

**AGENDA**  
**GREENHOUSE GAS WORKING GROUP**  
**September 28, 2023**  
**3:00 P.M.**  
**Village Hall, 850 Waukegan Road**  
**Deerfield, IL 60015**  
**Community Conference Room 206**

1. Call to Order
  
2. Roll Call
  
3. Discussion and Review of Past GHG Reduction Activities
  
4. Discussion and Review of 2021 GHG Baseline
  
5. Discussion of Next Steps and Short-Term/Long-Term Goals
  
6. Other Items for Discussion
  
7. Adjournment

**Memorandum**



DATE: March 1, 2023  
TO: Mayor and Board of Trustees  
CC: Kent Street, Village Manager  
FROM: Andrew Lichterman, Assistant Village Manager / Dir. of Com. Dev.  
SUBJECT: **Climate Action Report Update – March 2023**

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**Background**

On June 6, 2022, the Village Board approved a Climate Action Report (“Report”) from the Greenhouse Gas Reduction Working Group (“Working Group”) for the Village to reduce emissions by 45% by 2030 and become carbon neutral by 2050. The Report serves as the guiding document to staff and the Village Board and informs implementation efforts. The Report establishes a 2017 greenhouse gas emissions (“GHG”) baseline and sets high-level objectives to obtain the Village Board’s established greenhouse gas mitigation goals. At its June 6, 2022 meeting the Village Board adopted three specific objectives recommended by the Working Group:

1. Convert 100% of electricity to renewable sources by 2030
2. Reduce transportation emissions by 55% by 2030
3. Reduce waste emissions by 66% by 2030.

The complete Climate Action Report can be read [here](#).

**Purpose**

The Village Board and staff have been undertaking efforts to advance the objectives identified in the Report. This memo serves as a summary of some of the key initiatives underway.

**GHG Baseline**

The Working Group identified a 2017 GHG baseline of 428,798 MTCO<sub>2</sub>. The Report recommends that the GHG baseline be recalculated every four years. Staff has an internal working group actively collecting the prerequisite data for 2021 from various sources such as ComEd, North Shore Gas, Lakeshore Recycling Systems, Solid Waste Agency of Lake County, CMAP and others so that the GHG emissions model can be recalculated and the 2021 data can be compared to the 2017 baseline year. This involves large amounts of data collection and staff anticipates that the 2021 GHG emissions model will be completed and available for public presentation this summer. The GHG emissions model would also be recalculated in 2025 and again in 2029. This will help inform the Village if it is on pace to reach their 2030 objectives.

**(1) Electricity/Energy**

Several notable initiatives have been implemented to reduce carbon emissions from electricity/energy consumption:

- a. **Renewable Energy Credits**. Through the electric aggregation program, the Village was able to receive a \$60,000 contribution and use those grant funds to advance sustainability initiatives that benefit the entire community. Specifically, the grant funds were used to retire 23,530,000 kWh’s of Renewable Energy Credits (“RECs”), which is equivalent to offsetting the annual electricity consumption for 29% of the residential households and eligible small business customers. Moreover, this equates to offsetting the annual electricity consumption for 9% of the entire community, when including residential, commercial and industrial sectors. Due to the successful outcome of this program, the

Village will be recognized by the United States Environmental Protection Agency as a Green Power Community.

i. According the US EPA, by retiring 23,530,000 kWh's of RECs, the Village of Deerfield reduced the following carbon dioxide equivalents:

- 41,391,519 miles driven by an average gasoline powered passenger vehicle; or
- 18,449,704 pounds of coal burned; or
- 38,607 barrels of oil consumed; or
- 1,876,370 gallons of gasoline consumed; or
- 680,931 propane cylinders used for home barbecues; or
- 632,011 incandescent lamps switched to LEDs

b. **Solar.** The Village is pursuing several programs related to the promotion, installation and support for solar energy as an alternative to carbon sources for generating electricity.

i. **Community Solar** First, the Village is engaged in a Community Solar program this is offered as an opt-in program to all residential households. A community solar project is a single site solar installation shared by multiple subscribers. Community solar allows “subscribers” to receive net metering credits on their electricity bill and support the development of new renewable energy resources without needing to install equipment on their property. This program is offering subscribers a 20% savings on the energy supply portion of their utility bill. 114 households or 782.4 kW of subscriptions are enrolled in the program in Deerfield, which is the most of any of the seven communities in the North Shore Electricity Aggregation Consortium participating in the program. More information about the Community Solar Program can be found [here](#).

ii. **Solar Home Tours** For the first time, the Village participated in the Illinois Solar Tour in September 2022. Illinois Solar Tour is part of a nationwide event held in conjunction with the American Solar Energy Society. The purpose of the Tour was to offer the public the opportunity to visit – for free and without any sales pressure – innovative green homes and buildings to see how solar energy can be used efficiently. The Village encouraged residents to participate in the tours and even had some residents participate as ‘hosts’ by physically opening their doors to visitors or by pre-recording a video tour.

iii. **SolSmart Designation** Staff is actively applying to obtain a SolSmart designation to further signify the Village’s commitment to supporting the growth of solar energy at the local level. The SolSmart program provides no-cost technical assistance to help local governments follow national best practices to expand solar energy use in their jurisdiction. SolSmart also recognizes and celebrates communities with SolSmart designations of Gold, Silver and Bronze. Staff is working to complete the prerequisite application information to meet the programs criteria. Once a SolSmart designation is obtained, it provides official recognition that the local government has made a commitment to solar energy and removed obstacles for growth.

iv. **Ground-mounted/Rooftop Solar Installations and More** Staff has partnered with Veregy, a construction engineering company, to analyze and assess applications for solar installation on

Village facilities. Staff is making site visits with the consultant to determine the return on investment and net metering potential for various Village-owned sites. In addition, staff is working to analyze a new 'community-driven, community-solar' program that allows the Village to lease a privately-owned rooftop, install solar panels, and return the economic benefit of net metering credits directly to our residents. This is a brand-new program that was just enabled through recent legislation and is still in the early stages of implementation and development. Lastly, staff is following the direction of the Village Board and drafting program criteria for a potential solar rebate to incentivize businesses and residents to install solar panels on their rooftops.

- a. **LED Light Conversions.** Staff is seeking proposals to convert fluorescent lights in common areas and offices at Village Hall to LED lightbulbs. By converting every light fixture to LED in Village Hall, the Village will reduce current energy usage by 25,560 kWh/yr. This will result in the annual reduction of 12 metric tons of CO<sub>2</sub>. Once the lighting conversation is completed at Village Hall, staff will begin upgrading lighting fixtures at other Village properties.
- b. **ComEd Home Energy Assessments.** The Village's Sustainability Commission is actively promoting virtual and in-person home energy assessments by ComEd. This is a free energy savings program that has been tested by members of the Sustainability Commission and results in an average savings of \$377 annually. This program provides free showerhead replacements, LED lightbulbs, pipe insulation and more. Assessments are conducted by certified professionals and installers authorized by ComEd. As of the last full program year (pre-Covid), there was a 19% increase (or 214) appointments year over year yielding a \$90,933 savings on electric bills each year. The Sustainability Commission has just recently began promoting the program again to encourage greater participation in 2023.

## **(2) Transportation**

The Climate Action Report directs staff to reduce dependence on gasoline powered vehicles by supporting conversion of municipal fleet, residential vehicles and lawncare equipment to electric power.

- a. **EV Charging Stations and EV Fleet.** The Village recently installed five electric vehicle charging stations at Public Works, 465 Elm Street. Staff is actively pursuing installation of at least four more charging stations at Village Hall. These stations will help support the growth of the Village's electric vehicle fleet. Additional applications for publicly facing EV charging stations are being analyzed. The Village has recently acquired and operationalized four fully-electric or plug-in electric hybrid vehicles that have replaced gasoline powered vehicles. The Report directs the conversion of 16 gasoline powered vehicles to electric vehicles by 2030. Relatedly, the Village Board authorized the purchase of the first electric powered lawn mower. This piece of equipment further helps reduce greenhouse gases emitted by the Village fleet.

In addition, staff has contracted with Veregy to assist with preparing an Electric Fleet and Infrastructure Assessment. The Assessment helps provide a roadmap to convert the existing fleet to zero emissions vehicles over a given timeframe. In-person visits were conducted at multiple Village-owned locations. Staff also conducted a thorough review of available funding incentives that are available to offset the cost of transitioning to an electric fleet. A budget model and a total cost of ownership estimate was also developed. The cost estimate models yield favorable results and an operational savings achieved by converting eight administrative vehicles to electric counterparts over

a 10-year span provides a savings of \$78,414. A detailed breakdown of the annual savings estimates can be found in Appendix A:

Summary of Operations and Maintenance Savings For Battery Electric Fleets						
Fuel and Maintenance Summary	2028	2029	2030	2031	2032	Total Savings
Annual Fuel Savings	\$ 6,243	\$ 6,243	\$ 6,243	\$ 6,243	\$ 6,243	\$ 52,284
Annual Maintenance Savings	\$ 3,120	\$ 3,120	\$ 3,120	\$ 3,120	\$ 3,120	\$ 26,130
<b>Total Annual Savings</b>	<b>\$ 9,363</b>	<b>\$ 9,363</b>	<b>\$ 9,363</b>	<b>\$ 9,363</b>	<b>\$ 9,363</b>	<b>\$ 78,414</b>

Total Savings column is based on adding 8 electric vehicles over a 10 year period (2023 thru 2032).

Listed below is a table that summarizes the vehicle types and years that are recommend for purchasing EV replacement vehicles:

RECOMMENDED ELECTRIC VEHICLE REPLACEMENT SCHEDULE							
YEAR	VEH. #	MAKE AND MODEL	DEPARTMENT	DATE AVAILABLE	REPLACEMENT YEAR	PARKING LOCATION	NOTES
2012	310	FORD EXPLORER	PUBLIC WORKS	2023	2023	PUBLIC WORKS	
2013	605	1/2 TON CHEVY P.U.	PUBLIC WORKS	2023	2024	PUBLIC WORKS	
2013	701	1/2 TON CHEVY P.U.	PUBLIC WORKS	2023	2024	PUBLIC WORKS	
2013	U4	FORD EXPLORER	POLICE DEPT.	2023	2024	VILLAGE HALL	UNDERCOVER
2014	U1	DODGE CARAVAN	POLICE DEPT.	2023	2025	VILLAGE HALL	POLICE ADMIN.
2014	U3	FORD TAURUS	POLICE DEPT.	2023	2025	VILLAGE HALL	UNDERCOVER
2016	10	FORD F150 P.U.	POLICE DEPT.	2023	2026	VILLAGE HALL	POLICE ADMIN.
2016	NA	FORD ESCAPE	COMM. DEV.	2023	2026	VILLAGE HALL	

Vehicle replacement estimates are based on 7-10 year lifecycles. Make and model of vehicles may not be available by current manufacturer.

Overall, Deerfield can reduce CO2 emissions by 46% by converting this fleet of vehicles to zero emission models.

CO2 Emission Calculations									
Year	Vehicle ID	Make & Model	Department	Average Annual Mileage	Average Annual Gallons	Avg. Annual Equivalent kWh	Annual lbs CO2 emissions - gasoline	Annual lbs CO2 emissions - electricity	Reduction - Annual lbs CO2 emissions
2012	310	FORD EXPLORER	PUBLIC WORKS	7,800	355	3,744	6,876	3,688	3,189
2013	605	1/2 TON CHEVY P.U.	PUBLIC WORKS	7,800	355	3,744	6,876	3,688	3,189
2013	701	1/2 TON CHEVY P.U.	PUBLIC WORKS	7,800	355	3,744	6,876	3,688	3,189
2013	U4	FORD EXPLORER	POLICE DEPT.	7,800	355	3,744	6,876	3,688	3,189
2014	U1	DODGE CARAVAN	POLICE DEPT.	7,800	355	3,744	6,876	3,688	3,189
2014	U3	FORD TAURUS	POLICE DEPT.	7,800	355	3,744	6,876	3,688	3,189
2016	10	FORD F150 P.U.	POLICE DEPT.	7,800	355	3,744	6,876	3,688	3,189
2016	NA	FORD ESCAPE	COMM. DEV.	7,800	355	3,744	6,876	3,688	3,189
<b>Totals</b>				<b>62,400</b>	<b>2,840</b>	<b>29,952</b>	<b>55,011</b>	<b>29,503</b>	<b>25,508</b>

Mileages are based on an estimated average provided by Deerfield staff. Actual CO2 Emission Calculations could fluctuate depending on the actual miles driven each year. Overall, Deerfield would reduce emissions by 46% for this fleet of vehicles.

- b. **Leaf Blower Committee.** Staff participated in a regional effort comprised of 11-member communities to evaluate the need and impact for gas powered leaf blower regulations. The report was finalized by the Committee at the end of last year and is now available to each of the respective jurisdictions to further determine which regulations, if any, are appropriate for their community. This matter will be referred to the Village’s Sustainability Commission for further consideration.

### **(3) Waste**

The Climate Action Report directs staff to provide infrastructure, programs and policies that support composting and recycling materials across all sectors. In addition, the Report encourages education and community engagement in waste reduction, diversion and recycling.

- a. **Composting.** The Village is pursuing several composting programs and initiatives to increase participation and awareness.
  - i. **Residential Curbside Composting** The Village has offered a year-round residential composting program, at no additional cost, since May of 2020. At that time, the Village provided over 6,000 compost starter kits comprised of a kitchen counter top compost pail, compostable liner bags and an educational flyer with composting best practices. Staff is once again ordering starter kits and making them available to residents this spring so that new residents moving into the Village will also be able to receive the compost education materials.
  - ii. **Special Event Composting** The Village provided on-site composting at last fall's Harvest Fest. This was the first time that composting was offered at a Village special event and the program was received very favorably. Due to the success of that composting initiative, staff has expanded the compost offerings at special events in 2023. Specifically, on-site composting will be offered at all five food truck events as well as Harvest Fest this year. Staff has contracted with Collective Resource Compost to assist with providing composting services at these upcoming special events.
  - iii. **School Composting Partnerships** Village staff worked with Lakeshore Recycling Systems to provide a consultation to Shepard Middle School in order to implement a pilot program that would 'right-size' composting in their cafeteria. While the program was initially established, unfortunately the program was discontinued after a few months. However, staff is in the early stages of exploring a secondary compost pilot program at South Park Elementary School and related educational programming. Partnering with the elementary schools on educational programming/curriculum has long been an effort pursued by the Sustainability Commission.

### **(4) Ecosystem**

Ecosystem related initiatives were identified as a long-term (2050) goal in the Climate Action Report. Nevertheless, several initiatives related to the land, water and trees are being pursued to advance the objectives identified in the Report.

- a. **Urban Forest/Tree Canopy.** The Village's Tree Preservation Ordinance has recently been amended to further protect the community's tree canopy, specifically high-valued heritage trees. To further advance the Village's understanding of the urban forest, the Village just recently approved a tree inventory survey to effectively track all of the trees in the right-of-way. The inventory will include the location, species, diameter, condition and maintenance history and will be recorded in the GIS database. This will allow the Village to best manage its existing trees and determine best ways to preserve, protect and enhance the overall urban forest. Additionally, the Village's Sustainability Commission is hosting an Ask the Arborist program with Urban Forest Management at the Library on March 11. The program will provide residents with a free tree consultation to review trees and planting practices on private property.

- b. **Native Plantings.** The Village has been working with Footstone, LLC to convert Village owned turf grass locations to native planting areas and pollinator gardens. Currently, there are close to four acres of turf that have been converted at six areas throughout the Village. These areas are in various stages of the conversion process. For 2023, the Village will work with Footstone to begin the conversion of three more locations to native gardens. These locations are at Price Lane and extending the Elysian Way plantings to Carlisle Avenue on Deerfield Road, which will add approximately an eighth of an acre to the Village's native areas. Additionally, plans for future native planting are currently being discussed that include up to an additional five acres of native plantings on Waukegan Road north of Greenwood Avenue.
- c. **2021 IECC.** In December 2021, the Village Board adopted the 2021 Illinois Energy Conservation Code (IECC). The IECC is a model code that regulates minimum energy conservation requirements for new buildings and additions for both residential and commercial properties. According to the Department of Energy, the adoption of the 2021 IECC improves energy efficiency by 9.4% and reduces greenhouse gas emissions by 8.7% over the 2018 IECC; saving homeowners an average of \$2,320 over the life of a typical mortgage.
- d. **Water Education Programming.** The Village's Sustainability Commission has recently hosted several water education programs in the community. The Commission hosted a Water Taste Test at last year's Farmers Market. The goal of the program was to get residents to engage in a blind taste test to discuss water quality and notably, the high-quality safety and testing procedures in place for the Village's potable water system. The Water Taste Test required participants to rate the water's taste and of the three options (two bottled, one municipal) the Village's potable water received the highest ranking. Additionally, on November 19, the Sustainability Commission hosted a Water Filter educational seminar at the Library. Commissioner Mertes presented information about the Village's water system, describing where the water comes from, how it is tested, how it is filtered and the safety procedures in place. Both programs were very well received and will likely be repeated again in the future. Lastly, the Sustainability Commission has partnered with local area plumbers to promote a Residential Water Conservation Program. This includes offering residents a flat rate toilet leak detection test from participating plumbers.

### **Conclusion**

Staff has been pursuing the objectives outlined in the Climate Action Report. This memo summarizes some of the key initiatives related to the Report but is not intended to be an exhaustive list of all of the Village's sustainability undertakings.

Staff will be available at the March 6, 2023, meeting to summarize the report and answer questions from the Board.



## Appendix A – Fuel and Maintenance Savings Models

Fuel and Maintenance Estimates for Standard Fleet Vehicles											
Vehicle Type	Potential Quantity of Electric Vehicles Used Daily	Average Miles Per Vehicle Daily	Total Fleet Miles Driven Per Day	Average Annual Miles Per Vehicle	Total Fleet Miles Driven Annually	MPG/MPGe	Gallons vs. eGallons Per Year Per Vehicle	Average kWh per 100 Miles Electric Vehicle	Annual kWh Used Per Vehicle	Cost Per Gal/ kWh	kWh Cost per 100 Miles
Gasoline Vehicle Usage Statistics	8	30	240	7,800	62,400	22	355			\$ 3.26	
Electric Vehicle Usage Statistics	8	30	240	7,800	62,400	76	103	48	3,744	\$ 0.10	\$ 4.80
<b>Energy &amp; Fuel Comparisons</b>						<b>Maintenance Comparisons</b>					
Fuel Cost Per Mile for Gasoline Powered Vehicle			\$ 0.15			Maintenance Cost Per Mile for Gasoline Powered Vehicle			\$ 0.10		
Annual Fuel Cost for a Gasoline Powered Vehicle			\$ 1,155			Annual Maintenance Cost for Gasoline Powered Vehicle			\$ 788		
Fuel Cost Per Mile for Electric Vehicle			\$ 0.05			Maintenance Cost Per Mile for Electric Vehicle			\$ 0.05		
Annual Fuel Cost Per Electric Vehicle			\$ 374			Annual Maintenance Cost for Electric Vehicle			\$ 395		
Total Fuel Savings Per Electric Vehicle			\$ 780			Total Maintenance Savings Per Electric Vehicle			\$ 390		
<b>Annual Fuel &amp; Maintenance Savings Per Vehicle</b>				<b>\$ 1,170</b>							
<b>Annual Fuel &amp; Maintenance Savings For Fleet of 8 Vehicles</b>				<b>\$ 9,363</b>							
<b>Five Year Fuel &amp; Maintenance Savings Per Fleet of 8 Vehicles</b>				<b>\$ 46,814</b>							
<b>10 Year Fuel &amp; Maintenance Savings Per Fleet of 8 Vehicles</b>				<b>\$ 93,628</b>							



# 2017-2021 GHG COMPARISON

GREENHOUSE GAS REDUCTION WORKING GROUP  
SEPTEMBER 28, 2023

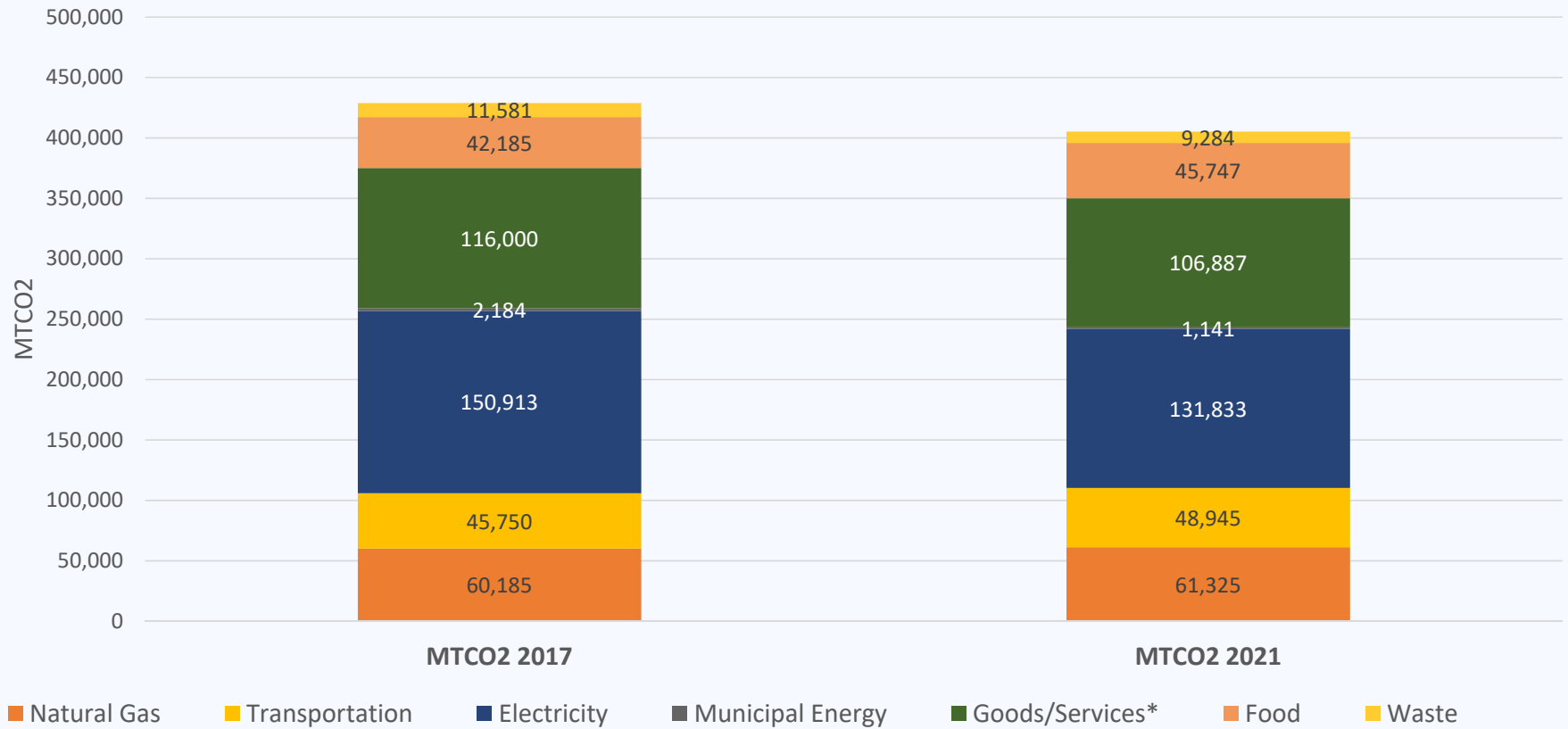


VILLAGE OF DEERFIELD

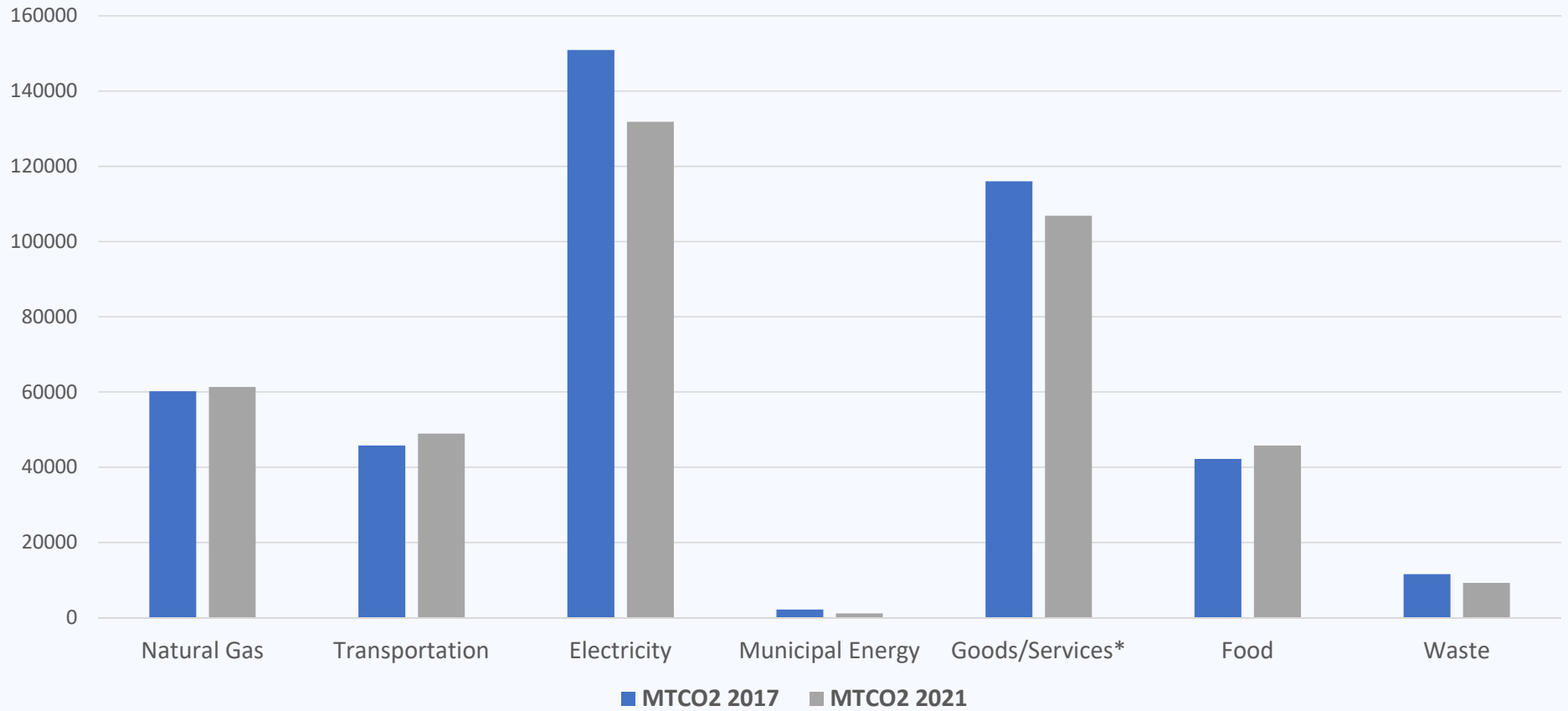
<u>Source</u>	<u>MTCO2 2017</u>	<u>Percent</u>	<u>MTCO2 2021</u>	<u>Percent</u>		
<b>Scope 1 (In Boundary)</b>						
Natural Gas	60,185	14%	61,325	15%		
Transportation	45,750	11%	48,945	12%		
<b>Scope 2 (Out of Boundary)</b>					<b>DELTA #</b>	<b>DELTA %</b>
Electricity	150,913	35%	131,833	33%	-19,080	-2%
Municipal Energy	2,184	1%	1,141	0.3%	-1,043	-0.2%
<b>Scope 3 (Purchases: Goods &amp; Services)</b>						
Goods/Services*	116,000	27%	106,887	26%		
Food	42,185	10%	45,747	11%		
Waste	11,581	3%	9,284	2%		
<b>TOTALS:</b>	<b>428,798</b>	<b>101%</b>	<b>405,162</b>	<b>100%</b>		

**Overall reduction  
of 23,636 MTCO2,  
represents a 6%  
decrease**

## MTCO2 2017-2021 COMPARISON

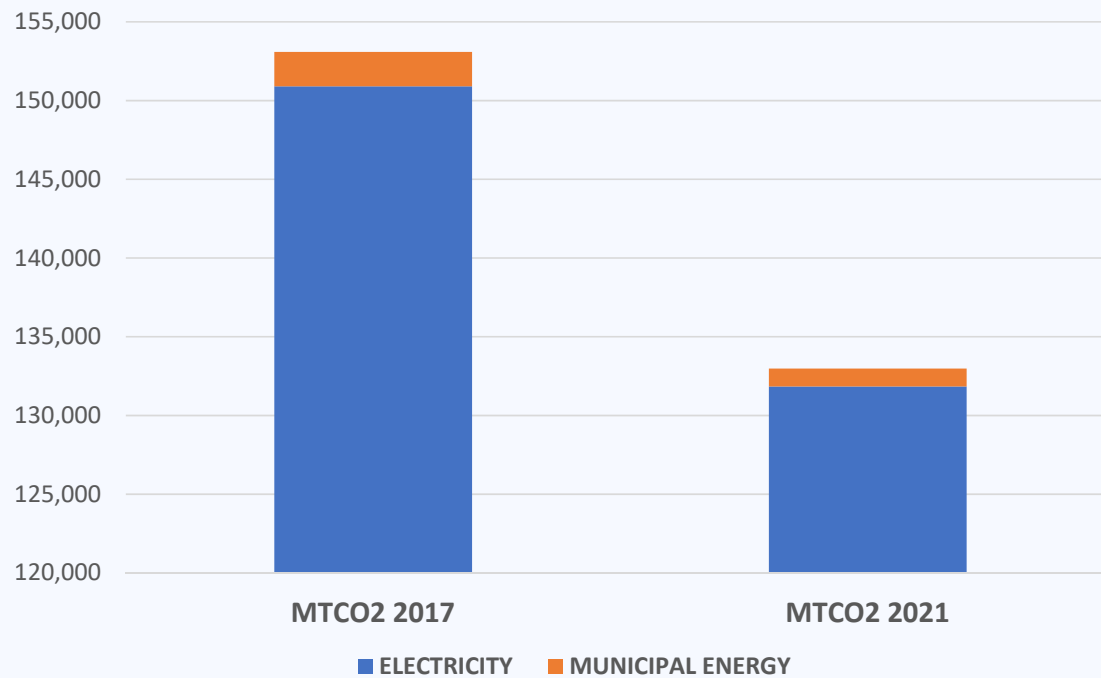


## MTCO2 2017-2021 COMPARISON BY CATEGORY



# 13% REDUCTION IN MTCO2 FROM ELECTRICITY

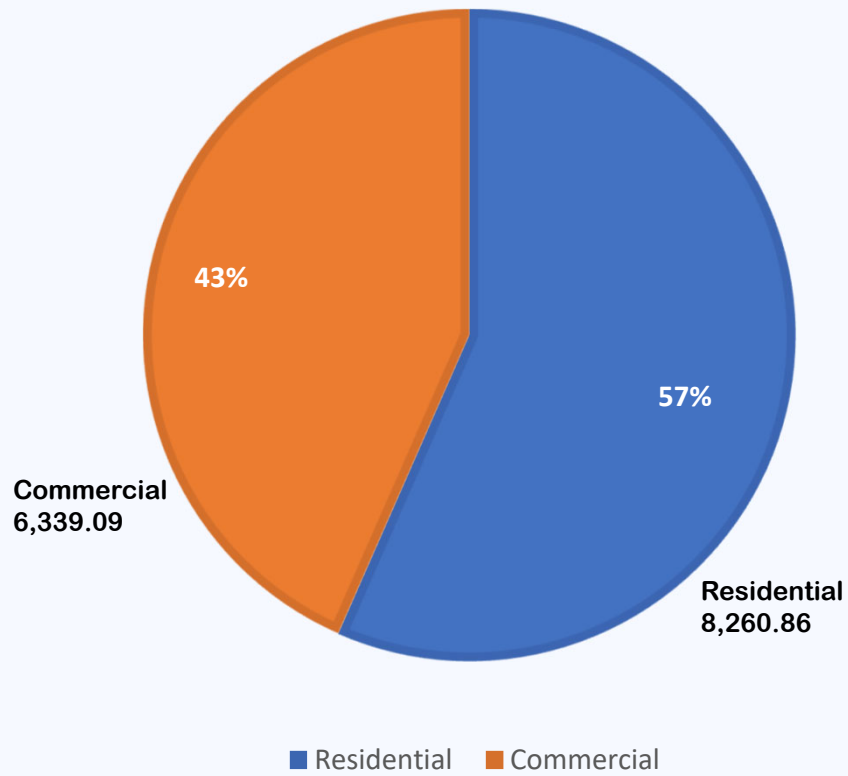
## MTCO2 FROM ENERGY



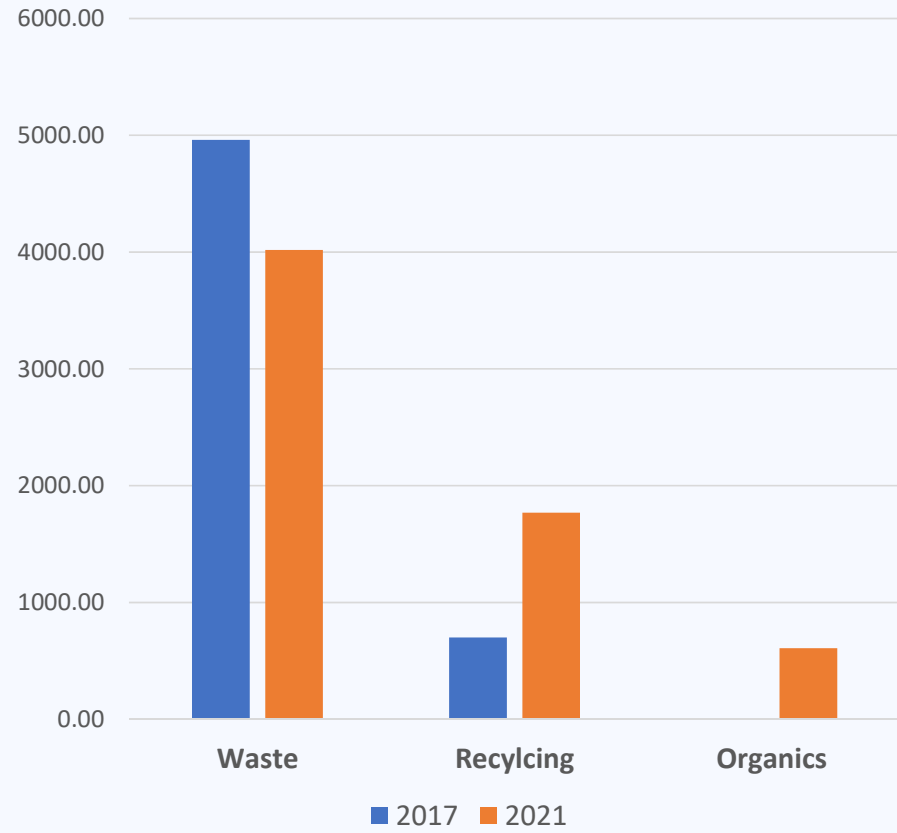
SOURCE	MTCO2 2017	MTCO2 2021
ELECTRICITY	150,913	131,833
MUNICIPAL ENERGY	2,184	1,141
<b>TOTALS:</b>	<b>153,097</b>	<b>132,974</b>

<b>MTCO2 DELTA #</b>	-20,123
<b>MTCO2 DELTA %</b>	-13%

## 2021 WASTE BY SOURCE

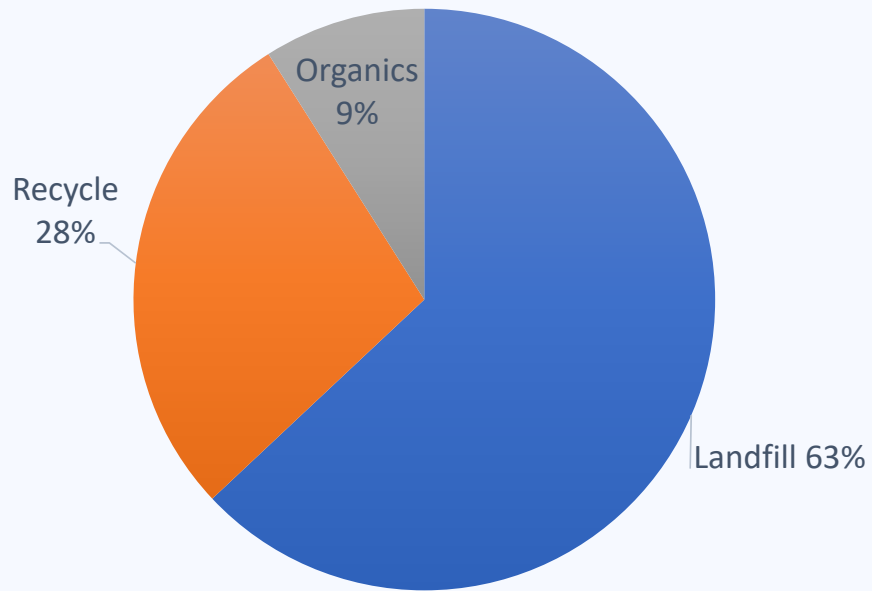


## MTCO2 FROM WASTE



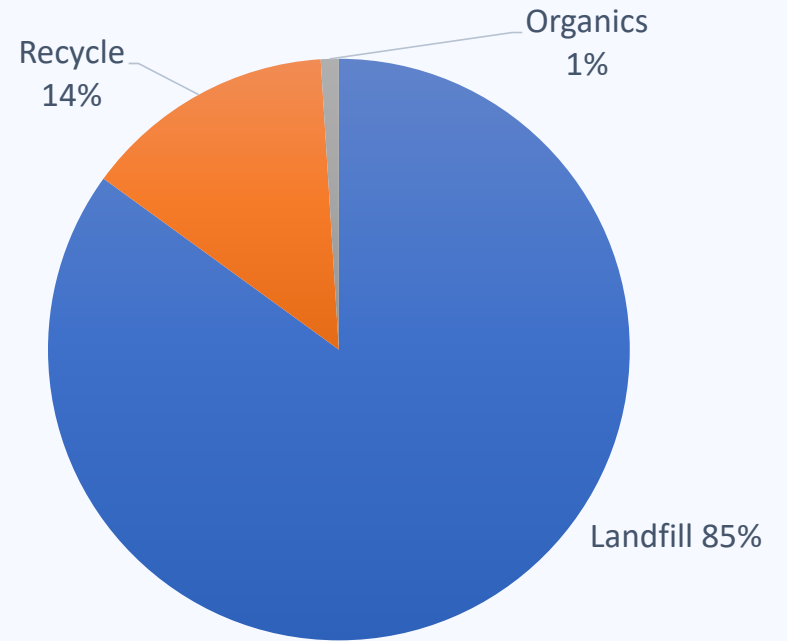


### 2021 Residential Diversion



**2021 Total Diversion: 37%**  
2017 Total Diversion: 33%

### 2021 Commercial Diversion



**2021 Total Diversion: 15%**  
2017 Total Diversion: 12%



**VILLAGE OF DEERFIELD**

Discussion/ Next Steps / Questions?