

Proposal to the Common Council of Oshkosh on the Creation of a Climate Resiliency Plan

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“There is no person or economy left on the planet untouched by climate change”
- Inger Andersen, executive director of the United Nations Environmental Programme

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Recommended Action

We recommend the City of Oshkosh develop a climate resiliency plan with the help of an outside consulting agency. The City of Appleton composed a climate action plan and should be used as a guide; this plan, as well as those of other cities, can be accessed in Appendix 1. Public and private involvement will be necessary - after all, climate change will affect us all, and any implementation of a resiliency plan will affect everyone. Surveys, focus groups, and frequent community meetings should be held, but it should be understood that the average community member probably cannot appreciate the full scope of what is to be done.

To manage uncertainty, we recommend frequent updates to a climate resilience plan so that changing situations can be accurately quantified and understood. We understand that climate change is a global issue, and thus may seem daunting at times. An effective climate resiliency plan would span the entirety of the globe, and obviously any one city cannot accomplish this. Therefore, we encourage you to think as broad as you reasonably can and to look at every facet that Oshkosh can reasonably face.

Should the city want to pursue nature-based solutions, Raymond et al. (2017) provides a framework for assessing their effectiveness in urban areas. Appendix 2.4 shows an example chart of nature-based solutions from Raymond et al.

Additionally, we highly recommend the City of Oshkosh go through the recently-released Fifth National Climate Assessment (Appendix 4); especially the subsection on the Midwest. This assessment provides data regarding the effects of climate change and will be useful when considering a resiliency plan. Oshkosh needs a climate resiliency plan because every inch of this

planet is already being affected by climate change and taking a proactive approach such as this will save lives, money, resources, and time.

Key Terms

During the course of the research, many different terms were found that could be considered confusing and contradictory. To alleviate this, the key terms used in this report are provided and defined below.

Mitigation - Mitigation is the action of reducing the amount and rate of climate change. The action of climate change mitigation “involves reducing the flow of heat-trapping greenhouse gasses into the atmosphere. The goal of mitigation is to avoid significant human interference with Earth’s climate” (NASA 2023).

Adaptation - Relating to preparation and future-proofing. “Adaptation is the adjustment to life in a changing climate which involves adjusting to actual or expected future climate impacts” (NASA 2023). The goal of adaptation is to reduce the risks related to the harmful effects of climate change (NASA 2023).

Resilience - Resilience is “the ability to prepare for threats and hazards, adapt to changing conditions, and withstand and recover rapidly from adverse conditions and disruptions” (USGCRP 2023).

Executive Summary

To reduce the social, environmental, and economic damage that climate change will cause, we propose that the City of Oshkosh design and implement a climate resiliency plan. Climate change is a very real threat, and the future is uncertain. A climate resiliency plan is the best way for the city to prepare for the future effects of climate change. In this report, we look at other municipalities' climate action plans in order to give a general idea of what Oshkosh can expect. We also identify local stakeholders, potential costs, and barriers.

Background and Problem Identification

Human caused climate change caused by the burning of fossil fuels is globally recognized as an existential threat (IPCC 2023). There have been and will be massive disruptions to society which are directly and indirectly related to climate change. Managing, mitigating, and adapting to these disruptions will be necessary to provide a healthy and reciprocal coexistence between humans, the natural world, and all of the living entities that exist in these spaces. While climate change is a global issue, it must be addressed at a local level for real change to be initiated.

Oshkosh does currently have a sustainability plan that was developed in 2019. However, we feel that this plan does not do enough to address the potentialities of climate change. For example, the current plan does not address climate migrants or refugees at all, meaning that the city is unprepared to deal with the potential influx of migrants, nor the economic growth they could bring. However, the most important thing to remember is that climate change is fundamentally uncertain - which is why planning is a necessity.

Uncertainty

With climate change comes uncertainty. This is normal and expected, as the precise effects of the climatic events of the future are impossible to predict. The only thing certain is the uncertainty. Planning for any potential events can lead to a more effective response. Having this approach is beneficial not just for sustainability, but also for the financial sector. Businesses and institutes of finance look warily upon uncertainty (Chenet et al. 2021). Having a plan in place to address uncertainty will increase resiliency within and around Oshkosh and will offer a wide array of potential economic effects. A climate resilience plan will help provide some sense of security in a time of uncertainty. As we try to prepare for the unexpected, we must also leave room for adaptation. It is imperative that we work with the uncertainty to create an adaptive plan that will help ensure our security as a city.

Significance of Sustainability

Despite this uncertainty, there are trends that we can clearly observe. In presenting the advocacy for a climate resilience plan, we focus on four areas and the issues being faced within each. We researched and analyzed how these areas can be addressed and contribute to the sustainability goals of Oshkosh. We cover the economic and social implications of climate change, disaster management, and the local effects that threaten Oshkosh.

This is an opportunity for Oshkosh to become a climate leader and take a proactive step towards a future that seems a lot less uncertain. Climate change is often seen through a global lens that offers a daunting sense of dread because of the sheer scale of the problem. As noted in Benjamin Barber's *Cool Cities* (2017), focusing on local government action and local change

shifts the scale of this problem from a daunting scale to a manageable scale. Working to build a resilient community in terms of adapting to and mitigating climate change impacts offers agency, which is often stripped away when focusing on climate change at a global scale.

This is an extremely important time for the city of Oshkosh as the city will have to make a critical decision regarding people being displaced by climate change impacts. As noted by Marandi and Main (2021), U.S. cities are inevitably going to be affected by climate migration. Marandi and Main (2021) offer two distinct ways in which cities like Oshkosh can choose to handle climate change impacts upon the cityscape. The first being, a *recipient city* – one that serves as an unsuspecting or unwilling “receiving community” from sudden-onset disasters without preparation as one way to deal with climate migration. The flipside of this scenario is the idea of *climate destinations* – cities seeking to rebrand their communities as “climate havens” that welcome displaced residents through equitable planning and preparation. Marandi and Main (2021) outline six characteristics that are common among other climate destinations: (1) More manageable climate impacts, namely, are not prone to sea level rise or wildfires and prolonged heat waves; (2) ready access to fresh water supply; (3) high vacancy rates or abundance of affordable housing; (4) post-industrial, legacy cities with high infrastructural capacity; (5) an expressed desire to grow and be welcoming; and (6) history of or interest in improving adaptive capacity through sustainability or resilience efforts. Oshkosh is going to face a pivotal decision regarding the influx of people through a major wave due to a specific climate change disaster, or the city may encounter people migrating or emigrating to this region through a slow onset over the course of the next few decades and the best way to handle this is through a climate resiliency plan.

With regional slogans such as “C’mon in” (Fond du Lac), “On the Water” (Oshkosh), and “One Great Place” (Appleton), it is easy to see how appealing Oshkosh and the surrounding area may be to someone who just experienced a climate related catastrophe or someone simply seeking a place with a more stable climate. A climate resiliency plan will prepare Oshkosh to accept the branding of *climate destination* and all of the associated responsibilities related to the *climate destination* title. The hope here is that Oshkosh does not become a *recipient city* which is caught off guard and ill-prepared for an influx of people who have been displaced.

Regardless of an influx of migrants or immigrants, a climate resiliency plan offers many of the same and immediate benefits for local Oshkosh citizens. Generally speaking, this plan will strengthen the city as a whole across a variety of different sectors. The city of Appleton created their climate action plan and are anticipating; increased community awareness and engagement, a cleaner environment, cost savings, resilience, and better overall health (see Appendix 1). In addition to the anticipated benefits of such a plan, a city that develops a resiliency plan can also expect decreased environmental injustices and plans to navigate localized climate catastrophes (flooding, drought, tornadoes, etc.).

Economic Implications

Natural disasters are some of the most infamous effects of climate change. Some of the most direct economic impacts will come from such events. Flooding causes damage to infrastructure which is costly to repair. For example, there was a massive wave of flooding in 2019 which occurred in the states west and south of Wisconsin (Kraft et al. 2019, Reed et al. 2020). Estimates of that put the total repair cost upwards of \$2 billion. Heat waves are another threat associated with climate change. If not for their direct impact on human health, they also

are associated with a decrease in agricultural output (Miller et al. 2021, Jarrett et al. 2023). This is bad not only for the livelihood of local farmers, but also because this indicates an effect on our food production. Heat waves could affect economic output in ways that will only show in the future (Miller et al. 2021). With an estimated 2 degrees Celsius of global warming, the Midwest is looking to face ten more days per year with temperatures above 95 degrees Fahrenheit (USGCRP 2023). Resilience preparation can help offset any damages that occur in said scenarios.

A particular sector at risk is aviation. One of Oshkosh's most well known events is the EAA - which brings in millions of dollars to the city. Because of climate change, many of the facets of aviation are under threat, including air travel, operations, and airport infrastructure (Burbidge 2018). Planning for this will increase the city's economic resilience.

With an increase of temperature, we can also expect massive threats to human health. Neumann et al. (2020) shows that an increase in temperature can be associated with labor damages; for the Midwest, we could see around \$6 billion in labor damage per degree Celsius of warming. Appendix 2.1 shows the per capita economic damage in relation to temperature change. Taking from the average for the region, a 2.5 degree Celsius increase could cause about \$6.6 million in labor damage for the city of Oshkosh. However, 2.5 degrees of warming is by no means guaranteed. An effective plan will look into all potential ranges of temperature rise.

Potential economic issues are not just limited to the immediate local area. Oshkosh is a city, and cities do not exist alone. Our global economic system connects us all, and the danger of climate change is spread unevenly around the country and around the world. This means that sometimes factors on the other side of the world will affect us. Cities need to take in resources in order to economically thrive, and the effects of climate change could make that economic growth

“difficult if not impossible” (Day et al. 2014). Outside commodities in the agricultural, metals, and textiles markets will be greatly impacted because of climate change (Dallman 2019, USGCRP 2023), it is important that the city has economic policies ready to encourage growth in local sectors. The recently-released Fifth National Climate Assessment states that future economic effects of climate change are “projected to be more significant and apparent across the US economy;” Appendix 2.2 shows how a local economy is affected by climate change. Chenet et al. (2021) encourages the use of a precautionary financial approach, as the uncertainty of climate-related risks will not lead to efficient market responses. Preparation is necessary in order to avoid economic losses or to take advantage of unique situations. There is some evidence that suggests that climate uncertainty could encourage investment into fossil fuels (Lin & Zhao 2023). Because climate change is caused by the burning of fossil fuels, it would be a bad idea to let this happen. A climate resilience plan can counter this and potentially encourage other paths. Because of the likely impact of climate change on economic growth, solutions outside of the norm are needed.

As part of the process of resilience, looking into alternatives for the economic sector will be necessary. Raymond et al. (2017) provide a framework to analyze this, and part of that includes a focus on “green economies” and “green jobs.” Such new green industries will likely see an increase; their job creation will outpace the losses from fossil fuel industries (USGCRP 2023; see Appendix 2.3). There is also some indication that certain industries will see growth because of climate change. Oshkosh, in particular, a defense concern like Oshkosh Corporation is likely to experience growth because of future geopolitical events (Jorgensen et al. 2023). Having a resiliency plan will make sure the city is ready with the right economic actions when the time comes to take advantage of these opportunities.

Social Implications

Cities are ultimately where climate change is happening and humanity is at a great risk. A firm understanding of local social implications is necessary to understand the problems Oshkosh citizens are facing and how a city can mitigate the risks to protect the vulnerable through the implementation of a resiliency plan.

Minority populations and low-income citizens are being disproportionately affected by climate change. Climate change is exacerbating existing health disparities in minority populations. Extreme weather events, increased temperatures, and changes in air quality can contribute to respiratory issues, heat-related illnesses, and other health concerns. This ultimately impacts vulnerable communities more significantly. Minorities are also experiencing economic inequalities and many weather events can cause damage to property and disrupt livelihoods, affecting those with fewer resources more severely, and ultimately leading to an economic divide within communities. Another issue climate change creates is housing vulnerability. Housing is facing a large strain in the United States, especially in the Midwest.

The Great Lakes region is seeing a notable surge of climate-induced migrants as citizens are increasingly seeking refuge in the Midwest due to escalating impacts of climate change. With more than 34 million people in the United States and Canada living in the Great Lakes basin, this number is expected to grow. The abundance of freshwater resources, strategic location, and room to accommodate growth is why displaced people find themselves attracted to this region. (Harder 2022).

With climate change creating displacement for vulnerable communities, climate destinations, or climate havens, are becoming increasingly more popular. Cities in the midwest, specifically Duluth, MN, are already marketing themselves as a climate haven and have seen an

increase in their population due to their preparedness for climate challenges. The University of Minnesota Duluth has created a slogan “climate-proof” for the city as a marketing strategy. Community leaders are trying to use climate change as an opportunity to spur growth. Since the location of Duluth and the Great Lakes are more favorable towards climate change, the effects can be more easily managed.

Oshkosh, having a lack of natural hazards, is unintentionally marketing itself as a place for new residents to work and live. However, housing is an issue within the United States and less housing is available for sale or rent than any other time in the last 30 years (Hickey). This creates implications for a climate haven, as tight housing markets and a lack of affordable housing will be harder to absorb and accommodate migrants. Climate havens also have to address rising urbanization. Increased displacement can lead to rising unemployment, higher competition for services, and also deepen poverty (Hickey). Implementing a comprehensive resiliency plan is essential for Oshkosh, not only to proactively prepare for new residents but also to effectively manage the challenges posed by a growing population in the context of climate change.

Disaster Management

Climate change has moved from a distant concern to a current reality, particularly evident in the Midwest. We will discuss the regional impacts of climate change on the Midwest, and highlight the vital role of disaster planning, addressing uncertainty in the Great Lakes region, engaging with stakeholders, and responding to climate events. Through case studies, including experiences in Oshkosh, Wisconsin, we uncover how climate-related disasters, and agriculture sector challenges, shape the region's resilience strategy. We will also examine the broader economic implications of climate change, emphasizing the need for a comprehensive response.

The Midwest's experience offers valuable insights for regions globally as they tackle the multifaceted challenges of a rapidly changing climate.

In our rapidly changing world, cities need to take proactive measures to ensure their future resilience. Developing a comprehensive climate resiliency plan is a crucial step in this direction. Such a plan should encompass both the mitigation of greenhouse gas emissions and adaptation to the impacts of climate change. By adopting a climate resiliency plan, urban areas can work towards a sustainable, safer future. These plans serve as blueprints for action, emphasizing the importance of urban resilience in the face of a changing climate. They guide cities in reducing emissions, adapting infrastructure, and fostering communities that are better equipped to withstand the challenges of a changing climate. Through these efforts, cities can secure a more sustainable and resilient future for their residents.

The Great Lakes region, a vital part of our natural environment here in Wisconsin, has been experiencing a significant increase in rainfall over the last century, as highlighted by a report published by the Environmental Law and Policy Center in 2019. The data reveals that between 1900 and 2015, rainfall in this region rose by 10%, a rate significantly higher than the nationwide average of 4%. This increase in rainfall presents new challenges, particularly in terms of flood risk. Understanding this uncertainty in weather patterns and the resulting potential for floods is crucial for our preparedness. We must be proactive in developing strategies to adapt to these changing conditions, building resilience in the face of increased flood risks.

The Midwest's response to climate change underlines the imperative of proactive planning. Regional impacts, such as extreme weather events in Oshkosh and agricultural disruptions underscores the need for adaptive strategies and community engagement. The uncertainty of increased flood risk in the Great Lakes region calls for a comprehensive approach,

including climate adaptation plans, equity-focused solutions, and collaboration with community-based organizations. Engaging stakeholders and addressing climate injustices, as seen in Minneapolis' draft plan, demonstrate the power of inclusivity and community-driven initiatives. Lastly, the economic challenges of climate change stress the interconnectedness of environmental sustainability and economic resilience. The Midwestern experience serves as a model for regions worldwide as they navigate the challenges posed by a changing climate. By prioritizing disaster planning, involving stakeholders, and responding to regional impacts, we can pave the way for a more resilient and sustainable future.

Local Impacts

At the heart of resiliency is revitalization. The three major economic enterprises in Wisconsin include agriculture, manufacturing, and tourism (Vogeler & Finley, 2023). This is an opportunity for Oshkosh to reflect on the weakest areas within the community and provide funding and resources to revitalize areas of agriculture, manufacturing, and tourism while instilling resiliency and new life into every corner of the city. Climate change is going to test each city to their very limit and now is the time to consider the impacts, analyze the data, and take action.

Aligning with most other midwestern towns and small cities, agriculture plays a dominant role within state and local economies while presenting itself as the most common landscape around Oshkosh and the surrounding area. Climate change is going to impact this sector in many different ways, some of which can be anticipated, while some will remain obscure due to the very nature of climate change uncertainty. Through the conventional farming lens, the Midwest plays a dominant role within global agriculture and the way climate change impacts this

role will impact the economic aspect of many Midwestern towns and cities. Through the sustainable farming lens, a more localized approach and the adoption of more sustainable practices will ensure the agricultural sector remains a dominant player in the economic realm within the Midwest for decades to come.

Manufacturing and tourism are some of the other economic leaders within the state. Oshkosh is going to need to consider manufacturing giants such as Oshkosh Truck, 4imprint, Amcor, etc., within their resiliency plan. Collaboration towards shared goals makes climate resilience achievement much easier. As host of many tourist attractions such as EAA, Oshkosh is also going to have to consider the economic impacts climate change is going to have on people coming to Oshkosh for specific events.

One additional note on collaboration, The University of Wisconsin - Oshkosh recently worked with Jillian Buckholz who is the sustainability advisor for Brailsford & Dunlavey, Inc. She drafted a tailor-made climate action plan/decarbonization strategy for the university in the summer of 2022. Jillian mentioned how advantageous it would be for the city to collaborate with UW Oshkosh and align on sustainability and climate action work. Jillian said “Although the two entities function separately, a lot of cross-over (waste-handling, transportation, housing, etc.) should be coordinated to ensure a larger, more expansive impact.”

Benchmarking

Other municipalities in the Midwest have developed and implemented climate action plans. This section identifies those municipalities and analyzes their planning process, plan contents, and plan implementation.

Appleton, Wisconsin

Population: 75,000

The city of Appleton is actively engaged in a comprehensive sustainability initiative, implementing a wide range of strategies to become a more environmentally responsible and energy-efficient community overall. When looking at energy conservation, the Parks and Recreation Department and the Facilities Management Department are taking measures to upgrade and utilize Direct Digital Controls on HVAC equipment. Additionally, they are replacing lighting fixtures and lamps with more efficient and cost-effective units, which contributes to lowering overall utility costs. In terms of transportation, Appleton has made significant progress in enhancing its sustainability efforts. They have completed the conversion connection between North Island Trail and the Eagle Point Development, installed various trails and sidewalks, added bike lanes, and incorporated GPS units in city vehicles for efficient route planning.

The city has also prioritized environmental preservation by focusing on reforestation, implementing horticultural vinegar for weed control, and utilizing biosolids-compost for landscaping and athletic fields. Their overall method has been interdisciplinary, and the city is actively trying to improve their levels of sustainability across a variety of sectors. The only information that has been challenging to find is the total cost of the creation of the plan, as well as the total cost of the implementation of their plan. The city of Appleton has released their official 'Climate Action Plan' which includes a cost analysis section. The cost analysis section however provided a financial range, instead of an exact total. See Appendix 1 for Appleton's plan.

What we can provide is how Appleton went about creating their plan. Appleton created the Task Force on Resiliency, Climate Mitigation and Adaptation. This task force's focus was

primarily to create this plan and offer recommendations for the city. With the taskforce, Appleton also utilized several consultants. We are unsure of the final cost of implementation, but we do know that the plan took a lot of time to create, roughly a year.

Duluth, Minnesota

Population: 90,000

Duluth has adopted a climate action plan to reduce emissions 80% from municipal operations by 2050. The plan has a 1-5 year work plan to set the stage for coming years. Dividing this work plan into two phases where phase one sets the groundwork, and phase two focuses on mitigation, resilience programs, and accelerating climate action. This five year work plan is only the beginning for Duluth. In creating this, Duluth partnered with Common Spark Consulting to draft a plan for \$15,000. Duluth also had help from the Great Plains Institute using federal funding.

Duluth also has another plan called Imagine Duluth 2035, which is an updated version to the 2006 Comprehensive Land Use Plan. Imagine Duluth 2035 was adopted in June 2018. This plan was to focus more on sustainable development and creating a greener community. Imagine Duluth 2035 tackles issues such as: persistent inequality, non-taxable land and buildings, challenging geography, aging infrastructure, and lack of efficient transportation and utilities. The hope with this plan is that it can help provide a glimmer of hope for the citizens of Duluth.

Edina, Minnesota

Population: 54,000

Minnesota has already seen changes to their environment because of climate change such as rising temperatures and heavier precipitation events. These impacts urged the city of Edina to pass its first Climate Action Plan in December 2021. Incorporating over 200 actions to meet Edina's goals by 2030, the plan targets a reduction in emissions. With an 11 month planning timeframe, the city incorporated a 26 member planning team to create the action plan. This planning team was able to engage with 23 different partner groups, sought input from 449 community members, and held four online community input surveys. The action plan addresses 8 sectors of greenhouse gas emissions and climate vulnerabilities. This plan is only the foundation and is still an on-going process to evaluate and advance the city's climate resilience.

Ann Arbor, Michigan

Population: 121,500

Like Oshkosh, Ann Arbor is a college city, but the city is more populous and thus has more funds to work with. Ann Arbor's A2Zero plan was created with the goal of carbon neutrality by 2030 and consists of six strategies; including renewable energy, electrification, energy efficiency, and resilience. In particular, the resilience strategy focuses on "ensuring [the] community can not only survive, but thrive, regardless of what disruptions or changes may take place" (City of Ann Arbor). Within this goal of resilience, there are many sub goals that each have their own estimated costs over a ten year period from 2020 to 2030. The most expensive of these - the creation of Resiliency Hubs - was estimated at around 5 million dollars; the least

expensive - the implementation of Climate Ambassador Programs - was estimated at around \$350,000. The process for creating this plan involved 70 public events and three large surveys, and lasted about 90 days (M. Stults, personal communication, October 25, 2023). Three consultants were used in the process: Kim Lundgren and Associates, Farr Associates, and Elevate. Their planning process took three full time employee positions alongside their hired consultants (J. Wolf, personal communication, November 14, 2023). Since Ann Arbor has more funding to work with, we suggest that the City of Oshkosh only use Ann Arbor's process only as an outline.

Stakeholder Analysis

To get a better understanding of the many aspects of creating a climate resilience plan, we talked to local stakeholders within the community. These stakeholders provided valuable insight and showed, ultimately, that they care about the city of Oshkosh. In our conversations with them, topics such as importance, concerns, benefits, and barriers were discussed. Each stakeholder shared their perspectives on an implementation of a resiliency plan for Oshkosh, and most were in support.

Dr. Misty McPhee, University of Wisconsin Oshkosh

Dr. Misty McPhee has been a professor at the University of Wisconsin - Oshkosh since the fall of 2009. She teaches in both environmental studies and biology departments. Misty is also a resident of Oshkosh, along with her husband, making her a valuable stakeholder for our project. The topic of sustainability is one that Misty is very passionate about. Misty shared that climate change is an immediate threat and that action needs to be taken as soon as possible. Concerns

were also brought up in our conversation as she discussed her worries of increasing climate events and the city not being able to respond effectively. She hopes a resilience plan would pay attention to the science that is provided for climate change and also acknowledge long-term consequences of climate change. Ultimately, she feels that the city would greatly benefit from the implementation of a resiliency plan.

Bradley Spanbauer, University of Wisconsin Oshkosh

Bradley Spanbauer is the Director of Sustainability at UW Oshkosh. He is one of our key stakeholders not only because he is a local resident, but because he works closely with the city and has already started working towards a new, potential resilience plan. Brad has been an immense help with sharing his insights and knowledge to our proposal. Not only does Brad do work for UWO, he is also a member of the Sustainability Advisory Board for the city of Oshkosh. Speaking with Brad, he shares how the problems around climate change are great and immediate, urging for a resiliency plan to be efficient and actionable. He discussed how implementing this plan would be beneficial for the city by, in simple terms, having a plan. However, Brad also shared his concerns. The main concern was cost and people not valuing the importance of a plan. Prioritization is key in making changes. Brad mentions that the technology and science is readily available to combat climate change, but prioritizing is not happening. Brad sees the importance of a resiliency plan and believes that having strategies put in place to respond and deal with climatic events is very beneficial, especially here in Oshkosh.

Jennifer Sattler, Local Resident

Jennifer Sattler an alumnus of UW Oshkosh who practices alternative agriculture. Having graduated from UWO, Jennifer and her husband opted to make Oshkosh their permanent home, captivated by their deep affection for the city. Jennifer spoke on how climate change has already impacted her agriculture. She discussed in the first few years of farming, they were met with a lot of water in their yard. Now, she noted that it had only rained one day this past summer. Scared for the state of her plants and her future of farming, Jennifer is in favor of a resiliency plan.

Kenneth Osmond, Sustainability Advisory Board Member and Local Business Owner

Ken Osmond is a member of the Sustainability Advisory Board and the owner of the local business Planet Perk. He believes that a climate resilience plan will address many issues that the City will face, especially in regards to economic effects. Furthermore, he feels that the best climate resiliency plan will facilitate coordination at the inter- and intra-county levels. As a sustainable business owner, he is a major advocate for these types of policies.

Margy Davey, Sustainability Advisory Board Member and Local Resident

Margy Davey is a member of the Sustainability Advisory Board. She believes that the planning process will help bring attention to the dangers of climate change. To her, investigating and implementing potential coping mechanisms before they are needed are essential when making a climate resiliency plan. She feels that the City would benefit from a plan because it would allow the City to budget over a long period of time.

Brandon Nielsen, Associated Planner

Brandon Nielsen is an employee for the City of Oshkosh. He believes that it is important for the City to make informed decisions, which includes being prepared in case of climate events. He feels that a climate resiliency plan is a good way to accomplish this. Brandon is involved with the planning office for the City of Oshkosh, so there is a chance that a climate resilience plan would affect his work. His position within the planning office also allows him to know what kinds of policies the city is capable of carrying out.

Emma Dziengelski, Assistant Planner

Emma Dziengelski is an employee for the City of Oshkosh. She believes that a climate resilience plan will provide a framework that future generations could build on. To her, having guidelines, policies, and goals would be beneficial for the future of the City. Her place within the planning office of the City of Oshkosh allows her to know what kinds of policies the city is capable of carrying out.

Barriers

The design of any large scale plan in any city poses a range of barriers. Multiple stakeholders have brought up the importance of political will. As with any major policy decision, the costs and benefits need to be examined extensively before any well-informed action can be made. The cost might be something that becomes a concern, no matter the benefits. Economic priorities will be high, even if that means overlooking the future in favor of the short term. While this is an unfortunate reality, it is important to recognize that this is a likely factor in determining the implementation of a climate resiliency plan. Another barrier is that of time. The longer it takes for a plan to be created, the less likely it is to be implemented, especially if the process

would result in a number of the city's staff working on the plan and away from their normal duties. Unfortunately, the best plan would require in-depth research and surveying, which takes time and energy. The City of Oshkosh will have to balance what they choose to design a plan around.

Cost

To produce a successful, sustainable, and equitable climate resilience plan, baseline research will need to be conducted to establish an accurate representation of the city's current state of affairs. Energy use, infrastructure, demographic data, and future weather models are all criteria that need to be considered when creating a plan. The city of Oshkosh will then need to analyze the data and incorporate a plan accordingly to the current landscape to make realistic, actionable, and specific goals for the city. Consultants should be utilized to help quantify the data necessary for the plan (for example, Elevate does analysis of energy use by sector). Consultants may be needed for the drafting of the plan itself. Jillian Buckholz from Brailsford & Dunlavey fast-tracked a tailor-made climate action plan/decarbonization strategy for the UW-Oshkosh campus during the summer of 2022. While a specific price regarding consulting costs for a plan at scale for the city of Oshkosh is hard to tack down as it really depends on the type of plan drafted, Jillian did mention that she has seen higher education institutions pay for similar plans that range anywhere from \$25,000 - \$600,000. Abby Finis from Common Spark Consulting has drafted plans for \$15,000 (Duluth) to \$105,000 (Cedar Rapids). Abby also went on to mention, "engagement is important and a big cost, detailed scenario planning will increase the budget, as well as what is included (mitigation and adaptation vs. one or the other). I am working on a plan

now that is about \$80k. It includes each of these items. I think \$66k could work with a similar scope if the city took on all the engagement” (Finis, 2023).

Ongoing costs will consist of updating goals and maintaining relevant data that is related to the plan’s initial objectives. While this is very broad, some of the maintenance costs could be kept lower by updating data points regularly rather than every 5-10 years. Jillian reminds us that a project such as this can take years, so it will be important to potentially frame ongoing costs along with upfront costs due to the nature and scope of this project.

Labor and time are going to be one of the most expensive parts of this project. The labor of collecting data around the city, conducting research, and writing drafts of a resilience plan are all examples of costs that will be put into this project - how long this step takes depends on the amount of resources (consultants, staff, etc) available. Using all available staff and resources could result in the creation of a plan in as little as a couple months. Not using them could make the creation process last many years. There will be time spent writing grants and hours spent securing funding for this project. Labor may be an overarching cost that spans between non-monetary, ongoing, and upfront costs depending on the style of plan the city decides to draft.

Due to the uncertainty of climate change, the risks themselves are impossible to predict, and therefore offsets are impossible to predict as well. However, a climate resilience plan will increase the resiliency to such risks. In the economic sector, having a plan minimizes uncertainty, which financial institutions will appreciate and thus be more likely to invest in the area. The opportunity Oshkosh is facing in terms of becoming a willing climate haven or a reluctant haven determines whether the city could expand exponentially in terms of economic opportunity.

Funding

There is a federal grant offered by the Environmental Protection Agency titled, ‘Climate Pollution Reduction Act.’ According to the EPA site, “The Climate Pollution Reduction Grants (CPRG) program provides \$5 billion in grants to states, local governments, tribes, and territories to develop and implement ambitious plans for reducing greenhouse gas emissions and other harmful air pollution. Authorized under Section 60114 of the Inflation Reduction Act, this two-phase program provides \$250 million for noncompetitive planning grants, and approximately \$4.6 billion for competitive implementation grants.” This grant is divided into three sections.

- a) Section 1: Planning - This program is designed to provide flexible support to states, local governments, tribes, and territories regardless of where they are in their climate planning and implementation process.
- b) Section 2 : Implementation - EPA has announced two opportunities for \$4.6 billion for CPRG implementation grants – a general competition and a competition only for tribes and territories. There is extra funding available for this section.
- c) Section 3: Training, Tools and Technical Assistance - EPA provides training and technical resources to support CPRG grantees at the state, municipal, tribal and territorial level.

The direct link for more information about this grant can be found in Appendix 3.1.

A second option for grant funding could be the grant offered by EJ4Climate, Environmental Justice and Climate Resilience. “The CEC established this grant program in 2021 to fund projects that target underserved and vulnerable communities, and Indigenous communities, in Canada, Mexico, and the United States, to prepare them for climate-related

impacts. The EJ4Climate Grant Program provides funding directly to community-based organizations and seeks to support environmental justice by facilitating the involvement and empowerment of communities searching for solutions and the development of partnerships to address their environmental and human health vulnerabilities, including those due to climate change impacts” (EJ4C, 2023).

- a) In North America, around 80% of the population resides in urban areas, positioning these environments as the primary backdrop for the unfolding dynamics of contemporary climate change and its corresponding responses. Consequently, this urban context could amplify the resulting impacts.
- b) Aligned with this theme, initiatives will be carried out in urban areas burdened by challenges. Emphasizing community-driven approaches, the strategies will prioritize empowerment as a central principle. This aims to provide communities and individuals with increased influence, facilitating the implementation of enduring solutions. The overarching goal is to enhance resilience to extreme weather events and alleviate the current disproportionate and adverse health, economic, and social consequences.

The direct link for this grant can be found in Appendix 3.2.

Another link can be found in Appendix 3.3, which is a Wisconsin DNR grant website.

Conclusion

Climate change is the biggest problem of our lifetimes, it is an *existential* threat. It will impact all scopes of life - social, economic, and environmental. If we wish to leave a healthy world for our descendents, it is wise to act now with a positive and proactive attitude. Oshkosh may not be the first city to experience climate events, but the effects will come sooner or later.

The uncertainty of climate change makes it vital that the city take action now and prepare, rather than wait until some future breaking point. Preparation and planning are key, and a climate resiliency plan would be the best way for the city of Oshkosh to do this.

Appendix

Appendix 1: Climate Action Plans

[Appleton's Official Climate Resiliency Plan](#)

[Duluth's Climate Action Work Plan](#)

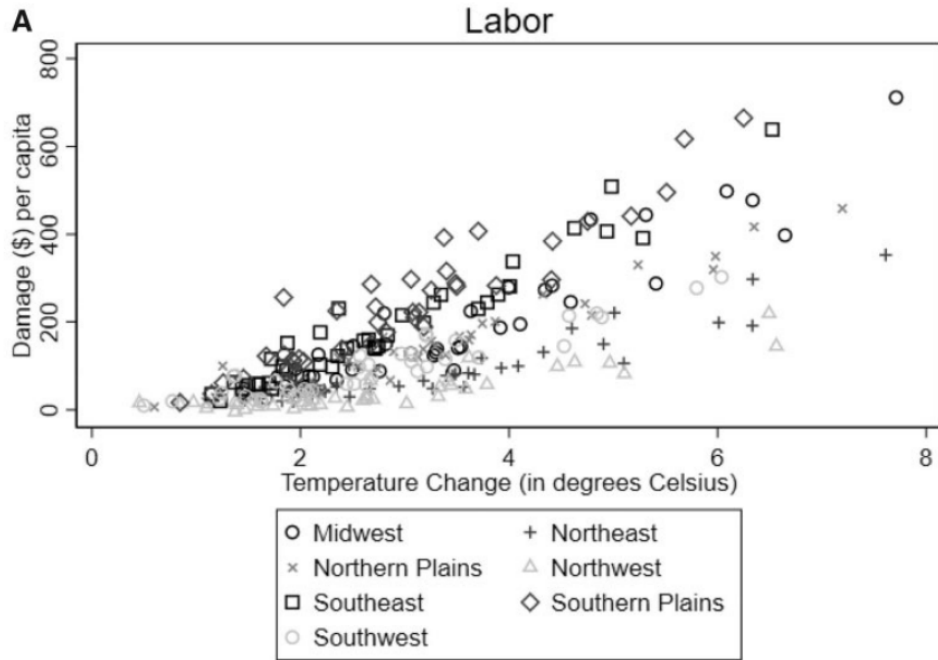
[Imagine Duluth 2035](#)

[Edina's Climate Action Plan](#)

[Ann Arbor's A2Zero Climate Action Plan](#)

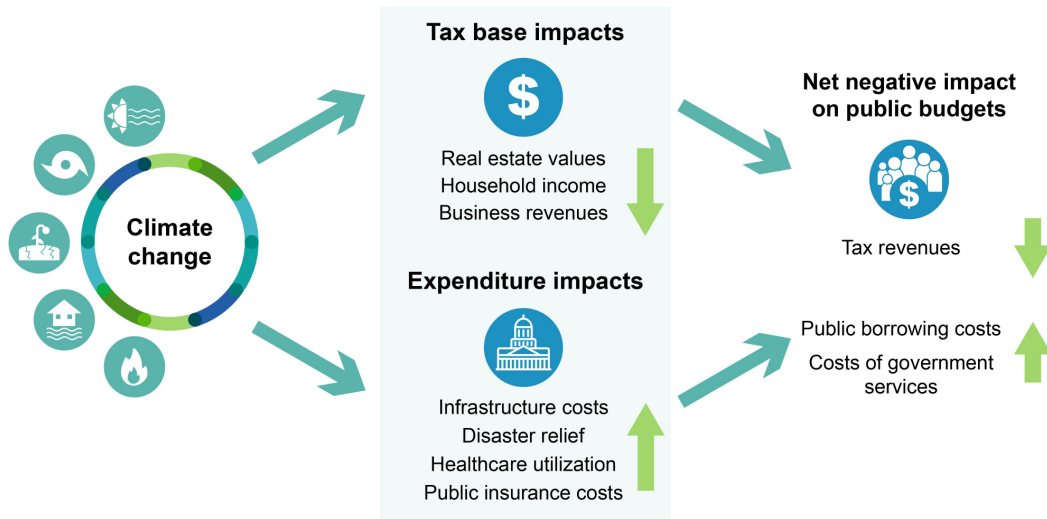
Appendix 2: Charts

(2.1) Labor damage per capita by temperature change (Neumann et al. 2020)



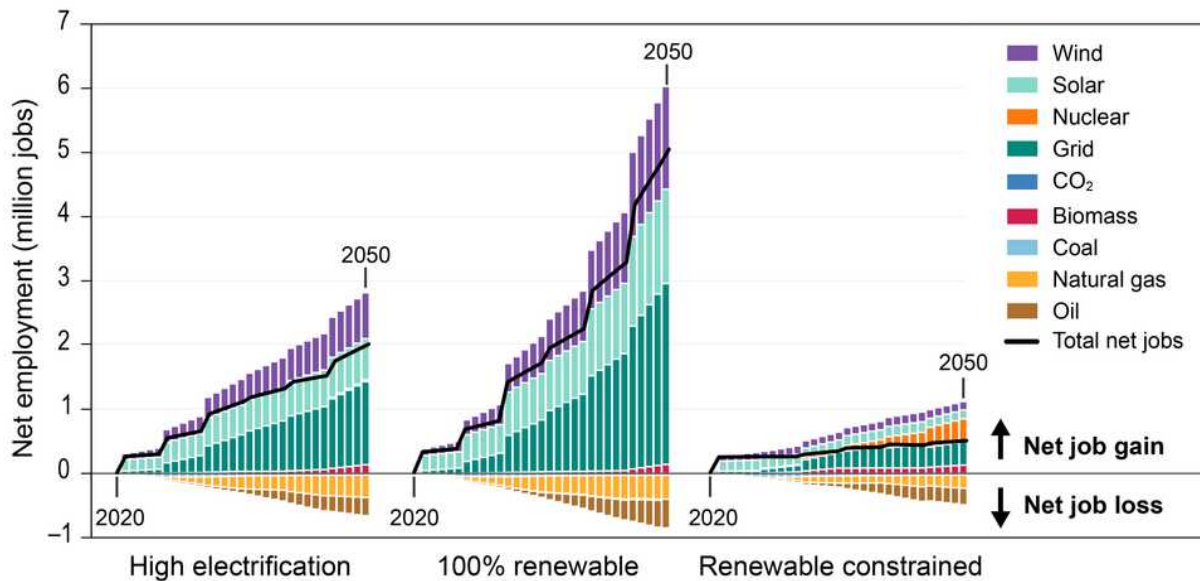
(2.2) Fiscal Risks of Climate Change (USGCRP 2023).

Fiscal Risks of Climate Change

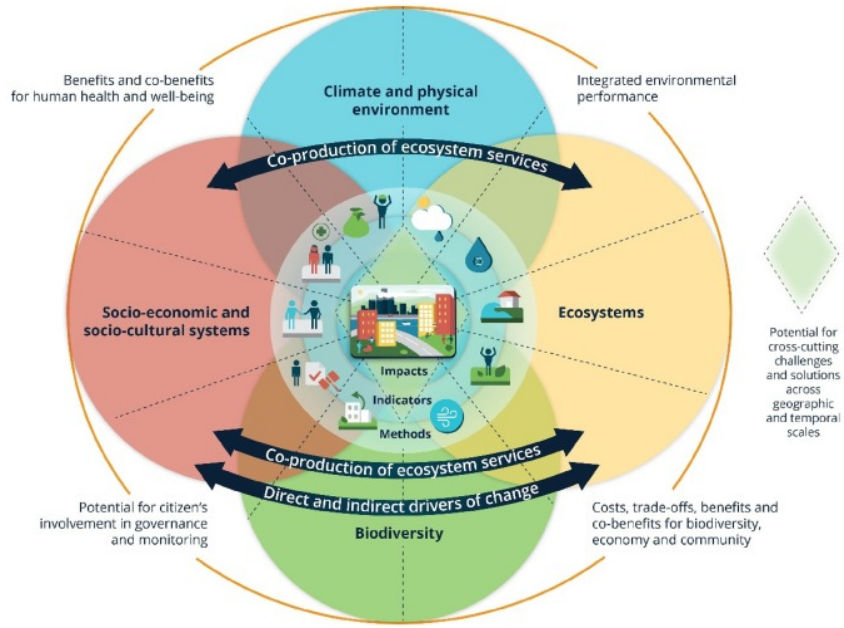


(2.3) Employment gains in green industries compared to fossil fuel industries (USGCRP 2023).

Energy Employment (2020–2050) for Alternative Net-Zero Pathways



(2.4) Nature-based solutions chart (Raymond et al. 2017).



- Climate Mitigation and Adaptation
- Water Management
- Coastal Resilience
- Green Space Management
- Air Quality
- Urban Regeneration
- Participatory Planning and Governance
- Social Justice and Social Cohesion
- Public Health and Well-being
- Economic Opps. and Green Jobs

Great Lakes Basin Precipitation
60-Month Period Ending in December



Appendix 3: Grants

- (3.1) [Climate Pollution Reduction Grants Program](#)
- (3.2) [Environmental Justice and Climate Resilience Grant](#)
- (3.3) <https://dnr.wisconsin.gov/aid/Grants.html>

Appendix 4: Fifth National Climate Assessment

[Fifth National Climate Assessment](#)

[Fifth National Climate Assessment; Midwest](#)

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