



# Roadmap to Outcomes

Sustainable Environment

*Spring 2017*

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## Why is this Goal Important?

- Our society and economy exist within an environment. This environment must be preserved now and for future generations.
- Nature cannot sustain itself with systematically increasing concentrations of materials extracted from the earth and dispersed, i.e. air and water pollution, and man-made substances that the earth cannot decompose, unsustainable degradation of earth's resources (i.e. deforestation, over-fishing, etc.), and conditions that undermine people's capacity to meet their needs.

## Equity Statement:

The negative health impacts from increasing concentrations of pollution and depletion of natural resources disproportionately impact populations that can least deal with these negative health impacts – the list includes, the elderly, persons with disabilities, the young, pregnant women, lower-income individuals, and people without adequate health care coverage. By decreasing these pollutants and restoring natural resources these populations will have more positive health outcomes.

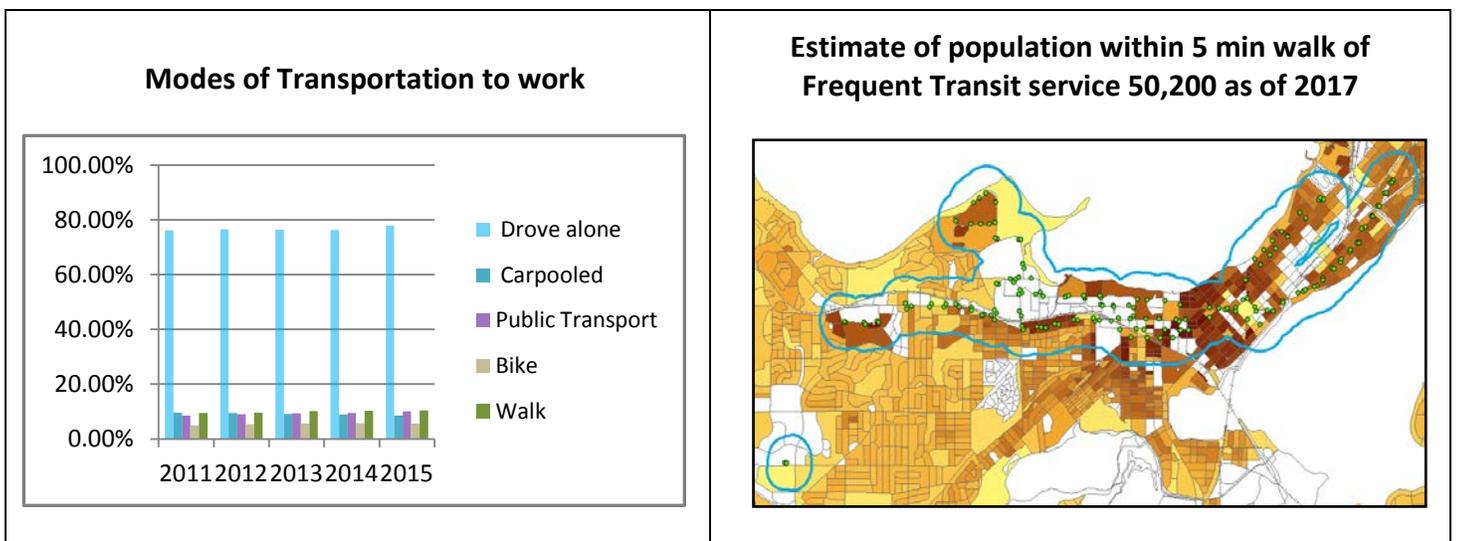
## Outcome 1: Diversify Transportation

- a) Reduce drove alone vehicles to work by 50% in 2025
- b) 50% of population within 5- minute walk of frequent Transit service by 2025

### Why this Outcome Matters

- Promotes healthy life style and reduces the health risks due to air pollution. Well-connected and accessible alternate modes of transportation increases sustenance in low-income group.
- Improves air quality by reducing green-house gas emissions which poses serious health risks such as asthma, lung cancer and heart disease.
- A higher percentage of low-income residents rely on alternate modes of transportation for work and other daily activities; access to well-connected modes of transportation improves the quality of life for all residents.
- Reduces traffic congestion during peak hours and hence there will be a decrease in travel delays and auto related accidents.
- A sect of the community heavily relies on alternate modes of transportation for their everyday commute needs and it is vital for the city to provide accessible and well-connected transportation modes to all its residents.

### Indicators:



Data Source: Census data, MPA

## Contributing Issues

Positive	Negative
Air quality	Longer Travel Times on alternate modes of transportation
Increased awareness in alternate mode share for trips; Healthy and green life style choice	Transit oriented development is an ongoing process and not fully functional
Expensive Parking rates	Decrease in gas prices
Trip planning made easier due to technology	More Sprawl than infill in Land use
Less wear and tear of the roads due to fewer vehicles on the road	Lack of dedicated funding sources

## What Works

- Incentivize businesses and programs that encourage alternate modes of transportation
- Implement existing plans for alternate modes of transportation and evaluate outcomes
- Prioritize alternate modes of transportation in neighborhood land use plans

## Partners

- City of Madison Agencies:
  - Traffic Engineering Division
  - Engineering Division
  - Planning Division
  - Metro Transit
  - Mayor's Office
- WisDOT

## Outcome 2: Have safe, clean water

- a) Reduce the input of road salt into local waterways and aquifers to environmentally sustainable levels.
- b) Reduce the input of phosphorous into local waterways to comply with the Rock River TMDL by strengthening and expanding the City's non-point source pollution prevention programs.

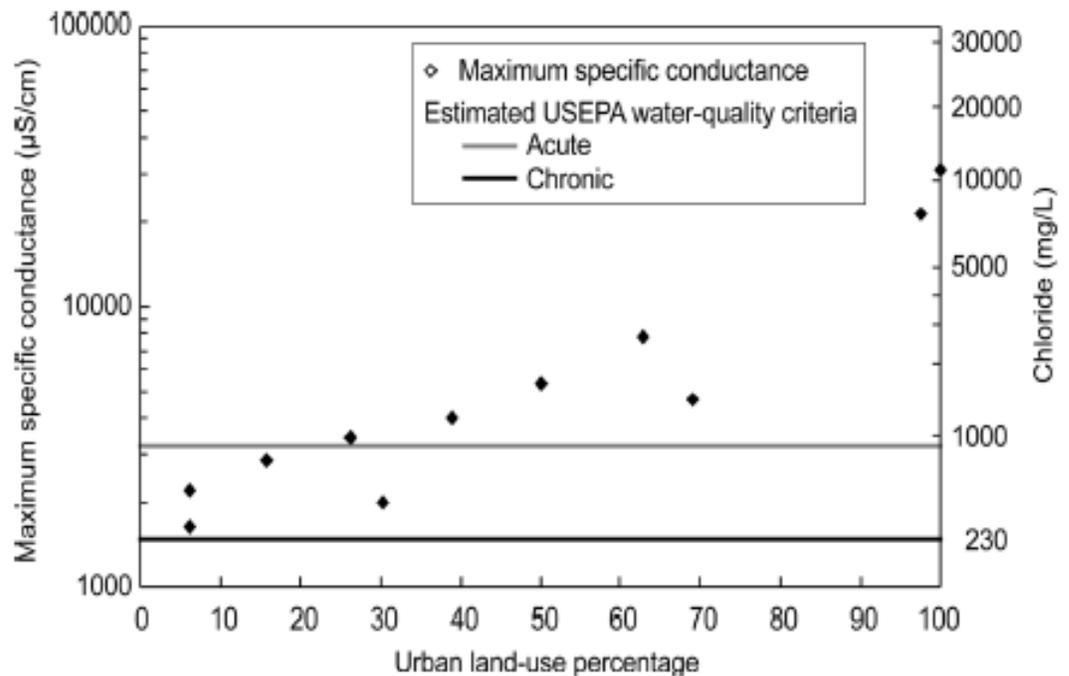
### *Why this Outcome Matters:*

- Clean water is an essential component to any sustainable environmental policy.
- Surface water and groundwater are inextricably linked and hence should be considered a single resource.
- While water quality is extensively regulated at the national and state levels, the City of Madison can and should make our water as clean and safe as possible.
- Road salt is contaminating local water bodies and the aquifer, our drinking water source. Salt infiltration has been observed at five of Madison's 22 drinking water wells.
- Road salt is toxic to small aquatic life. Chloride from salt has been found in all five Yahara Lakes, and levels exceeding the Chronic Toxicity Criteria for small aquatic life have been observed in Dunn's Marsh, University Bay Creek, and Starkweather Creek.
- Phosphorus is the primary driver of algae growth and hence the degradation of the Yahara chain of lakes.
- While phosphorous is regulated as part of the Clean Water Act and is attenuated by the City's stormwater management system, the Rock River TMDL requires that the City reduce its phosphorous load even further.
- Clean, safe drinking water is a fundamental human right and the most basic element of personal and public health. As such, it is crucial that the City of Madison ensure that all of its residents have access to a water source that poses no threat.
- The waters of the state are a public good and have value both as a natural and a recreational resource. The City of Madison is committed to ensuring that all residents have access to local waterways that are as clean and safe as possible.

## Indicators

### a) Data Sources – Road Salt:

- Madison Water Utility maintains records for salinity tests at all of its wells
- “A Fresh Look at Road Salt: Aquatic Toxicity and Water-Quality Impacts on Local, Regional, and National Scales,” Corsi, et al. *Environmental Science and Technology*, 2010



**FIGURE 5. Maximum specific conductance compared to urban land-use percentage in 11 Wisconsin streams with reference to U.S. Environmental Protection Agency water quality criteria for chloride (19).**

### b.) Data Sources – Phosphorus:

- Rock River TMDL: <http://dnr.wi.gov/topic/tmdls/rockriver/>
- Center for Limnology at UW, Madison:
  - <https://wsc.limnology.wisc.edu/node/163>
  - <https://lter.limnology.wisc.edu>
- A large amount of information is available at: [INFOS Yahara](#)

## Contributing Issues

Positive	Negative
Madison as a community is very attentive to its drinking water quality.	Road salt is necessary to maintain safe roads in winter.
Madison values its aquatic resources highly.	Source of salinity is not entirely within City's control.
	Proposed solutions may only have indirect effect on salt levels
Madison as a community is very attentive to its drinking water quality.	Large amount of phosphorous already removed by storm water management system and wastewater treatment facilities. Very costly to remove more phosphorous from within city limits.
Madison values its aquatic resources highly	Main source of phosphorous is from non-regulated agricultural lands in the Yahara watershed.
Phosphorus is a pollutant regulated by the EPA.	Large amount of phosphorous already present in the system—regardless of reductions in inputs.

## What Works

- Identify, through desktop methods, potential salt contributions to local waterways from private sources.
- Continue to develop and strengthen the certified salt applicators' program.
- Continue to educate public on how best to treat icy sidewalks, driveways, and parking lots
- Consider revising parking lot design criteria to limit salt transmission into storm sewers.
- Continue to strengthen and expand City of Madison's Leaf Collection program.
- Continue to encourage installation of rain gardens and other methods of runoff source control.
- Participate in and support (and perhaps replicate) MMSD's [Yahara WINs](#) program.
- Participate in and support Dane County Lakes and Watersheds Commission in their efforts to remove pollutants from local waterways.

## Partners

- US Geological Survey
- Madison area retail groups
- Madison area landscapers and salt applicators
- Madison Metropolitan Sewerage District
- Dane County Land and Water Resources
- USDA
- Wisconsin Department of Natural Resources
- Wisconsin Department of Agriculture, Trade, and Consumer Protection

## Outcome 3: Decrease the amount of waste material generated and sent to the landfill

### *Why this Outcome Matters*

- Landfills are wasteful and finite spaces. The less material sent to the landfill means resources are not being wasted, and it means landfill space remains available for the truly non-recyclable items.
- Landfills are the #3 manmade generator of methane. To reduce the amount of material that goes into the landfill means to reduce the amount of that harmful greenhouse gas our community puts out into the atmosphere.

### Indicator:

Amount of material sent to the landfill versus amount recycled/diverted from the landfill at the below stated schedule:

Year	Percentage of Waste Diverted from Landfill
2016	58% diverted
2020	65%
2025	70%
2030	75%
2035	80%
2040	85%
2045	90%
2050	Zero waste

### Data Sources:

- The Streets Division maintains multiple spreadsheets regarding the weight of material collected and recycled that can be tracked to show progress.

## Contributing Issues

Positive	Negative
Madison community by and large understands the importance of waste reduction and recycling	With limited resources, it is difficult to reach those who need help
	With limited resources, it is difficult to expand what materials can be recycled
	With limited resources, it is difficult to expand recycling opportunities for people by way of additional drop-off sites

## What Works

- Invest in ways to improve education of Madison residents so they can prevent waste where practical and recycle all that is possible
- Strengthen ordinances to require specific reporting measures for private haulers and construction & demolition projects
- Perform regular audits of refuse and recycling to learn benchmark materials that are being mishandled to shape recycling education efforts
- Form partnerships with other entities in the waste handling/recycling business, both public and private, to find new items to divert from the landfill, such as carpeting.
- Invest in ways to divert food waste from the landfill, whether it be through composting operations, anaerobic digestion, or with a public/private partnership to divert this material.

## Partners

- Other city agencies
- Other government agencies (State, County, etc.)
- Private refuse & recycling haulers
- Private recycler companies

## Outcome 4: Reduce Reliance on Fossil Fuels

### Reach 100% Renewable Energy and Zero Net Carbon

#### *Why this Outcome Matters*

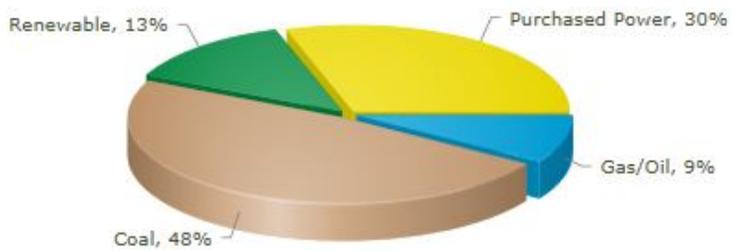
- This Outcome is important because most of our energy comes from fossil fuels, which when burned produce GHG emissions – these emissions are causing climate change, which for Madison will result in more heat events (public health issue), more severe storms (public safety issue) and more invasive species (biodiversity issue.)
- Burning of fossil fuels also has additional health impacts such as higher rates of heart and lung disease, and higher concentrations of mercury when people eat fish from lakes in Madison.
- Converting to 100% renewable energy and zero net carbon will increase the economic strength of Madison by increasing employment in the area of renewable energy and energy efficiency.
- Burning fossil fuels causes large amounts of air pollutants that have a direct negative impact on public health – include lung and heart diseases, mercury poisoning. Underserved/at-risk populations are more at risk to these negative impacts as well as any negative impacts from climate change i.e. heat events, severe storms, etc.
- The negative health impacts from burning fossil fuels disproportionately impact populations that can least deal with these negative health impacts – the list includes, the elderly, the young, pregnant women, lower-income individuals, and people without adequate health care coverage. By decreasing these pollutants these populations will have more positive health outcomes. In addition, the increase in employment potential can also better assist individuals and families that are at a lower-income.

Indicator:

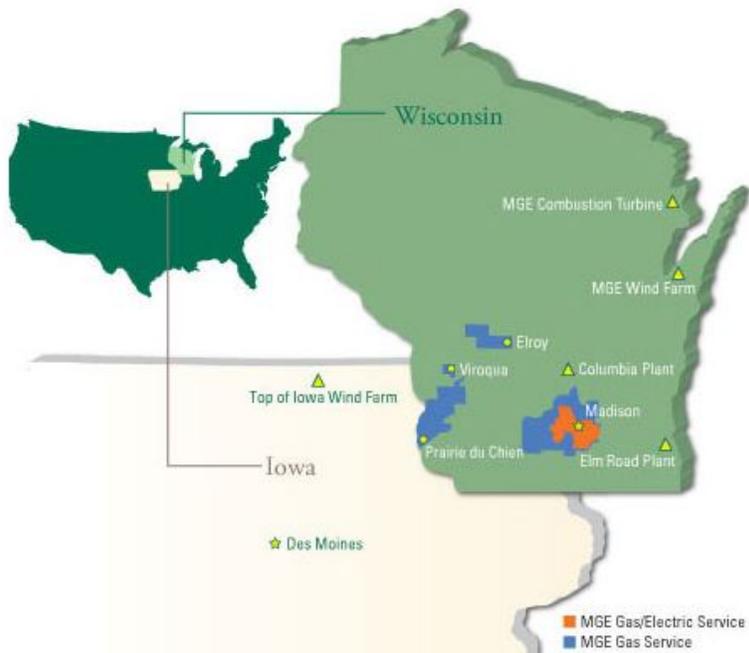
Percentage of energy coming from renewable sources

Data Source:

## MGE's 2015 electricity sources



MGE generates, purchases and distributes electricity to nearly 149,000 customers.



MGE distributes natural gas to 154,000 customers

## Contributing Issues

Positive	Negative
Community is very interested in where our energy comes from and turning to clean energy	It is uncertain what regulatory bodies and utilities will do with regard to renewable energy – i.e. anti-renewable energy policies.
Solar and Wind technology is more efficient and less expensive	There is still an up-front cost that can be prohibitive to some potential customers
Individuals and businesses can install energy generation on their homes and businesses	WI is not sunny all the time-especially in the winter.

## What Works

- Work with utilities and renewable energy investors/developers to increase solar in Madison
- Look to convert fleets to electrical vehicles and that also run on clean renewable energy

## Partners

- Utilities
- Renewable Energy Industry/Companies
- Local Non-Profits

Outcome 5: Diversify the urban forest to ensure the percent of each tree species does not exceed 10% by the year 2060. Urban forest is defined as street trees and any trees planted on private property as part of a city-promoted program.

*Why this Outcome Matters*

- A diverse urban forest is less susceptible to plant disease and major loss of primary species.
- Diverse species helps to encourage diverse habitat for insects, birds and mammals.
- Healthy habitat contributes to a healthier environment for residents; urban environments typically have more impervious surfaces which contributes to raising the temperature and ultimately contributes to global warming.
- A diverse urban forest is less susceptible to plant disease and major loss of primary species.
- Diverse species helps to encourage diverse habitat for insects, birds and mammals.
- Healthy habitat contributes to a healthier environment for residents; urban environments typically have more impervious surfaces which contributes to raising the temperature and ultimately contributes to global warming.

Indicator:

Data Sources:

- EAB Task Force Report
- Tree Phylly.org (Philadelphia, PA)
- NYC Million Tree Initiative;
- Urban Forest Grant Program, Austin, TX
- Trees for Urban Planting: Diversity, Uniformity and Common Sense

## Contributing Issues

Positive	Negative
Diverse tree species helps to encourage a diverse habitat for insects, birds and mammals.	Location of overhead power lines will dictate the species that can be planted in the terrace.
Canopy trees help to keep homes cool and reduce heat island effects in the city.	Cost of program to provide support and trees for planting trees on private property.
Where overhead power lines limit the ability to plant canopy trees in the terrace, programs could be developed to support planting canopy trees on private property.	Conflicts can result with urban wildlife.

## What Works

- Develop or partner with a non-profit group such as Urban Tree Alliance to provide a program and funding for trees on private property.
- Develop a scholarship program for low-income residents so trees are available to all.
- Develop educational materials and training regarding proper planting and maintenance of trees.
- Multiple agencies will be involved, including Planning, Zoning, Building Inspection, Parks, Engineering, Water Utility and Finance.

## Partners

- Urban Tree Alliance
- Neighborhood Associations
- Madison Community Foundation and other funding partners

## Outcome 1: Stop the decline in pollinator population and create conditions that will increase the overall pollinator population

### *Why this Outcome Matters*

- Pollinators are an important participant with maintaining sustainable habitats and ecosystems.
- All animal life, including humans, rely on food and shelter that are sourced from pollinated plants.
- Pollinator's population reductions are resulting from pesticides and loss of habitation.
- In the US 1/3 of all agricultural output depends on pollinators. A stable pollinator population creates a more secure food economy and stable environment.
- Pollinators provide pollination services to over 180,000 different plant species and more than 1200 crops.
- Pollinators add 200 + billion dollars to the global economy, and honey bees alone are responsible for between 1 and 5 billion dollars in agricultural productivity in the United States.

### Indicator:

Pollinator Annual Colony Loss

Data Sources:

- Pollinator Protection Task Force Report
- The Wisconsin Pollinator Protection Plan
- <http://www.ecowatch.com>



Contributing Issues

Positive	Negative
Agricultural decreasing use of pesticides will reduce the pollinators collateral damage	Agricultural prices may rise due to increase cost of farming with using pesticide alternatives
Identify and reserve pollinator friendly land from agricultural and/or human structures	Reduced land availability for commercial, housing or farming use
Legislation to reduce or use pollinator friendly pesticides sales in Dane County	Cost to implement is unknown and availability of anti-pollinator pesticide is available in adjoin counties and on-line vendors

## What Works:

- Reduce or eliminate the use of neonicotinoid insecticides.
- Work with private property owners to identify and encourage community wide installation of pollinator friendly plants.
- Develop and install pollinator friendly habitat within municipal space.
- Collaborate with organizations advocating for and planting pollinator friendly plants, e.g., Master Gardeners.

## Partners

- Federal Pollinator Health Task Force: <https://www.epa.gov/pollinator-protection/federal-pollinator-health-task-force-epas-role>
- State of Wisconsin: DATCP <https://datcp.wi.gov>
- Agricultural Marketing Service: <https://www.ams.usda.gov/>
- Dane County: <https://www.countyofdane.com/>