Meeting Agenda

Terrace Room – Second Floor
Northbrook Village Hall, 1225 Cedar Lane
Thursday, December 21, 2023

5:30 PM

1. **CALL TO ORDER**

2. **MINUTES APPROVAL**
   A. Approve November 16, 2023 Sustainability Commission Meeting Minutes

3. **PUBLIC COMMENTS**
   Please Note - Members of the public wishing to respectfully share thoughts about any matter concerning the Northbrook Sustainability Commission may do so by coming to a meeting and speaking during the "Public Comment" time on general matters, or by speaking if and when comment is called on a specific matter that is listed on the agenda. Members of the public can also submit a written comment via the Village's website. Each written comment submitted on the website will be delivered to each member of the Sustainability Commission prior to the meeting but will not be read out loud at the meeting unless specifically requested.

4. **2023 CAP PROGRESS REPORT REVIEW**

5. **COMMUNITY PLANNING REPORT**
   A. Former Green Acres Country Club pre-development agreement – Board of Trustees 12-12-23 agenda item – agenda website link - https://d2kbkoa27fdvtw.cloudfront.net/northbrook-il/4998265f02f115120359765966df18c40.pdf

6. **2024 VILLAGE BOARD MEETING COMMUNITY MOMENTS PLANNING**
   A. January 23, 2024
   B. February 27, 2024
   C. March 26, 2024 – cancelled for Spring Break
   D. April 23, 2024

7. **OLD BUSINESS**
   A. Sustainability Coordinator status

8. **NEW BUSINESS**

9. **REMARKS FOR THE GOOD OF THE ORDER**

10. **ADJOURN**

The Village of Northbrook is subject to the requirements of the Americans with Disabilities Act of 1990. Individuals with disabilities who plan to attend this meeting and require certain accommodations in order to allow them to observe and/or participate in this meeting, or who have questions regarding the accessibility of this meeting or facilities, are requested to contact 847 664-4010, promptly to allow the Village of Northbrook to make reasonable accommodations for those persons. Hearing impaired individuals may call the TDD number, 847 564-8645, for more information.

DRAFT MINUTES OF THE
COMMUNITY SUSTAINABILITY COMMISSION
VILLAGE OF NORTHBROOK
NOVEMBER 16, 2023

Chairman Reynolds called the meeting to order at 5:30 p.m. in the Village Hall, Terrace Room. Present were Members Sandra Dold, Becky Lee, Bernadette Knight, Ethan Stepen, Sandra Weiss

Also Present: Director of Planning Services Jonathan Mendel

Absent: Aaron Stash, Ying Wang

Guests: Kelly Durov, Jill Franklin, James Lamb, John Novison

Review and Approval of Minutes
A motion was made by Member Knight and seconded by Member Dold to approve the October 19, 2023 Sustainability Commission meeting minutes as submitted. The motion passed by voice vote.

Hear from the Audience/Public Comments
Mr. Lamb spoke on encouraging water conservation. He asked the Commission to look at Tucson, AZ's residential water plan. It has a whole different water billing system based on consumption. He asked if the Village has a water conservation plan. Director Mendel answered that this is outside the purview of the Sustainability Commission. Mr. Lamb should direct his comments to Public Works and the Village Manager.

Member Dold asked Mr. Lamb to share any information he has on Tucson's water billing plan with her.

Community Planning Report
Director Mendel stated that the 2023 Climate Action Plan (CAP) Greenhouse Gas and Inventory Report is coming soon. Director Mendel will distribute the report to membership when it is ready for release.

Pumpkin weight was 2.44 tons from the Pumpkin Smash held on November 4, 2023 at Northbrook Court. An individual attending the event asked Member Lee if there was an opportunity to collect left over candy for a donation program.

Director Mendel shared the Village branded reusable bags with any attendees at tonight's meeting.

New June Environmental Event Planning
Director Mendel distributed an event site plan for the proposed Environmental Fair to be held at the Village Hall/Library campus with a draft outline put together by Member Stash.

Many ideas were submitted online to Director Mendel by membership. The Commission will work on flushing out those ideas at future meetings. Director Mendel asked if one of the Commissioners would take the lead due to Village lack of staff. New fiscal year budget numbers are due to come out in February. There is the possibility that the event could still happen next June taking into account the time needed to plan the event. Anticipated costs include equipment rental and staffing, trash removal, giveaways, security costs. These numbers will continue to be refined. Member Dold asked how many vendors might be present at the proposed fair. Director Mendel will look for a list of vendor categories but membership seemed to favor approximately ten. Member Lee would like a tent for the Sustainability Commission to talk about Village sustainability initiatives. Member Dold offered to be the project manager to consolidate the plan. She suggested that membership divide up the sections in the CAP and provide takeaways.

Ms. Durov wants to coordinate the date for the Environmental Fair with the Library's events calendar.

Member Knight wants to develop a rain plan.

Next steps are to get any and all information to Director Mendel. He will disseminate it to the group. Member Dold will work on a subordinate power point presentation for next month's meeting.

2024 Village Board Meeting Community Moments Planning

Sustainability Commissioners will provide 2-4 minute Community Moment reports at the beginning of the Village Board Meetings for FY 2024. Members may repeat previous topics or seek out new ideas. Volunteers are needed for dates and subjects. Membership decided to focus on January, February, and March 2024.

Old Business

Member Knight asked for more information on the upcoming refuse contract. She would like the Commission kept in the loop regarding finding and negotiating a new contract.

Member Knight thinks the Village has an ambivalent comment on the website regarding Buckthorn. The website states that some people think Buckthorn is not a bad thing, it is a hedge. Member Knight would like to see more robust language.

Director Mendel reported that there is not a definitive time for the refuse contract or the Buckthorn item to come before the Village Board at present time.

Ms. Knight provided a verbal report on the Village of Wheeling regarding Buckthorn. To date the municipality has only received three verbal reports with no enforcement provided. It was determined that Wheeling uses Home Rule and follows the Illinois Invasive Species Act as their template. Member Knight is looking for an action plan.

Member Weiss would like to see more information in the Village Newsletter stating that winter is a good time to remove Buckthorn. Director Mendel will investigate how to get a blurb in the newsletter.

Member Dold suggested that Member Knight check to see where Buckthorn hits the CAP in all categories.

Old Business

Member Weiss would like to see follow up on Ms. Shital's request for more transparency by having an online dashboard to mark sustainability initiatives' progress on the Village website. Director Mendel answered that there is a lot of material available on the website but one must seek it out.

New Business

Member Knight stated she took part in the online Waste Management Survey. The survey asked three simple questions regarding collection days and time, compost collection and rates for service. Member Knight was dissatisfied with the questions. She found them to be confusing and lacking content. She would like to get the Sustainability Commission more invested in the process.

Member Dold believes it would be a good practice if all members on the Commission sign up for composting service.

Member Knight made a motion, seconded by Member Dold to contribute to the Village 2024 refuse and recycling RFP in order to support the goals of the CAP. The motion passed by voice vote.

Director Mendel stated that as individual residents, membership can take the survey and comment as they like through the email process.

Remarks for the Good of the Order

Director Mendel stated that the search is moving forward for a Village Sustainability Coordinator. Resumes have been received and interviews are being scheduled.

Member Knight went to the Getting to Zero Illinois Summit. She will share information at the December meeting.

Member Stepen reported on the Glenbrook North (GBN) Environmental Group meeting where Member Knight presented information from the CAP. He stated that students feel that recycling just goes to the landfill. He would like to see better communication between the Village and GBN concerning the CAP.

Director Mendel shared that the Village has no purview over the schools. They have their own taxing body. The Village cannot direct policy at the school district.

Next Scheduled Meeting

The next regular meeting of the Sustainability Commission is scheduled for Thursday, December 21, 2023 at 5:30 p.m.

Adjourn

A motion was made by Member Lee and seconded by Member Weiss at 7:27 p.m. to adjourn the Sustainability Commission November 2023 meeting. The motion passed by voice vote.

Respectfully submitted,
/s/ Sue Anetsberger
Recorder

MEMORANDUM

To: Sustainability Commission
From Jonathan Mendel, Director
Date: December 21, 2023
Subject: Northbrook Climate Action Progress Report 2023 – discussion and review

Attached for review is the Northbrook Climate Action Progress Report for 2023, prepared by environmental consultant paleBLUEdot, LLC. The report is a collaborative effort between Village staff and the consultant displaying the extent to which greenhouse gas (GHG) emissions decreased in Northbrook following the adoption of the Climate Action Plan in 2021. The GHG inventory was created using data collection from the year 2022, while the narrative summaries sustainability-related projects implemented in the Village cover 2022 and 2023.

The Sustainability Commission will be expected to review the report in advance of the December 21, 2023 meeting and come prepared for discussion and review. Should you have any questions regarding the report, Ted Redmond from paleBLUEdot will be attending by phone to provide insights.

Following the meeting, comments from the Commission will be presented alongside the report to the Board of Trustees at a future meeting.

Village of Northbrook

Climate Action Progress Report

2023

Novemnber 2023

Prepared by:

making change personal

paleBLUEdot LLC

Table of Contents

Acknowledgements

The efforts of many people have gone into the development of this update report, and of course many more who have contributed to the on-going implementation of the Village of Northbrook's Climate Action Plan. In particular, we would like to thank Derrik Chen, Village of Northbrook Sustainability Intern for records and data compilation and Tessa Murray, former Village of Northbrook Sustainability Coordinator for her leadership and coordination efforts.

Northbrook's Climate Action

The Village of Northbrook's 2021 Climate Action Plan:

addresses **8 sectors** of GHG emissions and climate vulnerabilities

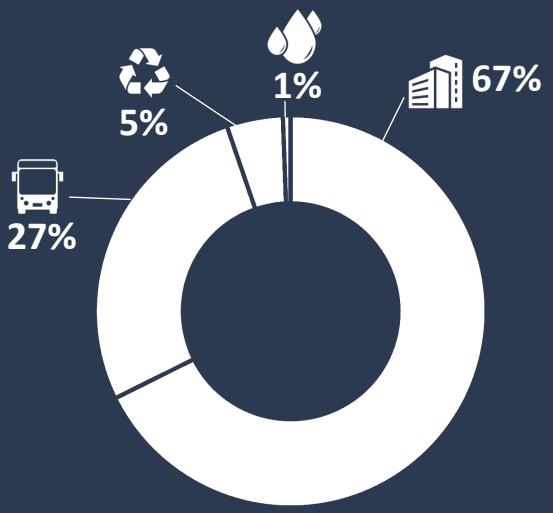
through **42 strategies** of GHG emissions and climate vulnerabilities

supported by **190 actions** detailing steps to be taken

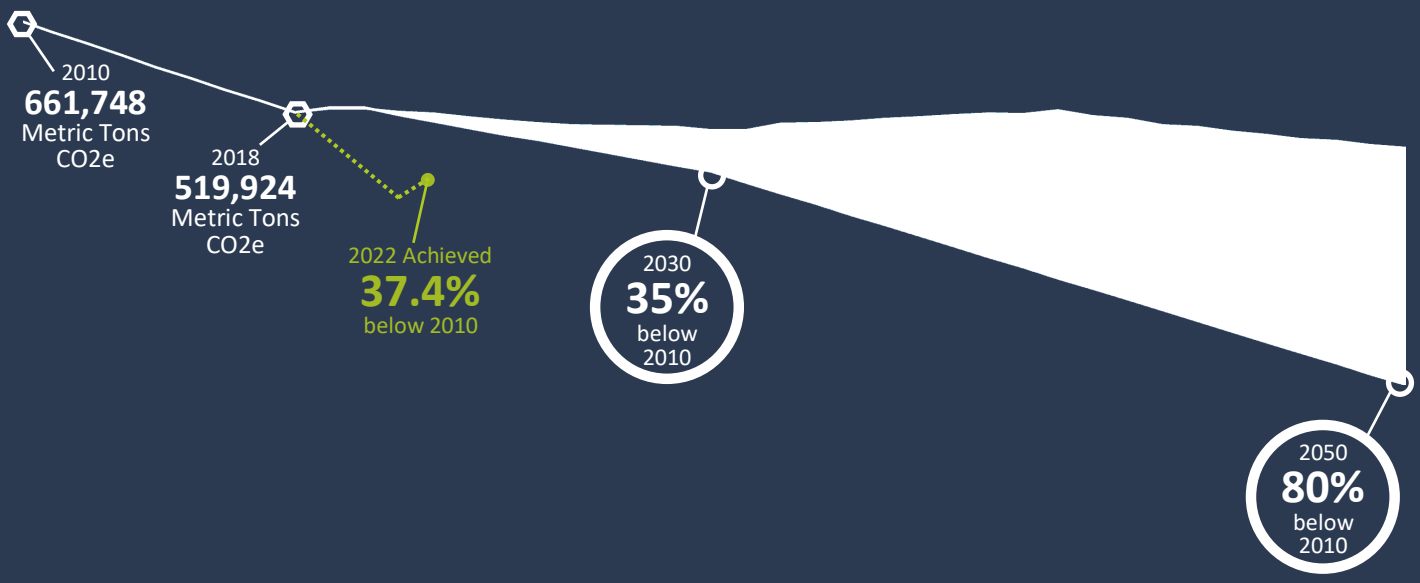
during a **10 year** implementation timeframe

Planned GHG Reductions

Share By Sector:
(note, not all CAP sectors have GHG reductions)



Planned Carbon Reduction Pathway:



Executive Summary

2023

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Climate Action Plan Adoption
In August 2022, Northbrook adopted a CAP to reduce its carbon footprint and enhance sustainability, aiming for an 80% reduction in greenhouse gas emissions by 2050 through 200 action items.

Climate Action Implementation and Collaboration

The CAP's first phase includes 100 actions, with the Board of Trustees selecting their top 10 priorities in September 2022. These priorities are part of the initial phase. The Village, Library, Park, and School Districts 28 and 30 collaborate quarterly on CAP initiatives, each endorsing the plan. Monthly coordination and oversight meetings are held by Village staff and the Sustainability Commission.

Greenhouse Gas (GHG) Inventory

The 2022 GHG Inventory by paleBLUEdot, encompassing community and Village operations emissions, is detailed in Section 02 and Appendix 2 of the report, with a comparison of achievements against 2022 CAP goals on the following page.

Implementation Progress And Results To Date

Over 82% of Phase One CAP actions are underway or finished, with another 10% in early stage planning. See Section 02 and Appendix A for detailed progress. The 2022 emissions were 37.4% lower than in 2010, exceeding the year's targeted reduction but showing a 7.6% increase from the previous year, primarily from increased natural gas usage. Solid waste and water trends also do not currently align with CAP goals.

Nonetheless, 2022 emissions still exceeded the 2030 goal of a 35% reduction from 2010 levels. The Village has also progressed on 4 of the 10 sector-specific climate action goals with outcomes on-track for meeting or exceeding 2030 targets (Single occupancy vehicle commuters, walking and biking commuters, village-wide renewable energy installations, and total electricity consumption). Progress on increased electric vehicle utilization has also been very significant, however, the pace of increase is not yet on track to meet 2030 targets.

These early successes are meaningful and clearly indicate significant progress towards the Village's long-term climate goals.

Recommended Priorities for 2024

Based on the trends seen in the 2022 GHG inventory, we recommend a prioritization of the CAP's strategies and actions supporting the following goals:

- Increased EV Utilization
- Decreased Natural Gas Consumption
- Increased Landfill Diversion of Solid Waste and Overall Reduction of Solid Waste

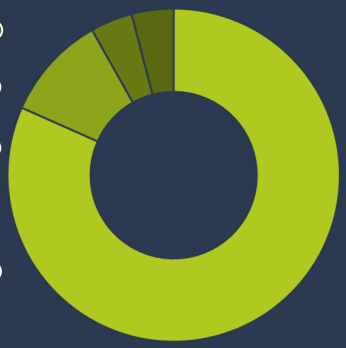
Climate Action Progress 2023

Actions in Need of Funding Source: 4%

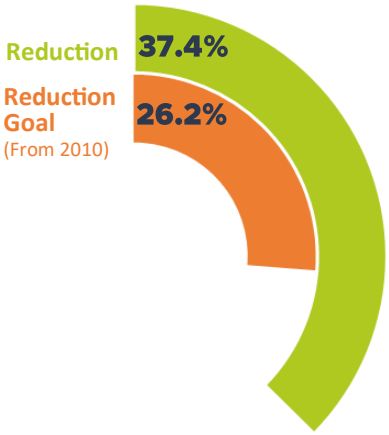
Actions Pending Zoning Review: 4%

Actions In Early Planning: 10%

Actions In Progress: 82%



Village-Wide reductions achieved VS Climate Action Plan reduction goal



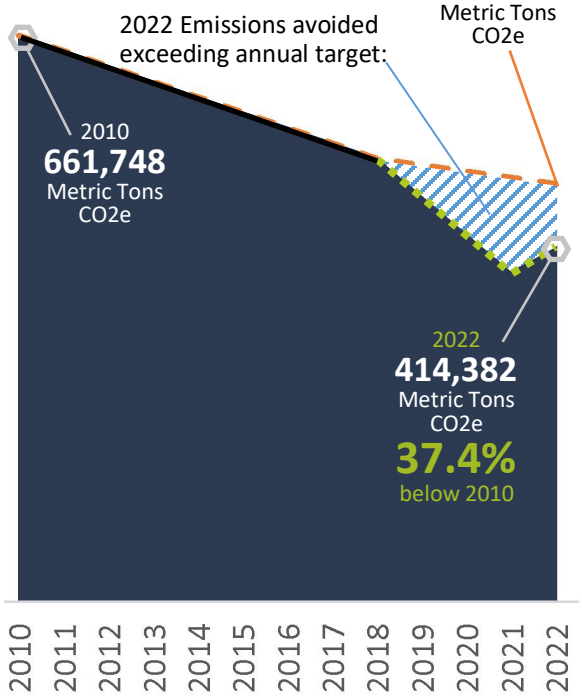
Climate Action Goal Progress

	Northbrook Transit Use[1]	Single Occupancy Vehicle Use[1]	Walk + Bike[1]	Electric Vehicles[2]
	+	-	+	+
2018	11.8%	70.4%	2%	1.0%
2022	11.0% ✗	59% ✓	2.6% ✓	3.4% −
2030 Targets	14%	67.9%	3%	20%

	Village-Wide Renewable Energy	Village-Wide Electricity Consumption	On-Site Fossil Fuel Consumption
	+	-	-
2018	0.2%	426GHW	34.1MTherms
2022	1.0% ✓	396GHW ✓	35.5MTherms ✗
2030	10%	375GWH	30.7MTherms

Emissions Target for 2022: <488,125 Metric Tons CO2e

2022 Emissions avoided exceeding annual target:



	Landfill Diversion	Total MSW Handled
	+	-
2018	33%	882 lbs/capita
2022	31.5% ✗	888 lbs/capita ✗
2030 Targets	50%	838 lbs/capita

	Potable Water Consumption
	-
2018	1,363 Million Gallons
2022	1,626 Million Gallons ✗
2030 Targets	1,260 Million Gallons

Legend

- ✓ On pace to meet goal
- − Progress occurring, but may not be on pace to meet goal
- ✗ Changes not in line with goals

1: Data from US Census via Data USA (https://datausa.io/) Available data may represent previous year.
2: Data from State of Illinois hhttps://www.ilsos.gov/departments/vehicles/statistics/electric/

SECTION 01

GHG Inventory

2023

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What is a GHG Inventory?

A community Greenhouse Gas (GHG) Inventory follows a standard protocol to quantify a community's greenhouse gas (GHG) emissions, including CO2, CH4, N2O. GHG inventories fluctuate year-to-year as we change our energy consumption, get access to better data, or gain new knowledge about how GHGs impact the atmosphere.

What Are GHG's?

Greenhouse Gases (GHG) absorb radiation and trap heat in the Earth's atmosphere. They are the basis of the Greenhouse Effect. The more GHGs there are, the more heat that is trapped in our atmosphere, leading to Global Warming and Climate Change. GHGs measured in this inventory include carbon dioxide, methane, and nitrous oxide.

Why Measure GHG?

As described by David Osborne and Ted Gaebler "If you don't measure results, you can't tell success from failure. If you can't see success, you can't reward it. If you can't see failure, you can't correct it." GHG inventories are useful. Planners need them, elected officials want them, and the future may see their development as a basic requirement of state and federal funding.

Methodology, Sources, and Terminology

This GHG inventory is assembled based on the Greenhouse Gas Protocol for businesses and communities established by GHG Protocol (www.ghgprotocol.org/) and is consistent with the protocol established by ICLEI Local Governments for Sustainability. The terminology used in this report is consistent with international Carbon Footprinting protocols. Unless noted otherwise, the Greenhouse Gas (GHG) emissions shown in this report are in metric tons of CO2e: Carbon Dioxide Equivalent. CO2e is a standard for expressing the impact of all greenhouse gas including those from other pollutants including methane (CH4), nitrous oxide (N2O), and fluorinated gasses like Chlorofluorocarbons (CFC) in terms of the equivalent amount of CO2 that would have the same impact.

GHG inventories, generally, arrive at an estimated emission in each emissions sector by multiplying raw consumption data - total electricity consumed as an example - by an emissions factor which define the greenhouse gasses emitted per unit of raw consumption. The chart on the following page illustrates the sources used for all raw consumption and emission factor data used in the GHG inventory calculations.

GHG Emission Sector	Project Resource
Residential Energy Consumption - Electricity	Data Source: Commonwealth Edison Emissions Factors: US Energy Information Administration
Residential Energy Consumption - Natural Gas	Data Source: Nicor Gas Emissions Factors: US EPA Emission Factor Hub
Commercial/Institutional Energy Consumption - Electricity	Data Source: Commonwealth Edison Emissions Factors: US Energy Information Administration
Commercial/Institutional Energy Consumption - Natural Gas	Data Source: Nicor Gas Emissions Factors: US EPA Emission Factor Hub
Transportation - On Road	Data Source: Chicago Metropolitan Agency for Planning (CMAP) Emissions Factors: US DOT Federal Highway Administration
Waste - Solid Waste	Data Source: Village of Northbrook, Advanced Disposal Emissions Factors: CMAP Chicago Regional Greenhouse Gas Emissions Inventory
Waste - Wastewater	Data Source: Village of Northbrook Water and Wastewater Services, Metropolitan Water Reclamation District Emissions Factors: CMAP Chicago Regional Greenhouse Gas Emissions Inventory
Water	Data Source: Village of Northbrook Water and Wastewater Services Emissions Factors: Above emission factors for electricity and natural gas consumption.

2010 By The Numbers

GHG Emissions
661,748
19.91 MT Per-Capita
17.94 MT / Job
0.3205 MT / $1,000 GDP

Population*
33,240

GDP *
$2,064,691,936
$62,115 GDP Per-Capita

Employment*
36,882

2022 By The Numbers

GHG Emissions
414,382
12.12 MT Per-Capita
11.86 MT / Job
0.1684 MT / $1,000 GDP

Population*
34,182

GDP*
$2,460,076,980
$71,970 GDP Per-Capita

Employment*
34,944

12 Year Trend Dashboard

GHG Emissions
-247,366 -37.4%
-7.79 MT Per-Capita
-6.08 MT / Job
-0.1521 MT / $1,000 GDP

Population*
+942 +2.8%

GDP *
+$398,306,519 +19.3%
+$9,943 GDP Per-Capita

Employment*
-1,938 -5.3%

Northbrook Community-Wide GHG Emissions Overview

Community wide total emissions for the Village of Northbrook decreased from 661,748 metric tons in 2010 to 414,382 metric tons in 2022—a 37.4% reduction compared to the year's goal of 26.2%. . It should be noted, however, that 2022 emissions were 7.6% higher than the previous year, primarily from increased natural gas usage. Over the same period the community's population increased almost 3% while GDP increased over 19%.*

* Population estimates from US Census Bureau Quick Facts, Employment estimates from US Census Bureau On The Map data, GDP values are Village of Northbrook pro-rata share of county total based on data from US Department of Commerce Bureau of Economic Analysis.

NORTHBROOK GHG EMISSIONS TRENDS

How Large Are Community wide GHG Emissions?

The community's total emissions have reduced 37.4% from 2010 levels—equivalent to eliminating over **4.9 Billion** cubic feet of human-made greenhouse gas atmosphere annually—shown in green in this image. The volume of the remaining 2022 emissions are equal to **8.1 Billion** cubic feet, or a cube **2,266** feet wide and deep and **1,583** feet tall— shown in blue in this image. The depictions of Northbrook emissions viewed here are seen from Rosewood Beach more than 5 miles away.

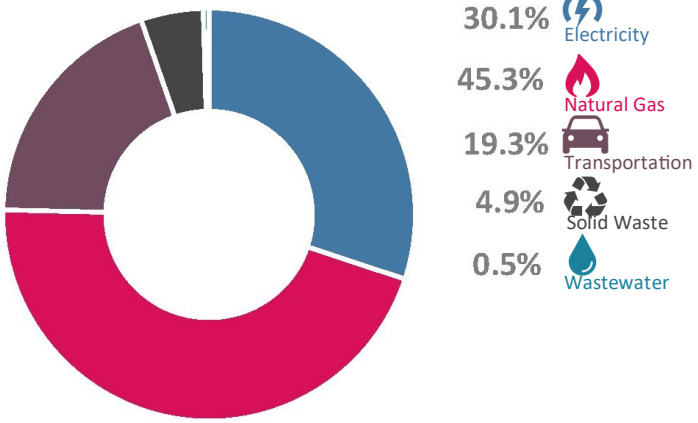
FINDINGS IN BRIEF: VILLAGE-WIDE

Greenhouse Gas (GHG) Inventory

paleBLUEdot updated the Village's 2022 GHG Inventory, including community and municipal emissions, following the Greenhouse Gas Protocol and ICLEI standards.

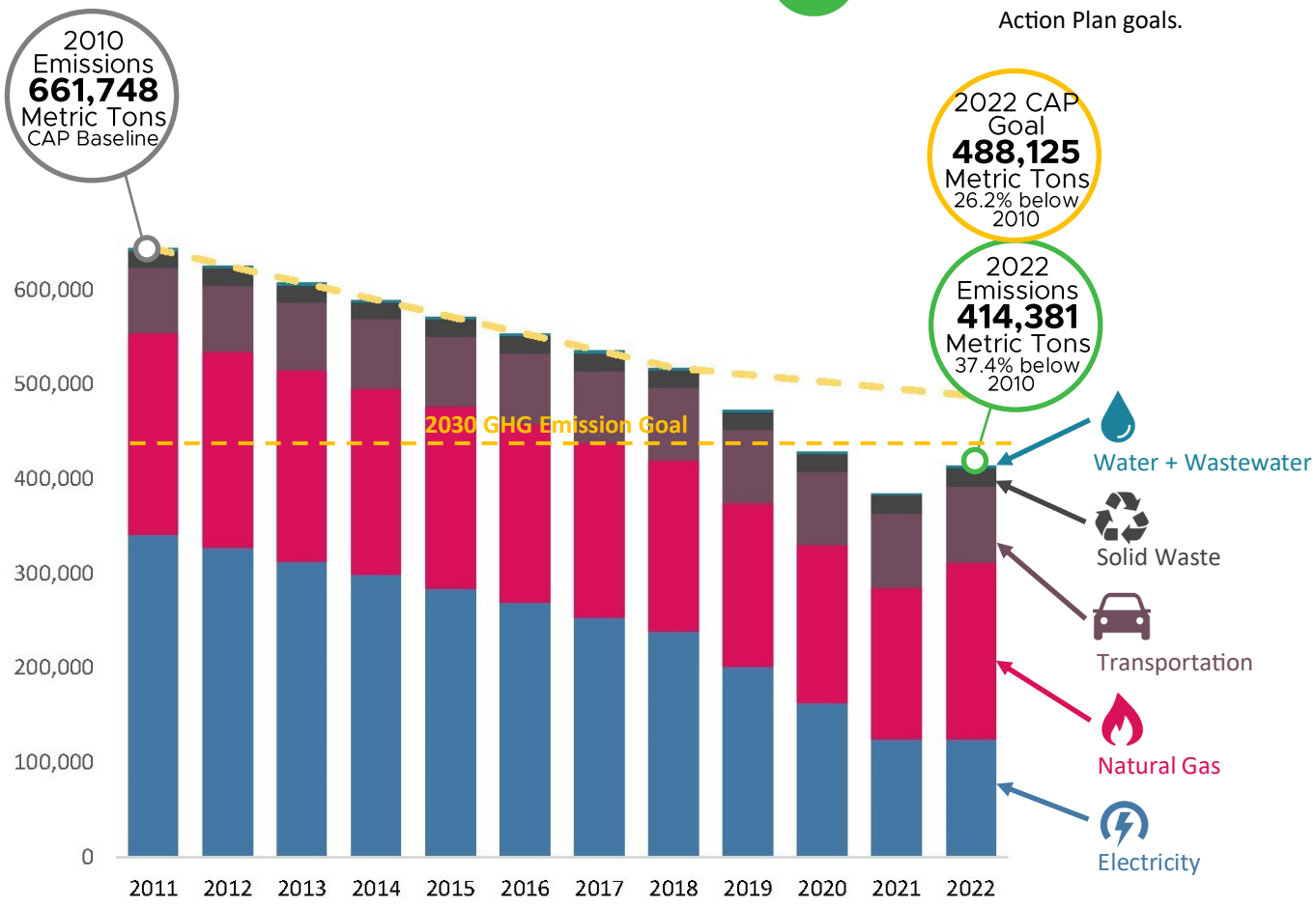
In August 2021, Northbrook's Climate Action Plan aimed to cut emissions by 35% from 2010 levels. The 2022 target was a 26.2% reduction, but actual emissions fell by 37.4%, surpassing the goal. However, this was a 7.6% increase from the previous year, mainly due to more natural gas use. Solid waste and water trends are not on track with CAP objectives.

Village-Wide GHG by Sector



Village-Wide Annual GHG Emissions

Village of Northbrook 2022 Community -Wide GHG emissions are 37.4% below 2010 levels, on-track with Climate Action Plan goals.



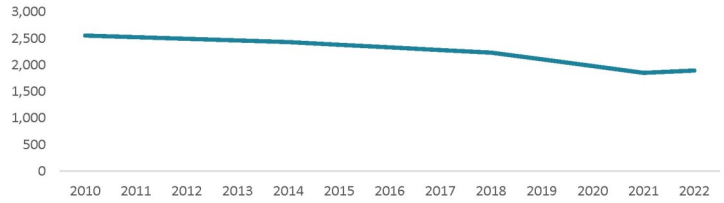
FINDINGS IN BRIEF: VILLAGE-WIDE

Village-Wide Sector GHG Trend Lines

	2010	2022	Change	On-Track

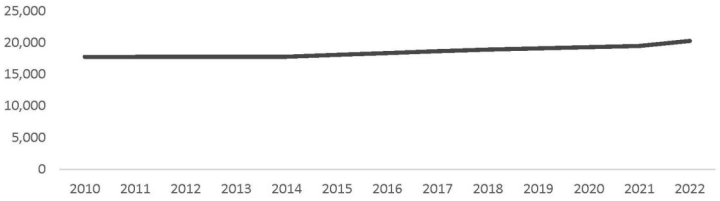
Legend
- On pace to meet goal
- Progress occurring, but may not be on pace to meet goal
- Changes not in line with goals

Water + Wastewater



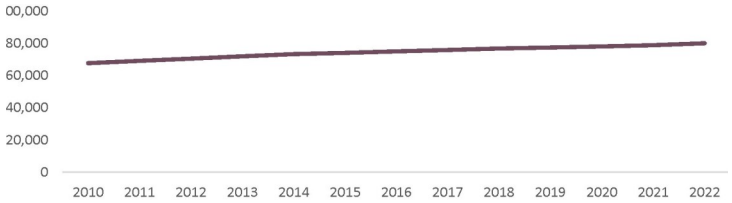
2010	2022	Change	On-Track
2,555 Metric Tons	1,897 Metric Tons	-25.7%	✓

Solid Waste



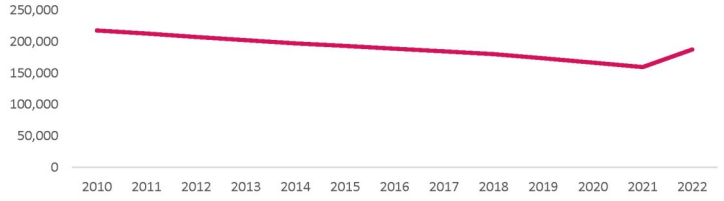
2010	2022	Change	On-Track
17,746 Metric Tons	20,269 Metric Tons	+14.2%	✗

Transportation



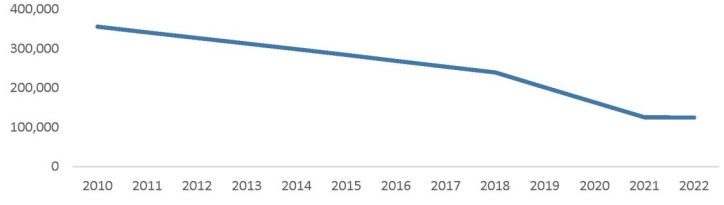
2010	2022	Change	On-Track
67,682 Metric Tons	79,976 Metric Tons	+18.2%	✗

Natural Gas



2010	2022	Change	On-Track
218,023 Metric Tons	187,665 Metric Tons	-13.9%	−

Electricity



2010	2022	Change	On-Track
355,742 Metric Tons	124,576 Metric Tons	-65.0%	✓

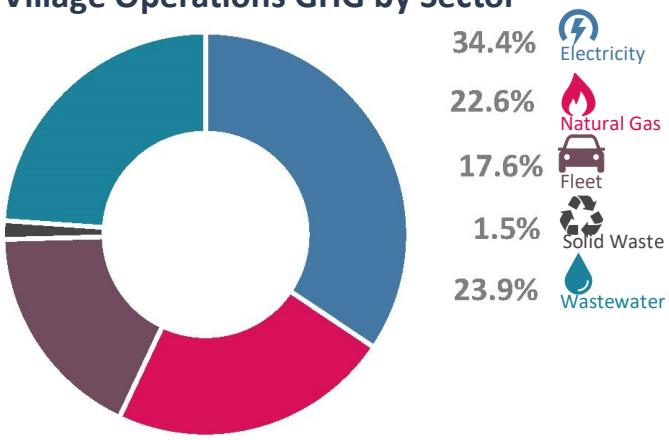
FINDINGS IN BRIEF: VILLAGE-OPERATIONS

Village Operations Emissions

Village Operations GHG emissions include energy consumption related to vehicle and equipment fleet operations, building and site operations, solid waste generated on municipal sites, and the municipal portion of water and wastewater treatment.

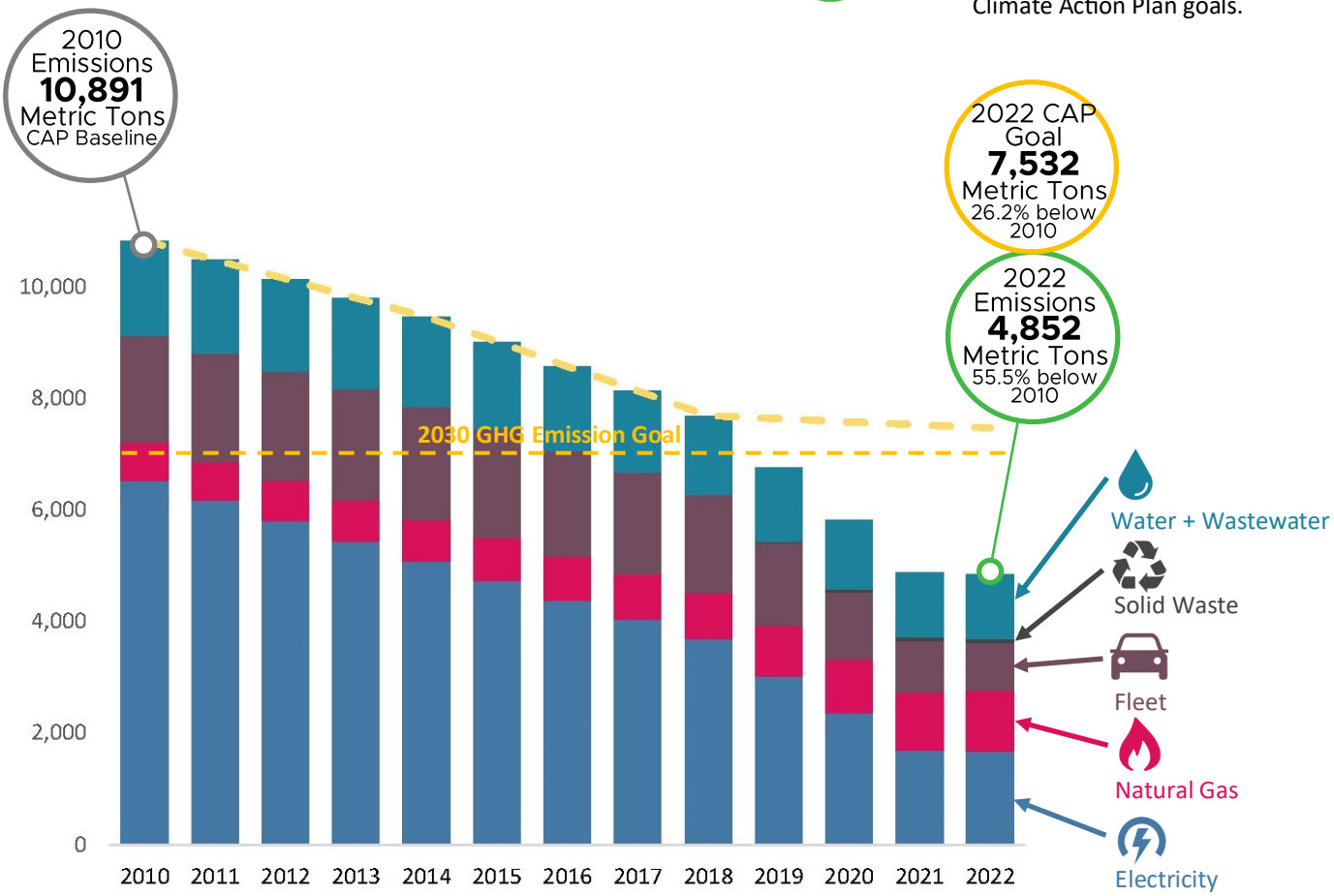
On an annualized basis, the Village Operations GHG emission goal for 2022 to be in alignment with the Climate Action Plan's 2030 targets is a total reduction of 26.2% below 2010 CAP Baseline levels. Actual emissions achieved a 55.5% reduction, surpassing the goal.

Village Operations GHG by Sector



Village Operations Annual GHG Emissions

Village of Northbrook 2022 Village Operations GHG emissions are 55.5% below 2010 levels, on-track with Climate Action Plan goals.

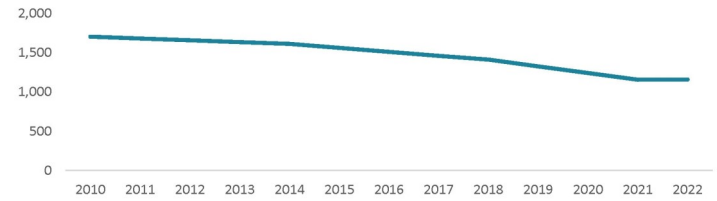


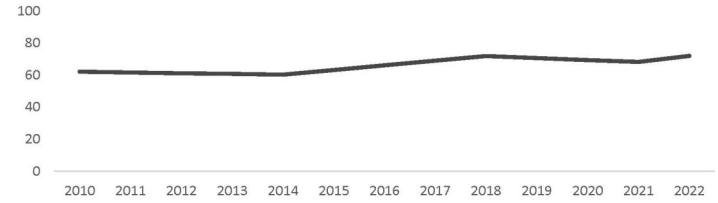
FINDINGS IN BRIEF: VILLAGE OPERATIONS

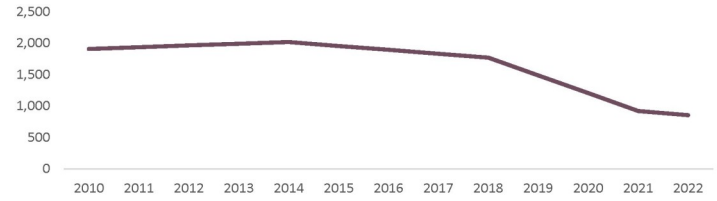
Village Operations Sector GHG Trend Lines

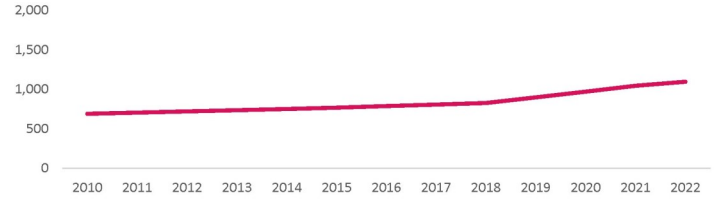
	2010	2022	Change	On-Track
Water + Wastewater	1,704 Metric Tons	1,160 Metric Tons	-31.9%	✓
Solid Waste	62 Metric Tons	72 Metric Tons	+15.9%	✗
Fleet	1,909 Metric Tons	855 Metric Tons	-55.2%	✓
Natural Gas	688 Metric Tons	1,095 Metric Tons	+59.2%	✗
Electricity	6,528 Metric Tons	1,670 Metric Tons	-74.4%	✓

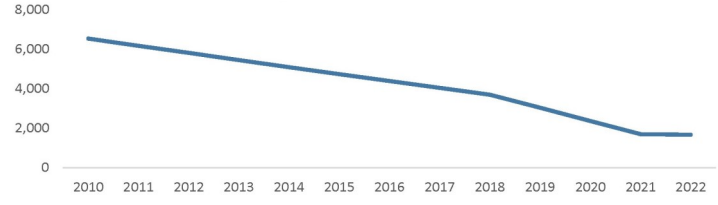
Legend
- On pace to meet goal
- Progress occurring, but may not be on pace to meet goal
- Changes not in line with goals











SECTION 02

CAP Implementation Progress By Sector

Transportation and Land Use

2023

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2023-2024 Climate Action Plan (CAP) PRIORITY:
Northbrook is part of the second cohort of the EV Readiness Program facilitated by the Metropolitan Mayors Caucus to prepare to meet the growing demand for EVs and EV charging infrastructure. Northbrook receives free technical assistance and training in a variety of critical areas as we work toward the designation of an "EV Ready Community", including considerations to be incorporated into EV feasibility assessment and fleet transition recommendations.

2021-2022 CAP PRIORITY:
The Village Board of Trustees approves projects for the Capital Improvement Plan (CIP) which covers a five year period. CAP items are pointed out in this Plan relating to transportation. Electrical Vehicle Charging Stations are being considered with review of the downtown improvements. As new vehicles are added to the municipal fleet, all purchases will consider electric, hybrid, or other sustainable options and recommendations will be made based on current operational needs. As well, plans are in place to improve pedestrian and bicycle infrastructure are planned in alignment with the Master Bike and Pedestrian Plan.

The Public Works department is making progress towards implementation of the proposed Shermer Road Multi-Use Path that will connect from Glenview's recently completed trail to Northbrook's downtown. Sustainability Commissioners endorsed the proposed Shermer Road Multi-Use Path as it relates to the CAP priority to reduce vehicle miles traveled by encouraging biking and walking. The proposed project will increase inter-modal connectivity, providing easier access to transit facilities, schools, and downtown Northbrook businesses on foot or by bike. The Sustainability Commission added several sustainability recommendations to be assessed during the design phase of the project. The recommendations include permeable pavements, warm-mix asphalt, and improved pedestrian experience with integrated artwork, seating, and native landscaping.

Sector Goal Progress

	Northbrook Transit Use[1]	Single Occupancy Vehicle Use[1]	Walk + Bike[1]	Electric Vehicles[2]
	+	-	+	+
2018	11.8%	70.4%	2%	1.0%
2022	11.0% ✗	59% ✓	2.6% ✓	3.4% –
2030 Targets	14%	67.9%	3%	20%

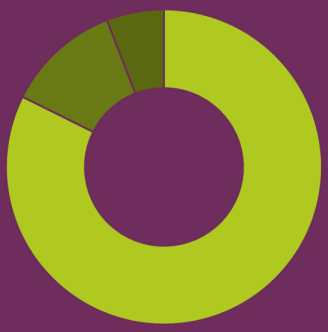
Transportation and Land Use Action Progress

Actions in Need of Funding Source: 6%

Actions Pending Zoning Review: 12%

Actions In Early Planning: 0%

Actions In Progress: 82%



OTHER ITEMS:

- In 2023, Northbrook hosted its second annual Grand Prix as part of the Intelligentsia Cup 10-day bicycle racing series in Chicagoland. Olympians and other famous cyclers ride in the race, and Northbrook provided community members with the opportunity to try out the pro race course for a Family Fun Ride. The event helped promote biking as an entertaining form of exercise in Northbrook.
- To address the CAP strategy for minimizing off-road fossil-fuel emissions such as gas-powered leaf blowers, the Village participated in a regional working group about this topic. Following the findings from the working group report, the Sustainability Commission agreed upon a recommendation for a 9-month ban on such equipment. Village staff is currently drafting an ordinance to be reviewed by the Board of Trustees.
- The Village is currently in the process of a Zoning Code update to comprehensively incorporate relevant priorities of the Climate Action Plan and other community plans. Transportation measures being considered include: reducing parking requirements, improving bicycle and pedestrian mobility, and removing barriers to electric vehicle infrastructure in the code.
- Starting in September 2023, a project is set to enhance local transportation infrastructure by introducing Shared bicycle lanes and bicycle signage along Grant Road, Lee Road, Lorenz Drive, Voltz Road, and Walters Avenue. Furthermore, a Bicycle Shelter will be built at Shermer Road, Northbrook's Metra Train Station's North Commuter Lot. This initiative, funded in collaboration with the State of Illinois and the Regional Transportation Authority, contributes to the reduction of vehicle miles traveled by promoting cycling and multi-modal transportation.
- Northbrook, Lake and Cook Counties are in the process of engineering design for the potential extension of a bike trail south from Lake County into the Northbrook area. The Skokie Valley Trail, which runs along the Commonwealth Edison right-of-way north of Lake-Cook Road, could potentially be continued south via a bridge over Lake-Cook Road and utilize the same Commonwealth Edison corridor which runs parallel to Skokie Boulevard to Dundee Road. The project would create a multi-use path connection between the Skokie Valley Bike Path (Skokie Valley Trail) and the Chicago Botanic Garden, along Lake Cook Road. The goal of the project is to create regional connectivity in the trail system and improve safety for bicyclists and pedestrians. This is in the initial planning stages and no final plans are being considered right now.
- Major development and redevelopment projects in Northbrook undergo sustainability reviews during the plan review process. The reviews provide applicable recommendations to further the development's alignment with the CAP. Sometimes, project approval is contingent upon commitment to CAP-related measures and other items that are requested by the Village Board and Plan Commission. Within the Transportation and Land Use category, these commitments have resulted in significant progress, including:
  - EV charging station installations (5 developments, a total of 66 stations)
  - The use of EVs in employee fleet (2 developments)
  - Bicycle parking facility installations (2 developments)
  - Enhanced public transit amenities (2 developments)
  - Creation of no-idling policies and/or signage (2 developments)
  - Incentives for employee carpooling to reduce vehicle miles traveled (2 developments)

SECTION 02

CAP Implementation Progress By Sector

Buildings and Energy

2023

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2023-2024 CAP PRIORITY:

Towards the Village goal of 100% renewable energy procurement for municipal buildings, the Village has aggregated electric usage of its water plant, street lights, lift stations, and train station on the open market, and entered into an agreement with Constellation New Energy for 100% offset electricity by Green-e certified renewable energy credits (RECs).

The Village is in progress towards a Renewable Energy Implementation plan to achieve 100% clean energy for all municipal facilities by 2040, which will prioritize on-site renewables and community solar options. Further focus on the completion of this item is to occur in 2024.

The Village is committed to providing updated, accurate, and understandable information for community member awareness of the many federal, state, utility, and local opportunities to support green power. In partnership with the Library and Solar Switch Chicagoland, the Village co-hosted a Solar Power Hour to engage interested homeowners in an opportunity to participate in a discounted group buy for rooftop solar installations. Similarly, Northbrook partnered to coordinate a geothermal group for the Chicagoland area.

2021-2022 CAP PRIORITY:

The Public Works Department is in progress with converting 100% of municipal streetlights to LEDs by 2030, and plans to use the Energy Efficiency and Conservation Block Grant for funding this project. Additionally, the Village updated sections of Northbrook's Engineering Specifications and Standards to switch to LED lighting for street and parking lot fixtures as standard.

Sector Goal Progress

	Village-Wide Renewable Energy (+)	Village-Wide Electricity Consumption (-)	On-Site Fossil Fuel Consumption (-)
2018	0.2%	426GHW	34.1MTherms
2022	1.0% ✓	396GHW ✓	35.5MTherms ✗
2030	10%	375GWH	30.7MTherms

Buildings + Energy Action Progress

Actions in Need of Funding Source: 13%

Actions Pending Zoning Review: 0%

Actions In Early Planning: 20%

Actions In Progress: 67%

OTHER ITEMS:

- In 2022 we issued a record number of solar photovoltaic permits for the Village (45), and are on track to top this number in 2023!
- Assessments are underway with the Public Works & Facilities Committee of the Village Board of Trustees, in which green building practices and materials will be heavily incorporated in facility improvements being planned for Fleet Maintenance, Police Station, and Fire Station 11.
- In collaboration with the North Shore Electric Aggregation Consortium, the Village offers two initiatives to promote sustainability: Electric Aggregation and Community Solar. The Electric Aggregation program brings in $90,000 each year of the contract for the Village to use on sustainability initiatives. Community Solar is an easy way for residents to support clean energy generation, which helps to reduce dependence on fossil fuels. The average Northbrook resident saves $194/year through this program. Community Solar currently has enrolled 766 kW subscriptions from Northbrook community members: over a 50% increase from last year!
- The Board of Trustees approves projects for the Capital Improvement Plan (CIP) which covers a five year period. CAP items are pointed out in this Plan relating to building energy. Projects include replacing outdated HVAC equipment in municipal facilities with more efficient ones, and the feasibility study to consider rooftop solar at Public Works.
- Decisions made during the design phases of new construction or major renovations have a lasting impact on carbon emissions over time. Village staff receive technical assistance from Midwest Energy Efficiency Alliance to discuss the possibility of adopting energy stretch codes that exceed code requirements to make new construction more resourceful and climate resilient.
- Major development and redevelopment projects in Northbrook are reviewed for alignment with relevant CAP recommendations, with project approval conditional upon their commitment to sustainability measures and other items as requested by the Village Board and Plan Commission. Regarding Building Energy, the following progress has been made through development reviews:
  - Prioritization towards sustainable building material specifications (8 developments)
  - Installation of EnergyStar rated appliances where applicable (6 developments)
  - Commitment to the use of low or no-VOC paints, laminates, and finishes (5 developments)
  - Installation of 100% LED lighting (4 developments)
  - Participation in various ComEd Energy Efficiency (4 developments) and CPACE (2) incentive programs
  - Assessments for rooftop solar energy generation potential (3 developments)
  - Full electrification of project plan (3 developments)
  - Commitment to advanced building envelope and performance standards (2 developments)

SECTION 02

CAP Implementation Progress By Sector

Waste Management

2023

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2023-2024 CAP PRIORITY:

In downtown Northbrook, 12 new refuse and recycling bin sets have been introduced, marking the first instance of recycling options in downtown trash bins. These smart bins employ solar technology to monitor waste levels and are networked with a communications system, enhancing sanitation control. These sustainability-driven measures not only facilitate better waste management but also align with overall sustainability goals by promoting recycling and reducing waste. By efficiently managing waste collection and encouraging recycling, this innovative bin system also plays a crucial role in reducing litter on downtown Northbrook streets, contributing to a cleaner and more sustainable downtown environment.

2021-2022 CAP PRIORITY:

Effective January 1, 2024, major retail stores shall charge ten cents per paper and plastic bag in an effort to reduce waste and encourage reusable bags. For each ten-cent tax, five cents are to be retained by the business and five cents will go to the Village. The single-use bag fees submitted to the Village of Northbrook will be used to fund Climate Action Plan projects as reviewed and approved by the Village Board. At the start of the tax rollout, the Village will supply free reusable bags for distribution at applicable businesses.

Sector Goal Progress

	Landfill Diversion +	Total MSW Handled -
2018	33%	882 lbs/capita
2022	31.5% ✗	888 lbs/capita ✗
2030 Targets	50%	838 lbs/capita

Waste Management Action Progress

Actions in Need of Funding Source 8%

Actions Pending Zoning Review: 0%

Actions In Early Planning: 8%

Actions In Progress: 83%

OTHER ITEMS:

- The Village facilitates a number of ongoing recycling opportunities including e-waste, plastic bags, hazardous household collection, paper shredding, batteries and beyond to help community members reduce their contribution to landfills.
- As the Village looks forward to the upcoming waste hauler RFP, the Board of Trustees will consider sustainability items to ensure CAP goals related to waste reduction, landfill diversion, and fleet electrification may be achieved.
- Through the creation of a Green Event Checklist housed on the Special Events Permitting page of the Village website, the Village encourages event organizers to employ environmentally sustainable practices to reduce waste and their carbon footprint. While not required, the checklist seeks to make community events more environmentally friendly.
- At the annual pumpkin smash in November 2022, Village staff engaged with over 200 attendees to discuss the benefits of organic material recovery. A grand total of 3.16 tons of pumpkins were composted through the event!
- On Earth Day 2023, over 900 attendees brought various hard-to-recycle items for collection, including: 2,388 lbs of single-stream recycling, 2,000 lbs of textile and household donations, 11,000 lbs of e-waste, 19,875 lbs of paper, 15 55-gallon drums (barrels) of paint, 10 Gaylord bags of Styrofoam, and 51 donated bikes.
- As part of the plan review process, major development and redevelopment projects in Northbrook undergo sustainability reviews that recommend items for alignment with the CAP. Project approval may be conditional upon commitments to CAP-related measures and other requirements stipulated by the Village Board and Plan Commission. Items focused on waste reduction become conditions from time to time, such as:
  - Commitment to divert at least 70% of demolition debris from landfills (6 developments)
  - Inclusion of services for recycling and food waste collection (3 developments)

SECTION 02

CAP Implementation Progress By Sector

Water and Wastewater

2023

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Sector Goal Progress

Potable Water Consumption

2018	1,363 Million Gallons
2022	1,626 Million Gallons
2030 Targets	1,260 Million Gallons

2023-2024 CAP PRIORITY:

The Village incorporated CAP wastewater goals into Project 31 of the Master Stormwater Management Plan, which was installed during 2022/23 construction season. The project included the installation of storm sewer, replacing an existing culvert, and the grading and shaping of the rear yard drainage ditch in the Willow Creek subdivision. The ditch was regraded to allow proper flow, and the base was reestablished using cobbles and wetland plantings. The cobbles and wetland plantings not only extend the lifespan of the ditch but also contribute to the overall ecological health of the area by promoting biodiversity, enhancing water quality, and reducing the carbon footprint associated with frequent maintenance and replacements.

2021-2022 CAP PRIORITY:

To make it easier for community members to implement nature-based solutions to reduce runoff, a new cost-share program is being launched which creates a process for residents to convert cul-de-sacs to native gardens and receive reimbursement by the Village.

Water and Wastewater Action Progress

Actions in Need of Funding Source: 0%

Actions Pending Zoning Review: 0%

Actions In Early Planning: 29%

Actions In Progress: 71%

OTHER ITEMS:

- Several sustainability changes have been incorporated into various sections of Northbrook's Engineering Specifications and Standards, demonstrating a commitment to eco-friendly water management practices. For example, updating rainfall intensity data aligns with the latest scientific research and enhances accuracy of stormwater management. Changes were made to allow alternatives to asphalt and concrete structures for on-site detention, such as permeable pavers which promote groundwater recharge and reduces runoff. The Appendix was revised to allow for annual modifications, which promotes adaptability and alignment with evolving sustainability practices. Additionally, native landscaping information and best practices for detention basins were added.
- The Village is currently in the process of a Zoning Code update to comprehensively incorporate relevant priorities of the Climate Action Plan and other community objectives. Water measures being considered include: increased limits to the percentage of impervious surface allowed on lots, incentives for permeable surfaces, green roofs, rain gardens, bioswales, and native vegetation.
- The Village facilitates a cost-sharing stormwater improvement program, in which eligible residents receive up to 70% of costs or $5,000 for the installation of a rain garden on private property offset.
- During the plan review process, major development and redevelopment applications in Northbrook are subjected to sustainability reviews, which propose actions to further alignment with the CAP. To encourage responsible water management, developers have agreed to include:
  - Use of WaterSense fixtures wherever applicable (3 developments)
  - Plans for permeable pavements in hardscaping (2 developments)
  - Installation of moisture-sensing irrigation systems in landscaping (2 developments)

SECTION 02

CAP Implementation Progress By Sector

Local Food and Agriculture

2023

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2023-2024 CAP PRIORITY:

The Village is now offering a discount for new subscribers to the compost pickup program provided by Waste Management. Up to 250 residents may receive a 25% discount on the annual subscription for curbside organic waste collection.

2021-2022 CAP PRIORITY:

In partnership with local business The Organic Gardener and the Library, the Village holds free educational programming on a regular basis at the demonstration raised bed vegetable garden between Village Hall and the Library. Over 200 residents have engaged with the program to date. The garden yields over 500 pounds of produce each season, all of which is donated to the food pantry. The crops being grown were chosen by Northfield Township Food Pantry staff to ensure the garden will best serve those most in need.

Other Items:

Northbrook Community Gardens are in their 15th growing season. Among the three garden locations (Village Hall, Crestwood Place, and Temple Beth-El), 65 residents have plots this year. 1,500 lbs. of fresh, healthy produce donated to Northfield Township Food Pantry last season with expectations for this year to exceed that amount. Currently 1 Eagle Scout candidate is working on his project at Village Hall Plot to design and construct a new compost system. Upon his success, he will be the 9th young man to have earned his Eagle Scout Award with the NCG as the beneficiary of his hard work.

Food and Agriculture Action Progress

Actions in Need of Funding Source: 0%

Actions Pending Zoning Review: 12%

Actions In Early Planning: 0%

Actions In Progress: 88%

CAP Implementation Progress By Sector

Health and Safety

02 SECTION

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2023

2023-2024 CAP PRIORITY:

The priority in this category is to develop a debris management plan to support responses to severe storm events and flooding. To this end, the Sustainability Commission provides recommended educational outreach content regarding preparing for storms and responsible tree pruning practices. Further focus on the completion of this item is to occur in 2024.

2021-2022 CAP PRIORITY:

The Village plans to work with the County during upcoming updates to the Local Emergency Operations Plan to help address the lack of centers located in close proximity to Northbrook.

Other Items:

- Our emergency services departments continue to incorporate climate-related disasters into everyday planning for emergency response and prevention.
- Due to an increase in poor air quality days in the region caused by wildfire smoke, Village's communication channels offer guidance on safeguarding both personal well-being and community health during adverse conditions.
- Private property tree giveaways prioritize areas in the Village that are most impacted by the urban heat island effect.
- As climate change impacts increases risk of vector-borne illness in our area, the Village provides updated information regarding West Nile Virus outbreaks and prevention measures from partner organizations on our communications platforms.
- The Board of Trustees approves projects for the Capital Improvement Plan (CIP) which covers a five year period. An upcoming project outlined in the CIP is the Deerfield Emergency Interconnect Project, which strengthens emergency management capacity as it will allow one community water system to feed the other in case of an emergency.
- Within the framework of the plan review process, substantial development and redevelopment projects in Northbrook receive sustainability reviews that recommend CAP items. Resulting from this process, several health and safety items from the CAP have been incorporated:
  - Plans for “cool” or green roof design to mitigate the urban heat island effect (2 developments)
  - Commitments to use warm mix asphalt when possible, as a safer and cleaner alternative to hot mix asphalt (3 developments)

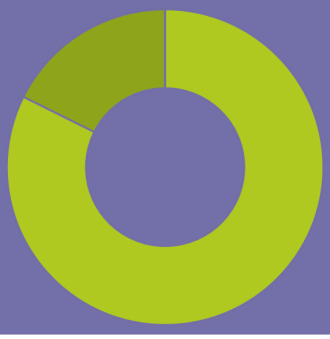
Health And Safety Action Progress

Actions in Need of Funding Source: 0%

Actions Pending Zoning Review: 0%

Actions In Early Planning: 18%

Actions In Progress: 82%



SECTION 02

CAP Implementation Progress By Sector

Greenspace and Ecosystem Health

2023

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2023-2024 CAP PRIORITY:

Village and GIS staff are working on a Solar and Tree Compatibility study to identify best sites for tree canopy expansion and priority locations for rooftop solar. Further focus on the completion of this item is to occur in 2024.

2021-2022 CAP PRIORITY:

Starting in the summer of 2023, all Village-maintained landscaping will be required to comply with the new Integrated Pest Management policy to curb the usage of chemical sprays like pesticides and inorganic fertilizers.

Greenspace + Ecosystem Action Progress

Actions in Need of Funding Source: 0%

Actions Pending Zoning Review: 7%

Actions In Early Planning: 0%

Actions In Progress: 93%

OTHER ITEMS:

- To support our local ecology, native plants and tree species are being prioritized for community planting.
- Through a combination of tree giveaways for private properties and the 50/50 parkway planting program, Northbrook planted 787 new trees in 2021, 805 in 2022, and 1,186 in 2023!
- Over 700 native plant seed mixes have been distributed to community members during a range of events in 2022 and 2023.
- For National Pollinator Week, the Village provides free native plant plugs to emphasize the crucial relationship between local plants and beneficial insects. For this event, 250 plants were distributed to residents in 2022 and 275 in 2023.
- Due to our commitment to pollinator conservation as detailed above, Northbrook received Leadership Circle designation through the National Wildlife Federation's Mayors Monarch Pledge!
- Northbrook celebrated the return of pollinators this spring by signing a Slow Mow May proclamation, in which the ordinance that prevents grass heights to exceed 8 inches was waived for the month to allow early spring blooms to establish for our native pollinators. Over 80 residents participated, along with the Park District, Library, and Village maintained-properties: that's at least 85 acres that provided habitat, saved fuel, and established deeper roots for carbon sequestration during the month!
- The Village engaged over 100 residents in ecological restoration activities through co-hosting three workdays with partner organizations such as the Park District and Somme Woods Community during Earth Month 2023.
- Several sustainability changes have been incorporated into various sections of Northbrook's Engineering Specifications and Standards, including a reduction to the allowable max height of light poles, which minimizes light pollution and fosters a better environment.
- Over 100 pollinator habitat areas are registered with the Village, committing to sustainable gardening methods such as biodiversity, excluding exposure to pesticides, "leave the leaves" and no-mow areas for nesting pollinators.
- Thanks to the meaningful efforts taken in Northbrook by mindful residents and our nature preserve volunteers, Northbrook is home to refuge for rare and vulnerable species. In July 2023, two rare bumblebees were found this week by a team from the Illinois Natural History Survey in the Somme preserves. According to the survey team, *Bombus fraternus* (southern plains bumblebee) has only once before been found in northern Illinois. *Bombus affinis* (rusty-patch bumblebee) was also found. The Village's good sustainability efforts help both of these rare pollinators.
- Developers that receive sustainability reviews for their projects will often make efforts to comply with Climate Action Plan goals related to greenspace and ecosystem health, such as:
  - Inclusion of at least 70% native species for new plantings in landscape plans (6 developments)
  - Use of International Dark Sky Association approved fixtures for all exterior lighting (4 developments)
  - Commitment to sustainable landscape maintenance practices (3 developments)

SECTION 02

CAP Implementation Progress By Sector

Climate Economy

2023

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2023-2024 CAP PRIORITY:

The Village is considering mechanisms to incentivize sustainability measures for new developments during the Zoning Code update. Further focus on the completion of this item is to occur in 2024.

2021-2022 CAP PRIORITY:

Village staff and the Sustainability Commission developed a green business certification checklist that was piloted with 6 participating businesses representing a range of business types. The checklist uses CAP categories and goals and tailors them to relevant business operations. Points are weighted by cost to implement and environmental benefits of achievement. These businesses used the checklist to self-assess their sustainability practices, then met with Village staff for confirmation and discussion. The program officially launched with the first cohort of businesses recognized at a Village Board of Trustees meeting in April.

Other Items:

- In Northbrook, significant development projects are subject to sustainability assessments during planning. These evaluations offer guidance on best environmental practices and compliance with the CAP, as mandated by the Village Board and Plan Commission. Conditional approval is given to these projects, with 15 moving forward after agreeing to CAP criteria since these reviews started. These assessments not only foster eco-friendly development but also strengthen the local climate economy through the encouragement of renewable energy, energy efficiency, and other eco-friendly projects.
- The mixed-use development at 1657 Shermer Road, previously the Grainger site, integrates CAP elements for eco-friendly, affordable housing. The developer pledged to use ComEd's program for 100% WaterSense and LED fixtures, and complete electrification. This transit-oriented project will feature bike parking, an enhanced PACE bus stop, and EV charging stations. Additionally, it will have a cool roof, dark-sky compliant lighting, and sustainable landscaping.
- During summer 2023, the Village hired its first ever Sustainability Intern to work alongside the Sustainability Coordinator towards CAP projects. Hiring a seasonal sustainability intern enhances the Village's capacity to develop and implement green initiatives, stimulating demand for environmentally-focused products and services

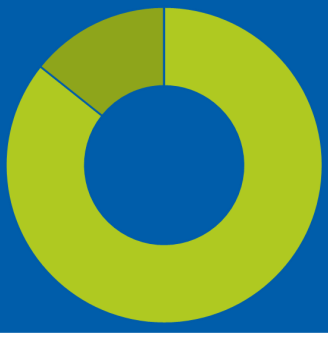
Climate Economy Action Progress

Actions in Need of Funding Source: 0%

Actions Pending Zoning Review: 0%

Actions In Early Planning: 14%

Actions In Progress: 86%

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COFFEE BAR & VIETNAMESE EATERY

Appendix A

CAP Phase One Progress by Action

2023

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There are 100 action items in the CAP listed for "Implementation Phase One". The Plan recommends these actions should begin within the first three years of adoption to achieve emissions reduction goals. All 10 priority items from the Board fall within Implementation Phase One.

This appendix provides a color-coded, designating progress status for each of the 100 items in Implementation Phase One. The progress status descriptions are as follows:


In progress


Early planning stage


Pending zoning review*


Funding source needed

*Zoning Code update is planned to begin 2022-2023.

FULL LIST OF CAP ITEMS IN IMPLEMENTATION PHASE ONE

	Transportation and Land Use
TL 1-1	Execute a community Complete Streets assessment to identify percentage of streets in compliance with Village's complete streets policy. Assessment should recommend 10 year compliance goals outlining percentage of streets to be renovated to be within compliance, recommend prioritized streets for renovation, and establish an implementation plan.
TL 1-2	Work with local businesses to promote tele-working as an alternative to commuting.
TL 2-1	Advance improved mobility options for youth and seniors such as shifting student transportation modes from cars to school bus system and promotion of services such as the PACE dial-a-ride, PACE Paratransit, and Senior Cap services. Explore creation of $5 credit per ride arrangement with PACE similar to those established by cab companies
TL 2-2	Explore frequent service transit to the Village's many employment centers
TL 2-3	Work with local employers encouraging them to implement subsidized or discounted transit program. Explore TMA Lake-Cook and others for potential partnerships.
TL 3-1	Identify locations, especially near shopping and business districts, where additional bike parking facilities could be installed
TL 3-2	Identify locations and partners to facilitate parking buyback programs for municipal and other employers in the Village.
TL 4-1	Conduct a municipal fleet inventory and EV transition Implementation plan. Effort to identify opportunities for electrifying, right-sizing, and improving overall efficiency of vehicles to meet CAP Goals. Include implementation recommendations to incorporate EV's through right-timing purchases with a planned vehicle-replacement schedule.
TL 5-1	Coordinate with Cook County to maintain tracking of EV registration in the community.
TL 5-2	Support State efforts to adopt a low-carbon fuel standard.
TL 5-3	Proactively encourage the safe use of non-car electric vehicles such as e-bikes and scooters on Village rights of way. Collaborate with the library for bike and e-bike safety education
TL 5-4	Modify future waste hauler agreements with haulers serving Northbrook to include progressive EV fleet requirements, with the goal of 50% EV fleet by 2030 and 100% by 2035.
TL 5-5	Create an Electric Vehicle (EV) Action Plan to guide access to chargers on Village property and village wide, explore alternative technologies like Smart cable technology and streetlight/EV charger integration, address barriers to charging for garage-free homes and rental properties, increase use of EVs in car sharing programs, assess options to lower EV and EV charger implementation costs, and recommend EV charging station requirement amendments to zoning ordinances to support EV plan. EV Action Plan should consider EV charging needs for village residents and businesses as well as consider opportunities to support EV re-charging for travelers in ways which support the community as well as the traveler.
TL 6-1	Amend the zoning ordinance to allow and encourage higher density development wtihin the downtown district and within 3/4 mile radius of transit center. These amendments should include increasing building heights, allowing projects to build out to approved densities, and should consider opportunities for mixed land use. Increased density can minimize vehicle miles travelled.
TL 6-2	Use regulatory and voluntary tools to promote affordable and accessible housing development along existing and planned high capacity transit lines, frequent transit routes and in opportunity areas identified by Northbrook Development and Planning.
TL 6-3	Reconsider Village parking requirements and establish revisions which support the goals of this plan such as reducing overall parking requirements, establishing parking maximums, elimination or reduction of parking minimums, establishing minimum EV and bike parking requirements or incentives. Particular focus should be given to the Transit Oriented Development areas within a ¾ mile radius of train station and transit stops. Consider incorporating bicycle parking requirements to commercial districts.
TL 7-1	Develop an incentive program to convert fuel-burning lawn equipment such as gas-powered lawn mowers and blowers to electric. Incentive should focus on increasing community equity.

In progress | Early planning stage | Pending zoning review | Funding source needed

	Buildings and Energy
BE 1-1	Conduct a renewable energy Master Plan for achieving 50% renewable energy for all Village facilities and operations by 2030, and a pathway to achieve 100% by 2040. Master Plan should include exploration of on-site renewable options, community/shared renewable options, Renewable Energy Credit (REC) options, and opportunities for hosting community solar projects on Village buildings/properties.
BE 1-2	Sponsor a community-wide "Solarize" program for residential group Solar PV. Explore use of Village staff, consultant support, resources, or financing mechanisms to support the required reach of annual solarize programs to achieve long-range goals (goal, 140 homes installed annually).
BE 1-3	Promote/Implement on-site renewable energy including solar and wind across commercial/Industrial buildings. Identify and engage a partner that would lease roofs to create solar panel fields, as a tenant who could generate power on the roofs and sell the power directly to ComEd
BE 1-4	Review zoning ordinances and policies for potential obstructions to advancing distributed renewable energy like solar and wind.
BE 1-5	Provide solar assessment reports to 50 properties annually. Conduct informational workshop to assist building owners and businesses in understanding potential clean energy generation. Include economic performance and return on investment estimates, information on financing and ownership models, next step resources.
BE 2-2	Create tools to use in building and zoning processes to support renewable energy and energy efficiency awareness and review.
BE 2-1	Require a Solar PV Site Assessment as a part of all new building and major renovation building permit submissions. Assessment should include estimated installation cost, and projections for both energy generation potential and economic payback potential over a minimum 20 year timeframe.
BE 3-1	Help showcase renewable energy at local fairs and events (Earth Day, etc). Work with education partners like Go Green, Library and schools at events like Earth Day.
BE 4-1	Promote green power purchase options such as those provided by ComEd and Nicor. Collaborate with utilities on promotion and education of available options.
BE 5-1	Convert municipal streetlights to LEDs. Explore other opportunities for smart lights that can further save energy through conservation with features like motion sensors. Achieve 100% LED conversion by 2030.
BE 6-1	Work with partner organizations to establish a Large Business Energy Efficiency program to promote building retro commissioning, energy efficiency strategies including geothermal, and operation and maintenance practices that improve affordability, comfort, indoor air quality, energy efficiency, and smart metering in commercial and multifamily buildings. Target 10 large businesses commissioned annually.
BE 6-3	Identify and promote available energy efficiency and weatherization programs serving under-resourced households. Collaborate with partners including, Greenest Region Corps, ComEd, Nicor, and local community organizations serving under-resourced households to establish program promotion content and communication pathways.
BE 8-1	Support interior lighting upgrades to LED technology Villagewide. Promote and distribute education and information to residents and businesses on advantages of and options for LED technology. Explore options for focused buy-down programs for low-income residents, with graduated approaches for individuals and institutions able to better afford the up-front costs required to secure long-term savings. In addition to energy cost savings, maintenance costs are greatly reduced.
BE 9-1	Enlist organizers such as schools, park district, Go Green, Library, churches, to support education of energy efficiency and renewable energy strategies and resources in support of this CAP.
BE 9-2	Establish a Green Building Resource Center to provide general and technical assistance about green materials, energy efficient appliances and equipment, lighting, renewable energy generation, and to provide information on available rebates to residents and others.

	Waste Management

In progress | Early planning stage | Pending zoning review | Funding source needed

WM 1-1	Phase out single-use products by 2026 by implementing an opt-in fee for such products.
WM 1-2	Encourage businesses of all sizes to utilize technology and software when determining purchasing product needs to reduce overhead waste, specifically for food waste in restaurants and grocery or specialty food stores.
WM 2-1	Conduct a waste audit to determine waste diversion opportunities. Establish a Village Facility Zero Waste goal to eliminate landfill stream from office operations. Encourage other public agencies (schools, park district, library etc) and businesses.
WM 2-2	Establish a zero waste Village Event policy making zero waste office operations and events standard.
WM 2-3	Reduce construction and demolition waste by ensuring that strong recycling and reuse requirements are met for all building-related permits Village-wide. Require compliance with Cook County's construction and demolition requirements including waste management plans; provide support resources. Partner with Habitat, reuse warehouses and county facilities to promote reuse options.
WM 2-4	Require that all real estate developments that receive financial assistance or special zoning approval from the Village agree to exceed the Village's sustainability goal for waste diversion for 2030
WM 3-1	Conduct an organics waste collection pilot project with a sample of Village businesses to test the interest, methodology, and amount of commercial food waste that would need to be accommodated by a commercial organics collection program. Explore possible incentives for food retailers, restaurants, and institutions to participate in food waste reuse and recycling programs
WM 3-2	Manage Food Waste: Expand on existing programs and coordinate with other entities to reduce food waste. Unused food should be funneled to composting or donation as much as possible.
WM 4-1	Increase waste diversion opportunities by increasing recycling and organics collection bins in public places. Work with other public agencies, including the school district, to advance recycling.
WM 5-1	Support state legislation to prohibit Styrofoam ; incentivize restaurants to choose alternatives ; education campaigns on single use items and consumer choice
WM 5-2	Educate the community on waste management strategies. Introduce the term Zero Waste and lifecycle concepts. Include reducing consumption, followed by reusing, repurposing, recycling, and composting information. Include clear information on what can and cannot be recycled, and the dangers and impacts of single use plastics. Offer tips such as opting out of junk mail, etc.
WM 5-3	Support collaborative consumption community projects, such as neighborhood compost projects, tool libraries, and repair cafes through mini-grant programs

Water and Wastewater

WW 1-1	In progress · Early planning stage · Pending zoning review · Funding source needed

WW 1-2	Reduce landscaping water use by encouraging water-efficient irrigation systems, grass replacement, and planting native and drought-resistant trees and vegetation. Explore funding opportunities to help low and middle income residents benefit from drought and flood tolerant landscaping and other water efficient investments
WW 1-3	Evaluate the potential for installation of rainwater collection systems at Village facilities for graywater uses, and investigate opportunities for graywater reuse at existing and new Village facilities and properties
WW 2-1	Prioritize managing stormwater before it enters the sewer system through a combination of overland flow, detention, and infiltration strategies (for example, permeable surfaces). Increase the ability of green space to withstand drought conditions through replacement of turf with native prairie, wildflower, and native savanna plantings.
WW 2-2	Prepare a Blue Spot flash flood risk map to identify areas within Village that are particularly vulnerable to flash flood impacts. Create and implement a mitigation and response plan. Share and promote the information developed by the flash flood risk map, particularly among vulnerable populations and neighborhoods.
WW 3-1	Conduct a stormwater management study exploring full range of methods of stormwater management including permeable pavements, bioswales, rain gardens, biochar amendments in soils with high clay content, and flood-tolerant plantings. Establish a recommended percentage goal of stormwater from Village-controlled impervious surfaces with sustainable stormwater strategies by 2030. Findings of study to be integrated into updated Village Master Stormwater Management Plan with recommended implementation projects.
WW 4-1	Coordinate with local watershed groups, Conservation District, State and federal agencies for restoration, education and outreach

	Local Food and Agriculture
LF 1-1	Identify, map and prioritize food insecure areas and populations.
LF 1-2	Promote and expand public education campaigns to encourage purchasing and procuring locally grown and produced food at the individual and institutional level
LF 1-3	Promote local food production, sales, and consumption and review Village codes to remove barriers for urban farming including innovative solutions such as aquaponics, hydroponics, indoor agriculture, vertical farms
LF 2-1	Establish "Grow Northbrook" central community food plot/garden, a visionary project supported by the Village that trains the community in local food growth. Village designs program with local business, Organic Gardener, students, community volunteers. Include a training class with Library and Park district. Supply greens to businesses, food pantry.
LF 3-1	Work regionally to support and facilitate food donation programs. Food donation programs reduce the amount of healthy, safe food that goes to waste and redirects it to those in need.
LF 3-2	Support edible food donation through coordination with the food bank and donations from Village and community partner events
LF 4-1	Increase availability of composting options for residents and businesses such as expanded curbside organics collection, back-yard composting, workplace composting, and organics-to-compost partnerships with community gardens. Include a focus on options which support local gardening and food production.
LF 4-2	Offer low price compost bins similar to rain barrels the Village currently offers; potentially work with businesses as well and Village could then sell or give compost to residents.

In progress Early planning stage Pending zoning review Funding source needed

	Health and Safety
HS 1-1	Provide guidance through resource material to social service providers so they are aware of best practices in treating client needs during an extreme heat event.
HS 1-2	Emphasize steps individuals can take to improve emergency preparedness. Increase awareness of Village and other alert systems
HS 1-3	Provide education around vegetation management of trees and how proper management can reduce storm-related power outages
HS 1-4	Coordinate with the County Health Department to provide up-to-date information to residents about the health effects of heat and Cooling Center locations throughout the County.
HS 1-5	Create and make available an Emergency Response Toolkit offering tips and suggestions for residents to increase their emergency preparedness
HS 2-1	Encourage businesses and residents to move toward improved power resilience by making their building sites solar resilient.
HS 2-2	Prepare for public buildings to be used in different ways, both in lower-impact ways, such as seniors using the library to cool down during hot June days, and as safe-havens during acute emergencies.
HS 3-1	Update or develop a community resilience plan to prioritize and prepare for responses in the event of a disaster and extreme weather events. Identify the location of critical facilities including hospitals, medical service providers, senior homes, childcare facilities, shelters, major and alternate transportation routes, public transit facilities and locations where hazardous chemicals are used or stored
HS 3-2	Continue to involve key community partners, such as hospitals, in emergency preparedness planning and management. Include the impacts of climate change as emerging threats in future response planning
HS 3-3	Update the Village emergency plans with specific climate change-related emergency materials. These could include press release templates, information on cooling/heating centers, specific plans for populations requiring mobility assistance, and steps to identify and help populations affected by extended power outages, flooding, etc.
HS 3-4	Develop a debris management plan to support response to severe storm events and flooding
HS 4-1	Promote equity in hazard mitigation, and emergency response and recovery activities, and consider populations most vulnerable to weather-related emergencies in all plans and exercises, including evacuation routes, transportation for vulnerable population groups, shelter in place locations, back-up power operations, extended access to fuel/power sources and drinking water, etc.
HS 4-2	Increase community participation in health and wellness, exercise and nutrition programs
HS 4-3	Strengthen emergency management capacity to prepare for and respond to the impacts of climate change. The Village should prioritize capacity improvements such as training and equipment to address risks exacerbated by climate change. Emergency management should be equipped to address the possibility of multiple emergencies at the same time, such as the combination of western wildfire smoke air pollution coupled with extreme heat, or extreme heat combined with extreme weather and electrical outages.
HS 4-4	Establish a "community watch" similar to the neighborhood watch program to strengthen community response capacity and support networks addressing climate health and safety. Explore the potential of establishing this as an expansion to CERT
HS 5-1	Educate public and public health professionals about health risks posed by climate change, including longer allergy seasons, potential changes in air quality and impacts on mental health. Include information on ways individuals can mitigate the health risks.
HS 5-2	Expand outreach to better educate the public about the hazards of air pollution, including indoor air quality, and the steps individuals can take and available resources to reduce their exposure. In planning and conducting outreach efforts, the Village will explore collaboration with regional and national industry trade associations, nonprofit groups, and environmental organizations.

In progress | Early planning stage | Pending zoning review | Funding source needed

	Greenspace and Ecosystem Health
GS 1-1	Develop an "All Things Green" implementation plan to establish annual tree and native planting coverage goals. Include identification of priority planting areas and species diversity goals.
GS 1-2	Assist Village residents to plant trees on their property by offering trees at cost through a Village sponsored sale. Encourage community groups to make tree seedlings available at appropriate venues such as Earth Day or the Farmer's Market. goal of 500+ per year.
GS 1-3	Accelerate tree replacement programming in neighborhoods that will be most impacted by urban heat island effect and Emerald Ash Borer.
GS 2-1	Implement invasive species control programs including Integrated Pest Management, Protect the Best, Early Detection and Rapid Response and public and private invasive species identification and control. Identify specific areas for invasive species control based on data and observation and schedule removal and monitoring schedule to maintain invasive species removal as appropriate.
GS 2-4	Restore Village-owned properties to native plants and ecosystem types under the advice of native plant experts.
GS 2-5	Establish a lighting control ordinance to protect native plants, species, biodiversity, and improve night sky quality.
GS 2-6	Establish and promote a voluntary "Lights Out Northbrook" program durring months of high migratory bird activity. Program to encourage residents and businesses to voluntarily reduce or turn off lighting durring specific hours durring key migratory timeframes.
GS 2-7	Support amendment of IL Pesticide Act to allow local regulation of pesticide usage. When possible, establish a policy to eliminate spray pyrethroid and neonicotinoids in Village practices. Encourage churches, schools, YMCA, Park District, and other public and private agencies to establish similar policies.
GS 3-1	Commit to sustained participation in the Mayors Monarch Pledge to support pollinators, native plant landscaping, and discourage pesticides.
GS 3-2	Promote “Carbon Gardening” and "landscaping for absorption" practices among residents for lawns, ornamental gardens, and produce gardens. Strategies include native moisture tolerant perennial plantings and shrubs, elimination of synthetic fertilizer and pesticide use, high mow deck settings, use of biochar amendments, and polyculture lawn mixture
GS 3-3	Establish a policy committing to Integrated Pest Management practices and non-petrochemical fertilizer use on Village owned property. Promote reduced use community-wide through community education. Explore establishing "demonstration yards" on Village owned property to exhibit strategies for increasing pollinator friendly, native plantings, permaculture, and other strategies
GS 3-4	Develop or promote existing guidelines and recommendations for types of vegetation for particular areas, such as parks, other open areas, and household backyards
GS 3-5	Cooperate with county, township, and urban governmental agencies, schools, clubs, libraries, neighborhoods, faith communities, and NGOs to provide and publicize workshops on gardening, landscaping, composting, and their importance in mitigating and adapting to the stresses of climate change on quality of life
GS 4-1	Develop educational and informational resources explaining the drivers and impacts of heat island and solutions which may offer multiple benefits for property owners and users to share with residents and businesses.
GS 4-2	Identify a Village owned building to implement as a cool roof pilot project, or partner with another public agency within the Village such as the school district, park district, library, etc.

	Climate Economy
CE 1-1	Continue the Green Leadership Awards program to promote Northbrook as an environmentally friendly destination by highlighting the businesses and residents that are taking steps to reduce resource consumption.
CE 1-2	Identify and promote locations for green businesses
CE 1-3	Encourage "green" businesses that are non-polluting, offer or support environmentally sustainable goods or services, and/or actively promote telecommuting, alternative work schedules, and alternative transportation modes.
CE 2-1	Review the Affordable Housing Ordinance adopted by the Board of Trustees on 12 8, 2020 and identify current and future need for affordable housing including scenarios anticipating climate immigration and migration potentials. Plan should also integrate strategies, actions, and priorities which support the goals of this CAP plan such as prioritization of transit oriented affordable development sites, advancement of increased energy efficiency, renewable energy, and electrification strategies, and integration of climate adaptation, ground cover, and tree canopy considerations.
CE 3-1	Work with the Northbrook Chamber of Commerce and community businesses to explore the creation of an incentivized "buy local" campaign to enhance resilience of small local businesses.
CE 3-2	Make sure key business infrastructure is recognized in the Village and County's general hazard mitigation plan and emergency response plan
CE 4-1	Add a Carbon Impact Fee to all new development as a percentage of the building permit fee. Additional funds raised to be used for Climate Mitigation and Adaptation implementation. Projects may apply for a refund if they install on-site renewable energy system and provide documentation that demonstrates the system will offset a minimum of 40% of the site's energy consumption, with sliding scale refunds provided for projects offsetting over 40%.

GHG Inventory Calculation Summary

Appendix B

2023

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Village of Northbrook

GHG Inventory Update 11/17/2023

Village Wide Emissions Inventory Data Calculations

Emissions Sectors	2010			2021			Change from Prior Study Year	2022			Change from Prior Study Year	MMBtu Change Since 2010	GHG Change Since 2010
	Consumption	MMBtu	GHG	Consumption	MMBtu	GHG		Consumption	MMBtu	GHG			
Electricity (Scope 2, MWh):													
Notes: **Gross Consumption**							Consumption				Consumption		
3 Residential	157,992	539,068	108,224	159,518	544,276	50,184	2.2%	146,416	499,572	48,682	-8.2%	-7.3%	-55.0%
3 Small and Large Commercial	361,665	1,234,001	247,740	242,091	826,015	76,162	-9.8%	232,584	793,576	77,333	-3.9%	-35.7%	-68.8%
3 Iindustrial	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	N/A
3 Streetlights	1,821	6,212	1,247	1,880	6,416	592	3.3%	1,848	6,305	614	-1.7%	1.5%	-50.7%
Subtractions	521,477			403,490			-5.4%				Subtractions		
Residential - Wind Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
16 Residential - Solar On-Site	-	-	-	(1,247)	(4,256)	-	N/A	(1,911)	(6,520)	-	53.2%	N/A	
Commercial - Wind Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
16 Commercial - Solar On-Site	-	-	-	(1,894)	(6,461)	-	N/A	(1,959)	(6,684)	-	3.5%	N/A	
Industrial - Wind Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Industrial - Solar Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Waste, Water, Wastewater Process	(2,145)	(7,320)	-	(2,491)	(8,500)	-	17.1%	(2,307)	(7,872)	-	-7.4%	7.5%	
Streetlights - Wind Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Streetlights - Solar Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Net Consumption With Emissions							GHG Emissions				GHG Emissions		
Residential	157,992	539,068	108,224	158,271	540,020	49,792	-43.4%	144,505	493,053	48,047	-3.5%		-55.6%
Commercial	359,520	1,226,681	246,271	240,198	819,554	75,566	-50.1%	230,625	786,892	76,681	1.5%		-68.9%
Industrial	-	-	-	(2,491)	(8,500)	(784)	-34.7%	(2,307)	(7,872)	(767)	-2.1%		N/A
Streetlights	1,821	6,212	1,247	1,880	6,416	592	-42.4%	1,848	6,305	614	3.8%		-50.7%
Subtotals	**519,347**	**1,772,011**	**355,742**	**403,490**	**1,376,707**	**125,166**	**-47.7%**	**380,848**	**1,299,453**	**124,576**	**-0.5%**		**-65.0%**
15 Blended emission factor (tonnes per MWh)	0.685			0.315			-44.2%	0.332			5.7%		-51.5%
Electricity as a % of total citywide amounts		24.6%	53.8%		25.4%	32.5%			22.2%	30.1%			
Natural gas (Scope 1, therms):													
Notes: **Gross Consumption**							Consumption				Consumption		
3 Residential	21,060,007	2,105,497	111,591	17,623,190	1,761,898	93,381	-11.3%	20,203,302	2,019,847	107,052	14.6%	-4.1%	-4.1%
3 Small and Large Commercial	20,123,805	2,011,900	106,631	12,582,380	1,257,937	66,671	-11.5%	15,252,210	1,524,856	80,817	21.2%	-24.2%	-24.2%
3 Iindustrial	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	N/A
Subtractions							Subtractions				Subtractions		
Residential - Renewable Natural Gas Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Commercial - Renewable Natural Gas Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Industrial - Renewable Natural Gas Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Waste, Water, Wastewater Process	(37,561)	(3,755)	-	(36,588)	(3,658)	-	-1.7%	(38,636)	(3,863)	-	5.6%	2.9%	
Net Consumption With Emissions							GHG Emissions				GHG Emissions		
Residential	21,060,007	2,105,497	111,591	17,623,190	1,761,898	93,381	-11.3%	20,203,302	2,019,847	107,052	14.6%		-4.1%
Commercial	20,086,244	2,011,900	106,631	12,545,792	1,257,937	66,671	-11.5%	15,213,574	1,524,856	80,817	21.2%		-24.2%
Industrial	-	(3,755)	(199)	(36,588)	(3,658)	(194)	-1.7%	(38,636)	(3,863)	(205)	5.6%		2.9%
Subtotals	**41,146,251**	**4,113,642**	**218,023**	**30,205,570**	**3,016,177**	**159,857**	**-11.4%**	**35,455,511**	**3,540,841**	**187,665**	**17.4%**		**-13.9%**
Emission factor (tonnes per MMBtu)	0.053			0.053			0.0%	0.053			0.0%		
Natural gas as a % of total citywide amounts		57.0%	32.9%		55.7%	41.5%			60.6%	45.3%			
Transportation (Scope 1):													
Notes: **Grand Transportation**							Consumption				Consumption		
4 Vehicle miles traveled (thousands of miles)	128,762		67,682	155,030		78,767	5.6%	155,568		79,976	0.3%	-100.0%	18.2%
14 Estimated number of vehicles in community				24,278				25,928			6.8%		
11 Registered electric vehicles in community (BEV)				602 2.5%				884 3.4%			46.8%	N/A	
11 Estimated Zero Emission Share of VMT				3,844				5,304			38.0%		
Net VMT with emissions				151,186				150,264			-0.6%		
12 Average MPG				18.24			0.3%	18.03			-1.1%		
Estimated Fuel Consumed	7,322,200	903,497		8,288,439	1,011,918		3.8%	8,332,739	986,942		0.5%	13.8%	
Subtotals		**903,497**	**67,682**		**1,011,918**	**78,767**	2.7%		**986,942**	**79,976**	1.5%	N/A	18.2%
12 Emission factor (tonnes per thousand VMT)	0.526			0.508			-2.8%	0.514			1.2%		
Transportation as a % of total citywide amounts		12.5%	10.2%		18.7%	20.5%			16.9%	19.3%			
Solid Waste (Scope 1):													
Notes: **Gross Consumption**							Consumption				Consumption		
Electricity (MWh)	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	N/A
Natural gas (therms)	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	N/A
Solid Waste Handled	13,881			14,728			0.7%	15,171			3.0%	9.3%	N/A
5 Recycled (tons)	3,996		-	3,833		-	-10.4%	3,836		-	0.1%	-4.0%	N/A
10 Organics / Yard Waste / Trees	794		126	846		135	32.6%	868		138	2.6%	9.4%	9.4%
5 MSW managed as RDF (tons)	-		-	-		-	N/A	-		-	N/A	N/A	N/A
13 Hazardous Waste	-		-	64		-	N/A	79		-	23.3%	N/A	N/A
5 Landfill (tons)	9,091		17,620	9,984		19,350	2.8%	10,387		20,130	4.0%	14.2%	14.2%
Solid Waste Diversion Rate	34.5%			32.2%			-4.2%	31.5%			-2.1%	-8.6%	
Solid Waste Per Capita (LBS)	#REF!			836			N/A	887.6350126			6.1%	N/A	
Solid Waste Handled per Household (LBS)	#REF!			2,310			N/A	2265.109369			-2.0%	N/A	
Subtotals		-	**17,746**		-	**19,485**	3.0%		-	**20,269**	4.0%	N/A	14.2%
Emission factor - RDF (tonnes per ton)	1.27			1.27				1.27					
6 Emission factor - Landfill (tonnes per ton)	1.94			1.94				1.94					
Solid waste as a % of total citywide amounts		0.0%	0.0%		0	5.1%			0	4.9%			
Water (Scope 1):													
Notes: **Gross Consumption**							Consumption				Consumption		
7 Water Flows (gallons in millions)	1,549			1,539			12.9%	1,626			5.6%	5.0%	N/A
8 Electricity (MWh)	1,948	6,648	1,335	2,310	7,881	727	19.7%	2,119	7,232	705	-8.2%	8.8%	-47.2%
Natural gas (therms)	37,561	3,755	199	36,588	3,658	194	-1.7%	38,636	3,863	205	5.6%	2.9%	2.9%
Gasoline (gal.)	1,855	207	16	5,146	575	46	669.2%	5,434	608	48	5.6%	192.9%	192.9%
Diesel (gal.)	-	0	0	4,974	644	51	N/A	5,252	680	53	5.6%	N/A	N/A
Emissions from combustion of digester gas (tonnes)			0			0	N/A			0	N/A		N/A
Subtotals		**217,859**	**1,550**		**12,759**	**1,017**	-21.3%		**12,382**	**1,011**	-0.6%		-34.8%
Emission factor -Water (tonnes per million	1.00			0.66				0.62					
Wastewater as a % of total citywide amounts		3.0%	0.2%		0.2%	0.3%			0.2%	0.2%			

Wastewater (Scope 1):													
Notes:	**Gross Consumption**						Consumption				Consumption		
9	Wastewater Flows (gallons in millions)	1,470			1,203		0.0%	1,270			5.6%	-13.6%	N/A
	Biologic Emissions			853		698				737			
8	Electricity (MWh)	197	672	135	181	619	57	-7.9%	188	640	62	3.4%	-4.7%	-53.8%
	Natural gas (therms)	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	N/A
	Gasoline (gal.)	1,855	207	16	2,174	243	19	224.9%	2,295	257	20	5.6%	23.7%	23.7%
	Diesel (gal.)	-	0	0	6,141	795	62	N/A	6,485	840	66	5.6%	N/A	N/A
	Emissions from combustion of digester gas (tonnes)			0			0	N/A			0	N/A		N/A
	Subtotals		**208,128**	**1,005**		**1,657**	**837**	-11.2%		**1,737**	**886**	5.8%		-11.8%
	Emission factor -Wastewater (tonnes per n	0.68			0.70				0.70					
	Wastewater as a % of total citywide amounts		2.9%	0.2%		0.0%	0.2%			0.0%	0.2%			
Villagewide Totals (Scope 1 & 2):			**7,215,136**	**661,748**		**5,419,218**	**385,129**	**-25.6%**		**5,841,354**	**414,382**	**7.6%**	**-19.0%**	**-37.4%**
			Per-Capita:	19.91		**Per-Capita:**	10.93			**Per-Capita:**	12.12			-39.1%

Notes:

1 Electricity in MWh, natural gas in therms. Carbon dioxide equivalents (GHG) are expressed in metric tonnes, which equal 1,000 kilograms, 2,204.6 pounds, or 1.102 US tons.

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12 Average MPG and emission factors are based on US DOT Federal Highway Administration data for most recent year (typically one year prior to subject year due to data availability)

13 Hazardous Waste not reported for years 2010, 2014, and 2018

14 Data from US Census 5 year estimates.

15 Blended electric grid emission factor from US Energy Information Administration (https://www.eia.gov/electricity/data/emissions/) Emission factors for 2019 and 2021 used earlier years due to data unavailability at time of inventory.

16 On-site solar electricity generated is based on total KW installed solar by class per Village provided solar array permitting data multiplied by a blended estimated specific energy factor of 1,236 KWH/KW allowing for estimated system losses, panel aging, and performance variances based on

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Village of Northbrook

GHG Inventory Update 11/17/2023

Village Wide Emissions Inventory Data Calculations

Emissions Sectors	2010			2021			Change from Prior Study Year	2022			Change from Prior Study Year	MMBtu Change Since 2010	GHG Change Since 2010
	Consumption	MMBtu	GHG	Consumption	MMBtu	GHG		Consumption	MMBtu	GHG			
Electricity (Scope 2, MWh):													
Notes: **Gross Consumption**							Consumption				Consumption		
3 Residential	157,992	539,068	108,224	159,518	544,276	50,184	2.2%	146,416	499,572	48,682	-8.2%	-7.3%	-55.0%
3 Small and Large Commercial	361,665	1,234,001	247,740	242,091	826,015	76,162	-9.8%	232,584	793,576	77,333	-3.9%	-35.7%	-68.8%
3 Iindustrial	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	N/A
3 Streetlights	1,821	6,212	1,247	1,880	6,416	592	3.3%	1,848	6,305	614	-1.7%	1.5%	-50.7%
Subtractions	521,477			403,490			-5.4%				Subtractions		
Residential - Wind Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
16 Residential - Solar On-Site	-	-	-	(1,247)	(4,256)	-	N/A	(1,911)	(6,520)	-	53.2%	N/A	
Commercial - Wind Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
16 Commercial - Solar On-Site	-	-	-	(1,894)	(6,461)	-	N/A	(1,959)	(6,684)	-	3.5%	N/A	
Industrial - Wind Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Industrial - Solar Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Waste, Water, Wastewater Process	(2,145)	(7,320)	-	(2,491)	(8,500)	-	17.1%	(2,307)	(7,872)	-	-7.4%	7.5%	
Streetlights - Wind Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Streetlights - Solar Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Net Consumption With Emissions							GHG Emissions				GHG Emissions		
Residential	157,992	539,068	108,224	158,271	540,020	49,792	-43.4%	144,505	493,053	48,047	-3.5%		-55.6%
Commercial	359,520	1,226,681	246,271	240,198	819,554	75,566	-50.1%	230,625	786,892	76,681	1.5%		-68.9%
Industrial	-	-	-	(2,491)	(8,500)	(784)	-34.7%	(2,307)	(7,872)	(767)	-2.1%		N/A
Streetlights	1,821	6,212	1,247	1,880	6,416	592	-42.4%	1,848	6,305	614	3.8%		-50.7%
Subtotals	**519,347**	**1,772,011**	**355,742**	**403,490**	**1,376,707**	**125,166**	**-47.7%**	**380,848**	**1,299,453**	**124,576**	**-0.5%**		**-65.0%**
15 Blended emission factor (tonnes per MWh)	0.685			0.315			-44.2%	0.332			5.7%		-51.5%
Electricity as a % of total citywide amounts		24.6%	53.8%		25.4%	32.5%			22.2%	30.1%			
Natural gas (Scope 1, therms):													
Notes: **Gross Consumption**							Consumption				Consumption		
3 Residential	21,060,007	2,105,497	111,591	17,623,190	1,761,898	93,381	-11.3%	20,203,302	2,019,847	107,052	14.6%	-4.1%	-4.1%
3 Small and Large Commercial	20,123,805	2,011,900	106,631	12,582,380	1,257,937	66,671	-11.5%	15,252,210	1,524,856	80,817	21.2%	-24.2%	-24.2%
3 Iindustrial	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	N/A
Subtractions							Subtractions				Subtractions		
Residential - Renewable Natural Gas Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Commercial - Renewable Natural Gas Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Industrial - Renewable Natural Gas Sourced	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	
Waste, Water, Wastewater Process	(37,561)	(3,755)	-	(36,588)	(3,658)	-	-1.7%	(38,636)	(3,863)	-	5.6%	2.9%	
Net Consumption With Emissions							GHG Emissions				GHG Emissions		
Residential	21,060,007	2,105,497	111,591	17,623,190	1,761,898	93,381	-11.3%	20,203,302	2,019,847	107,052	14.6%		-4.1%
Commercial	20,086,244	2,011,900	106,631	12,545,792	1,257,937	66,671	-11.5%	15,213,574	1,524,856	80,817	21.2%		-24.2%
Industrial	-	(3,755)	(199)	(36,588)	(3,658)	(194)	-1.7%	(38,636)	(3,863)	(205)	5.6%		2.9%
Subtotals	**41,146,251**	**4,113,642**	**218,023**	**30,205,570**	**3,016,177**	**159,857**	**-11.4%**	**35,455,511**	**3,540,841**	**187,665**	**17.4%**		**-13.9%**
Emission factor (tonnes per MMBtu)	0.053			0.053			0.0%	0.053			0.0%		
Natural gas as a % of total citywide amounts		57.0%	32.9%		55.7%	41.5%			60.6%	45.3%			
Transportation (Scope 1):													
Notes: **Grand Transportation**							Consumption				Consumption		
4 Vehicle miles traveled (thousands of miles)	128,762		67,682	155,030		78,767	5.6%	155,568		79,976	0.3%	-100.0%	18.2%
14 Estimated number of vehicles in community				24,278				25,928			6.8%		
11 Registered electric vehicles in community (BEV)				602 2.5%				884 3.4%			46.8%	N/A	
11 Estimated Zero Emission Share of VMT				3,844				5,304			38.0%		
Net VMT with emissions				151,186				150,264			-0.6%		
12 Average MPG				18.24			0.3%	18.03			-1.1%		
Estimated Fuel Consumed	7,322,200	903,497		8,288,439	1,011,918		3.8%	8,332,739	986,942		0.5%	13.8%	
Subtotals		**903,497**	**67,682**		**1,011,918**	**78,767**	2.7%		**986,942**	**79,976**	1.5%	N/A	18.2%
12 Emission factor (tonnes per thousand VMT)	0.526			0.508			-2.8%	0.514			1.2%		
Transportation as a % of total citywide amounts		12.5%	10.2%		18.7%	20.5%			16.9%	19.3%			
Solid Waste (Scope 1):													
Notes: **Gross Consumption**							Consumption				Consumption		
Electricity (MWh)	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	N/A
Natural gas (therms)	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	N/A
Solid Waste Handled	13,881			14,728			0.7%	15,171			3.0%	9.3%	N/A
5 Recycled (tons)	3,996		-	3,833		-	-10.4%	3,836		-	0.1%	-4.0%	N/A
10 Organics / Yard Waste / Trees	794		126	846		135	32.6%	868		138	2.6%	9.4%	9.4%
5 MSW managed as RDF (tons)	-		-	-		-	N/A	-		-	N/A	N/A	N/A
13 Hazardous Waste	-		-	64		-	N/A	79		-	23.3%	N/A	N/A
5 Landfill (tons)	9,091		17,620	9,984		19,350	2.8%	10,387		20,130	4.0%	14.2%	14.2%
Solid Waste Diversion Rate	34.5%			32.2%			-4.2%	31.5%			-2.1%	-8.6%	
Solid Waste Per Capita (LBS)	#REF!			836			N/A	887.6350126			6.1%	N/A	
Solid Waste Handled per Household (LBS)	#REF!			2,310			N/A	2265.109369			-2.0%	N/A	
Subtotals		-	**17,746**		-	**19,485**	3.0%		-	**20,269**	4.0%	N/A	14.2%
Emission factor - RDF (tonnes per ton)	1.27			1.27				1.27					
6 Emission factor - Landfill (tonnes per ton)	1.94			1.94				1.94					
Solid waste as a % of total citywide amounts		0.0%	0.0%		0	5.1%			0	4.9%			
Water (Scope 1):													
Notes: **Gross Consumption**							Consumption				Consumption		
7 Water Flows (gallons in millions)	1,549			1,539			12.9%	1,626			5.6%	5.0%	N/A
8 Electricity (MWh)	1,948	6,648	1,335	2,310	7,881	727	19.7%	2,119	7,232	705	-8.2%	8.8%	-47.2%
Natural gas (therms)	37,561	3,755	199	36,588	3,658	194	-1.7%	38,636	3,863	205	5.6%	2.9%	2.9%
Gasoline (gal.)	1,855	207	16	5,146	575	46	669.2%	5,434	608	48	5.6%	192.9%	192.9%
Diesel (gal.)	-	0	0	4,974	644	51	N/A	5,252	680	53	5.6%	N/A	N/A
Emissions from combustion of digester gas (tonnes)			0			0	N/A			0	N/A		N/A
Subtotals		**217,859**	**1,550**		**12,759**	**1,017**	-21.3%		**12,382**	**1,011**	-0.6%		-34.8%
Emission factor -Water (tonnes per million	1.00			0.66				0.62					
Wastewater as a % of total citywide amounts		3.0%	0.2%		0.2%	0.3%			0.2%	0.2%			

Wastewater (Scope 1):													
Notes:	**Gross Consumption**						Consumption				Consumption		
9	Wastewater Flows (gallons in millions)	1,470			1,203		0.0%	1,270			5.6%	-13.6%	N/A
	Biologic Emissions			853		698				737			
8	Electricity (MWh)	197	672	135	181	619	57	-7.9%	188	640	62	3.4%	-4.7%	-53.8%
	Natural gas (therms)	-	-	-	-	-	-	N/A	-	-	-	N/A	N/A	N/A
	Gasoline (gal.)	1,855	207	16	2,174	243	19	224.9%	2,295	257	20	5.6%	23.7%	23.7%
	Diesel (gal.)	-	0	0	6,141	795	62	N/A	6,485	840	66	5.6%	N/A	N/A
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Prepared by:

making change personal
paleBLUEdot LLC

2515 White Bear Ave, A8
Suite 177
Maplewood, MN 55109

Contact:
Ted Redmond
tredmond@paleBLUEdot.llc