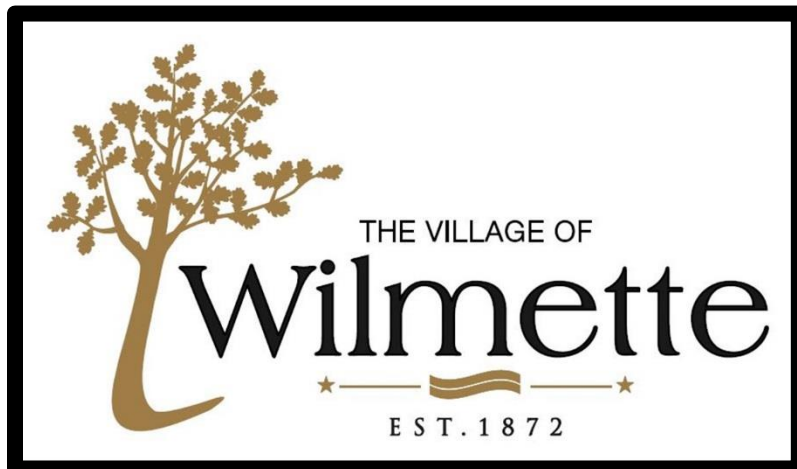


**VILLAGE OF WILMETTE**  
**SUSTAINABLE COMMUNITIES STRATEGIC PLAN**  
**2021**



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## **EXECUTIVE SUMMARY**

On August 28, 2018, the Wilmette Village Board endorsed the Greenest Region Compact (GRC) to address environmental sustainability issues of global importance at the local level. The GRC encourages each of its members to develop a Sustainable Communities Strategic Plan. This Plan has been developed by the Wilmette Environmental and Energy Commission to address the specific environmental issues identified in the GRC. Each of the ten chapters in this Plan identifies environmental issues unique to the Village of Wilmette along with a corresponding set of recommendations to address these issues moving forward with the goal of reducing the environmental footprint for the Village of Wilmette, thus making the Village a better place to live and work.

## INTRODUCTION

### **The Village of Wilmette**

The Village of Wilmette is located on the western shore of Lake Michigan and is a near northern suburb of Chicago about 14 miles north of Chicago's downtown district. It was officially incorporated on September 19, 1872, as the Village of Wilmette. The postwar need for housing led to a housing boom in the 1950s that transformed the area west of Ridge Road from farmland to residential subdivisions. As a direct result of this housing boom, Wilmette's population grew from 18,162 in 1950 to 28,268 in 1960. Based on the 2010 census the population was 27,087. In 2007, Wilmette was ranked as the seventh best place to raise children in the U.S., according to *Business Week*. In 2015, Wilmette was ranked the best place to live in the State of Illinois based on a variety of factors including its low unemployment rate, median income, low housing vacancy rate, high education expenditures per student, low crime, and short commute times. Wilmette is home to 2 of Illinois' 17 elementary schools to be awarded the 2017 National Blue Ribbon award. Students in Wilmette attend New Trier High School. In 2016, *Newsweek* magazine ranked New Trier as the top open enrollment high school in Illinois and the 17th best high school in the country. There are two private high schools located in Wilmette. The Wilmette Park District owns and operates a public 18-hole golf course in West Wilmette. There is a large park along the Lake Michigan shore with several neighborhood parks, a recreation center, outdoor pool, and an indoor ice rink.

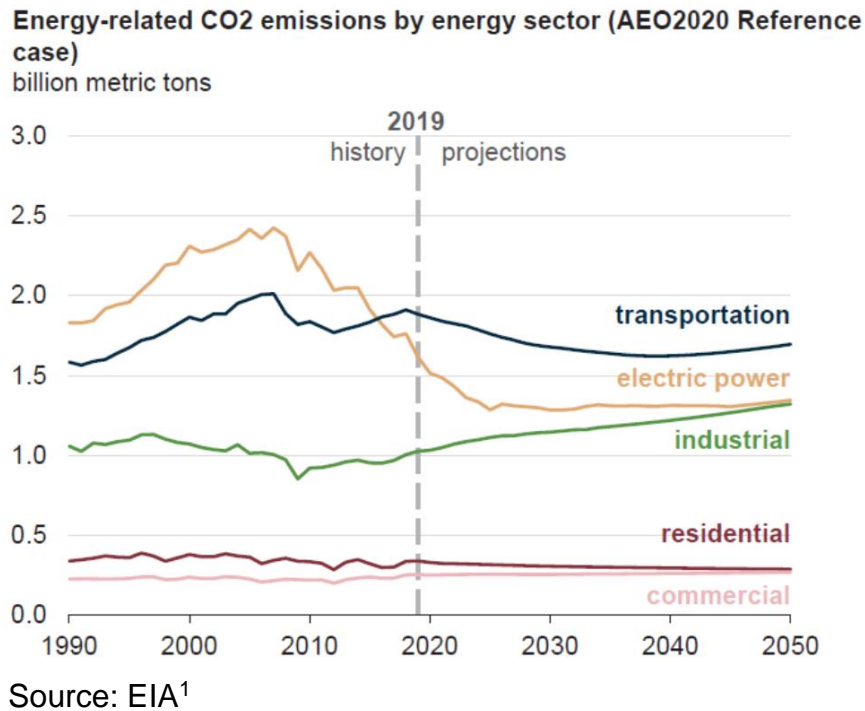
### **The Greenest Region Compact**

The Metropolitan Mayors Caucus created the Greenest Region Compact (GRC) to address environmental sustainability issues of global importance at the local level. The Greenest Region Compact, an update to the original pledge and sometimes referred to as the Greenest Region Compact 2, is built on important environmental initiatives already underway in communities in partnership with many non-profit, state, regional and national organizations. The Greenest Region Compact synthesizes sustainability goals already adopted by leading communities in the region; and these consensus goals align with common regional, state, national and global objectives. The Greenest Region Compact offers a companion Framework, in the form of a spreadsheet, to guide communities of all sizes and strengths to assess their current efforts, develop a sustainability plan suited to local priorities, and offer resources to help them succeed. The consensus goals of the Greenest Region Compact will guide coordinated efforts toward enhanced quality of life for residents, protection and stewardship of the environment, and sustainable economic vitality. On August 28, 2018, the Wilmette Village Board endorsed the GRC and tasked the Environmental and Energy Commission (EEC) to make recommendations to the Board on how best to implement the GRC. This Plan contains the EEC's recommendations to the Board. The 10 chapters in the Plan follow the framework given in the GRC: Climate, Economic Development, Energy, Land, Leadership, Mobility, Municipal Operations, Sustainable Communities, Waste & Recycling, and Water.

## CHAPTER 1 - CLIMATE & AIR QUALITY

### 1.1 Introduction

Climate change, also known as global warming, is caused by the release of greenhouse gases (GHGs) into the atmosphere which trap thermal energy and thus cause the temperature of the Earth to rise. Although there are several GHGs, carbon dioxide (CO<sub>2</sub>) is the one that gets the most attention. The graph below indicates that the transportation sector, the industrial sector, and the fossil fuel electric power sector each contribute approximately one-third of the total CO<sub>2</sub> emissions in the United States.



The electric power sector includes electricity generated for lighting, heating, cooling, appliances, electronic equipment, pumps, and motors. This sector includes the electrical power used by industrial, residential and commercial users. Approximately two-thirds of the electric power in the US is generated by burning fossil fuels which releases CO<sub>2</sub> into the atmosphere, thus contributing to global warming. This is a sector where Wilmette residents can reduce their carbon footprint through energy conservation and/or purchasing “clean” energy, such as that produced by wind turbines or solar panels. Appendix C provides background information on the global climate change problem and the impact that energy conservation can play as workable solution within the Village of Wilmette.

<sup>1</sup> <https://www.eia.gov/outlooks/aeo/pdf/AEO2020%20Full%20Report.pdf>

**1.2 Existing conditions**

In 2017, the GHG emissions rate in the US was 15.9 metric tons (MT) per capita, using data reported by the US EIA.<sup>2</sup>

GHG emission rate in 2017 (metric ton/person)

Commercial	Electric Power	Residential	Industrial	Transportation	Total
0.7	5.5	0.9	2.9	5.8	15.8

The Village of Wilmette does not independently track GHGs to determine our emissions, directly relate climate conditions to our climate-related actions, or focus on resilience to address climate change that will occur. Existing climate-related conditions in Wilmette are further detailed in the rest of this Plan.

Wilmette prepared an audit in 2011 of scope 1 and 2 GHG emissions. Scope 1 emissions originate directly from residents when they drive their cars and heat their homes and businesses. Scope 2 emissions originate from electricity use by residents. Accounting for the carbon intensity of the electric power sector serving Wilmette, the audit showed that scope 1 and 2 GHG emissions were between 5.8 and 6.8 metric tons per capita between 2008 and 2012, with a majority coming from heating demand.

Scope 2 emissions associated with the electric power sector are much lower for Wilmette residents, approximately 1.4 metric tons (MT) per capita, because much of the electricity in Northern Illinois is generated by nuclear power. It is interesting to compare Wilmette’s 1.4 MT per capita emission rate to the US per capita average of 5.5 MT, but Wilmette’s GHG emission audit is not directly comparable to the sector data reported by the US EIA, because the electric power sector includes indirect emissions associated with consumables (these are known as Scope 3 emissions). Some additional information on indirect emissions can be found in Appendix C.

No specific GHG reduction initiatives or ordinances have been implemented since 2011, but the Village has continued to improve its energy efficiency and has supported many community-based conservation and energy-reduction initiatives.

**1.3 Goals**

**1.3.1** The ultimate goal is to reduce Wilmette’s emissions the equivalent of at least 45% from 2010 levels by 2030, and to reach net zero GHG emissions by 2050.

**1.3.2** Develop a GHG Emissions Inventory (“Inventory”) to benchmark, monitor and report ongoing climate data for GHG emissions, water, carbon sequestration and waste.

<sup>2</sup> [https://www.eia.gov/environment/emissions/state/excel/summary\\_2017.xlsx](https://www.eia.gov/environment/emissions/state/excel/summary_2017.xlsx)

- 1.3.3 Establish measurable interim and long-term GHG emissions reduction targets.
- 1.3.4 Develop policies and laws to reduce Wilmette’s contribution to climate change.
- 1.3.5 Assess and improve climate adaptation and resilience throughout the Village.
- 1.3.6 Develop climate change and air quality outreach and education to improve public awareness.

## **1.4 Recommendations**

### **Climate Change Mitigation: Municipal Operations and Public Property**

- 1.4.1 For every policy and action in this Plan, work with all governmental entities in Wilmette including the municipality, school districts 37 and 39, park district and library; businesses; residents; the region and nearby communities; and federal and state entities. Consider needs of more vulnerable populations in all policies and actions.
- 1.4.2 Develop a coordinated panel of Wilmette ordinances and policy changes in alignment with achieving the climate targets in this Plan.
- 1.4.3 Complete benchmarking and a Greenhouse Gas Inventory (“Inventory”) in 2022 using the Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories (“GPC”). Greenhouse gases are the primary cause of climate change. Benchmarking, and continuously updating data will provide an accurate, comparable and rigorous protocol. The Inventory will assess the GHG that can be attributed to Wilmette, as well as to categories of emissions within the Village to help prioritize decision-making.
  - a. Determine methods to capture GHG emissions data from distinct sources. Look to GPC, Climate Mayors and other municipalities for best practices.
  - b. Obtain and analyze data for the municipality, public property, other branches of government and the school districts within Wilmette, as well as for private property (residential, commercial and business).
  - c. Measure and monitor GHG emissions and carbon sequestration categories including transportation, energy use, water use and water runoff, waste, and native plants. Include electricity, natural gas and gasoline.
- 1.4.4 Continue to evaluate and update the Inventory annually, and determine whether to adjust categories and policies to achieve the Plan’s goals.
- 1.4.5 Identify the Village’s primary areas of GHG emissions, to develop and prioritize short- and long-term strategies with clear interim deliverables. Measures include:

- a. Look to international, federal, state, regional and local plans to assist in planning and evaluating climate strategies including the US EPA's Local Government Climate and Energy Strategy Series.
- b. Develop a net zero GHG emissions policy for new municipal buildings, and require that new municipal buildings after 2022 be LEED platinum, or its equivalent, certified.
- c. Serve as an anchor subscriber to a shared solar project, and allow residents and businesses to subscribe to the project by 2022. All solar projects within the Village should comply the Illinois Pollinator-Friendly Solar Site Act.
- d. Install 100% LED lighting on Village and public properties by 2022.
- e. Complete a feasibility study in 2022 to determine the best opportunities for renewable energy installations on municipal properties.
- f. Install water-efficient fixtures at all municipal facilities.
- g. Develop a zero emissions municipal vehicle purchasing strategy.
- h. Install electric vehicle charging stations and offer subsidies for electric vehicles using the Climate Mayors Electric Vehicle Purchasing Collaborative.
- i. Subscribe to opt-out community choice aggregation for all Wilmette ratepayers.
- j. Consider developing an electric utility with other municipalities.

**1.4.6** Immediately save energy, water and money by implementing low- or no-cost emissions and water reduction measures concurrent with developing the Inventory. Install LED bulbs, other energy efficiency measures, and water-reducing fixtures.

**1.4.7** Set municipal operations and public property short- and long-term targets by category to attain 45% emissions reductions by 2030 and net zero by 2050. In assessing GHG emissions, include municipal operations and public property; transportation; land use and vegetation; water use and water runoff; and waste.

**1.4.8** Set municipal waste goals. Municipal waste actions to achieve targets include:

- a. Require that capital projects divert construction and demolition debris from landfills and set a numerical goal to use reclaimed material in all new projects within the Village.
- b. Ensure that recycling receptacles are located at all Village properties including parking garages, parks and the community center.
- c. Ensure compost collection service at public spaces and Village facilities.
- d. Work with landfills to ensure they are managed to minimize air emissions and leakage into water and soil.
- e. Complete annual studies for landfill waste, compost, and recycling.

**1.4.9** Set municipal land and carbon sequestration goals. Native plants and native habitat absorb and sequester carbon; improve public health, air quality and water quality; reduce water entering sewers; and restore native ecosystems. Actions include:

- a. Increase green infrastructure to naturally filter and contain water runoff.



- b. Maintain Wilmette's Tree City USA. Replace trees on public land and distribute throughout the Village, and set a goal to plant a fixed number of native trees annually.
- c. Manage the health of trees and native plants, placing in optimal growing sites throughout the Village to maximize carbon capture and improve native habitats. Strengthen the Village's ordinance to protect larger trees during construction projects.
- d. Set a goal to restore a fixed amount of acreage of public, Village, and parkway lands to native habitat by 2025. Emphasize restoring native habitat for wildlife, and ensuring an even distribution of habitat throughout Wilmette.
- e. Reduce urban heat islands. Asphalt and concrete absorb rather than reflect the sun's heat, causing surface and overall ambient temperatures to rise.

**1.4.10** Set municipal water goals and determine actions to achieve goals including:

- a. Strengthen the Village's zoning laws to prevent the loss of permeable surfaces.
- b. Utilize permeable pavement where practicable on all new Village sidewalks, alleys, and streets.
- c. Install low-flow filters on all village properties.
- d. Ensure that drinking fountains inside and outside municipal buildings and public properties are functioning with healthy water, and with water bottle accessibility.
- e. Integrate water resource management and landscape planning, including practices to reduce soil erosion, sedimentation and pollution runoff.

**1.4.11** Task a Village employee and the Environmental and Energy Commission ("EEC") to develop and implement the Plan; continue to coordinate climate efforts; and review and assess new laws, policies and regulations, technologies, funding opportunities, best practices, and climate-related science.

**1.4.12** Continuously coordinate and build on initiatives and best practices among branches of government with dedicated monthly meetings. Districts 37 and 39, the park and library boards, and other governmental organizations have initiatives and plans underway that already are addressing the environment and climate.

**1.4.13** Set a policy as a matter of good governance to consider and report climate impact in every governmental decision. From expenditures to regulations, all decisions in the government can impact climate change.

**1.4.14** Report and publicize climate actions and Inventory data. Submit data to databases such as carbon $n$ ® Climate Registry, C40 and Climate Mayors. With an Inventory and benchmarking data, Wilmette can track progress and monitor compliance with its external commitments including GRC2 and Climate Mayors.

**1.4.15** Demonstrate climate leadership by joining other climate agreements such as the Global Covenant of Mayors for Climate and Energy (GCoM), Ready for 100, the Paris Climate Agreement, and the Chicago Climate Charter.

**1.4.16** Assess community-wide climate risk and vulnerability. To address the needs of different populations and geography, assess data to determine whether Wilmette is meeting the needs of all people.

### **Climate Change Mitigation: Private Property**

**1.4.17** Set short- and long-term private property goals. Separate goals should be established for both residential and commercial properties. To assess GHG emissions, include transportation; land use and vegetation; water use and water runoff; and waste.

**1.4.18** Set a timeline to require new and existing buildings to meet stringent energy and water standards. Provide energy performance data to home buyers.

### **Climate Resilience**

**1.4.19** Coordinate climate resiliency efforts with federal, state and regional initiatives.

- a. Develop/update Wilmette's Pre-Disaster Hazard Mitigation Plan to prepare for responses to climate-related emergencies and extreme weather. Prioritize climate impacts and resilience issues such as drainage and flood protection, safe drinking water, sewage, roads, electric and gas infrastructure, standards for building and site planning, heat, air quality and infectious diseases.
- b. Use the guides provided by the Illinois Emergency Management Agency and seek funding to prepare the PDHMP in the Disaster Mitigation Act of 2000.
- c. Assess infrastructure and public safety threats that will increasingly occur with climate change such as extreme weather. Use the Federal Emergency Management Agency community guidelines. Consider issues that will worsen with climate change, and include senior, childcare and medical facilities; medical providers; schools; shelters; transport; and hazardous materials.

**1.4.20** Protect the needs of vulnerable populations in the Village.

- a. The impacts of pollution and climate change within and across regions is not equally distributed. Within the Village, people who are or may become more vulnerable have lower capacity to prepare for and cope with climate change impacts. Resilience actions must include planning for all populations, which ultimately will be more effective in preparing for resilience in the entire Village.
- b. Conduct targeted meetings to identify people less able to prepare for and respond to climate hazards such as lower-income residents, elderly and

children, people with disabilities, historically marginalized people, renters, and people without transportation.

- c. Identify sources of financial assistance for more vulnerable populations such as higher maintenance costs, food expenses, flood insurance and utility bills.

## **Air Quality**

**1.4.21** Protect outdoor air quality to reduce Wilmette's contribution to air pollution.

- a. Continue to forbid burning landscape waste. Study the program structure of requiring bags with fees as a possible model for other ordinances.
- b. Expand the composting service for residents and businesses.
- c. Facilitate business compliance with air quality standards. Create educational materials for businesses on federal and state and Wilmette requirements.
- d. Participate in Illinois Partners for Clean Air to alert the public on Air Pollution Action Days when low winds and high temperatures cause elevated levels of air pollutants including ozone and particulate matter.
- e. Strengthen Wilmette's gas-powered leaf blower ban, and expand it to other high-emitting small engines.
- f. Continue to monitor and enforce the ban on coal tar sealant.
- g. Ban or limit outdoor fire pits, especially those that burn wood.

**1.4.22** Protect indoor air quality. As energy efficiency improves with tighter building envelopes, indoor air quality has to be a concurrent consideration.

- a. Establish policies to meet the Illinois Department of Public Health Indoor Air Quality standards and EPA guidelines. Indoor air pollution typically includes radon, carbon monoxide, hydrogen sulfide, particulates, formaldehyde, ozone, nitrogen dioxide, smoke and consumer products containing lead and toxins.
- b. Develop protocol to address indoor air quality exacerbated by climate change, such as mold developing after flooding.
- c. Require public buildings to follow the Indoor airPLUS program with construction practices and product specifications to minimize airborne pollutant exposure.
- d. Use low VOC cleaners, paints, and paving practices to reduce volatile organic compound ("VOC") emissions for all municipal operations.
- e. Establish stringent indoor air quality practices, and require new public buildings to follow the Indoor airPLUS or a similar program.

## **Outreach and Education**

**1.4.23** Create educational and incentive programs to empower residents, building owners, businesses, and employees to reduce energy and water consumption, and use carbon-sequestering native plants.

- a. Survey and hold public stakeholder meetings to optimize decision-making.

- b. Publicize and continuously update Wilmette's achievement of goals in the Plan to raise public awareness and bring together the community on shared goals.
- c. Lead by example with municipal operations and public properties as models.
- d. Develop education, outreach and engagement on climate change and solutions by partnering with nonprofits, schools, the public library, parks and beaches, faith communities, energy and waste service providers, employers and employees, and elected and appointed representatives.
- e. Educate and inform the community about the air quality index and water quality.
- f. Educate about and connect the public with low- and no-cost options for energy and water efficiency such as incentive programs through Nicor Gas and ComEd, including those that benefit more vulnerable populations.

### **1.5 References**

Wilmette Resolutions 2018-R-14 and [2018-R-15](#)

United Nations Intergovernmental Panel on Climate Change, [Special Report: Global Warming of 1.5°C](#) (October 2018)

UN Environment's Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, [Global Assessment Report](#) (April 2019)

U.S. Environmental Protection Agency, [What climate change means for Illinois](#) (2016)

United States Global Change Research Program, [Fourth National Climate Assessment Volume I](#) (2017)

United States Global Change Research Program, [Fourth National Climate Assessment Volume II and Chapter 21: Midwest](#) (2018)

New York Times, [Why half a degree of global warming is a big deal](#) (Oct. 10, 2018)

[carbonn® Climate Registry website](#)

ICLEI Local Governments for Sustainability and carbonn® Climate Registry, [Multilevel Climate Action: The Path to 1.5 Degrees](#) (Bonn, Germany 2018).

[C40](#)

[Climate Mayors](#) and [Climate Mayors Electric Vehicle Purchasing Collaborative](#)

[Sierra Club Ready for 100](#)

[Paris Climate Agreement](#)

[#WeAreStillIn](#)

[Chicago Climate Charter](#)

[Global Covenant of Mayors for Climate and Energy](#)

Illinois Department of Public Health, [Guidelines for Indoor Air Quality website](#)

U.S. Environmental Protection Agency, [Indoor Air Quality website](#) and [Indoor airPlus](#)

Illinois Emergency Management Agency, [Mitigation Planning website](#)

Department of Homeland Security, [Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards](#) (2013)

Chicago Metropolitan Agency for Planning, [Climate Adaptation Guidebook for Municipalities in the Chicago Region](#) (2013)

U.S. Environmental Protection Agency, [Local Government Climate and Energy Strategy Series website](#)

## CHAPTER 2 – ECONOMIC DEVELOPMENT

### 2.1 Introduction

Although Economic Development and the cultivation of a green economy may seem tangential and an indirect way to address sustainability, the chances of succeeding in creating a long-term sustainability plan can undoubtedly be improved by engaging with Wilmette’s commercial stakeholders in addition to its residents. Wilmette has the opportunity to become a leader and model for green economic development on the North Shore, but with the appeal of commercial growth, local business’s participation in reducing its environmental impact will also be critical given the material impacts on energy, waste and water created by Wilmette’s economic activity.

Wilmette’s commercial activity is concentrated in the following areas:

- Downtown/Green Bay Road Corridor centered around Village Hall and the Metra UP North Train Station;
- Plaza del Lago shopping center on Sheridan Road at the northern border of the village;
- Edens Plaza shopping center located at Lake Street and the Edens Expressway
- Linden Square adjacent to the Linden CTA terminal at Linden Avenue and 4<sup>th</sup> Street

Although the Workforce Development and Innovation goals under the GRC2 Framework may not apply to a village of Wilmette’s size and makeup, there are a number of impactful Green Economy and Policy goals set forth under the GRC2 which are achievable in the near and medium term.

### 2.2 Existing Conditions

A number of initiatives geared towards the local green economy and related government policies are already in place through efforts of local governmental bodies and the impressive work of Wilmette’s not-for-profit community groups:

Recognize and support businesses who practice and promote sustainability, for example, Go Green Wilmette’s (“GGW”) Business Partners for a Greener Wilmette program;

Promote the use of local goods and services, and tourism featuring natural and cultural assets of the community in partnership with:

Wilmette Kenilworth Chamber of Commerce  
Village of Wilmette Historical Society  
Wilmette Park District; and

Support expanded job opportunities and sufficient wages based upon the Village of Wilmette's adoption of the Cook County minimum wage and sick time opt-in.

## **2.3 Goals**

**2.3.1** Attract, retain, recognize and support local businesses who practice and promote sustainability.

**2.3.2** Create and promote a community brand featuring natural resources or cultural characteristics of community.

## **2.4 Recommendations**

### **2.4.1 Adopt, endorse and expand Go Green Wilmette's Business Partners for a Greener Wilmette Program.**

Go Green Wilmette (GGW) initiated the Business Partners for a Greener Wilmette program in 2012 to publicly recognize Wilmette businesses that engage in environmentally responsible practices and encourage increased sustainability wherever feasible. Current benefits include promotion of businesses that meet GGW's internal application process through GGW public outreach channels. By adopting the GGW plan and formalizing/defining certain certification processes, Wilmette can expand the benefits of becoming a "green-certified" business including:

Preferential status for procurement decisions by the Village of Wilmette government and lobbying for other local governmental bodies to do the same (e.g., Wilmette Park District, local school districts, township government, etc.);

Expedite Wilmette permit process for green-certified businesses;

Dedicate parking spaces for green businesses;

Recognition of certification and "working towards" certification; and

Publicize green businesses to the public through Wilmette website, community events, etc.

### **2.4.2 Digitally expand sustainability messages on Village media/websites.**

Wilmette is endowed with a variety of natural resources and cultural sites of significance ranging from parks, beaches, historical sites, and "green" services. By coordinating publicity and marketing efforts and continuing to highlight the community, the "branding" efforts' contribution to the broader sustainability efforts which will attract visitors and businesses that share in community values and hope to reap the benefits from a thriving green economy.

**2.4.3 Formalize partnerships with local purpose-specific entities in furtherance of above (e.g. Chamber of Commerce, Wilmette Park District).**

Create a working group to coordinate sustainability and green economy promotion efforts as set forth above. The working group may evolve into a formal “green business association” to augment or complement Chamber of Commerce, GGW and other local community group efforts in providing resources, general support, business models, consulting, and networking opportunities for local sustainable business.

**2.5 References**

<https://gogreenwilmette.org/what-we-do/business-partners/>

<https://www.wilmettepark.org/>

<https://www.wilmettekenilworth.com/>

## **CHAPTER 3 – ENERGY**

### **3.1 Introduction**

Per the recent signatory of the Greenest Region Compact 2 (GRC2) and the resolution adopted by the Village of Wilmette, this report is provided by the Environmental and Energy Commission as recommendations to address the Energy category of the Greenest Region Compact 2. This report will discuss the Village of Wilmette (property, buildings and contents, street-lights, motor vehicles and heavy equipment that is owned, operated or under the control of the Village of Wilmette) and Other Village Services/Private (everything in the Village that is not defined under public – i.e.: all business and residential real estate, vehicles, energy utilizing devices etc.) sectors and make recommendations for improvements to become a more sustainable community with regards to energy. This Energy Chapter must be read in tandem with the Climate Chapter as Energy and Climate will be closely aligned in Recommendations and Goals.

### **3.2 Existing Conditions**

In 2011, a Greenhouse Gas Inventory Report was written for the Village of Wilmette that included an evaluation on electricity and natural gas used from 2008 through 2010. From this evaluation, it was determined that over half of the greenhouse gas emissions came from electricity use and a third of the emissions came from natural gas use. Most of the electricity used was by residential and small businesses with Government use the third highest user.

Electricity use is the main contributor to CO<sub>2</sub> scope 2 emissions (emissions generated by the power plants) and the combustion of natural gas in boilers is the main contributor to CO<sub>2</sub> scope 1 emissions (emissions generated on-site where the boiler is used). The Village of Wilmette can reduce these emissions through the reduction of electricity and natural gas use and through energy efficiency programs. While the report discussed above showed that most of the electricity use came from residents, the recommendation is for the Village to work in a multi-faceted manner to address improvements in all sectors. It is recommended that improvements be made in these three areas – (1) actions the Village can take to impact their own energy usage, (2) collaboration with other large energy users in the Village (Village services – schools, parks, library, and large and small businesses) to gain energy reductions and (3) resident education and outreach to encourage reduction and efficiencies.



### **3.3 Goals**

**3.3.1** Assess Village of Wilmette municipal energy use, develop and implement reduction strategies.

**3.3.2** Set % reduction goal and timeline to align with Climate Change goals.

**3.3.3** Educate others within the Village around energy reduction.

### **3.4 Recommendations**

#### **Manage and Reduce Village of Wilmette Use of Energy**

The energy used by the Village must be understood in quantity and use type so that reductions and efficiencies in energy use can be realized. An energy use reduction goal should be set to align with the GHG emissions reduction identified in the Climate Category goals.

##### **3.4.1 Benchmark Energy Use**

A new Energy Use study should be completed for 2018 to compare to the 2011 report. It is expected that there should not be a large difference between the rankings of the largest users of energy from 2011 to 2018. However, updated information is needed to move forward with accuracy in the recommendations to reduce use. This energy use benchmark will identify all of the Wilmette energy users and the Public Sector use data can then be analyzed. An Energy Use study should be completed annually so trends and improvements/reductions can be tracked.

##### **3.4.2 Set an Energy Reduction Goal**

An energy reduction goal should be set to align with the GRC2 and climate section recommendations.

##### **3.4.3 Conduct an Energy Audit and Implement Actions from Audit**

An energy audit should be conducted, by a third party, of all Public Sector buildings, facilities, equipment and any other public operations. Energy reduction and energy efficiency strategies to Village owned facilities and equipment identified in audit should be implemented. The strategies/projects should be prioritized with those that are either no/low cost, have the best return on investment or those that have the greatest energy reduction impact should be evaluated first getting the highest priority. Other projects should be included in a budget for longer-term implementation.

##### **3.4.4 Develop Village Internal Policies and Outreach for Energy**

Energy use reduction should be evaluated with every capitol project to ensure energy reductions and efficiencies are considered during the development and implementation phase. Internal policies for energy use should be developed (ex: power down

equipment and turn off lights when not in use). Internal sourcing policies should be developed to source energy star equipment or other reduced energy use equipment.

**3.4.5** Renewable energy purchase should be evaluated as the source of electricity for the Village municipal buildings. Education on the purchase of renewable energy should occur to other public and private entities with an investigation into the option of electrical aggregation. Additional information on renewable energy and electrical aggregation is found in Appendix C.

**Collaborate with Other Stakeholders in the Village That Have the Greatest Impact on Electricity Use**

Other Village services (schools, park district, library) as well as large business, currently act on their own regarding electricity use. With collaboration between these large electricity users, an understanding of electricity projects could be understood and efforts to reduce their usage should be shared.

**3.4.6** Develop Green Team

A green team could be developed with members from the D39 School District, Library, Park District and large business that use a lot of electricity. The purpose of the team would be to collaborate on electricity reduction strategies and share best practices. The reduction of energy use by these other large electricity users would help reduce the overall electricity use footprint in the Village of Wilmette.

**3.4.7** Obtain Energy Saving Commitments

Working with these other members of the Village, develop goals and commitments in line with the climate goals.

**Develop Education and Outreach Tools for Residents and Small Businesses**

**3.4.8** Develop an Outreach and Education Campaign for Residents, Small Businesses and Building Landlords.

Outreach would involve education on (1) why to reduce energy use, (2) contacts to conduct an energy audit, (3) upgrading to energy efficiency appliances and other equipment, (4) use of renewal energy (solar / community solar). Develop an energy reduction awareness program for local businesses who reduce their energy the most from a given benchmark. Keep all stakeholders informed on the total impact of the energy reduction.

**3.4.9** Expedited the Permit Approval Process for Projects with an Impact on Energy Permit request for projects that have an impact on energy reduction, renewal energy install or replacement of equipment with more efficient units shall be fast tracked and

approved by the Village in a more expeditious manner. Permit fees assessed could be reduced for these types of projects.

### **3.5 References**

Greenhouse Gas Inventory, Village of Wilmette, **EEC**, November 28, 2011  
GRC2 Energy/Climate Questions & Answers, Village of Wilmette, April 2019  
Community Solar Subscription Opportunity Assessment: Village of Wilmette, Proposal

## CHAPTER 4 – LAND

### **4.1 Introduction**

Wilmette has a total area of 5.409 square miles (14.01 km<sup>2</sup>) and hosts a wide variety of natural resources and amenities, including a well-developed urban forest with more than 18,600 trees comprising 150 species and sub-species in its parkways alone.

The Wilmette Park District oversees over 300 acres of parks and open land including Gillson Park and Beaches; Keay Nature Center; and a portion of the Green Bay Bike Trail. Neighborhood parks can be found in 20 locations throughout the village.

The consensus goals of the Greenest Region Compact aim for enhanced quality of life for residents; protection and stewardship of the environment and sustainable economic vitality. The EEC strongly endorses the consensus goals for Land, and aims to model best management practices within the Greenest Region Communities by:

- Encouraging strategic development that upholds sustainability principles
- Conserving, restoring and enhancing natural features and ecosystems
- Supporting networks of accessible, well-used, and enjoyable parks
- Sustaining a robust urban forest canopy
- Sustaining beautiful landscapes that provide ecosystem services
- Achieving greater livability through sustainable land use and housing policies
- Cultivating a conservation ethic in the community.

Healthy ecosystems and natural spaces improve the quality of our drinking water, our food, and the air we breathe. Natural systems with a high diversity of plants and animals, or high biodiversity, tend to be healthier, more productive, and better able to adapt to challenges like climate change. In fact, healthy ecosystems can provide 37% of the mitigation needed to limit global temperature rise, according to a 2019 United Nations report. Natural landscapes also absorb a significant amount of storm water.

Global biodiversity is declining at unprecedented rates, but we have the opportunity at a local scale to help reverse this decline. Pollinators such as bees and butterflies have evolved to utilize the flowers and pollen that are indigenous to the upper Midwest. Thus, including native plants in our landscaping will provide habitat for these critical components of global biodiversity. Birds, butterflies, and wildflowers not only represent healthy nature, but they provide joy and beauty and enhance the quality of our lives.

Another component of our suburban landscape is the care of our lawns, which currently relies heavily on two-stroke, gasoline engines and chemical inputs. These engines are the dirtiest and loudest of existing technology and contribute significant amounts of carbon dioxide, volatile organic compounds, particulate matter, and nitrous oxides to our air. These pollutants are especially harmful to the elderly, the young, and those

suffering from emphysema, bronchitis, and asthma. The excessive noise created by these engines contributes to stress-related illnesses such as high blood pressure, sleep disruption, and lost productivity, as well as hearing loss for those using the equipment. Fortunately, newer technologies can replace these older, dirtier machines.

Organic lawn care practices use natural fertilizers and ecological principles to provide healthy lawns with many fewer chemical inputs. We can shift our lawn care culture from focusing on immaculate tidiness to focusing on healthy green spaces that cultivate life whether through thriving lawns or species-rich gardens. This shift would improve the health and biodiversity of our landscapes and improve the quality of our lives.

#### **4.2 Existing Conditions**

Most green space within the Village of Wilmette – whether residential yards or public open space – is comprised of lawn monocultures and is maintained using gas-powered, two-stroke equipment and heavy chemical inputs.

Our urban forest is valued and supported by residents and village staff alike. Staff are knowledgeable, helpful, and work hard to maintain our older trees and promote the planting of new trees.

The Village actively supported the preservation and restoration of the Elmwood Dunes Preserve in 2013, which provides beauty, respite, and beach (but not swimming) access for residents and visitors, as well as providing habitat for birds, butterflies, other pollinators, and hundreds of native wildflowers and grasses. The community strongly supports this preserve, and volunteers regularly contribute to its maintenance.

#### **4.3 Goals**

**4.3.1** The Village of Wilmette aims to improve the quality of our air and water, to reduce our community's greenhouse gas emissions, and to increase the degree to which our green spaces support ecosystem services and biodiversity.

**4.3.2** By 2025, our biodiversity goal is to achieve Community Wildlife Habitat certification through the National Wildlife Federation's certification program. This would require approximately 200 residential properties, five schools, and eight public spaces to include native habitat, water, and shelter on their grounds. The full requirements can be found here or in the appendix: [www.nwf.org/CommunityWildlifeHabitat/](http://www.nwf.org/CommunityWildlifeHabitat/).

**4.3.3** By 2030, our goal is to have 100% of village-owned property and 50% of residential properties using sustainable landscape methods that include non-gas powered equipment and reduced chemical inputs, as described below.

#### **4.4 Recommendations**

#### **4.4.1 Manage Public and Private Landscapes to Optimize Ecosystem Services and Support Biodiversity**

Model best practices on village property.

1. Build on and showcase the success of Elmwood Dunes, the Fire Station, and the Village Hall rain garden to incorporate native plants, rain gardens, and permeable hardscapes into at least 70% of village-owned landscapes.
2. Modify parkway tree list to include at least 70% native species.
3. Encourage and incentivize the incorporation of native plants, rain gardens, and permeable hardscapes on private property, including residential, business, and no-profit properties.
4. Continue funding the residential Green Infrastructure program; see Chapter 10 for the specific details of this program.
5. Work toward community wildlife habitat certification through the National Wildlife Federation's Community Wildlife Habitat program ([www.nwf.org/CommunityWildlifeHabitat/](http://www.nwf.org/CommunityWildlifeHabitat/)).
6. Sign the National Wildlife Federation's Mayors' Monarch Pledge, specify which action items Wilmette will take, and implement these actions ([www.nwf.org/mayorsmonarchpledge](http://www.nwf.org/mayorsmonarchpledge)).
7. Education through the Communicator and other outlets about the value and beauty of natural yards.
8. Co-sponsor the Go Green Wilmette Sustainable Yards Tour and Native Plant Sale.
9. Change the zoning code or use the new Stormwater Utility Fee to incentivize native landscaping, rain gardens, and permeable hardscapes.
10. Review current zoning code to remove any restrictions on the incorporation of native plants into residential landscapes.
11. Educate residents about the identity of and harm caused by invasive species, and encourage their removal.
12. Encourage and support the use of native plants and rain gardens within residential parkways.
13. Consider adding a minimum requirement of 70% native species to section 20-15.5(k) of the village code that addresses plant diversity requirements for developments.
14. Consider adding a minimum requirement of 70% native species to section 20-15.9(f) of the village code that addresses plant coverage in parking lot islands.
15. Consider adding a minimum requirement of 70% native species to section 20-15.10 of the village code that addresses plant coverage in buffer yards.
16. Remove the phrase "neat and orderly" from section 20-15.4(d) that addresses the maintenance of plant materials.
17. Develop effective incentives to support section 20-15.5(j) of the village code, which reads thus: "Energy Conservation. Plant material placement should be designed to reduce the energy consumption needs of the development. In addition, landscape designs must take into account and make an effort to implement sustainable design standards, where appropriate."

**Protect existing green spaces from development or degradation, and support such protection by partner agencies.**

1. Partner with IDOT to remove invasive species from highway shoulders that lie within Wilmette.
2. Ensure that any destruction of green space that requires a village permit provides compensation to the community for its loss.

**Strengthen the existing Village tree ordinance.**

1. Model our tree ordinance after the Chicago Region Trees Initiative (CRTI) Gold standard (<http://chicagorti.org/OrdinanceTemplates>).
2. Create a tree ordinance page on the website so residents can easily access it.
3. Provide education to residents about protecting trees generally and especially during construction.
4. Clarify and highlight in the ordinance the requirement to protect trees during construction.

**4.4.2 Manage Cultivated Landscapes Sustainably**

**Model best practices on village property**

1. Transition to the use of battery-powered lawn care equipment on village property such as at Village Hall, the Fire Station, and the Police Station. Work with Park District to transition their practices as well.
2. Minimize the use of fertilizer on village property, and transition to organic fertilizers that result in minimal run-off to waterways.

**Encourage and facilitate best practices on residential properties**

1. Education through the Communicator and other outlets about the community health benefits of sustainable landscaping.
2. Develop incentives for landscape companies to transition to battery-powered equipment and minimal/organic fertilizer use. Possible ideas: A tiered pricing system for licensing that rewards demonstrated training in, and use of, battery-powered equipment and minimal/organic fertilizer. List sustainable companies on the village website, to allow residents to choose companies using sustainable practices.
3. Co-sponsor a workshop to train landscape companies and municipalities in the successful transition to battery-powered equipment.
4. Partner with neighboring communities to develop incentives for landscape companies, so that there is more leverage to effect change.
5. Remove public parks and golf courses from the list of places exempted from the current gas-powered leaf blower restriction.

**4.4.3 Encourage Locally-Grown Food**

1. Allow residents to keep egg-laying hens by adding them to the list of exempted animals under section 4-2.3 of the Village Code.
2. Support residential vegetable gardens, which can be difficult in many Wilmette yards due to heavy shade by older trees. Encourage front-yard and parkway gardens and provide education and resources to help residents learn how to grow food under shady conditions.
3. Provide space on Village property for community gardens, or support and encourage the Park District to increase the number of community gardens on park district land.

#### **4.4.4 Protect Open Space**

1. Continue supporting volunteer engagement in the maintenance of Elmwood Dunes Preserve. More actively promote volunteer events and celebrate the preserve.
2. Where opportunities like Elmwood Dunes Preserve arise in the future, preservation and restoration should be top considerations.
3. Require compensation for damage to natural areas, wetlands, and other storm water retention areas, in cases where private or other governmental entities propose to damage or destroy green space within the village, and where village permitting will be required.

#### **4.4.5 Protect and Restore Soil Integrity.**

Enforce strong rules that are effective in preventing construction runoff.

#### **4.5 References**

"Tree City USA / The Village of Wilmette". Village of Wilmette. 2009-10-08.

Bloorchian, A., L. Ahiablame, A. Osouli, and J. Zhou 2016. Modeling BMP and vegetative cover performance for highway stormwater runoff reduction. *Procedia Engineering* 145:274-280.

Kwok, R. 2018. News feature: Accidental urban oases. *Proceedings of the National Academy of Sciences*. 115:4800-4804.

Pollock, C., Sparks, G. and J.L. Banks 2018. Lawn and garden equipment sound: A comparison of gas and battery electric equipment. *Journal of Environmental and Toxicological Studies* 2:1-9.

Purakayastha, T. J., D. R. Huggins, and J. L. Smith 2008. Carbon Sequestration in Native Prairie, Perennial Grass, No-Till, and Cultivated Palouse Silt Loam. *Soil Science Society of America Journal* 72:534-540.



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<https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/>.

Volckens, J., D.A. Olson, and M.D. Hays 2008. Carbonaceous species emitted from handheld two-stroke engines. *Atmospheric Environment* 42:1239-1248.

Winfrey, R., N.M. Williams, J. Dushoff, and C. Kremen 2007. Native bees provide insurance against ongoing honey bee losses. *Ecology Letters* 10:1105-1113

## **CHAPTER 5 – LEADERSHIP**

### **5.1 Introduction**

The Village of Wilmette has taken some important steps to support the GRC2. The Village sponsors Going Green Matters, the annual environmental fair organized by Go Green Wilmette. This event, held in early March, makes information about sustainability available to the public and in 2020 included information about the GRC2 and steps Wilmette is taking to implement it.

### **5.2 Existing Conditions**

Village staff intends to update the Greenhouse Gas Inventory which was last done in 2011. Given that the basic nature of the village is residential, as it was at the time of the last inventory, it is expected that the results will indicate that residential energy use for heating, cooling, appliances, and technology will remain the largest contributor to greenhouse gases.

The Village of Wilmette has achieved Silver status in the U.S. Department of Energy's SolSmart program (details re: program?)

The Village of Wilmette finalized a Master Bike and Active Transportation Plan which will undergo further Village Board review in early 2021.

The West Side Neighborhood Storage Project began construction in 2020, this project aims to better manage stormwater runoff throughout the Village. As part of the project, the Village entered into a intergovernmental agreement with the Wilmette Park District and Wilmette School District 39.

### **5.3 Goals**

**5.3.1** Partner with local schools, the library and the park district to encourage sustainability in Wilmette.

**5.3.2** Partner with other local governments to achieve efficiency and sustainability in the region.

**5.3.3** Work with other local environmental commissions to share ideas and encourage a regional approach to sustainability.

### **5.4 Recommendations**

**5.4.1** Include local schools, the library and the park district in planning to make Wilmette a more pollinator and bird-friendly community, encourage active transportation, and reduce greenhouse gas emissions.

**5.4.2** Consider joining with Evanston or other nearby communities to form a consortium to purchase renewable energy credits.

**5.4.3** Work to achieve Gold status with SolSmart.

**5.4.4** Consider a program to encourage residents to subscribe to community solar through the Clearway Energy/Trajectory Energy Community solar program.

## **5.5 References**

Metropolitan Mayors Caucus, Greenest Region Compact, Web Site  
<https://www.wilmette.com/village-services/stormwater-improvement-project/>  
<https://www.wsnsp.com/>

## **CHAPTER 6 – MOBILITY**

### **6.1 Introduction**

The Village of Wilmette has about 87 miles of roadway and 166 miles of sidewalk. The Village is located close to the City of Chicago and its more than 27,000 residents are served by CTA’s Purple Line, Metra’s commuter train, as well as PACE bus service. While many of the Village’s residents use public transportation services for their daily commute, a significant portion of residents also use their personal vehicles as their primary mode of transportation. Bicycles on the roadways are increasingly common, both for recreation and transportation. Pedestrians of all ages walk regularly throughout the Village for exercise and to go to school, restaurants, and local establishments.

#### **Bicycle and Pedestrian Transportation**

The *Walk Bike Wilmette, Village of Wilmette Master Bike and Active Transportation Plan* prepared by Village staff along with consultant CivilTech along with the Active Transportation Alliance has identified challenges for pedestrians and cyclists throughout the Village. This plan was recommended for approval by the Transportation Commission and is expected to come before the Village Board of Trustees in the fall of 2020. The EEC voiced its support for this planning document and is hereby included by reference into this document. The plan identifies gaps in pedestrian and bicycle networks and recommends ways to improve safety, connectivity, and accessibility within the Village and into the surrounding communities.

### **6.2 Existing Conditions**

#### **Bicycle and Pedestrian Transportation**

In the spring of 2018, the Village received a Bronze level “Bicycle Friendly Community” designation from the League of American Bicyclists. Areas of strength cited, compared to others with this designation, were bicycle education in schools and bicycle friendly ordinances. Areas of weakness included safety (Wilmette had almost six times the number of crashes per capita), low commuter bike ridership, bike network mileage, bicycle related transportation spending and staff, and a lack of a current bike plan.

The Village provides some bicycle parking at municipal facilities, business districts, and at the two train stations located in the Village. In 2019, 35 additional bike racks and a bike fix-it station were added throughout the Village funded through a Rotary grant secured by GoGreen Wilmette and Bike Wilmette, two local volunteer organizations committed to the betterment of the Village environs.

#### **Transportation Infrastructure**

The Village attempts, as much as possible, to maintain streets and sidewalks without harming natural resources. Safety is always the Village’s priority and the Village will

take necessary steps to make sure residents are safe while using the streets and sidewalks in the Village. The Village has a tree planting program in an effort to keep green infrastructure elements into roadway design. The Village attempts to incorporate as many sustainable elements as possible during all capital improvement planning efforts and is currently developing a green infrastructure handbook. The Village is currently evaluating the feasibility of introducing electric charging stations at municipal and public parking facilities. The Village also maintains synchronized traffic lights to encourage efficient traffic flow and reduce vehicle idling at intersections. The Village continually coordinates with regional agencies to encourage transit, pedestrian, and bicycle mobility in an effort to make alternative modes of transportation accessible to residents. The Village is continually expanding its Safe Routes to School program and is finalizing its Master Bike and Active Transportation plan, as referenced above.

### Policy

The Village continually seeks State and Federal grants to help fund transportation system improvements. The Village has adopted anti-idling policies for Village vehicles and around schools. The Village has also adopted a Complete Streets policy to be considered for implementation during any upcoming reconstruction or rehabilitation projects. The EEC strongly encourages that this policy be adhered to and policed in good faith. The policy could be strengthened to require more specific accommodations and to be referred to an independent body when deemed appropriate.

The Village has policies that encourage Village employees to use alternative modes of transit to commute to work and to encourage residents to use alternate transportation (walking, PACE, bicycle) for public events.

### **6.3 Goals**

The goal of the Village regarding mobility should include the following items:

- 6.3.1** Improve access to alternative transportation to Village residents;
- 6.3.2** Educate Village residents about the benefits of using alternative transportation (personal and environmental);
- 6.3.3** Reduce traffic congestion;
- 6.3.4** Eliminate vehicle idling;
- 6.3.5** Encourage residents to have vehicles with alternative fuels; and
- 6.3.6** Maintain a transportation infrastructure that is in good state of repair, sustainable, and accommodates all modes of transportation.

### **6.4 Recommendations**

#### Bicycle and Pedestrian Transportation

**6.4.1** It is recommended that the Village should work with relevant local organizations such as Bike Wilmette, Bike Walk Wilmette, Go Green Wilmette, and the Active Transportation Alliance to earn and maintain bicycle and pedestrian friendly community designation by 2025. The Village should also work with neighboring communities to setup a bicycle sharing program with multiple access points, similar to what the Cities of Chicago and Evanston have, allowing residents of Wilmette to have a convenient access to bicycles.

**6.4.2** The Village should adopt the Master Bike and Active Transportation Plan and implement its recommendations to improve active transportation throughout the Village. The Village should encourage and incentivize residential and commercial buildings to make bicycle parking facilities available for tenants and customers. Also, the Village should provide sufficient bicycle parking sites around strategically selected areas to encourage pedestrian and bicycle usage.

#### Transportation Infrastructure

**6.4.3** The Village should implement the use of the Envision checklist and infrastructure rating system during project development.

**6.4.4** The Village should introduce electric charging stations at Village-owned parking facilities by 2025. New commercial developments, including apartments and condominiums, should require electric vehicle charging stations.

#### Ordinance

**6.4.5** The Village should develop policies that encourage alternative-fuel vehicles and electric-vehicle charging facilities in the Village and the Village should also implement alternative fuel vehicles for official use.

**6.4.6** The Village should adopt a transportation asset management system (for assets such as pavement, sidewalk, etc.) to extend the life of the Village transportation infrastructure and facilitate timely repairs and preservation activities.

**6.4.7** The Village should explore the use of innovative environmentally friendly designs during rehabilitation and reconstruction of transportation infrastructure.

**6.4.8** The Village should maintain and enforce no-idling zones around transit stations, and schools, and consider no-idling restrictions at train crossings and in Park District facilities.

#### Policy

**6.4.9** The Village should eliminate its sidewalk policy that was introduced in 2016 that requires 67 percent of residents adjacent to a proposed sidewalk to sign a petition indicating they are in favor in order for the project to be presented to a committee for

consideration. Development of new sidewalks should be based upon community need among pedestrians, rather than solely on the explicit approval of adjacent residents.

**6.4.10** The Village should introduce policy that encourages residents to own alternative-fuel vehicles.

**6.4.11** The Village should perform a study on ways to expand local transit connections to encourage the use of public transit in the Village.

**6.4.12** The Village should seek ways to collaborate with neighboring municipalities and local transit authorities to improve and expand regional transit capacity to encourage the use of public transit in the region. Also, the Village should collaborate with local transit agencies to promote the use of public transit options by Village residents.

**6.4.13** The Village should engage local businesses and the Chamber of Commerce to encourage flexible scheduling and telecommuting options for employees.

**6.4.14** The Village should encourage walking as a mode of transportation. This can be done by prioritizing safety for pedestrians by changing the sidewalk ordinance to allow for construction of new sidewalks for school children, improving access by snow removal and landscape obstructions, and using the existing Complete Streets Policy in decision making.

**6.4.15** The Village should maintain active education programs in conjunction with the school districts and private schools that inform residents of the proven health benefits of walking and biking. The program should include safety practices and laws.

**6.4.16** The Village should be cognizant of special needs residents and visitors who may have additional requirements and thereby making the Village welcoming to everyone. These sensitivities should include items such as not filling handicap parking spots for snow storage; designing public places with practicable access for wheel chairs, scooters, crutches, walkers; installing pushbutton doors at the Metra station; and having a public awareness campaign possibly in the Communicator and on the Village website.

## **CHAPTER 7 – MUNICIPAL OPERATIONS**

### **7.1 Introduction**

The Village of Wilmette owns and operates a number of facilities which allow staff to effectively serve over 27,000 residents. Operating these facilities using sustainable, environmentally-conscious initiatives has been a priority for current and future planning.

It is imperative for the Village of Wilmette to analyze current sustainability practices, and to set goals in relation to municipal operations that are logical, cost-effective, and rewarding.

### **7.2 Existing Conditions**

#### **All Facilities**

Currently, all Village facilities are utilizing “green” chemicals for general janitorial services. The use of biodegradable and low VOC (Volatile Organic Compound) products are examples of the Village’s commitment to environmental friendliness. Additionally, low VOC products are used to furnish all Village facilities, leading to lower levels of atmospheric dissipation.

#### **Village Hall**

Energy-efficient lighting and motion-activated light fixtures have been installed throughout Village Hall. Efficient and motion-activated lighting has led to less total energy consumption throughout Village facilities. Additionally, an energy-efficient water heater and air conditioning compressor have been installed in 2014 and 2017 respectively. The conventional boiler was replaced with three high efficiency condensing boilers, and the installation of a roof consisting of rubber and foam board insulation has led to substantial improvements in energy consumption and total use of energy input/output.

#### **Public Works Facility**

The Public Works facility has been recognized as a LEED-certified Gold facility by the U.S. Green Building Council. The building achieved perfect or near-perfect scores due to an energy-efficient metal wall system, a glass curtain wall system, a white reflective roof system, a parking lot bioswale filter system, and dedicated alternative fuel vehicle and carpool parking spots.

Throughout the facility, motion-activated light fixtures, low E-glass windows, and energy-efficient water heaters have been installed to prevent energy loss and reduce energy consumption.



Last, a new Building Automation System (BAS) controller uses software to optimize the buildings design, leading to better control over air conditioning and heating, and saving energy by reducing energy when the building is unoccupied.

#### Fire Station 26

The conventional hot water boiler and heating system has been replaced with high-efficiency air furnaces and air conditioning condensers. Apparatus heat was changed to high-efficiency radiant tube heaters, and the station has undergone 100% LED lighting. The new boiler, heating apparatus, and LED lighting has led to reduced rates of energy consumption and light pollution.

#### Fire Station 27

The existing heating system was replaced with high-velocity HVAC units that use electrical reheat systems. Apparatus heat was changed to high-efficiency radiant tube heaters, and the station has undergone 100% LED lighting as well. Similar to station 26, these improvements and new installations have led to reduced rates of energy consumption and light pollution.

#### Water Plant

Motion-sensor lighting, new water pumps, and the replacement of portable heaters with electric heaters has led to less energy consumption. The 1,200,000 BTU boiler has been replaced with a more efficient 900,000 BTU hot water boiler, resulting in a downsized boiler that uses less energy.

The incorporation of a vegetative roof completed in 2020 will reduce the overall volume of run-off, the peak volume-rate requirements for drainage systems, and contaminants in run-off water. This new roof will also increase air quality, reduce fluctuation in daily high and low temperatures, and increase the absorption of UV rays.

#### Village Fleet

Idling Policy: The Village has adopted an Idle Reduction Policy for its employees; the only exception is for public safety vehicles that are responding to an emergency situation.

Bio-Diesel Fuel: All diesel-equipped vehicles began using a 2% bio-diesel fuel blend on January 1, 2006.

Diesel Oxidation Catalysts: The Public Works Department received a grant from Clean Air Counts in the amount of \$22,140 to install diesel oxidation catalysts on nine trucks.

The Village purchased four Hybrid Police Utility Interceptors in January 2020. The Village will continue to consider Green Fleet alternatives when purchasing new fleet vehicles

### **7.3 Goals**

**7.3.1** Engage and involve all Village staff and other governmental entities in Wilmette on sustainability efforts.

**7.3.2** Incorporate alternative fuel vehicles into Village fleets.

**7.3.3** Explore State, Federal and private grants and resources to advance sustainability efforts.

**7.3.4** Continue to track and manage data that relate to sustainable/green efforts and initiatives.

**7.3.5** Set overall municipal targets for energy and waste.

### **7.4 Recommendations**

#### **Village Staff**

**7.4.1** Create a full-time Village-wide sustainability coordinator position. Additionally, establish an interdisciplinary team to coordinate internal sustainability efforts.

**7.4.2** Educate and train staff on sustainability practices.

#### **All Facilities**

**7.4.3** Analyze cost and benefits of third party certifications, and Village policies such as ENVISION certification, SITES certification, and environmental purchasing policies.

**7.4.4** Continue to install energy-efficient products, motion sensor lighting, and other sustainable features in Village facilities that undergo renovation.

**7.4.5** Implement cost-effective and short-term GHG emission reduction measures in Village facilities.

**7.4.6** Explore possible 'smart' technology that allows for better analysis and understanding of waste, water, fleet, air, and energy data.

#### **Village Fleet**

**7.4.7** Continue to explore incorporating alternative fuel vehicles into Village fleets when the ROI is more cost-effective.

**7.4.8** Seek IEPA Illinois Green Fleet certification.

**7.5 References**

<https://www.wilmette.com/green-initiatives/>

<https://www.wilmette.com/green-initiatives/green-fleet/>

<https://mayorscaucus.org/initiatives/environment/rec/>

## CHAPTER 8 – SUSTAINABLE COMMUNITIES

### 8.1 Introduction

Individual choices sum to create large impacts in a community. This section focuses on three topics that affect sustainability and climate change in the Village.

#### Diversity of Housing Stock

Maintaining diversity of housing stock is an environmental, social justice, and historic issue. A Preservation Green Lab study<sup>3</sup> found that reusing and remodeling existing buildings has less impact on climate, resource use, human health, and ecosystems than does building a new home. Further, increasing a home's footprint reduces the permeable area available for planting carbon-sequestering plants and retaining stormwater. Of note is the removal or damage of large canopy trees that often occurs due to new construction.

A culture of tearing down existing homes to build larger homes that cover more open space changes the mix of diversity of housing stock available, specifically reducing the availability of smaller, more affordable homes. The destruction of older and historic homes also reduces diversity in architectural styles.

#### Local Food

On average, produce travels 1500 miles<sup>4</sup> before arriving to our plates and loses many nutrients in the process. Allowing and encouraging the community to produce their own food would reduce carbon emissions and waste.

#### Light Pollution and Pesticide Use

Light pollution negatively affects the local ecosystem, including night pollinators<sup>5</sup> and lightning bug populations<sup>6</sup>. Additionally, it is estimated that up to 40% of insects are forecast to become extinct in the coming decades, largely due to climate change and pesticide use<sup>7</sup>. Dangerously low insect populations<sup>8</sup> will affect our food supply and ecosystem.

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<sup>3</sup> [https://living-future.org/wp-content/uploads/2016/11/The\\_Greenest\\_Building.pdf](https://living-future.org/wp-content/uploads/2016/11/The_Greenest_Building.pdf)

<sup>4</sup> [http://ngfn.org/resources/ngfn-database/knowledge/food\\_mil.pdf](http://ngfn.org/resources/ngfn-database/knowledge/food_mil.pdf)

<sup>5</sup> <https://will.illinois.edu/environmentalalmanac/program/dark-skies-benefit-people-and-wildlife>

<sup>6</sup> <https://www.firefly.org/light-pollution.html>

<sup>7</sup> <https://www.cnn.com/2019/02/11/health/insect-decline-study-intl/index.html>

<sup>8</sup> <https://www.nytimes.com/2018/11/27/magazine/insect-apocalypse.html>

## **8.2 Existing Conditions**

### Diversity of Housing Stock

The Village does not currently record housing stock or new construction in a reportable database.

### Local Food

The Village of Wilmette specifically forbids raising or keeping animals “for the purposes of the production of goods or food,” including backyard chickens or bees (Sec. 4-26). Sec. 16-89 of the Village code appears to restrict vegetable gardening in the parkway, but residents can grow “farm and garden crops” in any yard with at least 3’ from the property line (Sec. 30-13.5).

The Wilmette Park District offers 154 community garden plots in two locations – Centennial Park and West Park. A limited number of plots are available each year, and the Park District maintains a wait list.

### Light Pollution and Pesticide Use

There are no known data on light pollution and pesticide use throughout the Village.

## **8.3 Goals**

### Diversity of Housing Stock

**8.3.1** Maintain and encourage diversity of housing stock – architecturally, historically, economically, and in type (e.g., single-family, multifamily, apartment buildings, etc.).

### Local Food

**8.3.2** Encourage and enable residents to grow their own food.

### Light Pollution and Pesticide Use

**8.3.3** Take proactive action to support insects by reducing light pollution and pesticide use in the Village.

## **8.4 Recommendations**

### Encourage Diversity of Housing Stock and Reduce Tear-Downs

**8.4.1** Evaluate permeable land and tree loss data on tear-downs and project open space and housing diversity loss into the future. The Village does not currently collect sufficient data to assess permeable/plantable land loss resulting from new construction and home expansions. Thus, the Village should begin recording the following data in a database for ease of reporting:

Address, reason for tree removal, date, and number of trees affected;

Tree inventory for private trees; and

Percent permeable surface loss with new home or home renovation.

**8.4.2** Review the Village Zoning Code against nearby communities with diverse housing stock (e.g., Evanston, Skokie) to determine ways to preserve housing stock diversity in Wilmette. Begin to collect tear-down and housing stock data in Wilmette to assess housing diversity through time.

**8.4.3** Adjust the Village Zoning Code to discourage tear-downs for single-family homes.

**8.4.4** Require new buildings to be LEED-certified with permeable hardscaping if the home covers a significantly larger percentage of the original home's footprint.

**8.4.5** Review/revise the Village Zoning Code and Master Plan to encourage multi-family development in Wilmette, including 3-flats and coach houses.

**8.4.6** Serve as a resource and source grants to help the community make their older homes more sustainable.

**8.4.7** Educate the public on local historic districts and landmark buildings.

#### Encourage and Engage the Community in Sustainable Local Food

**8.4.8** Adjust the Village code to allow residents to raise backyard chickens.

**8.4.9** Adjust the Village code to allow residents to raise bees.

**8.4.10** Work with other Wilmette governmental bodies to increase the number and size of community gardens, ensuring that they are distributed evenly throughout the Village.

#### Preserve Dark Skies and Reduce Pesticide Use

**8.4.11** Assess and adjust Village and other public lighting practices per the International Dark Sky Association (IDA)<sup>9</sup>.

**8.4.12** Educate and encourage residents to turn off their porch lights when not in use.

**8.4.13** Require that private security and garage lights operate on a motion sensor.

**8.4.14** Use green practices instead of pesticides to maintain public property and rights-of-way.

**8.4.15** Educate residents of the dangers of home pesticide use to pollinators and insects.

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<sup>9</sup> <https://www.darksky.org/our-work/lighting/public-policy/>

**8.5 References**

Firefly Conservation and Research, "About Light Pollution"

Illinois Public Media, Environmental Almanac, "Dark Skies Benefit People and Wildlife"

Leopold Center for Sustainable Agriculture, "Food, Fuel, and Freeways: An Iowa perspective on how far food travels, fuel usage, and greenhouse gas emissions"

The New York Times Magazine, "The Insect Apocalypse is Here."

Preservation Green Lab, National Trust for Historic Preservation, "The Greenest Building: Quantifying the Environmental Value of Building Reuse"

## **CHAPTER 9 - WASTE and RECYCLING**

### **9.1 Introduction**

In the broadest sense, solid, liquid, or gaseous material that has exceeded its intended purpose is defined as waste. In addition, the excessive use of lights and the generation of high-level sounds can be considered a waste of energy. This chapter address solid waste which is commonly referred to as municipal solid waste (MSW). Liquid wastes are addressed in Chapter 10, Water, and gaseous wastes are addressed in Chapter 1, Climate.

In the course of ordinary, daily activities within the Village of Wilmette solid waste is generated by its residents and businesses. Also, things that have become obsolete, function poorly, or are no longer wanted become solid waste.

Certain steps must be applied to the management of solid wastes. First, measures should be taken to keep these wastes at a minimum. Second, these wastes must be safely stored and removed from working and living areas. Finally, these wastes must be properly disposed. All these steps must avoid pollution of the environment, endangerment of humans and other eco-receptors, and long-term adverse effects on the overall eco-system.

Ordinances, policies and regulations of the Village of Wilmette regarding the management of solid wastes must comply with applicable Federal and State of Illinois laws and regulations. Illinois has three principle laws regarding solid waste management and recycling; these are cited in the References.

Waste minimization is a set of processes and practices intended to reduce the amount of waste produced by reducing or eliminating the generation of such wastes at the source. Waste minimization supports efforts to promote a more sustainable community. Minimizing the production of solid wastes involves a three-fold approach:

- Reducing the procurement and acquisition of products that are in significant excess of expected utilization and consumption;
- Increasing the efficiency of utilization; and
- Diverting a significant part of the waste-stream to recycling.

Recycling and composting play an increasingly important role in reducing the net quantity of solid waste that requires ultimate disposal. The recycling ethic must be fostered through public policy and public education starting from childhood. The slogan, "Reduce, Reuse, and Recycle" must replace the all too common behavior of, "Discard at will."



The disposal of solid wastes is complex from both a quantitative and qualitative perspective. Certain wastes that are toxic or hazardous must be separated from the solid waste-stream. Special handling and methodology is required for the following classes of wastes:

- Drugs and other chemical waste that cannot be properly processed by the normal solid waste disposal system;
- Mercury-containing fluorescent lamp bulbs of all types;
- Lithium containing batteries;
- Substances derived from automobiles, including tires and lead-acid batteries;
- Medical-waste including infectious and potentially infectious materials, radioactive substances used in diagnostic testing or treatment, and so-called "sharps";
- Discarded television displays, computers, mobile cell phones, and other electronic devices; and
- Radioactive substances of both high-level and low-level types.

## **9.2 Existing Conditions**

The Village of Wilmette provides residents and small business the option of separating their solid wastes into three waste-streams: trash for land disposal; yard waste for composting; and recyclable materials, for example, glass or aluminum containers. The Village has recently expanded the composting program to include specified food wastes. These solid wastes are collected by the Village's contractor on a weekly schedule. Curb-side totes are available for each of the three separate waste-streams. The Village also maintains a 24 hour dumpster for the collection of electronic devices. Finally, the Village periodically holds a document destruction event for waste paper.

### **Collection**

The collection and disposition of municipal solid waste (MSW) in Wilmette may only be done by contractors who are licensed, franchise holders. For the past several years, Advanced Disposal is the authorized contractor to collect MSW from single-family residences, multi-family residences including high-rise condominium buildings and commercial buildings. Local law requires collection not less than once weekly from containers provided by the contractor. On the same day as MSW collection, items for recycling are collected in a separate truck. Recycled materials are not required to be segregated into glass, metal, paper, cardboard, etc. Trash and recycle collection are included in a monthly fee for each residential single-family unit which is billed and collected by the Village. Yard waste (grass clippings, small tree limbs, etc.) is also collected by the contractor in curb-side bags or bundles. This yard waste is sent to a composting facility, and each bag or bundle requires with purchased tags affixed. Yard

waste is collected from April through November. In the autumn, leaf collection from curbside piles is done by the same contractor and delivered to a composting facility.

In the year 2001 about 4,200 tons of compacted MSW was collected in Wilmette. By the year 2018, that was reduced to about 3,250 tons per year. That is almost a 25% reduction over those 18 years. The regression line, calculated by the method of least-squares for the yearly data, predicts that if the same annual rate of reduction of MSW were to continue, then by 2025, the annual amount of solid waste would be 52% less than that collected in the year 2001, and it would be about 43% less by the year 2035. However, during the same years, 2001 through 2018, the amount of material collected annually for recycling has not shown a progressive change: it has hovered around 4,325 tons. When the annual amount of solid waste collected for recycling over two decades is compared with that which was not sent for recycling, the recycling component is an increasing proportion of total solid waste.

### Special Wastes

Food waste is the single greatest component of solid waste in Illinois communities, comprising 32% of MSW. Next is construction and demolition debris (C&D) and other household items. These are removed by the Village's contractor. However, major construction projects must provide their own dumpsters and pay for the disposal costs.

By law, various electronic devices, including discarded television sets, computers, mobile telephones, and 14 other types are no longer allowed in municipal solid waste landfills. Liquids, used lubricating oils, fats and greases, as well as automobile tires and batteries have been excluded from licensed MSW landfills since 1996. Tire dealers are required to accept for disposal the same number of used tires as the number of new tires they sold.

Wilmette provides for the separate and anonymous collection of unused, expired, and excess drugs, including opioids, at the Police Station. Quantitative data are not available for drug nor most other items requiring special handling.

There are data for the collection of fluorescent light bulbs; but, they are not aggregated or analyzed so as to allow assessment of any change over time. For the separate collection of electronic devices, there are data for five months beginning in November of 2018. During that time, an average of about 2.5 tons was collected monthly from Wilmette. That projects to an annual rate of about 30 tons from all of Wilmette. A drop-off location for electronic devices is located at the Public Works Facility; it is open 24 hours per day to encourage residents to properly dispose of their electronic devices.

Disposal of items that are forbidden from inclusion in MSW still poses a special, personal burden for persons who have limited mobility, who do not have independent

transportation, or who have limited resources. These circumstances might pose a temptation to not properly segregate their solid wastes.

### Land Disposal

Wilmette is a member of the Solid Waste Agency of Northern Cook County (SWANCC) which employs several licensed solid waste landfills in the immediate area. Land disposal is used for most of Wilmette's municipal solid waste (MSW). Transfer stations are generally enclosed areas where MSW is sorted for delivery to a landfill that accepts that particular type among several types of waste, e.g., non-hazardous, residential, commercial, electronic, chemical, paint, etc. The Glenview Transfer Station is a nearby, large facility that services Wilmette. Advanced Disposal is the current contractor for Wilmette's MSW collection and disposal and uses several landfill facilities near Wilmette for disposition of household as well as commercial, non-hazardous solid waste.

### Recycling

Recycling is the preferred disposal alternative because it diverts a portion of the solid waste stream from landfills. An excellent guide to recycling, with details of what items may be recycled, and where it may be left for pick-up, or must be taken for drop-off, can be found at Go Green Wilmette's website; see the References. SWANCC also has a guide on its website, as well as a printed leaflet and a video version that also is on its website.

Wilmette offers the means for recycling paper and cardboard products, glass, cans, yard waste, and leaves of deciduous trees. The amount of matter submitted for recycling is dependent primarily on the habits and behavior of individuals as well as the mix of waste materials. Advance Disposal, the contractor for the collection of MSW, also collects and removes yard waste and recyclable waste from separate totes into separate trucks.

Several states have laws that require a refundable deposit on containers for soft drinks and other beverages. Data show that the rate of recycling of those aluminum and steel cans, and glass and plastic bottles, about doubles when refundable deposits are required by law, the so-called "Bottle Bills." Illinois does not have such a law.

The fate of waste designated for recycling is dependent on the commercial market for the particular commodity. Recycling facilities expect a profit after expenses for collection, sorting, processing and shipment to the locale for remanufacture or alternate uses. More than one-third, and in some cases approaching one-half of such waste in the U.S., has been sold and shipped to China. In 2018 and 2019, the recycling industry in North America had a major setback when China changed its standards for materials that it would accept, thus making it more difficult and more expensive to ship waste to China for recycling. The ripple effect through the United States led to some cities

changing their recycling programs, and in some cases eliminating recycling programs altogether. Materials formerly recycled were now sent to landfills. Advanced Disposal, the firm that has the Wilmette contract, is a nationwide firm with some international contracts. It is possible that significant changes in the Village's recycling program might occur due to international political and market forces.

### Composting

Composting is a special type of recycling that is facilitated by Wilmette ordinances and regulations. It is a practical, low-cost, home-owner activity which is also done by Wilmette's MSW contractor. Waste for composting is collected by the contractor curbside from single family residences using special totes provided upon request. Since April 1, 2019, consequent to Wilmette Ordinance, the MSW contractor also collects food waste, termed "food scraps," derived from vegetable matter and fruits, for composting, from April through November. Egg shells are accepted but the following are excluded: eggs, dairy, meat, fish, and bones. Wilmette ordinances specifically permit outdoor composting on residential property, but compliance with some restrictions regarding size, process, and other parameters are required.

Small scale, indoor composting, which is odorless when using equipment that is sold in the commercial marketplace, is an additional choice for home owners. One kitchen-countertop device, sold for about \$275, is advertised to convert about a one-gallon bucketful of kitchen waste, including meat, fish, eggs, egg-shells, bones, vegetable and fruit waste, into humus, in about 3 hours using an odorless, quiet process, using about 1.5 kwh of electricity (about 18-cents' worth). The resulting humus is suggested as a good base for growing one's own vegetables.

## **9.3 Goals**

**9.3.1** Reduce the generation of all types of waste.

**9.3.2** Attract and support community groups that focus on the protection of the environment through better solid waste management.

**9.3.3** Make the Village of Wilmette's approach to waste-reduction and recycling a model for both residents and businesses.

## **9.4 Recommendations**

**9.4.1** Reduce the generation of all types of waste in the long term by:

Forming, supporting, and maintaining a close, working relationship with all of the educational districts with which Wilmette residents interact; and then, together, develop an age-appropriate program for putting environmental and waste-reduction elements into the curriculum on a daily basis. This curriculum should begin with preschoolers and continue throughout high-school because education is the best way to raise a generation whose knowledge and sensitivity to these issues will be put into practice.

Developing and implementing a well-planned and sustained community education program focused on: Reduce, Reuse and Recycle.

**9.4.2** Develop a plan to further reduce waste in the short term by policy decisions and actions focusing on waste minimization and the ability to recycle at the end of the useful life. For example, as aging vehicles are replaced, consider natural gas, hybrid, or all electric models.

**9.4.3** Require the analysis and revision of all aspects of daily Village operations so that it meets the highest standards for waste reduction and sustainable material management giving a priority to reuse and recycling.

**9.4.4** Promote the Village of Wilmette's Waste and Recycling Program as a model to be followed by all residents and businesses.

**9.4.5** Advocate and promote the passage of an Illinois Legislative "Bottle Bill," to require a refundable deposit on cans, and glass or plastic bottles for soft drinks, beer and other beverages to encourage recycling and to prevent them from becoming waste.

**9.4.6** Join or Create a Large Item Swap or Transfer website, to facilitate further use of unwanted pianos, bookcases, appliances, etc., that are no longer wanted but still have a useful life, thereby saving the Village money by keeping them out of landfills.

**9.4.7** Develop and implement a plan to assist residents who have limited mobility and resources, to comply with regulations regarding disposal of materials which are prohibited from inclusion in solid waste and which should be recycled.

## **9.5 References**

Go Green Wilmette [www.gogreenwilmette.org/recycling-guide/](http://www.gogreenwilmette.org/recycling-guide/)

Solid Waste Agency of Northern Cook County <http://www.swancc.org>

Wilmette Draft Plan 11/23/2020

The Illinois Solid Waste Management Act ([415 ILCS 20/1 et seq.](#))

The Illinois Solid Waste Planning & Recycling Act ([415 ILCS 15/1 et seq.](#))

The Illinois Environmental Protection Act ([415 ILCS 5/1 et seq.](#))

Village of Wilmette, Residents Handbook <http://www.wilmette.com/residentshandbook>

Wilmette Department of Engineering and Public Works, Refuse and Recycling  
<https://www.wilmette.com/engineering-public-works/refuse-recycling-and-yard-waste-program/solid-waste-faqs/>

Yale Environment 360 <http://www.e360.yale.edu>

## **CHAPTER 10 – WATER**

### **10.1 Introduction**

The Village of Wilmette sits on the shores of Lake Michigan. Lake Michigan is a highly valued resource which provides fresh water, recreation, transportation, fish and wildlife habitat, a place to live and work, and esthetic value to the Village's residents. The Great Lakes basin provide benefits to an estimated 35 million people.

The Village of Wilmette operates its own drinking water plant which has a capacity to provide 44 million gallons per day (MGD) of drinking water. The current water plant was built in 1933 and has had several expansions and reliability improvements over the years. Along with serving the needs of all the Village residents, excess capacity provides drinking water to neighboring municipalities. Today it serves approximately 105,000 people and businesses. The water distribution system also plays an important role in fire protection throughout the Village.

The land within the Village of Wilmette is highly developed which creates large amounts of stormwater during heavy rainfall events. Unfortunately, the Village's stormwater collection system does not have adequate capacity to handle larger rainfall events resulting in flooding situations especially in certain areas west of Ridge Road. Recent reports regarding climate change suggest that the frequency and intensity of severe rainfall events are likely to increase.

### **10.2 Existing Conditions**

#### **Lake Michigan**

The Lake Michigan Lakewide Management Plan (LaMP) is a plan for restoring and protecting the Lake Michigan ecosystem. The LaMP is coordinated by the Lake Michigan Partnership which is led by the U.S. EPA with participation from federal, state, tribal, and local governments with input from non-governmental organizations (NGOs) and the public. The last LaMP was issued in 2008, and the next LaMP is scheduled to be issued in 2019. Overall, Lake Michigan is in "Fair" condition. The Lake is a source of safe, high-quality drinking water, and it allows for unrestricted swimming and other recreational uses. A major concern is the presence of aquatic invasive species. Lesser concerns include pollutants that prevent the unrestricted consumption of fish and wildlife, nutrients that promote algae blooms, and high water levels that promote beach erosion.

#### **Drinking Water**

The Village of Wilmette water plant is located on the lakefront. The plant receives its raw water from Lake Michigan and uses a mixture of chemicals, settling basins, and

filters to remove contaminants below the required regulatory levels. The Village operates and maintains a distribution system of pumps and underground pipes to deliver potable water to its end users. In addition there is a 4 million gallon standpipe and a 3 million gallon underground reservoir and pumping station which serves West Wilmette. The plant has an on-site certified laboratory to monitor the quality of water that enters the distribution system. The results of this testing indicates that the Village's water did not exceed any applicable U.S. EPA standard. Recent TV and press reports have highlighted the concern about lead in drinking water. For over 24 years the Village has had a lead corrosion control program in place to reduce the lead from older plumbing fixtures and service lines. As required by the State of Illinois, the Village conducts tri-annual lead sampling and analysis for lead in households throughout the Village. The most recent results from 2017 indicate that 90% of the samples were at or below 6.4 parts per billion (ppb) versus the current standard of 15 ppb. From May 15<sup>th</sup> to September 15<sup>th</sup> the Village prohibits lawn watering during the hours of 10:00 am to 4:00 pm on weekdays to maintain adequate water pressure throughout the distribution system.

#### Stormwater

The sewer system within the Village of Wilmette is divided into two distinct zones by Ridge Road which is a natural boundary between Lake Michigan to the east and the North Branch of the Chicago River to the west. The system in East Wilmette consists of combined sewers; combined sewers receive both sanitary wastewater and stormwater. The system in West Wilmette has separate sewers for sanitary wastewater and for stormwater.

#### East Wilmette

All collected wastewater and stormwater within the East Wilmette sewer system is sent to the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) for treatment at its North Side Plant located in Skokie, Illinois via large sewer pipes known as interceptor sewers. Because this is an older sewer system, its capacity to handle stormwater from rainfall events is limited both by the capacity of the interceptor sewers and the capacity of the treatment plant.

In attempt to handle these large volumes of combined sewerage during rainfall events, the MWRDGC constructed a series of underground tunnels and reservoirs to hold the excess wastewater. This system is known as the Tunnel and Reservoir Plan (TARP). Even with TARP in operation, large rainfall events can exceed the storage capacity of TARP. Under these circumstances, the excess combined sewerage from East Wilmette flows directly into the North Shore Channel through several discharge points. This discharge of untreated sewerage is known as Combined Sewer Overflow (CSO). The Village does have a permit issued by the State of Illinois for its CSO discharge points into the North Shore Channel. This permit requires the Village to have an active



program to operate and maintain its combined sewer system to minimize the occurrence of CSOs.

Under exceptionally heavy and/or extended rainfall events, the water in the North Shore Channel rises to a level which causes the MWRDGC to open the locks which then allows the North Shore Channel to flow into Lake Michigan near Wilmette Harbor. Any time the locks are opened there is a concern with the impacts on the Wilmette water plant and with swimming in Lake Michigan.

#### West Wilmette

The sanitary sewers in West Wilmette flow in a westerly direction to MWRDGC interceptor sewers at two locations. In 2016 the Village completed construction of the West Park Storage Project; this is an underground basin which can hold up to 5.5 million gallons of sanitary wastewater to reduce sewer backups when the MWRDGC interceptor cannot accept 100% of the sanitary wastewater from Wilmette. The storm sewers in West Wilmette also flow in a westerly direction to a Pumping Station located on Lake Avenue near the eastern bank of the North Branch of the Chicago River. All stormwater is pumped directly to the River. The Village is an active participant in the North Branch Chicago River Watershed Workgroup (NBWW). The mission of the NBWW is to improve water quality in the North Branch of the Chicago River through long-term monitoring and to gain a better understanding of the stressors to the aquatic system.

When the Edens Expressway was built in the 1950's it interrupted the westerly flow of stormwater for a large part of West Wilmette toward the North Branch of the Chicago River. As development occurred in West Wilmette, storm sewers were installed to handle the stormwater from rainfall events. Unfortunately, the storm sewer system only has the capacity to handle the stormwater from small rainfall events. The Village has been studying the flooding problem in West Wilmette since 2013. Several engineering reports were completed that evaluated the condition of the storm sewer system, the extent of flooding during various rainfall events, and several alternatives to reduce the flooding of streets and basements.

In April 2018 the Village Board decided to proceed with an alternative known as neighborhood storage. This alternative includes the installation of new relief sewers in several areas of West Wilmette and three underground storage basins on property owned by the Village. This alternative is predicted to reduce by over 50% the flooding of basements during a 10-year rainfall event. The first phase of this project was completed in 2020 with the installation of a storage basin and connecting sewers at the Community Playfield west of Highcrest School. This alternative is not likely to be the final solution to reduce stormwater flooding in West Wilmette. After this alternative is fully operational, follow-up studies will need to be conducted to determine if additional measures are needed to further reduce stormwater flooding.

### Inflow and Infiltration

Because the Village's combined sewers and sanitary sewers are treated by the MWRDGC, the Village must comply with MWRDGC's Inflow/Infiltration (I/I) Control Program. This program requires the Village to minimize or eliminate extraneous flows of rain water or groundwater to the treatment plant due to defective underground sewer pipes (infiltration) or illegal connections (inflow). Excessive I/I can overload the sewer system during wet weather usually resulting in the flooding of streets and basements. The Village has developed an ongoing I/I control program that meets the requirements of the MWRDGC. The Village inspects and repairs underground sewer pipes and manholes to reduce infiltration. Also, the Village identifies illegal connections via smoke testing and dye testing to reduce inflow. Finally, the Village does not permit any new private connections to the storm sewer system in West Wilmette.

### Green Infrastructure

Green infrastructure uses plants, soils, and other elements and practices to prevent stormwater from entering the local sewer system. Without too much work or expense, homeowners can plant new trees, replace turf areas with more thirsty plants, or install rain barrels at one or more of their gutter downspouts. With more time, investment, and, potentially, professional expertise, there are several stormwater control tools available to homeowners. Paved areas can be replaced by permeable surfaces or planted beds. Rain gardens can intercept and hold stormwater before turning the yard into muck. Green roofs put either flat or pitched roofs to work. Swales can help direct stormwater to where the homeowner wants it, often to a rain garden. These methods may be used individually or in combination, depending on the needs and desires of each situation. Several of these methods have the added benefit of supporting butterflies and wildlife, as well as beautifying the Village's neighborhoods. The addition of new plants and trees will also promote carbon capture which is further described in Chapter 1, Climate. Additional discussion of green infrastructure is found in Chapter 4, Land. Finally, additional discussion on the value of permeable surfaces can be found in Chapter 8, Sustainable Communities.

The Village has entered into a contract with the Center for Neighborhood Technologies (CNT) to design and administer a green infrastructure program known as RainReady Wilmette. This program will reduce the burden on local sewers by capturing stormwater at individual residential properties. It will provide partial grant funding for up to 25 single-family homes who enroll in the program and install one or more green infrastructure improvements. In 2019, 23 Rain Ready agreements were approved. Out of those, 16 residents actually completed projects. A total of \$20,750 was awarded to these residents.

The Village has decided to not continue the RainReady program beyond its first year. It will be replaced by a somewhat similar program known as the Stormwater Credit and

Incentive Program. This new program will provide a limited number of incentives each year, not to exceed \$1300, for 50% of the overall cost of eligible stormwater improvements such as rain gardens, dry wells, rain barrels, or permeable pavers. A larger incentive, not to exceed \$5000, is available for 50% of the overall cost to disconnect direct stormwater discharges to the Wilmette sewer system. Residential property owners will also be able to apply for up to a 50% credit of the new Wilmette Stormwater Utility Fee if they install an on-site stormwater retention system for a volume of stormwater that is determined using criteria set out in an existing MWRDCG ordinance.

### **10.3 Goals**

**10.3.1** Protect and restore Lake Michigan to ensure its long-term use as a source for drinking water and to provide for unrestricted recreational uses.

**10.3.2** Provide a safe and reliable source of drinking water for all residents, businesses, and other municipal customers.

**10.3.3** Manage stormwater to reduce flooding of streets and basements and to eliminate combined sewer overflows.

### **10.4 Recommendations**

#### Lake Michigan

**10.4.1** The Village should take an active role in the Lake Michigan Partnership to protect and restore this valuable resource.

#### Drinking Water

**10.4.2** The Village should continue its active role in the Partnership for Safe Water to improve the quality of its drinking water beyond the current regulatory requirements.

**10.4.3** The Village should continue its chemical addition and pH control to prevent any lead in pipes and plumbing fixtures from entering the tap water.

**10.4.4** The Village should continue its ongoing program to improve the reliability of its water treatment plant and distribution system.

**10.4.5** The Village should continue its ongoing program to reduce water consumption for both commercial and residential users.

#### Stormwater

**10.4.6** The Village should proceed with its chosen alternative of neighborhood stormwater storage to reduce the flooding of streets and basements in West Wilmette. After this alternative is constructed and operational, a follow-up evaluation should be conducted to determine if additional measures are necessary to manage stormwater from larger rainfall events.

**10.4.7** The Village should continue its Inflow/Infiltration (I/I) Control Program to reduce the volume of groundwater and rain water entering its sewer system.

**10.4.8** The Village should actively promote the use of Green Infrastructure at the residential level via its initial RainReady Wilmette program and the successor Stormwater Credit and Incentive Program.

Overall

**10.4.9** The recommendations in Chapter 3, Energy, to evaluate and reduce energy consumption at municipal facilities are applicable to all drinking water, stormwater, and wastewater pumping stations.

**10.5 References**

U.S. EPA, Great Lakes National Program Office, Lake Michigan Lakewide Management Plan (LaMP)

Village of Wilmette 2019 Water Quality Report

Village of Wilmette, Stormwater Credit and Incentive Manual, 11-19-19 Draft

Village of Wilmette, Stormwater Frequently Asked Questions

Village of Wilmette Water Management Department, Web Site

Wilmette Village Board, PowerPoint Presentation, 9-19-16

Wilmette Village Board, Request for Board Action, 1-22-19

Web Site: [www.wilmettestormwater.com/document-archive](http://www.wilmettestormwater.com/document-archive)

Memo: Inflow/Infiltration Control Program, 5-23-17

## **APPENDIX A**

### **Contributors**

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#### Stakeholders

Go Green Wilmette  
League of Women Voters

## **APPENDIX B**

### **List of Acronyms**

CoC	Chamber of Commerce
C&D	Construction & Demolition Debris
CFL	Compact Fluorescent Light Bulb
CNT	Center for Neighborhood Technologies
CSO	Combined Sewer Overflow
EEC	Village of Wilmette Environment and Energy Commission
EIA	US Energy Information Agency
EV	Electric Vehicles
GCoM	Global Covenant of Mayors for Climate and Energy
GGW	Go Green Wilmette
GHC	Greenhouse Gas
GPC	Global Protocol for Community-Scale Greenhouse Gas Emissions Inventory
GRC	Greenest Region Compact
IDA	International Dark Sky Association
I/I	Inflow and Infiltration (water entering a sewer system)
LaMP	Lakewide Management Plan
LED	Light Emitting Diode (normally refers to a type of light bulb)
LEED	Leadership in Energy and Environmental Design
MGD	Millions of Gallons per Day

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MSW	Municipal Solid Waste
MT	metric tons
mmt	million metric tons
MWRDGC	Metropolitan Water Reclamation District of Greater Chicago
NBWW	North Branch Chicago River Watershed Workgroup
ppb	Parts per billion
pH	A chemical test for acidity
SWANCC	Solid Waste Agency of Northern Cook County
TARP	Tunnel and Reservoir Plan
VOCs	Volatile Organic Compounds (a group of chemicals causing air pollution)
WPD	Wilmette Park District

## APPENDIX C

### Background Information

#### Chapter 1 - Climate Change

The following discussion describes the overall problem, possible consequences, and proactive measures related to climate change.

Climate Change Threat Earth is at approximately 1°C temperature increase from 1901, the warmest in modern civilization, and warming will reach 1.5°C between 2030-2050 under all best case scenarios, according to a 2018 UN climate scientific report. United States scientists state that “human activities, especially emissions of greenhouse gases (GHGs), are the dominant cause” of record-breaking, climate-related weather extremes in recent years, and extreme weather events will become more frequent and intense.

Catastrophic Consequences Scientists warn that catastrophic climate change will occur if the global warming exceeds 1.5°C. To stay under 1.5°C warming, GHG emissions must be reduced 45% from 2010 levels by 2030, and reach net zero by 2050. With current Paris commitments, Earth will reach 3 °C global warming by 2100.

Commitment to Climate Change Mitigation and Resilience Wilmette joined Climate Mayors in February 2019 “to further achieve the goals put forth by the Climate Mayors,” which is “a bipartisan, peer-to-peer network of mayors of cities located throughout the United States that work together to demonstrate leadership on climate change.” In response to the Trump administration’s withdrawal from the Paris Agreement, the Climate Mayors have committed to taking ambitious action to meet each of their cities’ current climate goals, while working together towards achieving our national Paris targets.

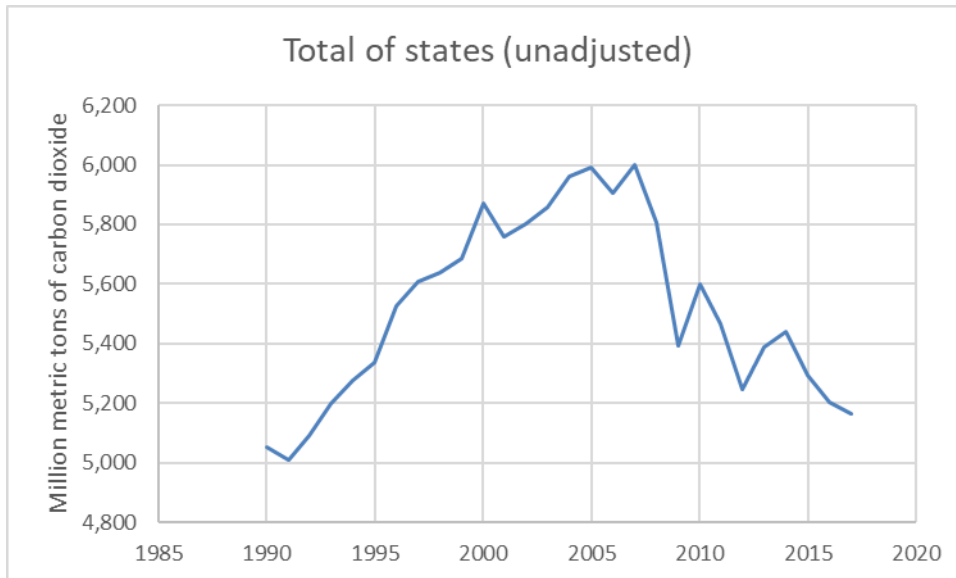
The Paris Agreement is a landmark environmental accord that was adopted by nearly every nation in 2015 to address climate change and its negative impacts. The deal aims to substantially reduce global GHG emissions in an effort to limit the global temperature increase in this century to 2 degrees Celsius above preindustrial levels, while pursuing means to limit the increase to 1.5 degrees. The agreement includes commitments from all major emitting countries to cut their climate-altering pollution and to strengthen those commitments over time. For its part, the United States committed to cut economy-wide emissions of GHG emissions by 26 to 28 percent below its 2005 level by 2025 and to make best efforts to reduce its emissions by 28 percent.<sup>10</sup>

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<sup>10</sup> <https://www.nrdc.org/sites/default/files/paris-climate-agreement-progress-2017-us-ib.pdf>



The latest data reported to the US Energy Information Agency (EIA) show that by 2017, the US cut economy-wide GHG emissions by 824 million metric tons (mmt) since 2005, i.e. a 13.8 percent reduction.<sup>11</sup>



Source: EIA<sup>12</sup>

To meet the 28 percent goal, an additional 853 mmt of GHG emissions need to be cut economy-wide in the US by 2025, from the 2017 total. The 2020 Annual Energy Outlook (AEO) Reference Case from the EIA shows that most of the emission reductions came from the electric power sector. The AEO forecasts those reductions to continue through 2025, but the US appears to be on-track to reduce GHG emissions by ~20% of 2005 levels.

Ambition The window for moderate climate action has closed. We can expeditiously approach climate change with multi-pronged efforts to build climate resilience and mitigation including conserving energy; promoting renewable resources; utilizing carbon sequestration; controlling water and waste; and improving education and awareness.

Local Action Global sustainability requires action at local, state, regional, national, and global levels. The Paris Agreement set a framework, but local action is essential. Cities control up to 70% of energy emissions, are ground zero for climate hazards and thus are essential in global efforts to mitigate and improve resilience to climate change.

Collaboration Climate change actions are most effectively achieved when stakeholders work together, including Wilmette residents and businesses, public interest groups, school districts 37 and 39, elected and appointed officials, and municipalities.

<sup>11</sup> [https://www.eia.gov/environment/emissions/state/excel/summary\\_2017.xlsx](https://www.eia.gov/environment/emissions/state/excel/summary_2017.xlsx)

<sup>12</sup> [https://www.eia.gov/environment/emissions/state/excel/summary\\_2017.xlsx](https://www.eia.gov/environment/emissions/state/excel/summary_2017.xlsx)

Science Climate goals and policies must be informed by the best available climate science including the 2018 United Nations Global Warming of 1.5 °C report, and the United States Global Change Research Program Fourth National Climate Assessment Volume 1 and Volume II published in 2017 and 2018.

Economy Courts in the US have widely affirmed the ability of governments to charge polluters for their emissions, when those explicit costs are based on the social costs of their pollution. Failing to charge polluters for the social costs of their emissions, does not eliminate the costs, and it encourages polluters by enabling them to socialize costs of their operations. Unlike taxes that increase costs for consumers, charging polluters for their emissions, can reduce total costs and incentivizes innovations to reduce pollution.

In 2007, the US Supreme Court ruled that carbon dioxide and greenhouse gases are air pollutants under the Clean Air Act and can be regulated by the EPA (*Massachusetts v. Environmental Protection Agency*). Subsequently, a 2008 U.S. Court of Appeals decision required the federal government to account for the economic effects of climate change in regulatory cost-benefit analyses, and an Interagency Working Group (IWG) began in 2009 to develop a uniform estimate for the social cost of carbon that could be used consistently by agencies across the government.

The IWG recognized that climate change can cost individuals, businesses, and governments hundreds of billions of dollars through rising health care costs, destruction of property, increased food prices, and more. The social cost of carbon is a measure of the economic harm from those impacts, expressed as the dollar value of the total damages from emitting one ton of carbon dioxide into the atmosphere.

Since the development of the first uniform estimate in 2010, federal agencies have used the social cost of carbon to set car and truck emissions standards, pollution controls for power plants, efficiency standards to household appliances, and other uses. As of 2020, ten states, including Illinois, have used the social cost of carbon to improve decision-making about investments in carbon-free energy systems and a variety of other programs. Illinois crafted its Zero-Emission Credit (ZEC) program in 2016 to compensate nuclear generators for providing electricity without carbon emissions, using \$42/ton as the social cost of carbon.

The social cost of carbon, like other estimates of future economic activity, is dynamic, debatable, and uncertain. Estimates of the social cost of carbon are influenced by assumptions such as discount rates, the shape of the damage function, and projected future economic and emissions growth absent policy to constrain GHG emissions, among others. (See Newbold et al (2010), *The 'Social Cost of Carbon' Made Simple*.) Nevertheless, the courts have consistently upheld its use to inform regulations to

mitigate climate change and reduce pollution. For example, in August 2016, the U.S. Court of Appeals for the Seventh Circuit affirmed that Department of Energy was correct to include the value of the social cost of carbon in its analysis of the energy efficiency of commercial refrigeration equipment (North American Association v. DOE). The judges concluded that they had "no doubt" that Congress intended for the agency to have the authority to consider the social cost of carbon, reinforcing the suitability of using the tool in future rulemakings.

At \$42/ton, the economic benefits from reducing greenhouse gas emissions would be enormous. The US emitted ~5.2 billion metric tons of GHG in 2016. So for 2016, \$42/ton translates to over 240 billion social costs in the US or ~\$750 per person. Many states explicitly charge electricity generators for their GHG emissions, and they have documented significant reductions in GHG emissions while charging <\$6/ton for their emissions. Many factors have contributed to lower GHG emissions from electricity generation in these states, but charging generators for their GHG emissions has certainly helped.

One benefit of forcing polluters to pay for their emissions, is it incentivizes innovation and supports efficient alternatives in dynamic and uncertain conditions. As we have seen, GHG emissions originate from many different sectors of our economy. The social cost of carbon provides a framework to evaluate pollution control technologies and alternative supplies and services, across different sectors.

Supporting a stable and sustainable economy necessitates good stewardship of the environment. Absent unprecedented mitigation and resilience efforts, climate change will increase losses in infrastructure and property, and slow economic growth.

Ecosystems A 2019 United Nations report states, "Biodiversity and nature's contributions to people are our common heritage and humanity's most important life-supporting 'safety net'. But our safety net is stretched almost to breaking point,"

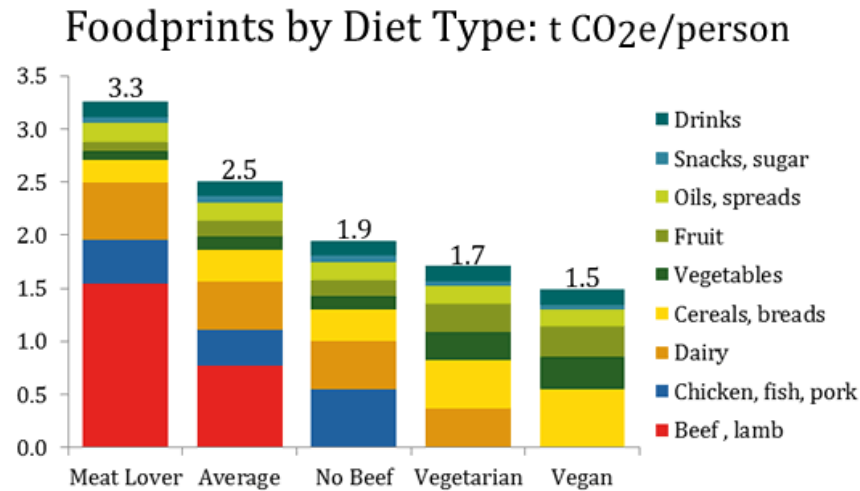
Resilience Taking measures so our community can prepare for and become resilient to current and anticipated climate changes is a critical part of climate efforts.

Morality and Equity Preserving the safety, health and wellbeing of future generations necessitates expedited and ambitious action to protect all people.

Communities' Commitment to Reduce Climate Change Communities are experiencing climate change impacts, and further changes in average climate conditions will "damage infrastructure, ecosystems, and social systems that provide essential benefits to communities. Future climate change is expected to further disrupt many areas of life, exacerbating existing challenges to prosperity posed by aging and deteriorating

infrastructure, stressed ecosystems, and economic inequality.” Setting and achieving ambitious climate goals therefore is necessary for a thriving, safe, economically viable, beautiful and healthy community.

Indirect Emissions Indirect emissions, also known as Scope 3 emissions, are associated with consumables. They depend on consumer choices, are difficult to monitor, and can be surprisingly large. The Economic Research Service of the US Department of Agriculture (ERS/USDA) has quantified the carbon footprint of typical diets, and several reports support the notion of energy efficient diets.



Note: All estimates based on average food production emissions for the US. Footprints include emissions from supply chain losses, consumer waste and consumption.. Each of the four example diets is based on 2,600 kcal of food consumed per day, which in the US equates to around 3,900 kcal of supplied food.

Sources: ERS/USDA, various LCA and EIO-LCA data



**Chapter 3 – Energy**

This topic is discussed in detail in Chapter 3. This discussion provides some additional observations regarding suppliers of renewable electricity. It directly related to the reduction of greenhouse gases by reducing the demand for the generation of electric power using fossil fuels.

**Electrical Aggregation and Renewable Energy Certificates**

Many communities use electrical aggregation and renewable energy certificates to decrease both the cost and the greenhouse gas emissions associated with their electricity. The following overview describes these tools and discusses their impact on renewable energy generation. A full guide to green power purchasing can be found at <https://www.epa.gov/greenpower/guide-purchasing-green-power>.

### **Electrical Aggregation**

The electricity grid is like a big pool, with multiple generators adding electrons to the pool and many electricity users drawing electrons from the pool to power our homes and businesses. Our electricity is delivered to our homes and businesses by Commonwealth Edison (ComEd), regardless of the original source of the electrons. In between the generation and delivery of electrons are the electricity suppliers – companies that purchase wholesale electricity from generators and sell it at a retail level to the general public. Suppliers not only sell the electricity but also are responsible for getting it to the local utility company for delivery to customers. In our region, ComEd is our sole utility (electricity deliverer) and is also one of many possible suppliers.

Each Wilmette resident and business currently has the ability to choose our electricity supplier, although most go with the default of ComEd. When municipalities choose to aggregate, this means they choose the supplier for all of us (with the ability for anyone to opt out of the program individually), in order to gain the bargaining power that comes with high volume purchasing. Typically the goal is to provide us with lower electricity rates, but many communities also use this bargaining power to purchase community-wide renewable electricity at a competitive price.

### **Renewable Energy Certificates**

Some generators produce electrons via renewable, low-impact sources such as wind or solar, while other generators produce electrons from coal, nuclear, or hydroelectric sources. Since the electrons themselves are identical and mix together in the pool, it is impossible to track whether the specific electrons drawn by an electricity user originated from a coal plant or from a renewable generator. There is also no way to channel the “good electrons” to the homes of electricity users that want their electricity to come from renewable sources. In terms of electrons, all electricity customers use the same average mix in the pool. Thus, the way we impact greenhouse gas emissions from the electricity sector is to increase the percentage of electrons in the pool that come from renewable energy. Renewable Energy Certificates, or RECs, help us do so.

According to the U.S. Environmental Protection Agency,

“A REC is a market-based instrument that represents the property rights to the environmental, social and other non-power attributes of renewable electricity generation. RECs are issued when one megawatt-hour (MWh) of electricity is generated and delivered to the electricity grid from a renewable energy resource.”

In other words, RECs are a market-based instrument created to reflect the societal value of renewably-sourced electrons. Renewable generators are issued RECs to match their electron production and can then sell these RECs within the REC marketplace (see below for details), thus incentivizing their production of renewable electricity. Both fossil fuel and renewable generators are paid for their electrons, but only renewable generators receive RECs that can then be sold in the marketplace.

RECs are essentially the flip side of a carbon tax. Whereas a carbon tax provides a disincentive for emitting carbon, a REC provides an incentive for not emitting carbon. Both use the marketplace to advance a widely agreed-upon societal benefit.

### **RECs Bought and Sold**

Each fiscal quarter, new RECs are issued by the grid operator and are added to the account of renewable electricity generators equal to their quantity (MWh) of electrons delivered. The renewable generators then sell the RECs to the buyers that want their electricity consumption to be matched by renewable generation. The buying and selling of RECs occurs within a REC marketplace, facilitated by brokers, with prices fluctuating according to supply and demand. A community such as Wilmette would pay an institutional buyer to buy RECs on our behalf.

RECs are the legal accounting instrument in the U.S. market for voluntary green power use and purchasing – they legally and verifiably track the amount and source of renewably-generated electrons. RECs obtain their value from the fact that people are willing to buy them specifically in order to encourage renewably-sourced electricity – we are paying generators to use renewable sources. Unlike subsidies or other types of support that might have indirect or uncertain impacts, RECs involve buying a product and making a payment that is sized to drive new supply on a 1:1 basis.

### **Chapter 9 – Waste**

In addition to the wastes discussed in Chapter 9, there are other waste streams that need to be addressed within both Illinois and the United States as a whole. These include:

#### **Nuclear Waste**

Radioactive waste is managed by storage. High level waste comes from nuclear reactors, mainly used for generation of electric power. There are more nuclear reactors in Illinois, than in any other state. In Illinois, in the year 2019, there are 11 currently operating reactors. All are within a total of six power generating stations; all are owned by Exelon. There are two decommissioned nuclear power plants with SFR (Spent Fuel Rods) stored on-site. There are about 11,500 tons of high-level nuclear waste temporarily stored on-site at Illinois nuclear power generating stations (as of year 2017), awaiting yet-to-be-designated sites for permanent storage. Low level radioactive waste, mainly from hospitals, academic and research centers, is either stored on-site until the radioactivity decays to negligible levels - whereupon it may be handled as non-hazardous MSW; or, it may be transported in special, NRC approved containers, to one of eight NRC designated sites in the nation, for long-term storage, of which the closest one is in Sheffield, IL - about 140 miles from Wilmette.

Wilmette does not have a nuclear powered electricity generating plant. The LaSalle County nuclear powered plant has high-level radioactive waste stored on site; it is about

100 miles away from Wilmette. The decommissioned Zion plant in Lake County is about 40 miles away; it has SFR in storage on site.

### Liquid Waste

This topic is discussed in detail in Chapter 10.

### Gaseous Waste

This topic is discussed in detail in Chapter 1. This discussion provides additional background information on the science and chemistry of greenhouse gases (GHG). Infrared radiation coming from the sun to the earth, plus that reflected outward from the earth, is absorbed by certain gases and the heat thereof is transferred to other gases in the atmosphere, with a net effect of warming. This is the so-called, "greenhouse effect". Those greenhouse gases are: water vapor, carbon dioxide, methane, nitrous oxide, ozone, hydrochlorofluorocarbons and chlorofluorocarbons. The first five are natural products that occur apart from human activities, but all also are waste products that result from human activities.

The concentration of carbon dioxide in the atmosphere is close to  $4 \times 10^{-4}$  volume per cent (400 parts per million volume). The increasing concentration of carbon dioxide in the atmosphere over the past one-hundred years has been attributed to human-driven activities. In Illinois, the generation of electricity using coal, oil and natural gas is a major contributor to carbon dioxide release into the atmosphere. Motor vehicles with gasoline or diesel engines are also large contributors to carbon dioxide release; but, only estimates of the latter, not actual measurements, can be made. Trees and other chlorophyll containing plants provide natural recycling of carbon dioxide to oxygen; this is known as carbon capture or carbon sequestration. Reducing the production of carbon dioxide hinges upon reducing the use of gasoline and diesel engines, reducing the generation of, electricity from fossil-fuel run generators, and increasing the generation of electricity from solar, wind, hydroelectric and nuclear powered sources.

Methane is present in only trace amounts (1.7 parts per million volume) in the atmosphere. It is formed naturally by anaerobic microbial action in the rumen of animals, decomposition of animal waste, wetlands, and landfill organic matter. Estimates are that the greater proportion of methane is coming from bacterial action, rather than man-made events, but the latter is increasing at a more rapid rate. Methane is the largest component of natural gas which is used in industry as well as in residential settings for heat, cooking and air-conditioning. Leaks from the extensive transmission and distribution system for natural gas, are reported to be the main source of increasing methane in the atmosphere. Methane has a much greater molecular effect on infra-red, heat, absorption than does carbon dioxide, resulting in a greater "greenhouse" effect.

Chlorofluorocarbons and hydrochlorofluorocarbons have been widely used as refrigerants (e.g., Freon) and propellants in spray cans. Because of their "super"

greenhouse effect, they have been largely phased out of production in accordance with international agreement, per the Montreal Protocol. Near elimination of these compounds from commerce, relieves Wilmette of planning for their management in the future.

Nitrous oxide is said to have a powerful effect as a greenhouse gas: about 300 times that of carbon dioxide; but, it is present in the atmosphere in very small amounts, about one-thousand times less than carbon dioxide. Based on the foregoing statements, then the net greenhouse effect of nitrous oxide would be about 0.03 times that of carbon dioxide. Even so, it has garnered considerable attention. Nitrous oxide in the atmosphere is mainly the product of microbial action on nitrogen-containing substances in the soil. The wide spread use of nitrogen-containing chemical fertilizers in commercial agriculture, is considered to be an anthropogenic source of nitrous oxide in the atmosphere. In Illinois it is a reflection of the agricultural economy; although no figures are provided. Since agriculture is not a major business in The Village of Wilmette, it can be assumed that nitrous oxide is not a significant factor here.

Ozone is a highly reactive molecule consisting of three-oxygen atoms bound together; it is found in very low concentrations in the air; whereas the oxygen which is about 20% of the air out of doors, consists of two-oxygen atoms bound together. Ozone present in the stratosphere, the highest level of the earth's atmosphere, is of natural origin and serves an important function by absorbing ultraviolet-B coming from the sun, thereby protecting humans from the risk of skin cancer attributed to UV-B radiation. However, *ozone* in the troposphere, the level closest to the ground, is mainly anthropogenic: the product of automobile exhaust, etc. It is causal factor of smog. Inhaling ozone has an adverse effect on the lungs and especially the health of persons with asthma, chronic lung disease (COPD), and chronic bronchitis. Pollutants in the exhaust of motor vehicles are reduced by required catalytic converters in the exhaust systems. Using more efficient engines, the gradual shift of sales toward hybrid and all electric motor vehicles, the Federal law requiring progressively increasing standards for miles-per-gallon of the automobile fleet of each manufacturer, are all major factors in reducing the potential atmospheric pollution by waste gases. The promotion of less driving and more bicycling and walking as public policy and public service messages via the media are gradual but effective means alter current local transportation patterns.

### Wasted Energy

This topic is discussed in detail in Chapter 3. This discussion provides some additional observations regarding energy conservation and efficiency. It directly related to the reduction of greenhouse gases by reducing the demand for the generation of electric power using fossil fuels.



Wasted energy commonly occurs from useless turned-on lights or running electric or gasoline motors; it also is the consequence of heating or cooling of an enclosed-space either with an inappropriately set temperature value or the enclosed space is inadvertently left open to an opposing temperature environment. Several specific examples are given below.

Outdoor lights illuminated during daylight hours contribute nothing to vision but consume and therefore waste electric power. This occurs in business and residential settings, sometimes as an oversight when turn-on / turn-off cycles are done by a person; or, deliberately, as a policy decision that changing to an automated system which responds to the level of natural illumination in the area, would cost more than would be the savings, during a reasonable time frame, from reduced use of electric power. The use of landscape floodlights and spotlights in the nighttime pollute the dark sky and might be considered to be a waste of electric power.

Indoor lighting in some locations is controlled by motion detectors plus light sensors; but even without quantitative data, random observations suggest that such purposeful lighting control occurs in only a small fraction of all room lighting. In Wilmette, Commonwealth Edison, a major electricity supplier, has offered to perform Energy Efficiency Assessments and recommend changes that would be cost-effective for the individual and indirectly for the company. For example, replacing incandescent light bulbs with light emitting diode (LED) bulbs, which use about one-sixth, or less, power for the same illumination, and have about 10 times the lifespan, has the potential to avoid considerable wasted energy and thus save money for the user. Although compact fluorescent (CFL) light-bulbs use less power for the same degree of illumination than do incandescent bulbs, replacing CFL bulbs at their end of lifespan with LED bulbs saves even more power and wastes less energy. A use guide for comparing various types of light bulbs can be found at:

<https://www.viribright.com/lumen-output-comparing-led-vs-cfl-vs-incandescent-wattage/>

Some recently manufactured motor vehicles automatically turn off the engine in order to not waste fuel while stopped at traffic lights; they then restart instantly when foot-pressure is removed from the brake pedal and applied to the accelerator. Most motor vehicles on the road today do not have this feature. Electric vehicles have this feature and some hybrids have it. It is commonplace to see delivery vehicles stand idle with the gasoline or diesel fueled motor running while the driver is delivering a parcels or doing some other task away from their vehicle. Sometimes, drivers lock their car with the motor and air conditioning unit operating in the summer, or heater in the winter, to keep the interior comfortable while they are out of the vehicle on an errand.

Considering the number of vehicles registered in Wilmette including those owned by the Village of Wilmette, plus those here for work or shopping, the practices just described likely cause considerable waste of fuel and energy. If all vehicles henceforth purchased

by the Village and by residents or businesses were to have a "motor-off-when-stopped" feature, and if an education initiative were implemented, we might have a notable reduction in wasted energy and a savings of money as well. When the brakes are applied in a gasoline or diesel powered vehicle the kinetic energy is converted to heat and the energy is dissipated into the environment. Slowing or stopping an all-electric or hybrid gasoline-electric motor vehicle converts the energy of motion into electrical energy which is stored in the battery for later use to move the vehicle. The increasing popularity and use of hybrid motor vehicles and all-electric vehicles reduces GHG emissions.

**APPENDIX D**

**Greenest Region Compact Spreadsheet for Wilmette**

[Click here to view the Greenest Region Compact Spreadsheet.](#)