

For The Old Worthington Partnership



Shaping Sustainable Old Worthington



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Executive Summary

This project is a collaboration between the Old Worthington Partnership, Old Worthington merchants, American Electric Power (AEP), and the Sustainable Worthington Capstone Group from The Ohio State University's Environment, Economy, Development, and Sustainability (EEDS) major. Old Worthington is located in the historic downtown of Worthington, Ohio. The Old Worthington Partnership is a volunteer group that aims to enhance the Old Worthington experience by pursuing collaboration, engagement, and sustainability. The Old Worthington Partnership reached out to this capstone group for assistance in implementing AEP's Small Business Express Program among their eligible merchants.

Project Goals

The main goal of this project is to help Old Worthington merchants better understand the costs and benefits of engaging in small business energy audit programs offered through AEP, and to encourage them to participate in these programs. The purpose of this research report is to evaluate the sustainability of Old Worthington, assess merchants' interest in the AEP small business energy audit process, and to make recommendations to further environmental initiatives in Old Worthington. By working to achieve its sustainability goals, Old Worthington can be recognized as a resilient community, especially through the reduction of energy usage and costs.

Main Findings

Throughout this research project, interviews and surveys with local Old Worthington merchants were conducted. The findings from these survey responses

indicate that merchants are highly interested in green initiatives and preserving the historic downtown in a sustainable manner. This includes a focus on energy efficiency, cost savings, supporting local initiatives, and implementing sustainable policy.

Additionally, through the use of case studies and Old Worthington energy audits, we were able to determine the benefits of having an energy audit conducted. In every instance, the benefits of the energy audit and project implementation outweighed the costs, especially when looking at the projects over the long-term.

Recommendations

Based on the survey and energy audit results, the Old Worthington Partnership should continue to encourage local merchants to have energy audits conducted and to implement the suggested projects. A way to incentivize merchants to do so would be through the issuance of a window decal. The window decal would show that merchants are energy efficient and attract conscious consumers. Furthermore, the Partnership should create a sustainability roadmap to guide Old Worthington in becoming a more environmentally, socially, and financially stable community. This strategy will help to keep sustainability initiatives on track and viable in the years to come.

Introduction

Background

Founded in 1803, Old Worthington is the historic downtown located in Worthington, Ohio. Many of the original buildings from the early 1800s through the 1900s still stand today. The Partnership is an organization focused on preserving and improving the historic Old Worthington downtown. The Partnership has three core values: collaboration, engagement, and sustainability. In order to make strides in sustainability, the Partnership has worked to encourage saving energy and resources. The Ohio State University's EEDS Capstone collaborated with the Partnership in an effort to gauge local merchants' interest in sustainability initiatives and energy audits. This project focused on 30 Old Worthington small businesses that met the scope and requirements of AEP's Small Business Express Program. This program's requirements included: (a) the business must consume less than 200,000 kWh per year, (b) the business must have occupied their current facility for at least 12 months, and (c) the business owner cannot have more than 6 electricity meters in their name.

Research Goals and Motivation

The goal of this project is to help Old Worthington merchants fully understand the costs and benefits of engaging in small business energy audit programs offered through AEP, and to encourage them to participate in these programs. This research project is motivated by the Partnership's and the merchants' demand for lower energy costs, energy usage, and greenhouse gas emissions. This research will be used to lay the groundwork for Old Worthington's sustainability plan. Achieving these goals will help Old Worthington

reduce their overall emissions and provide future opportunities for collaboration with Ohio State Capstone students and AEP.

Research Objectives

In order to achieve the goals of this project, three main research objectives were identified:

1. Study AEP case studies of small businesses and similar communities that have participated in energy audits and can serve as an example for Old Worthington.
2. Conduct and analyze a survey addressing barriers to participation in energy audits, determining merchant interest in energy audits, and assessing merchant perception of sustainability.
3. Create a handout to inform merchants about the energy audit process and incentives that are available to them; and create an energy efficient merchant window decal to incentivize merchants to participate in the audit process.

Results and Recommendations

Projected long-term energy and cost savings data from the audits conducted in Old Worthington and other small businesses throughout Ohio were compiled to generate a comprehensive energy and cost savings annual average for Old Worthington. These projections show that if all 30 eligible merchants are able to complete the audit process and implement the suggested projects, Old Worthington could see savings of nearly 150,000 kWh and \$20,000 annually.

By analyzing survey results it is apparent that some Old Worthington merchants are sustainability-minded and would like to see more green initiatives take place in Old Worthington. Surveyed merchants are concerned about preserving the historic downtown

in a sustainable manner, as well as reducing energy usage and costs. This was further emphasized through the merchants' interest in small business energy audits, an energy efficient merchant window decal, and support of local environmental initiatives and policy. However, only a third of the qualified merchants were willing to engage in this process. Roughly 20 merchants were uninterested or unavailable to participate in this project due to financial and time constraints.

Additionally, by reviewing other sustainable city case studies, it was found that Old Worthington is in a good position to further their sustainability plan as long as they are extremely transparent about these plans, and invoke community participation whenever possible². As an affluent community, Old Worthington has access to funding and other resources which allow them to “spend money to make money”. Old Worthington should also focus on striving for change through city policy and by educating future generations about sustainability in primary and secondary school¹.

The results of this project indicate that by encouraging energy audit participation and project implementation, the Partnership can enhance the resilience of the Old Worthington community. Participation could be increased through the issuance of an energy efficient merchant window decal. The Partnership should set expectations for the merchants such as: Did the merchant complete an audit and implement the recommended changes? If the merchants can prove that they met these requirements, then the Partnership should provide the merchants with their window decal so that they may market their energy efficient businesses. The creation of a sustainability roadmap will also help to further these initiatives in Old Worthington.

Shaping Sustainable Old Worthington

Project Goals

The overarching goal of this research project is to educate Old Worthington merchants about the sustainability opportunities available to them and to help shape Old Worthington into a more well rounded community. In order to do so, three main goals were outlined:

1. Understand where Old Worthington stands as a sustainable community.
2. Help Old Worthington merchants better understand the costs and benefits of engaging in small business energy audit programs offered through AEP, and encourage them to participate in these programs.
3. Shape the future of Old Worthington by outlining projects the city can undertake in order to become a more sustainable community.

The achievement of these goals will move Old Worthington one step closer to becoming a more progressive and resilient community. By engaging local merchants and encouraging community involvement, Old Worthington can cut down on energy usage, costs, and reduce greenhouse gas emissions.

The AEP Small Business Express Program is the ideal opportunity for Old Worthington merchants to cut down on energy usage. The AEP Small Business Express Program conducts free energy audits for any eligible small business that is interested. The audits are paid through a rider on every AEP customer's electric bill, and so it is in the merchants' best interest to take advantage of the audit. The audit process consists of an AEP representative assessing a business's lighting and energy usage, a process which can

take anywhere from one to four hours depending on the size of the business. Once the assessment is complete, an audit form is generated. The form includes project suggestions, an environmental impact assessment, and a cost proposal, which details savings results, payment options, and rebates. The AEP Small Business Express Program will pay up to 80 percent of the project cost, but on average will pay between 60 to 65 percent of the project cost.

Merchant and community interest is key to the success of sustainability projects and programs. This research project aims to educate Old Worthington merchants about the opportunities available to them, while also making their options easier to understand and access.

Research Objectives and Methods

To achieve the goals outlined for this project, three research objectives were identified:

1. Study AEP case studies of small business and similar communities that have participated in energy audits and can serve as an example for Old Worthington.

- a.) AEP case studies of similar communities and businesses, especially those in Old Worthington, serve as examples for Old Worthington merchants and Old Worthington as a whole. AEP case studies show Old Worthington merchants the cost savings they could experience by having an audit conducted and installing the suggested energy efficient projects. However, many Old Worthington merchants were skeptical of the unfamiliar AEP case study results. Therefore, Magic Cruises, a local Old Worthington merchant, provided their energy audit data to help gain

merchant trust. Magic Cruises had an AEP small business audit conducted in October 2016 and went through with project implementation in December 2016. Magic Cruises serves as the ideal example, as they are a local Old Worthington merchant and can testify to the audit process and the resulting energy savings.

b.) Additionally, case studies of other sustainable cities were reviewed in order to guide Old Worthington in creating a similar plan. Franklin, Tennessee and Santa Monica, California served as examples of cities that have successful sustainability plans in place. These case studies highlight the factors necessary to keep a city's plan flourishing over the long-term.

2. Conduct and analyze a survey addressing barriers to participation in energy audits, determining merchant interest in energy audits, and assessing merchant perception of sustainability.

a.) A survey was conducted to assess what Old Worthington merchants knew about AEP energy audits and to identify their definition of sustainability. The surveys were all conducted either in person or over the phone and all merchants were asked the same questions. The Sustainable Worthington Capstone Group made multiple trips to Old Worthington to engage the merchants in open conversation about these topics. This is how rapport and trust was originally cultivated with the merchants.

The full survey can be seen in the Appendix.

3. Create a handout to inform merchants about the energy audit process and incentives that are available to them. Also create an energy efficient merchant window decal to incentivize merchants to participate in the audit process.

a.) A pamphlet was created in order to inform and educate Old Worthington merchants about the AEP Small Business Express Program and the energy and cost savings opportunities it presents them with. The results from the survey were used to tailor the pamphlet to Old Worthington merchants specifically.

b.) An energy efficient merchant window decal was designed in order to act as a means to incentivize merchants to learn about and take part in an energy audit. In addition to saving money and energy, merchants will be recognized as an energy efficient business, which may attract a new cohort of environmentally-conscious consumers.

Data Analysis and Research Findings

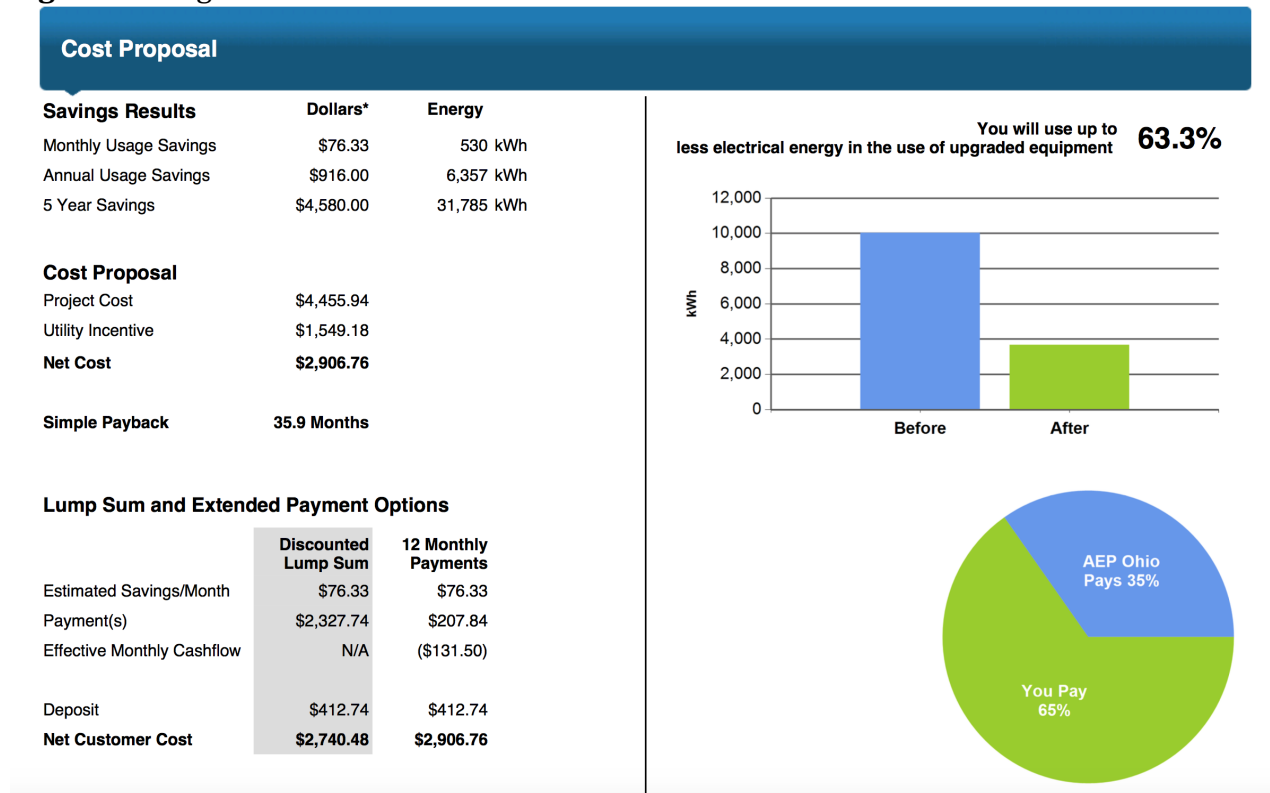
1.) Old Worthington Merchant Audits:

Magic Cruises served as the main example throughout this project because Old Worthington merchants were more accepting and trusting of information from a familiar business. Magic Cruises completed an energy audit and went through with the project implementation at the end of 2016. Their rebate covered 35 percent of the total project implementation cost. Magic Cruises provided their audit information to show other Old Worthington merchants what the audit process is like and potential audit results. The audit information given to merchants after the audit has been conducted includes detailed information about suggested projects and upgrades, costs and rebates, and environmental impacts. The Magic Cruises audit can be seen below in Figure 1.

Magic Cruises' audit information helped encourage other Old Worthington merchants to participate in the AEP Small Business Express Program. One of these

merchants is Sassafras Bakery. Sassafras Bakery recently had an audit conducted and is working to determine whether they will be going through with project implementation. If Sassafras bakery chooses to move forward with the recommended upgrades AEP will pay for 54 percent of the total project implementation costs. Sassafras Bakery's audit information can be seen in Figure 2.

Figure 1: Magic Cruises Audit



Environmental Impact

Lime Energy has earned its reputation by consistently finding ways to dramatically reduce our customers' energy cost and improve the quality of light in the workplace. We have 25 years of experience in delivering economically viable efficiency and renewable energy solutions to over 2.5 billion square feet of building space and counting. Through our Utility Programs alone we have saved over 9,348,500 MWh through 100,433+ customer installations delivering almost \$272 million in incentives.

Reducing energy use is the quickest, safest, most cost-effective way to reduce the emission of greenhouse gases that accompanies the generation of electricity from fossil fuels. The calculations are estimates based on national averages.

WITH THE IMPLEMENTATION OF THIS PROJECT WE ESTIMATE SAVING 6,357 kWh OR 9,662.64 LBS.* OF CO2



EQUIVALENT TO 0.78 CARS OFF THE ROAD

Overall yearly average of 11,298 lbs. CO2 per car.



EQUIVALENT TO 0.38 HOMES

The average Single-family home in the US generates 25,463 lbs. worth of CO2 per year.



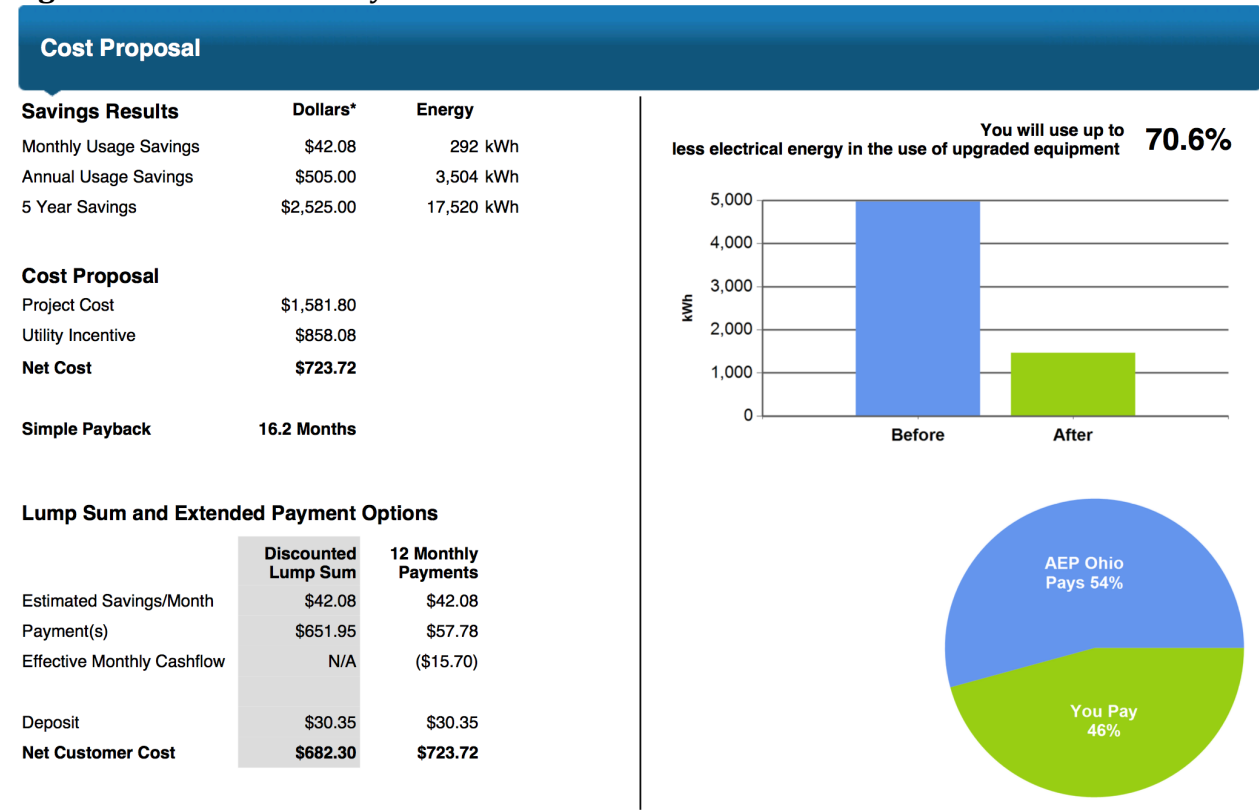
EQUIVALENT TO 113.54 SEEDLINGS GROWN FOR 10 YEARS

A medium growth coniferous tree in an urban setting can sequester 23.2 lbs. of Carbon which equates to 85.1 lbs. of CO2.

* 0.00068956 Metric Tons CO2/kWh = 1.52 lbs CO2/kWh (eGRID2010 Version 1.1, U.S. annual non-baseload CO2 output emission rate, year 2007 data)

Sources: - EPA (2011) eGrid2010 Version 1.1, year 2007 Data
 - www.epa.gov/cleanenergy/energy-resources/refs.html

Figure 2: Sassafra Bakery Audit



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WITH THE IMPLEMENTATION OF THIS PROJECT WE ESTIMATE SAVING 3,504 kWh OR 5,326.08 LBS.* OF CO2



EQUIVALENT TO 0.39 CARS OFF THE ROAD

Overall yearly average of 11,298 lbs. CO2 per car.



EQUIVALENT TO 0.21 HOMES

The average Single-family home in the US generates 25,463 lbs. worth of CO2 per year.



EQUIVALENT TO 62.59 SEEDLINGS GROWN FOR 10 YEARS

A medium growth coniferous tree in an urban setting can sequester 23.2 lbs. of Carbon which equates to 85.1 lbs. of CO2.

* 0.00068956 Metric Tons CO2/kWh = 1.52 lbs CO2/kWh (eGRID2010 Version 1.1, U.S. annual non-baseload CO2 output emission rate, year 2007 data)

Sources: - EPA (2011) eGrid2010 Version 1.1, year 2007 Data
 - www.epa.gov/cleanenergy/energy-resources/refs.html

Additionally, an energy and cost savings average from the two Old Worthington merchants who participated in the audit program was calculated. This average is not robust, but due to merchant skepticism towards the AEP program, this average was found to be very useful when interacting with the Old Worthington merchants. Merchants were much more interested and expressed less concern when they discovered a fellow merchant had a positive experience. By utilizing the average savings from the Old Worthington merchants that have already had audits conducted, it is projected that if all 30 eligible Old Worthington merchants participated they could see approximate savings of 148,000 kWh and \$21,300 annually for the historic downtown as a whole, which can be seen in Table 1.

Table 1: Estimated Average Annual Savings for Old Worthington

Estimated Average Annual Savings for Old Worthington		
	Annual Energy Savings (kWh)	Annual Cost Savings (US \$)
Magic Cruises	6,357	\$916.00
Sassafras Bakery	3,504	\$505.00
AVERAGE	4,931	\$710.50
30 Qualified Merchants	147,915	\$21,315.00

In addition to Sassafras Bakery, one other merchant, 689 High LLC, had an audit conducted throughout the course of this project. 689 High LLC owns 4 storefronts and 10 office spaces in Old Worthington. However, during the audit process it was determined that the project to renovate the lighting for every space would be outside of the parameters of the AEP Small Business Express Program. The decision was made to renovate lighting through another program with a different company.

Previously, Old Worthington merchant, House Wine, had an audit conducted. However, instead of installing the projects through AEP they decided to install the projects

on their own. House Wine installed LED lighting and continues to purchase and use energy efficient LED light bulbs today. House Wine was unable to share their savings data with us, but did state that although the lighting changes did save them money, the majority of their energy costs come from refrigeration units. Although they mentioned they would be interested in having an AEP audit conducted again to see how they could save more money by upgrading their refrigeration units, they were not yet ready financially to make those upgrades.

Multiple other Old Worthington merchants took interest in the AEP Small Business Energy Audit Program as well. These merchants include: Igloo Letterpress, The Candle Lab, La Chatelaine, and Peacock Lane. Both Igloo Letterpress and The Candle Lab are in the process of scheduling audits with AEP.

2.) AEP Small Business Case Studies:

In order to give a well-rounded estimate of the potential energy and cost savings for the diverse collection of Old Worthington Merchants, averages were calculated from six diverse small businesses throughout Ohio who also participated in AEP's small business program. To calculate these projections, the pre and post project implementation energy and cost savings were compared during the audit process. Furthermore, the group of Old Worthington merchants who qualified for this program is comprised of many different types of businesses which demand different amounts and sources of energy consumption. This diverse sample was chosen to help mimic potential Old Worthington merchant savings. On average the collection of diverse Ohio businesses saved 11,600 kWh and \$1,600 annually by implementing audit recommendations, which can be seen in Table 2.

Table 2: AEP Case Studies' Projected Annual Savings

AEP Case Studies' Projected Annual Savings		
	Annual Energy Savings (kWh)	Annual Cost Savings (US \$)
Tuffy Auto	9,168	\$1,283.52
Pizza Cabin	4,825	\$675.50
DMH Ministries, Inc.	15,200	\$2,128.00
Magical Touch Quick Lube	9,553	\$1,337.42
Dairy Queen	4,825	\$675.50
Mobile Mike's Auto & Electric Service	26,216	\$3,670.24
AVERAGE	11,631	\$1,628.36

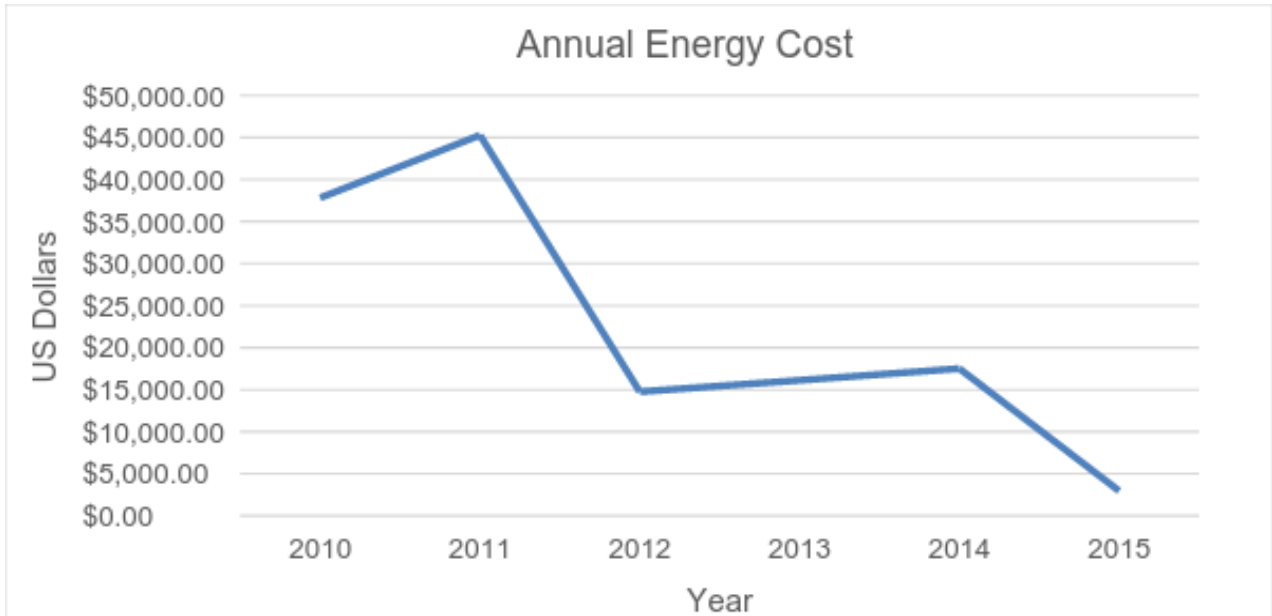
3.) Long-Term Energy Data:

Lastly, long-term energy data from Worthington United Methodist Church was used as an example of a sustainability leader in the community. AEP audit data serves as a great source of potential savings, but is not actual monthly or annual savings data.

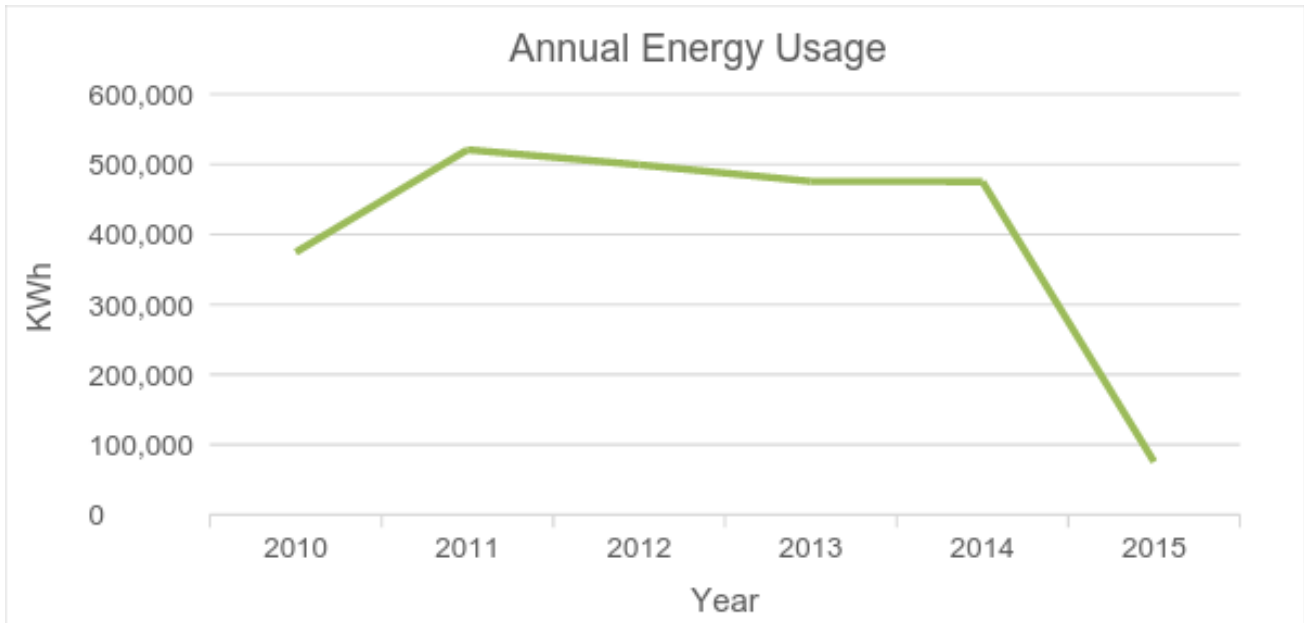
Unfortunately, long-term data from an AEP Small Business Express Program audit was not able to be acquired from AEP or its customers due to company privacy policy. However, Worthington United Methodist Church kindly provided its long term energy and cost savings data from having an audit conducted and installing a new boiler system in 2011.

This data is beneficial and persuasive because it provides real energy and cost savings data from a familiar and respected organization in Old Worthington. It does not, however, provide the merchants with comparable energy or cost savings data due the large scale of the project. Worthington United Methodist Church's cost and energy savings can be seen in Graphs 1 and 2.

Graph 1: Worthington United Methodist Church Annual Energy Cost



Graph 2: Worthington United Methodist Church Annual Energy Usage



4.) Survey Results:

A brief survey was conducted to determine merchants' understanding of sustainability, as well as to gauge their interest in undergoing an energy audit. The surveys were conducted either in person or over the phone. Eight merchants were surveyed and asked questions such as: What does sustainability mean to you? Have you heard of the AEP Small Business Express Program? Is this a program you would be interested in? The surveys were conducted in a conversational manner by one or two members of the group at a time. The group made sure to obtain a proper introduction from the Partnership before making contact with the merchants. This helped to create a more open relationship, and overcome initial merchant skepticism. The collaboration with the Partnership allowed merchants to see this project as a research opportunity rather than a sales pitch for the AEP audit program.

The survey results were used to gauge merchant interest, determine how to market AEP programs to merchants, and to assess the potential success of a sustainability plan in Old Worthington. The results of the survey showed that merchants are largely concerned with preserving the historic downtown while becoming more environmentally friendly and modern. Merchants emphasize the importance of cost savings as a result of energy savings which benefits their bottom line. Surveyed merchants were also very interested in supporting local green initiatives and policy. They were also interested in an energy efficient merchant window decal to indicate to customers that they are an environmentally conscious business. The merchants' definition of sustainability seemed to mainly revolve around environmental or green initiatives. They also saw value in creating a more diverse

and welcoming community. Merchants liked the idea of saving money from becoming more energy efficient, but did not associate social and financial factors directly with the term sustainability.

There were two main challenges for the survey process. First, 20 qualified merchants were unable or unwilling to participate in this project. The main reasons for their lack of participation were time constraints, availability constraints, and skepticism toward the project's intent. Many of the owners physically run their businesses daily and are left with very little time to invest in taking a survey, conducting an audit, or communicating with AEP representatives. They also are hesitant to renovate because they are concerned with having to close their business for an extended period of time. There was conflict between landlords and merchants. Often merchants were unsure of who was responsible for making the updates to the building, which resulted in a lack of motivation to further look into the energy audit program. Additionally, some landlords are unwilling to pay for a reduction in energy costs because they are not responsible for paying the energy bill. This challenge is difficult to address and is dependent on the relationship between merchants and their landlords.

Barriers

The main challenge for this project was related to communication. The Sustainable Worthington Capstone Group acted as a means of communication between the merchants, the Partnership, and AEP. Throughout the project's life there were a number of communication barriers to overcome. Initially, the group faced skepticism from many of the merchants. Some of the merchants were not open to or willing to participate in

surveys, and some were unsure of how to approach the situation with their landlords.

There was a time commitment issue for many of the merchants as well. Merchants did not always wish to take time out of their day to interview or do audits. Additionally, during the last month of the project there were a number of AEP contacts who ended their employment and no longer remained in contact with The Sustainable Worthington Group.

Therefore, towards the end of the project's life there were major issues obtaining long term energy data and completing final Old Worthington merchant audits.

Recommendations

The following is a recommendation for sustainability implementation in the Old Worthington community based off of the results from merchant audits, long-term energy usage data, merchant surveys, and case studies of sustainable cities. Below the recommendations for Old Worthington are prioritized by their importance to sustainable Old Worthington's future success:

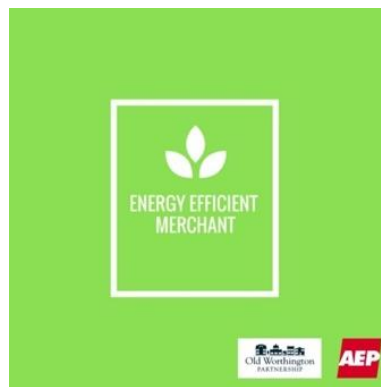
1. The Partnership must keep open communication channels with their merchants and the AEP auditor regarding the audit process once The Ohio State University's research has concluded for the semester. The conduit between merchant and auditor is a vital role which provides easier access to resources and builds community involvement.
2. The Franklin, Tennessee and Santa Monica, California case studies brought to light the importance of a number of factors which support the longevity of a sustainability movement.
 - a.) City government involvement and policy are crucial to the success of a sustainability movement. Although the community needs to support the movement, long-term success is highly dependent on a political backbone to keep pushing innovation and compliance¹.
 - b.) Similarly, transparency between the city, the Partnership, and the merchants is crucial. A community that makes decisions with their citizens reduces its risk of failure. If the community is involved and informed about the plan, potential issues are worked out in the planning stage instead of the

implementation stage².

c.) Additionally, the Santa Monica, California case study highlighted the significance of informing future generations through education in schools about environmental and sustainability issues at a young age. The life span of the plan is dependent on future generations' values¹.

3. If the Partnership is willing to invest in the energy efficiency of its merchants, then they should invest in an "Energy Efficient Merchant" window decal. All merchants surveyed showed great support for a sustainable business model marketing tool through which they may reach new or younger target customers who are moving into the Old Worthington area. The Partnership should be responsible for issuing and monitoring the decal. The recommended course of action is to have merchants apply for a decal by contacting the Partnership with their energy audit projections, and three months worth of energy bills post-upgrade implementation. An example decal has been provided and can be seen in Figure 3, but if the Partnership wishes to create a different decal there are a number of webpages and businesses that can be used. This reports example was made using the free online site Canva.com to design the figure.

Figure 3: Energy Efficient Merchant Window Decal



Additionally, the Partnership should distribute pamphlets to the merchants, possibly at one of the monthly merchant meetings. The pamphlet simply and succinctly explains the AEP Small Business Express Program, the prerequisites, the audit process, and the associated benefits in order to promote participation. A sample pamphlet was designed and can be seen in Figure 4, and the Partnership could change the layout or create their own with programs like Windows Publisher or other free online programs. The pamphlet below was created using the free online website Lucidpress.

Figure 4: AEP Small Business Express Program Pamphlet for Old Worthington

AEP SMALL BUSINESS EXPRESS PROGRAM

AEP OHIO®

What is it and how does it help you?
 As an AEP energy consumer in Old Worthington, you could qualify for their small business incentive program, which offers 1) a free energy audit to assess the current electrical technology in your space, and 2) suggestions for changes which could save you energy and money in the long term

Prerequisites for participating in the program include:

- ▶ Annual energy consumption of 200,00 KWh or less
- ▶ 12 months of billing history

1 AEP Ohio implementer conducts free audit
 A representative from AEP Ohio will come to your small business to conduct an energy audit and make suggestions based on your current electricity use, showing you costs, long-term savings and the payback period, and the AEP Ohio rebates offered.

2 Implementation
 An AEP contractor will implement the recommended energy-saving technologies. What you decide to implement based on their suggestions is flexible and negotiable.

3 AEP Ohio pays the program implementer the incentive
 This reduces upfront costs to the merchant.

4 Merchant receives invoice
 The merchant will receive an invoice from the program implementer for their portion of the implementation costs.

Not sure if you qualify or have questions/concerns? Contact _____ at:
 (xxx) xxx - xxxx
 _____@gmail.com

Why undergo a free energy audit?

- As an AEP customer, you are already paying for this free audit program via a rider on your bill; take advantage of your investment!
- Save energy and reduce significant costs for yourself in the long term, thereby putting more money towards your business.
- Reduce greenhouse gas emissions and qualify for a window decal for undergoing the audit and successfully implementing AEP's recommendations.
- Promote a more sustainable Old Worthington!

Addressing Challenges

There are a few challenges that Old Worthington may face as they strive to become a sustainable community. The resilience of any city's sustainability project is always a challenge. Although there are green policy supporters in the community, it may be difficult to move forward with sustainable policy and development because of the historic integrity of Old Worthington. Worthington should focus on defining what sustainability means for them as a community, and how that aligns with the community's values.

Additionally, it is important to keep in mind the conflicts of interest between landlords and merchants when working with the merchants in the future. Owning multiple business spaces can also add barriers to the audit process. To address these issues, it is important for the Partnership to keep open lines of communication between audit participants, as well as persevere and pursue other energy efficiency opportunities that may be available if roadblocks arise.

Conclusion

The Partnership stands in a good position to begin shaping a more sustainable Old Worthington. There is high community interest and merchants are receptive to promoting an environmentally friendly and open community. With the support of the Partnership and AEP's Small Business Express Program, merchants have the opportunity to both save money for their business and become more energy efficient. As a result of participating in this program, merchants can reduce their greenhouse gas emissions and save money that could be spent investing in other aspects of their business or the community.

Although the upfront costs associated with implementing better lighting technologies can be a deterrent, the Partnership can encourage participation by actively communicating with their merchants and with AEP (via emails, pamphlets, etc.). The Partnership must work to facilitate communication between merchants, encourage and bring awareness to other sustainable policy initiatives in the City of Worthington, and educate young community members on the importance of these policies. The Partnership should also stress to merchants that by implementing new energy efficient technologies, they will receive a window decal. This can attract new consumers, broaden their consumer base, and increase their property value.

Moving forward, the best way for the Partnership to make a lasting impact is by garnering more support in the community for sustainable policy in the city of Worthington. Implementing these environmental, social, and financial measures at the government level would potentially provide funding, enforcement, and regulation/monitoring to an extent that the Partnership cannot provide. AEP also provides a community sustainability

planning service that can be utilized to help aid in the development of sustainable initiatives outside of energy efficiency. In order for the Partnership to continue to build on the progress that has been made in the last three months, it needs to be persistent in its communication with the merchants and be cognizant of the changing demographic of the community. As more young people and families move into the area, community values may shift from strictly preserving the integrity of the historic appearance of Old Worthington to the inclusion of multiple aspects of sustainability (i.e. the implementation of solar panels on some flat-top buildings to make properties more environmentally friendly). Before the Partnership can make genuine progress, it needs to determine what sustainability (as a key tenet of their organization) means to the community of Old Worthington. Once this has been discussed openly with members of the community, then the Partnership may have a great opportunity to make meaningful impacts outside of energy efficiency in merchant businesses.

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4. AEP OHIO Small Business Incentive Program. (2017). *Small Business Energy Audit projected Results 2016-2017*. [Data set]

Appendix

Long-Term Data:

Dataset #1:

- WUMC-Energy Use and Cost Graph [Excel]
- Source: Worthington United Methodist Church. (2017). *Energy usage data, 2010 to 2015*. [Data set].
- Description: This dataset includes information on Worthington United Methodist Church. The data includes the church's monthly energy use and energy cost data from 2010-2015. This includes the time span slightly before and after the church completed an audit and implemented the recommended upgrades. This table was used to create long term energy use and cost savings graphs from participating in an AEP audit and implementing the recommendations. It is meant to be used as a persuasive tool for Old Worthington merchants.

Projected Audit Data:

Dataset #2:

- Magic Cruises Audit [PDF], Sassafras Bakery Audit [PDF], AEP Case Studies [Folder]
- Source: AEP OHIO Small Business Incentive Program. (2017). *Small Business Energy Audit projected Results 2016-2017*. [Data set].
- Description: This data set includes the following energy audit results for the small businesses listed above. The information includes projected energy usage, savings, and other measures of return on investment from implementing recommended audit upgrades. This data was used in the creation of the Merchant Pamphlet and Tables 1 and 2 of this report.

Sustainable City Case Studies:

Dataset #3:

- Santa Monica, California Case Study [PDF]
- Source: Gallagher, Patrick. (April, 2008). Local Sustainability Frameworks. Envecologic. Retrieved from <http://personal.colby.edu/personal/t/thtieten/sc-ca.html>
- Description: This article was posted to highlight the successful factors which lead to the creation of Santa Monica's Sustainable City Plan. The data was used to help make recommendations for Worthington's future Sustainability Plan.

Dataset #4:

- Franklin, Tennessee Case Study [PDF]
- Source: Shane, Dustin. (2011). Green Revolution in Franklin Tennessee. Main Street Now. Retrieved from <http://www.mainstreet.org/main-street/main-street->

now/main-street-now-pdfs/msnnews-2001-05_06.pdf

- Description: This article was posted to highlight the successful factors which lead to the creation of Franklin, Tennessee's Sustainable City Plan. The data was used to help make recommendations for Worthington's future Sustainability Plan. It also contributed to the creation of the "Energy Efficient Old Worthington Merchant" window decal merchants.

Interviews:

Dataset #5:

- Franklin, Tennessee Interview [PDF]
 - Dr. Ken Moore
 - Andrew Orr
- Sources:
 - Moore, Ken. Mayor of Franklin, Tennessee. Phone: (615) 791-3217. <http://www.franklintn.gov/government/board-of-mayor-aldermen/mayor-ken-moore>
 - Orr, Andrew. Principal Planner of Franklin, Tennessee Planning and Sustainability. Phone: (615) 550-6741. <http://www.franklin.gov.com/Home/Components/StaffDirectory/StaffDirectory/135/502>
- Description: Notes from the conversation with Mayor Moore and Andrew Orr regarding the creation of the Sustainable City Plan for Franklin, Tennessee. Phone Conversation on March 2nd, 2017. Questions included:
 - 1) Can you tell me about the window sticker and sustainability certification you created
 - 2) What is the relationship between the Franklin Is and Old Franklin organizations or websites? What is each of their focus?
 - 3) What happened with the Live Green Partnership? What worked and what didn't? What suggestions would they have to engage businesses in sustainable initiatives? to create a Sustainable image for our downtown?
 - 4) What did Sustainability mean for your community?
 - 5) What were some challenges you faced in this process?

Dataset #6:

- Merchant Survey Results [PDF]
- Source:
 - Allison Chapman and Beth Dekker - Igloo Letterpress
 - Christie Bruffy - Highline Coffee Co.
 - Jeff Kayati - 689 High LLC
 - Barbara Ruzzo - Pure Cottage
 - Lindsay Harrington - Birch
 - Regis Hudock - Peacock Lane
 - A.J. Perry - Sassafras Bakery
- Description: Notes from the many conversations with the Old Worthington

merchants listed above regarding their knowledge of AEP's audit opportunities and Old Worthington sustainability. In person or phone conversations from January to April, 2017. Questions included:

- 1) Hello, we are visiting from Ohio State University to try and better understand the energy usage of Old Worthington. We are working with Joanne Dole and the Old Worthington Partnership as well as AEP. We were wondering if you could share with us, your opinion of the vitality of Worthington and how that relates to your experience being a Worthington Merchant?
- 2) What does the future sustainability of Worthington mean to you as a merchant? Which is most important to you? (listed conversation starters for interviewer)
 - Preserving the Historic Buildings in the Heart of Worthington
 - Saving Energy and Money
 - Creating a Welcoming and Diverse Community
 - Investing in Local Initiatives as much as Possible
- 3) Have you participated in free AEP small business energy audit before?
- 4) (If yes to Q3) How was your experience? Did you implement their recommendations? Would you be willing to share you cost savings with us? Would you recommend this process to a fellow merchant?
- 5) (If no to Q3).... The AEP audit process is completely free for Worthington merchants who qualify for the small business program. If you decide to implement their recommendations they offer rebates up to 80% for the installation. Other merchants in Worthington who have participated saved \$_____ on their energy bills over time, and said "_____". Is this something you would be interested in?
- 6) (If yes to Q5).... Please enter contact information and any further questions!
- 7) (If no to Q5).... Is there something that could make energy efficiency more appealing to you? (listed conversation starters for interviewer)
 - Use as a business Marketing Technique to attract Millennials or new customer base
 - Efficient Worthington Business Certificate/ Window Sticker
 - Clean Cost Savings Results from Other Local Worthington Businesses

Mentoring/Collaboration:

Description: All of these individuals helped give guidance and assistance with our project.

Joanne Dole - Old Worthington Partnership Member

Annina Parini - Old Worthington Partnership Member

Brian Feathers - Lime Energy Contact and Auditor

Jason Grewell - Lime Energy Contact and Auditor

Thomas Lehman - Lime Energy Contact and Auditor

Rebecca Karason - AEP, CLEAResults Contact and Outreach Team Lead