# The City of Worthington Sustainability Action Plan

**Start Date: August 23rd**
**End Date: Decemeber 13th**

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**Executive Summary**

The purpose of this project was to develop a plan of action that will give the city of Worthington, Ohio the capacity to grow and develop sustainably into the future. Our first research objective was to develop a sustainability framework or set of guiding principles for the city in order to organize and track its future sustainability projects and goals. Our second objective was to review and categorize Worthington's progress within this chosen framework, giving the city a baseline understanding of its progress to date. Finally, our third objective was to develop a proposal for the structure and process of a city Green Team, whose ultimate purpose will be to create and implement future sustainability initiatives as the city grows and changes.

The sustainability framework that our team has chosen for Worthington is the Mid-Ohio Regional Planning Commission (MORPC)'s Central Ohio Green Pact, signed by the city of Worthington in 2007 (Central Ohio Green Pact, 2014). This document consists of ten focus areas that can help municipalities define and incorporate sustainability into their comprehensive plans. Using the Green Pact as a guide, we categorized Worthington's sustainability progress so far, thus developing baseline data for the city. Through this research, our team discovered that the city has performed fairly well in the "adoption of sustainable land use policies," "construction of green facilities," and "preservation of green space" categories, but can improve in "growing a strong green economy," "increasing access to mass transportation," and "reducing emissions and climate protection."

In order for sustainability goals and projects to be effectively implemented in Worthington over the long term, there needs to be strong leadership and support from the city government itself. Our research on municipal and corporate sustainability efforts supports the establishment of an internal city Green Team to ensure that these efforts are incorporated into

municipal functions and culture. As a result of conducting literature reviews of Green Team structures and hosting interviews with cities that already have established such groups, we have discovered numerous benefits, potential structures, and governance processes of successful Green Teams.

Ultimately, we recommend that the city of Worthington utilize the Green Pact as a guiding sustainability framework for the city. Worthington should also create an internal Green Team by adopting our proposed structure and making adjustments as needed. This proposal, crafted by combining researched best practices with advice from our advisors, lays out processes that members would use to create and implement sustainability goals that meet the Green Pact criteria and specific needs of the Worthington community.

## Introduction

At the beginning of this semester, our ENR 4567 capstone group was charged with developing a set of sustainability goals for the city of Worthington. As time went on, however, we realized it would ultimately be more useful if we developed a set of standards and processes to guide sustainability efforts in Worthington. This would allow the city to effectively create its *own* goals that would work best with existing city assets and needs. As such, our overall research goal is to gain an understanding of Worthington's current sustainability status and give the city the tools, framework, and processes it needs to move forward with sustainable development over the long term. Our research was guided by three objectives:

1. Develop an overarching sustainability framework that will help Worthington define sustainability, measure current progress, and plan for future projects.

2. Evaluate Worthington's existing sustainability progress within the ten Central Ohio Green Pact categories in order to determine current strengths and areas of improvement.

3. Review existing sustainability governance literature and use this research to develop a proposal for a Worthington Green Team.

    In order to establish a baseline understanding of Worthington's current sustainability progress, it was necessary to adopt a comprehensive framework to categorize and measure the city's past and future work. After researching various sustainability programs and metrics, we propose that the city utilize its existing loose commitment to the Central Ohio Green Pact (signed by the city in 2007) to act as such a guide (See Appendix A for Green Pact tenants). Upon reviewing Worthington's current progress, it is evident that the city has made considerable strides in "adopting sustainable land use policies," "constructing green facilities," and "preserving green space." The city has restored native vegetation in many areas, created rain gardens and community gardens, built new parks, and conducted HVAC studies and energy audits. However, areas that call for improvement include "creating a strong green economy," "promoting mass transportation," and "reducing emissions and climate protection." Worthington promotes green businesses, provides bike racks and pedestrian signage, and has retrofitted its diesel fleet; however, similar initiatives are limited beyond these actions. Based on our research findings, which are detailed in Appendix B, we believe that these categories provide opportunities for Worthington's sustainability initiatives to expand and grow.

    To ensure that sustainability progresses in Worthington over the long term, we propose the formation of a citywide Green Team. In research conducted by several universities and scholarly journals, it is illustrated that both corporate and governmental Green Teams provide a multitude of benefits to organizations that adopt them, including cost-savings, reduced environmental impacts, and a more engaged and satisfied workforce.

In the remaining sections of this report, our group explains why sustainability efforts will be needed in Worthington as central Ohio's population, housing stock, and land development patterns change over time. We explain our process and research methods, examine best practices for Green Team creation, review input from our Worthington advisors, and draw inspiration from similar cities in order to craft a Worthington-specific Green Team proposal. Finally, we review the potential limitations of our work, provide official recommendations for Worthington's immediate path forward, and identify future steps in sustainable development that the city could pursue over the long term.

**<u>Justification for Sustainability in Worthington</u>**

In order to understand the importance of sustainability in the city of Worthington, it is critical to look at projected trends that the community is expected to experience over the next thirty years. The Mid-Ohio Regional Planning Commission (MORPC) recently published its new Insight2050 report, which identifies expected development patterns for the region and provides recommendations for how central Ohio can best adapt in the coming years (Insight2050, n.d.). The report considers future population growth patterns, land development changes, and potential trends in both the job and housing markets. Each set of data supports the need to enhance sustainability efforts and each calls for the utilization of Smart Growth solutions that can mitigate environmental and social risks in the face of global climate change, while also expanding economic opportunities, protecting human health, and caring for the earth (EPA, n.d.).

The data presented in this report shows that over 115,000 residents have moved to the central Ohio region since 2010 alone. If growth rates remain constant, the region is likely to gain more than one million people by the year 2050 (Insight2050, n.d.). In order to accommodate this growing population, it is expected that over 300,000 new housing units will need to be built by

2050 (Insight2050, n.d.). If Worthington wants to attract any of these new residents, the city will have to be attentive to changing consumer demand in the market. Demand for larger-lot single family homes has been shrinking rapidly in recent years, and there is an increasing preference for well-located, small-lot detached and attached homes (Housing Demands, n.d.). In fact, 65% of new homes built in central Ohio over the past five years have been multi-family units, catering to this popular consumer desire (Insight2050, n.d.). Consumers are also prioritizing walkable, well-connected communities when deciding where to live (Housing Demands, n.d.). In the past, dominant development patterns have perpetuated suburban and exurban sprawl; however, due to these new consumer and spatial demands, the predicted pattern of the future is infill development, which creates and retrofits existing infrastructure within limited community boundaries (Insight2050, n.d.).

These trends help us understand that sustainability initiatives are vital for maintaining the health and resiliency of central Ohio communities. This information is especially important for a city like Worthington, which has no area to expand outwards. As the population grows, the community will likely need to adopt different or creative forms of development in order to attract new residents. If Worthington is proactive in utilizing Smart Growth strategies, we believe that the city will be able to maintain its distinct charm and prestige while allowing the community to grow and prosper in the coming years.

## Process and Methods

Acknowledging the importance and urgency of sustainable development, we focused the first portion of our project on identifying an appropriate sustainability framework to categorize and prioritize Worthington's initiatives. One of our advisors, Tyler Steele, encouraged us to look into the STAR communities rating system and similar sets of guidelines (Steele, personal

communication, Sept. 16, 2016). Such parameters are helpful in that they provide a way to focus projects and track improvement over time. In researching available sustainability guidelines, we discovered that Worthington is already a signatory of the Central Ohio Green Pact, a multi-jurisdictional commitment to sustainable development founded by MORPC (see Appendix A for tenets). In 2007, Worthington became one of many central Ohio cities to commit to the ten Green Pact tenets to shape sustainable policies and projects (Stewart, personal communication, Oct. 12, 2016). Rather than finding a new framework for the city to adopt, we decided to leverage this existing commitment and propose the ten Green Pact tenets as guiding principles for sustainability. Although this commitment is not as stringent as STARS in terms of providing metrics, it offers a strong foundation for sustainable development and will allow the city to adopt metrics in the future.

Once we chose this framework, we began compiling baseline data from various city documents to assess the Worthington's progress in each of the ten Green Pact categories. We did this by evaluating multiple city documents and categorizing implemented projects within the commitment's tenets. This process uncovered Worthington's areas of strengths and weaknesses in terms of progress under the Green Pact. This information will be helpful to Worthington, as the Assistant City Manager said that the city staff "would like to know where we are in terms of sustainability" (Stewart, personal communication, Oct. 12, 2016). Results from this baseline phase can be found in Appendix B.

Following our categorization of existing plans, we began to develop project ideas within Worthington's weakest Green Pact categories. We researched practices from surrounding and similar cities, sifted through Green Pact meeting notes, and attended the MORPC Summit on Sustainability. However, following a meeting with several of our advisors, we determined that it

would be more beneficial to focus our efforts on the development of an implementation mechanism for sustainability projects in Worthington (Stewart et al., personal communication, Oct. 14, 2016). We discussed the potential of creating a new intern position or a Green Team. The latter idea garnered the most support from our advisors, so we proceeded into the next phase of our project, which was researching best practices for the formation and facilitation of such a group.

## Green Team Research: Best Practices

According to one master's thesis regarding Green Teams in government, Green Teams are "groups of employees that are interested in changing the way their organization operates, practices, and even how the people in the organization think… in an effort to reduce its environmental footprint and shift the culture towards sustainability" (Dorosh, 2011). The purpose of a Green Team is "to activate the organization's sustainability mission, raise awareness of sustainable practices and to facilitate education to help stimulate ideas and actions for system improvements" (Arell, Leuhrs, & Walker, n.d.). Green Teams and cities themselves are constantly evolving in real time, and so they should be adaptable "to the emergent needs of citizens and residents" (Araya, 2015).

Regarding the structure of a Green Team, various tiers of participation are possible. Drivers who take charge and lead when making decisions are important parts of a successful Green Team, but so are supporting members who help facilitate the decision-making and implementation processes (Dorosh, 2011). Top-down and bottom-up approaches are both necessary for success. It is important to ensure top-level support within Green Teams of cities and corporations so that ideas can be implemented in a fairly rapid fashion, but grassroots support is also vital to show that all members are fully committed (Dorosh, 2011). The Team

should include 8 to 10 members to ensure that the group operates efficiently. It is essential that team members ensure that all roles and expectations are clearly communicated before moving forward with specific projects (McManus, 2009). Subcommittees may also be created as necessary to inspire individual ownership and ensure that targeted initiatives are carried out (Harvard University, n.d.).

The nature of a Green Team should be collaborative and inclusive, supporting diverse membership (McManus, 2009). People of various backgrounds and abilities provide a greater breadth of insights and opinions that can be used to accomplish the group's goals. Members should represent different departments and should possess various backgrounds and personality types, as this will facilitate the creation of useful and innovative ideas (McManus, 2009). Members do not have to be experts about sustainability; however, they must have a passion and willingness to learn (Sustainable Business Toolkit, n.d.). Creativity and innovation are needed to find solutions that best suit the interests and needs of the Worthington community (Araya, 2015).

Regarding the processes of a Green Team, it is essential to establish a shared vision, a purpose, and achievable objectives (Dorosh, 2011). Ultimately, a Green Team will not be successful unless it agrees on foundational values. The Team should focus on crafting core values and decisions that "reflect the interests and concerns of potentially affected people and entities" (Public Participation, n.d.). It should provide opportunities for the public to engage in voicing opinions and making decisions, and should be transparent, open, and accountable in order to build trust (Public Participation, n.d.). The Team should also consider creating a sustainability policy for the city, but this is not mandatory (Sustainable Business Toolkit, n.d.). The Team should initially focus on individual projects, but a comprehensive policy may be established as sustainability progresses. For Worthington, its Team should agree on a

sustainability framework that is appropriate, as it will provide a comprehensive guide for the development and implementation of initiatives (Dorosh, 2011).

In reference to creating actionable goals, a Green Team should operate in the present moment, but also keep the future in mind when making all decisions (McManus, 2009). It is vital for the Team to have a solid decision-making process to ensure effective governance from the very beginning (Dorosh, 2011). However, it is important to avoid patriarchal structures, strict top-down and hierarchal decision-making, one-way communication, and other restrictive forms of governance (Dorosh, 2011). The Team should meet frequently and intentionally in order to monitor progress and set new goals. It is also recommended that the Team meet quarterly and host beginning and end-of-year celebrations to foster a bonded unit (Harvard University, n.d.).

When developing goals for a Green Team and/or the community, it is important to craft both short and long-term goals that are specific, measurable, achievable, realistic, and timely (also known as SMART goals) (Whitman, n.d.). The Team should utilize creativity and collaborative power in formulating goals and have alternatives in mind. The Team should also review goals of similar regional cities and local industries and be willing to let projects adapt as needed (McManus, 2009). Goals should be prioritized, starting with easily achievable projects, or "low-hanging fruits." Once the group successfully implements these introductory initiatives, the group can tackle more complex and difficult tasks as the Team progresses (McManus, 2009). Goals should incentivize and educate city employees to create new, sustainable habits. Responsibility should be delegated and made clear about *who* will drive implementation and *how*. When carrying out actions, a Green Team should also have a clear source of funding (McManus, 2009). This funding may be garnered from government entities (such as the Ohio Department of Natural Resources), federal grant opportunities, and other similar organizations.

Over the course of the Green Team's existence, progress should consistently be measured, tracked, and communicated internally as well as externally, as this will promote transparency within the city (Green Team Guide, n.d.). A key attribute of a successful Green Team is the ability to engage the public in the efforts that are being proposed and implemented. It is essential for a Green Team to gather baseline measurements in order to see what the community is already doing, where the community stands in terms of sustainable implementation, and identify weak areas that call for improvement (Green Team Guide, n.d.). The Team must agree upon common metrics and indicators in order to develop a strong, cohesive plan (Arell, Leuhrs, & Walker, n.d.). To achieve goals, the Team should utilize incentives, such as informal recognition or opportunities for leadership, in order to motivate members of the Team and the community (Arell, Leuhrs, & Walker, n.d.). Following implementation, the Team should always celebrate and communicate successes to the public and city staff alike (Green Team Guide, n.d.).

**Green Team Research: Advisor Input**

Over the course of this project, we consulted frequently with our advisors and ultimately reached a consensus that Worthington should start with an "internal" Green Team in order to begin making long-term sustainability progress. This group could possibly become external or more formal eventually; however, this alteration would have to be approved by city council legislation (R. Stewart, personal communication, Oct.12, 2016). The Green Team should have 8 to 10 members who represent the 8 departments in Worthington's city government, while also leaving room to add other city staff or residents as needed (R. Stewart, personal communication, Oct.12, 2016). Members should be sincerely interested in promoting sustainable initiatives, but need not be experts on the subject. Worthington's Assistant City Manager, Robyn Stewart,

expressed that interest in Green Team membership may elevate if employees understand that engagement would result in opportunities to save money, time, and other resources through sustainability (R. Stewart, personal communication, Oct.12, 2016). Green Team meetings should take place during the workday so employees could be paid for their time. Due to this arrangement, Green Team obligations would have to be balanced with existing duties and should be flexible to accommodate limited time availability (R. Stewart, personal communication, Oct.12, 2016).

From discussion with advisors, we discovered that forming new groups in Worthington requires a number of preliminary steps. The first step would require gaining support and approval of our proposal from the city manager. Next, the application process for enlisting Green Team members would begin, entailing the collection of applications from those interested in participation and the conduction of interviews. According to our advisors, the process of creating a new city board typically involves 35 to 40 applicants that are then reduced to an appropriate group size (Stewart et al., personal communication, Oct. 14, 2016). This process, however, can differ based on the type of group being created. If the Green Team was designed to have a higher level of formality, the entire formation process would have to be overseen by the City Council. Therefore, it was recommended that the Green Team take on a lower level of formality and have support (but not oversight) from the City Council. This choice would offer flexibility in the early stages of the group's formation (Stewart et al., personal communication, Oct. 14, 2016).

**Green Team Research: Peer Cities**

Our research team contacted the cities of Upper Arlington and Westerville in order to obtain ideas about the structures of different Green Teams as they exist in practice. These cities have signed onto the Central Ohio Green Pact and are of similar sizes and demographics, so our

group felt that their Green Teams would be useful models for Worthington. In addition to the two Green Pact cities, we also reached out to the city of Fort Lauderdale, as one of our group members interned with the city and was involved with the city's Green Team.

According to Justin Milam, the Planning Officer for nearby Upper Arlington, this city created a Green Team with a formal structure in 2008. The Team consists of internal city staff with representation across all city departments, as well as a chairperson who leads discussion. This structure allows Upper Arlington's Team to be effective and efficient, as the chairperson keeps the discussion focused and promotes cohesion among departments. The Team originally met quarterly to discuss green initiatives; however, the Team now only meets when necessary, as city staff cuts have reduced the amount of time that workers can focus on sustainable initiatives (J. Milam, personal communication, November 3, 2016).

According to Kevin Weaver, chair of Westerville's Green Team, the Team is currently internal to the city government and has 13 members who represent all of the city's departments. The Green Team works closely with a sustainability coordinator from Otterbein University who assists the group in developing ideas. Westerville's Green Team incorporates volunteer membership, but also seeks to have representation from all city departments. In addition, the Team meets every 6 to 8 weeks. Weaver said, "The main issue that we have is that everyone has so much else going on that it is challenging for any one person to [keep] initiatives moving forward" (K. Weaver, personal communication, November 8, 2016). An additional challenge is that there is inadequate funding for the projects of the Team, so this group is continually working to market ideas to the community in order to maximize support (K. Weaver, personal communication, November 8, 2016).

According to Glen Hadwen, Sustainability Manager for the city of Fort Lauderdale, the city has formed an official Sustainability Advisory Board. This board is comprised of citizens that are appointed by the City Commission through an application process. This advisory board was formed in 2010 with a purpose to "identify and make recommendations to the City Commission concerning affordable strategies associated with conservation, renewable energy, and energy efficiency" (City of Fort Lauderdale. n.d.).  Any interested resident of Fort Lauderdale is encouraged to apply. This board is staffed by Fort Lauderdale employees from the Sustainability Division, and the Team meets monthly (Glen Hadwen, personal communication, November 4, 2016).

After speaking with the two other Green Pact cities and the city of Fort Lauderdale, there are several takeaways that can be considered when thinking about the structure of Worthington's Green Team. First, an internal structure is a good place to start for cities that are beginning to incorporate sustainability into their communities, as city employees are most familiar with the city government and what its departments are capable of accomplishing. An internal structure allows sustainability to be integrated into the municipality's daily operations, as the staff can meet during work hours on a regular basis or as needed. Consulting with an external sustainability coordinator is a good way to develop sustainability ideas for a city that is just starting out with a Green Team. It is important to include people from all of the various departments in the city to ensure that sustainability projects are supported and well-represented within the city government. The presence of a chairperson who facilitates Green Team meetings is also essential in ensuring that meetings are productive. Finally, it is important to be mindful of the additional time and effort needed by certain members of city staff to participate on a Green Team, and of the difficulties inherent in moving these projects forward.

## Recommendations

Over the course of our research, the purpose of our project has grown and evolved in order to best meet the needs of the Worthington government as well as the surrounding community. We have done our best to ensure that our recommendations are well-researched, actionable, and scaled to the abilities and resources available within Worthington. As such, we have crafted three main recommendations.

1. We recommend that Worthington **utilize the Central Ohio Green Pact to organize and measure its sustainability work**. This means that all future sustainability projects and goals would be created to fit within at least one of the ten categories. This also ensures that Worthington staff members are unified behind a common understanding of what sustainability actually *is*. Similarly, the Green Pact has already been signed by many surrounding cities and by Worthington itself, so locating the city's projects with these same categories will allow Worthington to compare its work with other Central Ohio leaders while fulfilling its existing commitment in a more active and intentional way.

2. We recommend that Worthington **create an internal Green Team** composed of city staff (and perhaps a few residents) in order to develop and ensure the long-term implementation of Worthington's sustainability projects and goals. An *internal* Green Team would be more capable of designing goals that are compatible with the city's existing assets and needs, and would also ensure that achieving these goals is institutionalized in the face of any future changes. We believe that creating and supporting a city Green Team is essential if Worthington aspires to make long-term progress in all sustainability initiatives.

3. We propose the following **example structure and process** for creating a functioning Green Team in Worthington. This recommendation was crafted using the best available sustainability governance literature and is designed to ensure both strength in implementation and adaptability in the face of a changing future. However, it is important to note that this proposal is designed to be *flexible* and *customizable*, so if particular sections of it do not suit Worthington's existing norms or operational structures, the city should certainly modify the proposal as it sees fit.

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**Worthington Green Team Proposal**

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**Example Purpose Statement:**

*To develop ecologically sound actions and policies for Worthington's internal city government operations over the long term, so that we may lead the way in ensuring an equitable, sustainable, and resilient future for our residents and our planet.*

**Green Team Membership**

Member Qualifications

A. Internal to Worthington city government
B. Representation from each of the 8 city departments, plus 1 to 2 additional members (most likely city staff, but could also be knowledgeable residents or business owners)
C. Members should have some experience and/or interest in sustainability-related areas (but need not be experts)

Member Selection Process

A. Department leaders identify and nominate potential Green Team members and co-chairs according to members' interests, knowledge, skills, and time availability
B. City manager confirms final makeup and structure

**Green Team Structure and Process**

<u>Meeting Times and Frequency</u>

    A. Meetings occur during normal work hours- 4 times per year for about 1.5 to 2 hours each (although the Green Team may need to meet more frequently upon initial formation in order to build momentum and establish successful group processes)

    B. Members should invite residents to participate as needed, either in open public meetings or as individual representatives on the Worthington Green Team

    C. Green Team sub-committees may be established if specific project groups have the need to meet more frequently

<u>Process for Project Selection and Implementation</u>

    A. Review existing baseline data to determine key problems and gaps

    B. Research and discuss potential solutions that Worthington could implement

    C. Perform cost-benefit analyses of options and review economic feasibility

    D. Report results back to the Green Team, select a course of action, and locate the initiative within the Green Pact framework

    E. Establish SMART goals for the project and create a plan for implementation

        a. Monitor periodically to ensure progress

        b. Communicate and celebrate successful projects, both within the Worthington city government and the greater community

**Green Team Governance**

    A. The Green Team is governed by 2 to 3 co-chairs who plan and facilitate meetings, manage team progress, and act as liaisons to external stakeholders

        a. At least one co-chair must be a director, assistant manager, or higher-level Worthington employee in order to provide additional power, efficiency, and effectiveness in implementation of projects

    B. Informal "everyday" decision-making is accomplished through spoken consensus; formal or contentious decisions are made by a vote with ⅔ of members approving

    C. Communicate clear roles, responsibilities, and expected time commitment to all members

## Project Limitations

Although we have presented recommendations that are well-researched, we recognize that our project is still inherently limited in several ways. Our project recommendations rely completely on the willingness of Worthington employees to serve on the Green Team and the ability to garner the time, energy, and resources to make the Team successful.

Our work is also limited because we lack familiarity with Worthington's staff, infrastructure, and resources that city employees and residents necessarily have at their disposal. We have tried to craft a plan that is as flexible and customizable as possible, allowing Worthington to adjust the framework as needed. However, we only have 3 months' experience with the city of Worthington, which limits our knowledge of how Worthington should move forward.

Finally, our work may also be limited because we draw some of our Green Team practices from literature about *corporate* Green Teams, not just municipal ones. We believe that this information is relatively transferable and adaptable to diverse applications, but it should still be reviewed with a critical eye in order to ensure that all parts of the proposal are as applicable to Worthington's situation as possible.

## Areas for Future Research and Growth

Although we proposed recommendations that will remain relevant and useful over the long term, we recognize that all city projects must be flexible in order to adapt and change with the unpredictability of the future (Araya, 2015). Over the short term, we believe that Worthington employees and Green Team members should review this proposal and make any necessary modifications to its structure and process so that it will best serve the city's specific needs. Over the long term, this may include more significant changes, such as researching and

adopting a more comprehensive or rigorous framework than the Green Pact. The Team may also expand to include Worthington citizens and business representatives, or it may develop a more nuanced governance structure that includes working groups, subcommittees, or other internal divisions (Harvard University, n.d.).

The Green Team may also choose to utilize more expansive marketing and communication channels, so that the larger community will have easy access to its work. This could include developing a Green Team website, newsletters, social media accounts, short videos, or other various modes of engagement (Sustainability at Work Portland, n.d.). Ultimately, we hope that our recommendations and proposal will act as a strong but flexible guide for Worthington, so that it may customize its own Green Team and projects in ways that will guarantee success in its sustainable development.

**Conclusion**

The city of Worthington needs to adopt a sustainability framework in order to ensure successful implementation of any goals and actions that it decides to pursue in relation to sustainability. With the Central Ohio Green Pact as a guide, we are confident that Worthington will be able to develop an array of goals encompassing all of the various aspects of sustainability. The development of an internal Green Team will provide the guidance, structure, and process for these sustainability actions to be executed while simultaneously ensuring that the actions are aligned with the unique characteristics and needs of the Worthington community.

It is important to note that there are gaps in the information provided in this report because of our unfamiliarity with Worthington's specific city government, as well as our research using both corporate and municipal Green Team structural information. Nevertheless, there is a potential for success and growth with this project. The city will be able to modify the

Green Team to fit Worthington as it evolves, as well as add external representatives and marketing initiatives to assist and promote the Team. We hope that this project will provide a useful framework and feasible recommendations for Worthington to become a sustainable and resilient city as it continues to grow and develop in the future.

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**Appendix A: Central Ohio Green Pact**

*The Central Ohio Green Pact, our proposed sustainability framework, is a commitment by various cities in Central Ohio to protect and enhance "the quality of life and economic vibrancy of the region" (Central Ohio Green Pact, 2014). This commitment was crafted with the help of 12 local jurisdictions and acts as a development guide by laying out 10 general values upon which communities should strive to improve.*

The tenets are as follows:

1. **Greener Public Fleets** to mitigate the effects of air pollution and carbon emissions through a variety of policies.

2. **Growing a Strong, Green Economy** to foster sustainable practices within the city's economy.

3. **Collaborating to Purchase Green Products** to preserve resources, decrease waste, and promote green markets.

4. **Adopting Sustainable Land Use Policies** to protect natural resources and create walkable, bikeable communities.

5. **Building Green Facilities and Reducing Energy Consumption** to construct buildings that increase energy efficiency, conserve water, and use environmentally friendly products.

6. **Reducing Waste** to decrease the amount of materials that end up in landfills by establishing reuse and recycling programs and encouraging efficient packaging in the supply chain.

7. **Educating and Engaging Our Communities** to spread awareness about environmental stewardship and sustainable living.

8. **Reducing Emissions and Climate Protection** to reduce the city's carbon footprint.

9. **Preserving Green Space and Creating Greenways** to create a healthy and sustainable community.

10. **Promoting Mass Transportation** to create more efficient ways to navigate the region.

**Appendix B: Baseline Data- Worthington's Progress within the Central Ohio Green Pact**

Worthington's actions regarding greener public fleets are outlined in the *2008 Progress Report* and the *2005 Comprehensive Plan*. The *2008 Progress Report* states that Worthington used approximately one thousand fewer gallons of diesel fuel in the first six months of 2008 than in the first six months of 2007. The city began purchasing more fuel efficient four-cylinder staff cars in 2008 and also acquired two hybrid electric cars. Worthington updated four Division of Fire staff vehicle management systems to allow vehicles to run on four cylinders when idling, as this will reduce greenhouse gas emissions. All Service Department pick-up trucks have had battery management devices installed to allow safety lights and flashers to work when cars are not turned on. The city also encourages ridesharing and promotes better vehicle use (idling reduction and transportation streamlining). Worthington is also involved in a grant program with OEPA to modify the city's diesel fleet and retrofit it with exhaust systems to eliminate 80% of diesel emissions. The *2005 Comprehensive Plan* highlights these efforts as well, as it outlines the city's anti-idling policies, the purchase of high fuel-efficiency vehicles, the use of alternative fuels and power sources, and the retrofitting of existing vehicles.

In terms of growing a strong, green economy, little information was found in the *2005 Comprehensive Plan*. Worthington states that it seeks to attract, retain and promote green businesses while promoting sustainable practices; however, these claims are vague**.** Over the past decade, the streetscape has been improved and parking spaces have been established, thus creating a vibrant and successful retail node that invites community gatherings. In addition, regional chains are working to locate in the area due to the attractiveness of the commercial center.

In terms of Worthington's collaboration to purchase green products, the city's actions can be found in the *2008 Progress Report* and the *2005 Comprehensive Plan*. The *2008 Progress Report* states that Worthington has made efforts to revitalize plastic incentives and fast-food coupons as Summer Reading Club (SRC) prizes. Worthington has also employed greener incentives, such as non-plastic water bottles, seed starting kits, nature explorer kits, coupons for outdoor activities, and other incentives. The city has switched to using green cleaning products to clean the Griswold Center and Community Center, and chooses to purchase "green" choice supplies when they are available and relatively inexpensive. Also, the city uses recycled copy paper, recycled toner cartridges, and online copies of documents when possible. The city has reduced reliance on snail mail, has moved towards email copies, and has converted all holiday lights to LED versions.

The *2005 Comprehensive Plan* states that Worthington reviews purchasing codes to include green procurement practices and explores ways to leverage combined purchasing power to create a green regional procurement network. This provides Worthington with greater savings on more environmentally and socially responsible products.

Extensive information about Worthington's efforts to adopt sustainable land use policies can be found in the *2008 Progress Report*, the *2005 Comprehensive Plan*, and the city's *Zoning Guidelines*. The *2008 Progress Report* states that the Parks Crew seeded an athletic field and the pool lawn, changing both surfaces from undesirable turf and weeds to turf. For this project, the city utilized seed that requires less irrigation, and the city intends to plant tall fescue, a drought tolerant grass wherever applicable. The Parks Crew also established a tree nursery at GoDown Road Park, which will enable the city to save money while replenishing the Urban Forest.

Franklin Soil & Water Conservation, Sustainable Worthington, F.L.O.W., and BSA Troop 365 have partnered up to construct a Demonstration Rain Garden, which will filter stormwater and allow for percolation into the groundwater table, thus preventing runoff into storm sewers and streams. Worthington has partnered with Friends of the Lower Olentangy Watershed to remove honeysuckle at Park Boulevard, and the city has transitioned portions of the Olentangy Parklands to native-planted, no mow areas to conserve wildlife habitat and reduce maintenance.

The city has created new parks, is restoring native vegetation along the stream bank, and has also developed a community garden for residents. The City Council set a goal to increase bike and pedestrian access in the community, which involves the appointment of a one-year Bike and Pedestrian Steering Committee. This committee provides recommendations to City Council on projects and priorities. Worthington has also created an on-going Bike and Pedestrian Advisory Board to recommend projects and activities that will increase bike and pedestrian access in Worthington.

The *2005 Comprehensive Plan* outlines Worthington's efforts to examine local codes and policies to determine how the city can create walkable, bikeable communities, promote infill and transit oriented development, protect natural resources and critical habitats, and create more sustainable infrastructure, such as green roofs, bioswales and rain gardens. The Village Green has been the center of the City since its inception, as it anchors the heart of the city as a public gathering space for both public and community functions. From its inception, the Village Green has represented the fundamental building blocks of a strong, cohesive community with the physical placement of a park, residences, businesses, churches, and schools surrounding its four quadrants. This strength in civic design is a defining characteristic of Worthington.

The *Zoning Guidelines* outline Worthington's efforts to avoid removal, damage, alteration, or eradication of natural features without approval per the procedures in Section 1181.07. The city has stated that drought tolerant, salt tolerant, non-invasive, low maintenance trees and shrubs should be utilized. All healthy trees six-inch caliper or larger shall be retained or replaced with total tree trunk equal in diameter to the removed tree, and this shall be documented as part of an approved "Natural Features" preservation plan and/or landscape plan. If the Municipal Planning Commission determines that full replacement would result in the unreasonable crowding of trees upon the lot, or that such replacement is not feasible given site conditions, a fee of $150.00 per caliper inch of trees lost and not replaced on such property shall be paid in cash to the city for deposit in the Special Parks Fund. Such deposits will be used for reforestation on public property.

Worthington has made significant progress regarding the construction of green facilities and reduction of energy consumption. The *2008 Progress Report* outlines energy conservation requirements in commercial and residential building codes. The city conducted an HVAC study for the Community Center in an effort to identify alterations that could improve efficiency and air quality in the facility. Light fixtures have been successfully updated in the older portion of the Community Center from metal halide lamps to more efficient T-8 lamps. More than 50 fixtures have been updated, which has produced significant energy savings.

The *2014 Comprehensive Plan* outlines a comprehensive design of the stormwater system for the UMCH focus area. This is a required part of the development plan, as controls must be located and sized prior to construction of any first phase. In the *2005 Comprehensive Plan*, Worthington illustrates its intention to create high performance buildings that are both energy efficient and water conserving. The city seeks opportunities to reduce energy

consumption by performing energy audits, installing high efficiency heating and cooling systems, converting traffic and streetlights to more efficient bulbs, installing skylights, and examining the potential for alternative energy.

The *Zoning Guidelines* state that surface changes, overhangs, and sunshades should be used whenever possible to provide sustainable benefits and visual interest. Sustainable, durable materials should be used whenever possible. Also, "both curtain wall and window/door glazing shall have the minimum reflectivity needed to achieve energy efficiency standards". Worthington's *Design Guidelines* mention that existing buildings should be maintained so that they run efficiently and that landscape options which complement energy conservation via sun shading and windbreaks should be employed. Solar energy, natural and controlled light for interior spaces, and natural ventilation for interior spaces should be utilized when possible to improve public health and increase energy savings.

Regarding waste reduction, the *2008 Progress Report* outlines the city's Solid Waste Collection program, which emphasizes waste reduction, recycling, and reuse. It also includes initiatives to remove household hazardous waste (HHW) from the waste stream. Dishes and glasses in break rooms are utilized to reduce the use of Styrofoam, plastic, and paper use. Worthington has started recycling efforts in the Griswold Center, the Community Center, and in various parks. The city recycles paper, bottles, cans, cardboard, and light bulbs. A collection bin for paper and cardboard was installed in parking lots, and the city receives payments for the paper that is collected.

The establishment of recycling and reuse programs, encouragement of reduced packaging and recycled content in purchasing and supply chains, and exploration of other sustainable materials management options are highlighted in the *2005 Comprehensive Plan*. In addition, the

*Design Guidelines* indicate Worthington's efforts to manage stormwater and runoff by investing in rain gardens, permeable pavement, rain barrels, and other water conservation and filtration systems.

Worthington is exploring efforts to educate and engage its communities. The *2008 Progress Report* introduces the Healthy Worthington Coalition, which planned a 6th annual Educational Roundtable to kick off the city's new "green theme". The coalition was planning a four-part educational series centered around initiatives that intended to feature green articles on the blog and the website. Per a citizen's request, the coalition is also looking to promote "Green Birthday Parties" in public gathering areas.

In the *2005 Comprehensive Plan*, Worthington states that it seeks to reach out to its stakeholders and citizens to teach the value and practice of sustainable living. The city will also make periodic reports to the community about its efforts. Worthington provides a full range of activities through its Parks Department, including over 500 programs targeted for various age groups. Many of these stem from Worthington's newly expanded Recreation Center, which provides a full range of indoor facilities and activities, including a leisure and a lap pool, a track, weights, athletic courts, lockers, and classrooms. For outdoor activities, natural enjoyment, and passive recreation, Worthington has over 190 acres of parkland. This is 50 acres above national standards for the city's population.

Worthington is also pursuing efforts to reduce emissions and protect the climate. The *2008 Progress Report* illustrates Worthington's involvement in a grant program with OEPA to modify the city's diesel fleet by retrofitting it with exhaust systems to eliminate 80% of diesel emissions. The Parks Crew constructed new truck mounted water tanks for more efficient watering. These tanks have twice the capacity of the former tanks, which reduces labor and fuel

costs. Worthington controls sediments and pollution during construction operations by employing post development control measures. The City Council also set a goal to increase bike and pedestrian access in the community. A bike path connecting the Olentangy Trail to High Street along West Wilson Bridge Road was recently added.

The *2005 Comprehensive Plan* mentions energy-efficiency improvements, alternative energy solutions, and a maintained and expanded tree canopy featuring the use of native species. The *Design Guidelines* also mention the reduction of light pollution; however, there are no other initiatives mentioned within this category.

Worthington has also shown noticeable progress in preserving green space and creating greenways. The *2008 Progress Report* contains information regarding the city's partnership with Sustainable Worthington to create community gardens at the Children's Home. This was not completed; however, the Department has planned to try the concept again next year. Worthington has established a tree nursery at Godown Park to help replace the loss of ash trees, mainly in the Olentangy Parklands. The city has also worked with community groups to transition portions of the Olentangy Parklands to be native-planted, no mow areas to create wildlife habitat and reduce maintenance. Invasive plants have been removed at various parks, and the city has also worked to clean up and restore local streams and tributaries to maintain biodiversity and freshwater ecosystems.

The *2014 Comprehensive Plan* mentions the preservation and integration of existing natural features related to Tucker Creek. A dedicated trail has been created along Tucker Creek that highlights natural features and provides an amenity and potential connection between High Street and Evening Street. Park space could be used to provide linear park "windows" into the site from High Street.

As outlined in the *2005 Comprehensive Plan*, Worthington has adopted a policy for land within the 100-year floodplain establishing these areas as unsuitable for building. Recognizing the significance of the Olentangy River, the Ohio Department of Natural Resources (ODNR) designated the Olentangy as a "Scenic River" between the Delaware Dam and Wilson Bridge Road in 1973. With the reestablishment of natural river vegetation south of Wilson Bridge, this area may now also qualify for "Scenic River" protection. The city encourages the planting of selected street trees in the city through a subsidized program that is offered to residents and businesses. Worthington also has sizable coverage of green space between the school sites and city park land, as a sizable portion of the city's land is reserved for parks. Together with the Olentangy floodplain, this open space totals ten percent. In addition to these plans, the *Design Guidelines* includes the utilization of indigenous plants, trees, and landscape features along with investment in streetscapes.

In terms of promoting alternative transportation, the *2008 Progress Report* includes information about bicycle racks that have been placed in various locations throughout the central business district. In regards to Old Worthington, the *2014 Comprehensive Plan* mentions the encouragement of wise sidewalks to allow for connections as well as additional activities. Pedestrian-scale signage, plantings, lawn areas, and street furniture will also create an inviting, walkable atmosphere. In addition to these initiatives, the *Zoning Guidelines* indicate that bicycle parking must be provided in the city.

**Appendix C: Datasets Used**

**Dataset #1: Steele_interview**

Source: Tyler Steele, LEED certified architect and property manager, Tyler.Steele@hines.com

Description: Notes from conversation with Tyler Steele regarding the process of researching and proposing sustainability projects for Worthington to implement. Phone conversation on Sept. 16, 2016. Questions included:

1. Should we look at similar cities to get ideas for sustainability projects?

2. If so, what cities do you recommend we study?

3. What do you think Worthington needs to do in order to best incorporate sustainability into its processes?

**Dataset #2: Stewart_interview1**

Source:  Robyn Stewart, Assistant City Manager for Worthington. Email: rstewart@ci.worthington.oh.us.

Description: Notes from a conversation with Robyn Stewart regarding perceptions of sustainability in Worthington, and how she sees the city's progress to date. In-person interview on October 12, 2016. Questions included:

1. What do you think of Worthington's commitment to the Central OH Green Pact?

2. Where are the gaps that you see in Worthington's sustainability, and what are solutions to fill those that we could provide in a relatively short time period?

3. What would the city actually want? (a framework or specific actionable solutions)

**Dataset # 3: Stewart, Dole, Steele_interview**

Source: Robyn Stewart, Assistant City Manager for Worthington. Email:

rstewart@ci.worthington.oh.us. Joanne Dole, Community Member. Email: joschn1@gmail.com.

Tyler Steele, LEED certified architect and property manager, Tyler.Steele@hines.com

Description: Notes from conversation with Robyn Stewart, Joanne Dole, and Tyler Steele

regarding the progress and direction of the project. In person interview on October 14, 2016.

Questions included:

1. Is the Green Pact a good direction, and can it be used to develop a baseline for the city?

2. What should the next steps in this project be?

3. Should we highlight weak areas for Worthington to work on?

4. Would it be useful to the city to develop a framework for a Green Team?

**Dataset #4: Stewart_interview**

Source: Robyn Stewart, Assistant City Manager for Worthington. Email:

rstewart@ci.worthington.oh.us.

Description: Notes from a conversation with Robyn Stewart regarding the structure of a Green

Team. Phone conversation on November 4, 2016. Questions included:

1. If you had the go-ahead to create a Green Team right now, what would be the process for

   doing that?

2. What is the best fit for a Green Team structure in Worthington: internal vs. external,

   voluntary vs. required?

3. What is the mayor's attitude towards sustainability?

4. Are there any anticipated challenges you foresee?