City of Alliance OH

Sustainability and Climate Action Plan

Revisions Approved by Alliance Green Commission

on April 8, 2019

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Ordinance 32-19

Contents

INTRODUCTION

Mayor Toni Middleton and the City of Alliance signed the US Mayors Climate Protection Agreement in 2007. A citizen's task force was assembled and has been working toward helping the City fulfill its commitment under the Climate Protection Agreement. Today more than 1000 US mayors have signed this agreement. This document outlines how the City plans to meet its commitment.

The agreement is attached Appendix A. The U. S. Mayors Climate Protection Agreement includes three commitments and a list of 12 possible action steps. This plan is organized around those commitments

SUSTAINABILITY

Our overall goal is to make Alliance a sustainable city. This means that we must consider all aspects of sustainability: environmental, economic, and social. While this plan focuses on the environmental goal of reducing our greenhouse gas emissions, it also recognizes the need to approach the task in a way that also benefits the economic and social conditions of the city and its residents. We are relying heavily on resources developed by International Council for Local Environmental Initiatives (ICLEI) Local Governments for Sustainability.

The following chart (Table 1.) from ICLEI provides an overview of the types of considerations that fall into each of the three pillars of sustainability.

***Table 1. Overview of areas of concern related to sustainability in cities*.**

ENVIRONMENT	ECONOMY	SOCIETY
Natural Systems (ecosystems, habitat, water, stormwater, air quality, waste, environmental management and resource conservation)	**Economic Development** (urban technologies, green jobs, local commerce, tourism, local food, local commerce, sustainable industries)	**Equity in Access, College Readiness, Lifestyles** (education excellence, arts, culture, and community engagement)
Planning & Design (land use, transportation, mobility, parks, open space, recreation, urban design, livability, preservation, brownfields)	**Employment & Workforce Training** (jobs creation, training, living wages, youth skills, services for economically disadvantaged)	**Children, Health & Safety** (youth wellness, crime prevention, emergency preparedness)
Energy & Climate (energy, emissions, renewable energy and green building)		**Affordability & Social Equity** (affordable housing, poverty, community revitalization, services for basic needs, civil rights, race and social justice)

CLIMATE ACTION

In the 1990's and before, cities and nations around the world recognized the need to develop sustainability and climate action plans to provide for their own economic and societal well-being and to position themselves for a transition to a new era in technology and energy use . The Kyoto protocol was a significant international agreement among nearly all the nations of the world that addressed these issues. As the science developed and polices emerged in various countries a new agreement based on the Kyoto protocol was reached in Paris in 2015. The United States is bound to the Paris Agreement until November 2020. (See Appendix B for more information)

The Mayors Climate Protection Handbook suggests five milestones for the Cities for Climate Protection Campaign:

1. Conduct a baseline inventory of global warming pollutants.
2. Establish a target to lower emissions.
3. Develop a local Climate Action Plan to implement actions that reduce global warming pollution.
4. Implement the local Climate Action Plan.
5. Measure, verify, and report performance.

Milestone 1 - Baseline Inventory

We made progress with the first milestone and have conducted a baseline inventory of government emissions using the Clean Air and Climate Protection (CACP) software provided through ICLEI. Our results for the period 2005-2010 are shown in Appendix B and in Figures 1 and 2. We used the **mean of the years 2005-2007 as our baseline**. The inventory indicates an increase in energy use and GHG (greenhouse gas) emissions during this time.

Inventory data from the years 2009 and 1010 show an average decrease of 5.5% which meets our goal for 2012. This was achieved through efficiency improvements at the water and wastewater plants and by improved street lighting but was offset somewhat by increased vehicle and building emissions during the same period.

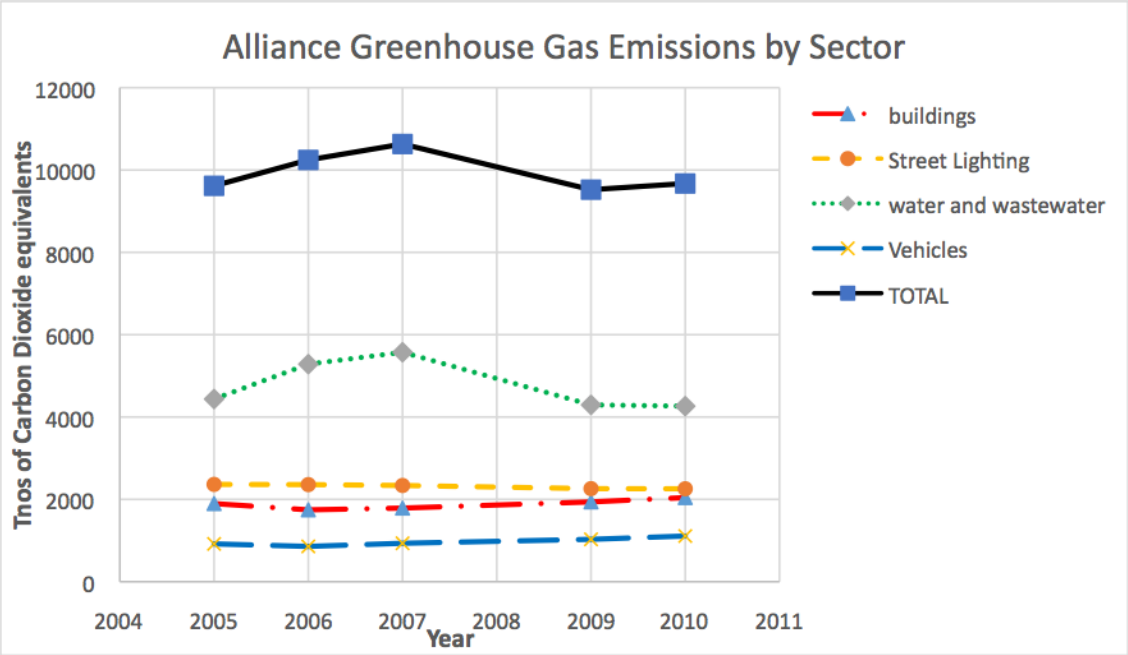


Figure 1. Baseline and interim greenhouse gas emissions by sector calculated using the Climate and Air Pollution Planning Assistant and the guidelines of the Local Government Options protocol developed by the California Air Resources Board. Major reduction in energy consumption by the water and wastewater sectors and reduction by modification of street lighting resulted in an overall reduction in years 2009 and 2010 of 5.5% compared to the 2005-2007 baseline.

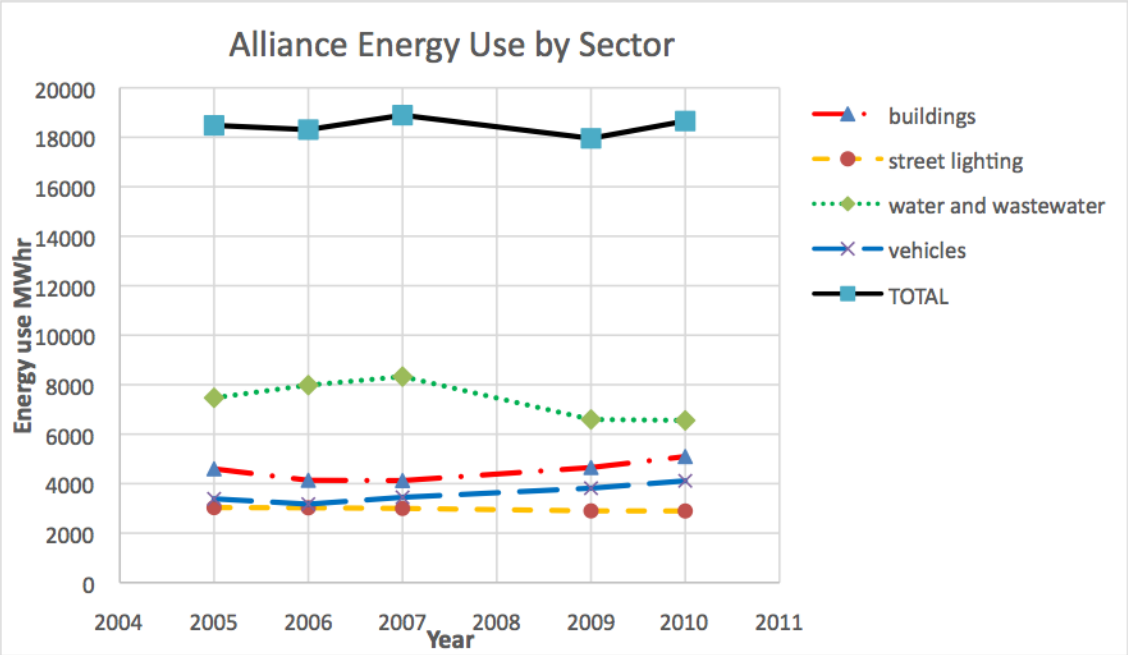


Figure 2. Baseline and early response energy Use by sector. Energy use was reduced in the water and wastewater sectors but was offset by increases in building and fleet use. The result is a slight and statistically insignificant change in 2009-2010 relative to the baseline of 2005-2007.

Milestone 2 – Establish a target

The goal stated in the Mayors Climate Protection Agreement is to "Reduce greenhouse gas emissions to 7% below 1990 levels by 2012". Alliance does not know what its 1990 emissions levels were, but we did set a goal based on our recent survey.

We propose to use the three-year average for 2005-2007 as our base. Thus, our base total emissions would be 10,163 tons. Our goal then would be a reduction of 30% by the year 2030 with an interim goal of 5% by 2012.

This would amount to a reduction of 508 tons by 2012 and 3049 tons by 2030.

We propose to achieve these by focusing on conservation, efficiency, and alternative energy sourcing.

Because water and sewer operations represent the largest component of energy and associated GHG emissions, that is an area that has the most potential for reductions and savings. Street lights are the second highest component.

Milestones 3, 4 and 5 – Develop, implement and evaluate a Climate Action Plan

The remaining three steps are the subject of this document.

THE PLANNING PROCESS

Eight areas of action have been identified in conjunction with the US Mayors Climate Protection Agreement, and will be used as the outline of this plan: :

1. Land Use Management and Urban Forestry
2. Transportation Planning
3. Green Power
4. Energy Efficiency
5. Green Building
6. Water and Wastewater Management
7. Recycling and Waste Reduction
8. Education and Outreach

Status of Greenhouse Gas Emissions Reduction by the City of Alliance

The Green Commission was formally created by the Alliance City Council with Ordinance 76-10, passed on September 20, 2010. In that ordinance the Green Commission was charged with developing this Sustainability Plan which was developed by the Commission and submitted to Council in November 2011. The plan called for, among other things, determining the current level of greenhouse gas emissions by City departments, setting realistic goals for the reduction of those, and monitoring the results. The Green Commission established 2005-2007 as the baseline years and the results, updated from those presented in the sustainability plan of 2011, are shown in Table 2.

Table 2. Baseline estimates of Greenhouse Gas Emission in metric tons of CO_2 equivalents by the City of Alliance. Data generated using ICLEI's Clean Air and Climate Protection Software

Year	2005	2006	2007	MEAN BASELINE	2009	2010	MEAN INTERIM
GHG Emissions (MT CO_2E)	9615	10243	10637	10165	9522	9672	9597

The goal set by the Green Commission in the plan was to reduce City emissions 30% by the year 2030, with an interim goal of a 5% reduction by 2012.

An inventory of City energy consumption during 2016 was done and estimates of the equivalent greenhouse gas emissions were calculated using conversion factors from the US EPA (see Table 3).

Table 3. Greenhouse gas emissions by department and energy source for the City of Alliance in 2016 using EPA conversion values (revised).

DEPARTMENT	METRIC TONS CO_2 Equivalents			
	ELECTRICITY	PETROLEUM	NAT GAS	TOTAL
ADMINISTRATION	368	7	78	453
FIRE	106	54	13	173
HEALTH	35	0	12	47
PARKS	146	55	56	257
POLICE	25	327	46	398
WASTEWATER	3859	137	50	3893
STREETS (including lights)	1903	223	13	2091
WATER	2412	14	20	2648
TOTALS>>	8853	819	288	9960

The baseline values (2005-2007) cannot be directly compared with the 2016 values because different methods were used for the calculation of baseline than for the 2016 calculations and allocation in the initial analysis were by function whereas the 2016 allocation was by department. Even with the

different calculations it appears that the Alliance Municipal GHG emissions have remained about the same. There was an initial small decrease in emissions in 2009 and 2010 but the 2016 level is like the baseline. See Figure 3. The potential for further cost savings remains.

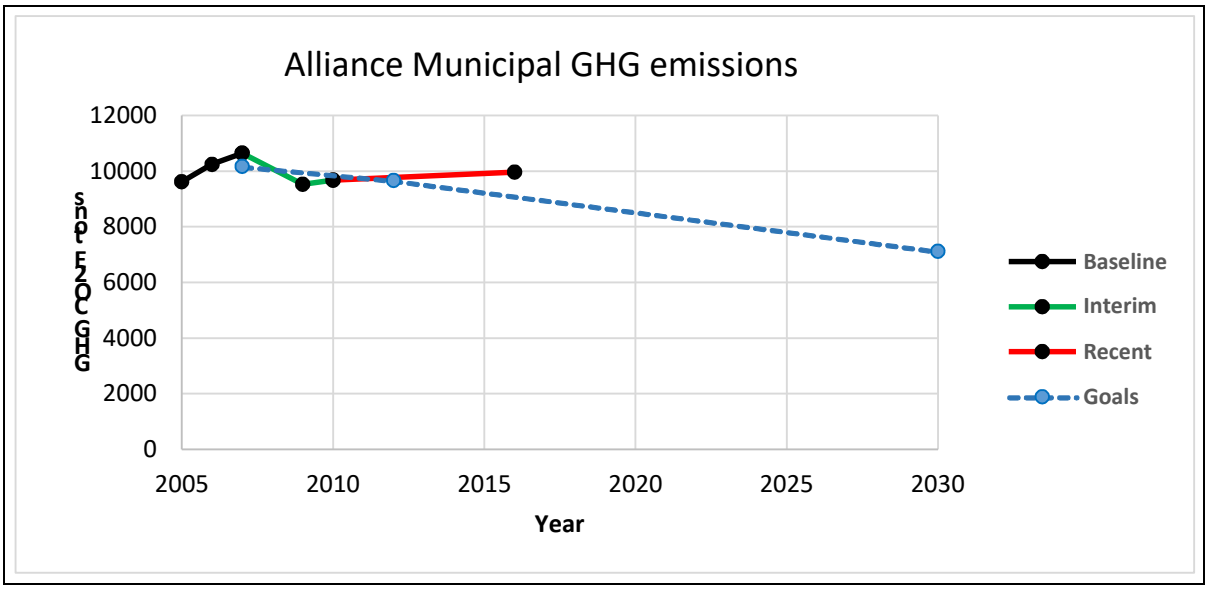


Figure 3. Baseline (2005-2007), interim (2009—2010) and recent (2016) GHG emissions along with emission goals for 5% reduction by 2102 and 30% reduction by 2030 for the City of Alliance. Note that a different method of calculation was used for 2016 so the points are not directly comparable.

The water and wastewater treatment facilities and associated activities in those departments account for most of the GHG emissions (Figure 4, below) and that most of the emissions are related to use of electricity (Figure 5, below).

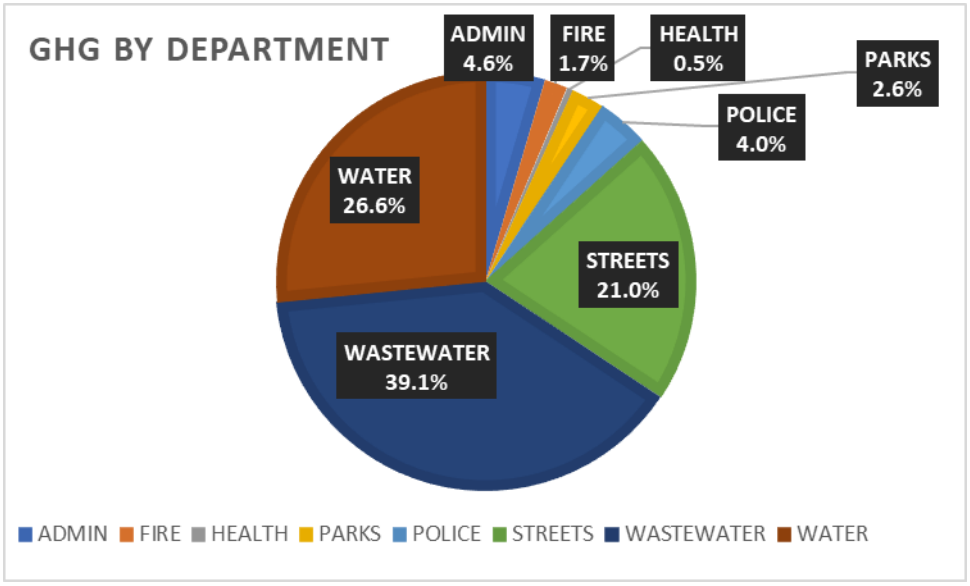


Figure 4. Relative (%) GHG emissions in 2016 by City department (revised).

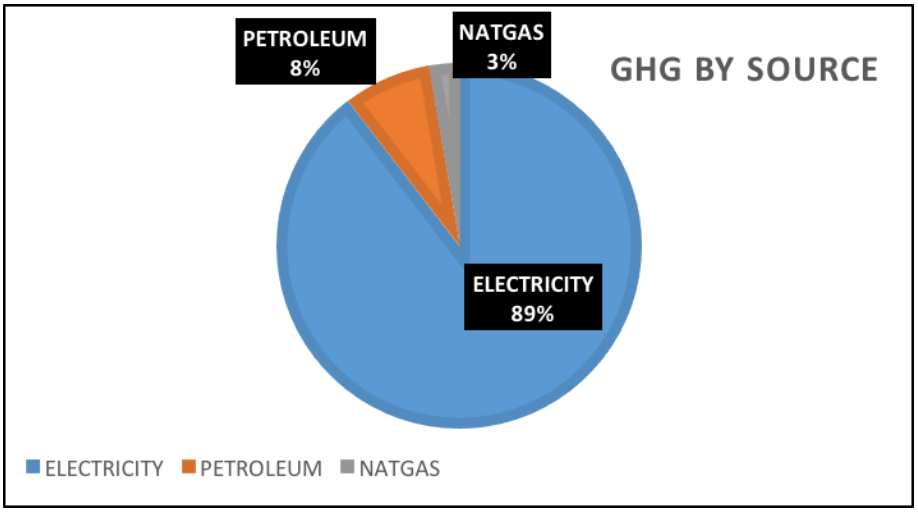


Figure 5. Alliance Municipal GHG Emissions in 2016 by energy source.

LAND USE MANAGEMENT AND URBAN FORESTRY

History

Land Use Planning and Zoning

The City of Alliance recently adopted a new Planning and Zoning Code that improves regulations that relates to green spaces and urban revitalization. The task now will be to educate citizens about the new regulations and provide fair enforcement of the policies. In addition, it will be necessary to review and update the codes as new technologies and opportunities for more efficient housing and building become available. The concepts outlined in Stark County's 2011 "Sustainable Planning and Zoning Handbook: A Guide for Sustainable Development in Stark County," may be considered for utilization in future updates of the Alliance Planning and Zoning Code. The City may also consider integrating "Smart Growth" concepts in their planning. According to Smart Growth America, "Smart growth is an approach to development that encourages a mix of building types and uses, diverse housing and transportation options, development within existing neighborhoods, and community engagement." In particular, the city should focus on enforcing existing ordinances related to sidewalks and sidewalk repair to maintain Alliance's assets of walkable neighborhoods.

Urban Forests

Alliance has a long tradition of promoting healthy urban forests. The Alliance Shade Tree Commission has been in operation for over 30 years and the City has been recognized as Tree City USA for 29 consecutive years. It is currently conducting a "1000 Trees for the City" program with the goal of planting 1000 new trees in public areas. The work has already begun with the planting of over 300 trees in areas chosen by the Commission. The Commission, in cooperation with The University of Mount

Union, has completed a computerized street tree inventory that is updated annually (not including parks and public lands). Finally, an Alliance City Arboretum is under development with 100 trees identified and labeled. This will promote interest in trees in the city and provide incentives for tree planting and increased diversity. We propose to continue support of tree planting and maintenance, according to guidelines established by the Shade Tree commission.

Parks and Public Lands

Alliance Parks had limited financial resources until the recent (May 2018) passage of park property levy. They provide open space and recreational opportunities for thousands of visitors every year. The Department of Parks, Recreation and Public Lands maintains 300 acres consisting of 24 parks and parklands, ranging from small neighborhood green spaces to the 54-acre Silver Park and the 60-acre Butler-Rodman Park Complex.

The Alliance Parks System is very fortunate to be supported by the non-profit organization, "Friends of the Parks." Annually, the "Friends of the Parks," along with many of the area's service and garden clubs, donate their time and money in support of our parks and recreation programs and projects.

A recent research project conducted at the University of Mount Union suggested that the city parks are widely accessible to Alliance residents from diverse socio-economic backgrounds.

Recently, Maple Beech Park has seen improvements related to trails and shelters, as well as improved river access and opportunities for passive recreation. Memorial Park has a skate park and frisbee golf, both of which are popular attractions. The transportation section below includes proposals for bicycle and walking paths that would also serve to tie together the City Parks.

Goals and measures:

Short term:

- Maintain Urban Forest Inventory and identify areas for removal and replacements.
- Conduct an ecological analysis of city forest cover.
- Identify public lands where improved forest management could increase sequestration and air pollution mitigation.
- Encourage adherence to and enforcement of new city zoning regulations.
- Encourage awareness of the Stark County guide *Sustainable Planning and Zoning Handbook: A Guide for Sustainable Development in Stark County*.
- Encourage education and enforcement of Shade Tree Commission's recommendations for appropriate tree planting on curb lawns.
- Work with local police to levy and enforce fines against traffic accidents that involve curb lawn trees.
- Re-evaluate use of small, park-maintained properties.
- Develop bike trails within the public parks with spurs to connect to the future county bike trail.
- Continue to explore funding sources for brown-field development.

Long term:

- Identify and preserve open space.
- Promote infill development.
- Provide incentives for building re-use and retrofit.
- Explore outdoor classrooms and wild school yards for the local school buildings.

TRANSPORTATION PLANNING

History

The transportation sub-committee has concentrated on developing a hike and bike trail in Alliance that initially connects the northern and southern ends of the city on a trail that roughly corresponds to the old Iron Horse Trail. It has also worked to plan and develop a much more comprehensive hike and bike trail system within the city that connects the city schools, university, parks, library, and major shopping areas (see Appendix E). We have worked both with the city council and Stark Parks to further these projects.

The committee has also worked on reducing carbon emissions through alternative transportation choices. Initially we focused on fuel-less Fridays and a letter-writing campaign to install bike racks. We have continued to push for additional bike racks and have seen them installed both in the downtown area, at some shopping areas and on the University of Mount Union campus.

The committee has worked with SARTA to make the county bus system more user-friendly. This includes shelters, better signage, availability of route schedules and bike racks on buses. Other avenues that the committee has explored to date are: Installing alternative fuels in the city, using alternative fuels for Alliance City vehicles, and encouraging police patrol on bicycles.

The Mayor's office has worked with AMTRAK to improve its facility in Alliance. SARTA has opened a transit center in Alliance that has increased the visibility of their presence and has begun to increase ridership.

Overall Goals:

- Promote safe walking and biking within the community.
- Facilitate better mass transit use within the community seek expansion of rail, bus and other alternative transportation connections within the region and state.
- Encourage the use of next generation transportation and fuels.

Short Term:

Government Measures:

- Work with city and county officials to develop an integrated City walking and bike plan (with or without grant funding).
- Seek and secure funding for a City bike plan.
- Develop and implement a plan to install more bike racks throughout the city.
- Develop a link between the SARTA station and future bike paths.
- Inventory and complete sidewalks and safe crossings at all schools and city parks.
- Review criteria for Bicycle Friendly Communities as published by the League of American Bicyclists and determine opportunities for making Alliance more bicycle friendly.
- Investigate and share with appropriate departments and Alliance schools grant opportunities from Ohio EPA for Alternative Fuel Vehicles Conversion, Clean Diesel School Bus, and Diesel Emission Reduction Grants.

Community Measures:

- Work with The University of Mount Union, the City administration, Stark Parks, and other concerned parties to create a bike and walking path on the abandoned railroad right of way between the Mount Union campus and downtown, parallel to Union Avenue.
- Develop workable plans to install effective bike routes throughout the city that connect city parks, schools, the university, library, and key shopping areas - See Appendix E.
- Continue to develop programs that encourage the use of public transit and biking or walking to work.
- Develop partnerships to promote the health benefits of walking and biking.
- Encourage businesses, schools, churches, parks, library, and other facilities to install bike racks.
- Develop a series of online and printable maps for walking and biking within the city.
- Work with SARTA to promote use of public transportation and make schedules accessible.

Long-Term:

Government Measures:

- Encourage inter-city rail and bus service in Ohio.
- Improve links between AMTRAK station, SARTA station, and future bike paths.
- Improve the waiting and parking areas of the AMTRAK station.
- Negotiate more SARTA routes.
- Improve existing sidewalks and install new ones.
- Continue to replace old vehicles with increasingly more fuel-efficient ones.
- Consider parking and driving incentives for fuel-efficient vehicles and carpool users.
- Explore requiring bike racks at area businesses that have parking lots.
- Continue and expand current five-minute idling policy for City vehicles.

Community Measures:

- Explore ride share program to Canton.
- Consider parking and driving incentives by local businesses for employees and patrons who use fuel-efficient vehicles or carpool.
- Develop plans to accommodate vehicles that use alternative fuels. (e.g. electric vehicles, plug-in hybrids, hydrogen, compressed natural gas).

GREEN ENERGY

History:

Historically, Alliance has not had significant access to green energy options. For a period, Ohio Edison offered a "green option" to customers. However, it was an option that involved burning waste coal which did not lower the carbon footprint of the energy. While AEP Energy has recently offered a plan, which provides power that is 100% offset with wind energy credits, local large-scale green energy options have not yet been developed.

Currently, there are several alternative energy installations within the city limits. Several solar voltaic arrays, a set of solar thermal panels, several geothermal installations, a methane recapture system and a wind turbine may all be found within the city of Alliance (See Appendix F for details).

In the past, the City of Alliance has investigated the possibility of methane recapture at the waste water facility. At the time, the project was not considered to be cost–effective. However, the analysis now shows this to be a cost-effective action, and the city has constructed a dewatering facility which will utilize methane recapture to increase its energy efficiency. A waste-to-energy facility was also investigated to be built northeast of town by private interests but did not move ahead. Natural gas has emerged as a fossil fuel source that is potentially less carbon-intensive than coal or oil, but which is still being evaluated for its long-term sustainability with regards to water resources and methane leaks.

According to the Public Utilities Commission of Ohio: "Ohio law contains a renewable energy portfolio standard that requires that 12.5 percent of electricity sold by Ohio's electric distribution utilities or electric services companies must be generated from renewable energy sources by 2027. Additionally, of the 12.5 percent, at least 0.5 percent must come from solar sources. The law sets annual benchmarks, or incremental percentage requirements for renewable energy, through 2027. Each utility and electric services company is subject to compliance payments if the annual benchmarks are not met. Utilities and electric services companies may purchase renewable energy credits to meet the renewable energy standard." (https://www.puco.ohio.gov/industry-information/industry-topics/ohioe28099s-renewable-and-advanced-energy-portfolio-standard/) Utility companies are expected to be developing a variety of programs to meet these goals which may be of use for our community.

Alliance's future green energy efforts will take place within the context of State, Federal, and International energy policy which will require increasing energy efficiency and reduction of carbon emissions. It is expected that these policies will be in flux, and local actions will need to be tailored to this rapidly evolving context. As is being discovered in the private business sector, it may be that the cost-effectiveness of making energy efficiency changes will prompt many changes ahead of their requirement. New opportunities in the area of energy conservation and alternative energy are quickly becoming available.

Overall Goals:

- To increase alternative energy opportunities for the citizens of Alliance.
- To explore alternative energy opportunities for the City Government of Alliance, in order to increase its resilience, to protect its citizens, businesses and industries against fluctuations in energy prices, and to reduce its carbon emissions.
- To encourage regional development of alternative energy options.
- To develop alternatives to traditional transportation fuels.

Short Term:

Government Measures:

- Investigate solar hot water for city fire stations. Solar hot water has a shorter pay-back cycle than solar electric generation, and potential grants make this more financially feasible in the short term.
- Investigate feasibility of geothermal, solar voltaics, a wind turbine, and other alternative energy in specific applications where they would be most cost-effective, and/or reduce peak loads.
- Implement methane recapture at new de-watering facility (this effort is currently under way)
- Continue updating equipment with solar or alternative energy when feasible (such as "arrow board" traffic signs which were switched from gasoline to solar power, and partnering with the Chamber of Commerce to install solar-powered LED lighting for the Alliance welcome signs)
- Continue investigating installation of a natural gas filling station in the city, and/or installing public-access electric charging stations on public properties.
- Investigate initiation of energy efficiency and alternative energy funding program for citizens through state grant/city tax program: the Ohio Revised Code enables cities to use bonds or grants to pay for the installation of alternative energy and/or energy efficiency for citizens. Residents who receive the funds then pay back the cost, plus the interest, through an assessment on their property taxes for up to 25 years (Property Assessed Clean Energy, or PACE program).
- Investigate use of a performance contract to measure City's energy use and provide for guaranteed energy use reductions.
- Develop energy dashboard in conjunction with new City website to illustrate city progress in the area of alternative energy use, and to provide resources for local businesses and residents.

Community Measures:

- Participate in the Ohio Solar/Green Energy Tour, highlighting existing alternative energy installations in the area.
- Promote energy efficiency and alternative energy use through a variety of means, including investigation of funding through a PACE Special Improvement District.
- Initiate discussions with local schools to institute technical classes in green energy production, management and installation.
- Raise awareness regarding State and Federal incentive programs for alternative energy installations.
- Strengthen ties with Green Energy Ohio.
- Encourage partnerships between organizations which are using alternative energy, and educational institutions.
- Provide information on local alternative energy installers and options.

- Investigate and encourage installation of electric vehicle charging stations (see also Transportation section).
- Continue to explore the possibilities for a Community Solar project in the area.

Long Term:

Government Measures:

- Negotiate a "green choice" program with Ohio Edison for city's population (AEP Energy is currently offering a program with 100% wind offsets as an energy supplier).
- Install solar hot water on all city buildings, consider photo-voltaics to reduce peak loads, geothermal, or other alternative energy.
- Investigate the feasibility of a district cogeneration facility.
- Encourage alternative energy installations such as wind, solar and geothermal through the building and zoning departments.
- Provide incentives for businesses in Alliance that produce, maintain, or install green energy components (see also Green Building, for brochure developed for use by building department).
- Investigate brown-field sites (including abandoned mine and landfill areas) or abandoned industrial sites for installation of green energy - either as energy generation sites OR as sites where green energy industries could be given incentives to become established.
- Investigate establishing a compressed natural gas (CPN) filling station or installing public-access electric charging stations on public properties.
- Consider setting a renewable energy percentage or "net zero" goal for the City. For instance, the University of Mount Union has set a goal to be "net zero carbon emissions" by 2046. The City of Cleveland recently committed to 100% renewable energy by 2050. Cities, Counties, and even states have made such commitments, with more than 250 US Cities committing to transition to 100% renewable energy for city facilities by 2035 or earlier, and many committing to community-wide alternative energy use by 2050. The US Conference of Mayors adopted policies in 2017 and 2018 in support of Cities transitioning to 100% renewable energy use. It is proposed that in agreement with the US Conference of Mayors and the University of Mount Union, the City of Alliance adopt a goal of 100% renewable electric energy use by City facilities by 2035, and a goal of 100% community renewable electric energy use by 2046. This goal should be re-evaluated periodically to see if the dates can be moved up.

Community Measures:

- Participate in the Ohio Solar Tour, highlighting existing alternative energy installations in the area.
- Research and promote alternative energy use.
- Investigate solar and wind turbine installation possibilities in city region together with University and school districts.
- Establish community goals for percentage of locally-generated alternative energy (i.e., in keeping with, or exceeding, state energy portfolio goals).
- Develop mechanisms within the community to help meet the goal of 100% community renewable electric energy use by 2046.

ENERGY EFFICIENCY

History:

The City has taken many steps to improve the energy efficiency of its facilities, including lighting retrofits, HVAC adjustments, and behavioral changes.

Currently, there are low-income weatherization programs in place through the local utilities. It is hoped that the programs will be extended in the future. As of November of 2017, Ohio Revised Code requires new commercial building construction to conform to the 2012 International Energy Conservation Code. Updates to the Energy section of the International Building Code are likely to increase levels of energy conservation required in the future, as it aims toward "Net Zero" energy use goals. There is a movement within the construction industry towards "Net Zero" facilities which reduce their energy consumption so that they are able to produce as much energy on-site as they use, resulting in "Net Zero" energy use over the course of a year.

Overall Goals:

- To substantially increase City facilities' energy efficiency.
- To help facilitate the energy efficiency of residences, businesses, industry, and institutions in the City of Alliance and surrounding area.
- Ultimately, to combine energy efficiency and green energy production in the area to the end that Alliance will be a net-zero energy, carbon-neutral community.

Short Term:

Government Measures:

- Conduct energy audits of city buildings.
- Investigate performance contracts to upgrade HVAC systems in city buildings.
- Complete LED lighting upgrades and LED exit sign changes.
- Install occupancy and light sensors.
- Install efficient vending machines or "misers."
- Continue "lights out and computers off-at-night" policies.
- Revise policy to purchase only Energy Star or equivalent equipment and appliances.
- Exterior LED lighting: Continue to replace all traffic signals and street lights with LED fixtures.
    - State Street traffic lights have been replaced with LEDs.
    - Decorative street lights on Union near the University have already been converted to LED fixtures, and new LED decorative light fixtures are planned to be installed along the remainder of N. Union to Gaskill, and also are being investigated to replace existing units on Main Street (The City is currently engaging in discussions with the electric utility over the use of LED street lighting fixtures and their effect on the pricing of electricity for the City).
    - The City has also purchased high-efficiency LED holiday decorations.
- Continue to facilitate residents' access to home weatherization assistance via the Stark County Community Action Home Energy Assistance Program.
- Investigate creation of a revolving fund with savings to provide capital for efficiency

improvement and energy use reduction.
- Develop energy dashboard in conjunction with new City website to illustrate city progress in the area of energy efficiency, and to provide resources for local businesses and residents.

Community Measures:

- Facilitate residents' access to information on energy audits and home and business improvements through energy utilities and other sources (Stark County Community Action Home Energy Assistance Program is well established).
- Initiate an energy savings campaign "How low can you go?" or "10% a year" challenge.
- Encourage community use of motion detectors and photo sensors for exterior lights.
- Provide information on progressive building standards and codes, for voluntary use.
- Encourage businesses and institutions to develop their own energy dashboards to share their progress.

Long Term:

Government Measures:

- Be involved with County and State code officials to update energy codes.
- Install reflective roofing and additional insulation as roofs need to be repaired or replaced.
- Adopt the American Institute of Architects' 2030 Net Zero building goals.

Community Measures:

- Encourage "Green Business" and Energy Star for Businesses program (Chamber of Commerce is currently considering the development of a sustainable business luncheon series).
- Develop map of Green businesses, alternative energy sites, etc.
- Help community to understand funding options for efficiency improvements.

GREEN BUILDING

History:

The Alliance Area Habitat for Humanity has built Energy Star-certified buildings in town and has developed green building standards for its future buildings. Buckeye Village's Giant Eagle store, and the Kohl's store are also Energy Star certified. The University of Mount Union's Welcome Center is Silver LEED (Leadership in Energy and Environmental Development) certified, and Mount Union continues to build to the LEED Silver level, although they do not currently pursue certification (See Appendix F).

The Green Task Force offered two seminars on green building in 2008: one for businesses, and one for homeowners. A general seminar on sustainability issues in 2007 also included information on green building topics.

The National Association of Governors and the American Institute of Architects are promoting a "green" construction code that the International Code Council has developed. The code is compatible with the

American Institute of Architects' 2030 carbon-neutrality target and is very similar to the LEED standards. It includes water, energy, air quality and safety benchmarks that states and cities may adopt and is currently available. Members of the City of Alliance building department have been attending professional development sessions on green building and are interested in incorporating new energy codes.

Overall Goals:

- Raise awareness of green building options and benefits.
- Facilitate green building for businesses and residences in Alliance.
- Adopt the Architecture 2030 goals for immediate 30% reduction of energy use in buildings, and net-zero energy use in new and renovated buildings by 2030.

Short Term:

Government Measures:

- Continue to encourage building department staff to obtain their LEED or other green building certification, and be aware of the NHA Green Building Standards, and the International Green Building Code.
- Implement as many Green Building or LEED design elements as is feasible in current City of Alliance building projects, with emphasis on measures which reduce energy usage.
- Provide updated copies of the Alliance Green Building Brochure at City Zoning and Engineering offices for public use. Provide an electronic version on the new city website.

Community Measures:

- Continue to provide green building information to the public.
- Promote and support green build projects together with Habitat for Humanity and other local non-profit builders.
- Participate in the Ohio Solar/Green Energy Tour to promote local green building efforts.
- Promote and support the Alliance Preservation Society in conservation and adaptive reuse of existing structures.

Long Term:

Government Measures:

- Provide incentives for green building.
- Work with Stark County to upgrade building code adoption to reflect most recent energy codes, and adopt a model green building code such as the International Green Construction Code, or LEED standards.
- Upgrade zoning codes to reflect green building practices (similar to what the City Engineer has developed as a best practices brochure for protecting water resources).
- Upgrade city buildings to at least LEED silver level (not necessarily certified).

Community Measures:

- Continue to provide green building information to the public.
- Assist in developing programs in support of green building, such as construction waste recycling, building deconstruction, building reuse, etc.
- Promote and support the Alliance Preservation Society, and encourage the preservation and reuse of viable and historic structures.

WATER AND WASTEWATER

History:

Water

The City added a UV oxidation water treatment system in 2014 to enhance and diminish the activated carbon treatment (reducing the use of solid carbon but increasing the City's use of electricity). The treatment process reduces bacteria and improves water taste and odor.

Wastewater

The City of Alliance replaced two pumps with high-efficiency pumps at its Wastewater treatment plant in 2008. The Wastewater treatment plant recaptures methane to heat its sludge. A dewatering plant for solids is installed and online. The city is part of a First Energy program to gain cost savings if it can use generators at the plant during peak load times. Catalytic converters will be put on the generator exhaust fans, which will reduce energy costs and air pollution. Additionally, in 2018 Alliance completed construction of a Class A Bio-solids facility that utilizes more of the methane gas produced and provides the city with better options for the end disposal of bio-solids.

Overall Goals:

- To reduce energy use in the distribution and treatment of water in Alliance.
- Increased retention of storm water to prevent peak water flow to waste water.
- More efficient management of storm water.
- Reduce water waste in the City of Alliance.

Short Term:

Government Measures:

- Continue to improve efficiency of water pumping system.
- Finalize and implement source water protection plan to increase protection of reservoirs, streams and river. The completed Limaville Sewer Project is designed to help accomplish this measure.
- Continue to implement Storm Water Phase II NPDES Permit Program (Education, Public Involvement, Illicit Discharge Elimination, Construction activities, Post Construction, Good Housekeeping).
- Investigate changes to zoning and building codes that will increase water efficiency
- Continue Inflow and Infiltration prevention program to eliminate bypasses of the waste water treatment plant.

Community Measures:

- Increase community understanding of link between water use and energy.
- Promote good storm water management at residences and businesses.
- Increase community understanding of source water protection.

Long Term:

Government Measures:

- Explore possibility of additional methane recovery and/or anaerobic digesters and cogeneration.
- Implement changes to zoning and buildings codes that will increase water efficiency.
- Investigate utilizing small hydropower generator at outfall of water plant.
- Investigate watershed management fee for the support and implementation of Storm Water Phase II NPDES Permit Program (Education, Public Involvement, Illicit Discharge Elimination, Construction activities, Post Construction, Good Housekeeping).

Community Measures:

- Increase community understanding of source water and receiving water protection.
- Promote good storm water management at residences and businesses.

RECYCLING AND WASTE REDUCTION

History:

Alliance's recycling project was started through Keep Alliance Beautiful (KAB), in 1988, with a drop-off for recyclables at Silver Park. Because of overwhelming response, KAB partnered with The University of Mount Union to have a drop off at the Union Ave. United Methodist Church parking lot. That became so well–utilized that the board of KAB and other interested parties met to discuss curb-side collection of recyclables in the early 1990's. A recycling committee encouraged the city council to include curb-side recycling with the next contract, and a curb-side recycling program was begun in 1992 which has continued to this day. A grant from the Ohio Department of Natural Resources-Department of Recycling and Litter Prevention (ODNR-DRLP) was used for awareness and education. The Tri-County SWMD currently dictates how KAB uses funds with respects to specific recycling drives.

KAB also receives six vouchers per year to fund tire collection efforts, which KAB continues to plan.

The street department collects/vacuums leaves in the fall, which are composted by a local landscaper. KAB collects data on weights of recycling and leaf collection and reports them to the SWMD as a part of the requirement for funding. Along with keeping streets clean, KAB has continued a downtown cleanup to improve the beauty and aesthetics for the businesses of that area.

With a new Kimble contract, city residents now have larger recycling receptacles at the curbside which has led to greater homeowner recycling. The city is reimbursed for recycling by tonnage, and recycling was up 50% in the first month with the new bins (see Table 4 below). The 4th quarter of 2017 marked the first quarter that large recycling cans were used across the city, and as the table below indicates, the diversion rate increased by 64% over the 3rd quarter of 2017. The 4th quarter of 2017 also posts the highest diversion rates that Alliance has seen for any quarter. Projecting these numbers into the future, we can expect to see a substantial increase in curbside recycling into the future. Kimble has also committed to use of compressed natural gas vehicles in the new contract.

The University of Mount Union has a recycling program, as does Stark State University's satellite facility. The Alliance Recycling Center also provides a drop-off location for recycling, so that 100% of the citizens of the Alliance area have access to recycling.

Table 4. Total tons of municipal waste diverted to recycling, curbside, Alliance, OH. By year and quarter 2013-2017. (Source: Re-TRAC report, generated January 16, 2018 by Erica Martin.)

Quarter	2013	2014	2015	2016	2017
1	128.7	169.4	133.1	134.5	118.3
2	156.9	195.2	149.8	123.1	131.3
3	164.3	176.9	140.8	122.6	152.7
4	189.5	204.2	158.7	141.6	250.5
Total	**639.3**	**745.7**	**582.3**	**521.7**	**652.9**

Overall Goals:

- Continue to raise awareness of recycling opportunities and waste reduction.
- Increase community recycling numbers.
- Develop composting and yard waste programs (possibly seasonal, or contracted curbside)
- Long-term goal to achieve a zero-waste greater Alliance community.
- Develop a community-accessible E-Waste Program.

Short term:

Government measures:

- Re-energize recycling in government offices through education.
- Investigate providing combination trash/recycling containers at all city parks.
- Shred and recycle paper records that need disposal.

Community measures:

- Encourage multi-family and business recycling through education.
- Host program event to increase recycling at bars and restaurants. Partner with Chamber of Commerce to host speaker event (such as from Great Lakes Brewery or E4S) for green businesses.
- Recommend that the parks department continue to work with the Carnation Festival Board to develop a waste reduction and recycling program for Days in the Park.
- Educate businesses and industries about state-wide materials exchange program.
- Achieve waste reduction through artistic creations – i.e. bike racks, public art, etc.

Long term:

Government measures:

- Investigate providing combination trash/recycling containers on Main Street and in all city facilities.
- Investigate implementing curbside organic waste collection.
- Achieve zero-waste city government facilities.
- Investigate new waste collection programs to reduce waste sent to landfill and encourage greater recycling and composting .
- Develop plan for recycling tires citywide.

Community measures:

- Work with Chamber of Commerce to develop a recycling and waste reduction plan for small businesses.
- Investigate development of a community-wide home and restaurant composting program.
- Work with schools to develop composting and waste reduction programs for their cafeterias.
- Support the development of programs for construction waste recycling, deconstruction and building re-use.

EDUCATION AND OUTREACH

History:

The Mayor's Green Task Force and Green Alliance have conducted several educational activities in the past years. In 2008, the Mayors Green Task Force organized an Energy Efficiency Seminar for Businesses, a Seminar for Homeowners, and a Waste-to-Energy Seminar for the public. Green Alliance launched a website, greenallianceohio.org, and held informal coffee-talks to discuss climate change issues. They have had an information table at the Carnation Festival Days in the Park, as well as at Stark Parks sustainability events. At the Days in the Park in 2008, cloth totes were distributed to the community and a drawing for a bicycle and a home-energy audit. In 2010, Alliance City Council approved Ordinance 76-10, establishing the City of Alliance Green Commission to serve as a permanent governmental body to carry on the programs and projects initiated by the Mayor's Green Task Force. In 2011, Green Alliance was formed as the non-profit (501(c)(3)) community group to support the Green Commission in its mission, and to help carry out community-related programs and projects, including education and outreach to the community.

Many Green Alliance initiatives have had strong educational components: the establishment of the Alliance Farmers' Market and the Fuel-Less Fridays initiative, for example. Green Alliance has cooperated with the University of Mount Union to promote No Child Left Inside and with the Beech Creek Arboretum's educational community garden project. Green Alliance partnered with the University Mount Union, SARTA, the Ohio Solar/ Green Energy Tour, and other Alliance groups, to host the Sustainable Alliance Festival, beginning in 2010, 2011, and 2012. Mayor Middleton and President Giese signed a statement of cooperation in 2008 to work together to achieve their sustainability goals: "Cooperating on education with the City offering opportunities for student internships, class research projects or other educational activities such as jointly sponsored field trips, seminars, and other educational programs [and]… cooperating in public outreach through joint press releases and other public relations activities."

Green Alliance has organized several educational events since its beginnings and especially since becoming a 501(c)(3)1) in 2011. Some of these events include:

- The rain barrel auction, fashion show of recycled materials, and musicians at Jupiter Studio during the first Sustainable Alliance Festival.
- The program on hydraulic fracturing ("fracking") with three speakers representing divergent views on the subject (more than 100 people attended at the University of Mount Union).
- A presentation on bike trails presented by representatives for Stark Parks.
- A watershed tour by SARTA bus led by Dr. Dean Reynolds.
- The first year of The Stark County Solar Tour.
- A quilt auction culminating in an event at Farm Girls Pub and Grub (over $1000.00 was raised).
- A meeting at Feed My Sheep to encourage the development of community gardens.
- A Community and Business Solar Energy Forum during the summer of 2015.

Green Alliance plans to continue to work in cooperation with the Green Commission of the City of Alliance and other interested citizens and groups to raise awareness of sustainability issues and best practices throughout the greater Alliance community.

Overall Goals:

- Create and nurture an institutional commitment to sustainability in Alliance and the region.
- Create and nurture a widespread citizen commitment to sustainability in Alliance and the region.

Short Term:

Government Measures:

- Encourage local institutions and businesses to develop and implement sustainability plans.

Community Measures:

- Continue an annual cycle of regular educational events (those already begun and noted in the history section above).
- Encourage local civic and social organizations, such as senior citizens groups, area church groups, area social clubs, etc., to highlight sustainability issues in their programming plans.
- Plan a series of presentations and panels on sustainability issues. These presentations and panels can be the chief program events of monthly Green Alliance meetings, well planned and widely advertised in the Alliance area to encourage broad public attendance.
- In July 2013, a joint meeting was held with the Green Commission, Green Alliance, Keep Alliance Beautiful, and University of Mount Union's Sustainability Management Advisory Committee to consider possible activities for the coming fall and spring.
- The major initiatives envisioned at that meeting are the following:
  (1) creating artistic bike racks for placement around the City, which was carried out in partnership with Arts for Stark.
  (2) organizing school classes to discuss sustainability and to engage students in sustainability projects in the City.
  (3) developing maps for various walks/tours in Alliance – re: historical preservation, trees or flower gardens, or the community gardens.
  (4) encouraging composting at the community gardens, the Farmers Market, and at homes and businesses around Alliance.

Long Term:

Government Measures:

- Encourage City of Alliance leadership and staff to participate in sustainability professional development, and to provide information on regional sustainability initiatives

Community Measures:

- Develop partnership groups of key stakeholders in the Alliance community who will work together to promote sustainability both locally and, in the region.
- Raise the general awareness of sustainability issues in the city and in the region so that government and business leaders will assume constituencies that will be alert and responsive to sustainability concerns.
- Develop a focus on sustainability issues in the local schools through both curricular and extra-curricular activities

GRANT AND FUNDING ASSISTANCE

The recommendations presented in this Sustainability and Climate Action Plan will require financial backing in order to achieve successful implementation. The Green Commission and Green Alliance are available to assist the City in the review and assessment of the applicability of grants and funding sources in order to help with this effort. In addition, it is suggested that the city might pursue the development of a revolving fund for energy efficiency and alternative energy improvements. The city could implement those changes which would afford the earliest and most significant payback for the least cost, and then utilize the savings from those improvements to fund future energy and climate work. The city could also investigate the possibility of performance contracts for some improvements, where appropriate.

Federal, state, local, and public/private funding opportunities will be explored. A partial listing of grant agencies is provided in Appendix D.

REVIEW AND REVISION

The plan for sustainability in Alliance will need to be reviewed and updated regularly. Reviewing and updating will probably be necessary at shorter intervals of one or two years at first; but later, longer intervals may be adequate. The overall direction of the plan will likely remain the same, but specific details should be updated with each review. The first thorough review of the sustainability plan occurred the summer of 2013. The second review took place between 2016 and 2018, with the final version to be presented to City Council in 2019.

Appendix A. The U. S. Mayors Climate Protection Agreement

(as endorsed by the 73rd Annual U.S. Conference of Mayors meeting, Chicago, 2005)

A. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels;

B. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that includes
1. clear timetables and emissions limits and
2. a flexible, market-based system of tradable allowances among emitting industries; and

C. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as:

1. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.;
2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities;
3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for carpooling and public transit;
4. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology;
5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money;
6. Purchase only Energy Star equipment and appliances for City use;
7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;
8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;
9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;
10. Increase recycling rates in City operations and in the community;
11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO2; and
12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.

Appendix B. Kyoto Protocol and Paris Agreement

The Kyoto Protocol treaty was negotiated in December 1997 at the city of Kyoto, Japan and came into force February 16th, 2005.

As of 14 January 2009, 183 countries and 1 regional economic integration organization (the EEC) had deposited instruments of ratification, accession, approval or acceptance.

"The Kyoto Protocol is a legally binding agreement under which industrialized countries will reduce their collective emissions of greenhouse gases by 5.2% compared to the year 1990 (but note that, compared to the emissions levels that would be expected by 2010 without the Protocol, this target represents a 29% cut). The goal is to lower overall emissions from six greenhouse gases - carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, HFCs, and PFCs - calculated as an average over the five-year period of 2008-12. National targets range from 8% reductions for the European Union and some others to 7% for the US, 6% for Japan, 0% for Russia, and permitted increases of 8% for Australia and 10% for Iceland."

The US withdrew support for the Kyoto protocol early in 2001 and never signed the agreement.

The Paris Agreement

The Kyoto protocol was amended at the Doha conference in 2012 which extended the Kyoto protocol to 2020. Subsequently, at the Paris conference in 2015, the Kyoto protocol was effectively replaced and while maintaining similar overall goals it revised some of the processes envisioned for reaching the goals. The reduction goals for the USA under the Paris agreement were 26-28% below the 2005 carbon emissions level. Although the US has stated its intention to withdraw from the Paris Agreement, such withdrawal is not allowable under international law until November 2020. Furthermore, the United States is nearly on target to reduce emissions close to the level of the Paris commitment (America's Pledge www.americaspledge.com).

The USA has reduced GHG emissions between 2005 and 2016 by 12% largely due to technology and efficiency.

Appendix C. Alliance Municipal Greenhouse Gas Emissions and Energy Consumption

Revised downward from earlier values due to updated emission factors. 2016 data not available by function, only by department and energy source.

	Year					
	2005	2006	2007	2009	2010	2016
Buildings						
eCO2 (tons)	1897	1745	1788	1938	2042	NA
Energy (MWh)	4596	4135	4123	4650	5094	
Vehicle Fleet						
eCO2 (tons)	918	857	933	1029	1109	NA
Energy (MWh)	3386	3171	3447	3815	4113	
Streetlights						
eCO2 (tons)	2363	2358	2337	2260	2257	NA
Energy (MWh)	3031	3023	2998	2898	2894	
Water/Sewage						
eCO2 (tons)	4437	5284	5573	4295	4264	NA
Energy (MWh)	7468	7980	8326	6593	6555	
TOTAL						
eCO2 (tons)	9615	10243	10632	9522	9672	10619
Energy (MWh)	18481	18309	18894	17956	18656	NA

This report for 2005-2010 was generated for Alliance, OH using STAPPA/ALAPCO and ICLEI's Clean Air and Climate Protection Software developed by Torrie Smith Associates Inc. Data provided by Alliance Auditor's Office. Data entry and management by The University of Mount Union. Data for 2016 calculated using US EPA values.

Appendix D. Grant Sources

Federal

American Recovery and Reinvestment Act – State infrastructure projects
U.S. Department of Agriculture – Wastewater Treatment Plant Renovations
U.S. Department of Energy – EECBG Funding
U.S. Department of Energy – Energy Star Programs (www.energystar.gov)
U.S. Department of Housing & Urban Development – CDBG (Community Development Block Grants)
U.S. Department of Transportation
U.S. Environmental Protection Agency – Brownfields, Site Clean-Up

State

Clean Ohio Assistance Fund
Ohio Community Development Corporation – public policy organization for urban development
Ohio Department of Development – Ohio Energy Office
*Ohio Department of Natural Resources (www.dnr.state.oh.us/grants.htm) – recycling, parks
*Ohio Department of Transportation – highways, bikeways, bridges, culverts
*Ohio Public Works Commission – wastewater treatment plants, local roadways
School Pool Electric Program – purchase of electric power for schools
Ohio Schools Council

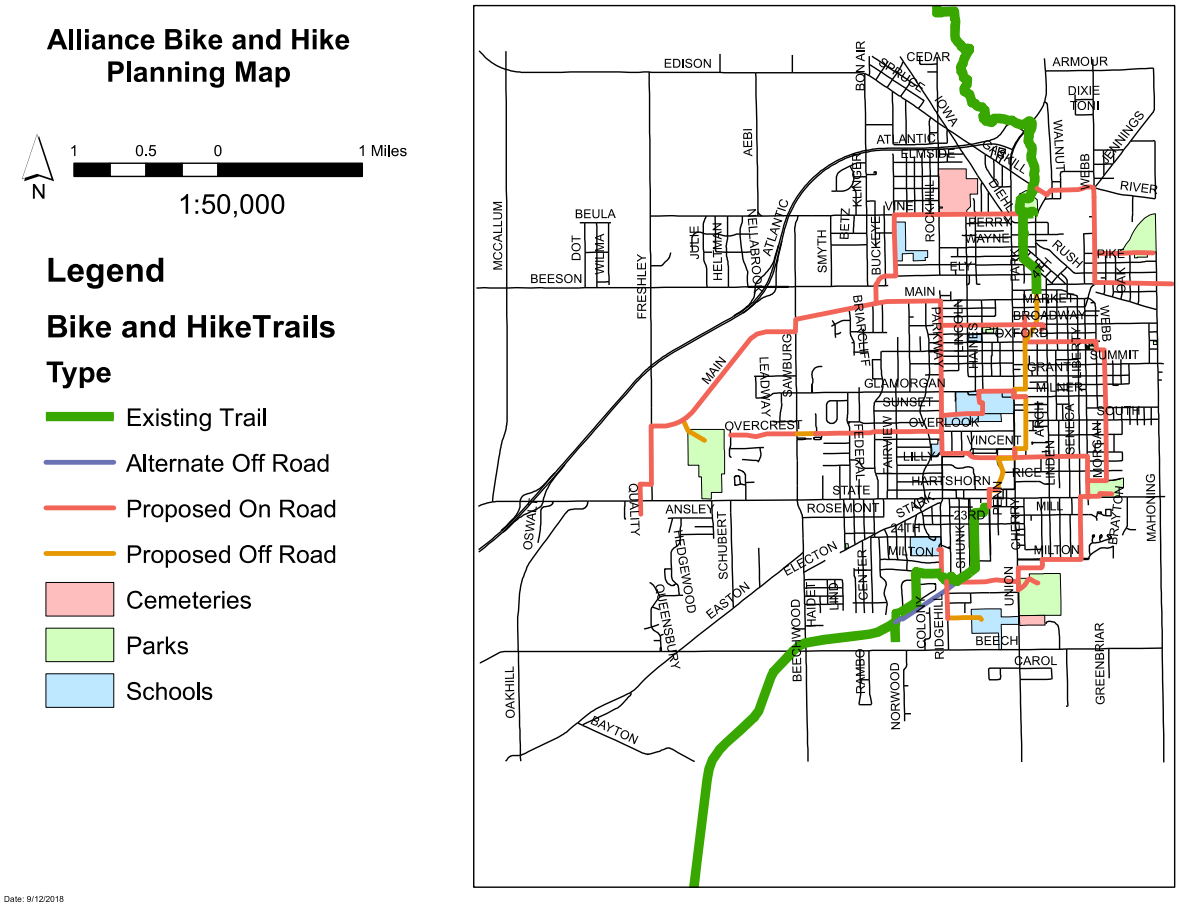
County

Stark County Community Action Agency – Home Weatherization Assistance Program

Private or Non-Profit

Allstate Foundation – neighborhood revitalization
Green Energy Ohio – funding for solar thermal
John S. and James L. Knight Foundation – education, economic development
Lowe's – Grants for schools (community gardens, ecological areas)
Oak Foundation – climate change
*Waste Management, Inc. (recycling)
*current or past grant awards.

Appendix E. Alliance Bike and Hike Planning Map



Appendix F. Energy Statistics

Known Renewable Energy Use Within City Limits:

Solar Voltaics:	55 (54 + 1) Kilowatts at University of Mount Union
	12 Kilowatts at Residence on Belleflower Drive
	__ Kilowatts at Wind Turbines of Ohio, LLC
	__ Kilowatts at Alliance High school
Solar Thermal:	1 Residence on Belleflower Drive
Geothermal:	1 system at University of Mount Union
	1 system at business at State Street and Fernwood
	1 Habitat for Humanity house
Wind Installations:	1 Turbine at Alliance Middle School
	1 roof-top Turbine at Giant Eagle mall
Methane Recapture:	Water Treatment Plant

Alternative Fuels Use Within City Limits:

Compressed Natural Gas:	1 pump at City facilities, and 1 retrofitted van
Electric Charging Stations:	0

Certified Green Buildings:

Energy Star:	Giant Eagle Grocery store
	Kohls Department store
	Habitat for Humanity – newer homes
LEED:	Mount Union Welcome Center – LEED Silver
	(other new buildings to be constructed to LEED Silver standards, although not certified)