

City of Dubuque Climate Action Plan 2020

July 2020



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## Acknowledgements

Thank you to the following organizations and individuals for their contributions:

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## **Mayor's Statement**

Dear Neighbors,



Every community owes its existence and vitality to generations from around the world who contributed their hopes, dreams, and energy to creating the history that led to this moment. Some were brought here against their will, some were drawn to leave their distant homes in hope of a better life, and some have lived on this land for more generations than can be counted. Truth and acknowledgment are critical to building mutual respect and connection across all barriers of heritage and difference.

I acknowledge that while we now call Dubuque home, it was built on the ancestral lands of the Meskwaki, Ho-Chunk, Potawatomi, and other Indigenous Peoples who have stewarded this land throughout the generations. Black, Indigenous, and people of color have demonstrated resilience and resistance in the face of violent efforts to separate them from their land, culture, and one another. They remain at the forefront of movements to protect Mother Earth and the life earth sustains.

As we work to address the climate crisis, we must put people first. This means working in partnership with frontline communities to determine how best we can support efforts already in motion and build coalitions to lessen the impacts of climate change for all residents. By centering equity in our climate work, we can achieve fair outcomes for every Dubuque resident.

Beginning in the 1980s, when Dubuque led the country in unemployment and had lost its connection to the Mississippi River, residents and business owners found a way to change Dubuque, making it a new kind of national leader for the 21st century. When I ran for the office of mayor in 2005, my platform was based upon "engaging citizens as partners," and what I heard from thousands of citizens was a consistent theme surrounding water quality, recycling, greenspace, public transit, cultural vitality, accessibility and downtown revitalization. A year later, with support from my council colleagues, we named sustainability a top priority, stating, "cities that get out in front on sustainability will have competitive economic advantages in the future."

Fifteen years later, amid a global health pandemic, a climate crisis and uncertainty regarding the health, safety, and economic prosperity of our community's future, this continues to ring true. Bolstered by the work of Sustainable Dubuque, a City Council-adopted, community-created, and citizen-led initiative, Dubuque will continue to expand awareness, create partnerships and work hard to cut the emissions that cause climate change and prepare our neighborhoods for its inevitable impacts to make sure Dubuque is a sustainable, resilient, equitable, and compassionate community of choice. I am proud of the progress we have made, and we will continue to evolve and advance our citizen-inspired vision and goals for Dubuque.

Now, we take our next big step. It requires innovation, imagination, resourcefulness, originality, and risk. In order to reach our goal, the 2020 update to our 50% by 2030 Community Climate Action and Resiliency Plan details the specific actions we will take over the next decade to significantly cut emissions across all sectors of city life. Our work is informed by the most up-to-date science and projections from climate experts. The United Nations Intergovernmental Panel on Climate Change (IPCC) Report, as well as the United States' Fourth National Climate Assessment, show that the global community must act with urgency to confront this crisis before it is too late. In Dubuque, we are heeding this warning and setting a strong, replicable example.



## **Mayor's Statement**

In 2013, the City Council adopted the 50% by 2030 Community Climate Action & Resiliency Plan. Our first-ever greenhouse gas inventory identified that over 70% of our emissions come from heating, cooling, and powering buildings. In this update, we have committed to protect and prepare our most vulnerable residents and the larger community for the impacts of climate change. While we invest in infrastructure improvements to improve our resiliency, we also invest in the resiliency of our residents through a variety of programs and public/private partnerships to address affordable housing, generational poverty, underemployment, grade-level reading, brain health, racism, and other challenges faced by our community.

The City of Dubuque and our partners are committed to be an anti-racist, pro-climate action, human-centered organization. This update is only the beginning of the urgent body of work and, although we have a plan, we will continue to learn about creating more sustainable, resilient communities, and ways to create opportunities to collaborate and work together to create innovative solutions to our most daunting challenges.

I am proud to say that I am one of thousands of community leaders who have committed to fighting climate change, creating more equitable communities, and creating innovative economic development opportunities that benefit all of our residents and businesses. I look forward to making Dubuque climate ready with you!

Sincerely,

for D. Burl

Mayor Roy D. Buol



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Executive Summary





# **Executive Summary**

This plan lays out the foundation for the City of Dubuque's efforts to reduce its greenhouse gas (GHG) emissions and improve its resilience to future impacts of climate change on its environment, infrastructure, and people. This plan should be viewed as a living document, with progress on actions and impacts occurring regularly and adjustments to the plan being made based on actionable data.

#### **Our Challenge**

The combustion of fossil fuels is warming earth's atmosphere and changing our climate. Climate change transition presents an is already affecting Dubuque and its impacts are projected to become much more severe in the coming decades. To minimize harmful impacts and play its part in curbing global carbon pollution, Dubuque needs to take bold social change inherent in steps to reduce greenhouse gas emissions and build resiliency.

#### **Our Opportunity**

Transformation of our energy system is essential in order to stop burning fossil fuels. This opportunity for Dubuque. Directing our energy investments into renewable sources will make them more decentralized and resilient and provide for local job creation. Innovation, technology, and collective Climate Action can also support greater community abundance and shared equity.

#### **Our Vision**

To be the first Climate Resilient community in lowa, leading in the social and economic transitions necessary to prevent, prepare for, recover from, and adapt to the long-term impacts of climate change.

By the 2050's **Dubuque Will** 

Likely See...

Increase in Average

Annual Temperature:

Days Above 95°F:

Air Conditioning

Demand:

150%

.....

ră ră:

#### **Our Carbon Reduction** Goal

To be the first **Net Carbon** Neutral community in lowa and to reduce communitywide GHG emissions 50% below 2003 levels by 2030.





## **Executive Summary**

### **Our Climate Action Goals**

## Buildings and Energy

BE1: Increase distributed renewable energy by 21 MW of installed capacity by 2030.

BE2: Reduce citywide energy consumption by 10% by 2030.

BE3: Promote "fuel switching" to reduce on-site fossil fuel use 10% by 2030.

BE4: Increase renewable energy share of electric grid to 15% by 2030

(beyond current Alliant Energy commitments)

# 🚽 Transportation and Land Use

TL1: Decrease Vehicle Miles Traveled (VMT) by 10% by 2030.

TL2:Support and encourage alternative fuel vehicles, Achieve 20% of vehicles sold and 15% of VMT by 2030.

## Solid Waste

SW1: 50% diversion by 2030 measured on a per capita basis.

SW2: Waste education.

SW3: Achieve 100% beneficial use of landfill gas.

## Water. Wastewater, and Flooding

W1: Increase water conservation citywide.

- W2: Reduce wastewater impacts.
- W3: Mitigate flood hazards and impacts.

## Climate Health and Safety

HS1: Create a climate adaptive community.

- HS2: Educate, engage, and empower the public for climate health and safety.
- HS3: Address air quality impacts of climate change.

## Food

- F1 Reduce food's contribution to climate change.
- F2 Improve local food resilience and availability.

## Greenspace and Tree Canopy

GS1: Strengthen Dubuque's tree canopy.

GS2: Strengthen Dubuque's green space.

GS3: Mitigate current and future urban heat island impacts.

# Climate Economy

**CE1: Capture local economic potential of climate action.** 

CE2: Build marketplace climate resilience.

# Sclimate Action Capacity

- C1: Enhance and expand community capacity for climate action and resilience.
- C2: Develop new mechanisms for financing climate action work that account for equity and cobenefits (building upon existing budget scoring criteria).

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#### **Dubuque's Vulnerability to Climate Risks:**

Climate change is a global phenomenon that creates local impacts. It presents one of the most profound challenges of our time. A broad international consensus exists among atmospheric scientists that the Earth's climate system is being destabilized in response to elevated levels of greenhouse gas emissions in the atmosphere. Two changes to lowa's climate are occurring already: shorter winters with fewer cold extremes, and more heavy and extreme precipitation. Increases in the global surface temperature and changes in precipitation levels and patterns are expected to continue and intensify for decades. In turn, these changes in climate have impacts on the economy and health of local communities.

The following highlight the vulnerabilities to climate risks facing Dubuque, excerpted from the 2019 Dubuque Climate Vulnerability Assessment:



# Where Is Summer Going?

As Dubuque's climate continues to warm, summer weather will be similar to what communities to the south already experience.



Individua



## Why Create a Climate Action Plan

The creation, and dedicated implementation of a Climate Action Plan (CAP) is an organized way for a city to contribute to solving the global climate crisis while helping its resident and business communities create improved resilience to the current and future impacts and risks of climate change.

#### What is a Climate Action Plan (CAP)

Climate action plans are comprehensive road maps that outline the specific Strategies and Actions that a reduction or prevention of City will implement to reduce areenhouse gas emissions and build resilience to related climatic impacts. The Dubuque CAP addresses both climate mitigation and climate adaptation actions.

### What is Climate Change Mitigation?

**Climate Change Mitigation** addresses the root causes of climate change through the greenhouse gas (GHG) emissions. Mitigation can mean using new technologies and renewable energies, making older equipment more energy efficient, or changing management practices or consumer behavior.

#### What is Climate Change Adaptation?

Some impacts of climate change are now inevitable. **Climate Change Adaptation** seeks to lower the risks posed by these impacts. Both mitigation and adaptation are necessary, because even if emissions are dramatically decreased, adaptation will still be needed to deal with the global changes that have already been set in motion.

#### The Role of Cities in Climate Action

With a large majority of Americans living in urban areas, cities play a key role in addressing climate change. While each individual city's impact on global GHG emissions is relatively small, the leadership cities provide in motivating change can be extremely significant. According to a survey by the US Conference of Mayors, more than half (53%) had committed to reducing greenhouse gas emissions.

#### **Climate Action As A Journey**

The Climate Action Plan represents a robust vision of the future with a comprehensive scope of action befitting the magnitude of our collective climate challenge ahead. This plan should be seen as a living document. Action progress and effectiveness should be reviewed at regular intervals through the plan's implementation and adjustments should be made to expand or modify the scope of individual actions and to augment the plan with new actions as appropriate to respond to ever-changing market and community conditions.

#### Synergy of Mitigation and Adaptation Actions

**Climate Mitigation Climate Adaptation** Actions Actions **Energy Efficiency Renewable Energy** 

Building

Water and Energy Conservation

Climate

Afforestation, Open space preservation

> Addressing vulnerable population needs

Infrastructure protection and building design

**Flood and Flash Flood** mitigation

Community programs promoting preparedness

Business continuity planning

#### **Types of Climate Plan Actions:**

#### Leading by Example:

Actions the City can apply to city operations or facilities to illustrate actions others can take:

- · Install solar on rooftops of public buildings
- Adopt net-zero energy standards for public facilities
- Convert city fleets to EVs

## Advocating:

Encourage change in support of meeting CAP goals - these can include lobbying at State/Federal and educating public on actions they can take:

- Lobby for PACE financing legislation
- Promote utility rebate programs
- Provide Net Zero and Solar Ready **Guides to Residents and Businesses**

## **Require:**

Actions the City can take to require actions within the private sector:

- Require energy efficiency and renewable energy within PUD ordinance
- Adopt an energy benchmarking ordinance
- Require solar pv feasibility assessment with all new building permits

## Incentivize:

These can include direct economic incentives as well as actions which remove barriers:

- Expedite permitting for clean energy projects
- Offer Net Zero technical assistance
- Establish a Renewable Energy grant program for income gualified residents.

Industrial process

improvements

**Sustainable** 

Transportation,

Improved Fuel Efficiency

Capture and beneficial

Increasing carbon

sequestration

use of landfill gas

## **Climate Action Plan** Framework

This Climate Action Plan includes an implementation framework designed to achieve communitywide goals for greenhouse gas reduction and climate adaptation and resilience. This CAP is organized around a unifying framework organized by sector as illustrated to the right. Each sector has over-arching Strategies established to meet 2030 goals and detailed Actions for implementation. Sector actions have primary focus on Climate Mitigation, Climate Adaptation, or both.

**Strategies:** are specific statements of direction that expand on the climate action vision GHG reduction goals and guide decisions about future public policy, community investment, and actions.

Actions: are detailed items that should be completed in order to carry out the vision and strategies identified in the plan.

Climate Mitigation: addresses the root causes of climate change through the reduction or prevention of greenhouse gas (GHG) emissions. Sectors with this as a significant focus are shown to the right with this symbol: 🜔

Climate Adaptation: seeks to lower the risks posed by the impacts of climate change which are now inevitable or likely. Sectors with this as a significant focus are shown to the right with this symbol:





This sector area includes all electricity and natural gas consumption within the city and also considers the mix of energy generation supplying the city of Dubuque. Strategies in this sector area include improved energy efficiency as well as shifts in Dubuque's energy supply to cleaner, low and no carbon sources.





## Transportation and Land Use

This sector area includes emissions from on-road vehicle traffic occurring in the community. Strategies in this sector area include reductions in vehicle miles traveled as well as shifts to cleaner. low and no carbon fuel vehicles in Dubuque.



This sector area includes commercial and non-commercial food cultivation and distribution, food and nutrition insecurity, and food waste. Strategies in this sector area include reduction of food waste, food system and distribution resilience, strengthening of local food production capacity, and equitable access to healthy food.





Greenspace and Tree Canopy

This sector area includes the climate resilience and benefits of urban tree canopy, ground cover, community greenspace and parks, and ecosystems that rely on these natural elements. Strategies in this sector include resilience/expansion of urban tree canopy coverage, improvement of beneficial use of lawn areas, and mitigation of heat island impacts





# Solid Waste and Recycling

This sector area includes all solid waste generated by residents and businesses within the community. Strategies in this sector focus on diversion of food, consumer, and construction waste as well as reduction of landfill gas generation and beneficial use of unavoidable landfill gas emissions.



# and Flooding

This sector area includes potable water distributed to Dubuque residents and businesses, wastewater collection and treatment, stormwater collection, flood mitigation, and surface water health. Strategies in this sector focus on water conservation, wastewater reduction and beneficial use of wastewater emissions, flood mitigation, and stormwater infiltration.





This sector area includes community health impacts and resilience in the face of current climate impacts and projected risks. Strategies in this sector focus on community resilience to extreme heat and weather, vectorborne and water-borne disease, and air quality impacts of climate change.

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This sector includes the economic development, jobs, and business creation potential represented by the actions and goals of all sectors in this Climate Action Plan. Strategies in this sector include workforce development, economic development and new business financing, and resilience of businesses in the community.





This sector area includes financial mechanisms, and systemic and organizational capacity to implement the actions and goals of all sectors in this Climate Action Plan. Strategies in this sector focus on mechanisms for financing Climate Action work, resilience of social networks - particularly those serving vulnerable populations, and education, engagement, and empowerment of the public. "

You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make.

> Jane Goodall, Anthropologist



#### **Benefits of Climate Action**

The strategies and actions contained in this plan seek to reduce Dubuque's dependence on non-renewable fossil fuels, prioritize sustainable uses of land and water, reduce waste, and support improved equity and livability. The actions outlined in this plan will reduce Dubuque's GHG emissions. In addition to reducing the community's contribution to climate change this plan strives to identify how climate change will increasingly impact the community. The CAP addresses next steps for Dubuque to adequately respond to climate change. If implemented successfully the CAP will enhance Dubuque's economic vitality, resilience, and viability as a healthy, livable city.

#### 6 Ways Climate Action Can Be Good For Dubuque's Economy

1: **Dubuque can lower emissions while growing the economy.** Since 2003, Dubuque's GDP has increased 41% while community wide GHG emissions have fallen over 27%.

#### 2. Electricity from renewable sources is typically less expensive than fossil fuels.

The costs of renewable energy fallen significantly over the last decade and their portion of our energy mix has grown. According *The Coal Cost Crossover*, a study by Energy Innovation, it would be cheaper to replace 3/4ths of existing U.S. coal plants with wind and solar power than to keep them operating with coal.

#### 3. Clean energy jobs already employ about 3.5 million Americans and growing.

The transition to renewable energy is a transition to local energy sources and infrastructure – and retention of more energy expenditures in the local economy. According to a study by the non-profit group MassSolar, every dollar invested in solar creates \$1.20 in local economic benefits.

#### 4. CAP focus areas can save Dubuque residents and businesses money .

Energy efficiency improvements, renewable energy adoption, and reduced single occupancy vehicle dependence strategies included in this plan can result in annual savings for Dubuque businesses and households.

#### 5. Better planned, low-carbon cities are more productive.

According to a study by The Coalition for Urban Transitions, for every 1% increase in population density in US cities, medium and high-skilled wages increase 0.5% and carbon emissions decrease 0.2% per capita.

#### 6. Without climate action, Dubuque will face increasing economic damage.

According to NOAA Records, extreme weather and climate disasters in Dubuque County have increased 7% in the last twenty years, causing an average of \$3,230,000 in damages annually. According to a study by the University of California at Berkeley, climate impacts can be expected to increase agricultural damage, death rates, energy costs, and violent and property crime rates in the City of Dubuque. In addition, as annual average temperatures and the number of extreme heat days increase, economic productivity will decrease due to labor efficiency losses. These impacts can be used to establish an estimated minimum "Social Cost of Carbon" - a measure of the economic harm of those impacts from emitting one ton of carbon dioxide into the atmosphere.

See calculations on the following page for an estimated cumulative economic savings potential of successfully implementing the Climate Action Plan through 2030.

#### Types of Climate Action Benefits



Estimated Economic Risk of Climate Change to Dubuque by 2100 (in today's dollars):



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**Cumulative Economic** 

Savings Potential of Successfully Implementing

**Climate Action Plan** 

per job

per job

## Did You Know?

Forest acres needed to sequester Dubuque's Citywide GHG Emissions:

**1,064,163** 

Total land within City: 19,981 Acres

Forest area required to sequester Dubuque's citywide emissions:

53.3 x City of Dubuque's land area.



# Section



Dubuque's GHG Emissions





### Greenhouse Gas Emissions (GHG) and Climate Change

The climate change we face today is caused by warming from greenhouse gases trapping infrared energy radiating from the earth. This is called the greenhouse effect. Greenhouse gases have been increasing in our atmosphere since the Industrial Revolution. Scientists attribute the global warming trend observed since the mid-20th century to human greenhouse gas (GHG) emissions which expand the "greenhouse effect" — warming that results when the atmosphere traps heat radiating from Earth toward space



#### What Are GHG's?

Greenhouse Gases (GHG) absorb radiation and trap heat in the Earth's atmosphere. They are the basis of the Greenhouse Effect. The more GHGs there are, the more heat that is trapped in our atmosphere, leading to Global Warming and Climate Change. The most common greenhouse gases include carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O).







Carbon dioxide **CO**<sub>2</sub>

Methane **CH**<sub>4</sub>

Nitrous oxide N<sub>2</sub>O

## **Greenhouse Gas Sectors**

Where do GHGs come from?



Energy Emissions are produced from the combustion of natural gas, coal, and other fossil fuels primarily for heating, cooling, and electricity generation.

#### + X Transportation

Emissions come from the combustion of fossil fuels for ground transportation and air travel.



# Solid Waste

Emissions in the inventory estimate the decomposition of biodegradable waste (e.g., food and yard waste) in the landfill.



Wastewater

Emissions from energy uses are calculated for the collection and treatment of wastewater.

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**Dubuque's GHG Emission Trends** 



#### **Dubuque Citywide GHG Emissions Overview**

Total emissions for the City of Dubuque dropped 27% from 1,122,597 metric tonnes in 2003 to 819,406 in 2018.



# Think Economic Development is Tied To Increased Emissions?

Think again! Between 2003 and 2018 the City was able to decrease its GHG emissions by 27% while growing its economy by 78% and adding 12% more jobs!

# How Large Are Citywide GHG Emissions?

The City's total emissions for 2018 are equal to **16.1 Billion** cubic feet of manmade greenhouse gas. This volume of atmosphere is equal to a cube **2,524** feet on each face, seen here over downtown Dubuque from 2 miles to the South.

Volume comparison to the Willis Tower, Chicago.



## **Citywide GHG Emission Forecast**

A GHG emission forecast supports GHG reduction planning efforts by anticipating what emissions may be like if actions are not taken. Emissions are typically forecast under a business-as-usual (BAU) scenario. The Intergovernmental Panel on Climate Change (IPCC) defines a "business-as-usual" baseline case as the level of emissions that would result if future development trends follow those of the past and no changes in policies take place.

The City of Dubuque GHG forecasts included here were based on population and employment growth estimates determined by 10 and 20 year historic growth rates. In addition to these data, information from the State of Iowa Department of Economic Development, the US Environmental Protection Agency, US Department of Transportation, and US Energy Information Agency. The full assumptions used for the Business-as-usual GHG Emissions Forecast model are outlined in detail in the appendix of this report.





### **Climate Action Plan GHG Reduction Goal**

The GHG emission reduction goals guiding this Climate Action Plan are to be the first Net Carbon Neutral community in Iowa and to reduce community-wide GHG emissions 50% over 2003 baseline by 2030.

#### GHG Emission Reduction Goal in Global Context

Reviewing the City's Climate Action Plan emission reduction goal within a global context and GHG emission reduction recommendations formulated by the International Panel on Climate Change (IPCC) can help validate the appropriateness of the goal. The IPCC is the United Nation Environment Porgramme (UNEP) body for assessing the science related to climate change and providing support in climate action policy making. The scientific consensus of the international IPCC working groups is to reduce global GHG emissions as needed in order to limit global warming to 1.5°C. In addition, the Paris Agreement aims to limit global warming to 1.5 to 2 degrees C above pre-industrial levels, considered to be the threshold for dangerous climate change.

The UNEP Emissions Gap Report published in November 2019 calculates that by 2030, global emissions will need to be 25% lower than 2018 to put the world on the least-cost pathway to limiting global warming to below 2°C. To limit global warming to 1.5°C, the same report finds emissions would need to be 55% lower than in 2018 - an upward adjustment of earlier recommendations which suggested a 45% reduction.

#### Fair Share Citywide Emission Reductions To Meet Global Need

The concept of "Fair Share" has been introduced into international climate action discussions. Though there is no consensus on how "fair share" should be defined, the most common way of looking at the concept is a straight-line reduction economy-wide. This means that the share of emissions reductions for each jurisdiction (the City of Dubuque, the State of Iowa, the United States, etc) should match their share of global emissions - meaning if the US emits 25% of global emissions, the "fair share" of emissions reductions for the US would be 25% of the global emission reduction goals.

Based on a "Fair Share" model of GHG emission reduction, the City's goal of 50% over 2003 baseline by 2030 is compatible with the Paris Agreement and exceeds the threshold of required reductions to keep global warming below 2°C. The goal, however, may not be fully compatible with a 1.5°C global warming pathway, as illustrated by the graphic to the right.

#### Climate Action Plan Approach to Emissions Reduction

This Climate Action Plan is intended as a "living plan" rather than a static document. This means that the implementation phase of this plan should be characterized by intermittent measurement of progress and plan adjustments. Plan adjustments should look towards increasing implementation goals for actions which illustrate success, modify goals for actions which may fall short of desired outcomes, and identifying additional action opportunities.

As a "living plan", the 2030 emission reduction goal should be seen as a guiding constant and recognition should be given that initial implementation actions may not yet fully achieve plan goals. Intermittent plan progress measurements and adjustments should identify additional actions, or increases in action implementation targets as needed to meet the ultimate 2030 GHG reduction goal.

#### 2030 Citywide GHG Emissions Goal:

**563,540** Metric Tons

Global Emission Reduction To Limit Global Warming to 2°C:

> 25% Below 2018 Emissions

Global Emission Reduction To Limit Global Warming to 1.5°C:

> 55% Below 2018 Emissions



Climate Action Plan Goal -Compatible with Global Pathway to

Global Pathway to Limit Global Warming to **1 5°C** 

## Estimated GHG Reductions Included in This Plan

Compared to the 2018 citywide GHG inventory, the total estimated emissions reductions included in the initial implementation actions of this plan are projected to total 221,451 metric tons annually. These estimated reductions are projected to result in total citywide GHG emissions of 563,605 metric tons. The potential cumulative GHG emissions reductions over the 10 year implementation period are estimated at over 1,160,000 metric tons - an elimination of over 22.7 billion cubic feet of man made greenhouse gas atmosphere annually.

The total projected GHG emissions reductions estimated for the initial implementation actions of this plan are projected to be sufficient to achieve a total reduction in annual emissions of 50.0% below 2003 baseline emissions by 2030. As outlined on the previous page, the implementation phase of the plan should be characterized by intermittent measurement of progress and plan adjustments based on results in order to achieve the ultimate 2030 reduction goals.

#### **GHG Emission Reductions Wedge Diagram**

The diagram below shows the estimated emission reductions from the Business-as-Usual projections, by emission sector, of the initial implementation actions and targets.



# Below is a breakdown of estimated sector emission reductions by sector strategy.

5.

**Buildings and Energy Total Emission Reduction:** `•\_• 151,429 Metric Tons Annually BE1 Increase Distributed Renewable Energy by 21 MW: 11,190 Metric Tons Annually **BE2 Reduce Citywide Energy** Consumption: 65,932 Metric Tons Annually BE3 Promote "Fuel Switching" achieving 10% adoption: 43.417 Metric Tons Annually BE4 Increase renewable energy share of electric grid by 15%: 30,890 Metric Tons Annually

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Transportation and Land Use **Total Emission Reduction:** 37,478 Metric Tons Annually

TL1 Decrease Vehicle Miles Traveled by 10%: 13,546 Metric Tons Annually

TL2 Support and encourage alternative fuel vehicles, Achieve 15% of VMT:

23,932 Metric Tons Annually

#### Solid Waste Total Emission Reduction: 32,544 Metric Tons Annually SW1 50% Diversion by 2030

measure on a per capita basis: 32,544 Metric Tons Annually

















# **Buildings and Energy**

Building construction and their operations can have extensive direct and indirect impacts on the environment, society, and economy. Buildings use significant resources (energy, water, raw materials, etc.), generate waste (occupant, construction, and demolition), emit potentially harmful atmospheric emissions, and fundamentally change the function of land, and the ability of that land to absorb and manage water.

Building energy use is a major contributor to greenhouse gas (GHG) emissions. The Building Energy sector includes all residential, commercial, and industrial buildings. Greenhouse gas emissions from this sector come from **direct emissions** – from fossil fuels burned *on-site* for heating or cooking needs – as well as **indirect emissions** – from fossil fuels burned *off-site* in order to supply that building with electricity. Building design plays a large role in determining the future efficiency and comfort of facilities. Increasing energy efficiency can help reduce GHG emissions and result in significant cost savings for both homes and businesses. The Dubuque community can also achieve environmental, social, and economic benefits through enhancements to the built environment.

## **Equity Considerations:**

- Often, families that live in properties that are not energy efficient are also those that can least afford high-cost utility bills. These households may lack the ability to pay for energy efficiency improvements or access renewable energy options.
- Renters of both single family homes as well as multifamily housing usually do not have the ability to implement energy efficiency measures to the buildings they live in to gain the benefits of energy efficiency. Energy efficiency retrofits are typically in the hands of the landlord while the costs associated with the resulting energy use are usually paid by the occupant.
- Families with fewer resources must dedicate a disproportionately larger share of their income towards energy costs. This energy access inequity exacerbates other vulnerabilities including exposure to heatwaves and other climate vulnerabilities.
   Families sometimes are forced to forego basic access to service altogether - an estimated 123 households in Dubuque go without heating fuel of any type.
- Air pollution, mainly from fossil energy use, disproportionately impacts low income and communities of color due to community locations and physical characteristics.

# 🛍 Buildings and Energy Goals

- BE1: Increase distributed renewable energy by 21 MW of installed capacity by 2030.
- BE2: Reduce citywide energy consumption by 10% by 2030.
- BE3: Promote "fuel switching" to reduce on-site fossil fuel use 10% by 2030.
- **BE4:** Increase renewable energy share of electric grid to 15% by 2030 (beyond current Alliant Energy commitments).

## **Accomplishing The Goals**

This Climate Action Plan is organized around a unifying framework organized by sector. Each sector has over-arching strategies established to meet 2030 goals and detailed actions for implementation.

Strategies are specific statements of direction that expand on the climate action vision GHG reduction goals and guide decisions about future public policy, community investment, and actions. On the following page are the strategies guiding the Buildings and Energy section.

## **Did You Know?**

Electric grid transitions towards renewable energy sources, improvements in energy efficiency, and installations of solar power in Dubuque have already reduced the building sector greenhouse gas emissions by 32.6% since 2003!

# 36,631,642,162

Cubic Feet of greenhouse gasses have been saved by building energy city-wide since 2010.

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# **a** Buildings and Energy

## BE1 Increase distributed renewable energy by 21 MW of installed capacity by 2030

How we'll accomplish this goal	How we'll measure our progress
Strategy BE1-A: Increase solar on City facilities	City facility annual on-site solar PV electricity generation reported
Strategy BE1-B: Support and accelerate installation of on-site solar PV and solar thermal.	r City-wide annual on-site solar PV installations and electricity generation reported
Strategy BE1-C: Encourage equity for renewable energy	On-site solar pv installations within low-to-moderate income communities reported
Strategy BE1-D: Increase solar on residential buildings	City-wide Residential on-site solar PV installations and electricity generation reported
Strategy BE1-E: Increase solar on commercial/industrial facilities	City-wide Commercial/Industrial on-site solar PV installations and electricity generation reported
Strategy BE1-F: Advocate for stronger state policy	Status of establishing community solar, virtual net metering, and aggregated net metering policies and laws

## BE2 Reduce citywide energy consumption by 10% by 2030

How we'll ac	ccomplish this goal	How we'll measure our progress
Strategy BE2-A: Increase energy	gy efficiency in City facilities	City facility annual energy consumption reported
Charles and DE2 Day 1		City wide appual operation constraints (its wide
Strategy BE2-B: Improve energ	gy efficiency in all sectors	annual total residential consumption reported; City-Wide annual total residential consumption and residential consumption per household reported; City-wide annual commercial and industrial energy consumption reported
Strategy BE2-C: Promote audits, energy efficiency rebates and		
financial incentives		City-wide utilization of available rebate and incentive programs reported
Strategy BE2-D: Improve energy	gy efficiency and equity in residential	
buildings		City-wide Commercial/Industrial sector annual energy consumption reported per job or per building area
Strategy BE2-E: Increase net ze	ero energy residential building stock	City-Wide Net Zero Energy certified residential buildings as reported by New Buildings Institute, Living Building Institute and/or HERs Rating Index

## **BE3** Promote "fuel switching" to reduce on-site fossil fuel use 10% by 2030

How we'll accomplish this goal	How we'll measure our progress
Strategy BE3-A: Promote "fuel switching" to low/no carbon	
alternatives	Reported city-wide natural gas use; reported city-wide
	Renewable Natural Gas use



# **Buildings and Energy**

How we'll accomplish this goal

Strategy BE4-A: Community solar for residential and commercial

#### How we'll measure our progress

City-wide community solar subscriptions reported (with REC retained by residents/businesses within community or by utility serving community without resale)

Strategy BE4-B: Increase utility scale renewable energy installations

Alliant Energy GHG annual emissions factor reported

## **Estimated Cumulative Economic Savings**

Implementing many of the measures in this plan, such as increased energy efficiency and on-site renewable energy, can save money for the community. The estimated community savings of the goals for this section include:

Residential Energy Cost Savings:

\$33,677,000

(Based on current average energy rates applied to energy reductions and an estimated average 12 year ROI on solar)



(Based on current average energy rates applied to energy reductions and an estimated average 12 year ROI on solar) Industrial Energy Cost Savings: \$19,187,000

(Based on current average energy rates applied to energy reductions and an estimated average 12 year ROI on solar)

Individual Strategy Annual

Estimated Cumulative Savings Potential: \$134,356,000 \$2,275 per-capita

## **Planned Buildings and Energy GHG Emission Reductions**

#### Planned Sector Emission Reductions Through 2030

The strategies and actions included in this section of the Climate Action Plan are projected to reduce the city's annual GHG emissions by 151,429 metric tons (MT) by 2030 - a 50% reduction over 2003 levels.

This is equivalent to eliminating **2.9 billion** cubic feet of man-made greenhouse gas atmosphere annually by 2030.

Emission Reductions by 2030				
003 ssions		<ul> <li>Strategy BE1-A:</li> <li>Strategy BE1-D:</li> <li>Strategy BE1-E:</li> <li>Strategy BE2-A:</li> </ul>	ncrease solar on City facili Increase solar on residenti Increase solar on comm/ir Increase EE in City facilities	ities - 1,172 MT al - 3,811 MT n - 6,207 MT s - 817 MT
030 ssions		— Strategy BE2-B:	Improve energy efficiency	r in all sectors 55,369 MT
		- Strategy BE2-C:   - Strategy BE2-D: - Strategy BE2-E:	Promote audit EE rebates Improve EE , equity in res ncrease NZE res building	- 3,539 MT - 5,103 MT - 1,104 MT
		—Strategy BE3-A:	Promote "fuel switching"	- 43,417 MT
		-Strategy BE4-A:	Community solar for res	and comm - <b>27,914 MT</b>
		-Strategy BE4-B:	ncrease utility scale re -	2,976 MT



# Buildings and Energy

## **Taking Action**

### How can you help Dubuque reach our emissions reductions goals?

Implementation actions are detailed items that should be completed in order to carry out the vision and strategies identified in the plan. Some actions will need to be led by City Council, city departments, and/or the business community; and there are some things that households and individuals can do to make an impact. All of the actions in the plan are divided by who has the ability, access and decision-making power to get them accomplished. While many actions will require City Council to amend a policy there will be opportunities for businesses, organizations, households, and individuals to support the City Council policy changes and provide input on ad feedback on those policies. It is important to remain engaged and active, advancing and advocating for actions you feel are important.

The following kick-start actions are foundational, high impact, and will help provide momentum for launching the City's Climate Action Plan (See Section 13 Implementation Action Plan for the complete list of detailed actions):

### **City Council**

- Create a policy that all City buildings shall reduce energy usage by 20% over the next 10 years, and require all municipal buildings to be benchmarked using ENERGY STAR Portfolio Manager. (Strategy BE2-A-1, Strategy BE2-A-2)
- 2) Implement energy benchmarking (performance tracking and annual reporting) program for commercial buildings, required for all buildings equal to or greater than 50,000 square feet. (Strategy BE2-C-4)
- 3) Develop and adopt a rental housing energy efficiency policy requiring single family and multi-family rental housing properties to meet minimum energy efficiency level to qualify for rental licensing. (Strategy BE2-D-2)
- 4) Adopt a voluntary green building stretch code (IgCC) including stretch energy efficiency requirements in-line with Architecture 2030 goals. Make (IgCC) code required for all City facility projects and all projects receiving \$50,000 or more in City tax abatement, financing or funding. (Strategy BE2-B-4)

#### **City Staff**

- Establish a centralized facility management / construction project management structure or department for all City owned facilities. Structure to focus on increased capacity for execution of high performance city construction projects capable of achieving energy efficiency and renewable energy goals consistent with the City's CAP plan. (Strategy BE-2-A-4)
- 2) Explore the development of a Revolving Loan program for City facilities to fund capital costs for high performance energy efficiency and renewable energy options with appropriate return on investment. (Strategy BE-2-A-5)
- 3) Conduct a detailed solar assessment and "Renewable Energy Master Plan" for all primary city facilities. City's largest energy consuming properties should be prioritized for assessment. Goal: 50% of city facility electric demand supplied through solar. (Strategy BE-1-A-1)
- 4) Deploy an incentive program for electrification. Work with Alliant Energy or other regional partnerships to create financial incentives to electrify new and existing buildings. (Strategy BE-3-A-1)
- 5) Develop and issue an RFI / RFP for community solar developers to advance community solar options and subscriptions within City. (Strategy BE-4-A-1)

#### **Business Community**

- 1) Use ENERGY STAR Portfolio Manger to benchmark your energy consumption and identify energy savings potential then make an energy savings plan targeting a 10% reduction.
- 2) Contact a solar pv installer and ask for a no-risk, free solar site assessment for your business. Ask the installer to educate you on all applicable rebates and tax incentives.
- 3) Explore replacing your roof with a greenroof system or a "cool roof": https://palebluedot.llc/dubuque-net-zeroenergy-guide

#### Households/Individuals

- 1) Switch your lightbulbs to more energy efficient LED lights.
- 2) Set a goal to save 10% in annual energy use and costs this year and schedule a Home Energy Assessment from the Dubuque Green Iowa AmeriCorps team.
- 3) Contact a solar pv installer and ask for a no-risk, free solar site assessment for your home/apt. Ask the installer to educate you on all applicable rebates and tax incentives. Alternatively, you can take advantage of Alliant Energy's Second Nature<sup>™</sup> option to switch to renewable energy through your utility.













# 🛱 Transportation and Land Use

The design of a city can limit or expand the choices and opportunities available to its residents in where they live, how they travel and the impact of those decisions on the global environment. Transport systems have significant impacts on the environment, accounting globally for 20% to 25% of world energy consumption and carbon dioxide emissions - in Dubuque transportation accounts for 20.4% of citywide GHG emissions.

Improving the equity and sustainability of our land use and transportation systems requires a focus on developing systems and networks that allow for greater choice in where residents live and work as well as how they commute. Implementation of Complete Streets and a connected system of transit, bike and pedestrian infrastructure along with consolidation of residential zoning categories and emphasis on neighborhood design that supports density and walkability will help Dubuque reach its goal of a 34% reduction by 2030.

## **Equity Considerations:**

- Increased opportunities for public transit and active transportation can help address health disparities for many atrisk populations.
- Affordable and reliable options for mobility for people with special transportation needs can significantly improve transportation equity. Populations with special transportation needs include older adults, youth, persons with disabilities, and persons with reduced incomes.
- Some neighborhoods in Dubuque have fewer housing and transportation options than others. This can limit people's choices in where they live and how they get to work or other activities. If you don't drive or you want to rent, some neighborhoods aren't available to you. Households that rely on public transit service or who rent their home will be limited in where they can find housing that meets both needs. See Appendix A1 for more information.

# 🛱 Transportation and Land Use Goals

- TL1: Decrease vehicle miles traveled (VMT) by 10% by 2030.
- TL2: Support and encourage alternative fuel vehicles; achieve 20% of vehicles sold and 15% of VMT by 2030.

## Did You Know?

For the City of Dubuque, if just one commuter from each household walked, biked, or took public transit to work just once a week, city-wide emissions would be reduced by:

27,204,594

pounds of GHG annually

On average, switching your daily commute to public transit will save:

<u>42,720</u>

annually cubic feet of greenhouse gas atmosphere



# 🛱 Transportation and Land Use

## Accomplishing The Goals

This Climate Action Plan is organized around a unifying framework organized by sector. Each sector has over-arching Strategies established to meet 2030 goals and detailed Actions for implementation.

Strategies are specific statements of direction that expand on the climate action vision GHG reduction goals and guide decisions about future public policy, community investment, and actions. Below are the Strategies guiding the Transportation and Land Use section:

## Goal TL1 Decrease vehicle miles traveled (VMT) by 10% by 2030

How we'll accomplish this goal	How we'll measure our progress
Strategy TL1-A: Build Complete Streets; target: 25% Complete Street community coverage by 2030	Street miles meeting Complete Streets policy
Strategy TL1-B: Promote reduced vehicle travel citywide	Annual Dubuque VMT reported; Percentage of telecommuters; Percentage of workforce receiving mode- neutral incentives; ACS reported telecommuting levels; Bike and commuter friendly designations
Strategy TL1-C: Encourage density and increase housing options and affordability; target: increase gross density by 3.75% by 2030	Calculated residential and commercial density (Households per residential zoned acre; Commercial building area/jobs per commercial zoned acre)
Strategy TL1-D: Increase public transit ridership to 3% by 2030	US Census ACS Commute by mode; Fixed route ridership statistics
Strategy TL1-E: Increase shared mobility utilization; target: increase shared mobility (carpooling) from 8.55% to 11% of commuters by 2030	City-wide commuter transportation mode data from US Census ACS 5 year estimates
Strategy TL1-F: Increase pedestrian access and safety	Percentage of schools with implemented Safe Routes To School plans; Average auto speed limit on bike and pedestrian corridors

# TL2 Support and encourage alternative fuel vehicles, achieve 20% of vehicles sold and 15% of VMT by 2030

How we'll accomplish this goal	How we'll measure our progress
Strategy TL2-A: Transition City fleet to alternative fuels	Percentage of alternative fuel vehicles to gas/diesel internal combustion (ICE) within City of Dubuque vehicle fleet
Strategy TL2-B: Support and encourage alternative fuel vehicles citywide	Percentage of registered alternative fuel vehicles to registered gas/diesel internal combustion (ICE) within city of Dubuque


# 🛱 Transportation and Land Use

## **Estimated Cumulative Economic Savings**

Implementing many of the measures in this plan, such as reduction of single-occupancy auto use, can save money for the community. The estimated community savings of the goals for this section include:



## Planned Transportation and Land Use GHG Emission Reductions

#### Planned Sector Emission Reductions Through 2030

The strategies and actions included in this section of the Climate Action Plan are projected to reduce the city's annual GHG emissions by 37,478 metric tons (MT) by 2030 - a 45.1% reduction over 2003 levels.

This is equivalent to eliminating **735 million** cubic feet of manmade greenhouse gas atmosphere annually by 2030.





# 🛱 Transportation and Land Use

## Taking Action

#### How can you help Dubuque reach our emissions reductions goals?

Implementation actions are detailed items that should be completed in order to carry out the vision and strategies identified in the plan. Some actions will need to be led by City Council, city departments, and/or the business community; and there are some things that households and individuals can do to make an impact. All of the actions in the plan are divided by who has the ability, access and decision-making power to get them accomplished. While many actions will require City Council to amend a policy there will be opportunities for businesses, organizations, households, and individuals to support the City Council policy changes and provide input on ad feedback on those policies. It is important to remain engaged and active, advancing and advocating for actions you feel are important.

The following kick-start actions are foundational, high impact, and will help provide momentum for launching the City's Climate Action Plan (See Section 13 Implementation Action Plan for the complete list of detailed actions):

#### **City Council**

- 1) Update, adopt and fund a more comprehensive Complete Streets Policy including a Systems Approach, increased Transparency/Accountability, and an Inclusive Public Process. A recommended policy is included here: https://palebluedot.llc/dubuque-cap-policies. (Strategy TL1-A-1)
- 2) Implement mode-neutral commuter incentives for City employees. Establish an incentive or subsidy and promote mode-neutral incentives with the goal of 25% of private workforce receiving mode-neutral incentives. (Strategy TL1-B-5)
- 3) Fund neighborhood-based plans for all neighborhoods to encourage neighborhood identity, engagement and development. Plan goals should be to increase housing density, options, affordability, and equity while furthering the goals of the Climate Action Plan. (Strategy TL1-C-2)
- 4) Update City vehicle (including The Jule transit) purchasing policy/budget process to default to alternative fuel with traditional internal combustion engine (ICE) as optional requiring proof of need. (Strategy TL2-A-1)
- 5) Establish an incentive or subsidy and promote commuter mode-neutral incentives with the goal of 25% of private workforce receiving mode-neutral incentives or telecommute benefits. (Strategy TL1-B-2)

#### **City Staff**

- 1) Implement feedback from existing Bike Friendly Community applications and re-apply to achieve a minimum of Silver Bicycle Friendly Community certification by 2025. (Strategy TL1-A-2)
- 2) Engage employers to secure a minimum of 10 Top Work places for commuters designations. (Strategy TL1-B-4)
- 3) Redesign parking fees to capture the full cost of parking in downtown and other commercial districts with equity and carbon reduction in mind. Explore using increased revenue to provide funding for alternative modes, for example, bike and pedestrian paths, public transit investments. (Strategy TL1-B-3)
- 4) Issue competitive redevelopment Request for Proposals encouraging high quality mixed use redevelopment on infill properties and existing surface parking lots within downtown district. (Strategy TL1-C-1)
- 5) Collaborate with Alliant Energy to develop and implement outreach and education campaigns designed to help residents understand the benefits of transitioning to an EV and to learn how to leverage applicable Alliant Energy programs or other incentives to facilitate EV charger installation or EV purchase. (Strategy TL2-B-1)

#### **Business Community**

- 1) Work to be designated as a Bike Friendly Business and encourage your peers to participate. Dubuque has a goal of 10 businesses meeting the designation. (https://bikeleague.org/business)
- 2) Explore how you can offer your employees mode-neutral commute incentives (https://www.vtpi.org/tdm/tdm8.htm).
- 3) Make and implement a Fleet Transition Plan to convert your vehicle fleet to electric vehicles (https://cutt.ly/Dul3ZSK)

- 1) Participate in Bike to Work Week Work and commit to changing your regular commute to walking, biking or carpooling at least one day/week.
- 2) Make your next personal vehicle a hybrid or EV. Explore incentives: https://cutt.ly/Nul4VGO
- 3) Consider becoming a one-car household and save thousands of dollars annually. Explore options: https://cutt.ly/aul5IUS.











# 🗓 Solid Waste and Recycling

In Dubuque, solid waste contribute about 7.8% of citywide greenhouse gas emissions. However, studies indicate that municipal solid waste sector has great potential paths towards zero waste to avoid emissions throughout the economy thanks to prevention and waste recovery. Landfills are the third largest anthropogenic (man-made) source of methane, accounting for approximately 11% of the estimated total global methane emissions.

Habitat destruction, global warming, and resource depletion are some of the effects of our materials consumption. Recycling - converting discarded materials into new materials or putting them to beneficial use - is an important approach in mitigating these impacts and reducing the pollution caused by wasting. Recycling reduces the need for raw materials so that natural resources, and the environments in which they exist, can be preserved. Recycling creates manufacturing jobs, extends the value of materials, and conserves natural resources while reducing the need for landfill space.

Food discards and residuals that decompose in landfills release methane, a greenhouse gas that is at least 28 times more potent than carbon dioxide. This fact makes food wasting a significant contributor to solid waste greenhouse gas emissions. On the other end of the food supply chain, food production accounts for 26% of global emissions. In the United States, approximately 30% of the food produced is wasted - meaning nearly 8% of US emissions come from the production and distribution of wasted food.

#### **Equity Considerations:**

- Accessibility to recycling and composting programs may not be equally and readily available to all community residents and may also be impacted by other participation-related barriers, including awareness of programs, user fees, accessibility based on housing type, and language barriers.
- Populations that are situated very close to the landfill or composting facility may experience nuisance issues like bad odors and potential health issues unless mitigation actions are implemented.

- Solid Waste Goals
- SW1: 50% diversion by 2030 measured on a per capita basis.
- SW2: Waste education.
- SW3: Achieve 100% beneficial use of landfill gas.



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### Accomplishing The Goals

This Climate Action Plan is organized around a unifying framework organized by sector. Each sector has over-arching Strategies established to meet 2030 goals and detailed Actions for implementation.

Strategies are specific statements of direction that expand on the climate action vision GHG reduction goals and guide decisions about future public policy, community investment, and actions. Below are the Strategies guiding the Solid Waste section:

### Goal SW1 50% Diversion by 2030 measured on a per capita basis

Annual reported C&D waste handled and landfilled
Annual reported total waste handled; Annual reported consumer waste handled
Annual reported total waste handled; Annual reported food
waste and organics handled
Multi-family facilities participating in recycling collection; Annual reported recycling handled
How we'll measure our progress
Annual educational events and communications
completed, Annual reported total waste handled; Annual
reported recycling participation; Annual reported organics and food waste handled

#### Goal SW3 Achieve 100% beneficial use of landfill gas

How we'l	l accomplish	this goal

How we'll measure our progress

Strategy SW3-A: Divert captured landfill gas

Reported annual landfill gas diverted to beneficial energy use; Reported annual landfill gas "flared" on site





### **Estimated Cumulative Economic Savings**

Implementing many of the measures in this plan, such as the reduction of food waste and diversion of commercial waste streams, can save money for the community. The estimated community savings of the goals for this section include:

SW1-C: 50% Food Waste Diversion: \$72,290,000 + SW1-B: Divert Consumer Waste: \$706,000 = Estimated Cumulative Savings Potential: \$72,996,000

(Based on NRDC per-person calculations)

(Business waste savings based on MN WasteWise reported average business savings)

## Planned Waste GHG Emission Reductions

Planned Sector Emission Reductions Through 2030

The strategies and actions included in this section of the Climate Action Plan are projected to reduce the city's annual GHG emissions by 32,544 metric tons (MT) by 2030 - a 60.4% reduction over 2003 levels.

This is equivalent to eliminating **639 million** cubic feet of manmade greenhouse gas atmosphere annually by 2030.



Energy sector as RNG use supplants utilization of



fossil fuels.



## Taking Action

#### How can you help Dubuque reach our emissions reductions goals?

Implementation actions are detailed items that should be completed in order to carry out the vision and strategies identified in the plan. Some actions will need to be led by City Council, city departments, and/or the business community; and there are some things that households and individuals can do to make an impact. All of the actions in the plan are divided by who has the ability, access and decision-making power to get them accomplished. While many actions will require City Council to amend a policy there will be opportunities for businesses, organizations, households, and individuals to support the City Council policy changes and provide input on ad feedback on those policies. It is important to remain engaged and active, advancing and advocating for actions you feel are important.

The following kick-start actions are foundational, high impact, and will help provide momentum for launching the City's Climate Action Plan (See Section 13 Implementation Action Plan for the complete list of detailed actions):

#### **City Council**

- 1) Adopt an ordinance and construction permit changes supporting C&D recycling requirements to be implemented as sufficient C&D recycling capacity is developed. (Strategy SW1-A-8)
- 2) Establish a policy requiring compost be used as a soil amendment for public and private construction projects that disturb the soil cover over a baseline level. (Strategy SW1-C-4)
- 3) Request DMASWA review food waste handling capacities and permitting limits and expand/update as needed to support food waste diversion and organics collection increases in line with CAP goals. (Strategy SW1-C-10)
- 4) Revise Land Use Code to require commercial indoor and outdoor space for recycling and diversion equal to or greater than the space provided for disposal. (Strategy SW1-D-2)
- 5) Adopt a deconstruction/diversion ordinance to require the reuse or recycling of salvageable construction and demolition materials. (Strategy SW1-A-3)

#### **City Staff**

- 1) Seek grant funds to launch a food waste reduction campaign for residents, such as the U.S. Environmental Protection Agency's Food: Too Good to Waste program. (Strategy SW1-C-7)
- 2) Examine options for expanding commercial and residential composting, including offering compost/food waste collection at restaurants; assess the feasibility of establishing a permitted facility to compost or anaerobically digest organic materials and food waste. (Strategy SW1-C-8)
- 3) Conduct a phased-in commercial organics waste collection project. Explore possible incentives for food retailers, restaurants, and institutions to participate in food waste reuse and recycling programs. (Strategy SW1-C-1)
- 4) Identify jobs benefits and economic potential of implementation of construction and demolition waste diversion policies, ordinances, and permitting requirements: create cost-benefit analysis. (Strategy SW1-A-1)
- 5) Require all commercial construction and demolition projects to submit waste management plans illustrating project's capacity to achieve specific C&D Waste diversion levels in-line with City's CAP goals. (Strategy SW1-A-5)

#### **Business Community**

- 1) Conduct a Waste Assessment and reduction action plan: https://cutt.ly/ruOwZ9S
- 2) Partner with the Iowa Waste Exchange to divert waste through identification of viable markets for waste materials or find another facility that can use disposed materials. https://cutt.ly/xuOyKjh

- 1) Minimize your food waste by first eating what you already have in your fridge. Plan meals and make grocery lists to further reduce your weekly food waste.
- 2) Start a back-yard compost to collect yard waste and the food waste you cannot avoid. Alternatively, sign up for the City's curbside yard waste and food scrap collection service.
- 3) Bring your own reusable produce and tote bags when grocery shopping to avoid using plastic bags.











# Water, Wastewater, and Flooding

Water is at the core of sustainable development. Quality water is vitally important for socio-economic development, maintaining healthy ecosystems, and for human survival. Water is central to the production and preservation of a wide range of services benefiting people. Water related energy use totals 13% of US electricity consumption and has a carbon footprint of at least 290 million metric tons. Meanwhile, wastewater treatment is responsible for 3% of global GHG emissions.

Water is also at the heart of adaptation to climate change - climate change, particularly in the Midwest will be closely linked to changes in precipitation including increased likelihood of drought combined with increased instance of heavy rain events, flooding, and flash flooding. Many impacts of climate change also increase stress on our water systems, increase water pollution potential, and place more risk on maintaining safe water resources. Water is an irreplaceable, critically important resource fundamental to the well-being of our communities. Water can only be considered renewable with high quality best water management practices in place.

## **Equity Considerations:**

• Low-income neighborhoods frequently suffer more damage from flooding, according to studies by the National Academies of Sciences, Engineering and Medicine. The frequency and magnitude of heavy rain events is expected to increase as a result of a changing climate, making the future flooding impacts for at-risk neighborhoods potentially more accute.

## Water and Wastewater Goals

- W1: Increase water conservation citywide.
- W2: Reduce wastewater impacts.
- W3: Mitigate flood hazards and impacts.

• Disadvantaged communities within cities often have denser populations, more impervious surfaces, and less open/green spaces. These areas can also be prone to flooding and sewer overflows. Stormwater management through the creation of open, green spaces serve to revitalize and promote health within these disadvantaged communities

## Did You Know?

A 2015 study by Illinois flood authorities found that between 2007 and 2014, **90%** of the flood damage in urban areas occurred outside the traditional flood plain.

# For a city the size of Dubuque, reducing water leaks by 50% alone could save:



Breakdown of Indoor Residential Water Use

Source: Water Research Foundation, Residential End Uses of Water, Version 2, 2016

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# Water, Wastewater, and Flooding

### **Accomplishing The Goals**

This Climate Action Plan is organized around a unifying framework organized by sector. Each sector has over-arching Strategies established to meet 2030 goals and detailed Actions for implementation.

Strategies are specific statements of direction that expand on the climate action vision GHG reduction goals and guide decisions about future public policy, community investment, and actions. Below are the Strategies guiding the Water, Wastewater, and Flooding section:

### **Goal W1 Increase water conservation citywide**

How we'll accomplish this goal	How we'll measure our progress
Strategy W1-A: Promote increased water conservation citywide	
	Annual reported citywide water use total and per capita
Strategy W1-B: Maintain and update city plans and standards in	
support water conservation goals	Annual reported citywide water use total and per capita; Annual reported citywide irrigation/outdoor water use

### **Goal W2 Reduce wastewater impacts**

How we'll accomplish this goal	How we'll measure our progress
Strategy W2-A: Capture and use of wastewater energy potential	Identified and studied opportunities for biogas beneficial use; Reported percentage of wastewater biogas energy captured for beneficial use
Strategy W2-B: Reduce waste water generation	
	Reported annual waste water flows per capita
Strategy W2-C: Improve waste water pollution prevention	
	Reported wastewater pollution contaminants; Wastewater overflow events

### **Goal W3 Mitigate flood hazards and impacts**

How we'll accomplish this goal	How we'll measure our progress
Strategy W3-A: Educate, engage, and empower the public for floomitigation	od Reported annual educational events and publications; Audience reached
Strstegy W3-B: Update design standards and plans for flood mitigation	Reported City plans and standards updated
Strategy W3-C: Create a storm water infiltration plan	Reported status on Storm Water Infiltration Plan; Reported status on fee structuring/restructuring; storm water infiltration performance
Strategy W3-D: Increase flood resilience of infrastructure	
	Reported status on green infrastructure improvements

# Water, Wastewater, and Flooding

## Taking Action

#### How can you help Dubuque reach our emissions reductions goals?

Implementation actions are detailed items that should be completed in order to carry out the vision and strategies identified in the plan. Some actions will need to be led by City Council, city departments, and/or the business community; and there are some things that households and individuals can do to make an impact. All of the actions in the plan are divided by who has the ability, access and decision-making power to get them accomplished. While many actions will require City Council to amend a policy there will be opportunities for businesses, organizations, households, and individuals to support the City Council policy changes and provide input on ad feedback on those policies. It is important to remain engaged and active, advancing and advocating for actions you feel are important.

The following kick-start actions are foundational, high impact, and will help provide momentum for launching the City's Climate Action Plan (See Section 13 Implementation Action Plan for the complete list of detailed actions):

#### **City Council**

- 1) Implement pricing preference for households installing water efficient fixtures (such as WaterSense certified fixtures) and water/energy efficient water heaters. Establish incentives/cost reduction programs for qualifying low-income residents to purchase WaterSense certified fixtures. (Strategy W1-A-2)
- 2) Implement a policy to require installation of rainwater colleciton systems and WaterSense water efficient fixtures and appliances at all City facility projects and all projects receiving \$50,000 or more in City tax abatement, financing or funding. (Strategy W2-B-3)
- 3) Establish incentives to prioritize the development of "green infrastructure" such as parks, wetlands, riparian and wildlife corridors, natural drainage-ways, and low-impact development. (Strategy W3-D-1)
- 4) Establish and implement a policy requiring a biochar or biosolids soil amendment for all building and earth working construction sites. (Strategy W3-D-8)

#### **City Staff**

- 1) Explore modifying residential water rates that better incentivize water conservation and dis-incentivize water use. (Strategy W1-A-3)
- 2) Prepare a Blue Spot flash flood risk map to identify areas within city that are particularly vulnerable to flash flood impacts. (Strategy W3-B-2)
- 3) Prepare a comprehensive plan for stormwater management that goes beyond baseline regulatory requirements and includes green infrastructure with the goal of eliminating Stormwater Sewer Overflows. (Strategy W3-B-5)
- 4) Review and update Public Infrastructure Design Standards to meet Climate Change projections for Dubuque. (Strategy W3-B-1)
- 5) Continue research into additional biogas opportunities at the City's wastewater treatment plant: Enhance existing RNG development capacity. (Strategy SW2-A-2)

#### **Business Community**

- 1) Improve your building site's stormwater capacity by eliminating all unnecessary pavement areas, planting trees, and installing rain gardens.
- 2) Convert lawn areas to native, drought resistant landscaping that does not require watering.
- 3) Replace your water fixtures with WaterSense certified water efficient fixtures. Develop a Water Management Plan with specific conservation goals: https://www.energy.gov/eere/femp/developing-water-management-plan

- 1) Assess your home's rain and flood readiness by using the online My Rainready Assessment Tool and implementing recommended improvements: https://www.cnt.org/tools/my-rainready-home-assessment-tool
- 2) Collect rainwater in rain barrels to water your lawn and/or plants.
- 3) Download and use WaterSmart the City of Dubuque's app to help you conserve water and save money.

















# Y Climate Health and Safety

There is a strong relationship between human health and environmental health. From the air we breathe to the water we drink and use, life here on Earth depends on the natural resources and the environment around us. This link between the environment and human health is a critical consideration of the impacts of climate change. As outlined in the City's 2019 Climate Vulnerability Assessment, changes in climate, such as higher average temperatures and increased storm frequency and intensity, can intensify public health stressors. These climate change impacts endanger public health and safety by affecting the air we breathe, the weather we experience, our food and water sources, and our interactions with the built and natural environments. As the climate continues to change, the risks to human health continue to grow.

In the same way local governments and the health care industry promotes healthy behaviors such as eating right and exercising; agencies should recognize the relationship between climate action, environmental stewardship and community health since the health of our environment affects public health.

 Areas within the city with increased flood risk, air quality impacts, compromised tree canopy coverage,

conditioning are vulnerable environments within our

cities with heightened exposure to climate change

represented within the vulnerable environments of

our cities and frequently lack resources to improve the

and older housing stock with insufficient air

risks and compromised capacity to adapt.

adaptive capacity of their surroundings.

• Vulnerable populations are disproportionately

### **Equity Considerations:**

 Some populations, including aging adults, children, persons with disabilities, economically stressed, non-English speakers, homeless persons, and workers employed in climate exposed jobs are particularly vulnerable to extreme weather, natural disasters, and the health, supply chain, and economic impacts of climate change. Many of these individuals also have limited access to the information, services, and resources needed to ensure resilience in the face of these impacts.

## Climate Health And Safety Goals

- HS1: Create a climate adaptive community.
- HS2: Educate, engage, and empower the public for climate health and safety.
- HS3: Address air quality impacts of climate change.

## **Accomplishing The Goals**

This Climate Action Plan is organized around a unifying framework organized by sector. Each sector has over-arching Strategies established to meet 2030 goals and detailed Actions for implementation.

Strategies are specific statements of direction that expand on the climate action vision GHG reduction goals and guide decisions about future public policy, community investment, and actions. On the following page are the Strategies guiding the Climate Health and Safety section.





# **Climate Health and Safety**

## **Goal HS1 Create a climate adaptive community**

How we'll accomplish this goal	How we'll measure our progress
Strategy HS1-A: Review facilities and plans	Reported City facilities updated
Strategy HS1-B: Update design standards and plans	Reported City plans and standards updated
Strategy HS1-C: Expand cooling and warming facilities	Reported cooling and warming facility quantity, distribution, and proximity and accessibility to vulnerable population; Status of process for vulnerable population check-in
Strategy HS1-D: Enhance resilience of community to extreme weather	Status of adoption of policies and incentives for climate resilient upgrades; Reported building renovation permits for climate adaptive improvements
Strategy HS1-E: Reduce risks to health and safety created by ongoing climate impacts	Status of Emergency Management incorporation of projected climate impacts and risks into Emergency Management plan and procedures; Status of Vector Borne Disease Response Plan

## Goal HS2 Educate, engage, and empower the public for climate health and safety

How we'll accomplish this goal	How we'll measure our progress
Strategy HS2-A: Expand public education campaign for impacts of climate change	Reported annual educational events and publications; Audience reached
Strategy HS2-B: Educate and engage the public on extreme heat and weather risks	Reported annual educational events and publications; Audience reached
Strategy HS2-C: Educate and engage the public on air quality and linkage with health	Reported annual educational events and publications; Audience reached

## **Goal HS3 Address air quality impacts of climate change**

How we'll accomplish this goal	How we'll measure our progress
Strategy HS3-A: Promote reduction of particulate matter and air quality impacts of fossil fuel use	Reported public transit ridership levels; Status of electric lawn equipment incentive; Status of enhanced City policies, ordinances, and incentives for "clean diesel" and diesel to electric fuel switch
Strategy HS3-B: Implement air quality monitoring	Status of collaboration with other agencies; Status of assessment and remediation of environmental justice concerns in Dubuque
Strategy HS3-C: Explore and address ozone impacts on local agriculture	Measured and reported ozone levels in Dubuque



# **Climate Health and Safety**

## Taking Action

### How can you help Dubuque reach our emissions reductions goals?

Implementation actions are detailed items that should be completed in order to carry out the vision and strategies identified in the plan. Some actions will need to be led by City Council, city departments, and/or the business community; and there are some things that households and individuals can do to make an impact. All of the actions in the plan are divided by who has the ability, access and decision-making power to get them accomplished. While many actions will require City Council to amend a policy there will be opportunities for businesses, organizations, households, and individuals to support the City Council policy changes and provide input on ad feedback on those policies. It is important to remain engaged and active, advancing and advocating for actions you feel are important.

The following kick-start actions are foundational, high impact, and will help provide momentum for launching the City's Climate Action Plan (See Section 13 Implementation Action Plan for the complete list of detailed actions):

#### **City Council**

1) Adopt policies to incentivize residential building owners (particularly rental and multi-family properties), to increase the resilience of existing and new buildings with resilience strategies. (Strategy HS1-D-1)

#### **City Staff**

- 1) Include a Health and Climate Change Impact Assessment component in all City plans. Develop metrics for reporting on climate related risks and health events. (Strategy HS1-A-3)
- 2) Update the City's emergency response plan and ensure that preparation and updates recognize and address likely climate change impacts. (Strategy HS1-A-6)
- 3) Develop/Update a comprehensive heat response plan that incorporates most current climate change impact projections and combines individual strategies into an integrated approach. (Strategy HS1-B-6)
- 4) Create and maintain a Response Plan for emerging vector-borne diseases, including increased capacity for health services that are triggered by certain case thresholds. (Strategy HS1-E-2)
- 5) Explore use of the EPA Midwest Clean Diesel Program resources to create enhanced City policies and ordinances and incentives for businesses. (Strategy HS3-A-2)

#### **Business Community**

- 1) Prepare your business for the extremes. Understand the risk of extreme weather, temperatures, flooding or wildfire to your facilities and employees, and take action to safeguard your business.
- 2) Collaborate with other businesses and create information, positions, and voluntary standards to define what climate and health mean within your sector.

- 1) Prepare your home for the extremes. Understand the risk of extreme weather, extreme temperatures, flooding or wildfire to your home, and take action to safeguard your home.
- 2) Put together an emergency preparedness kit for your household by visiting Ready.Gov
- 3) Check in on the people in your life, especially the elderly and those experiencing mental health problems particularly when extreme weather temperatures strike.



















Food and climate change are directly linked. For food or nutritionally insecure people, climate change is a threat multiplier. The extreme weather events, extreme temperature variations, changes in precipitation, changing soil temperatures and other climate impacts can impact crop yields as well as introduce interruptions in the current food processing and distribution system - disruptions that are likely to cause food availability or pricing fluctuations.

Our choices about what we eat and where our food comes from also directly impact our personal and community greenhouse gas emissions. Transporting food across long distances burns fossil fuels and emits greenhouse gases. In addition, the extended period of time of long-distance transport increases the need for refrigeration. The less transportation and refrigeration needed to supply us our food, the more sustainable it becomes.

Strengthening local food sources can address both climate change relationships with food and also supports your small business local economy. Studies have indicated that nearly 32 jobs are created for every \$1 million in revenue generated by produce farms involved in a local food market, compared to only 10.5 jobs for those involved in wholesale channels exclusively. Increased local food systems also increase community resilience. A robust local food system establishes additional supply chains and resilience to distribution disruptions. Healthy local food systems can also play a critical role in addressing food access vulnerability and food insecurity within neighborhoods of higher vulnerability. Increased local food systems also tend to increase diversity and long-term food system resilience in food crops cultivated.

### **Equity Considerations:**

- People in low-income neighborhoods may have limited access to full-service supermarkets or grocery stores - an area known as a "food desert". Over 8.8% of Dubuque County households are food insecure – over 40% of those with incomes above assistance program thresholds.
- Studies have also shown that communities with fewer resources often have more outlets that promote unhealthy dietary behaviors such as fast food restaurants, and little access to affordable nutritious food. This condition is known as a "nutrition desert".

## 🧖 Food Goals

- F1: Reduce food's contribution to climate change.
- F2: Improve local food resilience and availability.

### **Did You Know?**

Shifting just 20% of food purchases in the City of Dubuque to local food sources would add 260 local jobs.

# \$15,900,000

Could be added to the local economy by shifting just 20% of food purchases to local sources.

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## **Accomplishing The Goals**

This Climate Action Plan is organized around a unifying framework organized by sector. Each sector has over-arching Strategies established to meet 2030 goals and detailed Actions for implementation.

Strategies are specific statements of direction that expand on the climate action vision GHG reduction goals and guide decisions about future public policy, community investment, and actions. Below are the Strategies guiding the Food section:

### **Goal F1 Reduce food's contribution to climate change**

How we'll accomplish this goal	How we'll measure our progress
Strategy F1-A: Reduce perishable food wasting	
	Reported food waste volumes at DMASWA
Strategy F1-B: Increase food residuals recovery to beneficial use	
	Reported City organics and food scrap collection volumes; reported DMASWA compost sales/utilization volumes

### F2 Improve local food resilience and availability

How we'll accomplish this goal	How we'll measure our progress
Strategy F2-A: Improve healthy food system resilience and supply safety net	Number of reported grower locations, vendor participants, and sales volumes; Number of reported community garden locations and plots; Community garden participation by vulnerable populations; Oobserved number of residential and commercial urban agriculture plots
Strategy F2-B: Strengthen farm to institution procurement	
	Reported government and community institutions with implemented Farm-To-Institution programs





## **Taking Action**

### How can you help Dubuque reach our emissions reductions goals?

Implementation actions are detailed items that should be completed in order to carry out the vision and strategies identified in the plan. Some actions will need to be led by City Council, city departments, and/or the business community; and there are some things that households and individuals can do to make an impact. All of the actions in the plan are divided by who has the ability, access and decision-making power to get them accomplished. While many actions will require City Council to amend a policy there will be opportunities for businesses, organizations, households, and individuals to support the City Council policy changes and provide input on ad feedback on those policies. It is important to remain engaged and active, advancing and advocating for actions you feel are important.

The following kick-start actions are foundational, high impact, and will help provide momentum for launching the City's Climate Action Plan (See Section 13 Implementation Action Plan for the complete list of detailed actions):

#### **City Council**

- 1) Pass city policy to procure climate-friendly foods for events and other city-managed facilities. Foods should be locally sourced to the highest extent feasible. (Strategy F2-B-3)
- 2) Revise zoning ordinances to allow urban agriculture and clarify acceptability to remove barriers to front yard and rooftop vegetable gardens, edible landscaping and foraging. (Strategy F2-A-4)
- 3) Identify funding for, develop and promote a Shared Food Processing facility with commercial grade, code compliant equipment and space. (Strategy F2-A-3)

#### **City Staff**

- Identify opportunities to build upon the City's public health procedures, information and messaging to encourage local gardening, composting, leaving leaves, and reducing chemical fertilizers and pesticides. (Strategy F2-A-1)
- 2) Develop a comprehensive farmland conservation plan that prioritizes food production while taking into consideration other Imagine Dubuque priorities. (Strategy F2-A-7)
- Coordinate with City GIS Mapping servcies to identify potential sites for community garden sites or community farm sites with a focus on expanding community equity. Develop master plan and schedule for development of best sites. (Strategy F2-A-8)
- 4) Coordinate with School District, local universities, and local hospitals to establish a climate-friendly, locally sourced foods procurement policies. (Strategy F2-B-1)

#### **Business Community**

- 1) For catering needs, use local restaurants and suppliers selling organic and locally-grown food.
- 2) Convert lawn areas to Edible Landscape where food-producing trees, shrubs, and plants grow within the landscape. Collaborate with local community kitchens and food shelves enabling them to harvest food produced.

- 1) Plant fruit or nut bearing trees or shrubs that are well suited for our hardiness zone on your property.
- 2) Support restaurants, grocery stores, and farmer's markets that use and sell locally-grown food.
- 3) Grow your own food through front or back yard gardens or join a community garden.













# **Greenspace and Tree Canopy**

Trees and natural ground covering play a central role in supporting community health, improving air and water quality, helping to reduce building energy use, and supporting climate mitigation. Recent studies have shown that sometimes, going to a park, or even looking a single tree can significantly improve a person's health and stress levels. Some doctors have started prescribing parks as a remedy to patients' health issues. Our understanding of the value of trees has been expanded to include mental and physical health benefits. Trees are critical in filtering air, removing harmful pollutants, such as carbon monoxide, particulate matter, and ground-level ozone - pollutants that can be toxic at high levels and which can cause asthma and other respiratory impacts.

Conversely, higher levels of impervious surfaces (pavement and buildings) within a community will increase the heat island of the community. Heat island refers to the phenomenon of higher atmospheric and surface temperatures occurring in developed areas than those experienced in the surrounding rural areas due to human activities and infrastructure. Increased heat indicies during summer months due to heat island effects effectively raise human discomfort and health risk levels in developed areas, especially during heat waves. Based on a 2006 study done by Minnesota State University and the University of Minnesota, the relationship between impervious surface percentage of a City and the corresponding degree of heat island temperature increase can be understood as a ratio - meaning there is a measurable reduction in future heat island impacts for every healthy tree in the city's tree canopy.

### **Equity Considerations:**

- Lower income neighborhoods and neighborhoods with higher proportions of people of color regularly have lower tree canopy coverage; and the environmental, economic, and quality of life benefits trees support; than more affluent neighborhoods.
- "Heat islands" are built up areas that are hotter than other nearby areas. This is caused by lack of adequate greenspace and healthy tree canopy coverage combined with too many hard surfaces like roads, parking lots, and hard building surfaces. Frequently neighborhoods with higher vulnerable populations have the highest heat island impacts.

# **Greenspace and Tree Canopy Goals**

- GS1: Strengthen Dubuque's tree canopy.
- **GS2:** Strengthen Dubuque's green space.
- GS3: Mitigate current and future urban heat island impacts.

## Did You Know?

Dubuque's tree canopy covers an estimated 26.2% of the city's total land area. The city's trees and grasslands sequester a over 47,000,000 pounds of CO2 annually.

# \$8,786,896

in environmental and energy savings are provided by the trees within the city annually.



# Greenspace and Tree Canopy

## **Accomplishing The Goals**

This Climate Action Plan is organized around a unifying framework organized by sector. Each sector has over-arching Strategies established to meet 2030 goals and detailed Actions for implementation.

Strategies are specific statements of direction that expand on the climate action vision GHG reduction goals and guide decisions about future public policy, community investment, and actions. Below are the Strategies guiding the Greenspace and Tree Canopy section:

### **Goal GS1 Strengthen Dubuque's tree canopy**

How we'll accomplish this goal	How we'll measure our progress
Strategy GS1-A: Educate, engage, and empower the public	
	Reported annual educational events and publications;
	Audience reached
Strategy GS1-B: Update and implement recommendations in 2011	Completion of Updated Urban Forest Evaluation;
Dubuque urban forest evaluation	Completion of implementation Master Plan; Reported city-
	wide greenspace, ground cover, and tree canopy
	percentages (5 year interval)

### **GS2** Strengthen Dubuque's green space

How we'll accomplish this goal	How we'll measure our progress
Strategy GS2-A: Reduce, repurpose, and reimagine lawn space	Reported city-wide grass coverage and lawn coverage percentages (5 year interval)
Strategy GS2-B: Utilize parks and marginal city property for greater community use	Acres of equitably distributed publicly accessed greenspace: Percentage of residents within 10 minute walk of park space: Reported park space utilization

### Goal GS3 Mitigate current and future urban heat island impacts

How we'll accomplish this goal	How we'll measure our progress
Strstegy GS3-A: Update design standards, plans, and policies for heat	
island mitigation	Reported City plans and standards updated
Strstegy GS3-B: Promote and implement heat island mitigation	
improvements	Percentage of tree canopy coverage by census tract; Heat Island Coefficient by census tract



# Greenspace and Tree Canopy

## **Taking Action**

### How can you help Dubuque reach our emissions reductions goals?

Implementation actions are detailed items that should be completed in order to carry out the vision and strategies identified in the plan. Some actions will need to be led by City Council, city departments, and/or the business community; and there are some things that households and individuals can do to make an impact. All of the actions in the plan are divided by who has the ability, access and decision-making power to get them accomplished. While many actions will require City Council to amend a policy there will be opportunities for businesses, organizations, households, and individuals to support the City Council policy changes and provide input on ad feedback on those policies. It is important to remain engaged and active, advancing and advocating for actions you feel are important.

The following kick-start actions are foundational, high impact, and will help provide momentum for launching the City's Climate Action Plan (See Section 13 Implementation Action Plan for the complete list of detailed actions):

#### **City Council**

- Create a tree preservation ordinance with reasonable exceptions that support the CAP tree canopy coverage and heat island mitigation goals. Ordinance should reflect projected climate changes and impacts on tree species. (Strategy GS-1B-6)
- 2) Develop a performance based ordinance requiring tree planting within parking lots. Ordinance should establish a specific goal of percentage of pavement to be shaded by trees. (Strategy GS3-A-2)
- Establish a policy and incentive to assist homeowners by covering some of the cost of converting traditional lawns by planting pollinator friendly food gardens, permaculture, wildflowers, clover or native grasses. (Strategy GS2-A-4)
- 4) Develop a policy that requires all housing and commercial development projects recieving City funding, PUD approval, and/or Conditional Use Permitting to implement commercial scale heat island mitigation strategies. (GS3-A-3)

#### City Staff

- 1) Establish an implementation master plan with schedule, budget, and prioritized actions following the completion and recommendations of the City's updated Dubuque Urban Forest Evaluation. (Strategy GS1-B-2)
- 2) Replanting tree loss, and Ash tree replacement for EAB management, at 110% or more of replacement with improved diversity. (Strategy GS1-B-5)
- 3) Based on city's citywide heat island impact study (see Buildings and Energy actions) identify vulnerable urban tree canopy and street tree sections and develop policies to incentivize, encourage, or require strategic tree planting for heat island mitigation. (Strategy GS3-A-1)
- 4) Transition maintenance of all city owned properties to Carbon Gardening practices including elimination of synthetic fertilizer and pesticide use, high mow deck settings, use of biochar amendments, and polyculture lawn mixture. (Strategy GS2-A-1)

#### **Business Community**

- 1) Remove pavement and increase permeable surfaces, plant trees in parking lot islands to shade pavement and reduce heat island effect.
- 2) Convert traditional lawns by planting pollinator friendly food gardens, permaculture, wildflowers, clover or native grasses.
- 3) Use biochar soil amendments on any site construction projects that disturb the soil. Implement soil profile rebuilding around any new trees planted around buildings, parking lots, or other areas with heavily compacted soils.

#### Households/Individuals

- 1) Make your backyard a Certified Wildlife Habitat with the National Wildlife Federation.
- 2) Plant trees in your yard to provide shade and cooling in summer heat. Select climate adapted trees that don't interfere with power lines and preserve the trees you already have.
- 3) Plant a rain garden with native plantings to absorb storm water and replenish our aquifers.

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# 🚽 Climate Economy

Climate change and the economy are inexorably linked. Left unabated, the impacts of man-made climate change through the end of this century will cost the United States billions of dollars. According to a 2019 study by two EPA scientists, the difference in economic impact between the mid-range climate model and the high range climate model may account for as much as \$224 billion in economic impact annually by 2090. According to a 2019 World Bank report on trends in carbon pricing, a carbon price range of \$40-\$80 per ton is necessary by 2020 to reach the goals set by the 2015 Paris Agreement, while other studies have placed the full cost of carbon at \$200-\$400 per ton. The calculations outlined in Section 2 of this plan estimate a conservative localized cost for carbon at over \$50 per ton.

The economy is also directly linked to climate action as well. One common reason given by those who wish not to see action taken on climate change is that the economy will be damaged. Setting aside the avoidance of the future costs should we not act to mitigate climate change, evidence is building a clear case that acting on climate change, and reducing fossil fuel emissions can be done without weakening the economy. Since 2003, Dubuque has seen city-wide GHG emissions drop over 27% while during that same period the city's GDP has *increased* 78%.

Many of the climate actions included in this plan can reduce Dubuque's contributions to global greenhouse gas levels, deal with the risks posed by climate change, and achieve economic growth and opportunity. Transformative change is needed now in how we build our cities, produce and use energy, transport people and goods, and manage our landscapes. This change also represents opportunities to improve our quality of life, improve health outcomes, and provide opportunities for new jobs and economic development.

### **Equity Considerations:**

- Economic impacts of climate change are inequitably felt. Low income individuals in our communities are especially prone to the impacts of climate change and bear a greatly disproportionate share of the costs.
- Income inequality is rising in the US, with September 2019 levels being the highest in 50 years. High inequality leads to lower life spans, increased instances of mental health issues, and increased obesity rates among other social impacts.

## 🚰 Climate Economy Goals

- CE1: Capture local economic potential of climate action.
- CE2: Build marketplace climate resilience.



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# **Climate Economy**

## **Accomplishing The Goals**

This Climate Action Plan is organized around a unifying framework organized by sector. Each sector has over-arching Strategies established to meet 2030 goals and detailed Actions for implementation.

Strategies are specific statements of direction that expand on the climate action vision GHG reduction goals and guide decisions about future public policy, community investment, and actions. Below are the Strategies guiding the Climate Economy section:

### **Goal CE1 Capture local economic potential of climate action**

How we'll accomplish this goal	How we'll measure our progress
Strategy CE1-A: Create a climate action market supporting and advancing climate action strategies.	Status of market establishment; Annual revenue available for climate action implementation
Strategy CE1-B: Increase workforce development for the climate economy	Reported local workforce and employment in climate/green economy jobs
Strategy CE1-C: Explore climate action economic development and financing, particularly within underserved populations	Equitable funding sources established and/or utilized by underserved populations

## **Goal CE2 Build marketplace climate resilience**

How we'll accomplish this goal	How we'll measure our progress
Strategy CE2-A: Inform businesses of climate vulnerability and opportunities for increasing resilience	Reported annual educational events and publications; Audience reached; Utilization of on-line assessment resource
Strategy CE2-B: Prepare for climate change immigration/migration	Status of assessment and plan completion; Status of strategy identification; Status of collaboration with school district




## Taking Action

#### How can you help Dubuque reach our emissions reductions goals?

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The following kick-start actions are foundational, high impact, and will help provide momentum for launching the City's Climate Action Plan (See Section 13 Implementation Action Plan for the complete list of detailed actions):

#### **City Council**

- 1) Establish a policy that designates City Franchise Fee Income as funding source for Climate Initiatives. (Strategy CE1-A-1)
- 2) Fund and organize the establishment of a ReStore Facility for reusable furnishings and salvage including construction/demolition. (Strategy CE1-A-3)
- 3) Establish a policy to utilize TIF (Tax increment Financing) to incentivize Mitigation and Adaptation actions in line with the goals of the CAP. (Strategy CE1-A-4)
- 4) Create an ordinance to expand residual food scrap collection. (Strategy CE1-A-2)

#### **City Staff**

- 1) Explore the creation of Community Development Finance program or institution to provide credit and financial services to underserved markets and populations, with a particular focus on advancing the goals, strategies, and acitons of the City's CAP plan. (Strategy CE1-C-1)
- Create an intern program similar to the IDNR Pollution Prevention (P2) model. Task interns with finding resiliency solutions and cost savings. Intern development should focus on increasing community equity. (Strategy CE1-B-3)
- 3) Explore the development of a job training and entrepreneurial development program similar to Operation Fresh Start. Program to focus on devvelopping green jobs skills within vulnerable and underserved populations in local sustainable agriculture, energy efficiency audits and upgrades, renewable energy, and other skills that support the goals of the CAP. (Strategy CE-1-B-2)
- 4) Work with local union hall to ensure that apprenticeship program includes solar training. (Strategy CE1-B-1)

#### **Business Community**

1) Consider hiring an intern to focus on identifying resiliency solutions, energy efficiency opportunities, waste reduction potentials, and cost savings.

#### Households/Individuals

1) Explore opportunities for job training, skills development, and employment in the "green economy" and industries which advance renewable energy, energy efficiency, and local sustainable food development.













# S Climate Action Capacity

Implementing a Climate Action Plan requires capacity both internal to City government as well as external within the public. External capacity includes the social and technical skills of individuals, organizations and groups within the community to respond to and engage the environmental and socioeconomic changes at the core of a Climate Action Plan. External capacity is often established through education and engagement as well as support in establishing social networks supporting resilience. Internal capacity includes the staff support necessary for tracking and reporting progress, creating and executing an annual work plan, and establishing and growing collaborative relationships to support this important work.

Implementation of a Climate Action Plan should be supported by a variety of funding mechanisms and sources to be successful. Funds should be directed internally to support the city operations goals as well as toward the community in the form of communications, educational outreach, partnership development, and incentivization to spur action and change. Outside funds may also be identified to complement efforts of the city.

## **Equity Considerations:**

- Climate action capacity is determined by a number of determinants including an individual or organization's assets, flexibility, and agency – or ability to impact change. Climate vulnerable populations are frequently vulnerable specifically due to one or more of these key determinants being missing.
- Individuals, organizations, and communities with a higher degree of adaptive capacity will suffer less harm from exposure to climate impacts and will recover more quickly than those with a lower degree of adaptive capacity.

# Sclimate Action Capacity Goals

- C1: Enhance and expand community capacity for climate action and resilience.
- C2: Develop new mechanisms for financing climate action work that account for equity and cobenefits (building upon existing budget scoring criteria).





### **Accomplishing The Goals**

This Climate Action Plan is organized around a unifying framework organized by sector. Each sector has over-arching Strategies established to meet 2030 goals and detailed Actions for implementation.

Strategies are specific statements of direction that expand on the climate action vision GHG reduction goals and guide decisions about future public policy, community investment, and actions. Below are the Strategies guiding the Climate Action Capacity section:

#### **Goal C1 Enhance and expand community capacity for climate action and resilience**

How we'll accomplish this goal	How we'll measure our progress
Strategy C1-A: Educate, engage, and empower the public	Status of Outreach Plan; Status of CAAP outreach communication materials; Reported annual educational events and publications; Audience reached
Strategy C1-B: Support development of social networks to build social resilience	Reported annual social networks engaged; Reported participation levels within partner organizations and networks

# C2 Develop new mechanisms for financing climate action work that account for equity and co-benefits (building upon existing budget scoring criteria)

How we'll accomplish this goal	How we'll measure our progress
Strategy C2-A: Leverage existing financing pathways	Status of funding pathways; Status and stability of annual climate action funding and staff allocation
Strategy C2-B: Develop new financing pathways	Mechanisms identified; Status of funding pathways; Status and stability of annual climate action funding and staff allocation





## Taking Action

#### How can you help Dubuque reach our emissions reductions goals?

Implementation actions are detailed items that should be completed in order to carry out the vision and strategies identified in the plan. Some actions will need to be led by City Council, city departments, and/or the business community; and there are some things that households and individuals can do to make an impact. All of the actions in the plan are divided by who has the ability, access and decision-making power to get them accomplished. While many actions will require City Council to amend a policy there will be opportunities for businesses, organizations, households, and individuals to support the City Council policy changes and provide input on ad feedback on those policies. It is important to remain engaged and active, advancing and advocating for actions you feel are important.

The following kick-start actions are foundational, high impact, and will help provide momentum for launching the City's Climate Action Plan (See Section 13 Implementation Action Plan for the complete list of detailed actions):

#### **City Council**

- 1) Establish a policy that requires city infrastructure projects and capital budgets incorporate climate risk and vulnerability analysis and adaptation plans to ensure that future spending contributes to resilience and achieving the City's CAP plan goals. (Strategy C2-A-4)
- 2) Explore the development of a "Carbon Impact Fee" Additional funds raised to be used for Climate Mitigation and Adaptation implementation. (Strategy C2-B-2)
- Establish Rate Payer Advisory Commissions for review of rates, revenue, and uses for Resource Management and DMASWA. Explore revenue uses for opportunities to support actions in support of the City's Climate Action goals. (Strategy C2-A-2)
- 4) Create an ordinance to expand residual food scrap collection. (Strategy CE1-A-2)

#### **City Staff**

- 1) Explore modifications to City's zoning ordinance, such as allowance of accessory dwelling units, to encourage development of affordable intergenerational single-family homes and multi-family housing with a focus on improved social connectedness across demographic cohort. (Strategy C1-B-1)
- 2) Explore the potential of developing a "Carbon Impact Fee" similar to the City of Watsonville CA. Fee could be a percentage of the building permit fee applied to all construction projects. (Strategy C2-B-2)
- 3) Explore use of City share of DMASWA landfill methane capture and beneficial reuse as Renewable Natural Gas to fund Climate Mitigation and Adaptation implementation. (Strategy C2-A-1)
- 4) Explore the potential of collaborations with donors, philathropists, and non-profit foundations to develop a Climate Action and Equity Fund for the City of Dubuque. (Strategy C2-B-5)









Climate Actions and Implementation









# **Climate Actions and Implementation**

The first few years after plan adoption are critical to its success. Establishing roles, both internal and external, and identifying funding will help establish the implementation phase of the plan and ensure the community is on track to achieve its goals. This plan includes robust goals for significant GHG emission reductions and addressing climate resilience. This vision require commitment and integration of the CAP into City operations, functions, and services.

#### **Implementation is For Everyone**

As noted throughout this plan, the following Climate Actions include actions that require leadership and engagement from City Council, City departments and staff, the business community, as well as households and individuals. While many actions will require City Council to amend a policy there will be opportunities for businesses, organizations, households, and individuals to support the City Council policy changes and provide input on ad feedback on those policies. Ultimately, achieving the visionary energy efficiency, renewable energy, alternative transportation, and climate resilience goals outlined in this plan will require engagement and a sense of responsibility not only by the City of Dubuque leadership and government, but by the community itself as well. It is critical for all to remain engaged and active, advancing and advocating for actions you feel are important.

#### **General Implementation Recommendations**

The following are foundational recommendations to support the long-range implementation of the CAP:

#### Building Internal Capacity

Continuing to build internal capacity will be important to help establish the CAP as a priority integral to internal operations as well as fostering connections to community partners, businesses, and individuals through outreach, education, special projects, and service delivery.

- 1. Establish clear guidance and direction for the participation in and support of the CAP implementation actions by all City of Dubuque departments.
- 2. Fund and support Sustainability staffing required to:
  - Facilitate discussion among large users to reduce emissions through business and industrial strategies.
  - Participate in technical resource programs as they are available through County, State, Federal, and non-profit provider partners.
  - Support City of Dubuque department managers and staff as they implement CAP actions within their service area or area of expertise.
  - Convene an internal City climate working group that meets regularly and provides updates on progress and success, identifies additional support or resources needed to advance actions of the CAP, and collaboratively discusses strategies for more complex challenges.
  - Ensure the establishment and maintenance of a City of Dubuque Climate Action webpage supporting CAP resources for the community.
  - Coordinate and organizing volunteer groups and events.
  - Engage city boards and commissions (e.g., the Resilient Community Advisory Commission, Planning Commission, etc.) to ensure the CAP is integrated into their work plans.
- 3. Review Climate Action Plan implementation progress and impacts on a regular basis (1-2 year cycle); adjust, add, and remove detailed CAP actions as appropriate based on implementation progress review.



# **Climate Actions and Implementation**

#### **External Support**

City staff and elected officials will not be able to implement this plan without robust support from community members and coordination with jurisdictional, institutional, and organizational partners.

- 1. Establish the Resilient Community Advisory Commission as the main citizen-body to support the implementation of the CAP:
  - Form subcommittees that focus on particular areas of the CAP
  - Coordinate with City staff in all relevant departments to receive updates on City projects and progress
- 2. Establish jurisdictional partnerships that advance CAP strategies to advance and accelerate action. This can include government entities like Dubuque County, the State of Iowa, the Catfish Creek Watershed Management Authority, and Dubuque Soil & Water Conservation District; utilities like Alliant Energy and Black Hills Energy; institutions like University of Dubuque, Clarke University and Loras College; community groups like Dubuque Multicultural Family Center, Fountain of Youth, and Green Dubuque; and neighboring communities.

#### Funding

Funding the implementation of the CAP will require reallocation/reconsideration of existing City funds, raising new City funds, and identifying outside resources and funding opportunities. Some funds will need to be dedicated toward long-term support like staffing, while other funding will be on a project-by-project basis.

- 1. Maintain a budget and identify funding sources for staff dedicated to the implementation of the CAP.
- 2. Identify a budget necessary to support projects on an annual basis as per the detailed actions outlined in the Climate Economy and Climate Action Capacity sections of the plan and climate actions.
- 3. Utilize no-cost technical assistance offerings as available.

#### **Climate Action and Implementation Plan**

The following is the full detailed list of detailed Climate Actions and implementation details supporting the goals and strategies of each Climate Action section.

E	Section 04	Buildings and Energy
	Section 05	Transportation and Land Use
Ô	Section 06	Solid Waste and Recycling
٩	Section 07	Water, Wastewater and Flooding
Ŷ	Section 08	Climate Health and Safety
A.D.	Section 09	Food
<u>6</u>	Section 10	Greenspace and Tree Canopy
~	Section 11	Climate Economy
X	Section 12	Climate Action Capacity



		Priority Level		Ir	nplementatic	on	
-		Criteria Beview Score	Deimenne	Common and in a	Estimate d	<b>BA</b> - toric	Due sur es At
	Detailed Actions - Buildings and Energy	4.5 - 5.0 = 1         4.           - 4.4 = 2         3.5           3.9 = 3         3.0 -           3.4 = 4         2.0           2.9 = 5         0.0 -	Responsibility	Supporting Responsibility	Estimated Budget Need	Metric	Progress At Review
	BE1 Increase distributed renewable energy by 21 MW of installed capacity by 2030 Strategy BE1-A: Increase solar on City facilities						
BE1-A- 1	Conduct a detailed solar assessment and "Renewable Energy Master Plan" for all primary city facilities. Include new and existing buildings, incorporate strategies to address electricity storage, and focus on highlighting any hurdles or solutions that would be applicable to the broader community. Install solar panels on all City buildings and sites, where feasible, based on implementation established in Renewable Energy Master Plan. City's largest energy consuming properties should be prioritized for assessment.	2.0					
	Strategy BE1-B: Support and accelerate installation of on-site solar PV and solar thermal.						
BE1-B- 1	Develop solar ready policy or incentive offering with the goal of achieving 100% solar ready new home construction by 2025.	1.0					
BE1-B- 2 BE1-B- 3	Collaborate with local Solar PV contractors and Alliant Energy to identify infrastructural challenges to solar PV implementation throughout the community in support of the goals of the CAP - particularly circuit capacities, utility upgrade requirements and costs. Support Alliant Energy and collaborators in establishing a strategies and a plan for overcoming infrastructural challenges identified, with a prioritization of resolving challenges at the city's most optimal sites. Incentivize local renewable energy projects. Explore leveraging existing incentives to increase renewable energy utilization and generation throughout the entire city. These incentives would include support for low-	1.0 2.0					
BE1-B- 4	Conduct Solar Ready training using the City's Solar Ready Guidelines and listening sessions with the home builders association, contractors, building designers, developers, and building owners. Include information on benefits of on-site renewable energy generation. Distribute the Solar Ready Guidelines and checklist through city channels.	3.0					
BE1-B- 5	(http://palebluedot.llc/dubuque-solar-ready-guide) Encourage and educate residents on the benefits of on-site solar: Post the state solar resource map on city's CAP Resource Hub; include City's Solar Ready Guidelines (http://palebluedot.llc/dubuque-solar-ready-guide). Resource HUB should include links to helpful resources and tools supporting site owners in exploration and procurement of on-site solar.	3.0					
	Strategy BE1-C: Encourage equity for renewable energy						
BE1-C- 1	Collaborate with Alliant Energy to establish an on-bill financing option for renewable energy and energy efficiency upgrades. (https://www.lowincomesolar.org/toolbox/on-bill-recovery/)	1.0					
BE1-C- 2	Create a local Low Income Solar Renewable Energy Credit (SREC) Market and/or 3rd party financing Ioan guarantee program. Strategy BE1-D: Increase solar on residential	2.0					
BE1-D- 1	buildings Coordinate and promote a residential Solar Group Purchase Campaign annually to help reduce the costs of solar installation through volume purchasing power (goal, 120 households annually). Program design to explore strategies to support local small business solar installers such as being set up to enable small installers to collaborate or having a competitive "marketplace" approach with more than one installer to choose from. Strategy BE1-E: Increase solar on	3.0					
BE1-E- 1	<b>commercial/industrial facilities</b> Identify the "Solar Top 50" commercial/industrial properties within the city and produce detailed solar feasibility assessments for each site. Assessments to include potential solar generation and economic performance and return on investment estimates, information on financing and ownership models, and next step resources. Provide solar assessment reports to properties and conduct an informational workshop to assist building owners and businesses in understanding the assessments and next step potential. "Solar Top 50" assessment effort could be repeated annually, particularly through 2025	2.0					
BE1-E- 2	Coordinate and promote a commercial Solar Group Purchase Campaign annually to help reduce the costs of solar installation through volume purchasing power (goal, 1100KW installed annually). Group purchase campaign could include/focus on properties identified in the "Solar Top 50" assessment effort. Program design to explore strategies to support local small business solar installers and strategies to support local workforce development.	3.0					
BE1-E- 3	Motivate and assist businesses throughout the community to install solar. Provide information on solar incentives, tools, and financing to businesses throughout the City.	3.0					
BE1-F 1	<b>Strategy BE1-F:</b> Advocate for stronger state policy Collaborate with other communities, industry, and state agencies to support the State establishing community solar, virtual net metering, and aggregated net metering policies and laws.	1.0					
	BE2 Reduce citywide energy consumption by 10% by 2030						
	Strategy BE2-A: Increase energy efficiency in City facilities						
BE2-A- 1	Create a policy that all City buildings shall reduce energy usage by 20% over the next 10 years	1.0					

BE2-A- 2	Introduce a policy that requires all municipal buildings to be benchmarked using ENERGY STAR Portfolio Manager. Each primary building's Energy Score rating, and energy use intensity (kBTU/sqft) shall also be posted on the City's website. Invite County, School District, and other public agencies located within the City to participate in the City's public facilities energy benchmarking and disclosure effort.	1.0			
BE2-A- 3	Introduce a policy that requires all new and existing municipal buildings to meet and maintain energy and resource efficiency standards meeting an ENERGY STAR rating of 75 or better, and built to meet or exceed IGCC code. Require new and existing municipal buildings without solar PV installations in place or planned to install cool roof or green roofing. Require all new construction or major renovation projects to use the City's Net Zero Energy Building Guide and Checklist to explore opportunities to advance towards Net Zero Energy (palebluedot.llc/dubuque-net-zero-energy-guide). Invite County, School District, and other public agencies located within the City to participate in City's energy efficiency policy effort.	1.0			
BE2-A- 4	Establish a centralized facility management / construction project management structure or department for all City owned facilities. Structure to focus on increased capacity for execution of high performance city construction projects capable of achieving energy efficiency and renewable energy goals consistent with the City's CAP plan.	1.0			
BE2-A- 5	Explore the development of a Revolving Loan program for City facilities to fund capital costs for high performance energy efficiency and renewable energy options with appropriate return on investment. Fund to be used to implement all cost-effective (simple payback of ten years or less) resource- efficiency projects in City-owned buildings and facilities. Rather than reverting back to the City's general fund, operational savings from energy efficiency measures of completed projects are to be re-invested into revolving loan and a portion of savings provided to the participating depratment(s) to support funding of additional energy efficiency improvements.	1.0			
BE2-A- 6	Conduct a occupancy and plug load energy efficiency study of primary city owned facilities and establish a "Plug Load and Occupancy Energy Eficiency Guide" outlining operational practices to advance the City's energy efficency goals for City facilities. Provide training to all existing city employees and provide on-going training to all new city hires.	1.0			
BE2-A- 7	Conduct a Building Energy Audit on all primary City owned facilities. Fully implement audit recommendations. Prioritization should be given to the City's largest energy consuming sites. Study for Water Resource and Recovery Center (WRRC) to incorporate self-generated energy use including Renewable Natural Gas (RNG) into WRRC future planning.	2.0			
	Strategy BE2-B: Improve energy efficiency in all sectors				
BE2-B- 1	Conduct a citywide heat island impact study to identify areas of high heat island contribution and impact, overlapped with vulnerable population mapping from the City's Climate Vulnerability Assessment. Study to establish specific goals, by census tract, for reduction of imperviious surfaces (particularly dark), improvement of tree canopy and greenspace coverage, and target "Heat Island Coefficient". Study to establish heat island mitigation strategy recommendations and identify priority areas for heat island mitigation based on need, potential, and impact on equity and vulnerable populations. Study should provide prioritized direction on "cool pavement" strategies for integration with the City's Pavement Preservation Program CIP and city facility maintenance ance and construction plans. Study should also evaluate opportunities to plant additional trees near city facilities to reduce heat island. Coordinate and integrate study with the City's Storm Water Infiltration Plan (see Water section). http://palebluedot.llc/tree-canopy-assessments	1.0			
BE2-B- 2	Support state adoption of the new International Green Construction Code (IGCC) statewide and/or enabling local jurisdicitons to adopt and enforce IGCC locally.	1.0			
BE2-B- 3	Establish an "energy efficiency and renewable energy introduction" course for all city employees with any degree of facility responsibilities. Course shall then be provided on a regular basis for all new city employees as they are hired. Create a policy, to be part of assigned duties and presented during new employee orientation, that City employees shall turn off lights and equipment when they are done using them	2.0			
BE2-B- 4	Prior to adoption at the State level (see action BE2-B-2), adopt a voluntary green building stretch code (IgCC) including stretch energy efficiency requriements in-line with Architecture 2030 goals. Make (IgCC) code required for all City facility projects and all projects receiving \$50,000 or more in City tax abatement, financing or funding. providing information, technical assistance	2.0			
BE2-B- 5	Develop educational and informational resources explaining the drivers and impacts of heat island and solutions which may offer multiple benefits for property owners and users to share with residents and businesses.	2.0			
BE2-B- 6	Explore the development of a "Cool Roof", "Cool Building" and "Cool Pavement" pilot project to exhibit heat island mitigation strategies and measure potential for effectiveness. Identify city building with low solar PV prioritization/feasibility for inclusion as cool roof pilot locaiton. Alternatively, pilot program could be advertized for submission by City of Dubuque residents, businesses and neighborhoods for potential sites to be considered for pilot project selection. Preference should be given to sites serving low income or at risk communities with high heat island impact potential	2.0			
BE2-B- 7	Explore development of "Cool Roof", "Green Roof", "Green Wall" / "Live Wall" and "vertical garden" incentives (demonstration projects, voluntary programs, incentivized program, ordinance / policy) to meet long-range dark impervious surface reduction goals. Coordinate with existing compatible city policies such as the Stormwater Management Utility fee structure. Examples of incentive programs have been developed by the Climate Protection Partnership Division in the U.S. Environmental Protection Agency's Office of Atmospheric Programs. These can be found at: https://www.epa.gov/sites/production/files/2014- 08/documents/greenroofscompendium_ch3.pdf and https://www.epa.gov/sites/production/files/2014- 08/documents/coolroofscompendium_ch4.pdf	2.0			
	Strategy BE2-C: Promote audits, energy efficiency rebates and financial incentives				

BE2-C- 1	Partner with local community organizations serving under-resourced households to promote energy efficieny audit and upgrade program for low-income residents. (see BE2-C-2). Target 150 households per year	1.0			
BE2-C- 2	Work with Alliant Energy, Black Hills Energy, and University of Northern lowa's Center for Energy and Environmental Education Green Iowa AmeriCorps program to establish residential and multi-family energy efficiency audit and upgrade program similar to Xcel Energy's "Home Energy Squad Visits". Target 300 households per year (https://www.homeenergysquad.net/)	1.0			
BE2-C- 3	Work with Alliant Energy, Black Hills Energy, and University of Northern lowa's Center for Energy and Environmental Education Green Iowa AmeriCorps program to establish commercial energy efficiency audit and upgrade program similar Minnesota Chamber of Commerce's EnergySmart commercial energy savings program. Program could be integrated with the commercial waste audit service identified in Solid Waste action SW1-B- 1. 70 commercial businesses and 70 industrial businesses per year with 10% electricity savings and 12% natural gas savings each. ((https://www.mnchamber.com/your-opportunity/energy-smart )	1.0			
BE2-C- 4	Regularly host utility bill clinics similar to those offered by Minnesota Citizens Utility Board (http://cubminnesota.org/) to help residents understand their bills, discuss energy savings options, and hear about rebate availability and clean energy options	1.0			
BE2-C- 5	Implement energy benchmarking (performance tracking and annual reporting) program for commercial buildings, required for all buildings equal to or greater than 50,000 square feet.	1.0			
BE2-C- 6	Develop a city-hosted website with resources about home energy options for residents, including available energy programs and where to purchase ENERGY STAR appliances	1.0			
BE2-C- 7	Collaborate with other communities, industry, and state agencies to support the State establishing the enabling legislation for Commercial Property Assisted Clean Energy (C-PACE) and Residential Property Assisted Clean Energy (R-PACE) financing	2.0			
BE2-C- 8	Work with County to establish a Commercial Property Assessed Clean Energy (C-PACE) program and a Residential Property Clean Energy (R-PACE) program to provide financing for energy efficiency and renewable energy measures.	2.0			
BE2-C- 9	Create a building weatherization and high energy efficiency renovation program that includes a job training component. Potential partners may include the HEART program (https://www.fourmounds.org/programs- events/youth-programs/heart-program/). Program example: https://risingsunenergy.org/	2.0			
	Strategy BE2-D: Improve energy efficiency and equity				
BE2-D- 1	Develop and adopt a rental housing energy efficiency policy requiring single family and multi-family rental housing properties to meet minimum energy efficiency level to qualify for rental licensing. Program to include an energy efficiency rating system (ENERGY STAR or HERS). Example program: https://bouldercolorado.gov/plan-develop/smartregs.	1.0			
BE2-D- 2	Implement a residential energy benchmarking (performance tracking and reporting) and labeling program for homes listed for sale. Examples include HERS (https://www.hersindex.com/), and ENERGY STAR Portfolio Manager (https://www.energystar.gov/buildings/facility-owners-and- managers/existing-buildings/use-portfolio-manager )	2.0			
BE2-D- 3	Develop a pilot project with the City's True North Community Development Corporation home rehabilitation program to model residential scale heat island mitigation strategies including cool surfaces, solar-friendly landscape shading strategies, impervious surface reduction, and breeze capture. Alternatively, pilot program could be advertized for submission by City of Dubuque residents, businesses and neighborhoods for potential sites to be considered for pilot project selection. Preference should be given to sites serving low income or at risk communities with high heat island impact potential. Reference City's Rehab Guidelinnes and Net Zero Energy Building Guide for relevant strategies.	2.0			
BE2-E- 1	Strategy BE2-E: Increase net zero energy residential building stock Utilize incentives, vacant City land, and current programs for pilots of net- zero buildings across different sectors. Explore option of issuing a competitive RFP for effective and innovative Net Zero pilot projects. Focus on "Net zero building in every neighborhood" to establish visibility of strategies within the community	1.0			
BE2-E- 2	Provide City's Net Zero Energy Building Guide and Solar Ready Guidelines document to local home shows or remodeler showcase events. Include the City's Net Zero Energy Building Guide and Solar Ready Guideline documents on the City's Design Guidelines webpage (https://www.cityofdubuque.org/1295/Design-Guidelines)	2.0			
BE2-E- 3	Provide training on solar ready and net-zero strategies as found in the City's Net Zero Energy Building Guide and Solar Ready Guidelines to area builders with local builders association. Target 1% market coverage (140 homes) (palebluedot.llc/dubuque-net-zero-energy-guide) (http://palebluedot.llc/dubuque-solar-ready-guide)	2.0			
BE2-E- 4	Encourage new construction and remodeling projects to meet Electric Vehicle (EV) ready standards using the EV Readiness section of the City's Net Zero Energy Building Guide	2.0			
	fuel use 10% by 2030				
	Strategy BE3-A: Promote "fuel switching" to low/no carbon alternatives				

BE3-A- 1	Deploy an incentive program for electrification. Work with Alliant Energy or other regional partnerships to create financial incentives to electrify new and existing buildings. For example, rebates for panel upgrades, electric appliances, Air Source Heat Pumps, and Ground Source Heat Pumps can encourage the transition to electric energy use in homes and businesses. Goal: Target 10% residential market conversion (250 households annually) and 5% commercial/industrial market conversion (an estimated 25 commercial businesses, 10 industrial businesses annually) by 2030	1.0			
BE3-A- 2	Work with regional energy partnerships to invest in electrification financing programs such as on-bill financing and metered energy efficiency. Working with third-party entities allows the City to leverage incentive systems for electrification, such as options for financing retrofit projects and paying back loans through power bills	1.0			
BE3-A- 3	Work with Black Hills Energy Corporation to establish an option for Renewable Natural Gas for customers and achieve 2.5% commercial/industrial use by 2030 (128 businesses per year)	1.0			
BE3-A- 4	Work with Black Hills Energy Corporation to establish an option for Renewable Natural Gas for customers and achieve 7% residential use by 2030 (170 households per year)	2.0			
	BE4 Increase renewable energy share of electric grid				
	to 15% by 2030 (beyond current Alliant Energy				
	commitments)				
	Strategy BE4-A: Community solar for residential and commercial				
BE4-A- 1	Develop and issue an RFI / RFP for community solar developers to advance community solar options and subscriptions within City. RFP shall focus on projects that benefit all residents, particularly communities of color and low income populations. Include community solar option benefiting small businesses. (Goal: 400 households subscribed per year, 100 businesses subscribed per year)	1.0			
BE4-A- 2	Collaborate with Alliant Energy in establishing policies to allow Community Wind and Solar Gardens/Shared Solar, Aggregated Net Metering, and Virtual Net Metering within the City of Dubuque service area prior to statewide legislation as a demonstration project for the State.	1.0			
	Strategy BE4-B: Increase utility scale renewable				
	energy installations				
BE4-B- 1	Partner with Alliant to expand 1.2MW Solar Array to 3-5MW utilizing lower Bee Branch reservoir (floating solar) by year 2023.	1.0			
BE4-B- 2	Partner with Alliant for the development of an additional utility owned solar arrays and/or wind turbine installations totaling 12MW by 2028	1.0			
BE4-B- 3	New Hydro Electric Development at Lock and Dam – Identify strategically located energy offtakers (John Deere, Alliant Energy, etc). Research available technology options and develop proforma to use for bidding project to EPCs or submit an RFI to identify options. Construction and activation of new hydro development antciipated after 2030.	2.0			

		Priority Level		n			
	Detailed Actions - Transportation and Land Use	Criteria Review Score: 4.5 - 5.0 = 1 4.0 - 4.4 = 2 3.5 - 3.9 = 3 3.0 - 3.4 = 4 2.0 - 2.9 = 5 0.0 - 1.9 = 6	Primary Responsibility	Supporting Responsibility	Estimated Budget Need	Metric	Progress At Review
	Goal TL1 Decrease vehicle miles traveled (VMT) by 10% by 2030						
	Strategy TL1-A: Build Complete Streets; target: 25% Complete Street community coverage by 2030						
TL1-A- 1	Update, fund, and adopt a more comprehensive Complete Streets Policy including but not limited to: i.Inclusive Public Process- The City of Dubuque should utilize a Charrette or other citizen input process to determine Dubuque's long-term objectives with complete streets. See also "Transparency/Accountability". ii.Systematic Approach - Upon regularly scheduled maintenance ALL roadways should be considered for compliance with complete streets concepts and how that roadway fits into the overall transportation system. iii.Transparency/Accountability - There should be public documentation of planned upgrades and exemptions to roadways as they come up for maintenance with enough time for public comment. iv.Heat Island Mitigation Integration - integrate the heat island mitigation strategies recommended in the City's citywide heat island impact study (see Buildings and Energy actions).	1.0					
TL1-A- 2	Utilize and implement feedback from existing Bike Friendly Community applications and achieve a minimum of Silver Bicycle Friendly Community certification by 2025 (https://bikeleague.org/community)	1.0					
TL1-A- 3	Engage employers to secure a minimum of 10 Bike Friendly Business designations (goal of 25% of workforce impacted) (https://bikeleague.org/business)	1.0					
TL1-A- 4	Implement a comprehensive sidewalk network plan and policy - with public funding plan. Implementation should prioritize locations which improve equity of mobility.	2.0					
	Strategy TL1-B: Promote reduced vehicle travel						
TL1-B- 1	Engage colleges and universities to secure a minimum of 3 Bike Friendly University designations (https://bikeleague.org/university)	1.0					
TL1-B- 2	Establish an incentive or subsidy and promote commuter mode-neutral incentives with the goal of 25% of private workforce receiving mode-neutral incentives or telecommute benefits. Note, commuter "mode-neutral" incentives equalize overall commuter incentivization and benefits of all commute choices, creating equity for non-auto commute choices. Resources: https://www.vtpi.org/tdm/tdm8.htm https://www.smartgrowthamerica.org/app/legacy/documents/smartgrowthc limatepolicies.pdf	1.0					
TL1-B- 3	In coordination with right-pricing of on-street parking which redesigns parking fees to capture the full cost of parking in downtown and other commercial districts with equity and carbon reduction in mind, establish parking betterment districts where revenue generated at meters supports neighborhood infrastructure and other transport mode investments such as bike and pedestrian paths, public transit improvements.	1.0					
TL1-B- 4	Engage employers to secure a minimum of 10 Top Work places for commuters designations (goal of 25% of workforce impacted) (https://www.bestworkplaces.org/)	2.0					
TL1-B- 5	Implement mode-neutral commuter incentives or telecommuting benefits for City employees Resource: https://www.smartgrowthamerica.org/app/legacy/documents/smartgrowthc limatepolicies.pdf	2.0					
TL1-B- 6	Provide information on parking availability, transit routes, bike paths using one application: Integrate smart traffic project with smart parking and bus/shuttle routes	2.0					
TL1-B- 7	Participate, promote, engage and support Bike to Work/School Week efforts	2.0					
TL1-B-8	Leverage lowa Games as an opportunity to host a Walking and Biking, Challenge focused on increasing awareness of existing and planned complete street routes.	3.0					
	Strategy TL1-C: Encourage density and increase housing options and affordability; target: increase gross density by 3,75% by 2030						
TL1-C- 1	Issue competitive redevelopment Request for Proposals encouraging high quality mixed use redevelopment on infill properties and existing surface parking lots within downtown district. RFP's should focus on equity, affordability, livability, and compliance/support of Climate Action Plan goals.	1.0					
TL1-C- 2	Fund neighborhood-based plans for all neighborhoods to encourage neighborhood identity, engagement and development. Plan goals should be to increse housing density, options, affordability, and equity while furthering the goals of the Climate Action Plan	1.0					
TL1-C- 3	Incentivize infill and mixed-use development, particularly in census tracts with highest existing and planned public transit service and highest existing and planned bike trails and routes (e.g., through alternative code compliance, fee waivers, density bonuses, investment prioritization, development impact fees, tax benefits, historic tax credit utilization). Create an Infill Redevelopment Plan identifying priority infill redevelopment sites and establishing an implementation plan for redevelopment. Initial Focus areas include: Kerper Blvd, Loras Blvd, University Ave, Hill St.	1.0					
TL1-C- 4	Consolidate residential zoning categories to allow density based on market demand and historical development patterns. Example: multi-family moderate density in midtown area, mixed-use along transportation corridors. If infeasible, increase allowable density along transportation corridors (example - walkable, mixed-use low rise buildings along arterials).	1.0					
TL1-C- 5	Implement form-based code to along transportation corridors with goal of improved pedestrian experience (frequent access points, greenspace)	1.0					

TL1-C- 6	Eliminate minimum parking requirements from Unified Development Code and replace with a transportation reference guide for development that includes considerations for all modes. Allow developers to determine and defend their transportation needs - don't mandate parking. Resource: https://dot.ca.gov/-/media/dot-media/programs/research- innovation-system-information/documents/f0016902-final-pricing-parking- management-to-reduce-vehicles-miles-travelled-pi.pdf	2.0			
TL1-C- 7	Conduct public engagement and development planning around public transit transfer areas to increase Transit Oriented Development. Specfically address mixed use and childcare access near transit hubs. Provide incentives based on results of planning process.	2.0			
	Strategy TL1-D: Increase public transit ridership to 3% by 2030				
TL1-D- 1	Research, develop and promote a universal access program for employers to support (public-private partnership) commuter specific routes and services. Resource: https://www.cdta.org/news/connecting-capital-region	1.0			
TL1-D- 2	Increase frequency of public transit routes to a minimum of 30 minutes (goal of 15 min frequency)	2.0			
TL1-D- 3	Establish a single credential for either all city services a "City Pass" to include library, pool, recreation programs, and transit OR establish technology integration between City and regional transit providers to allow one pass for all transit services. As additonal public services roll out, ensure technology integration. Resource: Navigo Paris, France	2.0			
	Strategy TL1-E: Increase shared mobility utilization; target: increase shared mobility (carpooling) from 8.55% to 11% of commuters by 2030				
TL1-E- 1	Implement Existing Plans starting with infrastructure and policy changes first and education and encouragement, second: Implement a minimum of 3 East-West and 3 North-South Complete Street corridors based on the Tri-State Integrated Walking, Biking, Hiking Plan (Envision 2010 top 10 project) with a focus on commuter routes	1.0			
TL1-E- 2	Conduct a pilot bike-share service in a limited geographic area	2.0			
TL1-E- 3	Ensure ordinances allow flexibility for mode-forward services, for example: ride-hailing services such as Uber and Lyft; and the bike-share services Zagster and LimeBike, scooter -share	2.0			
TL1-E- 4	Outline clear policies for electric bikes, skateboards and scooters on city bike lanes, paths and trails	3.0			
	Strategy TL1-F: Increase pedestrian access and safety				
TL1-F- 5	Implement Existing Safe Routes To SchoolsPlans starting with infrastructure and policy changes first and education and encouragement, second: At each school, implement a minimum of recommended speed reductions, raised or high visibilty crosswalks and signage from Dubuque Community Schools and Holy Family Catholic Schools Safe Routes to School (SRTS) Plan	1.0			
TL1-F- 6	Collaborate with colleges and universities to develop and implement Safe Routes to School programs and infratsructure for each campus	1.0			
TL1-F- 7	Evaluate and reduce speeds on pedestrian and bicycle corridors and major crosswalk/intersections	2.0			
TL1-F- 8	Focus on transportation access for everyone using 5-95 access as the goal (5 years old to 95 years old), not just very fit and capable cyclists and pedestrians	2.0			
TL1-F- 9	Evaluate crosswalks and extend crosswalk times based on findings of evaluation including populations using the intersections.	2.0			
	TL2 Support and encourage alternative fuel vehicles, achieve 20% of vehicles sold and 15% of VMT by 2030				
	Strategy TL2-A: Transition City fleet to alternative fuels				
TL2-A- 1	Update City vehicle (including The Jule transit) purchasing policy/budget process to default to alternative fuel with traditional internal combustion engine (ICE) as optional requiring proof of need. For ICE Vehicle options, establish minimum fuel efficiency requirements. Focus on small vehicles as well as large vehicles for alternative fuels. EV replacement to be prioritized for high mileage vehicles. Goal: Achieve 50% EVs within City Fleet by 2030, maximize utilization of Renewable Natural Gas (RNG) and KwH produced for MICE with City Fleet by 2000, maximize utilization of Renewable Natural Gas (RNG) and KwH produced for MICE for the MICE for MICE fo	1.0			

	American Recovery and Reinvestment Act (ARRA), Diesel Emissions Reduction Act (DERA), Iowa Energy Center (IEC) Board and the Iowa Economic Development Authority (IEDA) and Volkswagen Clean Air Act Settlements for State of Iowa)				
	Strategy TL2-B: Support and encourage alternative				
	fuel vehicles citywide				
TL2-B- 1	Collaborate with Alliant Energy to develop and implement outreach and education campaigns designed to help residents understand the benefits of transitioning to an EV and to learn how to leverage applicable Alliant Energy programs or other incentives to facilitate EV charger installation or EV purchase. Explore with Alliant the development of additional incentives to advance the city's EV goals. Program should focus on increased community equity	1.0			
TL2-B- 2	Create an Electric Vehicle (EV) Transition Study and Masterplan to map existing infrastructure, determine the current and future demand for EV charging stations, Establish public EV parking regulation and policy, and to identify options for increasing number of electric charging stations in public parking areas (e.g., schools, parks, libraries, City-owned parking garages, near City Hall) and in commercial and high-density residential areas. Master plan should identify additonal strategies and actions for advancing EV adoption to meet or exceed the Climate Action Plan goals.	1.0			

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TL2-B- 3	Work with local utility providers to promote and incentivize alt-fuel vehicle locations. Program implementation should focus on increasing community equity.	1.0			
TL2-B- 4	As a prerequisite to receipt of TIF funds and/or other local incentives via development agreements require EV ready construction and installationn of EV charging stations. Include for new AND amended agreements.	1.0			
TL2-B- 5	Set an emissions standard for mass transit vehicles (including cabs, ride- sharing services) to achieve our climate and air quality goals	1.0			
TL2-B- 6	Allow or require builders to include EV charging station parking spaces as part of the required off-street parking spaces for new commercial and multi- family building construction	2.0			
TL2-B- 7	Organize and promote an electric vehicle (EV) Group Purchase campaign annually to partner with local dealerships to offer limited-time discounted pricing on EVs to help reduce the costs of EV purchasing through volume purchasing power. Program should focus options to increase community equity	2.0			
TL2-B- 8	Encourage new construction and remodeling projects to meet Electric Vehicle (EV) ready standards using the EV Readiness section of the City's Net Zero Energy Building Guide	2.0			
TL2-B- 9	Work with large entities and employers to host EV charging station.	2.0			
TL2-B- 10	Make all EV charging (home and private) franchise fee exempt.	2.0			
TL2-B- 11	Develop public and private partnerships for the installation of fast-charging electric vehicle chargers in publicly accessible parking areas along tourism corridors, at workplaces, and in multi-family housing developments.	2.0			
TL2-B- 12	Establish education materials on EV permitting process: Develop a guide or process checklist for what is required for EV infrastructure installation (include contacts at Alliant Energy when working with electric utility is appropriate), establish an EV Charging Station checklist for use by building owners, designers and contarctors. Establish list of where to buy	2.0			
TL2-B- 13	Collaborate with local partners to host ride-and-drive events to increase EV ownership by providing residents an opportunity to compare EVs to ICE	3.0			

		Priority Level	Implementation				
Î	Detailed Actions - Solid Waste and Recycling	Criteria Review Score: 4.5 - 5.0 = 1 4.0 - 4.4= 2 3.5 - 3.9= 3 3.0 - 3.4=4 2.0 - 2.9=5 0.0 - 1.9=6	Primary Responsibility	Supporting Responsibility	Estimated Budget Need	Metric	Progress At Review
	Goal SW1 50% Diversion by 2030 measured on a per capita basis						
	Strategy SW1-A: Divert construction and demolition (C&D) waste						
SW1-A- 1	Identify jobs benefits and economic potential of implementation of construction and demolition waste diversion policies, ordinances, and permitting requirements: create cost-benefit analysis	1.0					
SW1-A- 2	Collaborate with County and other partners in developing a regional construction and demolition recycling / ReUse facility	1.0					
SW1-A- 3	Adopt a deconstruction/diversion ordinance to require the reuse or recycling of salvageable construction and demolition materials.	1.0					
SW1-A- 4	Support capacity for construction and demolition transfer, sorting and possible processing. Establish a centralized C&D drop-off and construction / demolition processing facility to provide an affordable and environmentally preferable alternative to disposal. Drop off site can be co-located or coordinated with potential ReUse facility.	1.0					
SW1-A- 5	Require all commercial construction and demolition projects to submit waste management plans illustrating project's capacity to achieve specific C&D Waste diversion levels in-line with City's CAP goals	1.0					
SW1-A- 6	Engage business community in indentifying and developing opportunities for diversion of materials in support of the City's CAP goals	2.0					
SW1-A- 7	Partner with local organizations (e.g., Habitat for Humanity) for demolition waste pickup and reuse	2.0					
SW1-A- 8	Promote a C&D recycling industry in city by adopting an ordinance and construction permit changes supporting C&D recycling requirements to be implemented as sufficient C&D recycling capacity is developed within the community. Actively seek C&D recycling companies or promoting the creation of new business enterprises in support of establishing capacity following the proposed policy changes.	2.0					
SW1-A- 9	Research management practices of construction and demolition waste diverted from the landfill. Provide best practices education, training, and resources to community.	2.0					
	Strategy SW1-B: Divert consumer waste						
SW1-B- 1	Develop and fund an assistance program for businesses to provide waste audit services, support businesses in establishing tracking and reporting waste streams, identify reduction, diversion, and benificial use opportunities. Program should include identification of potential grants including the DMASWA Waste Minimization Grant and other revenue sources for implementation costs. Assistance program should pro-actively identify and outreach to businesses likely to benefit from waste reduction assistance. Assistance should include connecting businesses with energy audit and other resources in support of full CAP goals. Goal: 25 business waste audits	1.0					
SW1-B- 2	Create ordinance so trash haulers can incorporate more progressive Pay-As- You-Throw (PAYT) residential trash rates	1.0					
SW1-B- 3	Implement a plastic straw and stirrer-free policy or opt-in policy for businesses that provide food and/or beverage services, with appropriate options for people with disabilities	2.0					
SW1-B- 4	Develop a recognition program to promote leading businesses succeeding in waste diversion and reduction.	2.0					
SW1-B- 5	Reduce Citywide garbage pickup frequency to biweekly. Provide compost and recycling pickup weekly.	2.0					
SW1-B- 6	Generate and enact policy, ordinance, and permitting mechanisms to increase diversion, including policies that look 'upstream' waste reduction like Extended Producer Responsibility (EPR)	3.0					
SW1-B- 7	Expand consumer education (e.g. host community forums and provide direct outreach) on sustainable consumption and materials management, including recycling	4.0					
	Strategy SW1-C: 50% Food waste reduction and diversion						
SW1-C- 1	Conduct a phased-in commercial organics waste collection project. Explore possible incentives for food retailers, restaurants, and institutions to participate in food waste reuse and recycling programs	1.0					
SW1-C- 2	Based on the results of the phasedd-in commercial organics waste project, establish a business incubator to establish capacity for organics collection, five days a week (Monday through Friday) at businesses, particularly	1.0					
SW1-C- 3	Estaurants. Establish an At-Home and Community Garden Composting program supporting the expansion of food waste diversion through at-home composting. Provide backyard composting workshops, tips, and resources. (https://www.bouldercounty.org/environment/composting/)	2.0					
SW1-C- 4	Close the loop on organics recycling; establish a policy requiring compost be used as a soil amendment for public and private construction projects that disturb the soil cover over a baseline level to improve water infiltration in line	1.0					
SW1-C- 5	When city CAP goals Combat food wasting by requiring retailers and restaurants to donate, reduce, reuse, or compost their unsold food, creating "zero-waste sections" where products are sold close to their expiration dates, and designating "zero waste coaches" to raise awareness among staff and help manage products reaching the end of their marketable life. Edible unsold products shall be donated. When not edible, organic waste shall be composted through a City- approved vendor Conduct a community wide food waste assessment to identify scope of	1.0					
	potential food diversion. Encourage Dubuque area institutions and food businesses to conduct a food waste assessment (https://www.epa.gov/sustainable-management-food/resources-assessing- wasted-food)	2.0					

SW1-C- 7	Seek grant funds to launch a food waste reduction campaign for residents, such as the U.S. Environmental Protection Agency's Food: Too Good to Waste program	2.0			
SW1-C- 8	Examine options for expanding commercial and residential composting, including offering compost/food waste collection at restaurants; assess the feasibility of establishing a permitted facility to compost or anaerobically digest organic materials and food waste	1.0			
SW1-C- 9	Provide a kitchen best practices guide to help households and businesses reduce food waste and excessive portions	3.0			
SW1-C- 10	Request DMASWA review food waste handling capacities and permitting limits and expand/update as needed to support food waste diversion and organics collection increases in line with CAP goals and supporting generation of soil amendment feedstocks and /or energy.	3.0			
	Strategy SW1-D: Expanded recycling options for multi-				
511/4 D 4	family – equity				
SW1-D- 1	Promote subsidised low, or no charge, subscription recycling. Explore how the DMASWA Waste Minimization Grant program may support this action.	1.0			
SW1-D- 2	Land-Use Code Updates - improve commercial and multifamily recycling requirements by revising Land Use Code to require commercial indoor and outdoor space for recycling and diversion equal to or greater than the space provided for disposal. Explore how the DMASWA Waste Minimization Grant program may support this action.	2.0			
	SW2 Waste education				
	Strategy SW2-A: Waste education				
SW2-A- 1	Coordinate with the Dubuque Public Schools to establish paths towards Zero Waste program. Program to include zero waste curricula and family content as well as zero waste strategies for school facilities. (https://www.ecocycle.org/files/Zero%20Waste%20A%20Realistic%20Appro ach%20Sustainability%20Program%20for%20Schools.pdf ) (http://www.zerowastechallenge.org/curriculum.html)	1.0			
SW2-A- 2	Coordinate with the Dubuque chamber of commerce, business, and manufacturing associations to provide seminars, resources, and content to area businesses on Circular Economy concepts. Work with cohort to explore economic potential of Circular Economy business opportunities within the Dubuque region. (https://www.ceguide.org/)	1.0			
SW2-A- 3	Coordinate with the Dubuque chamber of commerce, business, and manufacturing associations to provide seminars, resources, and content to area businesses on the use of Life Cycle Assessment (LCA) process to minimize waste material and energy. LCA educational content should include end-of-life planning	2.0			
SW2-A- 4	Establish a public education program for solid waste contamination reduction education	2.0			
SW2-A- 5	Continue, and explore opportunities to expand consumer education (e.g. host community forums and provide direct outreach) on sustainable consumption and materials management, including recycling	4.0			
	Goal SW3 Achieve 100% beneficial use of landfill gas				
	Strategy SW3-A: Divert captured landfill gas				
SW3-A- 1	Divert methane captured at landfill cells to natural gas supply network in lieu of flaring on site. Goal of achieving 100% diversion of methane captured to beneficial use	1.0	 		

		Priority Level	Implementation						
	Detailed Actions - Water, Wastewater and Flooding	Criteria Review Score: 4.5 - 5.0 = 1 4.0 - 4.4 = 2 3.5 - 3.9 = 3 3.0 - 3.4=4 2.0 - 2.9=5 0.0 - 1.9=6	Primary Responsibility	Supporting Responsibility	Estimated Budget Need	Metric	Progress At Review		
	Goal W1 Increase water conservation citywide								
	Strategy W1-A: Promote increased water conservation citywide								
W1-A- 1	Improve/refine water and energy utilization incentives: Users retain non- profit reduced rates IF water efficiency/climate resiliency best practices used; Users retain residential second meter option at a reduced rate for outdoor irrigation/watering/pool filling, and IF water efficiency and climate resiliency best practices are used.	1.0							
W1-A- 2	Implement pricing preference for households installing water efficient fixtures (such as WaterSense certified fixtures) and water/energy efficient water heaters. Establish incentives/cost reduction programs for qualifying low-income residents to purchase WaterSense certified fixtures.	2.0							
W1-A- 3	Explore modifying residential water rates that better incentivize water conservation and dis-incentivize water use.	2.0							
W1-A- 4	Consider requirements for businesses that sell single-use plastic water bottles to provide an accessible drinking fountain with bottle filler capacity.	2.0							
W1-A- 3	Explore incentives for businesses, institutions, and events that do not allow the sale or use of single use plastic water bottles.	3.0							
W/1 D 1	Strategy W1-B: Maintain and update city plans and standards in support water conservation goals								
W1-P- 1	that may help customers better understand and reduce their water and energy consumption (example: https://www.fluidwatermeter.com/ ). Implementation should focus on improving community equity	1.0							
W1-B- 2	Develop, distribute, and promote a water efficiency and climate resiliency best practices guide for improved water efficienty in residential, commercial, and industrial properties. Explore the development of an award/recognition program for residents/businesses with greatest water conservation achievements through use of the guide	2.0							
W1-B- 3	Explore options for expanding the use of greywater systems and water conservation measures in public and private buildings	2.0							
W1-B- 4	Continue to Update City landscaping standards for reducing water consumption, pesticide, and chemical use.	2.0							
	Goal W2 Reduce wastewater impacts								
	Strategy W2-A: Capture and use of wastewater energy potential								
W2-A- 1	Conduct a study to determine facility specific GHG emissions generated by nitrification and denitrification processes used in the wastewater treatment. Study should explore additional mitigation actions and recommend next steps.	1.0							
W2-A- 2	Continue research into additional biogas opportunities at the City's wastewater treatment plant: Enhance existing RNG development capacity. - Research ability to recycle released CO2 into biogas production - Research ability to increase biogas production and reduce landfill waste feedstocks through new WRRC handling and processing capacity for commercial organics. - Research ability to convert WRRC biosolids/digestates from energy and funding consumption model (trucking and land application) to energy and funding production model (dry anerobic processing for biogas and compost Bi-products)	2.0							
W2-A- 3	Study options for retaining City waste water treatment plant produced Renewable Natural Gas (RNG) and KwH for City heating and electrical needs. Study to identify potential new funding sources.	2.0							
	Strategy W2-B: Reduce waste water generation								
W2-B- 1	Improve/refine waste water and storm water discharge incentives: Implement incentives/pricing preference for businesses and households installing waste/storm water avoidance strategies: - Rain gardens - permeable pavers - energy efficient dishwashers - Greywater reuse Implement new data enhanced outreach and incentives to identify and remedy sources of waste/storm water before management or processing is required. Incentive implementation should focus on improving community equity	1.0							
W2-B- 2	Evaluate the potential for installation of rainwater collection systems at City facilities for graywater uses, and investigate opportunities for graywater reuse at existing and new City facilities and properties. Implement greywater systems identified capable of reducing energy/water demand in other areas (for example, watering urban tree canopy to reduce heat island effect and air conditioning needs)	1.0							
W2-B- 3	Implement a policyt to require installation of rainwater colleciton systems and WaterSense water efficient fixtures and appliances at all City facility projects and all projects receiving \$50,000 or more in City tax abatement, financing or funding. providing information and technical assistance.	2.0							
	Strategy W2-C: Improve waste water pollution prevention								

W2-C- 1	Reduce pollutants, including PFAS, entering the sewage system that contaminate WRRC effluent and reduce beneficial use options for biosolids/digestate. Develop, distribute, and promote a Wastewater Pollution Prevention guide and establish an additional resources page (examples:https://dnr.mo.gov/pubs/pub1128.pdf; https://www.townofchapelhill.org/home/showdocument?id=8535; https://www.cityofpacificgrove.org/living/green-pg/waste-water/preventing- waste-water-pollution.)	1.0			
	Goal W3 Mitigate flood hazards and impacts				
	Strategy W3-A: Educate, engage, and empower the public for flood mitigation				
W3-A- 1	During and immediately after major rainfall events, deploy an education and communication plan in coordination with the appropriate partners such as Catfish Creek Watershed Management Authority to alert residents, businesses and institutions of any potential water quality issues such as increased E Coli counts. Communication systems also to include recommendations on delaying activities that could contribute to stormwater innundation.	1.0			
W3-A- 2	Provide flood insurance education to home owners, particularly new home buyers and at-risk home owners. Education should include when insurance is recommended, purposes for flood insurance, and what is typically covered and not covered by insurance.	1.0			
W3-A- 3	Strengthen education and outreach efforts in culturally appropriate and accessible ways, especially for those most vulnerable to potential impacts of flooding, to help the public understand, prevent and respond to vector-borne diseases	2.0			
W3-A- 4	Promote "landscaping for absorption" practices for water prone residential and commercial landscapes. Strategies include reduction/elimination of hardscape surfaces, use of native moisture tolerant perennial plantings and shrubs, use of compost, natural mulching, and soil aeration.	2.0			
W3-A- 5	Expand use of City's SCADA system to actively monitor and communicate flood events.	2.0			
W3-A- 6	Establish a preparedness education program and an emergency alert system that help protect the community from flooding and extreme heat events.	3.0			
W3-A- 7	Expand public education about the value of watersnees, rain gardens, and low-impact development to address stormwater run-off	3.0			
W3-A- 0	(https://www.cityofdubuque.org/1242/Flood-Maps-Flood-Insurance) Expand content to include flash flood and event based flooding. Promote information, particularly among properties identified as at risk in City's Blue Spot Flash Flood risk mapping.	3.0			
W3-A- 9	Explore opportunities for use of public art to educate about water quality and stormwater impacts. Art installations could be both permanent, temporary, and interactive.	2.0			
	Strstegy W3-B: Update design standards and plans for flood mitigation				
W3-B- 1	Review and update Public Infrastructure Design Standards to meet Climate Change projections for Dubuque. Determine stormwater volume requirements meeting anticipated future storm levels and identify stormwater management systems and infrastructure not capable of meeting projected needs. Prioritize upgrades required and implement. Integrate upgrades into already scheduled maintenance programs and budgets.	1.0			
W3-B- 2	Prepare a Blue Spot flash flood risk map to identify areas within city that are particularly vulnerable to flash flood impacts. Create a composite flash flood risk map overlapping flash flood risk with the Citywide tree canopy, impervious surface, and heat island contributuion mapping created in the City's Heat Island Impact study (see Heat Island Strategies) as well as the vulnerable populations mapping (see City's Climate Vulnerability Assessmetn). Review flash flood risk identified near/around critical and sensitive community infrastructure (emergency response, power generation, fresh water supply, hospitals, etc) and identify sites requring flash flood protection enhancements. Based on risk mapping and assessments, create an implement a risk reduction and response plan. Share and promote the information developed by the flash flood risk map, particularly among vulernable populations and neighborhoods. (https://climate- adapt.eea.europa.eu/metadata/tools/the-blue-spot-model-a-key-tool-in- assessing-flood-risks-for-the-climate-adaptation-of-national-roads-and- highway-systems)	1.0			
W3-B- 3	Confirm Flood wall readiness for current and anticipated climate change impacts. Explore opportunities to improve system with earth levy combined with bike and walking trails.	1.0			
W3-B- 4	Prepare a comprehensive plan for stormwater management that goes beyond baseline regulatory requirements and includes green infrastructure with the goal of eliminating Stormwater Sewer Overflows (SSO).	1.0			
W3-B- 5	infrastructure to implement including: parking lots, alleys, parks, vacant lots, parkways, and grading near sidewalks. In addition, identify property owned by other public entities that have a high potential for improved ecological management to improve stormwater management functions (school districts, county, etc)	1.0			
W3-B- 6	Test, train on, and update emergency response plans that address hazards likely to become more frequent or intense as the climate changes, including power loss, flash flooding, and unseasonal riverine flooding	2.0			
W3-B- 7	Establish and implement a policy requiring a biochar or biosolids soil amendment for all building and earth working construction sites – improves soil sequestration and builds carbon content of topsoil, and improves water retention and permeability characteristics	2.0			
W3-B- 8	Set a limitation on the total citywide percentage of pavement and impervious surface areas.	2.0			
W3-B- 9 W3-B- 10	Change design and management methods to minimize water use and waste in publicly owned or managed properties while still maintaining thriving vegetation. Replace potable water lawn irrigation systems with grey/recycled water systems at city-owned facilities and replace lawn areas with drought tollerant landscape design where practicable. Review city codes, drainage rules, and surface waterways to evaluate their ability to protect and improve stream flows, seeps, springs, wetland function,	2.0			
	water quality including temperature, vegetation and habitat, and stormwater management during periods of extreme heavy rain. Use the Natural Resource Inventory and other data to track gains and losses, and propose revisions as necessary Strategy W3-C: Create a storm water infiltration plan	4.0			

W3-C- 1	Establish a Storm Water Infiltration Plan identifying priority areas and strategies for improved infiltration of storm water to minimize storm water volumes requiring handling while increasing water aquifer recharging. Strategies to focus on reduction of impervious surfaces, increase of permeable surfaces, trees, bio swales, rain barrels, rain gardens, compost, mulch, etc. Coordinate and integrate Plan with city's Citywide Heat Island Impact Study (see Buildings and Energy actions)	1.0			
W3-C- 2	Advance improved Storm Water infiltration in new development by creating and enforce codes aimed at zero run-off with a focus on on zero run-off parking strategies. Coordinate and integrate Plan with city's Citywide Heat Island Impact Study (see Buildings and Energy actions)	1.0			
W3-C- 3	Promote effective Storm Water infiltration in residential sectors by exploring rebates and incentive opportunities including tax incentives, rebates, or other incentives for deceasing driveway, roof, and yard run-off. Implementation of incentive structure to focus on increasing community equity	1.0			
W3-C- 4	Restructure storm water fee based on impermeable surfaces with tax or other incentives for permeable surfaces and other water retention improvements.	2.0			
	Strategy W3-D: Increase flood resilience of infrastructure				
W3-D- 1	Establish incentives to prioritize the development of "green infrastructure" such as parks, wetlands, riparian and wildlife corridors, natural drainage- ways, and low-impact development, particularly in residential districts. Research green infrastructure implementation and long-term viability in local environment	2.0			
W3-D- 3	Expand on the success of the Bee Branch Creek Restoration project using it as a model for the restoration of other creeks or "daylighting" of other primary storm sewer collectors for improved flash flood capacities and community amenities. (https://www.cityofdubuque.org/804/Bee-Branch-Creek- Restoration)	2.0			

		Priority Level		In	nplementatio	n	
Ŷ	Detailed Actions - Climate Health and Safety	Criteria Review Score: 4.5 - 5.0 = 1 4.0 - 4.4= 2 3.5 - 3.9= 3 3.0 - 3.4=4 2.0 - 2.9=5 0.0 - 1.9=6	Primary Responsibility	Supporting Responsibility	Estimated Budget Need	Metric	Progress At Review
	HS1 Create a climate adaptive community						
	Strategy HS1-A: Review facilities and plans						
HS1-A- 1	Support and expand a social vulnerability assessment to more effectively respond to diverse neighborhoods and households that are most at risk during emergency situations. Enhance interagency data sharing to increase response capacity across the city	1.0					
HS1-A- 2	Coordinate with County to incorporate climate change and CAP goals into the County's Community Health Needs Assessment Health Improvement Plan	1.0					
HS1-A- 3	Include a Health and Climate Change Impact Assessment component in all City plans. Develop metrics for reporting on climate related risks and health events	1.0					
HS1-A- 4	Develop and implement a plan to monitor climate change related illnesses. Utilize results in resource and policy planning, with particular focus on neighborhoods. Communicate results to the public on a periodic basis	2.0					
HS1-A- 5	Form a team to develop action plans to address climate-related mental health resilience at the individual, neighborhood and community level. Explore potential to include this action with HUD Resiliency grant research, or future work in collaboration with the University of Iowa or other partners.	2.0					
HS1-A- 6	Update the City's emergency response plan and ensure that preparation and updates recognize and address likely climate change impacts	2.0					
HS1-B- 1	Strategy HS1-B: Update design standards and plans Prepare for public buildings to be used in different ways insupport of CAP						
	adaptation goals, both in lower-impact ways, such as seniors using the library to cool down during hot June days, and as safe-havens during acute emergencies.	1.0					
H\$1-B- 3	physical and behavioral signs of heat-related illness	1.0					
	safe space within the City's special event permitting process. Community- safe space guidelines and requirements to address climate change impacts such as extreme heat, cold, extreme weather, and poor air quality. Guidelines to ensure that these spaces are accessible and adequate for vulnerable populations.	2.0					
HS1-B- 4	Ensure that facilities that serve vulnerable populations are resilient to climate hazards. Develop model procedures for ensuring both City and non- City facilities employ best practices in the event of an emergency such as flooding, power outages, extreme heat, etc	2.0					
HS1-B- 5	Update or develop a community resilience plan to prioritize and prepare for responses in the event of a disaster and extreme weather events. Identify the location of critical facilities including hospitals, medical service providers, senior homes, childcare facilities, shelters, major and alternate transportation routes, public transit facilities and locations where hazardous chemicals are used or stored	2.0					
HS1-B- 6	Develop/Update a comprehensive heat response plan that incorporates most current climate change impact projections and combines individual strategies into an integrated approach. Components of plan may include forecasting and monitoring, education and awareness, and heat wave response strategies for City and individuals. Include Response Plan on City's Emergency Preparedness webpage (https://www.cityofdubuque.org/168/Emergency-Preparedness)	2.0					
	Strategy HS1-C: Expand cooling and warming facilities						
HS1-C- 1	Increase availability to cooling mechanisms in low-income housing and rental units (e.g., air conditioning units, fans, window screens)	1.0					
пз1-С- 2	culturally responseive and equitable. Develop an Equitable and Culturally Responsive Refugue master plan to guide implementation.	1.0					
HS1-C- 3	Educate the public about the health risks of higher temperatures, develop strategies to check on individuals at greatest risk, and make options for cooling widely accessible	2.0					
HS1-C- 4	Develop a plan to improve bus stop shelters' ability to provide relief from extreme heat (e.g., reflective materials, cooling fans)	2.0					
	Strategy HS1-D: Enhance resilience of community to extreme weather						
HS1-D- 1	Adopt policies to incentivize residential building owners (particularly rental and multi-family properties), to increase the resilience of existing and new buildings with resilience strategies such as minimal impact site design standards, resilient passive and active cooling systems, resilient electrical system design, elevated HVAC and electrical off basement floor, installation of backflow preventers, tree maintenance, permeable pavements, energy conservation and on-site renewable energy generation, and safe rooms. Incentives should focus on increasing community equity.	1.0					
HS1-D- 2	Explore the potential for installation of re-deployable solar microgrid systems for resilient power use in community emergency management and hazard/disaster response. Systems can be semi-permently installed at public facilities to provided day-to-day power and re-deployed in emergency resopnse (https://www.footprintproject.org/)	1.0					
HS1-D- 3	seek to reduce exposure to extreme heat by targeting the distribution of energy-efficient, air conditioning in vulnerable populations	1.0					
	Strategy HS1-E: Reduce risks to health and safety created by ongoing climate impacts						

HS1-E- 1	Strengthen emergency management capacity to prepare for and respond to the impacts of climate change. The City should prioritize capacity improvements such as training and equipment to address risks exacerbated by climate change. Emergency management should be equipped to address the possibility of multiple emergencies at the same time, such as the combination of extreme heat and power outage.	2.0			
HS1-E- 2	Create and maintain a Response Plan for emerging vector-borne diseases, including increased capacity for health services that are triggered by certain case thresholds	2.0			
	HS2 Educate, engage, and empower the public for climate health and safety				
	Strategy HS2-A: Expand public education campaign for impacts of climate change				
HS2-A- 1	Increase outreach to diverse populations about climate change and health, natural hazards, and emergency preparedness via broadcast, print, bus ads, social media, and other forms of communication in multiple languages and accessible to individuals with disabilities to ensure that emergency preparedness planning reaches all City residents	1.0			
HS2-A- 2	Give city and county elected officials and staff tools (e.g. webinar trainings on emergency preparedness, facilitation guides, and other materials in multiple languages) to have dialogues about emergency preparedness within neighborhoods and to create local resilience strategies such as an Adopt-A- Neighbor campaign or hosting an OEM CERT-like training session in their community.	1.0			
HS2-A- 3	Support education to the public, medical, and veterinary communities about the potential importation of non-native insect vectors (e.g. ticks, mosquitoes, fleas) through human and pet travel to areas outside of State where these insect vectors are prevalent.	2.0			
HS2-A- 4	Deploy point-in-time alert systems (e.g., RAVE, Nixle) to notify people of extreme weather events, periods of dangerous cold, and heat waves and refer them to resources on symptoms and prevention of climate-related illness	2.0			
HS2-A- 5	Identify current efforts and programs in place to engage the business and health care community in developing emergency response plans and business continuity plans. Review and expand efforts and programs to assure climate change impacts and risks are incorporated.	2.0			
	Strategy HS2-B: Educate and engage the public on extreme heat and weather risks				
HS2-B- 1	Enhance community networks and connections for those who require special attention during extreme heat and weather events, such as the elderly, homebound, disabled, isolated, or those likely to be in need of financial assistance during or after extreme weather events (heat, cold and heavy precipitation)	1.0			
HS2-B- 2	Develop extreme heat, weather, and poor air quality early warning and response plans and systems that alert City employees and community members when projected conditions pose a health risk. Public system enhancement should focus on reaching at-risk populations and improving	2.0			
	Strategy HS2-C: Educate and engage the public on air quality and linkage with health				
HS2-C- 1	In alignment with the American Public Health Association Policy Number: 201711, city will collaborate with educators at local k-12 and colleges to ensure that air quality learning objectives, particularly those related to current and projected climate change impacts, are included in their curricula (e.g., fundamentals of air pollution assessment and control, health risk assessment, environmental justice). Collaboration should include education and training programs for health professionals, including public health, medical, and nursing programs, and science education programs for postsecondary and K–12 science students. All health professionals and students should be informed about steps individuals and communities can take to reduce air pollution, and they should be made aware of services such as the Air Quality Index that can help individuals take appropriate actions to reduce exposures on days when air quality is poor. (Coordinate with action in Capacity section)	1.0			
HS2-C- 2	Explore funding to continue and expand community outreach and education of the CLE4R collaboration between University of Iowa, the City of Dubuque, and Dubuque-area partners. CLE4R outreach and education expansion to include the climate change risks, impacts, and actions outlined in this CAP.	2.0			
HS2-C- 3	Educate public, healthcare, and public health professionals about health risks posed by climate change, including potential changes in air quality and impacts on mental health.	2.0			
HS2-C- 4	Work with County Public Health Department, Emergency Management, and local media to establish a process (and expand the number of platforms e.g., social media) to notify schools, community organizations, residents, and businesses on changes in air quality and potential impacts on health. Notification process could intigrate the EPAs AirNow.gov information and platform. Final process established to be integrated within the Multi-Hazard Mitigation Plan.	2.0			
HS2-C- 5	Develop and distribute educational content (brochures, k-12 curricula content, infographics, media announcements, etc) which outlines and actively promotes the clean air and health benefits of strategies included in this CAP plan. Strategies to be actively promoted include use of renewable energy, conservation of energy, use of electric venichles, public transit, ride share, and walking and biking for transportation. Engagement may include collaborating with public schools on curricula content, visiting local schools to talk about environmental conservation, sponsoring science fairs and asthma awareness days, dissimination of information.	2.0			
HS2-C- 6	In alignment with the American Public Health Association Policy Number: 201711, City will expand outreach to urban populations to better educate the public about the hazards of air pollution, including indoor air quality, and the steps individuals can take and available resources to reduce their exposure. In planning and conducting outreach efforts, the city will explore collaboration with regional and national industry trade associations, nonprofit groups, and environmental organizations.	2.0			
HS2-C- 7	Disiminate information about the Air Quality Index and the UV index, supporting smart growth and green community programs, and working with community leaders to establish clean air policies and initiatives. Everyone can set an example for young people by thinking globally and acting locally.	2.0			
	Goal HS3 Address air quality impacts of climate change				
	Strategy HS3-A: Promote reduction of particulate matter and air quality impacts of fossil fuel use				
HS3-A- 1	Reduce generation of particulate matter, air pollution, and waste heat from mobile sources by promoting and incentivizing public transit, biking and walking.	1.0			

HS3-A- 2	Explore use of the EPA Midwest Clean Diesel Program resources to create enhanced City policies and ordinances and incentives for businesses. The Clean Diesel Program provides support for projects that protect human health and improve air quality by reducing harmful emissions from diesel engines. This program includes grants and rebates funded under the Diesel Emissions Reduction Act (DERA). https://www.epa.gov/cleandiesel/midwest- clean-diesel-initiative	1.0			
HS3-A- 3	Develop an incentive program to convert fuel-burning lawn equipment such as gas-powered lawn mowers and blowers to electric. Incentive should focus on increasing community equity. (For GHG impacts, see: http://palebluedot.llc/carbon-copy/2015/7/16/the-carbon-footprint-of-a- lawn)	2.0			
HS3-A- 4	Explore use of photocatalytic concrete for city road-side construction including road surfaces, curbs, sidewalks, barrier walls, sculptures, and bus shelters.	2.0			
HS3-A- 5	Install roadside vegetation that creates effective barriers to prevent drifting of air pollutants to adjacent schools and residences. Vegintation should be native plantings. Conduct a study to identify the most impactful placement locations for vegitation, locations for greatest equity impacts, and establish an implementation plan https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6060415/	2.0			
	Strategy HS3-B: Implement air quality monitoring				
HS3-B- 6	Explore developing a collaboration with other government agencies, universities, and institutions to fund and install an array of sensors for monitoring air quality similar to the City of Chicago's "Array of Things" which uses light post mounted monitors. Coordinate with the US EPA Air Quality System to share data. https://www.epa.gov/aqs	1.0			
HS3-B- 7	In alignment with the American Public Health Association Policy Number: 201711, city will collaborate with state and county environmental offices and health departments and with the EPA regional office in assessing and remediating environmental justice concerns in Dubuque. Concerns to be assessed to include exposures to smog and toxic air pollutants and the disproportionate number of asthma cases among people of color. Assessment to prioritize review of exposures near public housing and schools in the vicinity of freeways, industrial facilities, and power plants. Impacts of land-use planning and infrastructure decisions on air pollution exposure to be reexamined.	1.0			
HS3-B- 8	Explore potential of deploying a series of air quality monitoring stations at appropriately located public facilities.	2.0			
	Strategy HS3-C: Explore and address ozone impacts on local agriculture				
HS3-C- 1	Collaborate with regional agencies, universities, and agricultural interests to identify potential impacts of ozone on regional agriculture (both current and projected future impacts based on climate change). Identify strategies to address impacts.	1.0			
HS3-C- 2	Develop educational materials on the relationship between nitrogen fertilizers, nitrogen monoxide emissions, and ground level ozone formation. Include strategies for minimizing and eliminating ground level ozone creation such as modified fertilizer managment strategies and use of slow release fertilizers. Share and promote materials with regional farmers and agriculture associations. https://www.nature.com/articles/news050718-15 https://www.ucdavis.edu/news/smog-forming-soils/	2.0			

		Priority Level		Ir	nplementatio	'n	
ABS -	Detailed Actions - Food	Criteria Review Score: 4.5 - 5.0 = 1 4.0 - 4.4 = 2 3.5 - 3.9 = 3 3.0 - 3.4=4 2.0 - 2.9=5 0.0 - 1.9=6	Primary Responsibility	Supporting Responsibility	Estimated Budget Need	Metric	Progress At Review
	Goal F1 Reduce food's contribution to climate change						
	Strategy F1-A: Reduce perishable food wasting						
F1-A- 1	Create and support a business network of sourcing, distributing and marketing cosmetically imperfect produce	1.0					
F1-A- 2	Educate on food date labels so people won't throw out food they don't need to discard	1.0					
F1-A- 3	Improve logistics of sourcing and transporting surplus food from events, schools, restuarants, grocery stores and other sources.	1.0					
F1-A- 4	Support and facilitate food donation, food rescue and distribution programs to food-insecure people. This may include working with Health Dept. regulations/ advocating for restrictive regulations to change.	1.0					
F1-A- 5	Work with distribution and retail establishments to voluntarily phase out refrigerants with high ozone depletion and global warming potential. Explore conservation, efficiency and weatherization rebates for improving refrigeration efficiency	2.0					
F1-A- 6	Promote Restaurant, Food Service and Household Best Management Practices oReduce Food Wastage in the Kitchen (pre-consumer) oReduce over-purchasing of food oReduce prep waste and improperly cooked food oConsider secondary uses for excess food oEnsure proper storage techniques oReduce Plate Scraping Wastage (post-consumer) -Modify menu to increase consumer satisfaction and reduce food left uneaten -Modify serving sizes and garnishes -Encourage guests to order/request and take only the food they will consume - Go Trayless at buffets and school/institutional cafeterias	2.0					
F1-A- 7	Expand the refrigerated and freezer capacity at free meal sites and food pantries by 2022	2.0					
	Strategy F1-B: Increase food residuals recovery to beneficial use						
F1-B- 1	Expand residential food scraps/residuals collection as DMASWA processing capacity expands by 2022 oAIM: 50% of Households as Green Cart participants by 2025. Start selling certified compost	1.0					
F1-B- 2	Expand commercial food residuals collection as processing capacity expands by 2022 oEstablish 2x/week commercial food residuals collection option by 2022 oAIM: 50% of commercial food residual tonnage to beneficial use by 2025 F2 Improve local food resilience and availability	1.0					
	Strategy F2-A: Improve healthy food system resilience						
F2-A- 1	and supply safety net Identify opportunities to build upon the City's public health procedures, information and messaging to encourage local gardening, composting, leaving leaves, and reducing chemical fertilizers and pesticides (coordinate with Health and Safety)	1.0					
F2-A- 2	Expand Farmers Markets, local food hubs and marketing of locally produced and processed foods. Program to focus on increased community equity and food security among at-risk populations	1.0					
F2-A- 3	Identify funding for, develop and promote a Shared Food Processing facility with commercial grade, code compliant equipment and space. Space to be made available to individuals to produce food products for sale to public. Explore the feasibility of including an on-site locally produce food market. Facility access should focus on expanding community equity.	1.0					
F2-A- 4	Revise zoning ordinances to allow urban agriculture and clarify acceptability to remove barriers to front yard and rooftop vegetable gardens, edible landscaping and foraging. Proactively promote and educate the public on urban agriculture ordinances, options and approaches	1.0					
F2-A- 5	Collaborate with State economic, workforce, agriculture, and commerce departments to develop green jobs and skills to grow, harvest, market and prepare local, climate-friendly foods	1.0					
F2-A- 6	Expand to more garden plots, rooftop and community garden sites with water supply options	1.0					
F2-A- 7	Develop a comprehensive farmland conservation plan that prioritizes food production while taking into consideration other Imagine Dubuque priorities. The plan could also include specific maps or areas prioritized for farmland conservation or identify those areas most at risk from development. Program should focus on exploring increased local food-to-table, local food utilization, and local development of cultural food products in support of Dubuque area underserved communities.	1.0					
F2-A- 8	Coordinate with City GIS Mapping servcies to identify potential sites for community garden sites or community farm sites with a focus on expanding community equity (similar to Dubuque Rescue Mission Community Farm http://dbqrescue.org/). Develop master plan and schedule for development of best sites as community garden/farm locations with a focus on improving community access equity	1.0					

F2-A- 9	Promote information on locations and price ranges of uncommon cultural produce, dairy and meats. Explore opportunities to expand local development of these goods through the green job and skills program (see other strategy, this category) oVulnerable populations lack information needed to get what they want to feed their families oExplore options to include these goods at community events. Shared meal events with cultural foods can help unify and break down climate stressed social barriers	1.0			
F2-A- 10	Work collaboratively with the Dubuque County Food Policy Council to leverage county support and expand partnerships. This provides an important, credible decision-making body to guide food policy for years to come; aligning it with county government positions it for additional reach, resources, and impact	1.0			
F2-A- 11	Expand the <i>Dubuque County Food Policy</i> PARTNERS to include the City, Cooperative Extension, DCSD, Holy Family Schools, colleges, institutions, retailers and sustainable\regenerative farmers by 2022	1.0			
F2-A- 12	Collaborate with other agencies, such Iowa State Extension, in evaluating risks to local food sources under climate change. Prioritize additional action strategies with a focus on increasing community equity and food security. Identify additional implementation partnerships.	2.0			
F2-A- 13	Work with Dubuque Water and other water providers to determine the feasibility of offering rebates or other incentives to farmers for irrigation water management equipment, water storage, reclaimed water, and conservation tillage equipment that saves potable water	2.0			
F2-A- 14	Incentivize food related businesses with green recognition achievement awards for Best Practices	2.0			
F2-A- 15	Support efforts to encourage expanded plant-based diets, including Meatless Monday campaigns	2.0			
	Strategy F2-B: Strengthen farm to institution				
	procurement				
F2-B- 1	Coordinate with School District, local universities, and local hospitals to establish a climate-friendly, locally sourced foods procurement policies. Explore development of group purchasing and logistics agreements to increase efficiency of local farm-to-agency process.	1.0			
F2-B- 2	Work with state economics, workforce, agriculture, and commerce departments to develop green jobs and skills to grow, harvest, market and prepare climate-friendly foods. Job development to focus on increasing commuinty equity	1.0			
F2-B- 3	Pass city policy to procure climate-friendly foods for events and other city- managed facilities. Foods should be locally sourced to the highest extent feasible.	2.0			
F2-B- 4	Expand Farmers Markets, local food hubs and marketing of climate-friendly food	2.0			

		Priority Level		Ir	nplementatio	n	
	Detailed Actions - Greenspace and Tree Canopy	Criteria Review Score: 4.5 - 5.0 = 1 4.0 - 4.4 = 2 3.5 - 3.9 = 3 3.0 - 3.4=4 2.0 - 2.9=5 0.0 - 1.9=6	Primary Responsibility	Supporting Responsibility	Estimated Budget Need	Metric	Progress At Review
	Goal GS1 Strengthen Dubuque's tree canopy						
	Strategy GS1-A: Educate, engage, and empower the public						
GS1-A- 1	Develop educational and informational resources providing information on beneficial and climate adaptive tree species, "carbon gardening" strategies for ornamental gardens, and produce gardens, tree profile rebuilding, elimination of synthetic fertilizer and pesticide use, high mow deck settings, use of biochar amendments, polyculture lawn mixture and other beneficial greenspace practices included in this CAP.	2.0					
GS1-A- 2	Create and distribute tree and wildlife guide for residents. Guide should focus on improving urban ecosstem health and resilience.	2.0					
	Strategy GS1-B: Update and implement recommendations in 2011 Dubuque urban forest evaluation						
G\$1-B- 1	Update the 2011 Dubuque Urban Forest Evaluation. Update should include a citywide tree canopy, light impervious surface, dark impervious surface, grassland, and water coverage by census tract. Study should include heat island impact study to identify areas of high heat island contribution and impact. Findings of tree coverage, benefits, heat island impacts, and opportunities should be overlapped with vulnerable population mapping from the City's Climate Vulnerability Assessment. Study to establish specific goals of tree canopy coverage, by census tract, for reduction of dark imperviious surfaces, and target "Heat Island Coefficient". Study to identify specific citywide percentage coverage goals for forsted and native planting ground cover. Study to priority areas for heat island mitigation based on need, potential, and impact on equity and vulnerable populations. Study should also evaluate opportunities to plant additional trees near city facilities to reduce heat island.http://palebluedot.llc/tree-canopy-assessments	1.0					
GS1-B- 2	Establish an implementation master plan with schedule, budget, and prioritized actions following the completion and recommendations of the City's updated Dubuque Urban Forest Evaluation.	1.0					
GS1-B- 3	Continue, and expand promotion of community grant to assist in planting trees. Grant should focus within targeted ares for improved equity as identified in the City's updated urban forest study.	1.0					
GS1-B- 4	Promote the expansion of tree canopy in urban heat islands or areas that need air conditioning such as schools. Explore potential for pilot project. Identify target areas based on Citywide heat island impact study called for in Heat Island strategies, overlapped with vulnerable population mapping from the City's Climate Vulnerability Assessment.	1.0					
GS1-B- 5	Replanting tree loss, and Ash tree replacement for EAB management, at 110% or more of replacement with improved diversity	1.0					
GS1-B- 6	Create a tree preservation ordinance with reasonable exceptions that support the CAP tree canopy coverage and heat island mitigation goals. Ordinance should reflect projected climate changes and impacts on tree species.	2.0					
GS1-B- 3	Review City ordinances, policies, and standards to assure appropraitely flexible allowance of tree placement in line with City goals.	2.0					
GS1-B- 4	Emphasize diversity and native, climate appropriate plantings	2.0					
GS1-B- 5	Maintain an annual free street tree giveaway program in celebration of Earth Day (similar to 2020 Earth Day program).	3.0					
	GS2 Strengthen Dubuque's green space						
	Strategy GS2-A: Reduce, repurpose, and reimagine lawn space						
GS2-A- 1	Transition maintenance of all city owned properties to Carbon Gardening practices including elimination of synthetic fertilizer and pesticide use, high mow deck settings, use of biochar amendments, and polyculture lawn mixture	1.0					
GS2-A- 2	Encourage appreciation of functional, productive use of yard space such as food production and wildlife habitat. i.Encourage a 'garden club' aimed at education for productive yard space ii.Leverage colleges to survey and certify residential wildlife habitats through a city recognition program	1.0					
GS2-A- 3	Require soil profile rebuilding at all building project sites or compacted soil conditions to reduce erosion and runoff contaminated with fertilizers, increase soil carbon stores and support long-term soil building (https://www.urbanforestry.frec.vt.edu/SRES/)	1.0					
GS2-A- 4	Establish a policy and incentive to assist homeowners by covering some of the cost of converting traditional lawns by planting pollinator friendly food gardens, permaculture, wildflowers, clover or native grasses in an effort to slow the collapse of the state's bee population. (http://m.startribune.com/program-pays-minnesota-homeowners-to-let- their-lawn-go-to-the-bees/510593382/)	2.0					
GS2-A- 5	Educate citizens on use of chemicals and water and wildlife habitat impacts.	2.0					
GS2-A- 7	Review city ordinances on lawns, explore opportunities to encourage lawn alternatives, consider set-backs and signage areas for native installations.	2.0					
GS2-A- 8	Implement a biochar soil amendment for all building and earth working construction sites – improves soil sequestration and builds carbon content of topsoil, and improves water retention and permeability characteristics.	2.0					

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	Strategy GS2-B: Utilize parks and marginal city						
	property for greater community use						
GS2-B- 1	Review access to city parks and playgrounds and diversity of amenities offered across the city. i.Consider use of vacant lots for small playgrounds and/or community gardens in coordination with Food sector CAP Goals ii.Connect hiking and biking trails throughout the city. Expand into marginal wooded areas throughout the city. iii.Bike racks at all parks, safe bike routes to all parks. iv.Expansion and diversification of community gardens.	1.0					
GS2-B- 2	Map city owned properties and amenities offered or possible at each, including hiking, foraging, etc	3.0					
	Goal GS3 Mitigate current and future urban heat island impacts						
	Strstegy GS3-A: Update design standards, plans, and						
	policies for heat island mitigation						
GS3-A- 1	Based on city's citywide heat island impact study (see Buildings and Energy actions) Identify vulnerable urban tree canopy and street tree sections and develop policies to incentivize, encourage, or require strategic tree planting for heat island mitigation.	1.0					
GS3-A- 2	Develop a performance based ordinance requiring tree planting within parking lots. Ordinance should establish a specific goal of percentage of pavement to be shaded by trees. Explore partnering with local business (Hyvee, Target, Mall, etc) to create a pilot project to illustrate new ordinance requirements and benefits.	1.0					
GS3-A- 3	Develop a policy that requires all housing and commercial development projects recieving City funding, PUD approval, and/or Conditional Use Permitting to implement commercial scale heat island mitigation strategies including cool surfaces, solar-friendly landscape shading strategies, impervious surface reduction, and breeze capture. Reference City's Net Zero Energy Building Guide for relevant strategies.	1.0					
	Strstegy GS3-B: Promote and implement heat island mitigation improvements						
GS3-B- 1	Explore creation of a Heat Island Reduction Incentive / Award program to advance the actions and strategies identified in the city's citywide heat island impact study (see Buildings and Energy actions). Incentives and awards from governments, utilities, and other organizations can be an effective way to spur individual heat island reduction actions. Incentives might include below- market loans, tax breaks, product rebates, grants, and giveaways. (Determine the optimum balance for achieving climate adaptation goals of incentives vs. potential loss of tax base needed to accomplish those goals.) Explore potential for sponsorship of program by key local and regional businesses. Awards can reward exemplary work, highlight innovation, and promote solutions across the public and private sectors.	1.0					
GS3-B- 2	Promote the expansion of tree canopy in urban heat islands or areas that need air conditioning such as schools. Prioritize efforts based on city's citywide heat island impact study (see Buildings and Energy actions). Collaborate with school district, regional agencies, or institutions to identify and implment a pilot project, including community eductional and interprative content.	2.0					
GS3-B- 3	Explore partnering with local business (Hyvee, Target, Mall, etc) to create a pilot project to illustrate heat island reduction strategies included in this CAP and their benefits.	2.0					
GS3-B- 4	Research, evaluate and pilot porous paving, de-paving, vegetation and/or more reflective surfaces in parking areas to reduce and cool impervious surfaces, particularly in urban heat island areas with populations most vulnerable to heat. Explore partnership opportunities with local multi-family property owners (particularly low income communities), local businesses or institutions for pilot projects as well as research and development	3.0					

		Priority Level		Ir	nplementatio	n		
	Detailed Actions - Climate Economy	Criteria Review Score: 4.5 - 5.0 = 1 4.0 - 4.4 = 2 3.5 - 3.9 = 3 3.0 - 3.4 = 4 2.0 - 2.9 = 5 0.0 - 1.9 = 6	Primary Responsibility	Supporting Responsibility	Estimated Budget Need	Metric	Progress At Review	
	Goal CEI Capture local economic potential of climate action							
	Strategy CE1-A: Create a climate action market supporting and advancing climate action strategies.							
CE1-A- 1	Establish a policy that designates City Franchise Fee Income as funding source for Climate Initiatives Partner with Alliant to proactively identify barriers in existing infrastructure to reach Distributed Generation goals (DTT Relays, Fiber Communications between substations, Other SubStation upgrades, etc) Fund renewable and efficiency projects directly related to the utility through which the franchise fee is generated	1.0						
CE1-A- 2	Create a market for Certified Compost DMASWA: Upgrade permit and expand infrastructure to accept more food residuals. City: Create an ordinance to expand residual food scrap collection City: Specify compost utilization for all city projects	1.0						
CE1-A- 3	Fund and organize the establishment of a ReStore Facility for reusable furnishings and salvage including construction/demolition. Habitat for Humanity as partner with DMASWA	1.0						
CE1-A- 4	Establish a policy to utilize TIF (Tax increment Financing) to incentivize Mitigation and Adaptation actions in line with the goals of the CAP.	2.0						
CE1-A- 5	Biochar Business partnership with Forestry Division with Emerald Ash Borer Build local market for valuable product •Add to compost to boost value •Utilization as soil amendment •Utilize to bond contaminants in soil (positive cation exchange) •Establish city ordinance requiring Biochar soil amendment for all new construction projects	3.0						
	Strategy CE1-B: Increase workforce development for the climate economy							
CE1-B- 1	Work with local union hall to ensure that apprenticeship program includes solar training. Potential partners and vehicles include: Greater Dubuque Development Corporation Green Job Development Initiative Attract Green Businesses	1.0						
CE1-B- 2	Explore the development of a job training and entrepreneurial development program similar to Operation Fresh Start. Program to focus on devvelopping green jobs skills within vulnerable and underserved populations in local sustainable agriculture, energy efficiency audits and upgrades, renewable energy, and other skills that support the goals of the CAP. (http://www.operationfreshstart.org/)	1.0						
CE1-B- 3	Create an intern program similar to the IDNR Pollution Prevention (P2) model. Task interns with finding resiliency solutions and cost savings. Intern development should focus on increasing community equity (https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Waste- Planning-Recycling/Pollution-Prevention-P2)	1.0						
CE1-B- 4	Promote alternatives to traditional building demolition such as relocation, deconstruction and salvage. Establish a jobs training program focused on building workforce with deconstruction skills and capacities. Job training program should focus on establishing job skills and placement for low income individuals. See Beter Futures Program (https://betterfuturesminnesota.com/services/building-deconstruction/)	2.0						
CE1-B- 5	Renew DBQ Low Income Solar Program through local SREC market and financing to ensure that everyone benefits from equity in solving the problem not just those that created it	2.0						
CE1-C- 1	Strategy CE1-C: Explore climate action economic development and financing, particularly within underserved populations Explore the creation of Community Development Finance program or institution to provide credit and financial services to underserved markets and populations, with a particular focus on advancing the goals, strategies, and acitons of the City's CAP plan.	1.0						
	(https://www.developstrongcities.org/#cities ) Goal CE2 Build marketplace climate resilience Strategy CE2-A: Inform businesses of climate vulnerability and opportunities for increasing resilience							
CE2-A- 1	Create an online assessment of business' vulnerability/resiliency, including the following topics and content: Potential Climate Impacts and Risks Climate Resiliency Energy: efficiency and renewables Emergency Response Zero Waste improvements Potential Incentives or Tax breaks available Strategy CE2-B: Prepare for climate change immigration/migration	3.0						
CE2-B- 1	Create an Affordable Housing Master Plan to identify current and potential future need for affordable housing including scenarios anticipating climate immigration and migration potentials. Master plan should identify priority affordable housing locations which meet the Buildings and Energy, Transportation and Land Use, Climate Adaptation, Health and Safety, and other goals of this CAP plan.	1.0						
LEZ-B- Z	Conaborate with the school district to study potential service needs which may be required under a range of climate immigration/migration scenarios. Collaborate to create a "Climate immigration and migration response plan" identifying actions	1.0						
CE2-B- 3	Conduct a climate immigration / migration community development assessment to identify potential sustainable economic development and community development opportunities for the City. Assessment should assess the potential value of establishing a proactive communication and marketing campaign to areas of potential climate immigrant/migrant audiences. (coordinate with Adaptive Capacity)	1.0						

CE2-B- 4	Study strategies to maintain and increase equity in the face of potential				
	climate change immigration / migration. Study should identify policies and efforts the City can implement to avoid "climate gentrification"	1.0			

		Priority Level		n			
X	Detailed Actions - Climate Action Capacity	Criteria Review Score: 4.5 - 5.0 = 1 4.0 - 4.4= 2 3.5 - 3.9= 3 3.0 - 3.4=4 2.0 - 2.9=5 0.0 - 1.9=6	Primary Responsibility	Supporting Responsibility	Estimated Budget Need	Metric	Progress At Review
	Goal C1 Enhance and expand community capacity for						
	Strategy C1-A: Educate, engage, and empower the public						
C1-A- 1	Create a formal public outreach and education plan to inform the community about climate actions and progress (National Mississippi River Museum CAARE program may be a potential partner). Outreach and education should assure inclusion of chronic. non-accute. stressors	1.0					
C1-A- 2	Design and promote CAAP educational materials to ensure full engagement of community members by using methods that are accessible and relevant to all	1.0					
C1-A- 3	Build City staff capacity, within multiple departments, to support community- led, neighborhood-focused resilience actions (e.g., identifying best practices, establishing resilience hubs and implementing neighbor-based emergency response)	1.0					
C1-A- 4	Provide information on creating Personal Response Kits. Expand on City efforts to support families who cannot afford to purchase supplies for household emergency preparedness kits to adequately prepare their homes (e.g. solicit emergency supply donations). Identify possible strategies for the structure of the program through a review of donation programs in other communities and engagement with community partners and businesses.	1.0					
C1-A- 5	Develop and expand partnerships for education, training, and outreach efforts for residents around climate action and sustainability. Potential partners include regional Universities and the National Mississippi River Museum & Aquarium's existing CAARE curriculum	2.0					
C1-A- 6	Work with local public and private schools to promote environmental education curriculums and provide in-school lessons on climate change science and climate action in K-12 classrooms. Curridula should include communication of actions within the City's Climate Action Plan. Establish Climate Communicaiton and Education hubs to provide localized (neighborhood level) information and guidance on resources on climate impacts including flooding, flash flooding, extreme heat and weather, air quality, water quality, and vector borne diseases. HUB to include information from City's Blue Spot flash flood risk assessment and promote the City's flood and water quality information HUB. HUB should Emphasize steps individuals can take to improve emergency preparedness, support the City's CAP, and increase awareness of City and other alert systems. (https://www.ready.gov/heat ; https://www.ready.gov/severe-weather ; https://www.ready.gov/drought ; https://www.ready.gov/thunderstorms- lightning ; https://www.ready.gov/tornadoes ; https://www.ready.gov/winter-weather )	2.0					
C1-A- 7	Explore communication and education strategies to reach different audiences. Consider developing robust climate education app such as a "choose your own adventure" activity/app or other existing tools like the NIH Preparedness app (https://tools.niehs.nih.gov/wetp/index.cfm?id=2536)	2.0					
C1-A- 8	Work with the Iowa DNR and County Public Health Department to establish a process (and expand the number of platforms e.g., social media) to notify schools, community organizations, residents, and businesses durring periods of air quality, water quality, extreme heat, and extreme weather concerns. Cooridnate to provide educational resources on actions for personal and family safety.	2.0					
C1-A- 9	Develop and promote educational materials on the health impacts of air pollution, extreme heat, longer allergy seasons, and vector-borne disease	2.0					
C1-A- 10	Provide information on what residents can do to reduce their carbon footprint and how their households can be more resilient. Action examples should focus on strategies included in the City's CAP and should highlight opportunities for increasing the community's equity Create a climate change awareness "mascot" to promote education,	2.0					
	awareness, and action at public events. Mascot development and design could be conducted as a design competition and education/engagement opportunity in itself.	4.0					
C1-A- 12	Increase household education about water quality and food storage risks resulting from power outages associated with increased extreme weather events	4.0					
C1-B- 1	Strategy C1-B: Support development of social networks to build social resilience         Explore modifications to City's zoning ordinance, such as allowance of accessory dwelling units, to encourage development of affordable intergenerational single-family homes and multi-family housing with a focus on improved social connectedness across demographic cohorts (age and ethnicity)	1.0					
C1-B- 2	Ensure safe and welcoming community spaces for all, including parks, community and youth centers, and city streets and rights of way, located in all areas of the city. Identify areas within city not served by park space within 10 minute walk and develop a master plan to establish effective park spaces to support social connectedness in areas with greatest need, with a priority on equity. Study should coordinate with bike and walkability and public transit plans and pathways. See Parkscore: https://parkserve.tpl.org/mapping/index.html?CityID=1922395	1.0					
C1-B- 3	Strengthen social connectedness through relationship-building among community members across age, ethnicity, income, and other demographic differences	1.0					
C1-B- 4	Expand activity and participatory arts programs for older adults, extracurricular activities for youth social engagement, youth peer mentoring and intergenerational mentoring. Programs should focus on expanding social connectedness within and between demographic cohorts (age and ethnicity)	2.0					
C1-B- 5	Expand the use of social media to share information and encourage collaboration and civic engagement. Identify responsible party within city to establish and maintain a social media campaign to include organized and regular climate action plan implementation and/or climate change preparedness communications	2.0					
C1-B- 6	Ensure integrated community centers that provide space for recreational and educational programming, counseling and support services, and socialization readily available to all vulnerable and at risk populations within walking distance or convenient public transit service.	2.0		-			

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C1-B- 7	Support and encourage the expansion of public events that bring communities together in public and private spaces. Explore developing events in collaboration with other regional public agencies and private sponsors	2.0			
C1-B- 8	Build and support social networks: neighborhoods, churches, affinity groups	3.0			
	C2 Develop new mechanisms for financing climate				
	action work that account for equity and co-benefits				
	(building upon existing budget scoring criteria)				
	Strategy C2-A: Leverage existing financing pathways				
C2-A- 1	Explore use of City share of DMASWA landfill methane capture and beneficial reuse as Renewable Natural Gas to fund Climate Mitigation and Adaptation implementation.	1.0			
C2-A- 2	Establish Rate Payer Advisory Commissions for review of rates, revenue, and uses for Resource Management and DMASWA. Explore revenue uses for opportunities to support actions in support of the City's Climate Action goals.	1.0			
C2-A- 3	Research climate action financing tools and develop approach for Dubuque. Research should include resources included in the Dubuque Climate Vulnerability Assessment, September 2019, Chapter 12 "Possible Funding" as well as other sources	1.0			
C2-A- 4	Establish a policy that requires city infrastructure projects and capital budgets incorporate climate risk and vulnerability analysis and adaptation plans to ensure that future spending contributes to resilience and achieving the City's CAP plan goals.	2.0			
	Strategy C2-B: Develop new financing pathways				
C2-B- 1	Identify a sustainable funding source for increased utility assistance for low- income residents, including support for energy efficiency projects, such as weatherization	1.0			
C2-B- 2	Explore the potential of developing a "Carbon Impact Fee" similar to the City of Watsonville CA. Fee could be a percentage of the building permit fee applied to all construction projects. Additional funds raised to be used for Climate Mitigation and Adaptation implementation. Projects may apply for a a sliding scale refund if they install on-site renewable energy system and provide documentation that demonstrates the system will offset either 40%, 80%, or 100% of the project's average annual electricity demand. Alternative options include increasing the building permit fee base costs and providing a discount or rebate to properties meeting City energy and climate goals. Increased revenue to be used to fund Climate Mitigation and Adaptation implementation with a focus on the actions and strategies which increase the community's equity. https://www.cityofwatsonville.org/DocumentCenter/View/198/Frequently- Asked-Questions-About-the-Carbon-Fund-Ordinance-PDF https://www.cityofwatsonville.org/DocumentCenter/View/3944/Carbon- Fund-Voluntary-Compliance-Worksheet?bidld=	1.0			
C2-B- 3	Explore Issuing "resilience bonds" that generate risk-reduction rebates from a city's catastrophe insurance premiums to pay for resilience projects, prioritizing projects with high resilience, GHG mitigation, and climate adaptation potential.	1.0			
C2-B- 5	Explore the potential of collaborations with donors, philanthropists, and non- profit foundations to develop a Climate Action and Equity Fund for the City of Dubuque. (https://www.mcknight.org/news-ideas/new-charitable-fund-to- support-local-action-on-climate-change-2/)	1.0			
C2-B- 6	Establish a policy that accounts for all energy efficiency and renewable energy operational cost savings of City buildings and fleets. All savings to be invested into a Climate Action Fund as one source of financing for the City's climate action efforts.	2.0			
C2-B- 7	Explore the "green marketplace" utilization potential of the city's urban forest with all revenue being invested in Climate Action Plan strategies. Strategies may include sale of downed and select removed trees through marketplaces such as the Urban Wood Network (http://urbanwoodnetwork.org/members), as well as exploring lease of benefits of select city owned tree stock such as "sugaring" rights of maple trees. Utilization should be prioritized to maintain quality of the city's urban forest and quality of life benefits.	2.0			





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