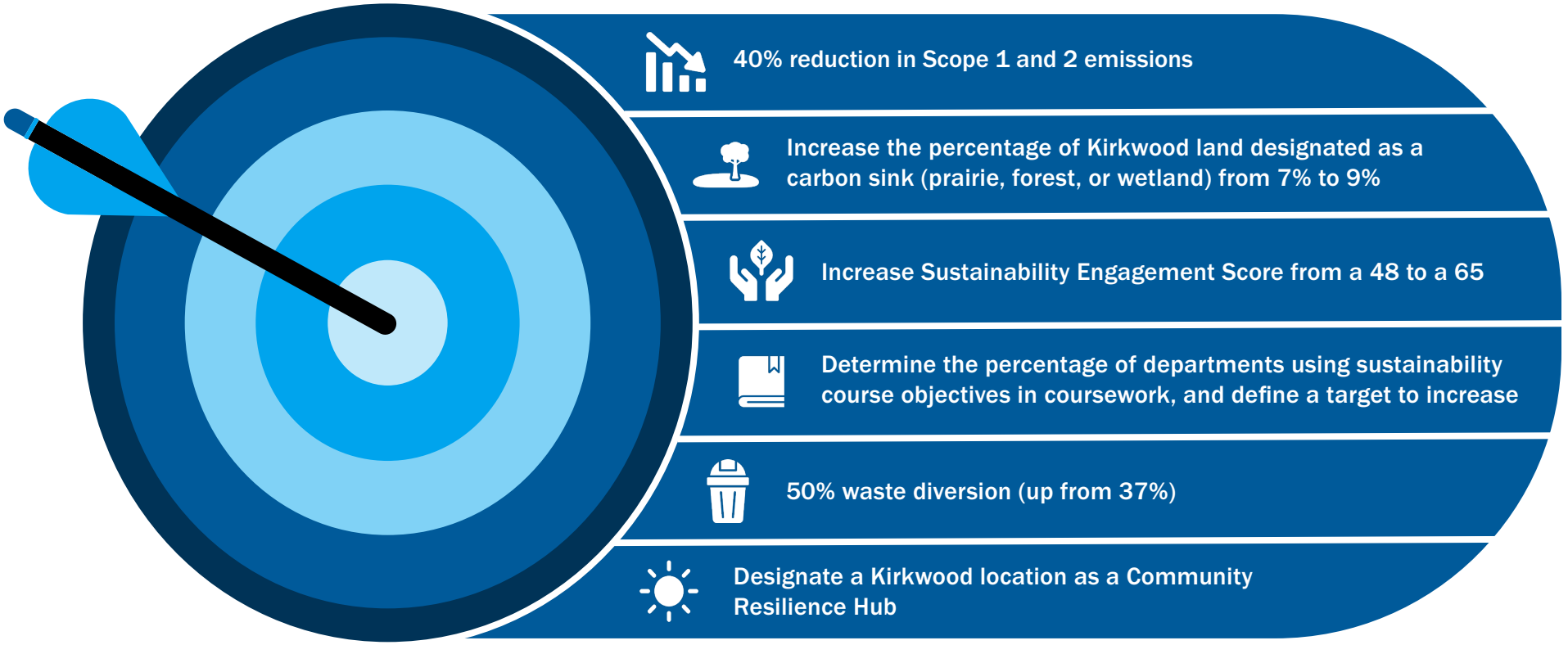
[1] Hegewisch, K.C., Abatzoglou, J.T., Chegwidden,O., and Nijssen, B., ' Climate Mapper' web tool. Climate Toolbox, accessed on December 14, 2023.

[2] Ibid

Climate Action Goal and Target:

Net Zero Emissions by 2040

2030 TARGETS



Priority Strategies

The following are strategies that are essential for Kirkwood to execute in order to achieve the goals outlined in this plan. These strategies may not be completed in the first year, but it is important to continue to prioritize movement towards them.

These strategies have not been prioritized within this list; it is no more important that Kirkwood complete strategy #1 than strategy #12.

- Partner with the eastern Iowa communities that Kirkwood is located in to establish and promote shared community Resilience Hubs
- Document and quantify existing land use (as a part of the campus master plan)
- Create a land management council that considers variables when making decisions about how land is used
- Evaluate the environmental and financial feasibility of a variety of composting systems to determine if composting at Kirkwood is feasibility on a large scale
- Allocate human resources to the implementation of the climate action plan
- Engage with the utility provider to assess the most viable options for Kirkwood to acquire renewable energy
- Determine existing curriculum that have sustainability component
- Identify a transition plan to mitigate natural gas usage on campus
- Create a strategic communications document that outlines all of the ways climate action and sustainability updates can be communicated to campus
- Define roles, responsibilities, and feedback loops that are regularly evaluated for the Sustainability Committee clarifying the role the group plays in advancing climate action at Kirkwood
- Revitalize Sustainability Village through intentional programming, collaborations with the community, and a long-term strategic plan for the use of the space
- Finalize, proactively communicate, and act upon a long-term strategy for the future of the wind turbine

INTRODUCTION

Kirkwood Community College (Kirkwood) strives to provide quality education, training, and lifelong learning to the communities it serves in Eastern Iowa. As leaders in the region, Kirkwood recognizes its responsibility to not just educate students on natural resource conservation, but also to prepare communities for the impacts of climate change and to use fewer natural resources as an institution.

The Climate Action Plan represents Kirkwood's commitment to reducing its own natural resource consumption and building resilience within its communities. Adaptation and mitigation work has occurred throughout Kirkwood's history, but the Climate Action Plan strives to unite efforts across campuses and departments, bringing staff, students, and faculty together to achieve the impressive goals and targets the college has set.

Sustainability is an integral part of the Climate Action Plan. In 2022, Kirkwood created a Sustainability Committee, and defined sustainability in the charter for the group:

> **Sustainability is the integration of environmental health, social equity and economic vitality in order to create thriving, healthy, diverse and resilient communities for this generation and generations to come. The practice of sustainability recognizes how these issues are interconnected and requires a systems approach and an acknowledgement of complexity.**

This Climate Action Plan takes a systems approach to both sustainability and creating resilient communities. The sections of the plan identified by the Project Team explore strategies that support mental health, identify funding opportunities, integrate sustainability in curriculum, support Eastern Iowa communities and more. By taking a complex approach, Kirkwood strives not only to increase mitigation and adaptation, but engage its entire community.

Strengths & Successes

Over the past several years, Kirkwood Community College has implemented several sustainability initiatives, reducing the institution's environmental impact and increasing engagement. According to the Sustainability Engagement Survey, Kirkwood's most significant sustainability strengths are engagement, wellness, and waste diversion.

Other strengths and successes include:

Dedicating resources to climate action

- Energy management and conservation procedures
- Waste minimization procedures
- Facilities-focused sustainability policy
- Cabinet-approved Sustainability Committee

Reduce waste and increase sustainable purchasing

- Kirkwood campus wide efforts
  - » Existing waste infrastructure (e.g. recycling bins)
  - » Educational signage
  - » Water fill stations across campus
  - » Hand dryers in restrooms
  - » Online promotional marketing by Student Life
  - » Sustainable serviceware in food areas
  - » Standardized printing practices
- The Kirkwood Hotel
  - » Additional waste streams (composting, glass recycling)
  - » Local food sourcing
  - » Sustainable guest practices (e.g. housekeeping)

Engage and support Kirkwood's community

- Ongoing work from the Sustainability Committee (which is a charter-recognized organization on campus) & Club
- Diverse marketing channels (e.g. "Have you Heard", press releases)
- Health and wellness programs (e.g. recreational center, wellness challenges)

Enhance land resources

- 7% of land is currently designed as a carbon sink
- Tree Campus USA Certified for ten years
- Utilizing land for sustainable education and short-term sustainable projects
- Best practices in the grounds department for sustainable landscaping and integrated pest management

Integrate sustainability into curriculum

- Creation of the Sustainable Village, which provides meeting spaces, land for gardening, and equipment to run sustainability activities on campus
- Existing curriculum (e.g. Agriculture, Horticulture)
- Previous student projects focusing on sustainability and climate action

Foster community resilience

- Cedar Rapids Climate Action Plan and integration of Kirkwood in resilience efforts
- Dedication to community and community partnerships (e.g. Linn County)
- Emergency response plans and procedures
  - » Preparedness drills
  - » Post-emergency checklists

Strategic Planning Process

Project Team members participated in five workshops throughout the project using Technology of Participation (ToP) methodology for strategic planning. ToP provides foundational methods for the facilitation of complex planning processes that encourages diverse perspectives to work collaboratively toward consensus around a desired outcome. This participatory decision-making framework lays the groundwork for a successful plan by incorporating voices from across the organization. People participate in what they help create, so ensuring Kirkwood's interested parties were involved in the creation of the plan will be instrumental to its success. The five strategic planning workshops are outlined below.

1. Visioning

Project Team members were asked to brainstorm and organize ideas around the question: "Over the coming years, how will we work together to increase our resilience to climate change impacts, and mitigate climate change's impact by reducing our environmental footprint? What do we want to see in place in 10 years as a result of our actions?"

2. Barriers & Climate Consequences

Project Team members participated in an exercise to identify obstacles that would stand in the way of achieving the vision they developed in the first workshop. In this workshop, they also completed an exercise brainstorming how Eastern Iowa's future climate risks might impact their day-to-day work.

3. Strategic Directions

The Project Team ideated strategies that would help overcome the identified barriers, address climate consequences, and move Kirkwood toward its vision.

4. Focused Implementation

Based on the results of the first three workshops and information from the Discovery phase, five key topics were identified around which Focus Teams were created to delve deeper into strategy development and implementation planning. Vision areas, barriers, and strategic directions were organized to fall within at least one Focus Team's purview, to ensure all ideas were pulled forward from previous workshops. Each Focus Team was convened to participate in a Focused Implementation workshop where they vetted, prioritized, and refined strategies that should be implemented in the first 2-3 years, and assigned ownership and timing to each strategy.

5. Goal Setting

The Project Team met one final time to review the final list of strategies for each Focus Team. This workshop also led participants through a focused conversation about what goals Kirkwood would set for the climate action plan, which were refined and approved by leadership.

VISION STATEMENT

Purpose

To summarize the sustainability and climate vision that members of Kirkwood Community College collaboratively described during the November 2023 Visioning Workshop.

Participants in the workshop developed the vision in response to the question: ***"What would a sustainable and climate resilient Kirkwood Community College be like in 10 years?"***

Community resilience & outreach

Kirkwood recognizes that organizations resilient to the impacts of climate change have strong community relationships and networks to support each other in times of crisis. Kirkwood works with its vendors to ensure sustainable services (including verified recycling programs and renewable energy programs) are available for the City of Cedar Rapids and prioritized with local utilities. Kirkwood Community College is a resiliency hub site, or a place community members can come to find shelter, food, and internet access during extreme weather events. The college has worked with the city to ensure an extreme weather emergency plan is in place, connecting the community to the college's resources and vice versa.

Regenerative landscapes and habitats

Regenerative landscapes increase local biodiversity, improve water and carbon cycles, and add nutrients back to the soil to help local ecosystems thrive. Kirkwood has created an on-site composting program as an investment in land regeneration, taking waste that would otherwise break down in a landfill and returning those nutrients to local landscapes.

Plant selection at Kirkwood reflects the native ecosystems, nurturing local wildlife and insects. Kirkwood has a long-term land management plan, which includes setting aside many acres of its land for carbon sink habitats or to be used for regenerative agriculture.

Circular purchasing practices

Materials at Kirkwood are carefully procured and disposed of, ensuring the carbon footprint is considered across product life expectancy. Standardized purchasing has reduced excess materials procured and campus has dramatically reduced its paper consumption. Office and school supply recycling programs encourage reuse and the campus has a robust recycling and composting program. Kirkwood has taken care to create an asset disposal program, ensuring large equipment does not go to the landfill if it still has a useful life.

Energy reduction strategy

Kirkwood has a comprehensive, data informed strategy for reducing its emissions on-site, using less energy, and sourcing energy from renewable sources. Submetering for more detailed building data and consolidated schedules have decreased energy use on campus. Kirkwood has invested in renewable energy on-site in the form of solar, wind, battery storage, and additional geothermal energy. Transportation at Kirkwood is sustainable, with an electric and hybrid fleet for college vehicles and many ways of getting to and from campus without driving alone in a car.

Environmental resource management

The cycle of water and chemicals in and out of Kirkwood has been managed to mitigate environmental degradation as much as possible. Permeable surfaces, stormwater capture, and an active stormwater management plan help the college maintain resilience during storms and flooding, and reduce soil erosion.

Communication and curriculum integration

When people think about Kirkwood they think about sustainability. This sustainability-focused culture has been fully integrated across the institution, and serves as a recruitment and retention talking point. The college regularly shares progress and success stories about its sustainability efforts at town halls, in campus communications, and on a dashboard that tracks progress. Kirkwood has incorporated sustainability into more course curriculums and have added additional sustainability-focused courses into their course offerings. Students leave KCC with an understanding of how they can reduce their environmental and social impacts in their future careers and everyday life.

Campus policies for resilience

Kirkwood has made major investments in sustainability and climate action to ensure these concepts reach every corner of campus. Policy is a driving force for change. This includes dedicated staff allocations to manage and implement sustainable strategies (e.g. sustainability employee). Funding is available every year to support student, staff, and faculty sustainability efforts. Local corporate connections have been leveraged to increase sustainability on campus with donated time, money, and resources, and the policies for these collaborations reflect fiscally responsible practice.

CEDAR RAPIDS CLIMATE ACTION PLAN SUMMARY

Cedar Rapids Climate Action Plan

In September 2021, following an 18-month process of extensive planning and public engagement, the City of Cedar Rapids, Iowa, developed a Climate Action Plan (CAP). The CAP is Cedar Rapids' effort to mitigate and adapt to climate change and build community resilience. Equity threads throughout the CAP and implementation process, with mitigation and resilience visions, goals, and actions prioritizing vulnerable city residents. Kirkwood's position within the Cedar Rapids community brings the opportunity to align with the City's CAP and provide regional leadership in climate action.

Projected Climate Impacts

Cedar Rapids is already familiar with its projected extreme climate impacts, namely extreme temperatures, heavy downpours, flooding, and extreme windstorms.

- The city's annual number of days with temperatures of 90 degrees and higher will triple by 2050. The urban heat island effect, a phenomenon whereby highly developed areas experience significantly elevated temperatures compared to their rural neighbors, amplifies extreme temperatures in much of the city.
- The frequency of extreme precipitation has increased by 42% since 1958, relative to 2016, resulting in historic extreme and very costly flood events during the last decade. For example, the 2008 flood cost Cedar Rapids $1.1 billion. With a projected additional 40% increase in heaviest rainfall by the 2050s, these extreme flood events will become the norm.
- Other extreme weather events, particularly windstorms, are projected to become more common.

Greenhouse Gas Emissions

In 2019, the city conducted an inventory of its greenhouse emissions. The inventory identified three major sources of Cedar Rapids community emissions:

- 70% from industrial processes
- 17% from residential and commercial buildings
- 9% from transportation

Cedar Rapids' overall greenhouse emissions have declined by 17% since 2010, primarily due to Alliant's, their electricity provider, ongoing transition to cleaner electricity sources.

Climate Mitigation Goals and Emission Reduction Targets

The CAP set two major goals: carbon-free by 2050 and 45% emission reduction by 2030. To achieve these goals, the city set these sector-based emission reduction targets:

- 67% reduction in coal-generated electricity for industrial use by 2030, and 100% by 2050
- 15% of electricity demand met through local renewable energy for commercial and residential buildings by 2030 and 2050
- 23% of commercial and residential buildings will use electricity for space and water heating by 2030, and 78% by 2050
- 15% reduction in vehicle miles traveled per resident from 2019 by 2030, and 45% reduction from baseline by 2050
- 19% of vehicle miles traveled are in electric vehicles by 2030, and 84% by 2050
- Increase diversion rate to 45% by 2030 and 75% by 2050

Climate Resilience Goals

The Cedar Rapid CAP also established community climate resilience and accessibility goals:

- Build resilience to flooding and climate hazards with priority for vulnerable residents
- Ensure all residents have affordable and accessible food options for growing and consuming healthy, culturally relevant food
- Ensure equitable access to parks and natural space
- Ensure equitable access to clean air and water
- Create high-wage, green jobs and green economic development
- Provide direct connections to city government for vulnerable residents

Key actions to achieving these goals include:

- Establishing resilience hubs
- Supporting and expanding existing resilience programs to mitigate flooding and prepare residents for future climate extremes
- Converting underused hard infrastructure to support gardens, cooling features, and active community programming
- Ensuring the continuation of the city's existing Stormwater Best Management Practices (BMP) Cost-Share Program. The program partially reimburses city residents for implementing practices that reduce stormwater runoff, such as bioswale installations.
- Creating a fund to implement a Green & Healthy Homes and Small Businesses program that supports community green practices such as energy and water efficiency retrofits, large appliance electrification, and renewable energy.

PEER REVIEW

A selection of Kirkwood Community College (KCC) peers were included in a review of industry actions and commitments. The selected peers enjoy similar professional reputation within the higher education industry, and the majority of them are located in the Midwest in similar climatic conditions as KCC. The table below summarizes the general background information of KCC peers, as well as their sustainability progress (Table 1).

College	City, State	Undergraduate Enrollment (2020 21)	Campus size (acres)	Climate Region	STARS	Emission & Energy Goals
Iowa Western Community College	Council Bluffs, IA	3,481	250	Midwest	N/A	N/A
Des Moines Area Community College	Des Moines, IA	10,175	~350	Midwest	N/A	N/A
Johnson County Community College	Overland Park, KS	10,583	234	Midwest	Silver	100% renewable energy by 2050
Bristol Community College	Southeastern, MA	5,331	65	Northeast	N/A	40% of campus energy from on-site solar
Central Community College	Grand Island, Columbus, Hastings, NE	3,477	Unknown, three main campuses	Midwest	Gold	Carbon neutral by 2025
Raritan Valley Community College	Branchburg, NJ	5,387	240	Northeast	Gold	Carbon neutral since 2017

Table 1. Summary of Kirkwood's peer institutions and their sustainability progress.

The review revealed these sustainability trends among KCC peers (each category was included in half or more of the peer organization's sustainability efforts):

Energy & Emissions Reduction

- Setting measurable emissions reduction targets
- Installing more efficient systems across the facility and implementing sustainable design for new buildings
- Creating energy tracking dashboards
- Generating renewable energy on-site

Waste Reduction

- Establishing landfill diversion goals
- Creating comprehensive waste management programs, such as composting and recycling
- Setting up waste tracking dashboards

Regenerative Landscape Management Practices

- Expanding pollinator-friendly habitats, including prairie restoration with native plants
- Implementing integrated pest management
- Practicing green stormwater management, including incorporating gardens, farms and wetlands into stormwater management infrastructure

Sustainability Education Efforts and Practices

- Establishing stand-alone sustainability divisions or programs
- Integrating sustainability across the curriculum, with sustainability courses being offered across diverse departments

CLIMATE VULNERABILITY ASSESSMENT

A critical step in the climate planning process is understanding the specific ways that projected climate change impacts will likely affect an organization. By identifying likely hazards and consequences, organizations can take steps to reduce their risks through implementing adaptive measures.

Kirkwood Community College's climate planning process included identifying its specific vulnerabilities to climate change based on a variety of factors detailed in this section. The process resulted in valuable insights that the College can use to improve its climate resilience.

This section will detail the methods used to conduct Kirkwood Community College's climate vulnerability assessment, describe climate impacts that the College is likely to experience, and summarize the College's adaptive capacity and vulnerability levels.

[3] Hegewisch, K.C., Abatzoglou, J.T., Chegwidden,O., and Nijssen, B., ' Climate Mapper' web tool. Climate Toolbox, accessed on December 14, 2023.

[4] Hegewisch, K.C., Abatzoglou, J.T., Chegwidden, O., and Nijssen, B. 'Future Climate Dashboard' web tool. Climate Toolbox, accessed on November 29, 2023.

[5] "Community Climate Action Plan - Sustainability." *City of Cedar Rapids*, 2021, accessed November 2023.

Methodology

The climate vulnerability assessment included the following steps:

Climate Projections and Impacts

Climate projection data for Cedar Rapids, Iowa, was obtained using the "Climate Mapper"[3], "Future Climate Dashboard" tool from the Climate Toolbox[4], and from the City of Cedar Rapids Climate Action Plan (2021).[5]

Data was collected in these categories:

- Heat indices: days at or above 90°F, 100°F
- Average annual maximum temperatures
- Average summer and winter temperatures
- Average annual precipitation and frequency of heavy downpours

Data described above was used to build upon existing sources to gain a full profile of Cedar Rapids' future climate. Following the framework developed by the Climate Impacts Research Consortium (CIRC), a Vulnerability Assessment Table (VAT) was created.

Climate data projections were summarized in the VAT into three main categories that align with the City of Cedar Rapids' Climate Action Plan:

- Temperature extremes
- Precipitation
- Severe weather and climate events

Unless otherwise noted, data presented in this report reflects third party modeling for the Cedar Rapids area, comparing averages from the 1990s to the projected conditions of the 2050s under the RCP 8.5 model (high scenario) as informed by the IPCC's Fifth Assessment report.[6]

Organizational Impacts

Impacts for Kirkwood Community College were assessed through an activity during the Barriers and Consequences Workshop and leadership interviews. The potential consequences of projected climate impacts for the College was summarized into narrative form.

Likelihood

The likelihood of each climate impact occurring was rated according to level of evidence. Levels of likelihood ranged from "improbable" to "very likely."

Stressors and Consequences

Possible intersections between climate and non-climate stressors were assessed. Non-climate stressors are impacts to the College that are not related to climate, such as staff overcapacity at the college or politicization of climate change within the Cedar Rapids community. Non-climate stressors were examined in terms of how they might compound, negate, or otherwise interact with the identified climate stressors related to temperature extremes, precipitation extremes, and severe weather and climate events. After examining possible interactions between climate and non-climate stressors, a consequence level between "negligible" and "catastrophic" was determined.

Risk

Using the determined values for likelihood and consequence levels, a risk value from "low" to "extreme" was assessed for each climate impact category.

Adaptive Capacity

CIRC defines adaptive capacity as the "ability of a system to adjust to changes, manage damages, take advantage of opportunities, or cope with consequences." To obtain information about the adaptive capacity, the Project Team members assessed the College's current strengths and weaknesses in the categories of social potential, management potential, and organizational capacity, all in relation to the College's ability to anticipate, respond to, and recover from the projected climate impacts involving temperature extremes, precipitation extremes, and severe weather. Survey results were analyzed, aggregated, and used to assign an adaptive capacity rating of "low," "moderate," or "high."

Vulnerability

Using the determined values for risk and adaptive capacity, a vulnerability level of "low", "moderate", or "high" was assigned for each climate impact area.

[6] "Fifth Assessment Report – IPCC." *IPCC*, 2014, accessed November 2023.

Projected Climate Impacts

Cedar Rapids projected climate impacts fall into three primary categories: warming temperatures, precipitation extremes, and severe weather and climate events.

Temperature Extremes

Temperature extremes are increasing in Cedar Rapids, and are projected to become the norm by midcentury. Average annual temperatures are projected to increase 6.4°F by the 2050s from the 1990s baseline. Average annual maximum temperatures are expected to increase at a similar rate (6.4°F), and the average minimum summer temperatures will rise to 6.8°F.

In keeping with these trends of Cedar Rapids' warming climate, projections show that the average number of days at or above:

- 90°F will increase from 30 days to 76 by the 2050s from the 1990s, nearly tripling.
- 100°F will increase from 7 days to 36 by the 2050s from the 1990s, an increase of over 5 times.

Given its urban setting, these extreme temperatures will be further elevated by the urban heat island effect. Urban heat island effect refers to the phenomenon of urban areas, or localized areas within cities, experiences higher temperatures that surrounding rural areas.[7] Currently the urban heat island effect has high to severe levels in Cedar Rapids, and is expected to strengthen in the future with increase of warming.[8] The urban heat island elevated temperatures are highest along Cedar Rapids public transit corridors, suggesting that Kirkwood's commuters who use public transportation will be at highest risk and will likely face transportation disruptions during extreme heat events (Figure 2).

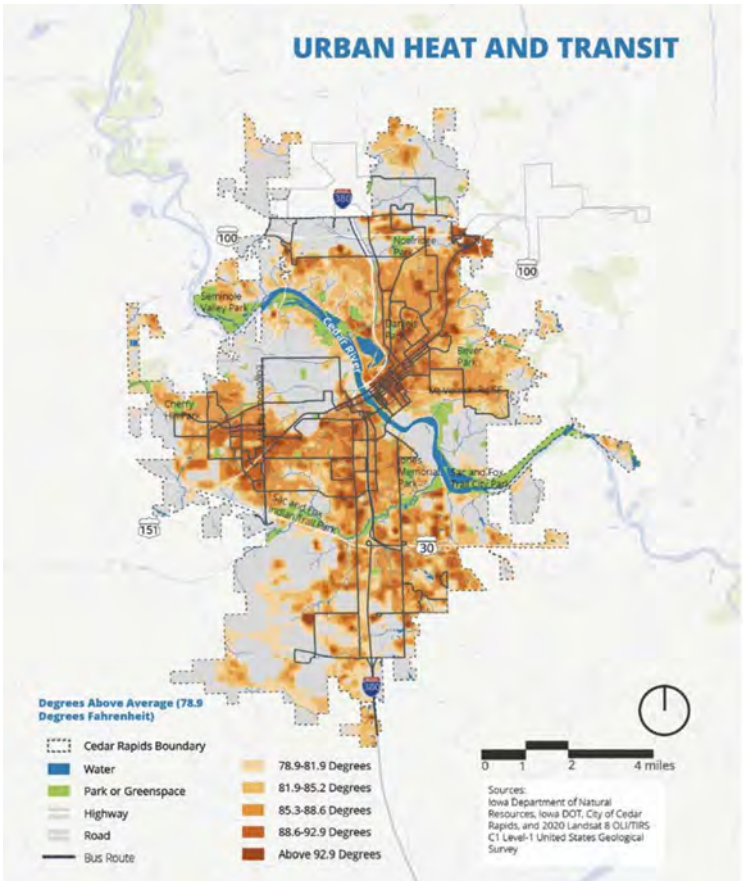


Figure 2: Areas of Urban Heat Island Effect with Elevated Average Temperatures in Cedar Rapids.[9]

[7] "Heat Island Effect | US EPA." *Environmental Protection Agency*, 18 March 2024, accessed December 2024.

[8] Ibid

[9] Asakura Robinson. "Community Climate Action Plan - Sustainability." *City of Cedar Rapids*, 2021, accessed November 2023.

Extreme Precipitation

Average annual precipitation is expected to increase slightly in Cedar Rapids (4.7%) by mid century compared to the 1990s.[10] While total rainfall quantities are not expected to significantly increase in the city, the timing and intensity of precipitation events are expected to shift. Cedar Rapids springs and winters are projected to get wetter, with respective average precipitation increases of 7.4% and 8.75%. Historically, the frequency of heavy rainfall events has been on the rise, increasing by 42% between 1958 and 2016. During the last half century, rainfall during the four wettest days of the year has increased about 35%, and over 40% annual precipitation occurs on the 10 wettest days of the year.[11] Projections indicate that heaviest rainfall will increase by an additional 40% by 1950s from the 2016 baseline.

Flooding

Because Cedar River flows through the City of Cedar Rapids, with the combination of increase in frequency of heavy downpours and ice jams in the spring, the City has increasingly experienced riverine, flash, and surface flooding.

In recent decades, the City has had record severe flooding events:

- In 2008, with Cedar River cresting at 31.1 feet, which was above the 26.5 foot, 500-year flood level, the City experienced a flood that cost it an estimated $1.1 billion (Figure 3).
- In 2014, the City experienced a 1-in-500 year flood event, where 3.5 - 5.5 inches of rain fell in less than 6 hours, with 8 inches of rainfall falling in one hour in some locations.
- In 2016, when Cedar River crested at 22 feet, a resultant flood event cost the City $8.5 million.

As more frequent, heavy rainfall events are projected to occur in the Cedar Rapids area, riverine, flash, and surface flooding will continue to occur, posing risks to community-wide property damage and disruptions to everyday life activities.

Figure 3. View of flooded Cedar Rapids in 2008, after a record flooding of the Cedar River.[12]

[10] Hegewisch, K.C., Abatzoglou, J.T., Chegwidden,O., and Nijssen, B., ' Climate Mapper' web tool. Climate Toolbox, accessed on December 14, 2023.

[11] NOAA. "Iowa." *State Climate Summaries*, 2022, accessed December 2023.

[12] Iowa Homeland Security and Emergency Management Division. "Resilient Cedar Rapids: Rebuilding Better Pays Off." *National Institute of Standards and Technology*, 12 August 2020, accessed 1 May 2024.

Drought

As temperatures rise and precipitation shifts away from consistent and even distributions, the Cedar Rapids region can expect drought events to increase. With projected high summer temperatures and low precipitation, Cedar Rapids and the Linn County region will experience more frequent and severe droughts. In recent years, the county has experienced severe droughts, experiencing the driest summer in a decade in 2023.[13] Intense droughts can reduce vegetation cover of a landscape, causing heavy runoff and flash flooding when heavy rain occurs.[14] In Cedar Rapids, the 2023 drought slowed the recovery of trees impacted by the 2020 derecho. Moreover, the Cedar Rapids community relies on water from shallow aquifers fed by Cedar Rapids River. Droughts slow the river flow, reducing the amount of water available for the community.

Extreme Weather Events

Warmer summer temperatures and milder winters combined with high humidities are projected to produce powerful storms in Eastern Iowa, including the Cedar Rapids region. Tornadoes are expected to be more variable than ever and will occur in larger outbreaks. In March 31, 2023, more than 25 tornadoes touched down in Eastern Iowa, which was the most in any day in March in the region's history.[15] In 2020, derecho swept across much of the state, causing property damage in Cedar Rapids, estimated at $60–80 million. Although there are fewer cases of hailstorms projected for Iowa, the size of hail is expected to be as large as the size of golf balls. While it is difficult to predict to the exact extent to which these severe weather events will increase for Cedar Rapids, past records along with future temperature and precipitation projections, show a strong likelihood that the city and Kirkwood will continue to experience severe weather events.

Potential Consequences

Potential consequences of the three main climate impacts, extreme temperature, extreme precipitation, and severe weather for Kirkwood Community College were determined through interviews and workshop participation.

College staff and students identified climate-related consequences that fall under the categories listed here:

- Damage to and stress on the built environment
- Revenue loss to the College and Cedar Rapids community
- Inability to physically travel to Kirkwood campuses
- Changes to working processes and needs
- Changes to educational processes
- Negative mental and physical health impacts to students, staff, and community
- Negative impacts to public safety

[13] Miller, Brittney J., and Marissa Payne. "Drought taking toll on older Cedar Rapids trees, but young ones hang on." *The Gazette*, 20 September 2023, accessed 19 April 2024.

[14] Myers, Dan. "Do extreme floods and droughts cause more extreme floods and droughts?" *Indiana University Bloomington*, 9 October 2021, accessed April 2024.

[15] "2023 Iowa Tornadoes." *National Weather Service*, 28 January 2024.

After reviewing the potential consequences identified by Kirkwood staff and students in comparison with the projected data, a consequence level of negligible to catastrophic (see scale below) was then assigned to each of the climate impact categories: temperature extremes, precipitation extremes, and severe weather and climate events.

- **Catastrophic.** Kirkwood Community College will cease to exist or have functions permanently altered.
- **Major.** Functions of the College may be dramatically altered, such that value is undermined.
- **Moderate.** Functions of the College may be diminished, such that operations and guest experience is degraded, but still present.
- **Minor.** Kirkwood will continue to function but specific activities may be impaired.
- **Negligible.** The College will not be visibly or functionally affected.

Adaptive Capacity:

Kirkwood Community College's adaptive capacity overall is rated as high.

Adaptive capacity refers to the ability of an organization or community to adjust to changes, manage damages, or cope with consequences. Staff evaluated adaptive capacity on a scale of 1 - 5 across the three dimensions as defined by CIRC and described in the table below (Table 2):

- **Nonexistent.** Not functional or does not exist.
- **Poor.** Not adequate, but provides modest function.
- **Fair.** Could easily be improved.
- **Good**. Better than adequate, but could use improvement.
- **Superior.** This is the ideal condition.

Ratings were then assigned a value of Low (1 - 2.3), Moderate (2.4 - 3.6), or High (3.7 - 5).

Adaptive Capacity Dimension	Description	Rating
Social Potential	Relationships between Kirkwood employees that allow them to make collective decisions about the future.	4.16 **High**
Organizational Capacity	Individual Kirkwood employee capacity, combined with others in the organization and local communities to make organizational choices in the face of change.	3. 90 **High**
Management Potential	Rules, regulations, and management styles that allow the College and its employees to adapt to changing conditions.	3.80 **High**

Table 2. Kirkwood Community College's adaptive capacity by dimension as assessed by employees.

Vulnerability Level

Vulnerability levels were assigned based on the risk and adaptive capacity for each climate category. The table below summarizes the climate impact categories and their corresponding levels of likelihood of occurrence, consequence if/when the impact occurs, risk to the College, the College's adaptive capacity, and the College's overall level of vulnerability (Table 3).

Climate Categories	Likelihood	Consequences	Risk	Adaptive Capacity	Vulnerability Level
Extreme Temperature • Extreme Heat Days • Heat Waves	Likely	Moderate	High	High	Moderate
Extreme Precipitation • Heavy Downpours, Snowstorms, Hailstorms • Flooding • Droughts	Likely	Major	High	High	Moderate
Extreme Weather Events • Windstorms (Derecho, Tornadoes)	Likely	Moderate	High	High	Moderate

Table 3. Summary of Kirkwood's vulnerability to the projected climate risks for eastern Iowa.

Summary

The Kirkwood community is already experiencing the effects of climate change, from extreme summer heat, catastrophic windstorms, to heavy downpours and flooding events. These climate impacts will continue to be felt throughout the Cedar Rapids community, and are likely to become more challenging for the College to navigate as intensity and frequency of multiple and overlapping impacts steadily increase.

Extreme temperatures, extreme precipitation, and windstorm events will continue to present the greatest risks and opportunities for disruption of Kirkwood Community College life. Effects from extreme heat, impacts from flooding, and extreme wind events will continue to affect College operations, staff capacity, and student learning experience. Cedar Rapids's experience with extreme events, including the 2020 derecho, and flooding event of 2008, 2014, and 2016 point to the major consequences that extreme weather and climate events can have for the city community, including Kirkwood. Past experience has shown that even when Kirkwood is not physically affected by extreme weather events, campus life is greatly disrupted. For example, during past severe flood events, while the College has been spared from flooding due to its higher elevation, it has closed down and offered its locations as staging grounds for emergency and rescue.

Kirkwood's moderate vulnerability ratings to projected extreme climate and weather events show that the College has some strengths working in its favor, in terms of its ability to be prepared, respond, and recover from climate change impacts.

Kirkwood has strong adaptive capacity, evident in a number of ways, including:

- Regular cabinet level communication during periods of extreme weather events, such as during the first week of derecho
- Strong commitment and investment in disaster/emergency response training
- Greater interdepartmental coordination in response to impacts of extreme weather events on campus
- Greater network with local contractors to ensure quick response to extreme weather disruptions to Kirkwood operations

Nevertheless, as extreme events continue and increase in frequency and intensity, the College must strengthen its ability to monitor, plan, respond, and recover from these events in a sustainable, resilient, and equitable manner.

DEDICATE RESOURCES TO CLIMATE ACTION

Vision Element

Kirkwood has made major investments in sustainability and climate action to ensure these concepts reach every corner of campus. Policy is a driving force for change. This includes dedicated staff allocations to manage and implement sustainable strategies (e.g. sustainability employee). Funding is available every year to support student, staff, and faculty sustainability efforts. Local corporate connections have been leveraged to increase sustainability on campus with donated time, money, and resources, and the policies for these collaborations reflect fiscally responsible practice.

Strong and lasting sustainability and climate action programs have dedicated staffing, funding, and lasting policies in place to ensure sustainability is a part of the culture of the organization. Throughout the climate action planning process, the task force and core team discussed strategies for implementing effective governance, allocating resources, and adding or editing policies.

Existing efforts

Kirkwood already has a number of sustainability-focused procedures in place. These include a procedure about energy management and conservation, owned by Facilities & Public Safety, and a procedure on waste minimization owned by the same department. At an institutional level, Kirkwood has a board approved policy that Kirkwood is, "committed to sustainability efforts on our campus and facilities through the use of those strategies and methods that support and enhance the overall operation of the college."

Kirkwood also has a cabinet-approved Sustainability Committee, whose goal as outlined in their charter is to create a "culture of excellence by promoting sustainability in planning, development and operation of the campus environment and facilities as well as in the development of sustainability initiatives in education and community service activities."

From a staffing perspective, Kirkwood has no dedicated staff to sustainability or climate action efforts today. However, staff throughout Kirkwood's campus and Facilities & Public Safety office are excited and aligned about the importance of sustainability. During the Net Zero Pathway goal setting workshop, staff achieved quick and clear consensus on the direction on their recommended emissions reduction goal.

Future opportunities

Dedicating ownership for engaging with faculty, staff, and students around sustainability was highlighted as an opportunity for Kirkwood. Sustainability and climate action strategies should be incorporated into staff's job descriptions, or ideally owned by dedicated personnel similar to peer institutions across the country, such as Johnson County Community College.

If a full-time sustainability position can be allocated, the existing sustainability committee can serve as an excellent governance structure. The full-time staff position may work in tandem with the sustainability committee to implement comprehensive sustainability initiatives. This type of governance structure will allow for more institutional buy-in and support for climate action implementation, since it is designed and implemented by a variety of key parties at the institution. In addition, this structure will add resilience to sustainability initiatives even during staff, faculty, and student turn over.

Funding for sustainability efforts can come from a wide variety of sources across Kirkwood, including but not limited to:

- **Governance:** The Sustainability Committee is allocated a specific budget each year to spend toward sustainability initiatives.
- **Policies:** Kirkwood dedicates a sum of resources to climate action efforts through policy change by the Board.
- **Mini grant program through the foundation:** This program has historically helped to fund small sustainability programs up to $5,000.
- **Other funding opportunities**
  - **Green Revolving Fund** - A revolving account that has funds that are used for investing and financing sustainability projects. The cost savings from those projects are then put back into the GRF to become a self-sustaining fund for future projects and investments.
  - **Paid from Savings Approach** - This approach uses the estimated cost savings from upgrading a building to calculate how the upgrades will pay for themselves over a period of time.
  - **Inflation Reduction Act Funding** - The college is eligible for funding through IRA programs to assist in paying for solar infrastructure, among other infrastructure funding opportunities. Most of these opportunities expire in 2032.

COMMISSION SUSTAINABLE INFRASTRUCTURE

Overarching goal: Net zero emissions by 2040

Vision Element

Kirkwood has a comprehensive, data-informed strategy for reducing its emissions on-site, using less energy, and sourcing energy from renewable sources. Submetering for more detailed building data and consolidated schedules have decreased energy use on campus. Kirkwood has invested in renewable energy on-site in the form of solar, wind, battery storage, and additional geothermal energy. Transportation at Kirkwood is sustainable, with an electric and hybrid fleet for college vehicles and many ways of getting to and from campus without driving alone in a car.

Introduction

The number one sustainability focus area that was identified by Kirkwood's staff, faculty, and students in the Sustainability Engagement Survey was energy conservation, with 56% of respondents indicating that this was a key area in which Kirkwood should focus their attention. Throughout the Climate Action Planning process, Kirkwood's baseline greenhouse gas emissions were measured and presented to key participants, which informed several activities and workshops dedicated to ideating climate mitigation strategies that Kirkwood should pursue and the co-creation of an organizational Net Zero Pathway (NZP). Net zero refers to the reduction of greenhouse emissions by at least 90% through strategies like energy efficiency upgrades and renewable energy investment, with carbon offsets used only to mitigate the last 10% of emissions.

During this stage of climate action planning, Kirkwood focused on accounting for emission sources over which they had the largest and most immediate opportunities to control changes, and therefore the NZP focuses on Kirkwood's Scope 1 and Scope 2 emissions. During the NZP process, key participants recommended a goal of reaching net-zero emissions by 2040. While not included in their current greenhouse gas inventory, Kirkwood recognizes the importance of Procurement and Business Travel emissions to their overall climate impact and identified them as future focus areas.

Greenhouse Gas Inventory

A GHG emissions inventory for KCC was completed, covering emissions associated with Scope 1 (direct, on-site), Scope 2 (indirect emissions from owned sources), and select Scope 3 categories (Waste, Water, and Employee Commute). Kirkwood provided all necessary data, and Verdis Group analyzed the data using proprietary tools. Kirkwood produced 14,003 metric tons of carbon dioxide equivalent ($MtCO_2e$) of emissions in 2022 (see Figure 4). The primary source of emissions is electricity consumption for building operations (53%), followed by emissions from stationary combustion (23%).

Methods and Assumptions

Emissions from four gasses: carbon dioxide, methane, nitrous oxide, and refrigerants were accounted for. These four gasses constitute the vast majority of emissions for most organizations. Methane and nitrous oxide are more potent greenhouse gasses than carbon dioxide. Verdis Group converted these gasses into carbon dioxide equivalents (CO_2e) to compare them equally. For example, methane is approximately 25 times more powerful than carbon dioxide, so methane emissions are multiplied by approximately 25 to produce the carbon dioxide equivalent. Emissions factors were sourced from the Environmental Protection Agency (EPA), the Energy Information Administration (EIA), Alliant Energy, and MidAmerican Energy Co., which report an annual emissions factor (the amount of carbon dioxide released per kWh generated).

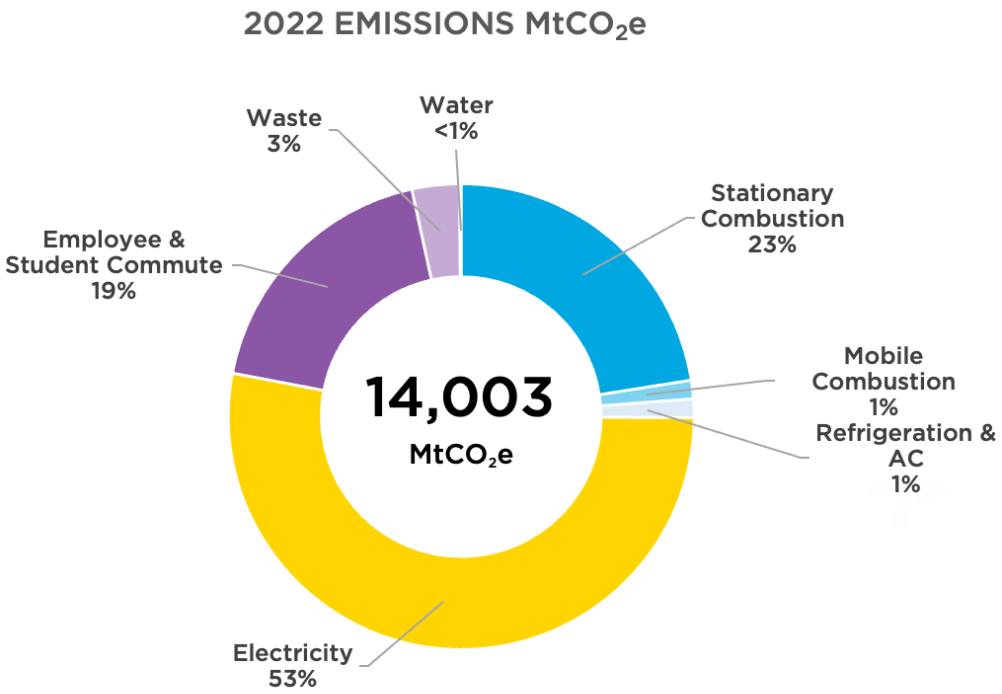


Figure 4. Kirkwood Community College's 2022 greenhouse gas emissions.

Other Relevant Information

- Applicable framework: Greenhouse Gas Protocol
- Reporting lead: Molly Coghlan, Associate, Verdis Group
- Reporting period covered: January 1, 2022 to December 31, 2022
- Organizational boundary: the inventory applies the consolidation approach of operational control
- Operational boundary: emissions sources included in the inventory are Scope 1, Scope 2, and select Scope 3 Categories (Waste, Water, and Employee Commute)
- Electricity Emissions:
- Market-based electricity emissions based on utility-specific emissions factors (also disclosed in emissions total): 7,412 $MtCO_2e$
- Location-based electricity emissions based on grid average data (disclosed per reporting requirements): 8,885 $MtCO_2e$

Assumptions

During the completion of the inventory, the reporting team made several assumptions that are disclosed below:

- **Solar Energy:** Kirkwood produced 130,768 kWh of on-site solar at Kirkwood Regional Center at the University of Iowa. Without the production of this energy, this property would have increased consumption of electricity from the grid and increased GHG emissions. Additional solar exists at Jones Hall, however the 2022 generation was not provided.
- **Emissions Factors:** A utility-specific emissions factor could not be obtained for Vinton Municipal Utilities, which provides electricity to Benton County Center and Cedar County Center, or Linn County REC which provides electricity to Kirkwood Regional Center at the University of Iowa. Instead, for those location-based emissions from purchased electricity were estimated using the regional average emissions factor from the Emissions & Generation Resources Integrated Database (eGRID).
- **Employee and Student Commute:** This source of emissions is measured based on a proprietary Verdis Group survey. The survey assesses the percentage of respondents commuting by various modes of transport, which is then extrapolated to the rest of campus.

Results

The majority of Kirkwood Community College's GHG emissions are from electricity use, followed by natural gas use for heating (see Table 4).

Scope	Source	Description	$MtCO_2e$
1	Stationary Combustion	From combustion of fuels in stationary sources (e.g., boilers, furnaces).	3,150
1	Mobile Combustion	From the fuel consumption of owned vehicles.	179
1	Refrigerants	From the use of refrigeration and air conditioning equipment.	181
2	Electricity (market-based)	From the generation of purchased electricity that is consumed on-site. Based on the most refined data available and used in inventory totals.	7,412
3	Employee and Student Commute	From the fuel consumption of the various modes of transportation used by employees and students to commute to work. Also includes work-from-home based emissions.	2,604
3	Waste	From the generation of waste in operations.	461
3	Water	From the use and treatment of water.	16
Total			**14,003**

Table 4: Sources of Kirkwood's GHG Emissions

Kirkwood Community College's total emissions for 2019 are equivalent to any of the following:[16]

3,017
passenger vehicles driven for one year

1,763
homes' energy use for one year

16,670
acres of US forests sequestering carbon for one year

32,566
barrels of oil consumed

[16] "Greenhouse Gases Equivalencies Calculator - Calculations and References | US EPA." Environmental Protection Agency, Accessed 4 January 2024.

Net Zero Pathway

Overview

The Sustainability Engagement Survey administered to Kirkwood's communities (Staff, Faculty, and Students) indicated that 23% of respondents see energy conservation as an important metric for a resilient campus at Kirkwood Community College. Respondents noted that campus should meet energy conservation goals, such as, percent of renewable energy and net-zero emissions.

Following the greenhouse gas inventory, Verdis Group and 13 key participants at Kirkwood co-created a Net Zero Pathway that estimates the impact of the strategies available to the organization to reduce its emissions and ultimately recommend an emissions reduction goal.

The process consisted of three phases:

Workshop #1: The project team focused on understanding the baseline emissions and ideating strategies that Kirkwood could pursue to achieve net-zero GHG emissions.

Information Gathering: Verdis Group worked with several subject matter experts at Kirkwood to gather key information and identify reasonable assumptions for the impact that each strategy could have on emissions.

Workshop #2: Participants and Verdis Group co-created a pathway to Net Zero, and the group put forth a recommendation for an emission reduction goal.

Other Relevant Information

- Applicable framework: Science Based Target Initiative
- Net Zero boundary: Scope 1 and 2
- Baseline: 2022 - 10,922 $MtCO_2e$

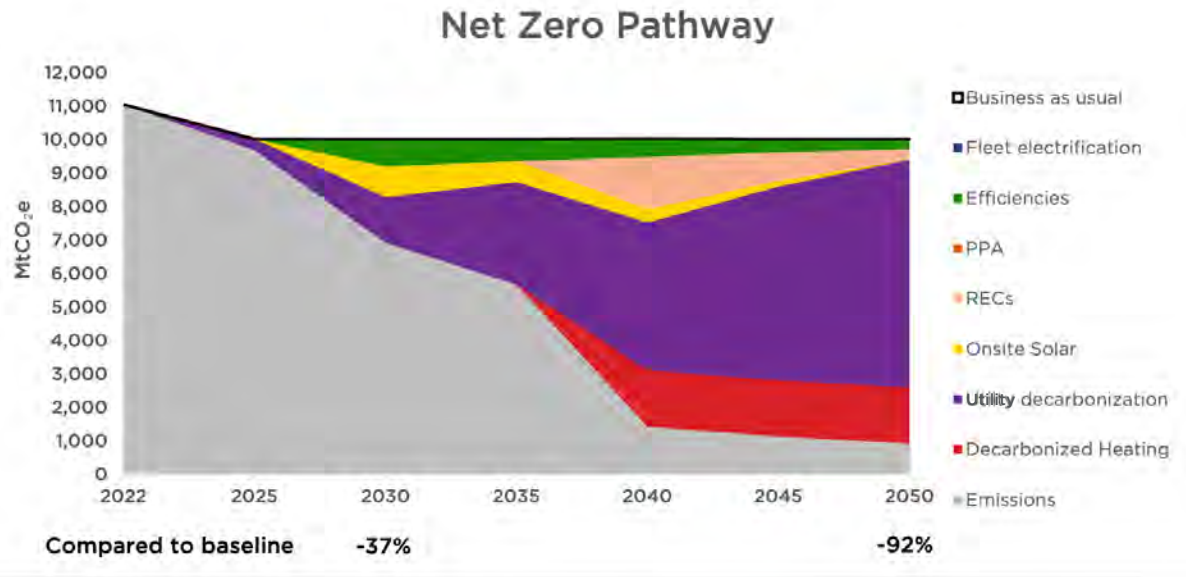


Figure 5. Kirkwood's Pathway to Net-Zero Emissions

Goal Setting

Based on inputs provided by the subject matter experts at Kirkwood, information gathered from external sources, and expertise provided by Verdis Group, the majority of participating team members recommended the following goals:

- Kirkwood will achieve a 40% reduction from the 2022 baseline for Scope 1 and Scope 2 emissions by 2030.
- Kirkwood will achieve net-zero emissions for Scope 1 and Scope 2 by 2040.
- Using this model (Figure 5) allowed key parties to decide when and to what extent the strategies would be undertaken. The following sections detail the key takeaways on each strategy considered.

Efficiencies and Space Utilization

Implementing strategies that increase efficiency or strategically utilize campus space can result in both Scope 1 and Scope 2 emissions reductions. The primary strategies that Kirkwood identified to optimize building efficiency and space planning are outlined below.

Strategic Sizing by 2025 (Business as Usual Line)

Since the baseline year of 2022, Kirkwood has removed nearly 100,000 square feet from their footprint, resulting in a decrease in overall emissions of 5%. Additional strategic downsizing decisions are being considered resulting in a total property decrease of 5%. With these changes made, Kirkwood would experience a 9% reduction in emissions from the 2022 baseline.

Efficiencies by 2030 (Green Wedge)

Kirkwood is committed to improving efficiencies in their buildings and has made great strides with an estimated 50-60% conversion to LED lighting already completed and efforts made to consolidate classroom scheduling to reduce energy demand.

To increase efficiencies further, completion of the conversion to LED lighting is a priority strategy to be completed by 2030. Additionally, Kirkwood could increase efficiencies on the main campus by expanding the efforts to consolidate classroom scheduling and building automation.

Recommended Next Steps

- Continue to monitor campus space demand and adjust campus size to optimize utilization
- Prioritize and implement LED conversion across all of Kirkwood's buildings
- Identify strategies for further optimization of classroom scheduling

Scope 1 Emissions Reduction Strategies

Decarbonized Heating by 2040 (Red Wedge)

Currently natural gas makes up 23% of 2022 emissions, and to achieve net zero emissions, Kirkwood will need to decarbonize heating infrastructure. Kirkwood has already committed to increasing their building heating efficiency with the implementation of geothermal on 55% of campus space. While it is difficult to estimate exactly how much energy reduction Kirkwood has achieved with the use of geothermal, Alliant estimates that one project, the student center, is 47% more efficient after the implementation of geothermal.

Key strategies for emissions reduction through decarbonized heating include:

- The expansion of geothermal to more buildings on campus
- Improving understanding of heating impact by expanding submetering of buildings, particularly on the main campus
- Electrifying boilers as they are up for replacement to achieve a 70% reduction in current demand for natural gas heating.

Fleet Electrification by 2030 (Dark Blue Wedge)

While emissions from the fleet of vehicles account only for 1% of total GHG emitted, switching to electric vehicles (EVs) is an opportunity to show Kirkwood's commitment towards its goal. About 30 of Kirkwood's vehicles will be eligible for replacement by 2030, and by transitioning those vehicles to electric, Kirkwood can see a small impact on overall emissions (<1%).

Electrifying the fleet will also require on-site charging infrastructure, which can also be made available to the communities of Kirkwood and bring additional benefits to students, faculty, and staff. The Kirkwood community has already indicated an interest in EV infrastructure on campus through the SES. 23% have indicated plans to purchase an EV in the next three years, and over 200 survey respondents indicated an interest in having EV infrastructure on campus.

Recommended Next Steps

- Set priorities for expansion of geothermal
- Set priorities for boiler replacement and electrification
- Implement sub-metering buildings on the main campus
- Develop an EV conversion plan
- Implement community EV charging infrastructure

Scope 2 Emissions Reduction Strategies

On-Site Solar by 2030 (Yellow Wedge)

Kirkwood has already invested in on-site solar at the Kirkwood Regional Center at the University of Iowa and at Jones Hall which has resulted in a decrease of demand for electricity from the grid. Kirkwood identified 4 MW of solar potential on their buildings, and have expressed an interest in utilizing their land resources to further expand on-site solar.

Kirkwood identified 9 projects representing 15 buildings that are prime candidates for solar on campus. Verdis Group conducted a solar study using Helioscope, a solar modeling tool, to estimate generation potential. To maximize the cost saving impact of federal solar rebates, a completion date of all solar projects by 2030 was selected for the following projects:

- Jones Hall
- Kirkwood Hall
- Washington Hall
- Horticultural
- Facilities & Public Safety
- Benton and Cedar Hall
- KCETC
- Linn Hall & Simulation Lab
- Washington County Regional Center

With the implementation of these projects, Kirkwood could generate 29% of its 2022 baseline electricity consumption and would reduce Scope 1 and Scope 2 emissions by 10% from the baseline.

Utility Decarbonization, Renewable Energy Acquisition, Offsetting Emissions (Purple and Pink Wedges)

Kirkwood's electricity provider for the main campus, Alliant Energy, has set a net-zero emissions goal for 2050. As Alliant increases the amount of renewable energy in their mix, Kirkwood's emissions for electricity will decrease. However, if the utility is to reach their net-zero emissions goal, they will need partnerships that can help them to increase the renewable energy in the mix and reduce the electricity demand in the region. As more organizations continue to electrify, load will be added to the utility, while at the same time, the utility will strive to add renewable energy. Kirkwood can expect their emissions to reduce over time, but should not exclusively rely on utility decarbonization to eliminate their electricity emissions.

There are several avenues Kirkwood could pursue to purchase or own renewable energy-generating assets. In addition to building renewable energy on-site, Kirkwood could leverage land assets to partner with Alliant on a customer-hosted solar project. The utility would lease land from Kirkwood for 30-35 years in order to develop solar. There would be no upfront cost to Kirkwood, and Alliant would provide a lease payment. In order to keep the credits associated with the energy produced on-site, the cost would be deducted from the lease payment.

Power purchase agreements (PPAs) are long term contracts that organizations enter into to fund the development of renewable energy, typically for ten to fifteen years. In some cases, PPAs may be virtual (VPPAs), a similar agreement, but in this case the organization purchases the renewable energy credits on an ongoing basis from the developer rather than directly receiving the renewable energy electrons produced by the project. VPPAs tend to be located in a different part of the country from the buyer, but have a similar impact to a true PPA. PPAs and VPPAs require complex agreements, and a certain threshold of total MWh consumption for a developer to commit to a project. Kirkwood may consider finding regional partners to develop a financially advantageous project with a developer.

Remaining emissions will need to be covered by offsets on an ongoing basis. Renewable Energy Certificates (RECs) are one type of offset that can be purchased to offset Scope 2 emissions from purchased electricity. These can be obtained either through direct purchase of existing RECs from a broker, through a utility, or as stated above, through a VPPA. As we look to the future, and the demand for RECs increases, the cost per REC is expected to increase annually by as much as 20%.

After emissions have been reduced 90% or more, remaining emissions will need to be neutralized by purchasing carbon offset credits in order for Kirkwood to achieve its net-zero emissions goal.

Recommended Next Steps

- Set priorities for on-site solar projects on Kirkwood's buildings
- Engage with the utility provider to assess the most viable options for Kirkwood to acquire renewable energy
- Explore the role that a VPPA or RECs play in offsetting Kirkwood's emissions

Scope 3 Emissions

Kirkwood's Net Zero Pathway covers a significant portion of their carbon footprint, but some categories of emissions were not fully included in their inaugural GHG accounting or represent a very small portion of overall emissions, and therefore, are not reflected in the strategies for reduction outlined above. Strategies Kirkwood may consider to advance sustainability in these additional areas are outlined below.

Employee Commute

Employee commute constitutes approximately 19% of Kirkwood's overall emissions. When employees and students commute using an active mode of transportation, it not only helps Kirkwood Community College reduce its emissions, but also contributes to employee and student wellness. The metric used to measure this is called a mode split, which is the percent of trips people make to Kirkwood using a mode of transportation other than driving alone in a vehicle (in a typical week).

Baseline:

Kirkwood Community College employee and student mode split is currently 30%, meaning 30% of employee and student trips to campus are made using a mode other than driving alone in a vehicle (Figure 6). The average one-way commute distance is 15 miles. See Table 5 for the breakdown of employee commute trips by mode.

The survey administered by Verdis Group indicated that, at present, 2% of employees drive an electric vehicle to work. Additionally, 23% of respondents indicated that they are considering purchasing an electric vehicle in the next 3 years, with 3% indicating that they are considering purchasing an EV within the next year. This shift is likely to increase the demand for electric vehicle charging on Kirkwood's campus in the next 3 years, not just for Kirkwood's owned vehicles, but also for Kirkwood's staff, faculty, and students.

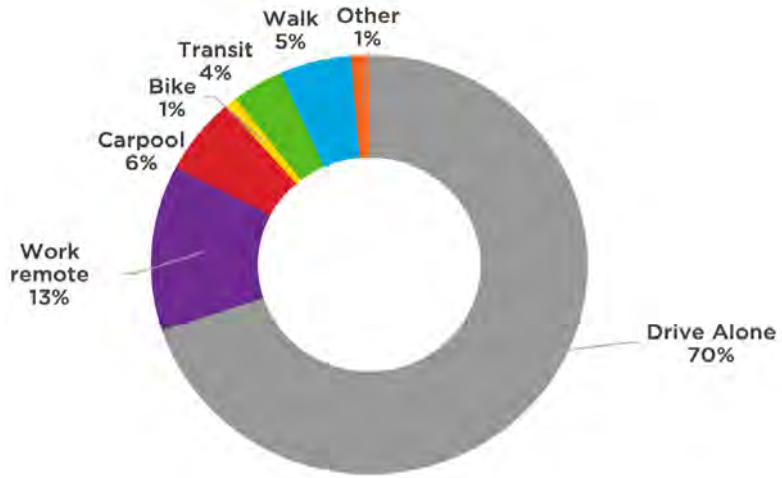


Figure 6. Kirkwood's 2024 Employee Commute Mode Split

Mode		Number of trips	%
	Drive Alone	20,630	70%
	Work Remote	3,772	13%
	Carpool	1,760	6%
	Bike	257	1%
	Transit	1,126	4%
	Walk	1,565	5%
	Other	405	1%

Table 5. Employee Commute Trips by Mode

Recommended Next Steps

Kirkwood may consider implementing programs that support their faculty, staff, and students in utilizing active methods for their commutes. Examples include:

- Free transit passes for employees
- Free emergency ride home program that ensures employees are not stranded at work if they utilize an active method but are unable to use it to commute home
- Improved bike and walking infrastructure; including access to a locker room with showers

Water

While Kirkwood currently has an abundant water supply, droughts and floods put stress on water systems by damaging infrastructure and causing contamination. While reducing water is a mitigation strategy because of its interconnection with energy use, climate-smart adaptation also considers ways to reduce water use in order to prepare for future water scarcity concerns.

Baseline

In 2022 Kirkwood's overall water consumption was 16,506,753 gallons, which is equivalent to about 25 Olympic-sized swimming pools, or about 8.9 gallons per square foot (Figure 7). Kirkwood's water usage saw a significant reduction during the COVID-19 pandemic in 2020, but increased by nearly 8% from 2021 to 2022. While the water usage remains lower than Kirkwood's use in 2018, it has been increasing since the return to normal operations following the COVID-19 pandemic.

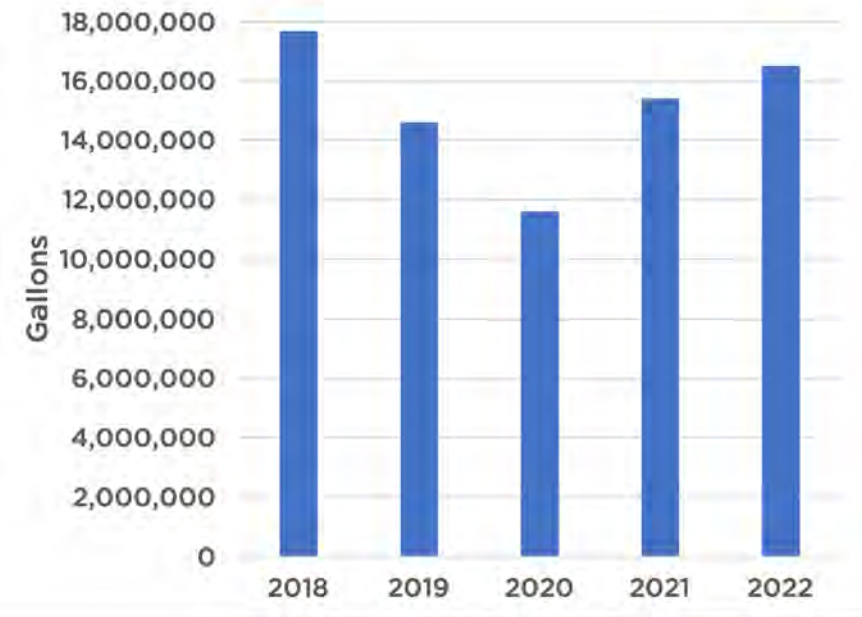


Figure 7. Kirkwood Community College's water use over time, 2018-2022.

Recommended Next Steps

- Set a goal for water use
- Install water-efficient appliances across Kirkwood's facilities
- Provide water conservation education to staff, faculty, and students

REDUCE WASTE AND INCREASE SUSTAINABLE PURCHASING

TARGET

Increase Kirkwood's diversion rate from a 37% 2022 baseline to 50% by 2030.

Vision Element

Materials at Kirkwood are carefully procured and disposed of, ensuring the carbon footprint is considered across product life expectancy. Standardized purchasing has reduced excess materials procured and campus has dramatically reduced its paper consumption. Office and school supply recycling programs encourage reuse, and the campus has a robust recycling and composting program. Kirkwood has taken care to create an asset disposal program, ensuring large equipment does not go to the landfill if it still has a useful life.

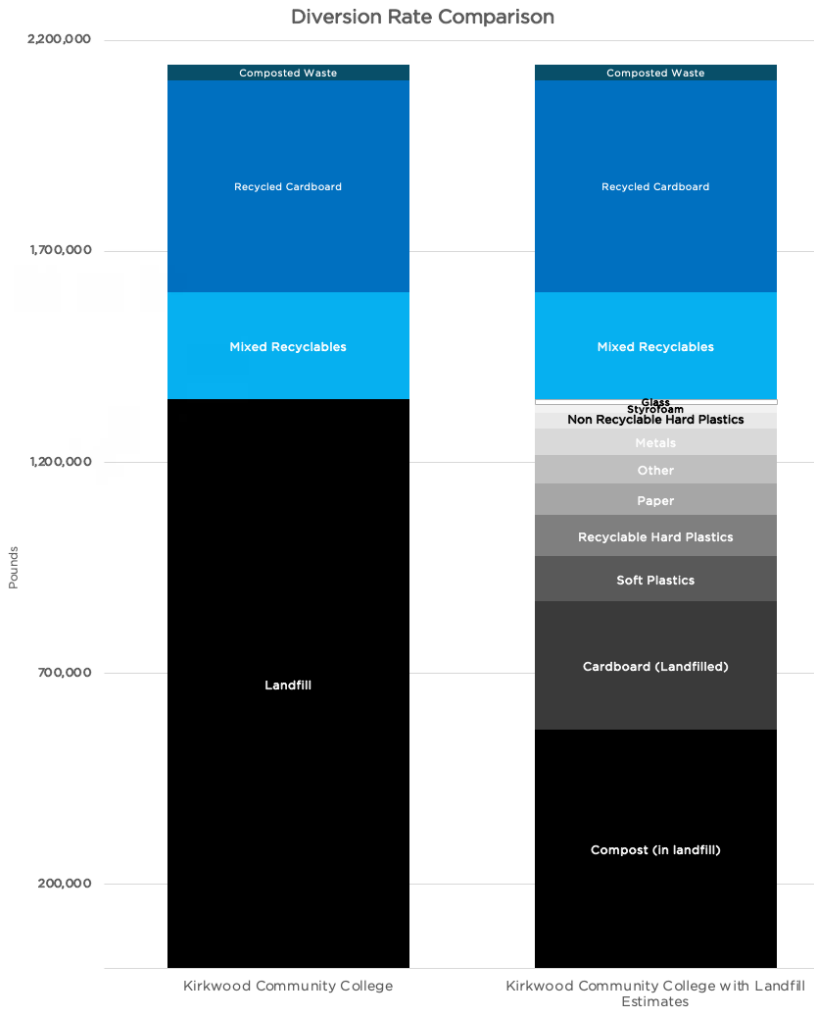


Figure 8: Comparison of Kirkwood's waste streams to potential landfill breakdown

Introduction

Waste reduction and sustainable purchasing go hand in hand to improve Kirkwood's environmental impact. Materials in the landfill contribute to negative impacts to the environment and health. Implementing circular purchasing practices as well as sustainable waste management can reduce costs in a number of areas. Additionally, the Kirkwood community identified waste reduction as a top opportunity to be more sustainable in Kirkwood's 2024 SES.

	Today	Potential	2030 Target
Diversion rate	*37%*	*89%*	*50%*
Mixed Recyclables	12%	24%	18%
Cardboard	23%	37%	30%
Compost	2%	28%	4%
LANDFILL BREAKDOWN	63%	10%	
Recyclable Hard Plastics	7%		
Papers	5%		
Metals	5%		
Glass	1%		
Cardboard	22%		
Compost	42%		
Soft Plastics	8%		
Non-Recyclable Hard Plastics	3%		
Styrofoam	1%		
Other	5%		

Verdis Group Waste Audit Data

Figure 9: Data outlined in the Figure 8

Existing Efforts

Kirkwood has already made several efforts to improve waste management on campus. Recycling bins, educational signage, water bottle refill stations, and hand dryers can all be found throughout campus. Faculty and staff have been given more sustainable printing practices, and Student Life has gone almost paperless with its promotional marketing.

Sustainable purchasing can be seen on campus through the transition to sustainable serviceware in food areas and standardized printing practices.

The Hotel is another great example of sustainable waste and purchasing practices. Composting, glass recycling, local food sourcing, and sustainable guest policies have been implemented. The Hotel's sustainable practices are a useful model that can be used to support campus-wide sustainable practices in purchasing and waste management.

The Hotel at Kirkwood Center

Future Opportunities

Today, 63% of Kirkwood's waste goes to the landfill (Figure 8). Between 2018 - 2020, Verdis Group conducted over one dozen physical waste audits of landfill-bound waste in building types similar to those at Kirkwood. Applying the findings of those waste audits, predictions can be made about what is likely in Kirkwood's landfill waste (Figure 9). It is likely that the majority (around 90%) of materials at Kirkwood are either cardboard, compostable materials, or waste that could enter Kirkwood's mixed recycling stream today. Kirkwood will strive to capture 50% of materials and divert them from the landfill by 2030.

To continue to drive down waste generated on campus, Kirkwood should implement a comprehensive waste management program. This includes training for faculty, staff, and students, consistent marketing on sustainability efforts on campus and in the community, transitioning to sustainable materials, and composting at all locations.

Kirkwood aims to create a circular purchasing process that streamlines procurement, reduces costs, and supports the environment. Kirkwood should develop comprehensive procurement practices that are required across all campuses. In addition, Kirkwood should require its partners, such as vendors and suppliers, to meet sustainable standards.

Strategies

Verdis Group suggests prioritizing capturing the three streams that most likely represent the majority of Kirkwood's landfill today: Mixed recycling, cardboard, and compost.

Determine an end-source for compostable waste

- Explore the feasibility of increasing composting at the hotel, and the cafe, by capturing pre-consumer food scraps for livestock feed or gardening compost
- Evaluate the environmental and financial feasibility of a variety of composting systems to determine if composting at Kirkwood is feasibility on a large scale, including but not limited to:
  - » Partnering with a waste management firm to haul compost to a commercial composting site
  - » Hiring internal staff to manage and find end-sources for a Kirkwood-run composting program
  - » A combination of small programs such as a pre-consumer animal feed composting program, a gardening composting program, and small windrows (elongated piles of compost) that can be managed by existing staff

Mixed recyclables and cardboard

- Allocate funding to pilot the addition of recycling collection infrastructure, such as cardboard compactors, additional mixed recyclable dumpsters, etc. to capture recyclables likely being sent to the landfill today
- Standardize bin placement so that every waste bin has an accompanying recycling bin
- Modify signage in places where key materials might differ (example: document common recyclable materials in labs and add to signage)

Engagement and communication

- Become a local leader in waste management practices through marketing and communications
- Conduct campus-wide waste management training for faculty, staff, and students
- Conduct waste audits in unique space types (labs, etc.)
- Teach about waste management in curriculum and leverage coursework to conduct preliminary analyses required

Develop comprehensive procurement practices

- Transition to compostable or reusable materials when applicable (e.g. serviceware)
- Incorporate sustainability priorities into the bid process for haulers, office supplies, food vendors, and other partners.
- Design college-wide standards for central and sustainable purchasing
- Create department specific purchasing policies
- Add more guard rails in purchasing policy about "sustainable" practices

ENHANCE LAND RESOURCES

TARGET

Increase the percentage of land designated as a carbon sink from 8% to 10% by 2030.

Vision Elements

Regenerative landscapes and habitats

Regenerative landscapes increase local biodiversity, improve water and carbon cycles, and add nutrients back to the soil to help local ecosystems thrive. Kirkwood has created an onsite composting program as an investment in land regeneration, taking waste that would otherwise break down in a landfill and returning those nutrients to local landscapes. Plant selection at Kirkwood reflects the native ecosystems, nurturing local wildlife and insects. Kirkwood has a long-term land management plan, which includes setting aside many acres of its land for carbon sink habitats or to be used for regenerative agriculture.

Environmental resource management

The cycle of water and chemicals in and out of Kirkwood has been managed to mitigate environmental degradation as much as possible. Permeable surfaces, stormwater capture, and an active stormwater management plan help the college maintain resilience during storms and flooding, and reduce soil erosion.

Introduction

Kirkwood Community College has vast land resources with over six hundred acres of land on the campus proper, with an additional hundred acres for farming and other educational purposes. Kirkwood is responsible for significantly more land than its community college peers (see page 18).

As of the last IPCC technical summary in 2022, land globally contributed to a quarter of all emissions; at the same time, land-based ecosystems have the potential to provide 20-30% of the mitigation required to ensure global warming stays below 1.5°C around 2050.[17]

UNCCD Executive Secretary, Ibrahim Thiaw, wrote in the 2022 IPCC report: "There is an urgency to restore the one billion hectares of degraded lands by 2030 to cut land-based emissions massively. We must strengthen the land's ability to absorb and store carbon emissions – and that means ensuring it remains healthy. What's more, restoring land back to health will also enable us to simultaneously increase food production from existing agricultural land and restore groundwater sources that we are losing."

It is clear that staff, students, faculty, and board members at Kirkwood take the responsibility of being stewards of so much land in eastern Iowa very seriously. The management of Kirkwood land is at several critical junctures; land for housing development in and around Cedar Rapids specifically is at an all time premium, putting financial pressure on Kirkwood, and Kirkwood is pursuing a campus master plan in the next five years which will form the vision for land management at the institution far into the future. To date, land use plans have been thoughtful and earnest, but not necessarily organized as an institution. Creating a unified long-term land management plan, and a system with feedback loops for bringing experts and key participants to the same table, will be essential in ensuring that Kirkwood's land resources are positively contributing to the environment.

[17] IPCC, 2022: Technical Summary. In Climate Change 2022: Mitigation Of Climate Change. Contribution of Working Group III to the Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change. Technical Summary

Existing Efforts

Today, Kirkwood maintains a thoughtful approach to land management; key participants deploy a diverse set of strategies to ensure Kirkwood's land is realizing its highest and best use. Land is not only an environmental resource but also a teaching one; prairies, production agriculture land, and forest areas are used to teach responsible land management and regenerative agriculture practices to students. Kirkwood has land allocated (around 8% overall) to serve as long-term carbon sinks today, including prairie, forest, and wetland (Table 6).

	Acres	Percent of Total Land
Prairie	41.5	5%
Forest / Riparian	19.7	2%
Wetland	11.7	1%
Total land designated as a carbon sink	**72.9**	**8%**

Table 6. Percent of Kirkwood Community College's 910 total acres currently serving as a carbon sink, by land type.

Kirkwood has historically been generous and willing to allocate pockets of land for short-term use that unfortunately have not outlived the champions that initiated the project (examples include monarch gardens, food waste compost, fresh produce spaces).

Kirkwood has been a Tree Campus USA participant for the past ten years, and the Grounds department follows a maintenance plan with best practices for mowing heights and pest control.

Future Opportunities

Two things are true simultaneously; decision-makers at Kirkwood take land use decisions seriously and have the best interest of the land in mind, and plans are created for land use without long-term consequences being studied. In the next five years, decisions and data tracking around Kirkwood's land will be transformed as a result of the campus master planning process. An outcome of the campus master planning process will be a unified, long term land management plan.

It was also made clear throughout the planning process that decisions about land use are not always transparent, or clear to the rest of campus. Creation of a land management council that brings together decision makers from throughout campus is an excellent way to create a consistent process to making decisions about land use that will hopefully ensure the long-term efficacy of different land use allocations.

It should also be noted that land is an essential ingredient for success in several components of this climate action plan. In order to create a campus resilient to the effects of climate change, shade needs to be planned for proactively. Allocating land for renewable energy may be an effective way to reduce campus greenhouse gas emissions. An on-site composting program may be the most financial and environmentally beneficial option for Kirkwood. Creating transparent processes and data for decision-making about land use will be an essential component of several areas of climate action for Kirkwood in the future.

Strategies

Design green spaces to create shade, resistance, and climate resilient outdoor areas

- Select new inventory technology to determine the percentage of campus that is shaded
- Implement inventory technology and determine percentage shaded
- Determine a target for the percentage of campus that should be shaded
- Add plantings to opportunity areas

Document and quantify existing land use (as a part of the campus master plan)

- Updated site survey (federal wetlands inventory)
- Develop layers of easements/classifications, property lines, etc.
- Mirror CAD plans with the site survey
- Legal review
- As a part of the campus master plan set land use targets for each classification

Determine opportunities to leverage sections of land as a prairie or forest carbon sink

- Conduct a study to determine the carbon potential of one acre of prairie land
- Set targets for percent of campus that should be carbon sinks

Complete an on-site compost feasibility study

- Record the history of composting at the organization
- Determine if an alternative piece of land can be found, identify an end use
- Determine whether to divert one material type

Create a comprehensive campus-wide stormwater management plan

Create a land management council that considers variables when making decisions about how land is used

- Draft a charter for a land management council using examples from other higher education institutions
- Recruit members for the initial land management council

Explore using land for onsite renewables generation (new wind, solar field, as examples)

- Get more context from Alliant on a land lease solar program
- Determine pros and cons of allocating land vs. agriculture production

Conduct a study on impacts of turf grass conversion

ENGAGE AND SUPPORT KIRKWOOD'S COMMUNITY IN CLIMATE ACTION

TARGET

Increase Kirkwood’s sustainability engagement score from a 48 to a 65 by 2030.

Vision Element

When people think about Kirkwood they think about sustainability. This sustainability-focused culture has been fully integrated across the institution, and serves as a recruitment and retention talking point. The college regularly shares progress and success stories about its sustainability efforts at town halls, in campus communications, and on a dashboard that tracks progress. Students leave KCC with an understanding of how they can reduce their environmental and social impacts in their future careers and everyday life.

Introduction

At its core, climate action is about people. Engagement, transparent communication, and wellness are all core components of creating a culture of sustainability and resilience on Kirkwood's campus. Throughout the climate action planning process, these three elements of campus engagement were discussed and examined separately, but significant overlap was discovered when drafting tactics. For this reason, these elements have been combined here.

Kirkwood aims to be a resilient campus where individuals are informed and empowered to take positive environmental action. This level of engagement requires ongoing education, outreach, and personal relationships with staff, faculty, and staff. Wellness creates capacity and resilience across organizations to be able to put time and energy into sustainability efforts, and increase retention and recruitment for the institution. Climate action has many health and wellness benefits; for example, planting trees creates green spaces, which promotes mental and physical health, cleans the air, regulates temperatures, improves water quality and more. In the 2024 Sustainability Engagement Survey (SES), the Kirkwood community also identified engagement (12%), wellness (8%), and communication as key opportunities that will create a sustainable campus and incorporate sustainability into the culture at Kirkwood Community College.

Existing Efforts

Through discussions with faculty, staff, and students, it is clear that Kirkwood is focused on community. Kirkwood engages faculty, staff, and students in sustainability through the Sustainability Committee, and most recently, the Sustainability Engagement Survey (Table 7).

Kirkwood utilizes several communication channels such as, "Have You Heard," virtual monitors on campus, and press releases, to inform on Kirkwood's sustainability efforts. These are often individual efforts to communicate sustainability, but communication will become an institutional effort to have all individuals on campus informed on sustainable action.

Wellness efforts continue to be a priority on campus. 11% of SES respondents believe that wellness is a strength at Kirkwood, and 8% of respondents indicated wellness as a key opportunity for climate action. Faculty, staff, and students currently have access to counseling services, a recreational center, outdoor opportunities, wellness challenges, interest groups/clubs, and regular engagement events.

Dimension of Sustainability Engagement	2024 Score
Awareness of Efforts *(very/moderately aware)* at the organization to be more sustainable	**37**
Knowledge *(very/moderately knowledgeable)* about way to be sustainable at work	**58**
Behavioral Frequency *(always/most of the time)* self-reported key sustainable behaviors	**60**
Perceived Norm *(always/most of the time)* percepctions of how often others engage in key sustainable behaviors	**37**
Awareness of Sustainability *(very/moderately familiar)* familiarity with the concept of sustainability	**50**
Overall Score	**48**

Table 7. Kirkwood's 2024 sustainability engagement score, ranked on a scale of 0-100 based on respondent's answers to a core set of five questions.

Future Opportunities

Engaging communities of Kirkwood in climate action will contribute to a culture of sustainability at Kirkwood, improve Kirkwood's Sustainability Engagement Score, and more. The top strength and opportunity for Kirkwood, indicated by the SES, was engagement. Kirkwood is known as a very engaging community at large, and respondents believe that Kirkwood's engagement strategies can be applied to sustainability.

Consistent, transparent communication across the institution about climate action efforts on campus is integral to the success of environmental efforts on campus. Kirkwood should develop a central source of sustainability information, generate quarterly impact reports, and conduct regular sustainability events, such as, climate summits.

Maintaining and improving wellness for all individuals on campus builds resilience and capacity to implement climate action. In fact, respondents to the 2024 SES listed health and wellness as the number three reason why sustainability matters at Kirkwood. Kirkwood should prioritize professional development opportunities and promotions within the organization, rather than outside the institution. Kirkwood should also continue to bolster and add to existing employee health programs, create a culture of awareness around mental health, and explore flexible work schedules. To engage the community in sustainability and wellness at the same time, Kirkwood can hold regular sustainability events, such as clothing swaps.

To understand the impact of strategies to engage, communicate, and improve resiliency for Kirkwood's community, the Sustainability Engagement Score will provide clear metrics of success. This survey should be taken every two years to understand what areas Kirkwood is improving in, what areas are lacking, and gain insights across the entire campus. The focus team identified a score of 65 as an achievable goal for 2030.

Strategies

Engage Kirkwood faculty, staff, students and greater community in sustainability

- Create sustainability professional development opportunities across campus
- Create idea sharing platform for climate action and sustainability strategies
- Update onboarding to include module on sustainability and climate action plan module
- Empower students, staff, and faculty with strengthened sustainability committee and club
- Revitalize Sustainability Village through intentional programming, collaborations with the community, and a long-term strategic plan for the use of the space

Create a strategic communications document that outlines all of the ways climate action and sustainability updates can be communicated to campus. Strategies might include:

- Conduct Community-Based Social Marketing campaigns, selecting a behavior or action that would increase sustainability at Kirkwood, and targeting communications around that behavior[18]
- Generate campus-wide quarterly impact reports (energy, waste, water, etc)
- Clearly communicate sustainability action plans and educate specific audiences on expected behavior changes
- Hold regular KCC climate summits (what is happening on campus, ways to get involved, education, etc.)
- Provide transparency around key indicator updates through a virtual dashboard platform, or something similar
- Establish single source for sustainability information and communication
- Highlight and communicate local climate change problems and solutions through strategic avenues

Build capacity and resilience for the Kirkwood community

- Bolster and continue to add to existing employee health programs
- Continue to foster a culture of awareness around mental health through intentional trainings and outreach to leadership and management
- Provide current staff and faculty with professional development opportunities, rather than hiring outside expertise
- Establish employee health program to support negative health impacts
- Host regular sustainability social events to strengthen connections
- Increasing flexible work schedules opportunities for faculty, staff, and students
- Implement climate science forums in CLD (faculty collaborative learning days)
- Create sustainability ambassador programs, or align the sustainability club/committee with climate action plan priorities

[18] McKenzie, Doug. Community-Based Social Marketing. Accessed April 2024.

INTEGRATE SUSTAINABILITY INTO CURRICULUM

TARGET

Document the percentage of courses that have sustainability offerings today.

Vision Element

When people think about Kirkwood they think about sustainability. This sustainability-focused culture has been fully integrated across the institution, and serves as a recruitment and retention talking point. Kirkwood has incorporated sustainability into more course curriculums and have added additional sustainability-focused courses into their course offerings. Students leave KCC with an understanding of how they can reduce their environmental and social impacts in their future careers and everyday life.

Introduction

Kirkwood strives to be the region's "leading provider of accessible, affordable, and exceptional education and training." Integrating sustainability into student learning outcomes is vital in fostering a culture of sustainability at Kirkwood. It enables all students to make a positive impact on the environment, both during their time at Kirkwood and in their future careers.

Nationwide, the U.S. The Bureau of Labor Statistics projects growth in occupations related to helping the environment, although the number of jobs is projected to be relatively small.[19] Wind turbine service technicians are expected to see a growth of 68% from 2020 to 2030,[20] and solar photovoltaic installers a 52% increase over the same period.[21] Environmental scientists and specialists are expected to see a 6% increase, which amounts to a large increase of 4,900 additional employees from 2022-2023.[22]

The 2022 Student Voice survey supported by Kaplan found that 12% of respondents said environmental sustainability influenced their choice of college.[23] To recruit and retain students, and to prepare them for future job markets, it will be important for Kirkwood to match students' interests in sustainability and the environment. Community colleges across the country are measuring and making concerted efforts to integrate sustainability into curriculum to meet students needs. Below is a list of peer community colleges and their goals related to integrating sustainability into curriculum.

Raritan Valley Community College

- 75% of academic departments offer sustainability courses

Central Community College

- 2024 Goal: Committed to increasing sustainability courses by 5% annually
- Increase sustainability EBadge program by 5% annually

Johnson County Community College

- 86% of departments offer at least one sustainability course

[19] "Green growth: Employment projections in environmentally focused occupations : Career Outlook: U.S." Bureau of Labor Statistics, April 2022. Accessed April 2024.

[20] "Wind Turbine Technicians : Occupational Outlook Handbook: : U.S." Bureau of Labor Statistics, April 2024. Accessed April 2024.

[21] "Solar Photovoltaic Installers : Occupational Outlook Handbook: : U.S." Bureau of Labor Statistics, April 2024. Accessed April 2024.

[22] "Environmental Scientists and Specialists : Occupational Outlook Handbook: : U.S." Bureau of Labor Statistics, April 2024. Accessed April 2024.

[23] Ezarik, Melissa. "Sustainability actions students take and want their colleges to take." Inside Higher Ed, 2 January 2023. Accessed May 2024.

INTEGRATE SUSTAINABILITY INTO STUDENT LEARNING OUTCOMES

The Sustainability Tracking, Assessment & Rating System (STARS), created by by the Association for the Advancement of Sustainability in Higher Education (AASHE), is a comprehensive sustainability rating system for colleges and universities that addresses the environmental, social and economic dimensions of sustainability. The AASHE STARS program tracks progress in integrating sustainability in curriculum by tracking:

- The percentage of courses offered by the institution that are sustainability course offerings
- The adoption of one or more sustainability learning outcomes that apply to the entire student body or, at minimum, to the institution's predominant student body
- The offering of at least one sustainability-focused major, degree, or certificate program for undergraduate students
- The offering of at least one immersive, sustainability-focused educational study program that is one week or more in length
- If the institution conducts an assessment of the sustainability literacy of its students
- If the institution has an ongoing program that offers incentives for academic staff in multiple disciplines or departments to develop new sustainability courses and/or incorporate sustainability into existing courses
- If the institution utilizes its infrastructure and operations as a living laboratory for applied student learning for sustainability in relation to Campus Engagement

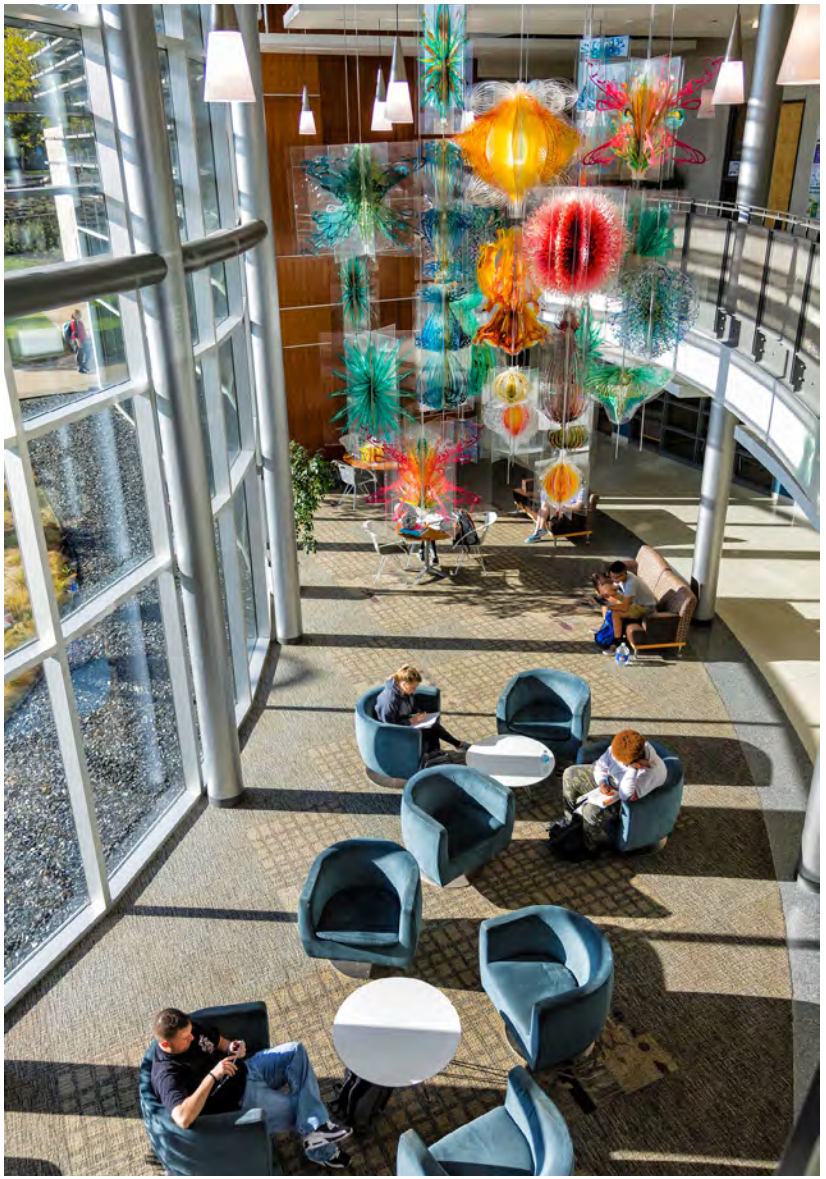
Existing Efforts

Sustainability may be taught to students today in their individual programs; however, data collection is needed to determine the current percentage of curriculum that discusses sustainability topics. In the past, the Sustainability Village has been used to teach sustainability topics to different programs on campus. Programs, such as agriculture and horticulture have existing teachings surrounding sustainability. In the Sustainability Engagement Survey (SES), 9% of students mentioned learning weather preparedness or conservation of natural resources in one of their courses at Kirkwood.

Future Opportunities

There are many opportunities across the institution to integrate sustainability into the curriculum. In order to accomplish this direction, Kirkwood needs to gather more baseline data. Once this research has been completed, there are many strategies that Kirkwood can implement:

- Set a target for percent of curriculum with a sustainability component
- Create a non-credit program or certificate program in sustainability to gauge student interest
- Develop experiential sustainability and climate change education opportunities
- Create interdisciplinary sustainability focused curriculum
- Integrate sustainability education as a student learning outcome
- Create a sustainability elective, honors project, and component in curriculum
- Establish a stand-alone campus sustainability program



FOSTER COMMUNITY RESILIENCE

Vision Element

Kirkwood recognizes that organizations resilient to the impacts of climate change have strong community relationships and networks to support each other in times of crisis. Kirkwood works with its vendors to ensure sustainable services (including verified recycling programs and renewable energy programs) are available for the City of Cedar Rapids and prioritized with local utilities. Kirkwood Community College is a resiliency hub site, or a place community members can come to find shelter, food, and internet access during extreme weather events. The college has worked with the city to ensure an extreme weather emergency plan is in place, connecting the community to the college's resources and vice versa.

Introduction

As discussed in the Climate Vulnerability Assessment (see page 20), Eastern Iowa is expected to face a variety of climate impacts over the next several decades including extreme heat, extreme storms, and varied precipitation (long periods of drought followed by periods of flooding). Eastern Iowa also has advantages that other parts of the country do not have; Iowa is land-locked and will not experience the direct impacts of sea level rise, and new crops will be able to be grown that were not compatible with the climate previously, as examples.

Resilience is often defined as the ability of a community to adapt to emergency situations; response time right after critical incidents occur is essential. Adapting also includes work prior to emergency situations taking place; research has shown that community connectedness and cohesion (social capital and trust), more so than physical or financial resources, predict a community's resilience to disasters (Figure 10). For example, a low-income, immigrant Vietnamese neighborhood in New Orleans impacted by severe flooding after Hurricane Katrina was able to recover much more quickly and efficiently than higher income, less damaged neighborhoods due to the strong social connections within the Vietnamese neighborhoods.[23]

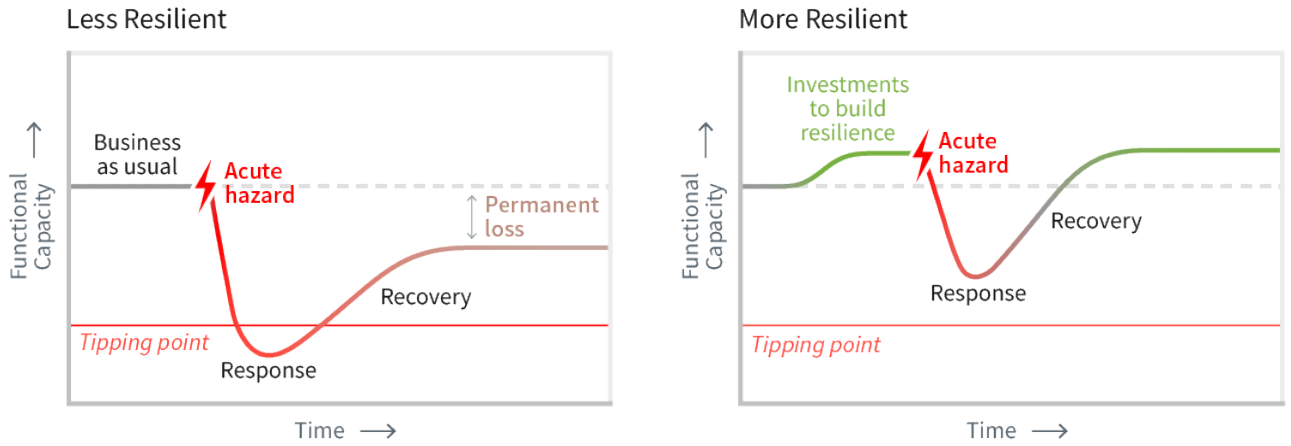


Figure 10: Impact of Resilience on a System[24]

[24] Chamlee-Wright, Emily, and Virgil Henry Storr. "Club Goods and Post-Disaster Community Return." Sage Journals, October 2009. Accessed May 2024.

[25] Eshelman, Anna. "Resilience Graphs | U.S. Climate Resilience Toolkit." U.S. Climate Resilience Toolkit, 2024. Accessed May 2024.

Existing Efforts

Kirkwood College has locations across Eastern Iowa; the main campus is located in Cedar Rapids, which has a municipal Climate Action Plan (see page 16). Existing climate assessments and strategies for increasing resilience were therefore excellent resources to build off of throughout Kirkwood's planning process.

In addition to work happening at the municipal level, Kirkwood already has several experiences navigating extreme storms and recovering quickly. In August of 2020, a derecho hit Cedar Rapids, bringing winds of 140 mph. Power outages, fallen trees, and lack of cell service all presented substantial challenges and risks on campus. However, Kirkwood acted quickly and found alternative ways to communicate with the rest of campus, limiting the safety risk to Kirkwood's communities.

Future Opportunities

Strategies throughout this plan will make Kirkwood a more resilient campus. As outlined in the land use section, the development of a plan for campus shading will protect visitors from the heat. In engaging campus and caring for the wellness of people who come to Kirkwood, social cohesion will be increased, further enhancing Kirkwood's ability to respond to and recover from emergency situations. Additionally, by using less energy and continuing to invest in renewable energy options, Kirkwood will reduce its reliance on the grid and create more local energy options that can build resilience during emergencies.

The strategies outlined in this section of the plan focus on emergency response, of which Kirkwood has an excellent track record for, and collaborating with community partners. The City of Cedar Rapids is a great partner with priorities already outlined in their climate action plan, but Kirkwood has locations in additional counties in Iowa. Relationships and communication about emergency response and resilience with these communities should also be pursued.

Strategies

Partner with the eastern Iowa communities that KCC is located in to establish and promote shared community Resilience Hubs.

- Determine logistics, locations (within KCC or with partners), key parties, and requirements for resilience hubs
- Meet with key parties (Including potential partners)
- Determine funding and locations
- Accessibility & communication plan
- Build resilience hubs

Create a campus-wide climate emergency and preparedness plan.

- Determine what currently exists
- Identify and engage with current key parties (including potential partners)
- Evaluate existing plan and create comprehensive plan
- Update comprehensive plan to apply to regional centers
- Update emergency plan to meet the latest state and federal policies and guidelines

Collaborate and continue to increase communication with surrounding counties, including Linn County, non-profit organizations, and others. Conduct tabletop drills and share materials with these organizations.

Create a post-emergency checklist to ensure momentum towards recovery does not stop after the emergency has ceased, including conducting a life-safety assessment.

Create emergency preparedness training programs for students, faculty and staff, to address response to extreme heat, flooding, and other climate change-driven hazards (e.g, Derecho).

- Determine what currently exists and find gaps
- Update training program
- Update educational/marketing materials

Establish/Create redundancies in campus-wide communication and IT systems.

- Accelerate the ongoing movement to cloud based IT infrastructure to increase resiliency to extreme weather disruptions

Kirkwood
COMMUNITY COLLEGE