

# 2021 Carbon Neutral Government Operations Report

#### 1. Introduction

Resolution 315 of 2019<sup>1</sup> was adopted by the Ulster County legislature in September of 2019 to establish a policy regarding Ulster County's use of renewable energy. This policy reinforces Executive Order 1 of 2019 signed by the County Executive in June of 2019.

The resolution commits Ulster County to:

- Purchase 100% of the County's electricity for government operations directly from local renewable energy sources, or as an interim solution only, by obtaining Green-e Energy certified Renewable Energy Certificates (RECs)
- Continue to operate a net carbon neutral government
- Decrease greenhouse gas emissions associated with its operations by 25 by the year 2025 and 80 by the year 2050 using the County's 2012 greenhouse gas emission inventory as a baseline.
- Ulster County shall supply 100% of its annual building and fleet electricity usage from locally generated renewable energy sources by the year 2030
- Endeavor to achieve the Department of Environmental Conservation's Gold Climate Smart Community designation by the year 2025
- Assist and support our towns and communities in increasing the use of green power and decreasing community wide greenhouse gas emissions by 80% by the year 2050

The following report, prepared by the Ulster County Department of the Environment, is submitted to detail the status of each of these goals, and to inform whether these goals remain attainable and whether they should be modified or amended.

# 2. Greenhouse Gas Inventory

In 2021, Ulster County produced approximately<sup>2</sup> 7,759 metric tons of CO2-equivalent (CO2e) emissions. The following tables detail the County's emissions by scope and sector respectively.

Table 1: 2021 Government Operations Emissions by Scope (Metric Tons CO2e)

	CO <sub>2</sub> e <sup>3</sup>	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
SCOPE 1 – Direct Emissions				
Mobile Combustion	4,354	4,269.4	4.5	79.7
Stationary Combustion	2,241	2,237.6	1.4	2.2
SCOPE 2 – Indirect Emissions				
Purchased Electricity	1,164	1,159.0	2.1	3.0
TOTAL	7,759	7,666.0	7.9	84.9

Table 2: 2021 Government Operations Emissions by Sector (Metric Tons CO2e)

	SCOPE 1	SCOPE 2
Buildings and Other Facilities		
Purchased Electricity	0	1,156

<sup>&</sup>lt;sup>1</sup> Available here: <a href="https://legislature.ulstercountyny.gov/sites/default/files/315.1%20-%2019">https://legislature.ulstercountyny.gov/sites/default/files/315.1%20-%2019</a> 0.pdf

<sup>&</sup>lt;sup>2</sup> Data for certain electricity and natural gas usage was unavailable due to temporary limitations with Central Hudson's billing system. These numbers were estimated and will be updated when available.

<sup>3</sup> Carbon dioxide equivalent or CO2e is calculated by adjusting the emissions of non-CO2 greenhouse gases using the global warming potential of each gas.

Stationary Combustion	2,233	0
Streetlights and Traffic Signals		
Purchased Electricity	0	2
Transit Fleet:		
Mobile Combustion	1,073	0
Vehicle Fleet		
Mobile Combustion	3,281	0
Purchased Electricity	0	1
Water Delivery Facilities		
Purchased Electricity	0	4
Stationary Combustion	9	0
TOTAL	6,595	1,164

## **Biogenic Emissions**

In 2021, Ulster County emitted 178 metric tons of CO2e from biogenic sources. These emissions are entirely attributed to the mobile combustion of ethanol and biodiesel.

Table 3: 2021 Biogenic Emissions (Metric Tons CO2e)

Sector	Biogenic Emissions (MT CO2e)	
Transit Fleet	51.7	
Vehicle Fleet	126.7	
TOTAL	178.3	

#### Scope 3 Emissions

In 2021, Ulster County estimated the anthropogenic Scope 3 emissions attributed to employee commutes as 2,117 MT CO2e.

Table 4: 2021 Estimated Scope 3 Emissions (Metric Tons CO2e)

	CO₂e	CO <sub>2</sub>	CH <sub>4</sub>	N₂O
SCOPE 3				
Mobile Combustion	2,117	2,075	2	40

# Progress Toward GHG Reduction Goals

Between the baseline year of 2012 and the most recent GHG inventory for 2021, Ulster County's emissions from government operations decreased by 21.4%.

The following figure compares Ulster County's 2021 emissions to the levels required to meet the County's 2025 and 2050 reduction goals.

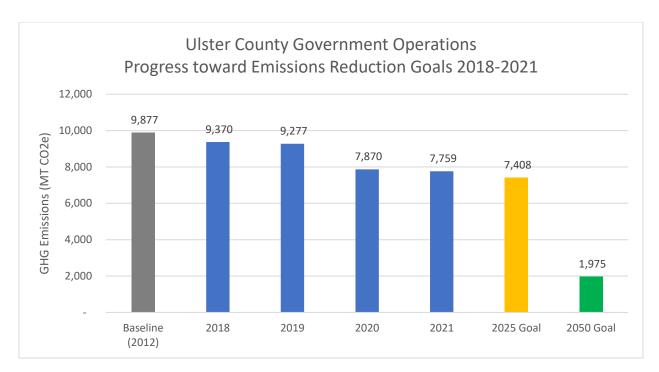


Figure 1: Progress Compared to 2025 and 2050 Goals

Figures 2 and 3 below show emissions trends by sector and energy type respectively.

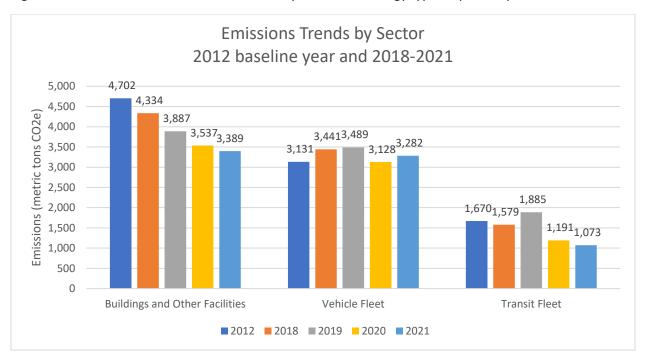


Figure 2: Emissions Trends by Sector

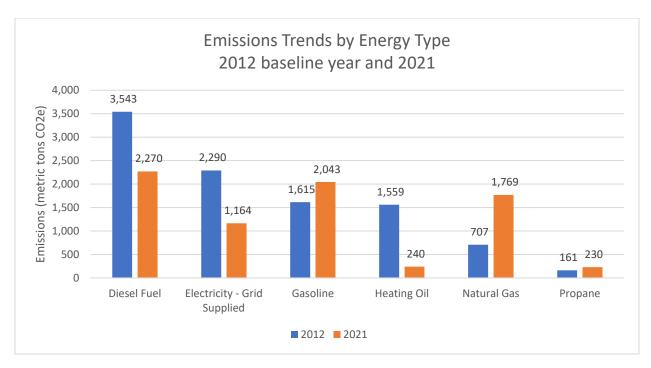


Figure 3: Emissions Trends by Energy Type

# 3. Renewable Electricity Usage

Per Executive Order 1-2019, Ulster County's goal is to purchase 100% of its electricity for government operations from renewable sources through a combination of on-site generation, distributed generation, renewable energy certificates and utility green power products.

Per Resolution 315 of 2019, Ulster County distinguishes between local renewable electricity and non-local renewable electricity. Non-local renewable electricity is acquired through the purchase of RECs. Ulster County defines local renewable generation as generation from a renewable source that occurs within the same utility territory and NY Independent System Operator (NYISO) zone as the load it serves. This includes generation from community distributed generation (CDG) sites if the renewable attributes are either conveyed by contract or purchased separately as RECs.

Table 5: Renewable Energy Credits Retired for Ulster County Government Operations

Year	RECs Retired (MWH)
2021	8,864
2020	8,906
2019	9,149
2018	10,803
2017	11,914
2016	12,217
2015	12,215
2014	6,000

#### Local Renewable Generation

In 2021, Ulster County purchased approximately 24.2% of its electricity from local renewable sources. This electricity was generated at the following locations:

Table 6: Sources of Local Generation

Site	System capacity	Туре	Installation year	Ownership
New Paltz Substation Salt Shed	30.6 KW DC	Behind the meter	2011	Ulster County
Town of Ulster Landfill <sup>4</sup>	1.9 MW DC	Remote net metering	2018	Third Party
Natural Power Group Hydroelectric Facility Wallkill	0.5 MW	CDG subscription agreement	1988	Third Party
East Light Partners Community Solar ELP Myer	2.9 MW DC	CDG subscription agreement	2021	Third Party
East Light Partners Community Solar ELP Union Vale	2.6 MW DC	CDG subscription agreement	2021	Third Party

Table 2 below shows the local electricity generation used by Ulster County government operations per year since the GHG inventory baseline year.

Table 7: Total Local Renewable Electricity

Year	Local Renewable Electricity Used (kWh)
2021	2,670,000 <sup>5</sup>
2020	2,113,649
2019	2,021,961
2018	927,285
2017	37,447
2016	42,164
2015	37,793
2014	36,862
2013	40,358
2012	31,203

#### Renewable Energy Credits

Since June of 2014, Ulster County has purchased RECs to ensure 100% of the electricity used for government operations is renewable. The renewable claim is made through the purchase and retirement of RECs certified by Green-e®, a third-party verification firm. Because they were not locally generated, these offsets are not counted as actual reductions in emissions (i.e. as progress toward GHG reduction goals). The GHG accounting in this inventory report assumes the absence of all offsets.

<sup>&</sup>lt;sup>4</sup> Generation data available here: http://s44709.mini.alsoenergy.com/Dashboard/2a566973496547374143454b772b71413d

<sup>&</sup>lt;sup>5</sup> Estimated due to time delay on data from vendor

RECs retired are a mixture of purchased Green-e national renewable certificates and New York Generation Attribute Tracking System (NYGATs) certificates

# 4. Carbon Neutral Government Operations

Ulster County endeavors to achieve net carbon neutrality through the annual purchase of carbon offsets. However, in 2021, the market rate for offsets increased significantly, ultimately exceeding the amount the County had budgeted for procuring offsets. As a result, the County was unable to purchase enough carbon offsets to match 100% of Scope 1 and Scope 3 emissions in 2021. The necessary carbon offsets to achieve carbon neutral government operations will be procured in 2022.

If offset prices continue to stay high, or increase further, it may continue to be challenging to achieve carbon neutral government operations via the purchase of offsets in future years.

In previous years, Ulster County has purchased carbon offsets on the voluntary market to offset 100% of Scope 1 emissions and Scope 3 emissions attributed to employee commutes when able. Scope 2 emissions are offset by the purchase of Renewable Energy Credits (RECs). These offsets are not counted as actual reductions in emissions (i.e. as progress toward GHG reduction goals). The GHG accounting in Section 3 of this inventory report assumes the absence of all offsets.

Table 8: Distinction between GHG measures as applied toward reduction goals

Mitigation Type	Measure
Avoided emissions (counts toward operational goals)	<ul> <li>Onsite generation (behind the meter)</li> <li>Remote Net Metering</li> <li>NYGATS RECs</li> <li>Community Distributed Generation (CDG)</li> </ul>
Offsets (counts toward carbon neutral government initiative only)	<ul><li>National Green-e Renewable energy credits (RECS)</li><li>Carbon credits</li></ul>

Table 9: 2020 Net Zero Emissions Compared to Adjusted 2012 Baseline (Metric Ton CO2e)

Category	2012	2021	% Change
Total Government Activity Emissions <sup>1</sup>	9,877	7,759	-21.4%
Avoided emissions	0	-226	
Actual Government Emissions	9,877	7,533	-23.7%
RECs	0	-938	
Carbon Credits	0	-6,595	
Net Government Operations Carbon Emissions	9,877	0	-100.0%

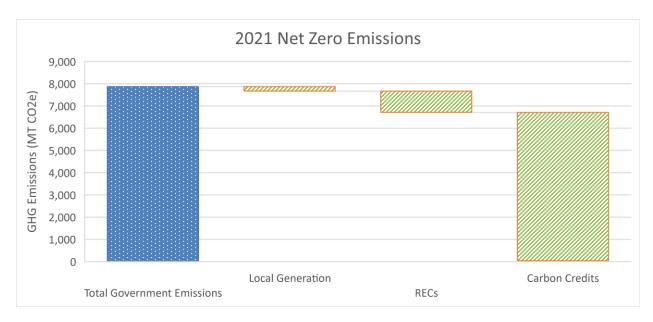


Figure 4: 2018 Net Zero Carbon Emissions

The following table details the offsets retired to meet the carbon neutral government operations mandate and the equivalent social cost of carbon per the EPA's methodology. The table includes offsets for Scope 1 and 2 emissions only.

Table 10: Offsets and Social Cost of Carbon

Year	2021
Carbon Offsets Retired (MT CO2e)	6,595
RECs Retired (MT CO2e)	938
Social Cost of Carbon <sup>6</sup>	At \$51.00 per MT CO2e =
	\$384,591.00

## 5. Climate Smart Communities Certification Status

Ulster County is currently Silver-level certified in the New York State Department of Environmental Conservation's (DEC's) Climate Smart Communities<sup>7</sup> program, with the County's first five-year Silver-level CSC recertification was announced in June 2021. More information is available in County Executive Ryan's <u>press release</u> and the County's full <u>CSC certification report</u>.

To date, the requirements to earn Gold-level certification in the Climate Smart Communities program have not been defined by the DEC. When available, the Gold-level requirements will be published by the DEC at the Climate Smart Communities program <u>Certification Levels</u> page.

content/uploads/2021/02/TechnicalSupportDocument SocialCostofCarbonMethaneNitrousOxide.pdf

<sup>&</sup>lt;sup>6</sup> Social Cost of Carbon value taken from the Interagency Working Group on Social Cost of Greenhouse Gases, United States Government Interagency Working Group on Social Cost of Greenhouse Gases, United States Government *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990.* Available here: <a href="https://www.whitehouse.gov/wp-">https://www.whitehouse.gov/wp-</a>

<sup>&</sup>lt;sup>7</sup> The DEC's program website is available here: <a href="https://climatesmart.ny.gov/">https://climatesmart.ny.gov/</a>

The Ulster County Department of the Environment continues to pursue completion of additional action
items in the program to prepare for a future recertification application for Gold-level status.

# **Appendices**

# Appendix A: GHG Inventory Methodology and Assumptions

To track progress toward our GHG emissions goals, all energy usage is monitored and tracked by the Ulster County Department of the Environment. The annual GHG emissions inventory is calculated by aggregating this data by sector, scope, source and type and converting to metric tons of CO2-equivalent MTCO2e) using EPA conversion factors.

#### Ulster County Government Operations GHG Inventory Methodology

The County references the Local Government Operations Protocol, Version 1.1 (LGOP) as a standard for accounting and reporting GHG emissions from government operations. This protocol was developed by Local Governments for Sustainability (ICLEI).

To the extent possible, Ulster County sets organizational boundaries for emissions accounting using the operational control approach. Per the ICLEI definition, Ulster County has operational control over a building or facility if either of these two conditions exist:

- Ulster County owns the building or facility, OR
- Ulster County has full authority to introduce and implement operational and health, safety and environmental policies.

The County accounts for leased facilities where it is possible to obtain the necessary data. Currently, the County does not estimate emissions for spaces where only part of the building is leased and the space is not sub-metered.

#### ICLEI Reporting Sectors

The County currently reports the following sectors and scopes:

- Buildings and Other Facilities: Scope 1 & 2
- Streetlights and Traffic Signals: Scope 2
- Transit Fleet: Scope 1
- Vehicle Fleet: Scope 1 & 2
- Water Delivery Facilities Scope 1 & 2

Ulster County does not own or operate facilities in the following sectors:

- Wastewater Facilities
- Port Facilities
- Airport Facilities
- Power Generation Facilities
- Solid Waste Facilities

#### Other Process and Fugitive Emissions

Ulster County currently does not collect data or estimate values for process and fugitive emissions.

#### Biogenic source emissions

CO2 Emissions from biofuel usage are not included as Scope 1 emissions in this inventory in accordance with ICLEI protocol, as the carbon concerned is of biogenic origin and would have been emitted to the atmosphere through the natural process of decay. Biogenic emissions totals from combustion of biofuels are tracked and reported as supplemental information in this report.

Ulster County assumes all gasoline purchased for fleet, transit and non-road purposes is an E10 ethanol blend (10% ethanol). Since 2015, the Ulster County transit fleet has used a B5 biodiesel (5% biodiesel) blend in the summer months.

#### Optional Scope 3 Emissions

Ulster County currently reports one Scope 3 source: Employee Commute. Usage data was estimated for each reporting year based on current number of employees and assumptions based on employee home of record data.

#### **Emissions Factors Disclosure**

Ulster County uses emissions factors published by the EPA in the document *Emissions Factors for Greenhouse Gas Inventories*<sup>8</sup> (last modified 3/9/3018).

100-year global warming potential (GWP) multipliers were applied as published in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report.<sup>9</sup>

Ulster County does collect and maintain data on vehicle miles traveled (VMT) for vehicle fleet and transit fleet vehicles. However, to simplify the accounting process for mobile combustion, methane (CH4) and nitrous oxide (N2O) emissions were estimated on a per-gallon basis as described in the New York Community and Regional GHG Inventory Guidance (Version 1.0, September 2015). To do so, the CO2 emission factors were multiplied by factors of 0.001 for CH4 and 0.18 for N2O to obtain an emissions factor.

## Appendix B: 2012 Baseline GHG Inventory

Ulster County completed its first GHG inventory for government operations in 2012, which was subsequently set as the baseline year. The 2012 report included emissions from purchased electricity, stationary fuel combustion, mobile combustion from government vehicle fleets, as well as emissions from County employee commutes.

#### Baseline adjustments

The scope of Ulster County government operations has undergone structural changes since the 2012 baseline inventory. To accurately compare current operating conditions to the baseline year and quantify GHG increases or decreases over time, Ulster County normalizes its baseline to account for changes that are due to a change in the services provided by the government.

For example, in 2013, the Golden Hill Health Care center was sold to a private service provider and the County no longer needed to provide this service to its constituents. This change reduced the County's

<sup>8</sup> Available here: https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors mar 2018 0.pdf

<sup>&</sup>lt;sup>9</sup> Available here: https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter2-1.pdf

purchase of utilities and fleet fuel significantly, saving approximately 3.5 MWh of electricity use, 53,000 gallons of fuel oil, and 1,500 gallons of fleet fuels per year. Because this was a divestiture of services, the 2012 baseline GHG inventory was updated to remove the emissions from this property and government function.

For its GHG inventory, the County uses the following set of rules to determine whether a baseline adjustment is warranted:

Table 11: Baseline Adjustment Methodology

Structural change	Baseline Adjustment?
New areas of government jurisdiction (or insourcing)	Yes
Acquisitions of property due to growth	No
Divestitures of property due to change in jurisdiction (or outsourcing)	Yes
Divestitures of property due to consolidation or efficiency of services	No
Access to energy use data that was not previously available	Yes

Table 11 shows the baseline adjustments that have been made to date.

Table 12: Adjustments to Normalize 2012 GHG Baseline

Baseline change	Effective Year	Reporting Sector	Scope	Change to Baseline Quantity (MT cO2e)
Golden Hill Health Care Center	2012	Buildings and Other Facilities / Vehicle Fleet	1 & 2	-1,216.4
Patriot's Project— Veteran's Housing	2014	Buildings and Other Facilities	1 & 2	+19.3
Sheriff's Substation— Wawarsing	2015	Buildings and Other Facilities	1 & 2	+6.5
Family and Child Advocacy Center	2016	Buildings and Other Facilities	1 & 2	+10.2
UCAT Kingston Expansion of Service	2019	Transit Fleet	1	+358.4
Previously unreported natural gas and fuel oil usage incorporated in baseline year	2020	Buildings and Other Facilities	1	+53.7

## Table 12 shows the 2012 baseline GHG inventory as updated for 2021.

Table 13: 2012 Baseline Government Operations Emissions by Scope (2021 Update)

	CO₂e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
SCOPE 1 – Direct Emissions				
Mobile Combustion	5,160	5,062	5	93
Stationary Combustion	2,426	2,420	2	5
SCOPE 2 – Indirect Emissions	·	·		
Purchased Electricity	2,290	2,282	2	6
TOTAL	9,877	9,763	9	104

Table 14: 2012 Baseline Government Operations Emissions by Sector (2021 Update)

	SCOPE 1	SCOPE 2

Buildings and Other Facilities				
Purchased Electricity	0	2,279		
Stationary Combustion	2,423	0		
Streetlights and Traffic Signals				
Purchased Electricity	Purchased Electricity 5 5			
Transit Fleet:				
Mobile Combustion	2,029	0		
Vehicle Fleet				
Mobile Combustion	3,131	0		
Purchased Electricity	0	0		
Water Delivery Facilities	·			
Purchased Electricity	0	6		
Stationary Combustion	4	0		
TOTAL	7,586	2,290		

# Appendix C: Activity Data

The following table shows the quantities of energy purchased by Ulster County in 2021. These quantities form the basis for the greenhouse gas inventory.

Table 15: 2021 Activity Data

Table 13. 2021 Nettvity Data			
Energy Type	2021 Usage		
Biodiesel (gal)	3,150		
Diesel (gal)	218,432		
Electricity (kWh)	11,073,948		
Ethanol (gal)	25,840		
Gasoline (gal)	228,351		
Heating Oil (gal)	23,402		
Natural Gas (CCF)	324,609		
Propane (gal)	40,326		

Note: Data for certain electricity and natural gas usage was unavailable due to temporary limitations with Central Hudson's billing system. These numbers were estimated and will be updated when available.

# Appendix D: Climate Action Plan Implementation

The following table lists action items from the 2019 Ulster County Government Operations Climate Action Plan<sup>10</sup> that are either completed, in-progress or ongoing.

Table 16: Climate Action Plan Implementation Status

Action Number	Description	Status
BF-1	Conduct additional building energy audits	Ongoing  —Completed two (2) energy audits at 1 Pearl Street and 17 Pearl Street.  Audits were completed as a residential home energy report due to the structure type of both buildings. The audits included a training component with DPW staff. (3/2020)  —Completed a targeted geothermal audit and conceptual design at the Ulster

<sup>&</sup>lt;sup>10</sup> Available here:

https://ulstercountyny.gov/sites/default/files/documents/environment/Ulster%20County%20Government%20Operations%20Climate%20Action%20Plan%202019 web.pdf

		County Office Building as Stage 3 of the Geothermal Clean Energy Challenge (10/2020)
BF-2	Implement lighting controls in County owned buildings	In progress  —Purchased eighty (80) wall switch occupancy sensors for the Ulster County Law Enforcement Center (12/2020). Installation is in progress by Public Works staff in 2021.  —Added the Development Court LED Lighting Retrofit project to the 2021- 2026 Capital Improvement Program. The scope of the project includes implementation of improved/additional lighting controls at the facility. Design is planned to start in 2021.
BF-6	Complete interior lighting upgrades for 100% of building area	In progress  —Added the Development Court LED Lighting Retrofit project to the 2021- 2026 Capital Improvement Program. Design is planned to start in 2021.
BF-11	Upgrade HVAC equipment	In progress  —Conducted an HVAC equipment inventory in 2020.  —DPW added a block program capital replacement project to the 2021-2026  Capital Improvement Program for HVAC/Weatherization at various County buildings. Implementation is ongoing.
BF-13	Complete renewable energy feasibility studies	Ongoing —Ulster County completed a geothermal design and feasibility study as part of Stage 3 of the Geothermal Clean Energy Challenge (10/2020)
BF-19	Offset Scope 1 and 2 emissions from buildings and facilities	Ongoing —Ulster County continues to procure RECs and carbon credits as part of its Carbon Neutral Government Operations program.
PP-4	Improve vehicle inventory	Completed —The format of the Ulster County annual vehicle inventory was updated for the 2020 Green Fleet Report to comply with NYS DEC Climate Smart Communities requirements. All further inventories will be generated using the new format.
PP-6	Track building energy efficiency upgrades	Ongoing  —The Ulster County Department of the Environment continues to track building energy efficiency upgrades. All upgrades that are eligible for utility incentive programs are submitted for rebate reimbursement.
PP-12	Encourage green business travel	In progress  —The coronavirus pandemic required that most green business travel requirements be conducted remotely. The Information Services department supported this effort by providing equipment necessary for County employees to conduct business remotely as able. This shift in practices and capabilities will allow for more streamlined implementation of this action.
PP-13	Encourage UC Employee commuting on UCAT	Ongoing —Ulster County offers a reduced fare of \$0.30/trip for Ulster County employees using the UCAT service.
PP-17	Update the County's environmentally preferable purchasing policy	Completed —The Department of the Environment and Purchasing Department initiated a project to update the County's Green Purchasing policy in 2020 (11/2020).

PP-23	Adopt a PV-Ready	Completed
	construction	—This action was completed in 2019 by the UC Legislature's adoption of
	standard	Resolution No. 416.2 of 2019: Establishing A Policy For Consideration Of Solar
		Arrays On All New Or Renovated/Replaced Roofs On Ulster County Buildings
		(12/2019)
TF-1	Complete a Transit	Completed
	Fleet Electrification	—Ulster County completed its transit fleet electrification study in 2021. The
	Study	study was partially funded through a NYSERDA grant. Ulster County selected
		Creighton-Manning Engineering as the project consultant through a
		competitive procurement process.
TF-4	Install DC fast	Completed
	charging	—Ulster County completed the project to install three (3) DC fast charging
	equipment at	stations at the UCAT facility in 2021. The County partnered with the New York
	UCAT facilities for	Power Authority to complete the work using NYS DEC-administered
	bus charging	Volkswagen Settlement funds.
TF-10	Offset Scope 1 and	Ongoing
	2 emissions from	—Ulster County continues to offset Scope 1 emissions from transit operations
	transit operations	through the purchase of carbon credits.
VF-6	Install additional	In Progress
	EV charging	—Ulster County included a project for additional EV charging station
	stations to support	installations in the 2021-2026 Capital Improvement Program. The project is
	fleet operations	planned to start in 2021.
VF-11	Offset Scope 1 and	Ongoing
	2 emissions from	—Ulster County continues to offset Scope 1 and Scope 2 emissions from
	vehicle fleet	vehicle fleet operations though the purchase of RECs and carbon credits.
	operations	