Royal Oak Sustainability and Climate Action Plan

2022

Royal Oak
Life Now Playing

THE SUSTAINABILITY & CLIMATE ACTION PLAN VISION

The 2022 City of Royal Oak Sustainability & Climate Action Plan will guide and coordinate all aspects of city service delivery and investments to ensure the most sustainable, inclusive, climate-friendly options are implemented and help City of Royal Oak leaders and staff foster regional cooperation and local participation in sustainability efforts.

S-CAP Approval Resolution

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At a Regular Meeting of the Royal Oak City Commission held on Monday May 9, 2022 in City Hall, 203 South Troy Street, the following Resolution was adopted:

Whereas, Royal Oak desires to protect and enhance the quality of life for all those who live, work, learn and play in our community, as well as for our children and grandchildren; and

Whereas, a rigorous public participation process encouraged and collected community feedback through multiple techniques include a community-wide survey, twenty-four stakeholder-driven workgroup meetings, and a public comment period. The community feedback guided the development of the objectives, actions, and implementation strategies that are included in the 2022 sustainability and climate action plan; and

Now, therefore, be it resolved, the city commission adopts the Royal Oak Sustainability and Climate Action Plan to incorporate sustainability initiatives and reduce GHG emissions throughout the community and to utilize the plan as a guiding document for all relevant departments' future master planning, budget planning, strategic goal planning, and capital improvement plan decision making efforts.

Be it resolved, that this plan is built for action implementation over the next three years and that an updated version will be created in 2025.

Be it finally resolved, the city commission gives clear direction that the city shall be making regular progress and taking substantive action with every decision made on executing elements of this plan, and that it is not just a reference guide, but a guiding document for the city for real strategic action to make a meaningful difference to address climate change.

I hereby certify that the foregoing is a true and correct copy of a Resolution adopted by the Royal Oak City Commission at a meeting held on May 9, 2022.

Melanie Halas

City Clerk

Acknowledgments

The Royal Oak Sustainability and Climate Action Plan (S-CAP) would not have been possible without the support and dedication of City of Royal Oak leadership, city staff, the Environmental Advisory Board, the S-CAP Task Force, stakeholder survey respondents, and focus topic work group participants from the community.

CITY COMMISSION

- Michael Fournier, Mayor
- Melanie Macey, Mayor Pro Tem
- Pat Paruch, Commissioner
- Kyle DuBuc, Commissioner
- Shar Douglas, Commissioner
- Monica Hunt, Commissioner
- Brandon Kolo, Commissioner

ENVIRONMENTAL ADVISORY BOARD (EAB)

- Amanda Herzog, chair
- Woody Gontina, vice chair
- Amanda Paniccia McMahon, secretary
- Christine Hartwig
- Pam Lemme
- Tom Regan
- Ken Long
- Jennifer Acevedo
- Paul Vial
- Andrew Sarpolis
- Nicholas Marcelletti
- Kyle DuBuc, commission liaison
- Aaron Filipski, ex-officio
- Julie Lyons Bricker, ex-officio

PROJECT TEAM

Sustainability and Climate Action Plan Task Force:

- Julie Lyons Bricker, LEED AP O+M, Royal Oak Energy and Sustainability Manager, and *Quality of Life and Green Space Work Group Facilitator*
- Amanda Herzog, Ph.D., Royal Oak Environmental Advisory Board Chair and *Water Work Group Facilitator*
- Woody Gontina, LEED AP BD+C, Royal Oak Planning Commission member, Environmental Advisory Board member, and *Energy & Buildings Work Group Facilitator*
- Paul Vial, Royal Oak Environmental Advisory Board member and *Mobility Work Group Facilitator*
- Aaron Filipski, Royal Oak Department of Public Services Director and *Waste Work Group Facilitator*
- Andrew Sarpolis, Royal Oak Environmental Advisory Board member
- Ann Bueche, Royal Oak Planning Commission member
- Paula Martinos Mantay, Resident
- Rachel Bush, Graduate City Management Fellow (Project Assistant) and *Green Space Work Group Co-facilitator*
- Peter Young, Graduate City Management Fellow (Project Support)
- Kathleen Duffy, SmithGroup
- Katrina Kelly-Pitou, SmithGroup

CITY STAFF

City Manager's Office:

- Paul Brake, *City Manager*
- Todd Fenton, *Deputy City Manager and Economic Development Manager*
- Susan Barkman, *Assistant to the City Manager*
- Carol Schwanger, *Executive Assistant to the Mayor and City Manager*
- Judy Davids, *Community Engagement Specialist*
- *Julie Lyons Bricker, Energy and Sustainability Manager*

Department of Public Services and Recreation:

- Aaron Filipski, *DPS Director*
- John Fedele, *Superintendent of Recreation*
- Shana Bishop, *DPS Clerk (Project Support)*

Community Development and Planning:

- Tim Thwing, *Community Development Director*

Engineering:

- Holly Donoghue, *City Engineer*

Building:

- Jason Craig, *Chief Building Official*

Planning:

- Joe Murphy, *Planning Director*

Assessing:

- Jim Geiermann, *City Assessor*

Treasurer's Office:

- Jaynmarie Hubanks, *Treasurer*
- Beau Bouscher, *Water Staff*

Clerk's Office:

- Melanie Halas, *City Clerk*

Information Technology:

- Mike Kirby, *Manager of Information and Communication Technology*
- Michael McBain, *GIS Coordinator*

COMMUNITY CONTRIBUTORS

The S-CAP Task Force would like to recognize the efforts of community groups and community members who donated their time and energy to bring this plan to life. We especially acknowledge and thank all who responded to the stakeholder survey and the many volunteers who attended the work group meetings.

Focus Topic Work Group Participants

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- Iris Steinberg
- Ted Strunck
- Kamilo Sussman
- Robert Tomasaitis
- Jessica Valovick
- Claire Vial
- Scott Weinstein
- Monika Wojtaluk
- Russ Wright

Businesses, Institutions, and Organizations

- Beaumont Hospital- Royal Oak
- Great Lakes Integrated Science + Assessments
- Greater Royal Oak Democratic Club
- Interclub Council
- ICLEI - Sustainability for Local Governments
- MoGo Detroit
- Oakland Community College - Royal Oak Campus
- Royal Oak Chamber of Commerce
- Royal Oak Civic Foundation
- Royal Oak Schools
- Royal Oak Rotary Club
- Southeast Michigan Council of Governments (SEMCOG)
- The Office Coffee Shop
- United Sustainability Directors' Network (USDN)

PEER CITIES

Thank you to these cities who've readily shared plan content and best practices with us.

- Bloomington, IN
- Durango, CO
- Indianapolis, IN
- Ann Arbor, MI
- Ferndale, MI
- Holland, MI
- Grand Rapids, MI
- Lakewood, CO
- Kirkland, WA
- Dubuque, IA
- Beverly and Salem, MA
- Redmond, WA
- Las Vegas, NV
- Raleigh, NC
- Mansfield, CT

Table of Contents

City Manager's Letter

On behalf of the city of Royal Oak's elected leaders, city staff, and members of the Royal Oak Environmental Advisory Board (EAB), I am proud to introduce the city's first Sustainability and Climate Action Plan (S-CAP). This community-wide plan will help us function more efficiently and enhance the quality of life for all who live, work, and play in Royal Oak. Through this plan, local leaders have committed to stewarding citywide sustainability and climate action efforts to encourage individual and collective efforts to reduce greenhouse gas emissions (GHG).

Royal Oak has a proud tradition of implementing green initiatives which have resulted in numerous accomplishments: the Tree City USA recognition for more than 50 years straight, multiple grants for energy waste and GHG emissions reduction projects, several green stormwater infrastructure installations, and recently, the LEED® for Cities Certified designation from the U.S. Green Building Council. The LEED® designation celebrates the city's practical and measurable strategies aimed at improving sustainability, resilience, and the standard of living for all residents.

This document offers ambitious goals, detailed strategies, and actions with the intent to create a permanent shift to make a meaningful difference for current and future generations. We invite you to read the plan and understand the goals and strategies required to move this effort forward. Please view it as a living document that reflects the values and vision of the community and the desire to progress toward sustainability. We also ask that members of the community recognize that they are key to making substantial progress with these efforts. My staff and I will take the lead and we look forward to the community collaborations.

Finally, the most enduring testimony of this effort is the countless hours of volunteer time that were so generously given to complete this plan. We are grateful to those who responded to the survey, participants of the focus topic work groups, and the S-CAP Task Force volunteers, Dr. Amanda Herzog, Woody Gontina, Paul Vial, Ann Bueche, and Andrew Sarpolis. Additionally, this plan wouldn't have been possible without the efforts of our staff, Julie Lyons Bricker, Aaron Filipski, Holly Donoghue, Tim Thwing, Rachel Bush, and Peter Young.

Now that the plan is before us, it is time to engage as individuals and as the collective community to turn this conceptual idea into a reality. This work will be exciting and challenging and will ensure that Royal Oak remains a great city for many generations to come.

Sincerely,

Paul J. Brake, ICMA-CM, CEcD
City Manager

2022 Royal Oak S-CAP Executive Summary

In January 2021, the Royal Oak City Commission adopted a resolution that set greenhouse gas (GHG) emissions reduction goals for 2030 and 2050 and tasked staff to develop a city-wide sustainability plan through a collaborative process with essential stakeholders. This planning process started in late January 2021 and was developed over an approximately fourteen-month period led by the S-CAP Task Force consisting of city staff, Royal Oak Environmental Advisory Board (EAB) members, and Royal Oak Planning Commission members. The city commission also provided two goals as a directive to guide the development of this plan, including GHG reduction goals and the incorporation of sustainability measures supporting the economy, environment, and community (p. 28).

The resulting 2022 Royal Oak Sustainability and Climate Action Plan (hereafter referred to as 'the S-CAP' or 'the plan') is a three-year action strategy that outlines projects and programs to support the city's sustainability and climate goals. This plan represents the first formal sustainability planning effort for Royal Oak, with objectives and action steps identified through a community-wide survey and 24 community stakeholder workgroup meetings. These objectives address local environmental issues, with additional consideration of economic prosperity, GHG reduction, and social accessibility, inclusion, and equity.

The S-CAP action implementation is divided into six focus topics: energy and buildings, mobility, water, waste, green space, and quality of life. Each topic includes a summary of current and past sustainability initiatives, along with tables that identify objectives, actions, partners, estimated costs, and projected impact on GHG reduction. More than 100 actions across all topics were identified and approved through the stakeholder workgroup process which included, coordination with municipal departments, residents, business owners, institutional partners, and other local stakeholders. Combined, these objectives and actions will help the City of Royal Oak achieve its goals. (See Table 1 for a sample list of actions in the S-CAP)

The workgroups used the city-wide GHG inventory results (pg. 23) during the creation and approval process of the plan's actions and strategies. The data-driven decisions emerged to focus on energy waste reduction in all building sectors and reducing ICE (internal combustion engine) vehicle miles traveled by increasing alternative mobility options.

City government will lead these sustainability efforts and several municipal projects are planned over the next three years, including but not limited to an LED streetlight conversion, increasing the tree canopy, fleet conversion, and stormwater management. The city will also provide energy, water, and materials waste education sessions to the community. Additionally, the S-CAP strategies will integrate sustainability considerations into Royal Oak's master plans, policies, programs, and decision-making.

"Sustainability is the responsibility of the entire community; it will take all community members to reduce GHG emissions."

– quote from a public commenter

Critical components for successful implementation of the S-CAP's actions include partnerships, funding and financing, resources to support tracking and progress monitoring, and tools for education, communication, and outreach. City staff will track and report progress, seek grant funding and mutually beneficial partnerships, and push ahead with new opportunities to achieve maximum sustainability implementation.

This plan's objectives and actions are expected to educate and empower municipal staff, businesses, institutions, and residents to implement energy and water waste reduction techniques, consider alternative mobility options, and engage in other sustainability and resilience measures. The objectives and actions are applicable to both the public and private sectors. This work will only thrive if it is approached as a collaborative, all-hands-on-deck effort.

TABLE 1: SAMPLE OF S-CAP ACTIONS (** Denotes a top priority from the stakeholder survey results)

Energy & Buildings	• **Improve municipal buildings' and streetlights' energy efficiency. • **Promote energy efficiency programs for other community building sectors. • Increase implementation of renewable energy community-wide. • Increase the resiliency of buildings in the community.
Mobility	• **Convert fleet to EVs or other alternative fuel vehicles, as appropriate. • **Participate in Safe Routes to Schools and Parks projects. • Provide safe transportation systems to reduce and eliminate crashes. • Promote telecommuting, carpooling, walking, biking, and public transit.
Waste	• **Develop educational recycling and composting programs. • **Increase number of special items drop-off recycling events. • **Promote food waste composting community wide and reduce food losses.
Water	• Replace lead service lines. **Educate and implement water conservation measures. • Provide resilience infrastructure to reduce combined sewer overflows. • **Educate about alternatives to lawn and garden chemicals and winter salting.
Green Space	• **Develop community-wide education and outreach programming. • Increase native plants and biodiversity to restore the natural ecosystem. • **Provide options for green space stewardship and volunteerism in parks.
Quality of Life	• **Educate about civic engagement and local decision-making opportunities. • **Create a Human Rights Commission. • Strengthen public communication and emergency communication channels. • Promote a diversity of housing type and attainability options. • Support local small businesses and business retention.

With the adoption of the S-CAP, the city of Royal Oak joins several other Michigan cities, as well as the State, in the movement to reach carbon neutrality by 2050. This plan puts the city on the path toward a sustainable and resilient Royal Oak for generations to come. Please join us on this journey.

Royal Oak

Life Now Playing

How to Read the Plan

The S-CAP is developed based on the city commission's two overarching goals:

GOAL #1

Reduce GHG emissions by 40%* by 2030 and achieve net zero by 2050.

(*from 2018 baseline)

GOAL #2

Operate the city in a way that supports the three pillars of sustainability: the community, the economy, and the environment.

This action plan contains objectives, actions, and strategies for implementation over the next three fiscal years* and is laid out in six sections.

The Introduction section: focuses on the city's background and why sustainability and climate action are important for the vision of tomorrow in Royal Oak.

The second section, Current Status: lays out the "Where We Are" as a city including the existing sustainability accomplishments, recent shocks & stressors, and our GHG inventory results.

The third section, Going Forward: discusses the "Where We Want to Be", including the goals, vision, and values that guided the development of the plan, and a description of the planning and community engagement process.

The fourth section, Action Steps: The Next Three Years: describes the core of the plan through six focus topics each with its own vision, objectives, actions, and metrics. This provides the context for "What We're Going to Do" to successfully advance toward the overarching goals, while prioritizing the following values: equity & access, economy, natural ecosystems, resilience, and health & wellbeing. There is also an Overview which offers tips on how to read the focus topic tables.

The fifth section, Strategies for Accomplishing Desired Outcomes: describes the "How We're Going to Do it", including implementation strategies, roles, partnerships, resources needed, funding and financing, progress tracking, education and outreach, and additional considerations.

And, the sixth section, Appendices: provides a list of acronyms of key partners, descriptions of recognized energy efficiency programs and green building organizations, a glossary, the Climate Emergency Resolution, and direct web links to supplementary resources for the S-CAP.

Measurable targets for the next version of the plan will be created based on the baseline data collected during the evaluations of actions implementation by the end of this three-year period. (2025). The plan is also created to be flexible in nature and will be regularly updated based on new data and information.

*The city of Royal Oak's fiscal year is defined as July 1- June 30. "Fiscal years 23-25" equates to FY 2022-2023, FY 2023-2024, and FY 2024-2025.

Royal Oak Today

Royal Oak is a unique city that is well-known for its vibrant downtown, abundance of parks, thriving farmer's market, and - most importantly - its welcoming people. For these reasons and more, Royal Oak is a very attractive place for people and businesses to call home.

58,211
total 2020 population[1]

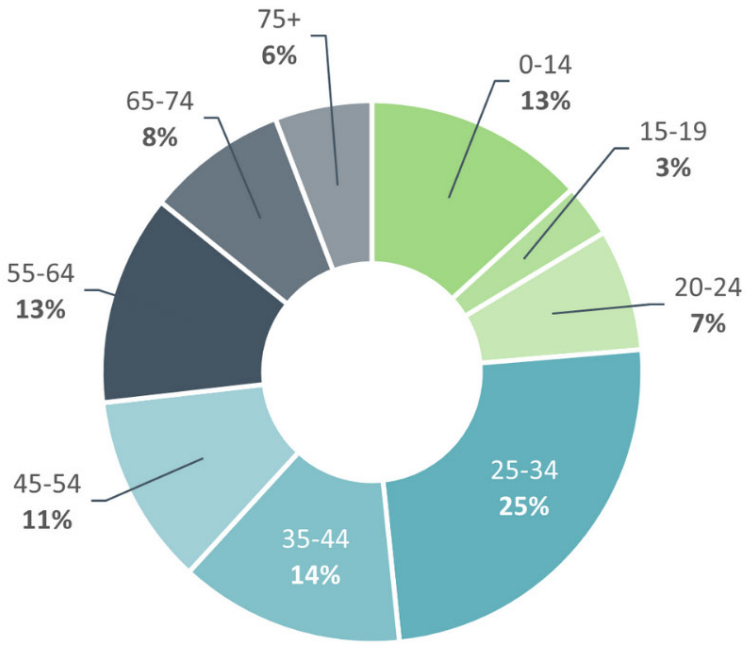
1.7%
growth in Royal Oak's population from 2010-2020[2]

1.5%
estimated growth in Royal Oak's population from 2020-2030[2]

$83,194
median household income[3]*
*adjusted for inflation from 2020 ACS 5-Year Estimate

36 years
median age[1]

AGE DISTRIBUTION



ETHNICITY DISTRIBUTION

[1] U.S. Census Bureau, 2020 Decennial Census
[2] SEMCOG. Royal Oak Community Profile
[3] 2020 American Community Survey. 5-Year Estimates

Introduction

Royal Oak is an inner-ring suburb of Detroit that is well-known for its vibrant downtown, diverse and unique parks, robust farmers market, and –most importantly– its welcoming people. The city was incorporated in 1921 and is currently celebrating its 100th anniversary. The centennial offers an opportunity for reflection on the past and community-wide visioning for Royal Oak's next 100 years.

The city has seen substantial changes over the last few decades, including increased commercial and residential development, more traffic, and a growing demand for housing that has raised property values and housing prices. In that same time period, the city has experienced more intense weather events, including drought, 100-year rainstorms, flooding, and extreme high heat days. These economic, environmental, and quality of life changes require monitoring and planning to help keep the city vibrant, safe, and accessible.

In the next few years, the city will go through several planning exercises to address these changes in new and updated plans including this sustainability and climate action plan (S-CAP), an updated parks and recreation five-year plan, and a new master plan.

The S-CAP represents the first formal sustainability planning effort by the City of Royal Oak, though city leadership, staff, and the Royal Oak Environmental Advisory Board (EAB) have been engaged in community-wide sustainability efforts for more than a decade (Figure 3). In July 2020, these efforts culminated in the Royal Oak City Commission approving a climate emergency resolution, based on the long-supported scientific consensus that the climate is changing and that greenhouse gas (GHG) emissions exacerbate the global temperature increase – putting the health and vitality of our city, region, state, nation, and planet at risk. The resolution solidified the city's commitment to provide residents, businesses, and the community at large with the tools and resources for collective sustainability and climate action.

The city commission further directed staff to develop a community-wide GHG emissions inventory. Later that year, the city commission also directed staff to develop a sustainability plan in partnership with stakeholders.

COMMON DEFINITIONS

City of Royal Oak: Relating to Royal Oak's community and government. Also referred to as "Royal Oak" or simply "city"

City Staff: Staff of the government of the City of Royal Oak

City Leadership: Elected leadership of the government of the City of Royal Oak

Municipal: Relating to City of Royal Oak's government operations, staff, equipment, regulations, or policies

A Sustainability and Climate Action Plan Task Force (Task Force), consisting of city staff, Royal Oak Environmental Advisory Board (EAB) members, Royal Oak Planning Commission members, and community members was created to manage this plan's development and completion requirements.

Throughout the development of the plan, the task force sought to integrate a wide range of community voices through a robust public participation schedule. Outreach included multiple ways for community stakeholders to share their feedback.

The Sustainability and Climate Action Plan (S-CAP) focuses on the city commission's overarching goals of 1) reducing GHG emissions, and 2) operating the city in a way that supports the three pillars of sustainability: the community, the economy, and the environment. (Goal specifics on pg. 30) The plan breaks those goals down into six focus topics, each with its own vision, objectives, actions, and metrics.

WHAT IS SUSTAINABILITY?

The widely-accepted definition of sustainability is "*the ability to meet the needs of the present population without compromising the ability of future generations to meet their needs.*" A sustainability mindset compels a community to make decisions based on economic, environmental, and social impacts in the long-term, rather than just the short-term. Sustainability efforts in Royal Oak must address not only reduction of GHG emissions and waste, but equitable distribution of resources and resilience in response to climate-related and other emergencies.

Across the country and around the world, cities have stepped forward to create a sustainable future and fight against climate change, through actions like protecting water and air quality, reducing energy waste, increasing clean energy installations,

SIX S-CAP FOCUS TOPICS:

ENERGY & BUILDINGS

WATER

MOBILITY

GREEN SPACE

WASTE

QUALITY OF LIFE

maintaining and increasing the tree canopy, increasing cultural cohesion, and more. Many Michigan cities, including Ann Arbor, Ferndale, Detroit, Grand Rapids, Holland, Kalamazoo, Lansing, Marquette, Rochester, and Traverse City have a sustainability plan in place, or are currently in the sustainability planning process for their communities.

WHY URGENT ACTION IS NEEDED

Consensus exists among the world's leading climate scientists that climate change, caused by GHG emissions from human activities, is among the most significant problems facing the world today. According to a report released in August 2021 by the Intergovernmental Panel on Climate Change (IPCC), climate change is widespread, rapid, and intensifying.[1] The report compares recent climate trends with climate patterns from 1850-1900. Each of the last four decades has been successively warmer than any preceding decade since 1850. Human activities contributed to a global surface temperature increase of 1.1°C between the early 20th and early 21st centuries, contributing also to the associated impacts of increased precipitation, sea level rise and acidification, and glacier melt. Over the next 20 years, global temperature is expected to reach or exceed 1.5°C of warming. It's predicted that 1.5°C of warming will bring increasingly hot heat waves, longer warm seasons, and shorter cold seasons, all of which will lead to a rise in sea level, more intense storms, increased geographic range of insect-borne diseases, and climate refugees. The National Geographic Worldwide Catastrophe Events chart indicates there were 291 worldwide catastrophic events in 1980, and by 2014, that number steadily rose to 904 (Figure 1).

1 IPCC. Climate Change 2021: The Physical Science Basis, Summary for Policymakers

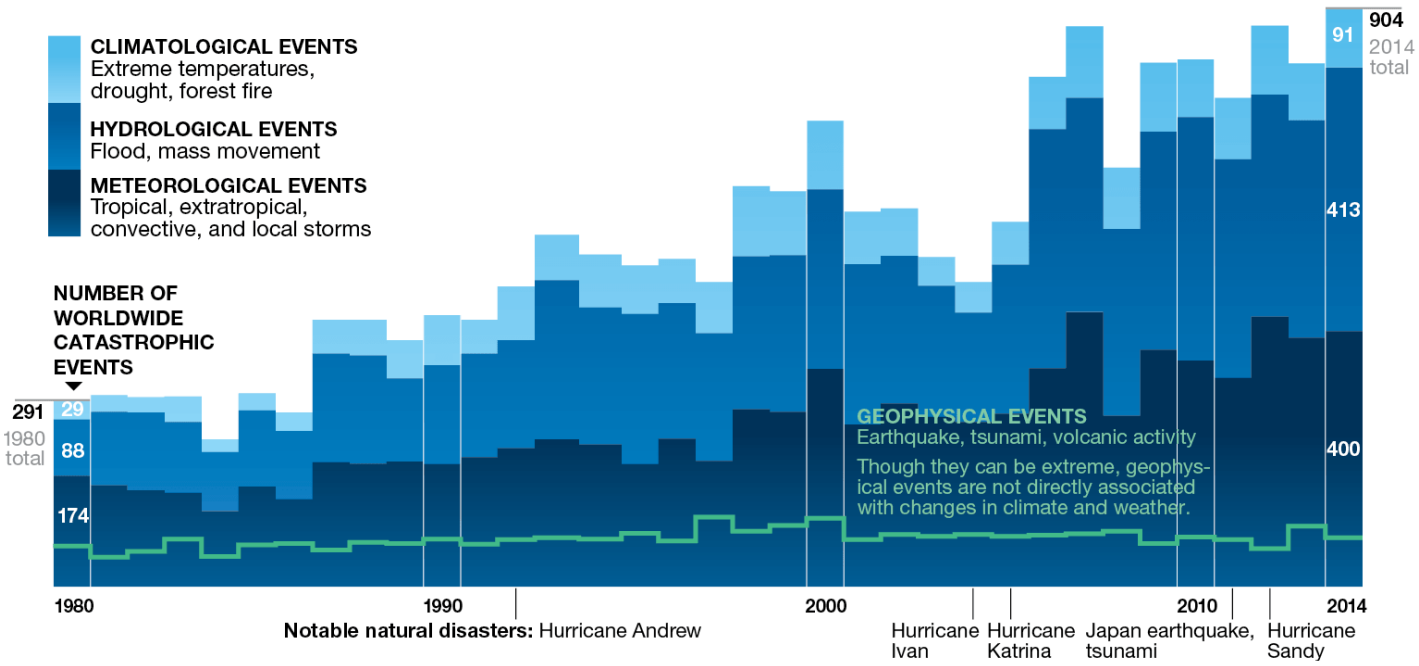


Figure 1: Worldwide Catastrophic Events 1980 - 2014. Source: National Geographic, 2015.

Future changes in climate patterns have serious implications for the United States, as well as for Michigan. The National Oceanic Atmospheric Administration (NOAA) has calculated the total cost of extreme weather events (greater than one billion dollars) for the United States from 2010 to 2019 at more than US$825 billion (Figure 2). This includes the cost of damages from Southeast Michigan's 2014 flood.

LOCAL IMPACTS OF CLIMATE CHANGE

Our city and region are already experiencing the local effects of climate change through more frequent high heat days, more extreme precipitation and flooding events, and greater length and intensity of droughts[2] and heat waves – all of which affect our economy and way of life. Urbanized areas like metro Detroit can expect amplified effects of climate change, including heat islands and flooding.

Regional impacts from climate change on extreme weather, air quality, and the transmission of disease increasingly threaten the health and wellbeing of all Michiganders, particularly populations that are already vulnerable. Without substantial and sustained global mitigation and regional adaptation efforts, climate change is expected to cause increasing losses to infrastructure, agriculture, ecosystems, and property, and to slow economic growth in the coming century.

WHY IS THE S-CAP IMPORTANT?

Sustainability planning is a framework for determining how to create the best Royal Oak now and into the future. Through its actions and implementation strategies, the S-CAP encourages city staff to leverage resources more efficiently; reduces energy expenditures; promotes effective land-use and smart economic development; improves the natural environment; creates a more equitable and inclusive community; lays the groundwork for major investments; and reduces GHG emissions.

2 NOAA, National Integrated Drought Information System. Drought Conditions in Oakland County

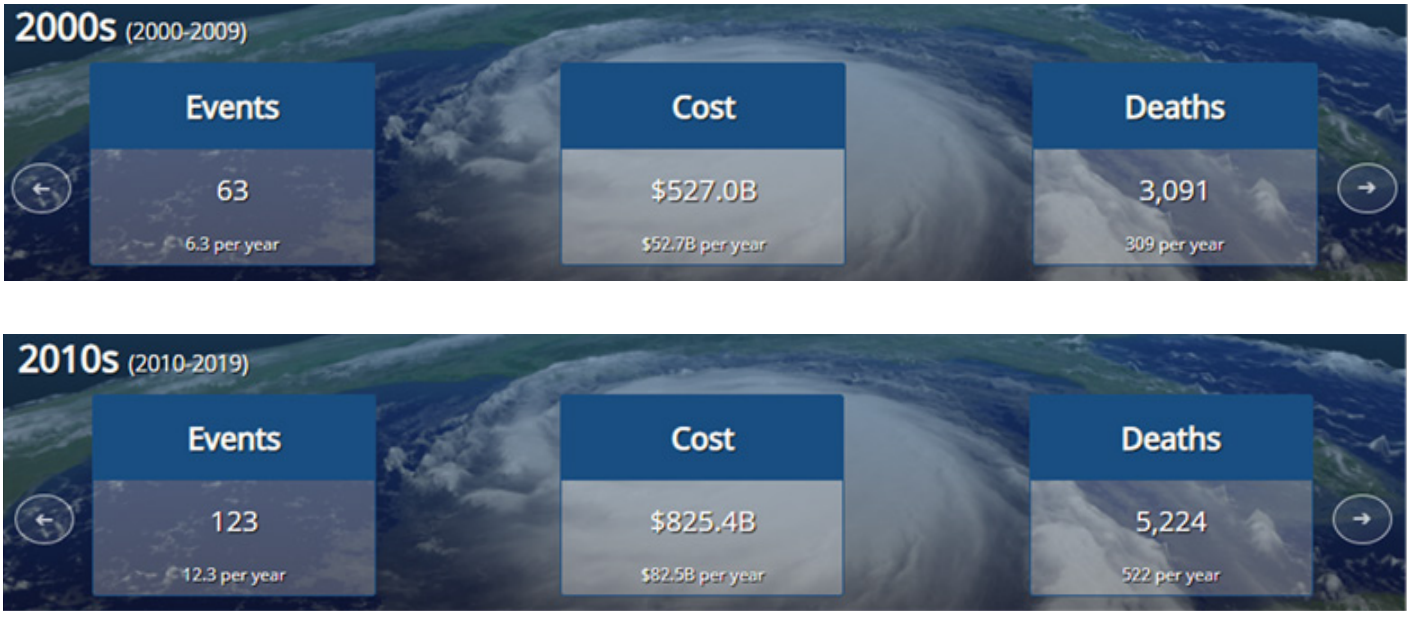


Figure 2: NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters. Source: NOAA, 2021.

Today (2020)

Temperature

2.6°F *Increase in annual average temperature* [1]

10 *Days over 90°F* [2]

Precipitation

5.5" *Increase in annual average precipitation* [1]

11 *Days of heavy precipitation (>1.25")* [6]

The above temperature and precipitation statistics are based on historic trends from 1951 - 2020 [1]

Tomorrow (2060)

Projected Increases in Annual Average Temperature [1]

WINTER	+2°F - 4.4°F
SPRING	+1.9°F - 5.5°F
SUMMER	+4°F - 6.4°F
FALL	+3.2°F - 5.9°F
ANNUAL	+3.1°F - 5.2°F

12.5 - 15 *Projected increase in the number of days over 90°F* [3]

In addition to consistently higher average temperatures, projections indicate that Royal Oak could experience 2.5 - 5 days of 100°F heat annually by 2060 [5].

Projected Changes in Annual Total Precipitation [1]

WINTER	-0.5 - 2.5"
SPRING	-0.7 - 2.3"
SUMMER	-0.7 - 2.9"
FALL	-0.4 - 0.6"
ANNUAL	0.3 - 3.8"

1.5 - 2 *Projected increase in the number of heavy precipitation days (>1")* [7]

In addition to more intense rain events, projections indicate that there will also be periods of dryness. Up to 1" loss of seasonal precipitation has implications for agriculture, landscapes, and drought.

[1] Data from Great Lakes Integrated Sciences + Assessments (GLISA)
[2] Detroit News. 2021 is on track to be the 9th hottest since 1874
[3], [4], [5], [7] GLISA Climate Change Maps
[6] National Weather Service, Accumulation graph, precipitation 2020-2021

SECTION 2

CURRENT STATUS

Open Hands Food Pantry & Garden
Image Source: Owen Bricker

Sustainability Initiatives Timeline

PRE-2011

Late 1930s: Myron Zucker, a Parks Commissioner, created a policy that stated all children will have access to a park within 1/4 mile of their homes and without having to cross a major road.

1976: Awarded Tree City USA desgnation and have earned the recognition every year since.

1990: The Solid Waste Board established. In 2008, it was renamed to the Environmental Advisory Board and given an expanded role of advising the city commission on green topics.

2011

A nearly 72,000 square foot commercial building in downtown receives LEED for New Construction 2009 Certification for onsite renewable energy and green purchasing power, recycled content building materials, diversion of construction and demolition debris, 100% reduction in potable landscape water use, and 30% reduction in indoor baseline water use.

2012

The City of Royal Oak participates with neighbors Ferndale, Pleasant Ridge, Huntington Woods, and Berkley (the "Woodward 5") in a grant program to develop the Woodward 5 Sustainability Collaboration.

2014

The city commission approves a resolution to endorse the Woodward Avenue Complete Streets Master Plan and to urge the 11 neighboring municipalities and the Michigan Department of Transportation to support and implement the plan through short- and long-term projects.

A nearly 50,000 square foot commercial building achieves status as an EPA ENERGY STAR Certified Retail establishment for reporting energy usage reduction efforts and participates in the EPA ENERGY STAR National Building Competition.

2016

Two commercial buildings, totaling approximately 4,000 square feet, achieve LEED Silver certification and LEED Retail CI 2009 certification.

2017

June: Mayor Mike Fournier joins the National Mayor's Support of the Paris Climate Agreement. Alongside 467 other Mayors nationwide, Mayor Fournier commits to adopt, honor, and uphold the Paris Climate Agreement goals in Royal Oak.

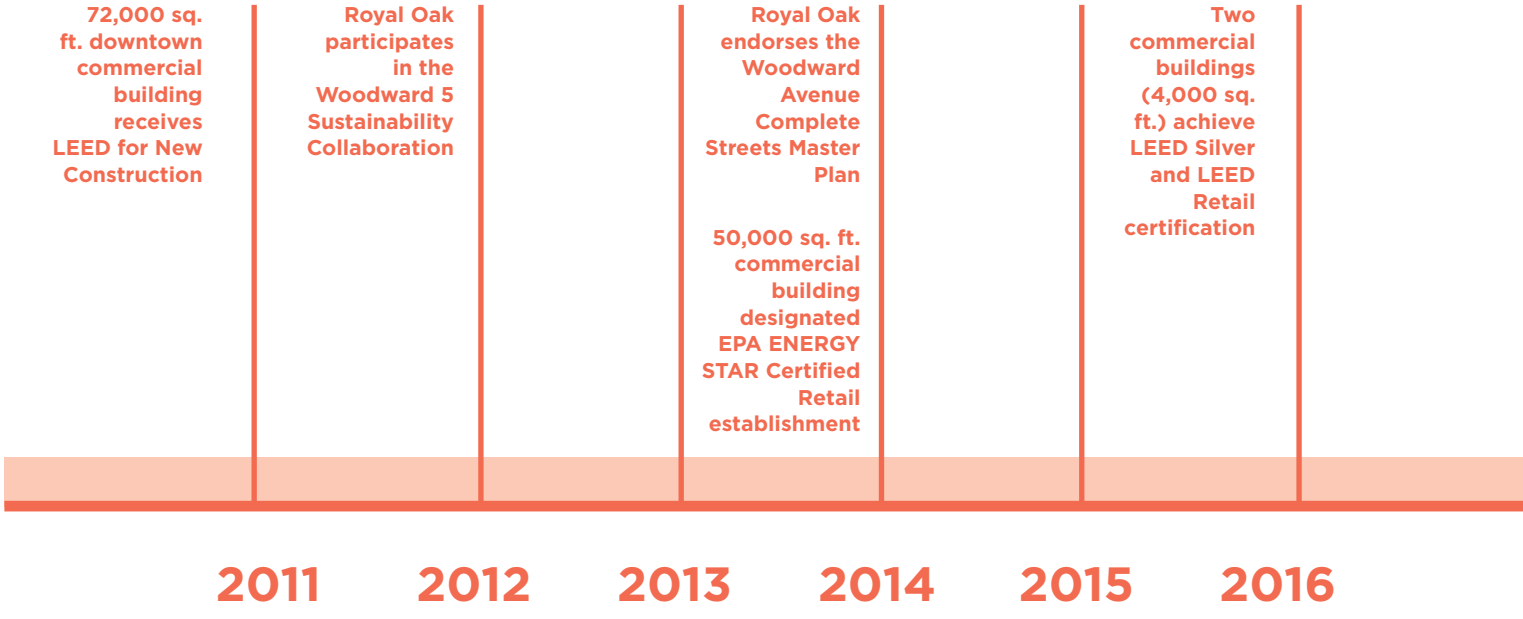


Figure 3: City of Royal Oak Sustainability Initiatives Timeline (2011 - 2022)

2018

March: The Royal Oak City Commission adopts the Energy Management Plan. This project was made possible by a grant awarded to EcoWorks from the C.S. Mott Foundation.

March: A Green Stormwater Infrastructure Evaluation Report is created to recommend viable green stormwater infrastructure projects throughout the city.

2019

February: The Royal Oak City Commission approves the 2020 Goals and Objectives Strategic Plan which includes an action item for the development of a city-wide sustainability plan.

May: The City of Royal Oak is awarded a position in the 2019 LEED for Cities and Communities grant program, funded by Bank of America in partnership with the U.S. Green Building Council.

2020

April: Royal Oak achieves the LEED for Cities Certified designation. Royal Oak is the first city in Michigan and the third nationally to certify under the LEED version 4.1.

July: The Royal Oak City Commission approves a climate emergency resolution and tasks staff with developing the city's first greenhouse gas (GHG) emissions inventory.

Royal Oak Environmental Advisory Board (EAB) becomes an ordinanced board, tasked with sustainability recommendations to the city commission.

September: The city's GHG inventory is completed. City staff and members of the EAB analyze emissions data, local utilities CO2 reduction goals, and IPCC recommendations to craft Royal Oak's draft GHG reduction goals.

2021

January: The city commission approves recommended GHG reduction targets: to achieve a 40% reduction in GHG emissions (from 2018 baseline levels) by 2030, and to achieve net zero GHG by 2050.

June: The city hosts a virtual community forum to formally kick off the sustainability community engagement process. The event and presentation is an opportunity for stakeholders to learn about sustainability, climate change, and the S-CAP.

July: The S-CAP Task Force publish a sustainability stakeholder survey as one technique of community engagement in the S-CAP planning process.

August - November: City staff and the S-CAP Task Force facilitate a series of twenty-four S-CAP focus topic work groups. 75 residents, business owners, and other stakeholders participated in the meetings.

2022

January: The sustainability stakeholder survey summary is published to share the participants' responses with the community.

March: The draft S-CAP plan is published for public comment.

April: The final S-CAP draft document is submitted to the city commission for approval.

Shocks and Stressors

2000-2020

Long-term sustainability planning also requires building resilience: transforming the way the City of Royal Oak and the community prepare for, respond to, and cope with shocks and stressors. The S-CAP will provide the city with tools to reduce the impact of these future events. The following timeline summarizes 20 years of disruptive shocks and stressors experienced by the Royal Oak community.

TIMELINE OF RECENT SHOCKS AND STRESSORS IN ROYAL OAK

2002
Devastated by the Emerald Ash Borer invasion, Royal Oak's tree canopy lost thousands of trees between 2002 and 2007. This has made the city more vulnerable to the effects of climate change, including the urban heat island effect, flooding, and air quality changes.[1]

August 14 – 16, 2003
The Northeastern blackout caused widespread power outages for 4 days in Michigan. Caused by tree branches touching power lines in Ohio, plus software issues, equipment failures, and human error, it led to the most widespread blackout in North American history. 50 million people were impacted by the grid disruption.[2]

2008
The Great Recession began, and Royal Oak businesses and residents experienced economic hardship in the following years. As of 2016, Royal Oak's assessed property value was still 14.8% below 2008 levels.[3]

July 2011
This is the warmest month on record for Detroit, Southeast Michigan, and Saginaw. Detroit experienced 36 consecutive days of 80°F or higher, and 14 days above 90°F. Detroit's records go back to 1874.[4]

2013-2014
This is the snowiest winter on record in metro Detroit, at 94.9 inches of snow.[5]

August 11, 2014
Royal Oak experienced historic flooding, resulting in an estimated $120 million in damages affecting about 40% of Royal Oak's homes. Royal Oak has a moderate risk of flooding over the next 30 years.[6,7]

March 2017
A wind storm led to the largest weather event-caused DTE power outage in the utility provider's history.[8]

January 24 – early February 2019
The polar vortex brought record-breaking low temperatures to Michigan. Consumers Energy and DTE Energy called for customers to reduce their natural gas and electricity usage.[9]

2020 - 2021 and beyond
The COVID-19 pandemic changed and challenged community interactions, business operations, and City services.

August 10-12 2021
Severe thunderstorms in Metro Detroit caused widespread flooding and power outages, leaving residents without power for 5+ days – the most significant electricity outage since March 2017.[10]

1 Metro Mode. Royal Oak investing $25,000 in new trees to help replace those lost to ash borer
2 Michigan Radio. Ten years after the great northeast blackout of 2003
3 Bridge Michigan. Michigan property values remain dramatically below 2008 levels
4 NOAA. Severe Weather Events in Metro Detroit Region
5 NOAA. Severe Weather Events in Metro Detroit Region
6 Floodfactor. Flood risk overview for Royal Oak
7 Detroit Free Press. Metro Detroit flood damage approaching $1 billion
8 Detroit Free Press. After record-setting outage, 277,000 remain without power in Michigan
9 NOAA. Severe Weather Events in Metro Detroit Region
10 Detroit Free Press. Metro Detroit floods again; 700,000+ Michiganders lose power due to storms

GHG Inventory

WHAT ARE GREENHOUSE GASES (GHG)?

Greenhouse gases (GHG) are gases in Earth's atmosphere that let sunlight pass through but prevent that heat from leaving the atmosphere. It's beneficial to have some level of the gases in the atmosphere because they create the greenhouse effect making our planet habitable. But, too many greenhouse gases block too much heat from escaping, leaving our atmosphere and planet warmer which is creating changes in the climate system. Greenhouse gases include carbon dioxide (CO2), water vapor (H2O), methane (CH4), nitrous oxide (N2O), and several fluorinated gases. Carbon dioxide is the most prevalent greenhouse gas in the U.S.

In 2020, two greenhouse gas (GHG) emissions inventories were compiled for the 2018 baseline year; one for the Royal Oak community as a whole and the other for municipal operations only. The data was obtained for these inventories from the local utilities, South Oakland County Resource Recovery Authority (SOCRRA), Great Lakes Water Authority (GLWA), Southeast Michigan Council of Governments (SEMCOG), and the City of Royal Oak and was then entered into software developed by the International Council for Local Environmental Initiatives (ICLEI)*. The GHG inventory produced a baseline from which to measure the city's current emissions and future emission reduction progress. The standard unit for measuring GHG emissions is metric tons of carbon dioxide equivalents, also shown as MTCO2e. ICLEI's ClearPath tool also allows the city to use the inventory results to conduct a business-as-usual scenario (BAU), shown in Figure 7, analyze various opportunities to reduce GHG emissions, and set projected targets for reductions. This inventory also provides the framework for future review of the city's GHG reduction goals and associated metrics for any necessary updates.

KEY FINDINGS

Royal Oak's total 2018 community-wide GHG emissions were 918,287 MTCO2e** and the municipal operations (city government) GHG emissions were 12,478 MTCO2e. The breakdown of Royal Oak's community-wide GHG emissions for 2018 are shown in Figure 4. The commercial electricity sector was the single largest contributor to community emissions (24.2%), followed by the transportation-gasoline sector (19%). Residential energy, which includes electricity and natural gas, scored as the highest category contributor (31.9%).

As shown in Figures 5 & 6, emissions from municipal operations only account for 1.4% of the total community-wide GHG emissions. It's clear that for Royal Oak to meet its GHG reduction goals, the collective community will need to participate in various strategies for reducing emissions. That said, city government will lead by example and is actively engaged in energy waste reduction initiatives within municipal operations. Several GHG-reducing municipal projects are planned over the next few years.

*The inventory does not include emissions from the following sources: food consumption, durable and non-durable consumer goods consumption, leisure travel, gasoline powered yard equipment for residential, commercial, and industrial, off-road vehicles for residential, commercial, and industrial, leakage from A/C, chillers and refrigerators for residential, commercial, and industrial, and any upstream energy sector construction and processing. Gathering these sources' emissions was deemed not feasible for this basic inventory process.

**The 2018 community-wide GHG emissions have been adjusted since their original release due to the availability of more accurate estimates of VMT through the Google EIE software and the inclusion of non-residential solid waste through a recommended EPA multiplier calculation. These updates were approved by ICLEI, the purveyor of the GHG software used to produce the Royal Oak GHG inventories.

2018 ROYAL OAK GHG EMISSIONS COMMUNITY-WIDE (THIS INCLUDES ALL MUNICIPAL OPERATIONS(

CATEGORIES	FUEL OR SOURCE	MTCO2e	PERCENT
Commercial	Electricity	221,909	24.2%
Transportation	Gasoline	174,715	19%
Residential	Electricity	148,302	16.1%
Residential	Natural Gas	145,364	15.8%
Transportation	Diesel	62,586	6.8%
Industrial	Electricity	58,923	6.4%
Commercial	Natural Gas	44,394	4.8%
Electric Grid Transmission Losses		21,085	2.3%
Landfilling of Solid Waste		16,315	1.8%
Natural Gas System Leakage		6,268	0.7%
Transportation SMART		4,508	0.5%
Wastewater Treatment		4,138	0.5%
Street Lighting (commercial elec.)		3,045	0.3%
Waste Collection and Transport		2,415	0.3%
Industrial	Natural Gas	2,398	0.3%
Potable Water Supply	Pumps	1,922	0.2%
TOTAL		**918,287**	**100%**

93.1%

Percent of Royal Oak community greenhouse gas emissions can be attributed to the top seven sources listed here.

Figure 4: City of Royal Oak Community-wide GHG Emissions, 2018

2018 ROYAL OAK GHG EMISSIONS BY CITY GOVERNMENT (MUNICIPAL OPERATIONS(

CATEGORIES	MTCO2e	PERCENT
Buildings & Facilities - Electric	4,885	39.1%
Street Lights & Traffic Signals	3,045	24.4%
Buildings & Facilities - Natural Gas	1,705	13.7%
Employee Commute	1,389	11.1%
Vehicle Fleet	1,317	10.6%
Off-road Equipment	91	0.7%
Air Conditioning Fugitive Emissions	46	0.4%
TOTAL	**12,478**	**100%**

Figure 5: City of Royal Oak Municipal GHG Emissions, 2018

2018 ROYAL OAK MUNICIPAL OPERATIONS AS A SHARE OF COMMUNITY-WIDE GHG EMISSIONS

CATEGORIES	MTCO2e
City Government	12,478
Community-wide	918,227
MUNICIPAL SHARE %	**1.4%**

Figure 6: Municpal Operations as Share of Community-wide GHG Emissions 2018

Beyond Business as Usual

The City of Royal Oak's community-wide greenhouse gas (GHG) inventory estimates emissions from activities and sources that took place within the City of Royal Oak during the 2018 calendar year. Using the 2018 GHG inventory as a baseline, ICLEI prepared a "business-as-usual" (BAU) forecast of future GHG emissions by sector through 2050. The BAU scenario is meant to show the projected CO2e values if the city does nothing to actively reduce emissions.

BUSINESS-AS-USUAL (BAU) FORECAST

The following forecast is a projection of the city's BAU emissions through the year 2050. This forecast is based on the city's community-wide GHG baseline with estimated projections data including population growth,[1] expected changes in automotive fuel efficiency standards,[2] and expected electricity grid decarbonization that is part of DTE Energy's 2050 Net Zero Carbon Emissions Goal.[3] In this BAU scenario, the city's 2050 emissions are projected to be 400,286 MT CO2e (Figure 7).

PROJECTED CO2E VALUES FOR ROYAL OAK(S BAU SCENARIO

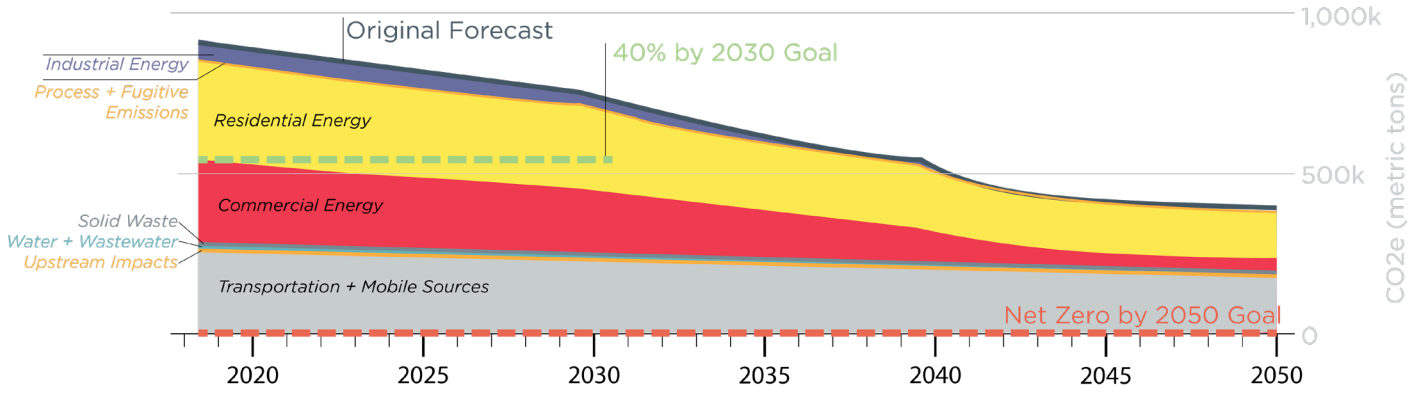


Figure 7: Projected Co2e Values in the Business-as-Usual (BAU) Scenario

1 SEMCOG Population Estimates — Royal Oak's population growth calculations include Oakland County's population growth
2 ICLEI's Carbon Intensity Reference Sheet
3 DTE Energy's Net Zero Carbon Goal

PROJECTED GHG WITH ACTIVE REDUCTIONS BY 2030

The following 2030 forecast for Royal Oak includes the above data from the BAU chart, but also projected reductions in residential and commercial energy consumption, reductions in municipal energy consumption including in facilities and through converting streetlights to LED bulbs, projected increases in solar energy generation, a portion of the municipal fleet converted to electric vehicles, increases in electric vehicles replacing internal combustion engine vehicles on the road, and a small increase in gas appliances converted to electric (Figure 8).

PROJECTED CO2E VALUES FOR ROYAL OAK WITH ACTIVE REDUCTIONS APPLIED

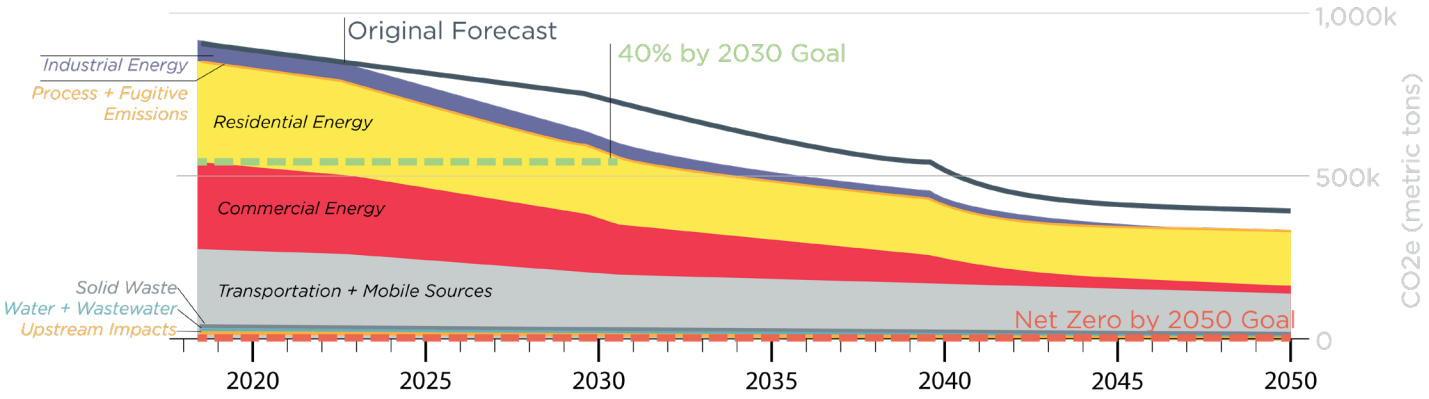


Figure 8: Projected Co2e Values with Reductions Applied

GHG emission reducing strategies recommended by ICLEI include:

- Energy efficiency for both municipal facilities and residential and commercial buildings.
- On-site solar energy for both municipal facilities and residential and commercial buildings.
- Encouraging bicycling, walking and transit use by municipal staff and the public.
- Promotion of electric vehicles (EVs), and the associated infrastructure, to replace fossil fuel powered vehicles.

Local actions in each of these areas can make a significant contribution to reducing GHG emissions and to maintaining cost-effective municipal services and a high quality of life for Royal Oak residents and businesses.

SECTION 3

GOING FORWARD

Normandy Oaks Heron
Image Source: Jeff Williams

Sustainability Goals, Vision, and Values

To promote sustainability throughout the community, the Royal Oak City Commission provided these two goals as directives to guide the plan's development:

S-CAP GOAL #1

Achieve 40% reduction in GHG emissions from 2018 levels by 2030, and achieve net-zero by 2050

The baseline for community GHG emissions was established in the 2018 Royal Oak Greenhouse Gas Emissions Inventory, which was completed in September 2020 by Royal Oak city staff and interns with ICLEI staff assistance, and pro-bono support from a resident engineer. The city's membership in ICLEI provided access to the GHG inventory software, ClearPath. The Sustainability and Climate Action Plan will chart a pathway to achieving adopted GHG emissions reduction goals.

S-CAP GOAL #2

Operate the City of Royal Oak in a sustainable way supporting the community, economy, and environment.

This goal comes from the 2021 City Commission Goals and Objectives annual strategic planning. Its naming of the three tiers of sustainability is meant to focus on incorporating specific sustainability projects into the current municipal scope of work and within the city's future planning documents. It also highlights sustainability initiatives and programming for community-wide stakeholders.

Based on feedback received from the community engagement, city commission goals, and best-practices from peer cities' sustainability planning, the S-CAP Task Force developed a vision statement and high-level values for inclusion in the plan.

SUSTAINABILITY VISION

The City of Royal Oak, as a community, is recognized as a leader in sustainable practices to combat climate change and provide an exceptional quality of life to residents, visitors, and institutions while improving natural ecosystems and the built environment, preserving and building on the past, to prepare for a greener, better future.

VALUES

As part of developing this plan's framework, the task force prioritized a set of values based on the overarching goals of reducing GHG emissions and implementing sustainability's beneficial environmental, economic, and social aspects. The intent of these values is to supplement the sustainability vision as measurable evaluation criteria. Combined, the sustainability vision and values serve as long-term targets to guide the plan's direction and prioritize the actions.

VALUES

EQUITY & ACCESS
Ensure access to all members of our community

HEALTH & WELLBEING
Have a positive impact on public mental and physical health.

ECONOMY
Have a positive local economic impact.

NATURAL ECOSYSTEMS
Positively impact natural ecosystems.

GREENHOUSE GAS EMISSIONS
Reduce GHG Emissions

RESILIENCE
Increase resilience against severe adverse conditions.

FOCUS TOPICS

Plan Process

This planning process started in January 2021 and was developed over an approximately fourteen-month period led by the S-CAP Task Force consisting of city manager's and DPS' staff, Royal Oak Environmental Advisory Board (EAB) members, Royal Oak Planning Commission members, and residents. The task force worked in coordination with other municipal departments, residents, business owners, institutional partners, other stakeholders, and outside consultants. The plan provides a three-year action framework to achieve near-term goals, a list of longer-term goals for future planning, and an opportunity to incorporate sustainability into municipal decision making and community-wide initiatives in a more directed way.

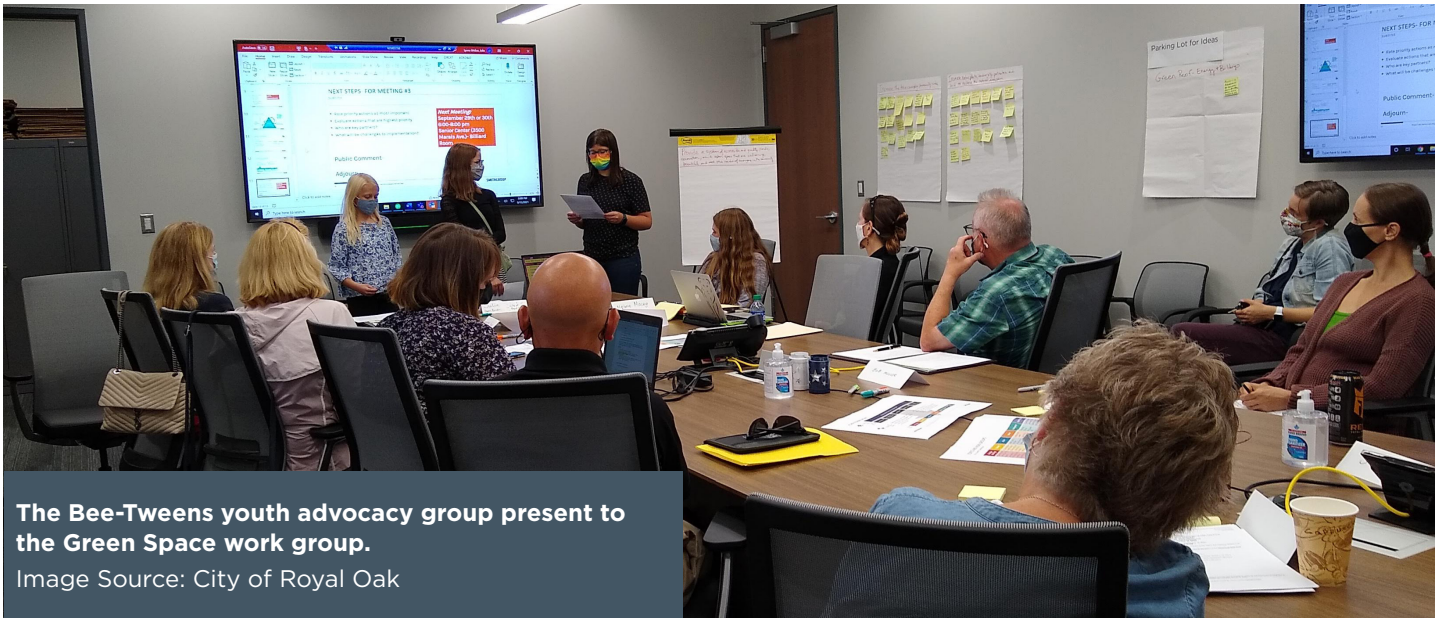
During the plan's development period, like everyone, the task force had to contend with COVID-19 restrictions, safety protocols, and limitations in mind while planning community engagement opportunities. Even with these limiting factors, a robust engagement and outreach process occurred. The task force compiled community feedback through several stakeholder engagement processes.

The S-CAP planning process is defined by several key phases described below and illustrated at right:

Baseline: City staff collected existing initiatives data as well as demographics information for both the LEED for Cities designation and the greenhouse gas emissions inventory work. This data assisted the task force and work group participants in understanding where the community is relative to energy consumption, tree canopy, public safety, etc., and where there are opportunities for future sustainability best practices.

Understand: The stakeholder engagement resulted in a large collection of data points defining the community's aspirations, concerns, and priorities related to sustainability. The work groups used this data in crafting the initial priority actions for each focus topic.

Analyze: A list of preliminary actions were recommended from the work groups. Using the recommendations, city staff continued conversations with other staff, the task force, and consultants to further score and prioritize the list into short and long-term actions and their implementation.



The Bee-Tweens youth advocacy group present to the Green Space work group.
Image Source: City of Royal Oak

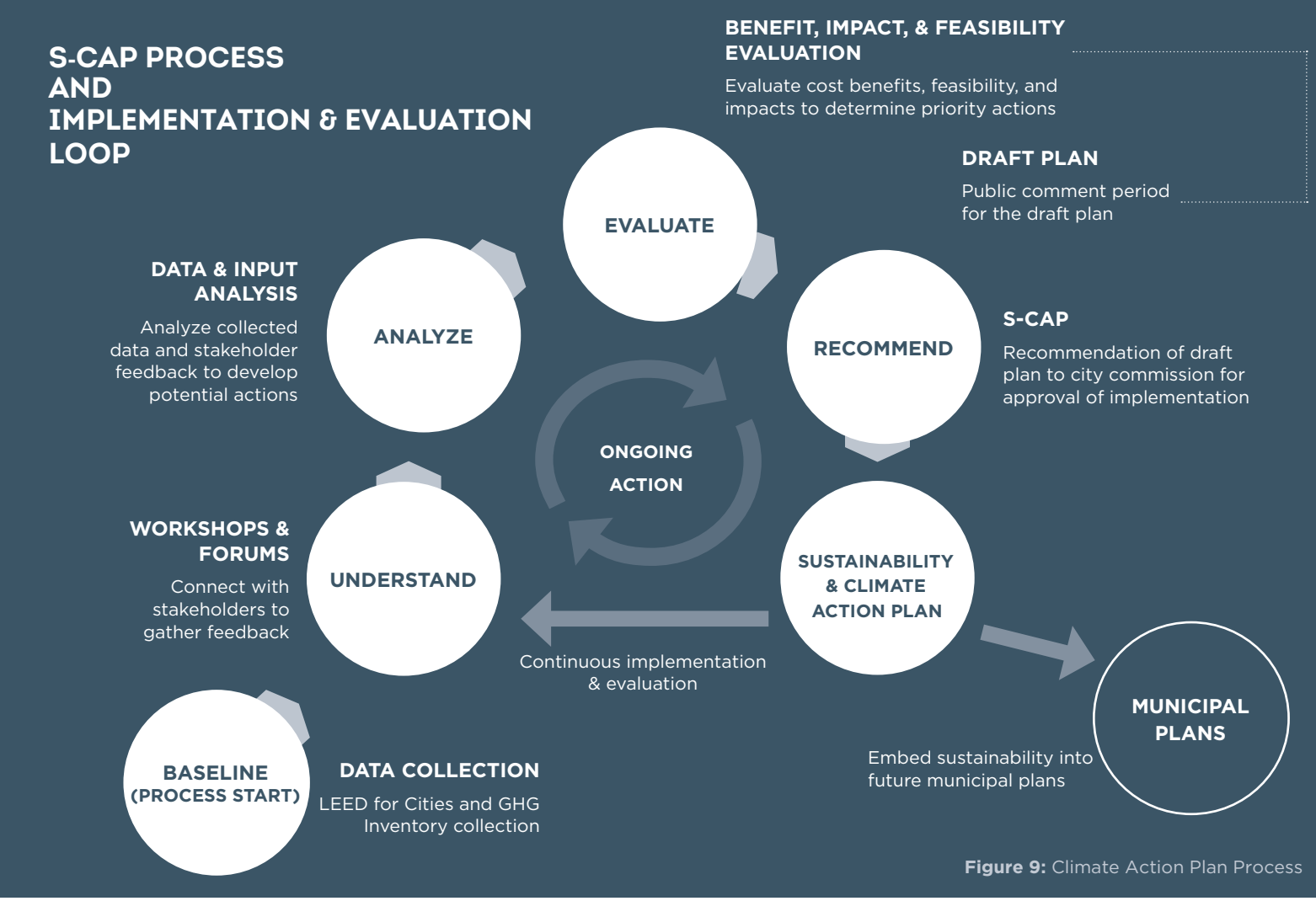


Figure 9: Climate Action Plan Process

Evaluate: After synthesizing the actions list, the task force identified the top scoring priorities to include in the plan based on community priority, cost benefits, feasibility, and overall impact. A draft plan was made available to the public for feedback.

Recommend: The final draft plan is presented to the city commission for approval. Once approved, the plan's goals, values, objectives, and actions will be incorporated into the master plan, as well as other future municipal guiding documents.

Implement & Update Plan: As the city implements the plan's actions, it will continuously collect, analyze, and publish data to evaluate the effectiveness and impact of specific programs and policies. An updated version of the S-CAP will be completed after the first three years based on the collected data.

COMMUNITY OUTREACH & ENGAGEMENT

From June through November 2021:

70 **Participants attended the online community forum**

75 **Participants attended focus topic work group sessions**

366 **Participant volunteer hours contributed during work groups**

452 **Participants responded to the community stakeholder survey**

Community Engagement

Soliciting community feedback is a crucial part of the planning process to ensure that the Sustainability and Climate Action Plan (S-CAP) reflects community needs. Public engagement included an online Community Forum sustainability plan kickoff (June 29, 2021), in-person pop-up events at the Royal Oak Farmers Market, in-person stakeholder meetings with the Royal Oak Chamber of Commerce, Royal Oak Schools, Royal Oak Rotary Club, and other groups, a community survey, and 24 stakeholder-driven focus topic work groups described more fully in Section 4. These efforts to gather feedback allowed the task force to understand some of the community's aspirations, concerns, and priorities related to sustainability.

SURVEY

Royal Oak residents, business owners, institutions, NGOs, and the public were invited to complete the community survey.[1] The survey was designed to gather 1) feedback on proposed components of the S-CAP and 2) additional concerns and suggested actions through open-ended responses. The survey was distributed online and promoted through the municipal weekly e-blasts, various social media pages, the local quarterly magazine, email lists, and through pop-up events at the Royal Oak Farmers' Market.

The survey results were analyzed quantitatively, the open-ended responses were coded qualitatively, and all data was summarized. The survey summary results were used in the focus topic work groups to make data-driven decisions about community-supported and priority sustainability objectives and actions.

1 According to survey software's sample size calculator—based on the 2020 population of Royal Oak, to achieve a confidence level of 95%, and a margin of error of 5%—the survey required 382 or more responses. The 32-question survey was available from July 19 through September 30, 2021, and received 452 responses, surpassing the required sample size for the desired accuracy.

SURVEY FINDINGS SUMMARY

Below are some general findings from the survey summary. The full survey summary can be found by clicking **here**.

75% of survey respondents indicated that city government and the Royal Oak community should act on climate change with urgency and set an example for sustainability and resilience in the region.

Climate change (74.5%), future generations (62.2%), and waste management (62%) were the top three motivators to the respondents' commitment to sustainability.

Water quality and safety (including flood hazards) were identified as the most important climate- related threats facing Royal Oak (81.6%).

The top three perceived barriers to achieving sustainability goals and addressing climate change in Royal Oak:

- Costs, cost-effectiveness, funding
- Community support, participation, motivation and compliance
- Local government priorities and actions, i.e., balancing population/economic growth and land use patterns with green space preservation and management

"Describe in one or two sentences what a sustainable and climate-friendly Royal Oak means to you."
A qualitative analysis pulled out major recurring themes in the open-ended responses to this prompt:

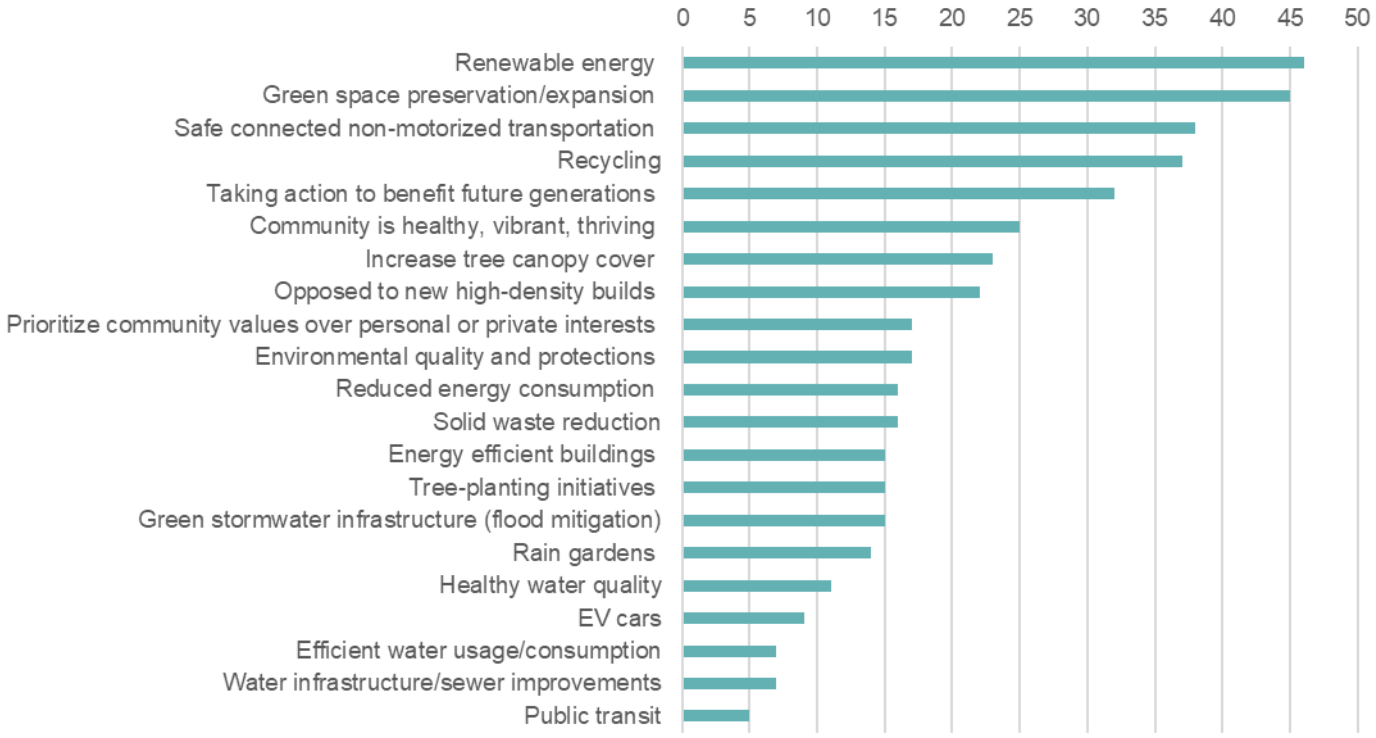


Figure 10: Community Engagement Feedback, frequency of write-in responses

TOP TAKEAWAYS BY FOCUS TOPIC

	GREATEST OBSTACLE	TOP COMMUNITY-SUPPORTED PRIORITY
ENERGY & BUILDINGS	Adding solar panels to their property (58%)	Community-wide streetlight conversion to LED (72.9%)
MOBILITY	Purchasing electric or hybrid vehicles (63.2%)	Encouraging safe routes to schools (63.2%)
WASTE	Maintaining a compost pile or system at home (33.2%)	Coordination of recycling events for special items (68.4%)
WATER	Adding Green Stormwater Infrastructure (GSI) to their property in the form of: • Permeable pavements (46.3%) • Rain gardens (37.7%) • Rain barrels (35.4%)	Education and programming about alternatives to standard lawn and garden chemicals (68.1%)
GREEN SPACE	Participating in green space-enhancing community events (34.7%)	Increasing Royal Oak's tree canopy (73.9%)
QUALITY OF LIFE	Respondents' expectations are partially met or not met by the following: renewable energy access; attainable and accessible housing options for each stage of life; and alternative mobility options	Integrating sustainability into the master plan update and similar guiding documents (68.4%)

Figure 11: Community Engagement Feedback

SECTION 4

ACTION STEPS

The Next Three Years

Tree Planting Volunteers
Image Source: City of Royal Oak

Overview

As mentioned in the previous section, a number of techniques were used to engage various stakeholders in the community. This next section focuses on the objectives and action plans of each focus topic area, which are outcomes of the 24 stakeholder-driven work group meetings.

Work groups were organized by each focus topic area of the plan and met regularly in the Fall of 2021 to brainstorm opportunities and challenges. Draft visions and objectives were crafted to organize priority actions for each topic. Their work and action priorities are listed in each of the focus topic tables.

HOW TO READ THE FOCUS TOPIC TABLES

In this section of the plan, the focus topics each have a vision statement, objectives, actions, and a set of metrics, to evaluate and document progress. This evaluation will allow staff and partners to prioritize successful sustainability initiatives, GHG emissions reductions, sharing accomplishments, and refining the approaches.

Each action table is set up with objectives and related actions. Table columns provide details indicating estimated costs, task departments and partners, impact on community GHG emission reductions, and other benefits associated with the action.

The GHG reduction scores are subjective and were chosen based on the general question of whether the action would directly create a reduction in emissions. If so, the action received a "Favorable" (F) score. If the action would indiretly create a reduction, the action received a "Neutral" (N) score.

Metric topics are listed and thier goals are indicated as a general increase or decrease. In the next version of the plan, the metrics will be more specific and based on data collected during this plan's three year period's tracking and evaluation.

KEY TERMS

	WHAT DO THESE ADDRESS?
FOCUS TOPIC VISION	Broad, aspirational, future-focused direction
OBJECTIVES	What we are trying to achieve
ACTIONS	Specific strategies to meet objectives
METRICS	Key indicators for measurement to meet the objectives and actions

Action plans set the agenda for Royal Oak's officials, committee members, staff, and partners to align their work with the community's vision, **but do not provide a guarantee that resources will be available to advance each action**. While these action plans are comprehensive in nature, they are not intended to prevent the municipality from pursuing other actions as opportunities arise. **As additional actions and initiatives are contemplated, they should be evaluated with regard to how the action will help to advance the vision and goals contained in the overall S-CAP.**

KEY ENTITIES

Acronym	Departments
CC	City Commission
CM	City Manager
ESM	Energy & sustainability manager
CE	Community engagement specialist
ED	Economic development manager
DPS	Dept. of Public Services
Parks	Parks & Recreation Dept.
PD	Police Dept.
FD	Fire Dept.
IT	Information Technology
HR	Human Resources

Acronym	Potential Partners
EAB	Environmental Advisory Board
DDA	Downtown Development Authority
Chamber	Chamber of Commerce
SOCWA	South Oakland County Water Authority
SOCRRA	South Oakland County Resource Recovery Authority
MDOT	Michigan Department of Transportation
SMART	SMART bus services
GLREA	Great Lakes Renewable Energy Association
CRWC	Clinton River Watershed Council

Objective

Actions

Each action table includes a legend explaining the remaining columns.

GREEN SPACE	Initial Cost	Department/ Potential Partners	GHG Reduction	Other Values Benefited
5.1. Increase and enhance the tree canopy community-wide.				
5.1.1. **Expand and enhance municipal sponsored tree-planting programs	$$ - CIP	DPS, CM-ESM & CE, Planning	F	H/W, Econ, NE
5.1.2. **Develop and implement a community-wide tree education and outreach program	$ - PR	DPS, CM/EAB	F	EQ/A, H/W
5.1.3. Evaluate viability of an ordinance that protects existing residential trees	$ - PR	CM-EMS, DPS, Planning/USDN	N	H/W, NE
5.2. Increase native plants, biodiversity, pollinators, and birds to restore the natural ecosystem.				
5.2.1. Integrate native plantings and sustainability into municipal landscaping practices	$ - CIP	DPS, Planning	F	H/W, Econ, NE, R
5.2.2. Develop and implement community-wide native plant and biodiversity promotion programs	$ - PR	CM-ESM/EAB	N	EQ/A, H/W, NE
5.2.3. Develop a planned natural landscape program (like Ferndale's), including ordinance/code enforcement adjustment	$ - PR	CM-ESM, Planning, Building/Ferndale	N	EQ/A, H/W, NE
	$ - PR	CM-ESM/EAB	N	EQ/A, H/W, NE, R

LEGEND

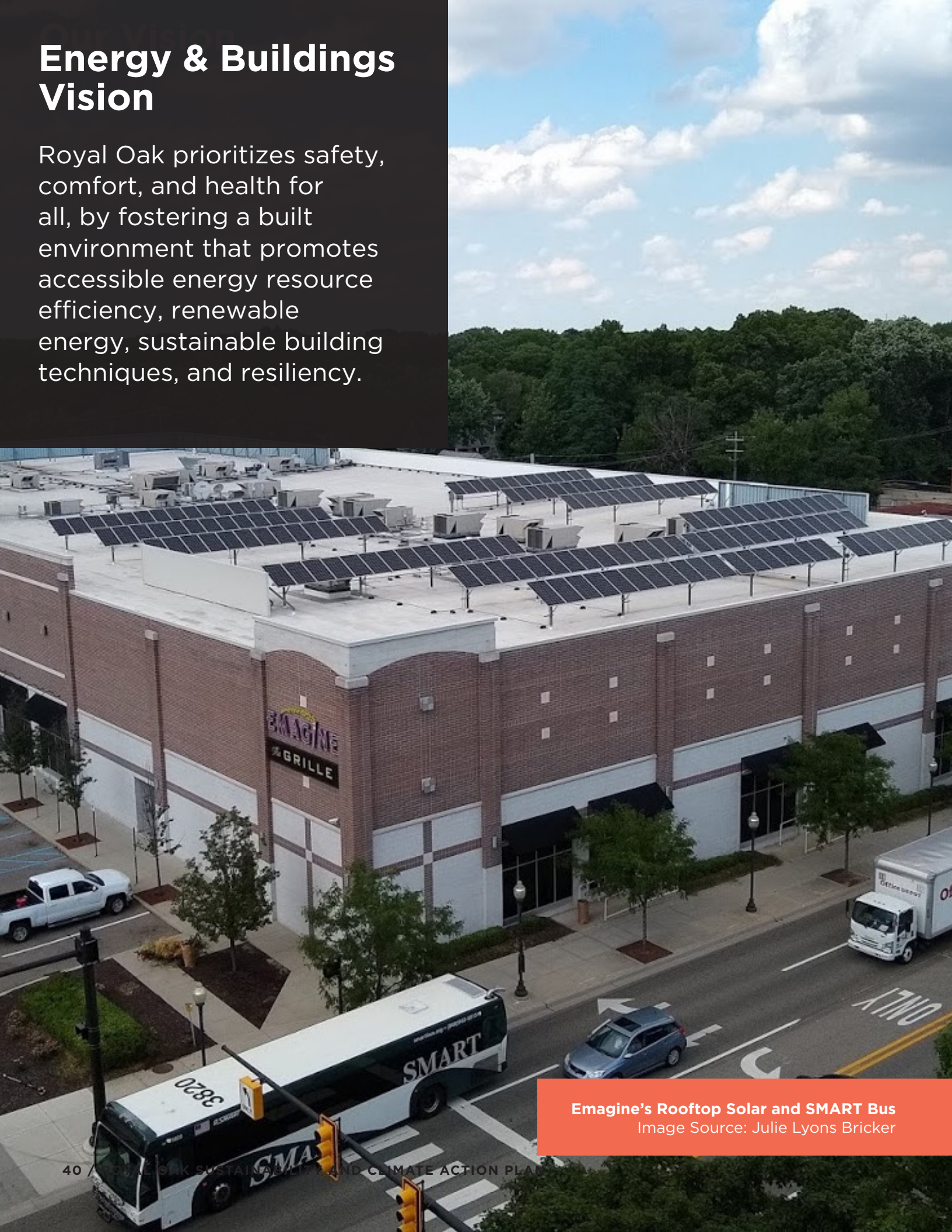
PR= Programs/programming, **CIP**= Capital Improvement Projects, **CIP***= Capital projects with an ROI

$=	PR	0-$10K	CIP	0-$75K
$$=	PR	$10K-$30K	CIP	$75K-$200K
$$$=	PR	$30K-$120K	CIP	$200K-$500K
$$$$=	PR	>$120K	CIP	>$500K

GHG Reduction: Favorable= F, Neutral= N, Not Favorable= NF
Values: Equity/Access= EQ/A Health/Wellbeing= H/W Economy= Econ. Natural Ecosystems= NE Resilience= R

Energy & Buildings Vision

Royal Oak prioritizes safety, comfort, and health for all, by fostering a built environment that promotes accessible energy resource efficiency, renewable energy, sustainable building techniques, and resiliency.



Emagine's Rooftop Solar and SMART Bus
Image Source: Julie Lyons Bricker

Energy & Buildings

DEFINITION

The Energy and Buildings focus topic considers all building sectors including commercial, residential, and industrial buildings. It is focused on efficiency, reduction of energy waste, the implementation of renewable energy, and incorporation of green building techniques. These strategies lead to a healthy, safe, and resilient community.

People spend 90% of their time indoors, whether at work, school, or home[1]. These spaces should be healthy, safe, and efficient. Moreover, energy use in the built environment is one of the largest contributors to Greenhouse Gas (GHG) emissions. According to the City of Royal Oak's 2018 GHG Inventory, there is a substantial opportunity to reduce energy waste and increase efficiency community-wide. Buildings and energy account for 70.9% of Royal Oak's community GHG emissions and about 77% of municipal GHG emissions. Increasing energy efficiency can help reduce GHG emissions and result in significant cost savings for both homes and businesses.

Much of this can be done by utilizing sustainable building practices and changing how we meet the energy needs of those buildings. Changing how we produce and consume energy provides one of the best opportunities to reduce GHG emissions and utility expenses. Royal Oak seeks to develop programs and policies that promote community-wide energy efficiency and renewable generation, in addition to joining other Michigan municipalities in advocating the transformation of state energy codes and utility efficiency and renewable energy standards. The city government should consider greenhouse gas emissions, resiliency, life cycle cost, indoor air quality, and energy and water use in the design, purchase, installation of all new municipal infrastructure, and major remodels of existing facilities.

1 US Green Building Council. Indoor environmental quality and LEED v4

CURRENT STATE OF ENERGY & BUILDINGS IN ROYAL OAK

Royal Oak is the first city in Michigan to achieve the 2020 LEED for Cities Certified designation through LEED version 4.1.

Commercial Energy

Commercial electricity is the highest single community-wide GHG- emitting sector at 24.2%

Residential Energy

Residential energy (electricity and natural gas) accounts for 31.9% and is the highest community-wide GHG-emitting category

- Royal Oak's older housing stock (median year built 1956[1]) provides an opportunity for energy efficiency upgrades to dramatically reduce residential electricity and natural gas consumption and the associated expenses.

Municipal Operations

Municipal operations account for only 1.4% of the community-wide GHG emissions. Of that, the following categories account for:

- Buildings and facilities electricity (39.1% of municipal GHG)
- Street lights and traffic signals (24.4% of municipal GHG)
- Buildings and facilities natural gas (13.7% of municipal GHG)

Building performance standards are governed, and limited, by State law

- Currently using amended 2015 IECC energy code

Despite the lack of vacant land to develop, Royal Oak's number of housing units has increased in the past 10 years from 30,207 (2010) to 31,244 (2020)[2].

- Royal Oak experienced an uptick in teardown-and-rebuilds (both multifamily and single family). If this trend continues, it provides opportunities to encourage the incorporation of improved energy efficiency designs and appliances.

Municipal Energy Efficiency Initiatives and Policies

- Adoption of the city's first Energy Management Plan (2018)
- Earned grants to help cover cost of energy upgrades
- Approved wind and solar energy systems zoning code § 770-54
- Tracking all municipal building utility consumption through free software
- Upgrading to LED lighting in multiple municipal buildings
- The EAB established Solarize Royal Oak (see p. 43)
- Pursuing a SolSmart Certification (see p. 43)

Air Quality Performance

- Air quality monitoring in Royal Oak helps to identify sources of pollution, encourage public involvement, and increase quality of life and public health.
- Median air quality index (AQI): 40 (According to the EPA, air quality index below 100 is satisfactory)
- 8 days annually (on average) of unhealthy air quality days for sensitive groups

1 US Census Bureau. 2020 ACS 5-Year Estimates, Year Structure Built (Table B25034)
2 US Census Bureau. 2020 ACS 5-Year Estimates, Occupancy Status (Table H1)

WHAT IS ENERGY EFFICIENCY?

Energy efficiency means usings less energy to perfom the same task- that is, eliminating energy waste. There are several benefits of energy efficiency: reducing greenhouse gas emissions, reducing demand for energy imports, and lowering a building's utility expenses. Some energy efficiency technologies use less energy to provide the same service or product, and other technologies don't use energy directly but contribute to energy efficiency, such as insulation and windows that reduce heat exchange. The municipality is leading by example implementing energy efficiency and resiliency improvements on the city's public builings and facilities.

WHAT IS RENEWABLE ENERGY?

Renewable energy is energy that is derived from natural sources or processes and that are constantly or naturally replenished, such as wind and solar energy. Renewable energy can be provided through on-site generation and storage, and through off-site utility-scale arrays. Royal Oak has zoning codes in place to support the expansion of wind and solar energy systems, and seeks to promote renewable energy options throughout the community. Implementing renewable energy strategies can increase workforce and local economic development opportunities, reduce energy costs making, housing more affordable, and provide resiliency during grid power outages.

Bright Ideas' Rooftop Solar
Image Source: MI Solar Solutions

SolSmart

SolSmart is a non-profit funded by the U.S. Department of Energy, designed to recognize municipalities, countries and regional organizations that have taken key steps to address barriers to solar energy and otherwise foster the growth of strong solar markets.

Solarize Royal Oak

Solarize is a grassroots initiative that works to connect residents, interested in rooftop solar, to each other for information, lessons learned, and the potential to purchase discounted solar through bulk-buying programs together.

ENERGY AND BUILDINGS	Initial Cost	Department/Potential Partners	GHG Reduction	Other Values Benefited
1.1. Increase energy efficiency behaviors and incentives.				
1.1.1. Collect and report annual, community-wide energy consumption	Ongoing $ - PR	CM-ESM, Utilities	N	EQ/A
1.1.2. **Improve municipal building energy efficiency through facility retrofits, behavioral changes, and employee engagement	$ - PR $$$ - CIP*	CM, CM-ESM, DPS	F	H/W
1.1.3. **Convert streetlights to LED technology throughout the city	$$ - PR	DPS	F	EQ/A, Econ
1.1.4. **Develop energy waste reduction and other green building practices education programs for the residential, commercial, and multi-family sectors	$$ - PR	CM-ESM, EAB	N	H/W, Econ
1.1.5. Evaluate joining a 2030 District (green and efficient building) program	$ - PR	CM-ESM, USGBC	N	R
1.1.6. Create an energy reduction competition initiative	$ - PR	CM-ESM, EAB, USGBC	N	EQ/A, Econ
1.1.8. **Engage the industrial sector in utility-sponsored energy efficiency programs	$ - PR	CM-ESM & ED/Utilities	F	Econ
1.2. Increase implementation of renewable energy community wide.				
1.2.1. Achieve the SolSmart designation	Ongoing $ - PR	CM-ESM	N	Econ
1.2.2. Promote and support Solarize-Royal Oak program	In progess $ - PR	EAB	F	Econ, R
1.2.3. Install a municipal solar and battery storage demonstration project	$$$ - CIP*	DPS	F	EQ/A, Econ, R
1.2.4. Increase the EV charging network city-wide	$$ - CIP*	DPS, CM-ESM, Planning/DTE	F	R
1.2.5. Develop incentives to increase renewable installations for all building sectors	$ - PR	CM, Planning/GLREA	N	Econ, R
1.2.6. Encourage the creation of a Community Benefit List including high-performance building standards (or techniques)	$ - PR	CM, Attorney, CM-ESM, Planning	N	Econ, R
1.2.7. Update zoning ordinance, for new construction projects, to include solar-ready, net-zero energy ready, and EV charging ready design for single family homes	$ - PR	Planning	N	Econ, R
1.2.8. Determine viability of renewable energy installations for all municipal facilities and develop a renewable electricity goal	$ - PR	CM-ESM, DPS/GLREA	N	
1.2.9. Establish a staff liaison role, whose responsibilities include coordinating with other like-minded Michigan municipalities to use our influence and advocate for state legislation and policies that protect fair consumer choice on electricity generation, ensure non-utility installed solar connection to the grid at fair rates, access to community solar, and require investor-owned utilities to meet specific annual energy efficiency (energy waste reduction) and renewable energy portfolio percentages	$ - PR	TBD	N	

ENERGY AND BUILDINGS	Initial Cost	Department/Potential Partners	GHG Reduction	Other Values Benefited
1.3. Increase the number of buildings using sustainable practices and certifications (e.g., ENERGY STAR, LEED, WELL, or Passive, etc.).				
1.3.1. Develop an ordinance to mitigate fugitive dust from residential building demolitions and major renovations	In progress $ - PR	Building, Attorney, DPS/USDN, USGBC	N	EQ/A, H/W
1.3.2. Develop a sustainable-certification education program for the residential and commercial sectors	$ - PR	CM-ESM	N	
1.3.3. Conduct a feasibility study of all municipal buildings' ability to achieve sustainable certifications	$$ - PR	CM-ESM, DPS	N	
1.3.4. Achieve green certification, minimum LEED Silver, and comply with the most stringent ASHRAE building code, for all new city facilities	TBD - CIP*	CM-ED & ESM, Planning/USGBC	N	H/W/, Econ, R
1.4. Coordinate with public utilities on site specific strategies to upgrade distribution infrastructure.				
1.4.1. Collaborate with local utilities to ensure physical lines/vulnerabilities in the grid are upgraded	$ - PR	Engineering, DPS	N	Econ, R
1.4.2. Participate in regional and state advocacy groups to advocate for community-wide carbon reductions savings across shared systems like energy, mobility, and greenway development	$ - PR	CS-ESM	N	EQ/A, R
1.5. Increase the resiliency of buildings in the community.				
1.5.1. Create a city-wide emergency/hazard mitigation committee	$ - PR	PD, FD, DPS/SOCWA & hospitals	N	EQ/A, H/W, R
1.5.2. Develop a municipal facility as an emergency resilience hub with solar and storage to ensure 100% reliable energy	TBD - CIP*	CM, CM-ESM, DPS	F	EQ/A, H/W, R
1.5.3. Collaborate with other organizations to identify additional non-municipal safe spaces available during emergency situations	$ - PR	CM-ESM, CM-CE	N	EQ/A
1.5.4. Evaluate access to the Salter Center as the current emergency hub	$ - PR	CM-ESM, PD/Boys & Girls Club	N	
** Denotes a top three priority action from the stakeholder survey results.				

LEGEND

PR= Programs/programming, **CIP**= Capital Improvement Projects, **CIP***= Capital projects with an ROI

$=	PR	0-$10K	CIP	0-$75K
$$=	PR	$10K-$30K	CIP	$75K-$200K
$$$=	PR	$30K-$120K	CIP	$200K-$500K
$$$$=	PR	>$120K	CIP	>$500K

GHG Reduction: Favorable= F, Neutral= N, Not Favorable= NF
Values: Equity/Access= EQ/A Health/Wellbeing= H/W Economy= Econ. Natural Ecosystems= NE Resilience= R

Energy Metrics

Metric	Baseline	Goal
Residential Energy Emissions	293,666 MT CO2e (GHG Inventory-2018)	↓
Commercial Energy Emissions (includes municipal usage-buildings and streetlights)	266,303 MT CO2e (GHG Inventory-2018)	↓
Industrial Energy Emissions	61,321 MT CO2e (GHG Inventory-2018)	↓
Residential Energy Use Intensity (EUI)	105.21 kBtu/ft^2 (Royal Oak city & utility data-2018)	↓
Commercial Energy Use Intensity (EUI)	155.13 kBtu/ft^2 (Royal Oak city & utility data-2018)	↓
Industrial Energy Use Intensity (EUI)	130.96 kBtu/ft^2 (Royal Oak city & utility data-2018)	↓
% renewable electricity in DTE's grid supply	10% (RPS in 2018-MPSC)	↑
kW renewables installed (privately-owned)	87 kW (Royal Oak city data-2018)	↑
kW renewables installed (municipally-owned)	0 kW (Royal Oak city data-2018)	↑
Municipal Energy Emissions-Buildings & Facilities	6,590 MT CO2e (GHG Inventory-2018)	↓
Municipal Energy Emissions-Streetlights & Traffic Signals	3,045 MT CO2e (GHG Inventory -2018)	↓
Municipal Energy Use Intensity (*Apportioned) (EUI)	150.53 kBtu/ft^2 (Royal Oak city data-2018)	↓
Municipal natural gas consumption	320,503 Therms (Royal Oak city data-2018)	↓

*Municipal Apportioned EUI does not include the parking decks' data or any municipal building without electric and gas utility data. (Inculding these would create results that show an incorrectly low EUI)

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Mobility Vision

Royal Oak promotes and encourages low-carbon modes of travel that are safe, accessible, reliable, convenient, healthy, and affordable to connect people to jobs, education, amenities, and housing.

MoGo Bikes in Royal Oak
Image Source: City of Royal Oak

Mobility

DEFINITION

The Mobility focus topic encompasses all motorized and non-motorized transportation systems. It includes bicycling, walking, internal combustion engine and electric vehicles, the municipal fleet, carpooling, public transit and the infrastructure required for each of these systems to operate safely and reliably. It also considers wheelchair accessibility for those with mobility challenges and micro-mobility users.

In a region dominated by suburban sprawl, Royal Oak is a community proud of its walkability to downtown and neighborhood businesses. Currently, transportation in Royal Oak is heavily skewed towards the use of personal motor vehicles, and typically consist of single-occupancy trips (as opposed to ride-sharing, carpooling, van-pooling, etc.). Transportation emissions account for 26.3% of the community's total GHG emissions and 21.7% of municipal GHG emissions. In 2019, most households (42.3%) in Royal Oak had 2 cars, followed by 1 car (40.1%)[1].

Even households with cars can make a big difference improving air quality and community health by walking and biking more regularly. In the U.S., more than half of all car trips are one mile or less. Converting some of these trips to walking and biking will require infrastructure beyond sidewalks, including safe crossings of major roads[2]. We as a community can reduce greenhouse gas emissions by walking and biking more, expanding our use of public transit, and switching to more efficient and electric vehicles.

1 US Census Bureau. 2020 ACS 5-Year Estimates, Household Vehicles Available (Table B08201)
2 US EPA. What if we kept our cars parked for trips less than one mile?

CURRENT STATE OF MOBILITY IN ROYAL OAK

The following is an inventory of the current state of mobility in Royal Oak.

Support for Non-Motorized Transportation

- Royal Oak received an honorable mention in 2021 through its first application to receive a Bicycle-Friendly Community designation from the League of American Bicyclists. City staff will pursue improvements to meet the requirements for the Bronze designation.
- Six downtown MoGo stations were installed in 2019. Over 2,000 trips were made in the first year of MoGo in Royal Oak, and 1,901 trips were made during the 2021 calendar year.
- Royal Oak currently has 3.3miles of bike lanes, 19.8 miles of sharrows, and 428 miles of sidewalks.

Public EV Infrastructure

- City government provides eight downtown EV charging stations, found in three public parking structures.

Safety

Royal Oak seeks to improve motorist, pedestrian, and bicyclist safety from the following baseline data obtained through SEMCOG for the year 2018[1].

- 2,276 total crashes; 2,240 involving motor vehicles-only (without bicycle and pedestrian incident numbers)

Municipal Fleet

- Royal Oak's municipal fleet consists of 263 fleet vehicles, most with the potential to be replaced with hybrid, low-emission, or electric alternatives. Four hybrid low-emission vehicles have been purchased so far.

Municipal Policies

- A Non-Motorized Plan is included in the current approved Master Plan
- In 2015, the city commission endorsed the Woodward Avenue Action Association's Complete Streets Master Plan which proposes a use-transition that would accommodate a variety of mobility modes and urges the Michigan Department of Transportation (MDOT) to support and prioritize the plan's implementation.
- No-idle policy for municipal vehicles
- City government operates transportation services for senior and disabled residents (ROSES)

Public Transit

Public transit already has a presence in Royal Oak, offering connections to neighboring communities and beyond

SMART operates in Macomb, Oakland and Wayne counties.

The SMART FAST bus operates along Woodward Ave with express service south to downtown Detroit and north to Pontiac and Somerset Mall

The I-75 Modernization Project includes High-Occupancy Vehicle (bus and carpool) lanes to be implemented on I-75 between 12 Mile and South Blvd.

1 SEMCOG. Crash and road data portal

WHAT IS VISION ZERO?

Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all.

Vision Zero Network

Top: Race participants in a Royal Oak Neighborhood

Image Source: City of Royal Oak

Bottom: MoGo in Royal Oak

Image Source: MoGo Detroit

MOBILITY	Initial Cost	Department/ Potential Partners	GHG Reduction	Other Values Benefited
2.1. Fund, plan, and develop well maintained infrastructure for all modes of travel.				
2.1.1. Develop a public-facing app for bicyclists, pedestrians, and drivers to report lighting and crossing signal issues, potholes, and other road maintenance needs	In progress $ - PR	CM-CE, DPS	N	H/W
2.1.2. Continue to evaluate road surface conditions, including bicycling lanes and routes, and upgrade sections as necessary	Ongoing $ - PR $$$$ - CIP	Engineering	N	
2.1.3. Continue to implement the sidewalk improvement program	Ongoing $ - CIP	Engineering	N	EQ/A, H/W
2.1.4. Continue to implement the city's non-motorized transportation plan and review performance and update as necessary	Ongoing $ - PR	Engineering, Planning	F	EQ/A, H/W
2.1.5. Maintain bicycle lanes as part of road cleaning (removal of debris, leaves, and snow)	Ongoing $ - PR	DPS	F	EQ/A, H/W
2.1.6. Develop and implement a plan to install and maintain municipal bicycle infrastructure community-wide (bike racks, repair stations, etc.)	$ - CIP	CM, DPS - Parks, Planning	N	H/W
2.1.7. Add and/or improve high-quality routes that service bicyclists and pedestrians community-wide (crosswalks, low-speed roads, segregated lanes on and off the roads)	Ongoing $$$$ - CIP	Planning, Engineering	F	EQ/A, H/W
2.2. Reduce VMT and associated emissions by promoting telecommuting, carpooling, walking, biking, and public transit.				
2.2.1. Achieve the Bicycle Friendly Community Bronze designation	In progress $$ - PR	CM, Planning, Engineering, DPS/ EAB	N	H/W
2.2.2. Educate and encourage residential, municipal, business, and institutional participation in SEMCOG's Commuter Connect or other carpooling initiatives	$ - PR	CM/SEMCOG	F	EQ/A, Econ
2.2.3. Research viability of car-sharing platforms in the community	$ - PR	CM-ESM	N	Econ
2.2.4. Encourage businesses and schools to expand bicycle parking	$ - PR	CM-ESM	N	H/W
2.2.5. Allow flexible scheduling and telecommuting for city employees, where feasible	$ - PR	CM-ESM	F	Econ
2.2.6. Actively inform Royal Oak residents and city staff about available SMART service in Royal Oak	$ - PR	CM-ESM & CE/ SMART, Chamber, DDA, EAB	F	H/W
2.2.7. Advocate for more encompassing, frequent and reliable multi-modal transit service at the regional and state levels	$ - PR	CM, CC	N	
2.2.8. Institute a Bike to Work Month event for municipal employees	Ongoing $ - PR	CM	F	H/W
2.2.9. Evaluate feasibility of a municipal walk or bike to work incentive program	$ - PR	CM	N	H/W, Econ

MOBILITY	Initial Cost	Department/ Potential Partners	GHG Reduction	Other Values Benefited
2.3. Promote the reduction of fossil fuel powered vehicles by supporting electric vehicles and their associated infrastructure.				
2.3.1. Install EV chargers at appropriate municipal facilities	$$$ - CIP	DPS, Planning/ DTE	F	
2.3.2. **Convert municipal fleet to EVs or other alternative fuel vehicles, as appropriate (also consider right-sizing the fleet vehicles)	$$$ - CIP	DPS	F	
2.3.3. Develop and implement a program that encourages EV charger installations at existing residential, multifamily, and commercial buildings	$ - PR	CM-ESM, Planning/DTE	F	
2.3.4. Develop and promote electric vehicle (EV) purchase education program	$ - PR	CM-ESM & CE/ EAB	N	
2.3.5. Determine the viability of an EV readiness ordinance for new development in the city	$ - PR	CM-ESM, Planning	N	
2.4. Provide safe transportation systems to reduce and eliminate crashes.				
2.4.1. **Identify partners and research viability of Safe Routes to Parks programs	$$ - PR	Engineering, Parks/TBD	N	EQ/A, H/W
2.4.2 ** Continue engaging in Safe Routes to Schools projects	$- PR	Engineering/Royal Oak Schools	N	E/QA, H/W
2.4.3. Adopt Vision Zero or a similar program to eliminate future crashes	$$ - PR	Engineering, PD	F	H/W
2.4.4. Enforce speed limits to ensure driver compliance and install speed-minimizing infrastructure where warranted	Ongoing $ - PR $$ - CIP	PD, Engineering	F	H/W
2.5. Improve transportation accessibility for all abilities and income levels.				
2.5.1. Advocate for lower cost public transit	$ - PR	CM, CC/EAB	N	Econ
2.5.2. Advocate for regional, state, and federal policy that supports local transit and multi-modal transportation programs	$ - PR	CM, CC	N	
2.5.3. Promote the use of lower cost ride-sharing alternatives	$ - PR	CM-CE	F	Econ
2.5.4. Research and improve public transit accessibility for individuals with disabilities as appropriate	$$ - PR	CM-ESM, Engineering, DPS/ SMART	N	EQ/A, H/W
** Denotes a top three priority action from the stakeholder survey results.				

LEGEND

PR= Programs/programming, **CIP**= Capital Improvement Projects, **CIP***= Capital projects with an ROI

$=	PR	0-$10K	CIP	0-$75K
$$=	PR	$10K-$30K	CIP	$75K-$200K
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GHG Reduction: Favorable= F, Neutral= N, Not Favorable= NF
Values: Equity/Access= EQ/A Health/Wellbeing= H/W Economy= Econ. Natural Ecosystems= NE Resilience= R

Mobility Metrics

Metric	Baseline	Goal
Transportation-gasoline & diesel emissions	237,301 MT CO2e* (GHG Inventory-2018)	↓
Vehicle Miles Traveled-gasoline (VMT)*	420,140,540 VMT (GHG Inventory 2018) 7,108 mi/yr/capita (2018 population-59,107)	↓
Transportation to Work-Mode Share	86.8% drove alone, 5.3% carpooled, 0.4% public transportation, 1.6% walked, 0.3% bicycle, 0.4% other, 5.2% worked at home (SEMCOG-2019 ACS)	Drove alone ↓ All others ↑
# Electric Vehicles registered in Royal Oak	217 (MI Clean Cities and MI Secretary of State-2021)	↑
Municipal Fleet Vehicle Fuel Emissions	1,409 MT CO2e (GHG Inventory-2018)	↓
# Alternative Fuel Fleet Vehicles	3 (Royal oak city data-2018)	↑
EV chargers available to the public (City of Royal Oak(4), Emagine(2))	6 (EV Charger search site-2018)	↑
# Motor vehicle crashes annually	2,276 (2018) 2,166 (2019) 1,607 (2020)	↓
# of miles of bike lanes	3.3 miles (Royal Oak city data- 2018)	↑

(*updated VMT based on 2018 Google EIE data by ICLEI staff)

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Waste Vision

Royal Oak promotes reduced solid waste to landfills through generation reduction, support of reuse, increased recycling, and composting of organic materials.

GreenTeam, EAB, and volunteers recycling
Image Source: Julie Lyons Bricker

Waste

DEFINITION

The Waste focus topic addresses solid waste, recycling, and composting streams, as well as initiatives and practices related to product life cycles and waste reduction.

Although solid waste collection, transport, and landfilling only account for about 2% of Royal Oak's community GHG emissions, the upstream impacts of goods and services we consume as a society are significant. Between 2019 and 2020, the state of Michigan reported an 8.5% increase in state garbage disposal, the largest percent increase in the past decade of waste management[1]. According to the US Environmental Protection Agency, the single largest component of municipal solid waste is paper and cardboard products, which are more biodegradable than plastics, but still place unnecessary stress on our environment and waste management system[2].

The US Department of Agriculture estimates that 30-40% of the food supply produced in the United States is thrown away[3], which has implications for food security and community composting.

To help mitigate these compounding issues, the City of Royal Oak plans to integrate sustainability in waste management to efficiently reduce overall solid waste disposal by expanding education about reducing, reusing, and recycling options, and considering expansion of composting community-wide.

1 Michigan EGLE. Waste
2 US EPA. National Overview: Materials, Wastes, and Recycling
3 USDA. Food Waste FAQs

CURRENT STATE OF WASTE IN ROYAL OAK

Solid Waste Management

Waste management is contracted out to partners SOCRRA and GFL.

GFL uses reprocessed fuel oils to avoid depending on virgin fuels and is transitioning its fleet from diesel to Compressed Natural Gas (CNG) vehicles, which will reduce greenhouse gas emissions by 25% per truck[1].

Royal Oak is consistently the second highest contributor of waste to the SOCRRA system[2]

Waste and Recycling Average Tonnage

As of 2021, Royal Oak's 5-year average waste collection amounts to:

- 764.62 tons weekly (about 39,760.24 tons annually) sent to the landfill
- 102.26 tons of recycling weekly (about 5,317 tons annually)
- 222.5 tons of yard waste weekly (about 11,570 annually), which is processed into compost for SOCRRA member communities to use[3]

Single-stream recycling services community-wide resulted in an increase of 28% in recycling one year after new bins were implemented and an 8.5% reduction in trash tonnage over the same period.

Royal Oak trash tonnage has been very stable over the last 10 years, with the exception of 2014/2015 resulting from the August 2014 flood event.

There has been a 5% increase in trash tonnage from 2019/20 and 2020/21 in all SOCRRA member communities, assumedly due to the COVID-19 pandemic.

Municipal waste initiatives and policies

- City staff participated in a composting pilot program at three municipal buildings, diverting a combined 1,169 gallons of food waste from the landfill (2019-2021). Municipal buildings also participate in single stream recycling.
- All concrete and asphalt from municipal road projects are recycled.

1 Green For Life. Sustainability
2 SOCRRA. April 2021 Quarterly Report
3 SOCRRA. Compost

WASTE	Initial Cost	Department/Potential Partners	GHG Reduction	Other Values Benefited
3.1. Ensure effective waste and recycling operations, policies, education, and adoption in our community to reduce solid waste.				
3.1.1. **Develop educational recycling & composting programs for the residential and commercial sectors	$ - PR	DPS/EAB, SOCRRA	N	EQ/A
3.1.2. Create a multimedia campaign for recycling & composting	$ - PR	DPS, SOCRRA	N	EQ/A
3.1.3. **Increase the number of Drop-Off recycling events per year	$ - PR	DPS/SOCRRA, EAB	F	EQ/A
3.1.4. Create green designation to incentivize businesses to engage in waste reduction practices	$ - PR	DPS, CM-ED/Chamber	N	Econ
3.1.5. **Develop and implement municipal waste reduction policies	$ - PR	CM-ESM, DPS, Finance	F	Econ
3.2. Increase the reduction, reuse, recovery, and recycling of construction and demolition materials.				
3.2.1. Require contractors to include recycling as part of their bids for municipal construction projects	$ - PR	Planning, CM-ED, DPS, Engineering	NF	Econ
3.2.2. Feasibility study to develop partnerships between city departments and salvage companies to promote reuse	$ - PR	CM/EAB	N	
3.2.3. Research feasibility of zoning that requires salvageable materials, from major remodels or demolitions in residential and commercial buildings, be kept out of the waste stream	$ - PR	Planning, CM-ESM	N	
3.3. Promote food waste composting community wide and reduce food losses at the retail and consumer levels.				
3.3.1. **Research viability of residential food composting programs	$ - PR	DPS/EAB	N	
3.3.2. **Develop a program to work with restaurants and grocery stores on composting options	$ - PR	DPS, CM-ED/DDA, Chamber	F	Econ
3.4. Promote proactive pest management programming.				
3.4.1. Create a community-wide education campaign to manage rat population without the use of rodenticides	$ - PR	DPS, CM/Ferndale	N	EQ/A, H/W, NE

** Denotes a top three priority action from the stakeholder survey results.

LEGEND

PR= Programs/programming, **CIP**= Capital Improvement Projects, **CIP***= Capital projects with an ROI

$=	PR	0-$10K	CIP	0-$75K
$$=	PR	$10K-$30K	CIP	$75K-$200K
$$$=	PR	$30K-$120K	CIP	$200K-$500K
$$$$=	PR	>$120K	CIP	>$500K

GHG Reduction: Favorable= F, Neutral= N, Not Favorable= NF
Values: Equity/Access= EQ/A Health/Wellbeing= H/W Economy= Econ. Natural Ecosystems= NE Resilience= R

Waste Metrics

Metric	Baseline	Goal
Total Solid Waste Generation**	78,659 tons/yr (SOCRRA and EPA estimate-2018	↓
Solid Waste Generation Emissions	18,730 MT CO2e** (GHG Inventory-2018)	↓
Recycling and Yard Waste Diverted Rate	45.13%** (SOCRRA and EPA estimate-2018)	↑
Solid Waste Sent to the Landfill and Per Capita (2018 population-59,107)	43,161 tons/yr.** .73 tons/yr./capita (SOCRRA and EPA estimate-2018)	↓
Household Hazardous Waste Diverted	84,554 lbs diverted of 86,335 lbs collected at 2020 event	↑

(**updated solid waste data based on recommendation, to include EPA estimate for waste generation from sectors other than residential, by ICLEI staff)

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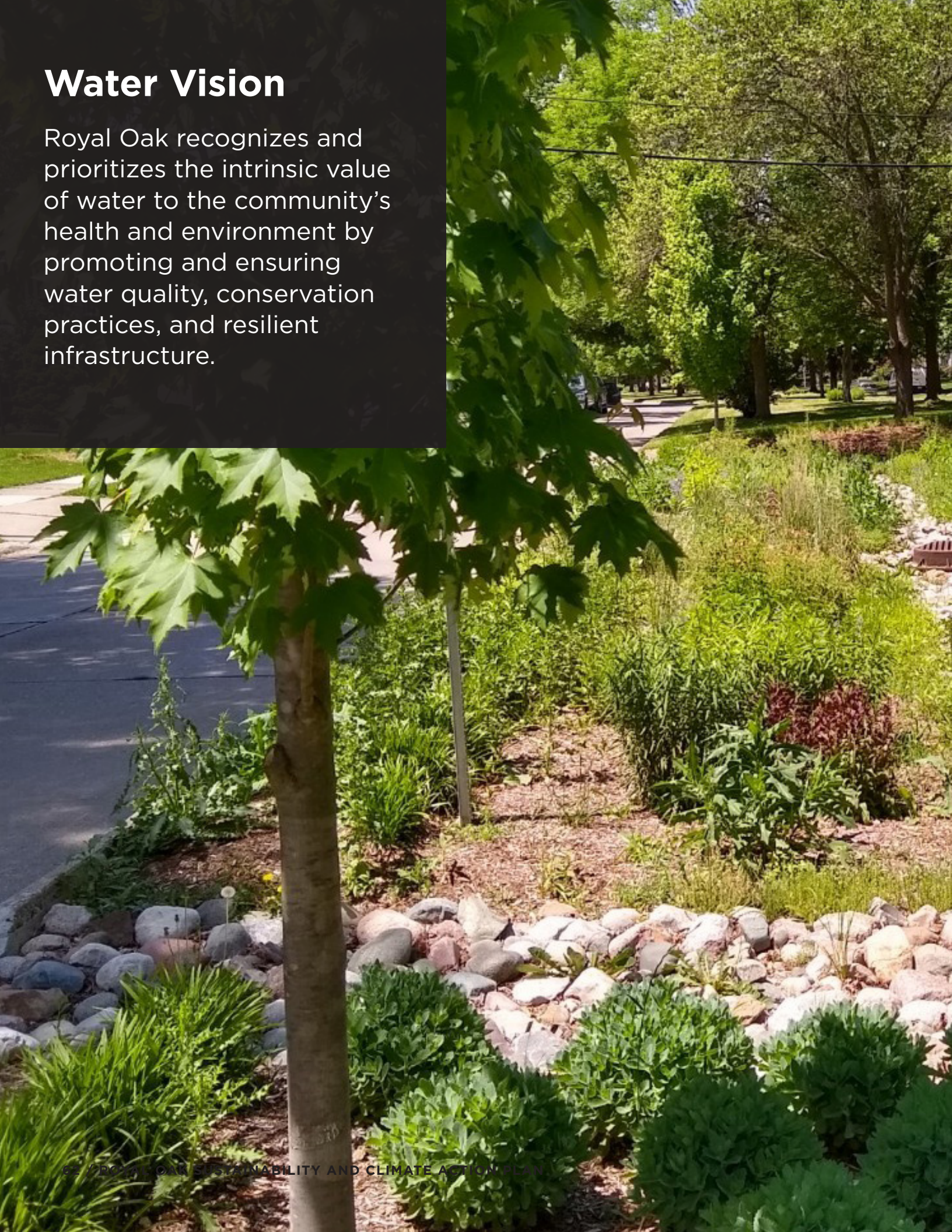
Water Vision

Royal Oak recognizes and prioritizes the intrinsic value of water to the community's health and environment by promoting and ensuring water quality, conservation practices, and resilient infrastructure.



Vinsetta Blvd. Raingarden
Image Source: Julie Lyons Bricker

Water

DEFINITION

The Water focus topic concentrates on protecting Royal Oak's water quality, encouraging water conservation, proactively managing water infrastructure, including green stormwater infrastructure and working to mitigate flood risk.

Michigan is surrounded by 20% of the world's fresh surface water[1]. Royal Oak is fortunate to have ample supplies of water that, if protected and used in a sustainable manner, will last long into the future. Royal Oak strives to implement sustainable water management practices and regulations to achieve greater conservation and more efficient use of our water supply. In the past decade, Royal Oak experienced increased flooding, which has implications for both gray and green infrastructure improvements (*see "What is Green Infrastructure?" on p. 63 for details*). The municipality has taken additional measures to replace all lead pipe service lines at no cost to residents, as well as routinely test water quality to share with the public. By ensuring the systems are in place to conserve, protect, and enhance water resources, the City of Royal Oak can promote a resilient relationship with water for current and future generations.

1 Michigan EGLE. Michigan Water Strategy

CURRENT STATE OF WATER IN ROYAL OAK

Quality

Lead pipe service lines in the community have been identified and are being replaced over the next ten years[1].

Detroit Water and Sewer Department (DWSD) is responsible for lead testing members' water supply[2].

Southern Oakland County Water Authority samples 56 sites throughout the service area every week to test for possible contamination.

Royal Oak water quality is reported annually in the form of Consumer Confidence Reports and shared by City staff in the summer issue of Insight magazine.

Flood Risk

According to Floodfactor, Royal Oak has moderate flood risk, which means flooding is likely to impact day-to-day life in the next 30 years. 8% of all properties in the City of Royal Oak have a greater than 26% chance of being severely damaged by flooding over the next 30 years[3]. Infrastructure to improve stormwater management is crucial to protecting water quality, public health, and homes and businesses in Royal Oak.

In 30 years, southeast Michigan can expect a 10% heavier precipitation change in extreme rain events compared to the 1980-2010 average[4].

Green Stormwater Infrastructure (GSI)

GSI has been installed at eight sites in downtown and beyond (including Normandy Oaks Park, 4th Street median, and Centennial Commons Park)

1 City of Royal Oak. Lead Testing
2 SOCWA. FAQs
3 Floodfactor. Flood risk overview for Royal Oak, MI
4 GLISA. Potential impacts of climate change

MUNICIPAL POLICIES AND INITIATIVES

- **Development of a Green stormwater infrastructure evaluation report (2018) to mitigate historic flooding in Royal Oak**
- **Rain garden ordinance (§ 302.4.3)**
- **Permeable surfaces ordinance (§ 770-109)**
- **Stormwater detention ordinance (development) (§ 644-4)**
- **Ribbon drives (§ 770-104)**

WHAT IS GREEN STORMWATER INFRASTRUCTURE?

A method of storing stormwater using the natural environment, i.e., bioswales, rain gardens, green roofs, etc. rather than "gray infrastructure" such as sewer pipes and basins.

In the last decade, local agencies such as SEMCOG[1] and federal agencies like the EPA[2] have emphasized the importance of green stormwater infrastructure in climate resiliency. This method can be incorporated into large- and small-scale projects to reduce stormwater runoff, improve infiltration, protect the health of Michigan's waterways, and restore habitat for wildlife.

1 SEMCOG. Green Infrastructure Vision for Southeast Michigan
2 EPA. Green infrastructure for climate resiliency

Top: Fourth St. Raingarden and signage
Bottom: Royal Oak Residential DIY raingarden
Images Source: Julie Lyons Bricker

WATER	Initial Cost	Department/ Potential Partners	GHG Reduction	Other Values Benefited
4.1. Provide safe, accessible drinking water to all residents.				
4.1.1. Replace lead service lines	Ongoing $$$$ - CIP	DPS	N	EQ/A, H/W, R
4.1.2. Continue to provide regular water quality testing analysis access	Ongoing $ - PR	DPS	N	EQ/A, H/W
4.1.3. Upgrade/replace water mains annually based on asset management plan	Ongoing $$$$ - CIP	Engineering	N	EQ/A, H/W, R
4.1.4. Educate residents about drinking water safety	$ - PR	DPS/EAB - Water system Adv.	N	EQ/A, H/W
4.1.5. In partnership with Oakland County, provide access to self-testing kits/programming	$ - PR	DPS/Oakland County, EAB	N	EQ/A, H/W, R
4.1.6. Prepare for future water quality threats and water hazard mitigation	Ongoing $ - PR	DPS, PD/SOCWA	N	EQ/A, H/W, NE, R
4.2. Educate and implement water conservation measures.				
4.2.1. **Develop an education campaign(s) to encourage water conservation for residential, commercial, institutional, industrial, and municipal sectors	$ - PR	CM/EAB	F	EQ/A, Econ
4.2.2. Explore the viability of software that identifies anomalies in water consumption billing to expedite finding leaks within the system	$ - PR	CM-ESM, Treasurer	N	EQ/A, Econ, R
4.2.3. Reduce indoor and outdoor potable water use at city facilities	$ - PR	CM, CM-EMS, DPS	F	NE, Econ
4.2.4. Reduce potable water use in golf courses and park irrigation	$ - PR	CM, DPS	F	NE, Econ
4.3. Improve regular sewer system maintenance and tracking.				
4.3.1. Develop GIS mapping of all sewer maintenance (storm, sanitary, combined)	Ongoing $ - PR	IT, Engineering	N	R
4.3.2. Evaluate feasibility of separating the city's combined sewer lines	$$$ - PR	Engineering	N	EQ/A, H/W, NE, R
4.4. Provide resilience against more intense precipitation events to reduce combined sewer overflows.				
4.4.1. Identify critical stormwater ponding areas caused by larger storms (where water can pond deeper than 9" at the gutter)	$$ - PR	Engineering	N	NE, R
4.4.2. Perform green infrastructure feasibility check for all city construction projects	Ongoing $ - PR	Planning, Engineering	N	R
4.4.3 Evaluate long-term maintenance needs for the sustainability of green stormwater infrastructure projects	$ - PR	DPS	F	NE, Econ, R
4.4.4 **Develop education and programming that introduce stormwater management practices	$ - PR	CM/EAB	F	EQ/A, H/W, Econ, NE, R

WATER	Initial Cost	Department/ Potential Partners	GHG Reduction	Other Values Benefited
4.4.5 Update city municipal codes to integrate stormwater management and water efficiency practices	$ - PR	Planning, CM-ESM	N	Econ, R
4.4.6. Incorporate Oakland County's updated stormwater management rules into the city's stormwater detention ordinance	In progress $$$ - PR	Engineering	N	R
4.4.7. Develop a stormwater utility that charges properties for stormwater runoff based on the amount of impervious surface on the property	On Hold $$$ - PR	CM, Planning, Engineering	N	EQ/A, R
4.5. Promote innovation and comprehensive strategic planning which considers the watershed (Clinton River Watershed) and the Great Lakes ecosystem.				
4.5.1. Build relationships and partnerships with universities, non-profits, utilities, watersheds, and regional communities (counties, cities, villages, and townships)	$ - PR	CM/CRWC	N	Econ
4.5.2. City staff attend workshops, conferences, training for innovative approaches	$ - PR	Various	N	
4.5.3. **Facilitate education about alternatives to standard lawn and garden chemicals to reduce the use of commercial pesticides	$ - PR	CM/EAB, CRWC	N	EQ/A, H/W, NE
4.5.4. Facilitate education about reducing food waste/oils down the drain	$ - PR	CM-CE/Oakland County, EAB, SEMCOG	N	EQ/A
4.5.5. Facilitate prescription drop-off education programs	$ - PR	CM-CE, PD/EAB	N	EQ/A, H/W
4.5.6. **Research viable options and educate the community on reducing salt use. Use an alternative to salt (sodium chloride) on sidewalks, driveways, roads.	$ - PR	CM, DPS/EAB	N	EQ/A, NE
4.5.7. Develop and facilitate education on the role water plays in sustainability and greenhouse gas emissions	$ - PR	CM-ESM/EAB, CRWC	N	EQ/A, R
** Denotes a top three priority action from the stakeholder survey results.				

LEGEND

PR= Programs/programming, **CIP**= Capital Improvement Projects, **CIP***= Capital projects with an ROI

$=	PR	0-$10K	CIP	0-$75K
$$=	PR	$10K-$30K	CIP	$75K-$200K
$$$=	PR	$30K-$120K	CIP	$200K-$500K
$$$$=	PR	>$120K	CIP	>$500K

GHG Reduction: Favorable= F, Neutral= N, Not Favorable= NF
Values: Equity/Access= EQ/A Health/Wellbeing= H/W Economy= Econ. Natural Ecosystems= NE Resilience= R

Water Metrics

Metric	Baseline	Goal
Potable Water Distribution Emissions	1,922 MT CO2e (GHG Inventory-2018)	↓
Wastewater Treatment Emissions (at treatment facility)	4,138 MT CO2e (GHG Inventory-2018)	↓
Commercial Water Use Annually	499,206,972 gallons (Royal Oak city data-2018)	↓
Municipal Water Use Anually	24,883,716 gallons (Royal Oak city data-2018)	↓
Residential Water Use Annually	1,247,338,620 gallons (Royal Oak city data-2018)	↓
Residential Water Use Daily per Capita	57.8 gallons/day/capita (Royal Oak city data-2018) (2018 population-59,107)	↓
Lead Service Lines Replaced (Estimated 1,500 need replacing- (2020-2031 replacement progam))	250 service lines replaced (Royal Oak city data-2020-2021)	↑
Municipal Green Stormwater Infrastructure	6 installations (Royal Oak city data-2018)	↑

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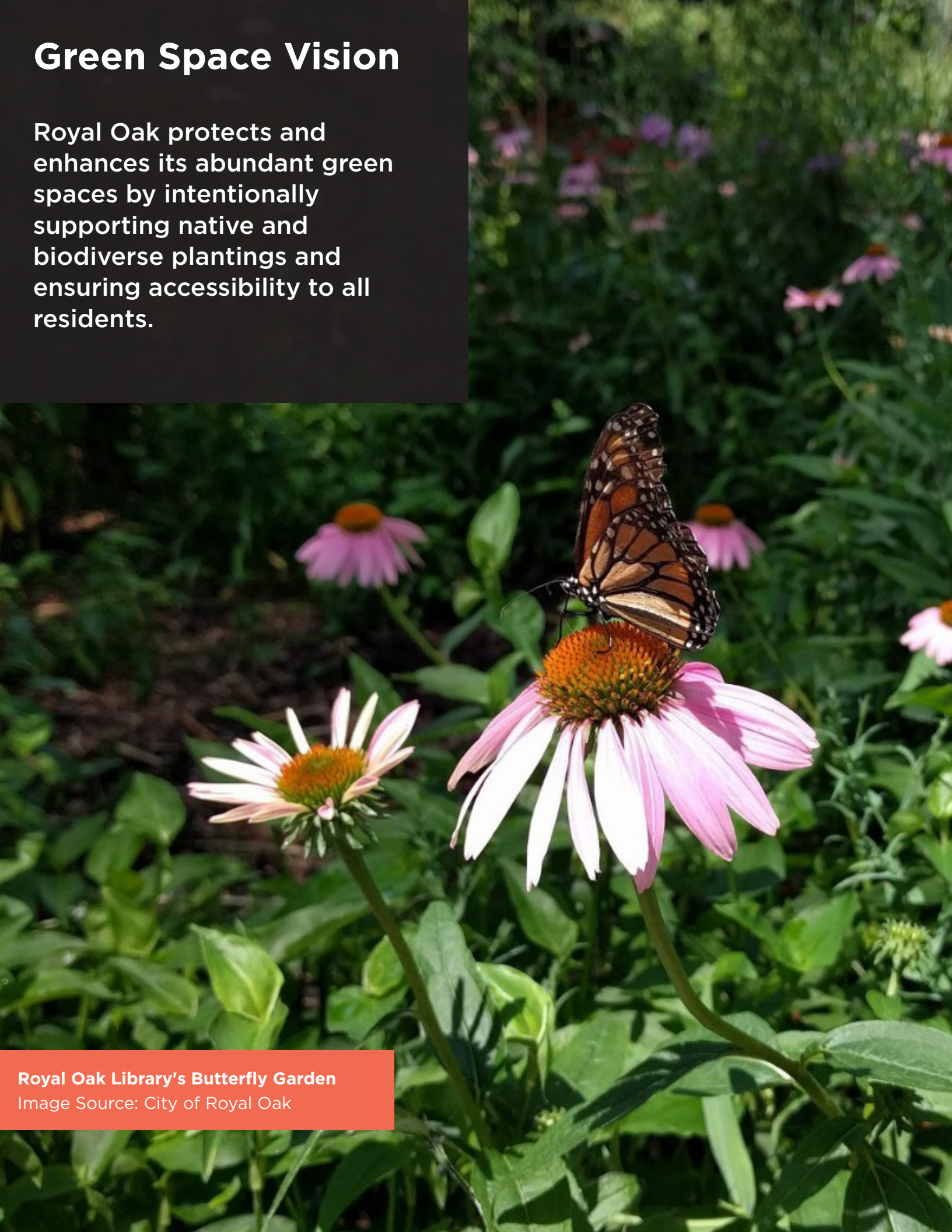
Green Space Vision

Royal Oak protects and enhances its abundant green spaces by intentionally supporting native and biodiverse plantings and ensuring accessibility to all residents.



Royal Oak Library's Butterfly Garden
Image Source: City of Royal Oak

Green Space

DEFINITION

The Green Space focus topic includes Royal Oak's parks, natural habitats, tree canopy, and the landscaping practices to maintain these spaces in a way that is simultaneously sustainable and considerate of human, wildlife, and environmental health.

Management and preservation of urban green space plays an important role in the health and wellbeing of its inhabitants, as well as climate resiliency. A city's parks, tree canopy, and other green features reduce the heat island effect, improve air quality, capture stormwater runoff, increase carbon storage and biodiversity, and have positive effects on residents' physical and mental health[1,2].

Currently, Royal Oak is home to 51 park sites consisting of over 352 acres of space (4% of Royal Oak's city land area). Another 21% of Royal Oak's land area is open space[3]. Royal Oak has a substantially high Park Equity Score of 93% (compared to the national average of 55%)[4]. 92% of children, 93% of adults, and 91% of seniors are within a 10-minute walk of a park. This abundance of park space was championed by Myron Zucker, leadership of the Royal Oak Park Commission in the 1930s and 1940s[5]. Even during the throes of wartime, their vision produced a network of playgrounds, parks, and preservation areas, which also relates to Royal Oak's tree stewardship. Royal Oak's tree canopy cover was estimated to be 30.5% of total land cover in 2017[6] (Michigan DNR and SEMCOG both recommend a 40% urban tree canopy cover target[7,8]), with 18,922 right-of-way trees under the City's care as of 2021.

1 City Parks Alliance. Active parks, healthy cities
2 City Parks Alliance. City parks infographics
3 SEMCOG. Royal Oak land community profile, environment and land use
4 Trust for Public Land. Royal Oak, MI
5 City of Royal Oak. Parks
6 City of Royal Oak. Tree Ordinance and Policy Recommendations (2017)
7 Michigan DNR. Forest Action Plan (2020)
8 SEMCOG. Tree canopy

CURRENT STATE OF GREEN SPACE IN ROYAL OAK

Ecosystems

Four of the 51 parks in Royal Oak are regionally unique:

- The city's two nature parks, Tenhave Woods and Cummingston Park, are former woodlots that have never been clear-cut or developed. Because of this, the landscape resembles the pre-settlement vegetation of Oakland County. In a landlocked city like Royal Oak, it is important that these natural landscapes be adequately maintained.
- The Arboretum showcases nearly all 86 of Michigan's native tree species and a collection of native plants not found in Tenhave Woods or Cummingston Park. It also supports pollinator gardens and specific native ecosystems, which reflect the original vegetation found in Michigan before early settlement.
- Tenhave Woods, Cummingston Park, and the Arboretum are thoughtfully managed and curated by volunteers of the Royal Oak Nature Society
- The new Normandy Oaks Park offers 40 acres of green space, substantial green stormwater infrastructure, pollinator gardens, bee hives, and native oak savanna ecosystems, as well as many park recreation amenities.

Forestry

Awarded Tree City USA designation every year since 1976 by maintaining Tree City USA's community forestry standards.

Planted 200 trees in right of ways and Normandy Oaks Park in Fall 2021 through an Oakland County grant[1].

A new tree-planting program for right-of-way trees is currently being developed.

1 City of Royal Oak. Tree-planting program

Trout Lily in Tenhave Woods
Image Source: Ann Bueche

RELEVANT ORDINANCE

These ordinances provide a foundation for protecting and replacing trees in public areas, but more action is needed.

- Municipal tree replacement **(§ 710-5)**
- Private tree replacement **(§ 770-90)**
- Domestic, market, and community gardens **(§ 770-56)**
- Rain garden ordinance **(§ 302.4.3)**

Other Municipal Initiatives

- Approved parks and recreation 5-year plan (2017-2022), plan update forthcoming

GREEN SPACE	Initial Cost	Department/ Potential Partners	GHG Reduc-tion	Other Values Benefited
5.1. Enhance and increase the tree canopy to 40% community-wide.				
5.1.1. **Expand and enhance municipal sponsored tree-planting programs	$$ - CIP	DPS, CM-ESM & CE, Planning	F	H/W, Econ, NE
5.1.2. **Develop and implement a community-wide tree education and outreach program	$ - PR	DPS, CM/EAB	N	EQ/A, H/W
5.1.3. Evaluate viability of an ordinance that protects existing residential trees	$ - PR	CM-ESM, DPS, Planning/USDN	N	H/W, NE
5.2. Increase native plants, biodiversity, pollinators, and birds to restore the natural ecosystem.				
5.2.1. Integrate native plantings and sustainability into municipal landscaping practices	$ - CIP	DPS, Planning	F	H/W, Econ, NE, R
5.2.2. Develop and implement community-wide native plant and biodiversity promotion programs	$ - PR	CM-ESM/EAB	N	EQ/A, H/W, NE
5.2.3. Develop a planned natural landscape program (like Ferndale's), including ordinance/code enforcement adjustment	$ - PR	CM-ESM, Planning, Building/Ferndale	N	EQ/A, H/W, NE
5.2.4. Pursue native plant and biodiversity certifications	In progress $ - PR	CM-ESM/EAB	N	EQ/A, H/W, NE, R
5.3. Provide a system of accessible and quality parks, recreation opportunities, and open spaces that is welcoming, beautiful, and meets the needs of everyone in the community.				
5.3.1. Develop and distribute a parks equity survey to identify and address accessibility challenges	$ - PR	DPS, Parks, CM	N	EQ/A
5.3.2. **Create opportunities for the community to engage in green space stewardship and volunteerism in city parks	$ - PR	DPS, Parks, CM	N	EQ/A, H/W, NE
5.3.3. **Support rollout of Community Garden(s) pilot program in Spring 2022	In process $ - CIP	DPS, Parks/EAB	F	H/W, Econ, NE
5.3.4. Evaluate the use of ecologically-friendly materials for park play areas	Ongoing $ - PR	Parks/EAB	N	EQ/A, H/W, NE
5.4. Increase the utilization of ecological buffers as elements of the built environment.				
5.4.1. Pursue viability of the pollinator pathway initiative as a larger spatial project/program	$ - PR	CM-ESM	N	NE
5.4.2. Pursue the viability of the community forest initiative	$ - PR	CM-ESM	N	NE
** Denotes a top three priority action from the stakeholder survey results.				

LEGEND

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Values: Equity/Access= EQ/A Health/Wellbeing= H/W Economy= Econ. Natural Ecosystems= NE Resilience= R

Green Space Metrics

Metric	Baseline	Goal
Tree Canopy	30.5% (SEMCOG-2010)	40%
Public parks acreage	352 acres (Royal Oak city data-2018)	↑
Land Cover: Trees & Open Space (grasslands, turf grass)	51.6% (SEMCOG-2010)	↑
Municipal right-of-way trees	18,922 (Royal Oak city data-2018)	↑

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Quality of Life Vision

Royal Oak offers a healthy, safe, and welcoming community that prioritizes arts and culture, community connections, economic opportunity, life-long learning education, diverse housing, outstanding public services, and accessibility for all.

Fun at Royal Oak's Eagle Plaza
Image Source: City of Royal Oak

Quality of Life

DEFINITION

The Quality of Life focus topic embraces and advances the characteristics of a community in which residents have the ability to live healthy, safe, and fulfilling lives. These characteristics include community connectivity (neighborhood associations, volunteerism), public safety including resiliency (the ability to successfully handle shocks and stressors) like severe weather emergencies, robust civic participation, and access to amenities such as life-long learning, arts, and culture.

Of the six focus topics, Quality of Life is perhaps the hardest to define and, simultaneously, the most important to promote. Royal Oak's population is expected to increase 1.5% between 2020 and 2030[1]. An important concept of sustainability is fostering a livable community that meets the needs of all existing and potential residents - of all ages, abilities, and income levels. Information collected from the Sustainability Community Survey and in the Quality of Life work groups during 2021 cite personal and public safety as important values to maintain in the future vision of a sustainable Royal Oak. According to a recent national study of 1,300 small US cities (with populations between 25,000 and 100,000), Royal Oak ranks as the second-safest small city in Michigan[2]. At a national scale, Royal Oak is in the 96th percentile of the best small cities to live, scoring #193 in Affordability, #120 in Economic Health, #388 in Education and Health, #379 in Quality of Life, and #39 in Safety[3].

1 SEMCOG. Royal Oak community profile
2 MSU School of Journalism. Oakland county home to many of Michigan's safest cities
3 Wallethub. Best small cities in America

CURRENT STATE OF QUALITY OF LIFE IN ROYAL OAK

Services for the Aging Population

Ongoing efforts to include Royal Oak in AARP's Network of Aging-Friendly Communities. Five focus workgroups consisting of senior residents, topic experts, and city staff will set visions and recommendations to increase the livability of Royal Oak for all ages.

ROSES (Royal Oak Senior Essential Services) is a program providing a variety of supportive services to Royal Oak residents aged 62 and over who qualify for subsidy.

The Mahany/Meininger Senior Center offers a variety year-round programming, including support, counseling, fitness, hobbies, games, and informative sessions

Civic Engagement

There was an 81.9% response rate to 2020 Decennial Census[1]. The number of registered voters has increased since 2018, from 48,316 to 52,017 in 2020. Voter participation was 76.2% in the November 2020 presidential election[2].

Green Jobs & Businesses

In addition to achieving the LEED for Cities Certified designation, Royal Oak is home to a number of businesses operating with green and energy efficient practices[3].

Further analysis needed to identify and promote existing green businesses and the potential for green jobs in Royal Oak.

Safety & Wellbeing

Data from SEMCOG shows that in 2017, Royal Oak's violent crime and property crime rates were near 10-year lows[3].

Arts & Culture

The Royal Oak Commission for the Arts is a robust board that supports Art Explored (outdoor art), the annual Art Laureate program, and the summer concert series to encourage arts and culture.

Schools

#28 in Detroit Metro Area High Schools

Royal Oak High School is 35th in the state for graduation rate, which is at 99%, well above the state median, according to the US News ranking data[4].

The International Baccalaureate program (IB) is available to students at Royal Oak Middle School and High School, which requires students to commit a challenging program of international education and dedicate their time to community service.

Neighborhoods

23 neighborhood associations exist to foster community, represent the interests of their neighborhood, and communicate with neighbors and city staff[5].

Additional Initiatives and Policies

- Voters passed Human Rights ordinance § 402
    - A Human Rights Board is in the formation stage

1 US Census Bureau. 2020 Census: Self-response rates
2 Oakland County Clerk. Past election results
3 SEMCOG. Violent crime rate, property crime rate
4 Royal Oak Schools. IB Middle Years program
5 City of Royal Oak. Homeowners/Neighborhood Associations

In the Quality of Life work groups there was consensus that the municipality is succeeding in fostering a vibrant downtown of small businesses, including the year-round Farmer's Market and high-quality library, as well as maintaining a network of many parks and green spaces. The work group also approved of the municipality's COVID-19 response and several other services that enhance residents' quality of life.

Participants expressed concerns regarding:

- Transparency of municipal decision making processes
- Making connections to leadership
- Increased civic engagement
- Better methods to communicate events and services
- Lack of a volunteer system
- Inactive neighborhood associations
- Low youth involvement for sustainability efforts
- Planning for the senior population and housing suitable for aging in place

Survey respondents and work group participants also acknowledged the effects of climate change and severe weather events to the health and wellbeing of Royal Oak residents and discussed ideas for resiliency planning and education. We can work together to address these concerns, maintain a high quality of life, and preserve community infrastructure to ensure a resilient and sustainable future for Royal Oak residents and businesses.

QUALITY OF LIFE	Initial Costs	Department/ Potential Partners	GHG Reduction	Other Values Benefited
6.1. HEALTH AND WELLBEING: Promote access to fresh and healthful food and have opportunities to learn about nutritious eating and food safety.				
6.1.1. **Facilitate healthy food events	$ - PR	CM-ESM, DPS, Farmers Market/ hospitals, local chefs/ EAB	N	EQ/A, H/W, Econ
6.1.2. Promote the Farmer's Market	$ - PR	CM-CE/Farmers Market	N	EQ/A, H/W, Econ
6.1.3. Promote the Royal Oak Schools Foundation's Farmers' Market Haul food delivery program	$ - PR	CM-CE, Farmers Market/Royal Oak Schools Foundation	N	EQ/A, H/W, Econ
6.1. HEALTH AND WELLBEING: Respect and protect the civil and human rights of all members of the community.				
6.1.4. **Create a Human Rights Commission	$ - PR	CM, CC	N	EQ/A, H/W
6.1.5. Create a mechanism for reporting civil/ human rights violations	TBD	TBD	N	EQ/A, H/W
6.1.6. Encourage participation in local MLK Day "Day On" events	$ - PR	CM	N	EQ/A, H/W
6.2. SAFETY AND WELLBEING: Maintain an environment where people feel safe and welcomed in their neighborhoods.				
6.2.1. Facilitate more community engagement activities with the PD & FD	$ - PR	PD. FD	N	EQ/A, H/W
6.2.2. Promote and support neighborhood associations	$ - PR	CM, CC	N	H/W
6.2. SAFETY AND WELLBEING: Strengthen public emergency communication channels.				
6.2.3. Create a mass text list for emergency communications	Ongoing $ - PR	CM, PD, FD	N	EQ/A, H/W
6.3. CIVIC ENGAGEMENT AND COMMUNITY CONNECTIONS: Strengthen and increase communications networks.				
6.3.1. Facilitate communication/issue status and response on easy access, visible network	Ongoing $ - PR	CM	N	EQ/A, H/W
6.3.2. Encourage registration in weekly eblast database list	Ongoing $ - PR	CM	N	
6.3. CIVIC ENGAGEMENT AND COMMUNITY CONNECTIONS: Promote inclusive civic engagement and empower community members to participate in local decision-making.				
6.3.4. Encourage the community to vote in all elections	$ - PR	Clerk, CM-CE	N	EQ/A, H/W
6.3.5. Encourage make-up of boards/commissions to reflect community demographics	$ - PR	CM-CE, CC, Clerk	N	EQ/A
6.3.6. **Offer educational materials to encourage engagement in the decision-making processes	$ - PR	Clerk, CM-CE	N	EQ/A

QUALITY OF LIFE	Initial Costs	Department/ Potential Partners	GHG Reduction	Other Values Benefited
6.4. HOUSING: Promote diversity of housing type and attainability options.				
6.4.1. Research incentivizing developers to include a range of housing options in developments, high density, or other facilities	$ - PR	CM-ED, Planning	N	H/W, Econ
6.4.2. Research and develop new or adjusted zoning code(s) to help developers build housing that meets the community's needs	$ - PR	CM, Planning	N	H/W, Econ
6.5. ECONOMY AND EDUCATION: Encourage job and educational training programs that support upward economic mobility and better living wages so that all working people and their families can afford basic necessities.				
6.5.1. Enhance and expand partnership with Royal Oak Schools and higher education organizations.	$ - PR	CM	N	EQ/A, H/W, Econ
6.5.2. Research viability of a program to place local high school graduates or undergraduates in municipal intern jobs	$ - PR	CM, HR	N	EQ/A, H/W, Econ
6.6. ECONOMY AND EDUCATION: Establish public policies, programs, and resources to support local small businesses and business retention.				
6.6.1. Support and encourage participation in buy-local campaigns	Ongoing $ - PR	CM-ED & CE, DDA/ Chamber, EAB	N	EQ/A, Econ
6.6.2. Evaluate options for funding resources and partners to clean up Royal Oak's portion of the Woodward corridor	$ - PR	CM-ED, Planning, DPS/Chamber, Oakland County, MDOT	N	Econ
6.6. ECONOMY AND EDUCATION: Partner with financial institutions to support investment in activities that promote new businesses, entrepreneurship, wealth building, and job opportunities, prioritizing sustainability.				
6.6.3. Research viability of partnership programs with commercial institutions and the chamber of commerce to benefit the community	$ - PR	CM-ED/Chamber	N	Econ
** Denotes a top three priority action from the stakeholder survey results.				

LEGEND

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GHG Reduction: Favorable= F, Neutral= N, Not Favorable= NF
Values: Equity/Access= EQ/A Health/Wellbeing= H/W Economy= Econ. Natural Ecosystems= NE Resilience= R

Quality of Life Metrics

Metric	Baseline	Goal
# Healthy Food Events	0	↑
# Public Safety/Community Events	4	↑
# of Participants on Emergency Communication List	2,500 (Royal Oak city data-2020)	↑
# of Participants on Municipal Weekly E-blast List	2,400 (RoyalOak city data-2020)	↑
# of Community Members Registered to Vote	52,017 (Royal Oak city data-2020)	↑
% of Community Members Who Voted	76.2 (Royal Oak city data-2020)	↑
Public Safety- Violent Crime per Capita	0.027 (Royal Oak city data-2018) (2018 population-59,107)	↓
% High School Graduates	96.4 (2018-ACS 5yr.)	↑
% Bachelors Degree or Higher	56 (2017-ACS 5yr.)	↑
% Unemployment Rate	2.10 (2018-ACS 5yr.)	↓
Median Household Income	$74,140 (2018-ACS 5yr.)	↑
Median Gross Rent as % of Household Income	15.9 (Royal Oak city data-2018) (2018 population-59,107)	↓

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SECTION 5

STRATEGIES FOR ACCOMPLISHING DESIRED OUTCOMES

Implementation

The previous sections of this sustainability and climate action plan (S-CAP) describe existing conditions, establish the overarching goals, and identify priority actions that will aid the city in achieving sustainability and climate action implementation over the next three years and beyond. To accomplish this, this initial three-year plan must be executed in a deliberate way using a variety of strategies: linking the plan to policy and the new master plan, making thoughtful budget decisions, and prioritizing the development of partnerships in the community, the region, and throughout Michigan.

IMPLEMENTATION STRATEGIES These strategies will guide the ongoing implementation of the Sustainability and Climate Action Plan.
I.1. Expand the city's municipal Green Team to include members from each department to support the implementation of this plan and foster an organizational culture of sustainability.
I.2 Prioritize and integrate sustainability when updating the master plan and all other municipal planning documents. (survey respondents scored this as a top-three priority for the city to work on. (68.3%))
I.3. Develop and use a sustainability objectives and actions checklist in the capital improvement planning (CIP) processes and the annual budget document to support the ongoing implementation of this plan by all municipal departments.
I.4. Each relevant department will develop an annual implementation strategy, including metrics, for actions within the plan and create an annual progress report.
I.5 Develop and implement a green events policy for all municipal sponsored events.
I.6 Develop and use a special events pre-approval checklist to ensure alignment with city sustainability goals and values. (ie, the implications on GHG emissions, solid waste creation, accessibility, etc.)
I.7. Develop and use an equity checklist in the creation of strategies to accomplish plan actions to ensure that the costs and benefits are equitably distributed.
I.8. Connect the sustainability plan to the LEED for Cities framework to track and communicate progress for LEED certification in the future, as applicable.
I.9. Update the greenhouse gas emissions inventories every one to three years to track progress toward overarching emissions reduction goals and review the community's GHG reduction goals relative to the current global targets and community feedback for alignment.
I.10 Update this plan in three years and then every 3-5 years thereafter.
I.11 Develop an easily accessible and visually appealing dashboard tracking key metrics identified in this plan.
I.12. Coordinate with the Royal Oak Environmental Advisory Board (EAB) as a key partner to provide ongoing guidance and support related to the implementation of actions in this plan and emerging sustainability topics.
I.13. Prioritize building partnerships with stakeholders to support progress toward accomplishing the overarching goals and actions of this plan.
I.14. Seek grants and other innovative funding to help pay for action implementation.
I.15. City leadership and staff to continuously evaluate how to best support the plan through staffing, and internal and community partnerships with the resources that are available.

As the city moves from plan development to action implementation, there needs to be a shift from the way things are done now (business as usual), so that substantial reductions in energy waste, increases in renewable energy installations, and updates to the public transportation system become mainstream to reduce GHG emissions and incorporate community resilience.

This plan's objectives and actions are expected to educate and empower businesses, institutions, and residents to reduce their own energy waste using traditional and innovative strategies, as well as to consider alternative mobility options and resilience. The objectives and actions are applicable to both the public and private sectors. This work will thrive if it is approached as a collaborative, all-hands-on-deck effort.

Developing this plan is the first step of a larger process shift of embedding sustainability into the decision-making practices within the government operations as well as in the community. The plan is designed as a guiding document for city leadership, city staff, community partners, and other stakeholders. It should be referenced during any municipal planning or policy process affecting the community's future. Development decisions, internally or externally, should consider the plan's goals, values, and objectives, in conjunction with the master plan, as guidance for beneficial community growth. While the S-CAP action plans are comprehensive in nature, they are not intended to prevent city staff and partners from pursuing other actions as opportunities arise or removing actions that are no longer relevant. Further, it is the intention of city staff, the EAB, and other implementation partners that the plan's actions will be started, and many of them completed, within the three-year scope. In the event there are actions that are not feasible to begin, for one reason or another within the time frame, city staff will work diligently to implement them in the timeliest manner possible.

COMMUNITY WIDE ROLES

To ensure successful outcomes, it is important to clarify the general roles of city leadership and staff, key partners (existing and potential), and the community as a whole.

Royal Oak City Government Roles:

- **Lead by example:** Continue to engage in efforts that connect to and accomplish S-CAP actions and scale up the efforts as needed. Share best practices and innovations with peer cities.
- **Empower the community:** Serve as a convener and collaborator to establish key partnerships, brainstorm and develop ideas with partners that will lead to overall progress on sustainability implementation.
- **Invest budget resources in foundational sustainability:** Allocate funding in the municipal budget to support and enable S-CAP implementation. Identify innovative funding sources and financing mechanisms to fund priority actions.
- **Track S-CAP progress:** Regularly monitor and evaluate the plan's implementation, including benchmarking and performance measures annually.
- **Implement S-CAP actions through regulation:** Explore opportunities for city government to

lead by example and to understand where it can shift local practices through regulations (policies, plans, and codes), or by creating incentives (or disincentives).

- **Leverage and advocacy:** Leverage the collective power of existing partnerships with peer cities to advocate for sustainability- and climate action-supporting policies, programs, and funding from regional, state, and federal government, local utility companies, and relevant foundations.

Just as the S-CAP couldn't have been developed without volunteers and input from the community, it can't be successfully implemented without the community playing a major role, too. Community partners include government agencies, non-profit organizations, academia, private companies, individual community members, and more.

Community Partner Roles (examples):

- **Participate in new and existing programs:** Based on expertise, engage in an implementation working group, a task force, or as a presenter to provide input and guidance on specific action strategies.
- **Be creative, innovative, and a leader:** Play a lead role in taking action and in inspiring your family, friends, and neighbors to do the same. Consider participating on a sustainability task force or with the Royal Oak Environmental Advisory Board.
- **Invest time and resources into action implementation:** Community collaborations are key to amplifying both public and private sustainability efforts. Community partners should identify, reallocate, and invest funding and time resources that support S-CAP implementation within their own work, daily lives, and other spheres of influence.
- **Embed S-CAP actions into current and future planning:** Embed equity, resilience, and climate-related initiatives and focus into individual, organizational, and community-wide decision-making.
- **Take action and empower your networks:** Engage in leading and supporting action strategies and grassroots outreach for plan implementation.

There are also community partners that are positioned to provide high impacts through their GHG mitigation, equity, and resilience efforts, as well as others who have large networks that can support education, outreach, and other implementation strategies by inspiring others. A few of the potential high-impact partners include the local health systems, the school district, higher education organizations, and multi-family development and rental companies. Engagement and leadership from these high-impact partners will be vital to the S-CAP's success.

High-impact Partner Roles (examples):

- Support and implement S-CAP actions in their own organizations and daily lives around the topics of energy & buildings, mobility, waste, water, green space, equity, resilience, economic development, health, and community engagement, as well as other GHG-related strategies.
- Advocate for program-specific climate actions, regulations, plans, and policies at the state, regional, and federal levels.

- Contribute insight and expertise and provide communications/outreach on community climate action priorities to wide networks of other Royal Oak stakeholders.
- Empower youth and student bodies in climate supportive initiatives, volunteerism, studies, and research.
- As available, provide leadership, resources, training, and support for data collection, storytelling, research, and/or analysis that supports ongoing S-CAP implementation.

Roles of State and Regional Government

The State of Michigan recently established statewide climate goals and is in the process of developing a sustainability and climate plan. In September 2020, Governor Whitmer signed an executive directive that outlines a goal of carbon neutrality by 2050 and a 28 percent reduction below 1990 levels in greenhouse gas emissions by 2025. The state's MI Healthy Climate Plan is in the public comment phase currently. This overarching state-wide plan has beneficial implications for the sustainability work that Royal is engaging in.

Oakland County is also engaging in sustainability efforts. They passed a climate emergency resolution in December 2019 and just filled their first sustainability officer position. This work at the county level also has beneficial implications for Royal Oak's S-CAP efforts.

KEY PARTNERSHIPS

The list to the right highlights organizational partners who were involved in the plan's development phase and potential partners for future engagement. This is not a comprehensive list of all community partners; it is to be used as a starting point only and new partners and organizations will be enthusiastically added.

Government						
Local and State		Woodward 5 partners		Peer Cities		
Oakland County	Royal Oak Boards and Commissions	Ferndale	Pleasant Ridge	Meridian Township	Holland	Rochester
State of Michigan	SEMCOG	Berkley	Huntington Woods	Ann Arbor	Kalamazoo	Lansing
SOCRRA	Royal Oak DDA			Grand Rapids	Dearborn	Traverse City
SOCWA				Charlevoix	Marquette	Houghton
Non-Governmental Organizations						
Royal Oak Chamber of Commerce	Royal Oak Civic Foundation	Clinton River Watershed Council (CRWC)		Urban Sustainability Directors Network (USDN)		
Royal Oak Schools	Judson Center	Royal Oak Nature Society		Michigan Interfaith Power & Light (MI-IPL)		
Beaumont Health	Kresge Foundation	Disability Network		Great Lakes Integrated Science + Assessments (GLISA)		
Henry Ford Health	MI Saves	Open Hands Pantry		Great Lakes Renewable Energy Association (GLREA)		
Royal Oak Rotary	ICLEI	Blessings in a Backpack		Erb Family Foundation		
Interclub Council	USGBC - Detroit	YMCA of Metro Detroit				
Academia						
Baker College	Oakland University	Wayne State University		Oakland Community College		
Commercial						
Emagine	MoGo Detroit	Urbane Apartments		Lean & Green Michigan (PACE)		
Consumers Energy	DTE	Amber Apartments		The Office Coffee Shop		
Coventry Condo Association						

RESOURCES NEEDED

The S-CAP contains more than 130 implementation actions, many of which are low-hanging fruit that require minimal expenditure or have a quick return on investment (ROI). Conversations with city staff within the relevant departments indicate these initial actions can be accomplished or at least started in this plan's three-year time period. Although, it is recognized that supporting the full, successful implementation of these actions in the next three years -- and into the future -- will require additional capacity beyond what the city has today. Opportunities for consultants to assist with some of the projects and programs early in this sustainability journey are a possible way to fill the gap. City leadership staff will continuously evaluate how to best support the plan through staffing, and internal and community partnerships with the resources that are available.

FUNDING & FINANCING

Funding and financing the S-CAP is a critical implementation step. With the wide-ranging partners and various types of projects that support sustainability and climate action, it is both an opportunity as well as a challenge to identify funding streams. All S-CAP stakeholders will be needed to help identify and leverage both public and private resources to support the plan's implementation.

As implementation begins and continues over time, there are various ways that community stakeholders, including the city government, can start preparing, planning, and taking action—even before funding is identified. It will be important to identify shovel-ready projects and their potential associated funding needs (even if the funding sources are not known). This will allow staff and stakeholders to work together to identify creative ways to leverage existing resources, as well as to be "opportunistic" when funding sources and funding partners become available. In addition, identifying foundational actions will also set the stage for future funding opportunities.

STRATEGIES FOR POTENTIAL FUNDING

Investigate public financing opportunities at the local, state, and federal levels to support S-CAP implementation: The S-CAP actions are so wide and far-reaching, it offers opportunities to leverage funding in government agencies that may not traditionally be seen as climate-related, such as health and human services, economic development, hazard mitigation response/resiliency, transportation, housing, etc. City staff will evaluate long-term future spending related to S-CAP implementation and will continue to evaluate local investment of general and capital funds in work consistent with S-CAP actions.

Investigate private financing opportunities to support S-CAP implementation: This could include public-private partnership opportunities. Explore banks, non-profits, foundations, and other funding sources for grants and other community entities that can incorporate S-CAP-type goals into their projects and initiatives (e.g., energy-efficient housing, youth education focused on climate topics, or green space preservation, tree canopy expansion to mitigate urban heat areas, etc.).

Understanding the climate change risks: Explore potential actions key partners may need to take

to mitigate risk. This could provide financing and partnership opportunities for mitigation and adaptation.

Leverage existing funded projects: Incorporate equity, resilience, and GHG reduction measures into existing projects; also, incorporate climate-related measures into existing funding streams that may incentivize climate action behaviors in new ways (such as incorporating energy efficiency education and resources into existing business support grants). Identify ways to reach other already-funded goals that create co-benefits related to climate action, rather than just focusing on climate action as the main goal.

Leverage community partnerships: Partner with those who can provide education and outreach tools (like grant databases) that gather finance-related opportunities for various types of S-CAP stakeholders, as well as various sustainability action topics for implementation (from attainable housing and energy efficiency to community gardens and pollinator habitat to smart city technology solutions).

Educate and promote savings reallocation opportunities: For municipal operations and for stakeholders, so that existing funds can be used on projects that offer an ROI and then reallocate those savings to implement more S-CAP actions.

PROGRESS TRACKING

Tracking performance, benchmarking, providing narrative storytelling, and sharing lessons learned related to action implementation are vital to the success of S-CAP. As the S-CAP implementation is getting started, narrative storytelling and sharing lessons learned set a foundation for transparency and action, and will inspire and empower community stakeholders to participate.

The city staff will focus projects on specific sectors or categories of emissions each year between GHG inventory iterations. GHG inventories will be conducted periodically (potentially every three years or more frequently if the process becomes less resource-intensive). Since GHG emissions numbers do not typically change much from year to year, nor do they provide a clear connection to individual actions, tracking action implementation data and category-specific metrics (like solar, energy efficiency, transportation, equity, health, etc.) will provide performance tracking on a more granular scale from year to year.

City staff should consider creating specific milestones to track, incorporating the ongoing work of the annual city commission's strategic goals and objectives plan, as well as efforts being done through the development of a new municipal master plan.

City staff will work to play a role as a convener and update the community on S-CAP implementation and progress over time. As mentioned throughout the plan, city staff can't do this alone. City staff will be looking for partners that can provide access (and dedicate their resources) to direct data, narrative storytelling, and ongoing implementation tracking assistance, as well as those that can provide support, resources, training, etc., to other stakeholders related to tracking and performance.

TRACKING IDEAS

- Make tracking as automated as possible (due to limited city staff capacity).
- Use existing, reliable, and regularly updated sources from which Royal Oak-specific data can be apportioned or inferred.
- City staff or a partner should consider creating a master site that lists information being tracked and collected by partners for various funding streams.
- Use input from stakeholders, partners, and strategy-specific working groups for sustainability narrative storytelling and outreach.
- Prepare progress narratives that are readily available for grants and other alternative funding opportunities.

EDUCATION AND OUTREACH

Sustainability and climate action engagement depends on successfully communicating information to the community and encouraging broader participation in related activities and programs. The role of city government, while important, is small in comparison to the actions that everyone must take to communicate and implement S-CAP actions effectively. Internal and external partners who participated in the plan's development, as well as the community at large, are a vital part of these communication and outreach efforts.

Outreach efforts should highlight collaboration and compel stakeholders to partner in the implementation of the plan's actions. Some implementation strategies may necessitate equitable engagement and outreach and should emphasize cultural sensitivity and building trust within the community. Education will also work to create positive community-led action, broad-based support, and a sense of ownership in the S-CAP.

The general ideas for community outreach and education are:

- Narrative storytelling
- Reaching a broad and inclusive audience
- Sharing municipal S-CAP implementation progress
- Sharing partners' S-CAP implementation progress
- Increasing awareness and affecting behavioral change

Additional Considerations

This plan only focuses on the actions that have an estimated beginning or accomplishment time frame within the next 1-3 years. That said, the focus topic workgroups also produced priority actions with longer-term timing that are not included on this plan's action tables. These longer-term actions, within each focus topic, are listed below for recognition as priorities from the 2021 community engagement process and should be revisited for inclusion during the next S-CAP update. [Objectives are numbered, actions are lettered]

ENERGY & BUILDINGS

1. Reduce energy consumption in buildings and other infrastructure community-wide.
    a. Reduce permitting costs/overhead for energy efficiency projects
    b. Develop an energy benchmarking ordinance for large buildings over a certain SF
2. Increase implementation of renewable energy community-wide.
    a. Resolve to achieve the remainder of its GHG reduction goals by negotiating with its utility to supply the community with enough renewable energy to make up any shortfall required to meet GHG reduction goals
    b. If negotiations with the utility to achieve the city's GHG reduction goals are unsuccessful, explore the creation of a community cooperative utility
3. Increase # of buildings using sustainable techniques and certifications
    a. Incentivize project certification (grants for project certification)
4. Coordinate with public utilities on site-specific strategies to upgrade infrastructure
    a. Research viability of DTE replacing their streetlights with renewable powered LEDs (3-5 years)
5. Increase the resiliency of buildings in the community
    a. City fleet of electric vehicles with bidirectional flow capability
    b. Install solar-powered EV chargers
    c. Investigate and create an incentive program for building owners to install solar and storage
6. Extra – not related to specific objectives
    a. Reduce bird collisions with building windows (This will be covered in green building educational programming)

MOBILITY

1. Fund, plan, and develop well-maintained infrastructure for all modes of travel (including walking)
    a. Pass a millage to fund non-motorized transportation
    b. Conduct walk and bike audits in various neighborhoods to measure access to shopping and other amenities (15-minute neighborhood)

2. All actions from this objective are included in the Mobility Table.

3. Promote and support electric vehicles and their associated infrastructure.

    a. Develop and implement a program that encourages Royal Oak residents to purchase electric vehicles over internal combustion engine vehicles (perhaps partner with local car dealers for block discount?)
    b. Advocate to SMART for electric buses on Woodward

4. Provide safe transportation systems to reduce and eliminate crashes.

    a. Improve crossings from neighborhoods to parks (slower car speeds, marked crosswalks, pedestrian lights green, head start for bikes at intersections); ensure safe crossing for all modes of travel (MOBILITY)

WASTE

All work group priority actions from this focus topic are included in the Waste Table.

WATER

3. Improve regular sewer system maintenance and tracking.

    a. Develop sewer backflow preventer program.

GREEN SPACE

1. Increase and enhance the tree canopy community-wide.

    a. Pursue viability of a residential tree ordinance requiring tree replacement and a permit to remove a tree from private property.

2. All work group priority actions from this objective are included in the Green Space Table.

3. All work group priority actions from this objective are included in the Green Space Table.

4. Increase the utilization of ecological buffers as elements of the built environment.

    a. Ensure new developments/buildings include green space, native plants, and ecological buffers (like green roofs and walls); Possible ordinance

    b. Partner with commercial and institutional entities to encourage compliance with the new municipal landscape practices of sustainable, native, and biodiverse ecosystems.

QUALITY OF LIFE

All work group priority actions from this focus topic are included in the Quality of Life Table.
    Note: Consider sustainability when updating the master plan and similar guiding documents (15 Minute City idea, attainable housing, age-friendly, equity, accessibility, all ages & all abilities greenspace opportunities, etc.) 68% of survey respondents scored this as a top-three priority action for the city government to pursue.

Conclusion

Addressing sustainability implementation and the associated climate change impacts in Royal Oak is a substantial undertaking that is complex and urgent. Successful implementation needs to include all local community partners, as well as support from the regional, state, and national levels. Everyone has a role, and everyone must do their part, both at the personal level and at the community level.

As a living plan, the S-CAP will evolve with the community over time to effectively support Royal Oak in achieving positive equity, resilience, and climate outcomes, including the community GHG reduction goal by 2050. The success of this initial three-year plan and the broader plan's overarching goals depends on the involvement of all Royal Oak community stakeholders.

As this plan has conveyed, it is important to continue to recognize that not everyone is affected equally by the impacts of climate change or the implementation of sustainability and climate action strategies. We must build community resilience and ensure an equitable approach to the plan's implementation strategies so that everyone in our community can thrive and Royal Oak is preserved and enhanced for current and future community members.

Appendices

Appendix I

Appendix II

Appendix III

Appendix I

I. Acronyms of Key Partners

Acronym	Expanded Acronym
DOE	U.S. Department of Energy
EAB	Royal Oak Environmental Advisory Board
EERE	U.S. Office of Energy Efficiency and Renewable Energy
EPA	U.S. Environmental Protection Agency
GLREA	Great Lakes Renewable Energy Association
ICLEI	ICLEI - Local Governments for Sustainability
IPCC	Intergovernmental Panel on Climate Change
LEED	Leadership in Energy and Environmental Design
MPSC	Michigan Public Service Commission
NOAA	National Oceanic Atmospheric Administration
RTA	Regional Transit Authority of Southeast Michigan
SEMCOG	Southeast Michigan Council of Governments
SMART	Suburban Mobility Authority for Regional Transportation
SOCRRA	Southeastern Oakland County Resource Recovery Authority
SOCWA	Southeastern Oakland County Water Authority
USDN	United Sustainability Directors Network
USGBC	US Green Building Council

II. Energy Efficiency and Green Building Organizations

Energy Star	The ENERGY STAR program was established by EPA in 1992, under the authority of the Clean Air Act Section 103(g). Since 2009, the EPA and Department of Energy collaborate in setting performance level standards and implementation of programs. Michigan is home to about 600 businesses and organizations participating in the program, and over 20,000 homes earned the ENERGY STAR certification as of April 2021.

II. Energy Efficiency and Green Building Organizations

LEED for Cities and Communities	LEED for Cities and Communities helps local leaders and project managers credibly track progress toward overall sustainability objectives and allows for comparison with others around the world. The LEED for Cities certification framework encompasses social, economic and environmental performance indicators and strategies with a clear, data-driven means of benchmarking and communicating progress.
Living Building Challenge	The Living Building Challenge is the world's most rigorous standard for green buildings. Going above and beyond LEED certification, Living Buildings strive for net-zero or net-positive energy, are free of toxic chemicals, and lower their energy footprint many times below the generic commercial structure. LBC compliance is based on actual, rather than modeled or anticipated, performance (projects must be operational for at least 12 consecutive months prior to the audit). LBC projects must address the seven core aspects: place, water, energy, health + happiness, materials, equity, and beauty.
Passive house (PHIUS)	is a non-profit 501(c)(3) organization committed to making high-performance passive building the mainstream market standard. Buildings that meet the PHIUS+ standard use 40-60 percent less energy for space conditioning than conventional buildings. PHIUS is the leading provider of passive building professional training and the leading project certification project body in North America.
Pearl	is the only market-based firm approved by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) to administer the Home Performance with ENERGY STAR® program for existing homes. The Pearl Certification process is a points-based system based on how much home features contribute to a building's performance, including: building shell, heating and cooling, baseload, home management, and renewable energy and energy storage.
WELL Building Institute	Is a performance-based system that explores the connection between the buildings where we spend more than 90 percent of our time, and the health and wellness impacts on us as occupants. WELL measures attributes of buildings that impact occupant health by looking at seven factors, or Concepts: air, water, nourishment, light, fitness, comfort, and mind.

III. Glossary

15-minute neighborhood: A variety of spatial and/or policy features with the ability to provide access to all human needs by walking or bicycling for 15 minutes or less.

100-year rainstorm: According to historical data about precipitation and flooding, this term refers to the probability of a hydrologic event of this magnitude occurring in any given year. The common misconception is that an event of this magnitude could only occur once every 100 years.

Accessibility: Refers to the quality of being easy to obtain or use or of being able to be reached or entered.

Age-friendly: A local response to help to identify and address barriers to the well-being and participation of older peopl eand encourage active aging by optimizing opportunities for health, participation and security.

Attainable housing: Unsubsidized market rate housing that is appropriate and suitable for the households living in Royal Oak.

Bidirectional flow capability: In a unidirectional (one-way) electric vehicle (EV) charger, electricity flows from the electric grid into the electric vehicle. With a bidirectional (two-way) EV charger, electricity can flow both ways and re-enter the electric grid.

Biodiversity: The variety of life in a habitat or ecosystem. Biodiversity at the genetic, species, and community level is essential for the processes that support life on Earth.

Building life cycle: Refers to the view of a building over the course of its entire life, viewing it not just as an operational building, but taking into account the design, construction, operation, demolition and waste treatment.

Business-as-usual: The level of emissions that would result if future development trends follow those of the past and no changes in policies take place.

Climate change: Climate change refers to the long-term changes in the average weather patterns that have come to define Earth's local, regional, and global climates. Changes observed in Earth's climate since the early 20th century are primarily driven by human activities, particularly fossil fuel burning, which increases heat-trapping greenhouse gas levels in Earth's atmosphere and raise Earth's average surface temperature. Key indicators of climate change from the data record include: global land and ocean temperature increases; rising sea levels; ice loss at Earth's poles and in mountain glaciers; frequency and severity changes in extreme weather such as hurricanes, heatwaves, wildfires, droughts, floods and precipitation; and cloud and vegetation cover changes.

Climate resilience: Climate resilience is defined as the capacity of a community, business, or natural environment to prevent, withstand, respond to, and recover from climate impacts and disruptions.

Combined sewer system (CSS): A system of pipes, tunnels, pump stations, etc. to transport sewage and urban stormwater runoff together to a sewage treatment plant or disposal site. In the Detroit area, when this system is inundated with runoff during periods of heavy rain, the combined sewage-runoff overflow is discharged

into the Detroit River. This has detrimental impacts on the health of our neighboring water systems.

Community Choice Aggregation: A type of shared purchasing model that allows a local governments to procure energy for eligble customers, allowing greater customer choice and more environmentally-friendly options.

Complete streets: Roadways that make it safer and easier for users of all ages, abilities, and modes to get around. These streets typically have design elements that include bus lanes, sidewalks, accessible signaling, curb extensions, and street trees or other vegetation.

Ecological buffer: A zone or an area that serves not for any anthropogenic use but as a conserved natural habitat where plants and animals can thrive.

Environmental sustainability: Environmental sustainability refers to fostering practices that reduce pollution, waste, and damages to the natural surroundings. The objective of having a healthy environment is for resources to exist for future generations.

Equity: In this report, equity refers to 1) fairness, 2) distribution of resources to reduce inequalities, and 3) redistribution of resources to level the playing field. The City has ensured equity and inclusion as a part of the process in developing the plan through seeking to engage communities that typically are not represented in Royal Oak's environmental sustainability conversations.

EV: Electric vehicles are vehicles that derive all or part of their power from electricity.

Green stormwater infrastructure (GSI): A method of storing stormwater using the natural environment, i.e., bioswales, rain gardens, green roofs, etc. rather than "gray infrastructure" such as sewer pipes and basins.

Greenhouse gas (GHG) emissions: Greenhouse gasses (GHGs), such as carbon dioxide, methane, nitrous oxide, and fluorinated gasses, trap heat in the atmosphere and contribute to global warming. GHG emissions and removals associated with human activities can be tracked across sectors, including transportation, industry, electricity, agriculture, and land use.

Heat Island (also referred to as Urban Heat Island): "Urban heat islands" occur when cities replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat. This effect increases energy costs (e.g., for air conditioning), air pollution levels, and heat-related illness and mortality.

LED: Light-emitting diode, which is an energy-efficient mainstream lighting technology.

LID: Low impact development are systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater in order to protect water quality and associated aquatic habitat.

Locally-Owned Utility: Also known as a municipal utility, this is a type of utility that is owned and operated by a local government or other local public entity.

Municipal Fleet: Includes a city government's public works vehicles, administrative vehicles, public safety and emergency services vehicles, and if applicable, public transportation vehicles.

Native plants: Plants that have been growing in area prior to European settlement.

No-mow zone: An area with a reduced frequency of mowing that allows native plants and grasses to grow.

Product life cycles: An approach to managing the stages of a product's existence so that any negative impact on the environment is minimized.

Renewable energy: Renewable energy is energy that is derived from non-fossil fuel natural sources or processes that are naturally and constantly replenished. Examples include wind and solar energy.

Ride-sharing: Includes carpooling or vanpooling, an arrangement in which a passenger travels in a private vehicle driven by its owner, free or for a fee, especially as arranged by means of a website or app.

ROI: Return on investment is the methodology for identifying and quantifying the net financial benefits of projects and initiatives.

RPS: Renewable portfolio standards are policies designed to increase energy utility suppliers' use of renewable energy sources for electricity generation.

Safe Routes to Parks: The Safe Routes to Parks action framework was developed to implement environmental, policy, and program strategies to create safe walking and biking access to parks.

Safe Routes to School: The Safe Routes to School programs aim to make it safer for students to walk and bike to school and encourage more walking and biking where safety is not a barrier.

S-CAP: Sustainability and Climate Action Plan

Sewer backflow preventer: A sewer backflow preventer is installed on a home's sewer line and is meant to keep sewer water out even when the pressure in the pipes build up (i.e., during a heavy precipitation event that overwhelms the CSS).

Single-occupancy vehicles: Vehicles designed to accommodate one or more people, but are being used by only one person (the driver).

Tree Canopy: In an urban setting, this refers to the area of a city that is shaded by trees. This shade offers benefits, like by lowering temperatures in the summer, and also provide habitat for wildlife.

Urban Heat Island: See Heat Island.

Water infrastructure: Refers to the extensive network of drinking water, wastewater, and stormwater infrastructure to provide the public with safe and clean drinking water. Gray infrastructure includes water treatment plants, distribution lines, sewer lines, and storage facilities. Green infrastructure includes bioswales, rain gardens, green roofs, and other methods which replicate the natural management of stormwater runoff.

Wayfinding: Environmental signage that encompasses the ways people navigate from place to place in physical space.

Zero waste of resources: Materials of economic value, whether for reuse, resale, or recycling, that won't be thrown away or end up in the landfill

Appendix II

Climate Emergency Resolution

At a Regular Meeting of the Royal Oak City Commission held on Monday July 27, 2020 via teleconference on Zoom, the following Resolution was adopted:

Whereas, the City of Royal Oak desires to protect and enhance the quality of life for all those who live, work, learn and play in our community, as well as for our children and grandchildren; and

Whereas, consensus exists among the world's leading climate scientists that climate change, caused by emissions of greenhouse gases from human activities, is among the most significant problems facing the world today; and

Whereas, global annually averaged surface air temperature has increased by about 1.8°F (1.0°Celcius) over the last 115 years (1901–2016) as cited in the U.S. Global Change Research Program's 2017 Climate Science Special Report support widespread evidence of climate change; and

Whereas, the last few years have also seen record-breaking, climate-related weather extremes, the three warmest years on record for the globe, and continued decline in arctic sea ice. These trends are expected to continue in the future; and

Whereas, southeast Michigan's annually averaged surface air temperature has increased by 2.2°F (1.2°C) from the 30-year period 1960-1989 to the 30-year period 1990-2019 and annually averaged precipitation has increased by 2.4 inches, an increase of seven-percent, over the same two 30 year periods; and

Whereas, without substantial and sustained global mitigation and regional adaptation efforts, climate change is expected to cause increasing losses to American infrastructure, agriculture, ecosystems, and property and impede the rate of economic growth over this century; and

Whereas, the total cost of extreme (greater than one billion dollars) weather events for the United States from 2010 to 2019 has been calculated to be 802 billion dollars by the National Oceanic Atmospheric Administration. This includes southeast Michigan's 2014 flood; and

Whereas, impacts from climate change on extreme weather and climate-related events, air quality, and the transmission of disease through insects and pests, food, and water increasingly threaten the health and well-being of the American people, particularly populations that are already vulnerable; and

Whereas, the quality and quantity of water available for use by people and ecosystems across the country are being affected by climate change, increasing risks and costs to agriculture, energy production, industry, recreation, and the environment; and

Whereas, members of our community and others are already feeling the local effects of climate change through higher frequency of high heat days, more extreme precipitation and flooding events, and greater length of droughts and heat waves that affect our economy and way of life; and

Whereas, other Michigan cities including Ferndale, Kalamazoo and Ann Arbor as well as Kalamazoo, Washtenaw, and Oakland Counties have already passed climate emergency resolutions because of the same concerns; and

Royal Oak
Life Now Playing

Now therefore be it resolved, the city commission acknowledges that a climate emergency threatens our city, region, state, nation, civilization, and the natural world; and

Be it further resolved, the city commission commits to a citywide climate action effort to reduce municipal and community GHG emissions through energy waste reduction and other initiatives; and

Be it further resolved, the city commission direct the city manager to facilitate the immediate development of a GHG emissions inventory to set a baseline by September 30, 2020; and

Be it further resolved, the city commission direct the city manager to facilitate, in collaboration with staff and other essential stakeholders, the development of GHG emission reduction targets for 2030 and 2050, within ninety days after the GHG inventory baseline is set. These reduction targets will guide the city's climate action goals within the sustainability plan; and

Be it further resolved, the city commission direct the city manager in collaboration with staff and other essential stakeholders, beginning in 2025 and continuing at five year intervals, update the GHG emissions inventory and review and consider recommending changes to the goals established for 2030 and 2050 so that those goals remain in alignment with ongoing updates to scientific findings regarding climate change; and

Be it further resolved, the City of Royal Oak is further committed to sharing experiences and best practices with other communities and currently participates as a member of Michigan Green Communities, Urban Sustainability Directors Network, U.S. Green Building Council -- LEED for Cities, Climate Mayors, and the United States Conference of Mayors; and

Be it finally resolved, Royal Oak engage with partners to collaborate with the community about the urgent need for climate action in order to help inspire and encourage individual climate action efforts at the local, state, national, and global levels to provide maximum protection for all people and species of the world.

I hereby certify that the foregoing is a true and correct copy of a Resolution adopted by the Royal Oak City Commission at a meeting held on July 27, 2020.

Melanie Halas

City Clerk

Appendix III

Additional Resources

Royal Oak Sustainability Website

S-CAP Community Stakeholder Survey Results (2021)

S-CAP Public Comment (2022)