

BUILDING MORE LIVABLE COMMUNITIES

Corridor Design Portfolio

November 2014



MICHIGAN STATE
UNIVERSITY

Land Policy Institute



MMPGS
MID MICHIGAN PROGRAM
FOR GREATER SUSTAINABILITY



Building More Livable Communities: Corridor Design Portfolio

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INTRODUCTION

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WHAT IS SUSTAINABILITY?

“There are many definitions, and there are many different ways for communities to attain a more sustainable future. The sustainability of a community depends on creating and maintaining its economic and environmental health, promoting social equity, and fostering broad-based citizen participation in planning and implementation. Communities that engage citizens and institutions to develop sustainability principles and a collective vision for the future and that apply an integrative approach to environmental, economic, and social goals are generally likely to be more successful.

Job creation, energy use, housing, transportation, education, and health are considered complementary parts of the whole. Since all issues are interconnected they must be addressed as a system. The process includes:

- *Broad and diverse involvement of citizens;*
- *The creation of a collective vision for the future;*
- *The development of principles of sustainability;*
- *An inventory of existing assets and resources and additional assets that would benefit the community;*

- *Clear, measurable goals;*
- *The development of community indicators to evaluate progress;*
- *Open and transparent communication;*
- *Early, visible results; and*
- *Celebration of success.*

Sustainability is a process of continuous improvement so communities constantly evolve and make changes to accomplish their goals. The initiatives and resources on this website have been selected to help you learn about ways to make your community healthier, safer, greener, more livable, and more prosperous.” [Sustainable Communities](#)

This portfolio shares these goals and purposes, and hopes by using a wide range of local examples, that citizens can see that communities in the Tri-County Region (Clinton, Eaton and Ingham counties), in general, and neighborhoods along the Michigan Avenue/Grand River Avenue, in particular, are working diligently at a wide variety of sustainability initiatives.

Context for Portfolio

Mid-Michigan is blessed with the Michigan Avenue/Grand River Avenue Corridor (the Corridor), which to many is the Region's "main street." For the purposes of this Portfolio, the Corridor extends from the State Capitol in Lansing to Webberville. It traverses through several central business districts, regional health science clusters, internationally recognized educational institutions, suburban shopping districts, and seven of the region's 10 largest employers. The Corridor also carries more than 1.7 million transit trips annually. As part of the Mid-Michigan Program for Greater Sustainability (MMPGS) project, a two-part design charrette was commissioned to help develop a vision for the Michigan Avenue/Grand River Avenue corridor.

There are two other major initiatives that serve as an important backdrop to this Portfolio, providing both valuable examples for inclusion in it and simultaneously creating the need for it: HUD Sustainable Communities program grants and a statewide placemaking initiative.

The Tri-County Regional Planning Commission's Mid-Michigan Program for Greater Sustainability was one of six projects in the state funded by the U.S. Department of Housing and Urban Development (HUD) under the HUD Sustainable Communities program, and one funded by the Michigan State Housing Development Authority (MSHDA). The other six projects are listed below.

1. City of Grand Rapids, Planning Department - *Michigan Street Corridor Plan*;
2. Washtenaw County - *Washtenaw County Sustainable Community* project;



The Michigan Avenue/Grand River Avenue Corridor looking East from the Capitol (bottom center) to Williamston (upper right).

Source: Dover Kohl and Associates, under contract to the Tri-County Regional Planning Commission, reproduced with permission.

3. Northwest Michigan Council of Governments – the *Grand Vision to Grand Action: Regional Plan for Sustainable Development*;
4. City of Flint – *Imagine Flint: Master Plan for a Sustainable Flint*.
5. Southeast Michigan Council of Governments – *Creating Success: Sustainable Communities Regional Planning Grant*; and
6. City of Marquette - *Third Street Corridor* plan.

This infusion of funding for major planning initiatives focused on sustainability across Michigan is unprecedented. There are also population and demographic changes forcing market shifts that municipalities must respond to in order to be competitive. As these plans are finalized and adopted, communities will move toward implementation and seek unique ways to meet their goals. The Portfolio can provide examples of both current and innovative techniques to help communities and neighborhoods do just that.

Within the last five years, Michigan has developed a major Placemaking Initiative that is also both driving the need for the information and examples in this Portfolio and producing them. The MIplace Partnership Initiative is a collaborative effort between state agencies and about 40 stakeholder organizations, including the MSU Land Policy Institute. Following is the official description of the [MIplace Partnership Initiative from its website \(www.miplace.org\)](http://www.miplace.org):

“Michigan is at the forefront of a national movement embracing placemaking policies in 21st century downtown community and neighborhood planning. The movement is founded on the understanding that people, companies, and talent do not move to specific communities—they move to regions. Being globally competitive as a region requires understanding, mapping, and pooling regional resources and assets. It means local governments, the private sector,

schools, higher education, and nongovernmental and civic organizations must all work cooperatively to market the region. Our job begins by working together to build and maintain quality places. Thriving communities and successful regions are places that are attractive to employees, places where connections can happen, where productivity and creativity increase, and where professional networks foster collaboration and innovation.

The goal of The MIplace Partnership Initiative is to create more jobs, raise incomes, and thereby restore prosperity in Michigan at least in part, through targeted local and regional placemaking activities. A significant amount of State, regional, local, and private resources would be marshaled to make significant physical change in a relatively short period of time (such as 2-6 years). Action projects would be planned in collaborative public, private, and nonprofit entity partnerships, and be largely built by the private sector (in some cases with state financial support, or credits).

Achievement of this goal requires development of toolkits to assist local officials and stakeholders and provision of direct technical assistance to those that need and request it; broad education/training of State and local government staff and officials and key stakeholders about what placemaking is and how to effectively engage in it; preparation of regional and local strategic action plans for targeted placemaking improvements; local engagement and local action; targeted state technical assistance by key state agency consultants to assist local officials resolve barrier and gap problems; and specific local project action plans need to be prepared that meet the requirements of all entities involved.”

A six-module, three-level Placemaking Curriculum has been developed to educate decision makers, developers, and citizens about Placemaking. The curriculum was launched in 2013 and now in September 2014, about 10,000 people in hundreds of venues have been exposed to the curriculum.

The Strategic Placemaking advocated for and implemented by the MIplace Partnership Initiative targets efforts toward centers of commerce and culture in each economic region, investing in areas that have the potential for the quickest and largest return on that investment.

This Portfolio is an opportunity to serve as a model resource for all future Placemaking projects in and outside the Tri-County region, and draws examples not only from this corridor but also from other HUD Sustainable Communities and a variety of new local plans (Lansing, Grand Rapids, Northwest Council of Governments Grand Plan, Detroit, Flint). It also draws heavily from the two charrettes that were conducted in the Corridor. Occasionally examples from other parts of the country were used when a local example couldn't be found, or the alternative example was especially good.

LIVABILITY PRINCIPLES

Provide more transportation choices.

Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions and promote public health.

Promote equitable, affordable housing.

Expand location- and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.

Enhance economic competitiveness.

Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers, as well as expanded business access to markets.

Support existing communities.

Target federal funding toward existing communities—through strategies like transit-oriented, mixed-use development and land recycling—to increase community revitalization and the efficiency of public works investments and safeguard rural landscapes.

Coordinate and leverage federal policies and investment.

Align federal policies and funding to remove barriers to collaboration, leverage funding, and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices, such as locally generated renewable energy.

Value communities and neighborhoods.

Enhance the unique characteristics of all communities by investing in healthy, safe and walkable neighborhoods—rural, urban or suburban.

About the Portfolio

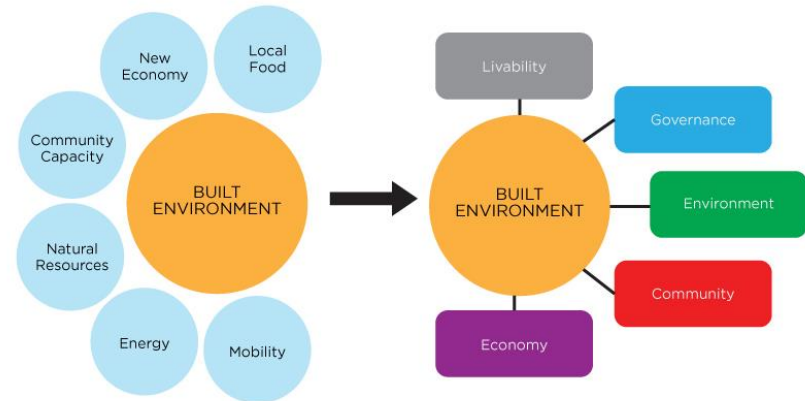
Development of this Portfolio began in September 2012 with the first meeting of the Sustainable Corridor Design Portfolio Task Force. Early taskforce meetings focused on educating participants about demographic, economic, and geographic characteristics of the corridor and built interest in and support for the corridor charrettes. Work began in earnest on the Portfolio in late 2013 with outlines and sample techniques. Most of the content was developed in 2014, after the Corridor Plan was complete, with review of the first draft of the Portfolio taking place during that summer. The final draft was completed in September 2014.

Designed for online distribution only, the Portfolio is laced with links to other websites and online resources. It is meant to be a highly visual, educational tool for citizens, neighborhood leaders, developers, and local officials. The Resources provided in each technique, however, are often more technical, and are probably most useful to practitioners.

The five major chapters (Livability, Governance, Environment, Community, and Economy) focus predominantly on the built environment and are based on another companion tool developed by the MSU School of Planning, Design and Construction, the [Sustainability Audit Tool](#). While these two documents are complementary, they also are philosophically based on the key principles of many Quality-of-Life Movements, including Placemaking, Smart Growth, Livable Communities, Healthy Communities, Sustainable Communities, and the Partnership for Sustainable Communities' livability principles (inset on opposite page).

The five sustainability categories of Livability, Governance, Environment, Community, and Economy (based on the International Council for Local Environmental Initiatives' (ICLEI) STAR Community Index "[Sustainability Goals & Guiding Principles](#)") pull from common sustainability topics that communities face today, including energy, local food, built environments, mobility, natural resources, capacity, and economic development.

The Livability chapter is by far the largest, covering a wide range of topics. It also underscores the struggle with placing techniques that are multi-disciplinary into only one subchapter. By their very nature, topics related to sustainability are often systems-oriented and overlap with each other making placement difficult. Many techniques are, therefore, cross-referenced throughout the Portfolio.



Graphic source: Land Policy Institute, Michigan State University.

How to Read the Portfolio

Each chapter supplies an introduction to the overall topic, an image displaying their relationship, and a glossary of concepts that the reader will encounter throughout. Each subchapter also provides a more focused introduction to the subject matter along with some graphics that display the information visually. Techniques are presented in a two-page, landscape layout.

Overview of issues associated with the topic, topic's relevance to sustainability and livability principles, and general introduction to the elements that will be examined

ENVIRONMENT

Average temperatures have been rising around the globe since industrialization became dependent on petroleum and coal for its principal energy sources and emitted large amounts of smokestack pollutants. This change is referred to as global warming. The overwhelming consensus of scientists around the world is that global warming is contributing to climate change.

"Climate models predict that the global climate will shift in a number of ways over the next century in response to continued emissions of greenhouse gases (GHGs)." We are likely to see global average sea levels rise, rainfall patterns change, and experience more intense and frequent extreme precipitation and drought events. Indeed, we are and have been witness to these trends already. "Most climate scientists now agree that increases in global concentrations of GHGs, largely attributable to humans, are the predominant cause of climate change. Human activities, such as driving cars, producing and consuming energy, and clearing forests" are contributing GHG emissions into the atmosphere at a faster rate than the earth's land and water masses can absorb them.

"Climate change may have potentially catastrophic effects on both the natural and human environments as it disrupts ecosystems and threatens livelihoods, infrastructure, and human health. Expected shifts in climate may reduce crop yields, increase the risk of invasive species, exacerbate drought conditions," intensify flooding, "and threaten employment opportunities." A reduction in the number of working hours is expected to occur in many sectors. (U.S. Department of the Interior, Bureau of Land Management, "Land Rights and Climate Change," U.S. Department of the Interior, Bureau of Land Management, 2010.)

How do communities respond in the face of such daunting challenges, not including local environmental issues such as stormwater management, land contamination, and air quality that they face on a daily basis?

As communities look to the future and think about sustainability, there are evolving technologies and innovative ideas emerging to ensure a healthy and secure future. Recognizing that all natural systems are interconnected, communities are discovering for example that energy efficiency techniques can be coupled with stormwater management strategies to enhance objectives under both concepts and make gains toward sustainability quicker. (The graphic on the opposite page shows how these systems and concepts are all interconnected.)

Preserving the natural environment is essential for maintaining community sustainability. Healthy ecosystems balance economic and consumer needs by assuring adequate resources are available to meet future needs. Communities that act as environmental stewards preserve natural resources and open space, monitor energy use and seek alternate sources, maintain biodiversity, enhance water and air quality, and attempt to mitigate the effects of climate change. (U.S. Environmental Protection Agency, 2010.)

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Landscape Design Portfolio

Indicators of sustainability that are covered in the sustainability audit tool (hotlink)

Definitions of elements and terms that are used in or will help provide helpful context for this chapter

Sustainability

Water

Air Quality

Energy

Climate Change and Global Warming

GLOSSARY

Biodiversity - Biological diversity is the range or variety of plants, animals, and other living things in an area. It includes genetic and taxonomic diversity, and is the key component that makes up life.

Climate Change - Any significant change in the measures of climate lasting for an extended period of time, including major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer. (U.S. EPA)

Global Warming - The heat and ongoing rise in global average temperature near the Earth's surface. It is caused mostly by increasing concentrations of greenhouse gases in the atmosphere. Global warming is causing climate patterns to change. However, global warming does not represent only one aspect of climate change. (U.S. EPA)

Greenhouse Gases - Gases that trap heat in the atmosphere, primarily carbon dioxide, methane, nitrous oxide, and ozone. Greenhouse gases from human activities are responsible for almost all of the increase in greenhouse gases in the atmosphere over the last 150 years. The largest source is from burning fossil fuels for electricity, heat, and transportation. (U.S. EPA)

Stormwater - Rain and snow melt that runs off surfaces such as rooftops, paved streets, highways, and parking lots that catch up pollutants and flow directly into a local water body or, if managed, it may infiltrate the soil and continue through storm pipes used in a watershed, which could enter a local waterway. Large impervious surfaces in urban areas increase the quantity of peak flows of runoff, causing flooding and other detrimental hydrologic results.

Vehicle Miles Traveled (VMT) - The sum of miles traveled in a vehicle in a certain period of time. This measurement is calculated not only in transportation mode but also in managing air quality.

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Landscape Design Portfolio

How the elements of the topic relate to each other. These include the subchapter topics and may include other relevant topics as well

Subchapter Title

Chapter Title

Illustration depicting some of the characteristics or qualities associated with the subchapter topic

ENERGY AND AIR QUALITY

ENVIRONMENT

Modern human activity heavily relies on the combustion of fossil fuels (i.e. oil, coal, and natural gas). When fossil fuels burn they emit greenhouse gases like carbon dioxide, a major contributor to global warming. The effect of any given population can be measured by its carbon footprint, which is described as the total amount of greenhouse gas created by that population. Cities and nations around the globe are prioritizing the reduction of their carbon footprint, and consequently their negative impact on the environment.

Community greenhouse gas emissions come from a few primary sources: buildings, transportation, and waste. Sources can be direct (i.e. burning fuel in a car or a stove) or indirect (i.e. burning fuel to produce a product that is later purchased by consumers). Limited greenhouse gases are mitigated by trees and vegetation, which break down carbon dioxide during photosynthesis.

Many communities have successfully lowered their carbon footprints on the consumption and through the adoption of policies and programs that reduce net energy use at household and community-wide levels. A common approach focuses on the production end by investing in sources of energy that create fewer greenhouse gases.

Some other approaches to reduce a community's carbon footprint may include and are presented as techniques:

- Establishing native growth protection areas.
- Preserving and enhancing the community's tree canopy.
- Converting vehicle fleets to hybrids.
- Installing green roofs.
- Replacing street lights and interior building lights with LEDs and all appliances with ENERGY STAR approval.
- Increasing weatherization of buildings to reduce the use of air conditioning and heating.
- Constructing future buildings to higher energy-efficient standards.
- Purchasing higher percentages of electricity from renewable sources.
- Uniform street tree planting operations to increase the tree canopy.

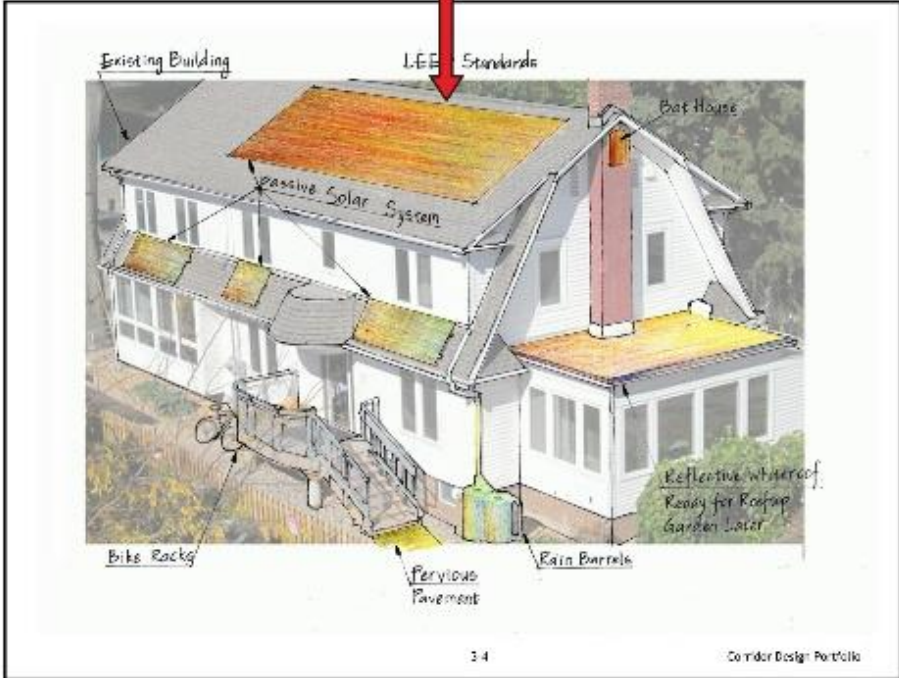
Unlike fossil fuel-based energy production, renewable energy production methods use resources which are continually replenished, such as sunlight, wind, and geothermal heat. The absence of directly burning fossil fuels makes the net output of greenhouse gas from these methods much lower than traditional techniques. The viability of renewable energy projects is highly dependent on local weather, geography, and other conditions. *See case study on the City of El Segundo for more details on a SolarCity Case Study.*

On the opposite page is an illustration of the changes made to a home in a residential district that has implemented a variety of energy saving treatments and green practices to serve as a model for other homeowners and small businesses. *See case study on the City of El Segundo for more details on a SolarCity Case Study.*

See case study on the page State of Maryland, Office of General Services, Multiple Benefits of the Greenhouse Gas Reduction Plan, 2012.



Encouraging development of green roofs and solar panels on buildings to reduce energy consumption and improve air quality. Encouraging development of green roofs and solar panels on buildings to reduce energy consumption and improve air quality. Encouraging development of green roofs and solar panels on buildings to reduce energy consumption and improve air quality.



Description of the concept to be presented through the techniques

Graphic or information that helps illustrate the subchapter topic further

General information about the technique

Images and caption boxes expand on information, providing examples

A quick visual reference for which chapter you are in

Calculating Individual Carbon Footprint Reductions

A carbon footprint is the total amount of greenhouse gases (GHG) that are produced either directly or indirectly from our activity. It can be calculated at any scale: person, household, business, or community, and for any timeframe: such as a year, or over the length of a trip.

There are many online carbon footprint calculators available and most of them consider fuel consumption for travel, energy use (e.g. electric, gas, oil), food consumption, and waste emissions to calculate a value in tons or pounds of CO2 emitted. An average household of four people emits an average of 83,000 pounds of CO2 per year. U.S. Environmental Protection Agency's Household Carbon Footprint Calculator: <http://www.epa.gov/epaonline/ghghome/subcalculator.cfm?cat=1&tab=1&subcat=1&subsubcat=1&subsubsubcat=1&subsubsubsubcat=1>

Once a carbon footprint is established and an individual has reduced their emissions as much as possible, they can choose to further offset their emissions through carbon offsetting programs. These programs are offered by organizations that support carbon reduction projects such as tree planting or efficiency programs.

"Because the commercial carbon trade is an emerging market, it's difficult to judge the quality of offset providers and projects. Trees don't always live a full life, reforestation projects (for the long-term containment of emissions) sometimes fail and offset companies occasionally deceive their customers. And voluntary offsets can easily become an excuse to overindulge and not feel guilty about it. Carbon offsets do, however, raise awareness about lowering the global world total." How to use Offset Works, <http://www.offsetworks.com/offsetworks/offsetworks.html>

Household Carbon Footprint Calculator

Use our easy-to-follow online calculator to weigh "lightbulb" choices of energy and water conservation, recycling, and other low-impact living choices to lower your emissions. The calculator is broken into four steps:

1. Choose your current and desired residence.
2. Enter a value for your current and desired energy use (electricity, gas, oil, and fuel).
3. Enter a value for your current and desired water use (water for drinking, bathing, and washing).
4. Waste.

Take your data Estimated possible by you

Carbon Footprint of Typical U.S. Household: 48 Tons per Year

Category	Carbon Footprint (Tons per Year)
Transportation	18
Housing	12
Food	10
Goods	6
Services	2

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The U.S. Environmental Protection Agency's Household Carbon Footprint Calculator calculates a household's current carbon dioxide emissions, offers suggestions for ways to reduce them, and estimates the savings of those suggestions.

Discover U.S. Environmental Protection Agency's Household Carbon Footprint Calculator: <http://www.epa.gov/epaonline/ghghome/subcalculator.cfm?cat=1&tab=1&subcat=1&subsubcat=1&subsubsubcat=1&subsubsubsubcat=1>

Once a person has reduced his/her carbon footprint to the extent possible, carbon offset programs offer an opportunity to further reduce it by supporting programs that reduce greenhouse gases.

Source: GreenSource: <http://www.greensource.com/carbonoffset.html>

The chart breaks down typical household carbon dioxide emissions, in metric tons, by category. Transportation and housing create the bulk of emissions.

Source: Renewable Energy Workforce: <http://www.renewableenergyworkforce.com/energy-workforce/energy-workforce.html>

Personal Carbon Offsets

More green projects happen!

RESOURCES

- 1) U.S. Environmental Protection Agency, Household Carbon Footprint Calculator: <http://www.epa.gov/epaonline/ghghome/subcalculator.cfm?cat=1&tab=1&subcat=1&subsubcat=1&subsubsubcat=1&subsubsubsubcat=1>
- 2) The Nature Conservancy, What's My Carbon Footprint? <http://www.nature.org/usa/offsettingcarbon.cfm>
- 3) How to reduce your carbon footprint, Carbonfund.org: <http://www.carbonfund.org/offset>

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Resources for further examination of the technique (These are geared more toward practitioners)