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COMMUNITY DEVELOPMENT
DEPARTMENT

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NOTICE OF MEETING
of the
ENVIRONMENTAL AND ENERGY COMMISSION
Thursday, October 10th, 2019 at 6:15 P.M.
Village Hall Training Room – Second Floor of Wilmette Village Hall

1200 Wilmette Avenue, Wilmette, Illinois

AGENDA

I. Call to Order

II. Approval of Minutes

Minutes of the Environmental and Energy Commission meeting of April 25th, 2019.

III. Chairman's Report

IV. Staff Report

V. Sustainability Plan Discussion

Sections to be reviewed: Land Use, Sustainable Communities, and Mobility.

VI. Public Comment

VII. Adjournment

Julie Wolf, Chair

IF YOU ARE A PERSON WITH A DISABILITY AND NEED SPECIAL ACCOMMODATIONS TO PARTICIPATE IN AND/OR ATTEND A VILLAGE OF WILMETTE PUBLIC MEETING, PLEASE NOTIFY THE VILLAGE MANAGER'S OFFICE AT (847) 853-7509 OR TDD (847) 853-7634 AS SOON AS POSSIBLE.

VILLAGE OF WILMETTE

SUSTAINABLE COMMUNITIES STRATEGIC PLAN

2019

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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 identify 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 16 miles north of Chicago's downtown district. It extends approximately five miles west from Lake Michigan and is approximately one mile wide. It was officially incorporated on September 19, 1872, as the Village of Wilmette. The Village is very stable financially; it is one of very few communities in Illinois to have a AAA bond rating. Wilmette was rated in the Top Ten “Best Places to Raise your Kids” by BusinessWeek. It is also a Tree City.

The Village is well-served by transportation including Metra and CTA trains, PACE buses, and the Edens expressway. It is also extremely walkable, with transportation, shopping and dining, the library, parks, and schools within easy walking distance of most of the residential neighborhoods.

The Wilmette Park District includes 20 parks, swimming and sailing beaches, the Wilmette Golf Course, the Community Recreation Center, and the Centennial Recreation Complex. The Village is served by New Trier High School District #203, Avoca School District #37, and Wilmette School District #39, and also St Francis Xavier School, St. Joseph’s Catholic School, Loyola Academy, Regina Dominican High School and Baker Demonstration School.

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. Also called the GRC2, the compact provides a blueprint for sustainability, based on impactful environmental initiatives already underway in neighboring communities and in partnership with many non-profit, state, regional and national organizations.

The GRC2 outlines consensus goals that align with common regional, state, national, and global objectives. It provides 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 GRC2 goals will guide coordinated efforts toward enhanced quality of life for residents, protection and stewardship of the environment, and sustainable economic vitality.

The Wilmette Sustainability Plan

On August 28, 2018, the Wilmette Village Board endorsed the GRC2 and tasked the Environmental and Energy Commission (EEC) to make recommendations to the Board on how best to implement the GRC2. This Plan contains the EEC’s recommendations to the Board. The Plan’s 10 chapters follow the framework given in the GRC2: Climate,

Economic Development, Energy, Land, Leadership, Mobility, Municipal Operations, Sustainable Communities, Waste & Recycling, and Water.

This plan provides a list of goals and recommendations that are highest priority for Wilmette. Its intended use is as a guidepost, directing our resources and energies toward those sustainability measures that will have the greatest impact and make the most sense for our community. Specific strategies for achieving each goal will need to be developed as our village staff, board, and citizens roll up our sleeves to begin implementing each recommendation.

CHAPTER 1 - CLIMATE

1.1 Introduction

According to a 2018 United Nations report, we as a global population have until the year 2030 to curb our greenhouse gas emissions enough to avoid the worst predicted impacts of climate change. Scientists are clear that "human activities, especially emissions of greenhouse gases, are the dominant cause" of record-breaking, climate-related weather extremes of recent years, and they warn that extreme weather events will become more frequent and intense in the future. Reductions in greenhouse gases will need to be substantial, and major changes in our use and sources of energy will be required to meet this challenge. Many scientific and civic groups have begun calling our situation a "climate crisis" to emphasize the urgency of bold action now.

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.

We can expeditiously approach climate change with multi-pronged efforts that include conserving energy, promoting renewable energy resources, utilizing carbon sequestration, controlling water and waste, and improving education and awareness.

Absent strong mitigation and resilience efforts, climate change will increase losses in infrastructure and property and will slow economic growth. Taking measures so our community can prepare for and become resilient to current and anticipated climate changes is a critical part of climate efforts.

Climate change actions are most effective when stakeholders work together, including residents and businesses, public interest groups, school districts, elected and appointed officials, and municipalities.

Preserving the safety, health, and well being of future generations necessitates expedited and ambitious action. Setting and achieving ambitious climate goals therefore is necessary for a thriving, safe, economically viable, and healthy community.

1.2 Existing conditions

Wilmette and our neighboring communities are experiencing climate change impacts, most noticeably an increased frequency and intensity of rainfall events. This increase has resulted in more major flooding events and subsequent property damage. The village is working to mitigate future damage by installing substantial stormwater infrastructure, at a cost of approximately $___M. Such costs to coping with climate change will likely increase in the future and should be weighed against proposed costs

of initiatives intended to slow climate change. The village also has committed to an increase in “green infrastructure,” which is the use of native plantings to absorb some of our stormwater.

Wilmette joined the Climate Mayors Agreement in February 2019, which is a bipartisan, peer-to-peer network of mayors throughout the United States that work together to demonstrate leadership on climate change.

Wilmette prepared an inventory of Greenhouse Gas (GHG) emissions in 2011 but has not repeated the inventory since then. No GGE-specific initiatives or ordinances have been implemented since then, although the village has continued to increase its energy efficiency and has supported many community-based conservation initiatives.

1.3 Goals

1.3.1 Reduce Wilmette’s GHG emissions at least 45% from 2010 levels by 2030, and reach net zero GHG emissions by 2050.

1.3.2 Assess and improve climate resilience throughout the Village.

1.3.3 Develop climate change outreach and education to improve public awareness.

1.3.4 Protect and inform the public about indoor and outdoor air quality.

1.4 Recommendations

1.4.1 Measure and track our village-wide GHG emissions over time.

1. Complete a current GHG inventory and repeat this inventory annually, using the Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories (GPC). Look to GPC, Climate Mayors, and other municipalities for best practices in capturing emissions data from distinct sources, including both public and private properties, and measuring carbon sequestration as well as emissions.

2. Establish measurable interim GHG reduction targets that will get us to our ultimate, long-term goals.

3. Use results of GHG emissions inventory to prioritize emissions reduction strategies for Wilmette. 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.

4. Report and publicize climate actions and Inventory data. Submit data to databases such as carbon*n*® Climate Registry, C40 and Climate Mayors.

1.4.2 Set specific emissions reductions goals for municipal properties.

1. By 2025, procure 100% of energy on municipal properties from renewable sources.

2. By 2025, reduce municipal building and operations energy consumption *xx%* from 2018 levels, and reach xx% by 2050.

3. By 2025, achieve zero-emissions technology in all Village-owned vehicles and equipment.

4. By 2030, achieve carbon neutrality for municipal operations and public property.

1.4.3 Set specific emissions reductions goals for private properties.

1. By 2025, procure 100% of energy for residential and commercial properties from renewable sources, with the option for individuals to opt out of aggregation plans.

2. By 2025, reduce residential and commercial energy consumption *xx%* from 2018 levels, and reach xx% by 2050, using education and appropriate incentives to encourage energy efficiency.

1.4.4 Align village policies with climate change reduction goals.

1. Subscribe to opt-out community choice electrical aggregation for all Wilmette ratepayers.

2. Consider developing an electric utility with neighboring municipalities.

3. Develop a net zero GHG emissions policy for new municipal buildings by 2019, and require that new municipal buildings after 2020 be LEED platinum certified.

4. Develop a zero emissions municipal vehicle purchasing strategy.

5. Complete a feasibility study in 2020 to determine the best opportunities for renewable energy installations on municipal properties.

6. Host /serve as an anchor subscriber to a shared solar project, and allow residents and businesses to subscribe to the project by 2020.

7. Install 100% LED lighting on Village and public properties by 2020.

8. Install electric vehicle charging stations and offer subsidies for electric vehicles. Use Climate Mayors Electric Vehicle Purchasing Collaborative.

9. Evaluate all new and existing ordinances and codes for their potential climate change impacts.

1.4.5 Devote staff time to sustainability.
Designate a portion of staff time for one or more Village employees to focus on sustainability and implementing the recommendations of this entire Plan, in collaboration with the Environmental and Energy Commission (EEC).

1.4.6 Coordinate sustainability efforts with other local branches of government.
This includes school districts, the park district, and the public library.

1.4.7 Demonstrate climate leadership.
Join other climate agreements such as the Global Covenant of Mayors for Climate and Energy (GCoM), Ready for 100, the Paris Climate Agreement #WeAreStillIn, and the Chicago Climate Charter.

1.4.8 Develop climate change resilience and mitigation plans.

1. Assess community-wide climate risk and vulnerability.

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

3. Update Wilmette's Pre-Disaster Hazard Mitigation Plan (PDHMP) to prepare for responses to climate-related emergencies and extreme weather, including 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.

4. Use the guides provided by the Illinois Emergency Management Agency and seek funding to prepare the PDHMP, as provided in the Disaster Mitigation Act of 2000. Also use the Federal Emergency Management Agency community guidelines.

5. 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.

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

1.4.9 Outreach and Education

1. 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.

2. Publicize and continuously update Wilmette's achievement of goals in the Plan to raise public awareness and bring together the community on shared goals.

3. Lead by example with municipal operations and public properties as models.

4. 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.

5. 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.

1.4.10 Protect indoor air quality.

1. As energy efficiency improves with tighter building envelopes, indoor air quality will become more important. 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.

2. Develop protocols to address indoor air quality exacerbated by climate change, such as mold developing after flooding.

3. Require public buildings to follow the Indoor airPLUS program with construction practices and product specifications to minimize airborne pollutant exposure.

4. Use low volatile organic compound (VOC) cleaners, paints, and paving practices to reduce VOC emissions for all municipal operations.

1.5 References

Wilmette Resolutions 2018-R-14 and 2018-R-15
United Nations Intergovernmental Panel on Climate Change, *Special Report: Global Warming of 1.5ºC* (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 carbon*n*® 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

[*Note to Draft: This Sec. 2.1 is written with the assumption that some general demographic information would be included in broader 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 in 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 4th Street
- The Ridge Road corridor

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, the 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, and historical sites to "green" services. By coordinating publicity and marketing efforts and continuing to highlight the community, the "branding" efforts' contribution to the broader sustainability efforts 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

[Add web sites for organizations listed above.]

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 report must be read in tandem with the GRC2 Climate Category report as Energy and Climate will be closely aligned in suggestions and goals to achieve.

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_2 scope 2 emissions (emissions generated by the power plants) and the combustion of natural gas in boilers is the main contributor to CO_2 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 to take to impact their own energy usage; 2) collaboration with other large energy users in the Village (Village services – schools, park district, 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, then develop and implement reduction strategies.

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

3.3.3 Educate others within the Village regarding energy reduction options.

3.4 Recommendations

Manage and Reduce the Village of Wilmette's Energy Usage
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 Usage

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 the 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 Evaluate and Purchase Renewable Energy

Renewable energy should be evaluated as a viable option as the source of electricity to run the Village. This could be in the way of Renewal Energy Credits (i.e., wind), solar energy or aggregation of energy. Renewal Energy use should be encouraged upon other community stakeholders – i.e., businesses, Park District, Schools, Library, etc.

3.4.6 Develop a 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 Reduction Commitments

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

3.4.8 Develop Outreach and Education Campaign for Residents and Small Businesses and Building Landlords

Outreach would involve education on: 1) why to reduce energy use; 2) contacts to conduct an energy audit; 3) upgrade to energy efficiency appliances and other equipment; and 4) use of renewal energy (solar and community solar). Develop an energy reduction aware to be given to local businesses who reduce their energy the most from a given benchmark time. Keep stakeholders informed on the total impact of the energy reduction.

3.4.9 Expedite Permit Approval Process for Projects with an Impact on Energy

Permit requests for projects that have an impact on energy reduction, renewal energy install or replacement of equipment with more efficient units should be fast tracked and approved by the Village in a more expeditious manner. Permit fees 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

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/.

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.

Encourage and incentivize the incorporation of native plants, rain gardens, and permeable hardscapes on private property, including residential, business, and no-profit properties.

1. Continue funding the RainReady program to encourage and enable sustainable residential landscaping.
2. Work toward community wildlife habitat certification through the National Wildlife Federation's Community Wildlife Habitat program (www.nwf.org/CommunityWildlifeHabitat/).
3. Sign the National Wildlife Federation's Mayors' Monarch Pledge, specify which action items Wilmette will take, and implement these actions (www.nwf.org/mayorsmonarchpledge).
4. Education through the Communicator and other outlets about the value and beauty of natural yards.
5. Co-sponsor the Go Green Wilmette Sustainable Yards Tour and Native Plant Sale.
6. Change the zoning code or use the new Stormwater Utility Fee to incentivize native landscaping, rain gardens, and permeable hardscapes.
7. Review current zoning code to remove any restrictions on the incorporation of native plants into residential landscapes.
8. Educate residents about the identity of and harm caused by invasive species, and encourage their removal.
9. Encourage and support the use of native plants and rain gardens within residential parkways.
10. Add a minimum requirement of 70% native species to section 20-15.5(k) of the village code that addresses plant diversity requirements for developments.
11. Add 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.
12. Add a minimum requirement of 70% native species to section 20-15.10 of the village code that addresses plant coverage in buffer yards.
13. Remove the phrase "neat and orderly" from section 20-15.4(d) that addresses the maintenance of plant materials.
14. 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

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.

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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.

Winfree, 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 [Updates needed from Julie Wolf]

5.1 Introduction

5.2 Existing Conditions

5.3 Goals

5.4 Recommendations

5.5 References

CHAPTER 6 – MOBILITY

6.1 Introduction

The Village of Wilmette has about 65 miles of roadway. 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. The Village also has a significant recreational bicycle ridership.

6.2 Existing Conditions

Bicycle and Pedestrian Transportation

The Village is continually identifying gaps in pedestrian and bicycle networks and is currently creating a bicycle and pedestrian plan to improve connectivity within the Village and surrounding community. This includes working with regional partners to connect bicycle facilities with existing and planned trails. The Village provides some bicycle parking at municipal facilities, business districts, and at the two train stations located in the Village.

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 much 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 pedestrian program.

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 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

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.
6.3.6 Maintain a transportation infrastructure that is in good state of repair, sustainable, and accommodates all modes of transportation.

6.4 Recommendations

6.4.1 Improve bicycle and pedestrian transportation.

1. Work with relevant local organizations to earn and maintain bicycle and pedestrian friendly community designation by 2025.

2. Work with neighboring communities to setup a bicycle sharing program with multiple access points (similar to what City of Chicago has) allowing residents of Wilmette to have a convenient access to bicycles.

3. Consider including dedicated bicycle lanes on all major Village roadways during each street's next rehabilitation project.

4. Provide sufficient bicycle parking sites around strategically selected public areas to encourage pedestrian and bicycle usage.

5. Encourage and incentivize commercial buildings to make bicycle parking facilities available for their tenants/customers.

6.4.3 Improve and maintain transportation infrastructure.

1. Use the Envision checklist and infrastructure rating system during project development.

2. Introduce electric charging stations at all Village-owned parking facilities by 2025.

3. Develop policies that encourage alternative-fuel vehicles and electric-vehicle charging facilities in the Village.

4. Transition to 100% alternative fuel vehicles for official use.

5. Adopt a transportation asset management system (for assets such as pavement, sidewalk, etc.) in order to extend the life of the Village transportation infrastructure and facilitate timely repairs and preservation activities.

6. Explore the use of innovative environmentally friendly designs during rehabilitation and reconstruction of transportation infrastructure.

7. Maintain and enforce no-idling zones around transit stations and schools by 2020.

6.4.4 Align village policies with mobility goals

1. Introduce policy that encourages residents to own alternative-fuel vehicles.

2. Perform a study on ways to expand local transit connections to encourage the use of public transit in the Village.

3. Seek ways to collaborate with neighboring municipalities and local transit authority to improve and expand regional transit capacity to encourage the use of public transit in the region.

4. Collaborate with local transit agencies to promote the use of public transit options by Village residents.

5. Engage local businesses and the Chamber of Commerce to encourage flexible scheduling and telecommuting options for employees.

CHAPTER 7 – MUNICIPAL OPERATIONS

[Updates needed from EEC Staff]

7.1 Introduction

7.2 Existing Conditions

7.3 Goals

7.4 Recommendations

7.5 References

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[1] 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. 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[2] before arriving to our plates and loses many nutrients in the process. Allowing and encouraging the community to produce our own food would reduce carbon emissions and waste.

Light Pollution and Pesticide Use

Light pollution negatively affects the local ecosystem, including night pollinators[3] and lightning bug populations[4]. 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[5]. Dangerously low insect populations[6] will affect our food supply and ecosystem.

[1] https://living-future.org/wp-content/uploads/2016/11/The_Greenest_Building.pdf
[2] http://ngfn.org/resources/ngfn-database/knowledge/food_mil.pdf
[3] https://will.illinois.edu/environmentalalmanac/program/dark-skies-benefit-people-and-wildlife
[4] https://www.firefly.org/light-pollution.html
[5] https://www.cnn.com/2019/02/11/health/insect-decline-study-intl/index.html
[6] 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. Anecdotally, new construction reduces permeable/plantable areas, replaces smaller homes with larger, and enables canopy trees destruction.

Local Food
The Village of Wilmette currently does not allow residents to raise backyard chickens or bees.

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

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

8.3.2 Encourage and enable residents to grow their own food.

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

8.4 Recommendations

8.4.1 Encourage Diversity of Housing Stock and Reduce Tear-Downs

1. Evaluate permeable surface loss and tree loss data on tear-downs and project open space and housing diversity loss into the future. Record these data in a database for ease of reporting and tracking changes over time.
2. Review the Village Zoning Code against communities with diverse housing stock (e.g., Evanston) to determine why tear-downs are more prevalent in Wilmette.
3. Adjust the Village Zoning Code to discourage tear-downs for single-family homes.
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.
5. Review/revise the Village Zoning Code and Master Plan to encourage multi-family development in Wilmette, including 3-flats and coach houses.

6. Offer the Village as a resource and secure grant funding to help the community make their older homes more sustainable.
7. Educate the public about local historic districts and landmark buildings.

8.4.2 Encourage and Engage the Community in Sustainable Local Food

1. Adjust the Village code to allow residents to raise backyard chickens.
2. Adjust the Village code to allow residents to raise bees.
3. Work with other Wilmette governmental bodies to increase the number and size of community gardens, ensuring that they are distributed evenly throughout the Village.

8.4.3 Preserve Dark Skies and Reduce Pesticide Use

1. Assess and adjust Village and other public lighting practices per the International Dark Sky Association (IDA)[7].
2. Educate and encourage residents to turn off their porch lights when not in use.
3. Require that private security and garage lights operate on a motion sensor.
4. Use green practices and limit pesticides in maintaining public property and rights-of-way (please see Section 4 for more details).
5. Educate residents of the impact of home pesticide use on pollinators and insects.

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”

[7] https://www.darksky.org/our-work/lighting/public-policy/

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).

Several steps are required for sustainable management of solid wastes. First, measures should be taken to minimize the production of waste. 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 at the source and involves a three-fold approach:

1. Reducing the procurement and acquisition of products that are in significant excess of expected utilization and consumption;
2. Increasing the efficiency of utilization; and
3. 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.

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:

1. Drugs and other chemical waste that cannot be properly processed by the normal solid waste disposal system;
2. Mercury-containing fluorescent lamp bulbs of all types;

3. Lithium containing batteries;
4. Substances derived from automobiles, including tires and lead-acid batteries;
5. Medical-waste including infectious and potentially infectious materials, radioactive substances used in diagnostic testing or treatment, and so-called "sharps";
6. Discarded television displays, computers, mobile cell phones, and other electronic devices; and
7. 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 compositing; and recyclable materials. 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 has been 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, and new in 2019, in curbside totes, where food waste may be included with yard waste in a "ride-along" program. This yard waste is sent to a composting facility, and each bag or bundle requires a purchased tag 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, this was reduced to about 3,250 tons per year, representing nearly a 25% reduction. 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.

1. Form, support, and maintain 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.

2. Develop and implement a well-planned and sustained community education program focused on: Reduce, Reuse and Recycle.

3. 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.

4. 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.

9.4.2 Develop a plan to further reduce waste in the short term

1. Enact policies that focus 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.

2. 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 and prioritizes reuse and recycling.

3. 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.

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

9.5 References

Go Green Wilmette www.gogreenwilmette.org/recycling-guide/

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

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 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 15th to September 15th 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 though 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. 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 MWRDCG'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

The Village has entered into a contract with the Center for Neighborhood Technology (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. Initially the program 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. As of the date of this Plan, this program is over-subscribed.

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

10.4.1 Protect and restore Lake Michigan and safe drinking water.

1. Take an active role as a Village in the Lake Michigan Partnership.

2. Continue the Village's active role in the Partnership for Safe Water to improve the quality of its drinking water beyond the current regulatory requirements.

3. Continue the Village's chemical addition and pH control to prevent any lead in pipes and plumbing fixtures from entering the tap water.

4. Continue the Village's ongoing program to improve the reliability of its water treatment plant and distribution system.

5. Promote the reduction of water consumption for both commercial and residential users.

10.4.2 Manage storm water.

1. After the neighborhood storm water storage plan is constructed and operational, conduct a follow-up evaluation to determine if additional measures are necessary to manage stormwater from larger rainfall events.

2. Continue the Village's Inflow/Infiltration (I/I) Control Program to reduce the volume of groundwater and rain water entering its sewer system.

3. Actively promote the use of Green Infrastructure at the residential level via the expansion of the RainReady Wilmette program.

10.5 References

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

Village of Wilmette Water Management Department, Web Site

Village of Wilmette, Stormwater Frequently Asked Questions

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

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

APPENDIX A

Greenest Region Compact Spreadsheet for Wilmette

[Insert Completed Excel Spreadsheet Here]

APPENDIX B

List of Acronyms

CoC	Chamber of Commerce
C&D	Construction & Demolition Debris
CNT	Center for Neighborhood Technology
CSO	Combined Sewer Overflow
EEC	Village of Wilmette Environment and Energy Commission
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
MSW	Municipal Solid Waste
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

Additional Discussion Items

Chapter 1 Possible Additions

FINANCE
Introduction:

Financing. Financing is essential to climate change mitigation and resilience, including partnerships among municipalities, public-private sectors, the state and federal governments, and creative financing to pool resources and develop best solutions.

Goal:

Align municipal funds with Village climate and environmental goals.

Recommendations:

Set a climate-friendly municipal investment strategy.
Plan for short- and long-term funds for actions pursuant to this Plan.

PUBLIC HEALTH AND SAFETY
Introduction:

Public health and safety. Climate changes impact and will increasingly impact human safety, public health, infrastructure, agriculture, water quality and quantity, and natural ecosystems. Protecting public health and safety requires achievement of ambitious climate change mitigation and resilience goals. Extreme weather, air quality, water quality, food, and increases in insects and pests that transmit diseases threaten the health and well-being of local and worldwide communities.

Goal:
Minimize climate change impacts on public health and safety.

Recommendations:
Consider safety alongside emissions data.

Obtain medical information regarding rates of asthma and warming-related diseases.

Warn the public about the problems.

Chapter 9 Possible Additions – ***NOTE: Consideration of this section may be best deferred to a later date***

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, too, has SFR in storage, on site.

LIQUID WASTE

The water from toilets, showers, sinks and other residential and commercial business drains, goes into Wilmette's sanitary sewer system which is combined with storm water waste (CSO), in the part of Wilmette that is east of Ridge Road. The MWRDGC (Metropolitan Water Reclamation District of Greater Chicago) manages that liquid waste for Wilmette. This topic is discussed in Chapter 10.

To reduce liquid waste, it is recommended that residents conserve potable water and that rain barrels be used to capture storm water for later use, thus sparing the sewer system of some of that burden. There are no financial incentives for residents to take an active role to divert storm water from sewers. Sewer use is billed as a fraction of water supplied and used. Paved property directs more water to sewers than does unpaved, or porous surface, yet no credit is given for the last two.

GASEOUS WASTE

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" (GHG) 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 4×10^{-2} volume% (400ppmv, 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 and oil fuels, is the largest, single contributor to carbon dioxide release into the atmosphere. Next, are electricity generators that operate using natural gas. Motor vehicles with gasoline or diesel engines are also important 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. Reducing the production of carbon dioxide hinges upon reducing use of gasoline and diesel engines; and, reducing demand for, and hence generation of, electricity from fossil-fuel run generators and more generation from solar, wind, hydroelectric and nuclear powered sources.

Methane is present in only trace amounts (1.7ppmv) in the atmosphere. It is formed naturally by anaerobic microbacterial 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 (see later); 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 on television, are gradual but effective means of reducing these noxious waste gases.

SWANCC has not advanced a plan to control the emissions of nitrous oxide, nor methane or ozone.

WASTED ENERGY

Minimizing wasted-energy requires:

(1) Behavioral modifications for the entire population, predicated upon education, so that awareness of wasting energy and appropriate corrective actions become automatic for all individuals; and

(2) Selection of devices and fuels which function with progressively higher efficiency.

Wasted energy, commonly occurs from useless turned-on lights or running motors; it also is the consequence of heating or cooling of a supposedly enclosed-space, either

with an inappropriately set thermostat goal-point; or else the enclosed space is inadvertently open to an opposing temperature environment. Wasted energy results in greater use, which in turn causes more waste products to be released into the atmosphere or accumulate as solid waste.

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.

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, ComEd (Commonwealth Edison), an electricity supplier, in 2019 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 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 CFL light-bulbs use less power for the same degree of illumination than do incandescent bulbs, replacing CFL, at their end of lifespan, with LED saves even more power, and wastes less energy as heat, and results in lessened generation of waste gases.

Some motor vehicles manufactured in 2018 and 2019 automatically turn off the gasoline engine, in order to not waste fuel while stopped at traffic lights and elsewhere; 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 hybrids may 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 energy of motion is converted to heat energy and is dissipated into the environment i.e., wasted. 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 of the purchase and use of hybrid motor vehicles and all-electric vehicles, reduces waste by saving energy (i.e., recycling, so to speak, the energy of motion) and reducing the source and quantity of gaseous pollutants in the atmosphere.

Transmission of electric power over wires at 230 volts, rather than 115 volts AC, can be accomplished with a smaller diameter copper wire to deliver the same power. Greater efficiency equals less waste. The standard for residential electric power in Wilmette and in most of the U.S.A., is 115 volts AC for most uses. Some high power consuming appliances, e.g., electric dryers, window air-conditioners, electric ovens and cooking ranges, use 230 VAC. In Europe, 230 volts AC is the most common. If future Wilmette residential and commercial construction were to use only 230 volts, there would be a savings in copper wire for installation, i.e., avoidance of wasted copper wire, and indirectly, less wasted energy.

Decorative use of outdoor, upward-directed floodlights and spotlights, at night, pollute the dark night sky and may be considered to be a waste of electric power. By increasing the use and demand for electric power, the practice causes increased generation of electricity and therefore the release of more GHG from natural gas and coal fired generating plants.

Comparing light-output (Lumens) of Incandescent, CFL and LED bulbs.
https://www.viribright.com/lumen-output-comparing-led-vs-cfl-vs-incandescent-wattage/

OTHER

Dumping is now illegal; previously, public lands, lakes, rivers and the oceans were used to dispose of waste. There are still signs of dumping by private parties along our highways as well as on public and private lands. Wilmette sometimes dumps liquid waste, i.e., unmodified sewage mixed with storm-water (CSO), directly into the North Shore Channel. This is explained in Chapter 10.

Exporting waste to Asian and some other countries is still practiced in some U.S. cities, as a solution to the problem of ultimate disposition; it is not done by Wilmette.

Incineration was an attractive solution for disposal of waste, especially during the years 1980-1996, when it was considered as a means of converting waste into energy. By the early 1990s, in the United States, more than 15 percent of all MSW was incinerated. The majority of non-hazardous waste incinerators, which were recovering energy by that time, had installed pollution control equipment. However, newly recognized threats

posed by mercury and dioxin emissions, led the EPA to enact the Maximum Achievable Control Technology (MACT) regulations in the 1990s. As a result, most existing facilities had to be retrofitted with advanced, air pollution control systems, at great expense; or else, shut down. In the belief (later recognized to be mistaken) that landfill space was close to exhaustion, Illinois enacted laws that permitted and encouraged construction and operation of incinerators with energy recovery capability. Unexpected consequences of that law were calamitous. Too many incinerators were built for the waste supply. Illinois was called the incinerator for the nation. Financial failure and concern about atmospheric pollution and hazardous residues of incineration, eventually led to closure of most incineration plants. Disposition of medical waste and cremation remained as users of incineration furnaces. Incineration is no longer significant for MSW from Wilmette. This report did not identify an incineration plant for MSW from Wilmette.

RECOMMENDATIONS

8. Authorize the creation of a group of Resident-Volunteers to become Observers and Reporters of the locations of wasted-energy in the form of outdoor lights turned on during daylight hours, especially street lights and business buildings; and, Village-owned and commercial vehicles standing still, idling with their motors running, so that appropriate remediation steps may be taken.

9. Study the potential benefits and other consequences of expanding use and perhaps requiring, 230 volt AC power for new construction in Village properties and possibly elsewhere in Wilmette, as a means of reducing waste and cost.

DEFINITIONS

Energy is the enabler for force or power to accomplish work. It occurs in several forms, including motion, electrical, heat, chemical, and electromagnetic radiation; it may be changed among these types, given a suitable interface-device. Only some forms of energy may be stored for future use. Neither energy nor mass may be created or destroyed, but they may be changed into one another, according to the equation:
$E = mc^2$ as first proposed by Professor Albert Einstein, wherein **E** is energy; **m** is Mass; and **c** is the speed of light.

Green, in the context of this endeavor, means that the subject does not have a destructive effect on the environment.

Greenhouse gas (GHG), means those gaseous substances in the atmosphere, either natural or consequent to human activities, that absorb infra-red radiation and thereby retain some of the heat of this planet that otherwise would radiate into space.

Mass is the amount of matter in a substance; it defines the amount of force need to impart motion and acceleration. Although mass is measured in kilograms, it is not

synonymous with weight. Waste material, has the quality, mass; as such, it cannot be destroyed.

Pollution means the contamination of healthful land, water or air, with noxious substances.

Recycling means that used material or the remaining unused material or energy from a project, is captured and salvaged to be used for another purpose or project or, becomes the source-material for manufacturing another product of the same or different type.

Renewable energy. [When energy is used, it is not literally renewable: the term means that a source of energy is not measurably depleted by the energy extracted or acquired from that source and therefore the latter can continue to function as a source, indefinitely]. The term, renewable energy, is applied to five types of energy sources: solar, wind, hydroelectric, geothermal and replenishable biomass such as wood – the latter, only if given sufficient time, which may be decades, e.g., reforestration. Nuclear powered electric generation is accepted by some experts as "renewable," but is rejected by IRENA as a renewable energy source, despite the performance of breeder-reactors, because of the belief that the amount of uranium used in reactors, is finite – a premise that is challenged by some other experts.

Sustainability, in this context, means that the acquisition and utilization of substances or energy from a given source does not materially diminish the amount that will be available for future acquisitions.

Waste is that ***remainder*** of a *substance*, *product* (or, *energy)* that has been *acquired* for a *particular purpose* but which was *not utilized* for the intended, primary purpose and is discarded; **Waste** is also the residue after a product has been used and either spontaneously disassembles (“wear and tear”) or, is deliberately or unintentionally demolished.

ABBREVIATIONS & ACRONYMS

C&D	Construction and Demolition debris
CFL	Circular Fluorescent Light
COPD	Chronic Obstructive Lung Disease
CSO	Combined Sewer Overflow
ILCS	Illinois Compiled Statutes
ILEPA	Illinois Environmental Protection Agency
IPA	Illinois Power Agency
IRA	Illinois Recycling Association
IRENA	International Renewable Energy Agency
LED	Light Emitting Diode

MACT	Maximum Achievable Control Technology
MSW	Metropolitan Solid Waste
MWRD	Metropolitan Water Reclamation District
MWRDGC	Metropolitan Water Reclamation District of Greater Chicago
NEI	Nuclear Energy Institute.
NRC	Nuclear Regulatory Commission.
REC	Renewable Energy Certificate; the bearer owns one Megawatt Hour of electricity generated from a renewable energy source.
SFR	Spent Fuel Rods
SWANCC	Solid Waste Agency of Northern Cook County
U.S.EPA	United States Environmental Protection Agency

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Go Green Wilmette
League of Women Voters