

# Moving Tompkins County to “Net-Zero”

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CHIEF SUSTAINABILITY OFFICER

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# 2016 Tompkins County Energy Roadmap

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IMPROVING ENERGY EFFICIENCY IN BUILDINGS, LIGHTING AND APPLIANCES.



MOVING FROM GRID-SUPPLIED ELECTRICITY GENERATED OUTSIDE OF TOMPKINS COUNTY TO LOCAL RENEWABLE GENERATION.



MOVING FROM NATURAL GAS TO HEAT PUMPS AND BIOMASS HEATING.



MOVING FROM GASOLINE-POWERED TO ELECTRIC CARS AND LIGHT TRUCKS AND REDUCING THE NUMBER OF MILES DRIVEN.



# August 2019 Energy Strategy Update

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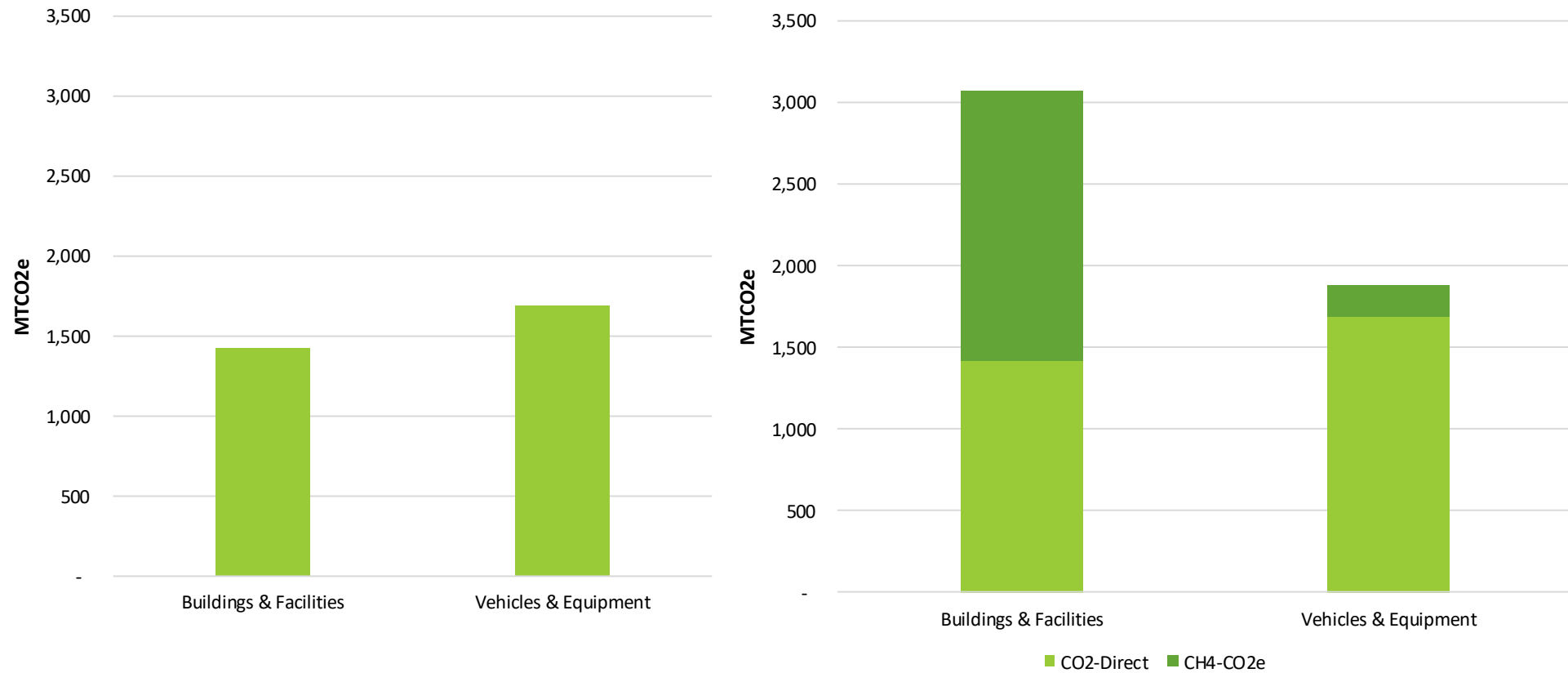
## INTERNAL FOCUS:

*“Tompkins County will strive for the largest reduction in the shortest timeframe possible while remaining financially solvent.”*

## EXTERNAL FOCUS

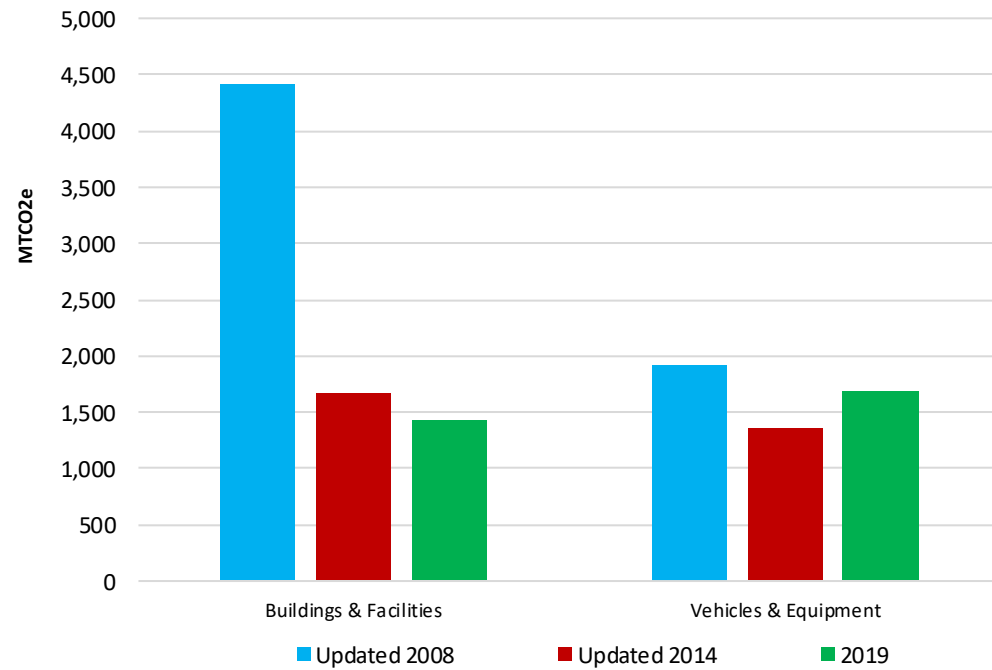
*“Tompkins County will lead by supporting and facilitating community work to reduce fossil fuel dependency and reduce GHG emissions “*

# Where are we today: Gov't Ops

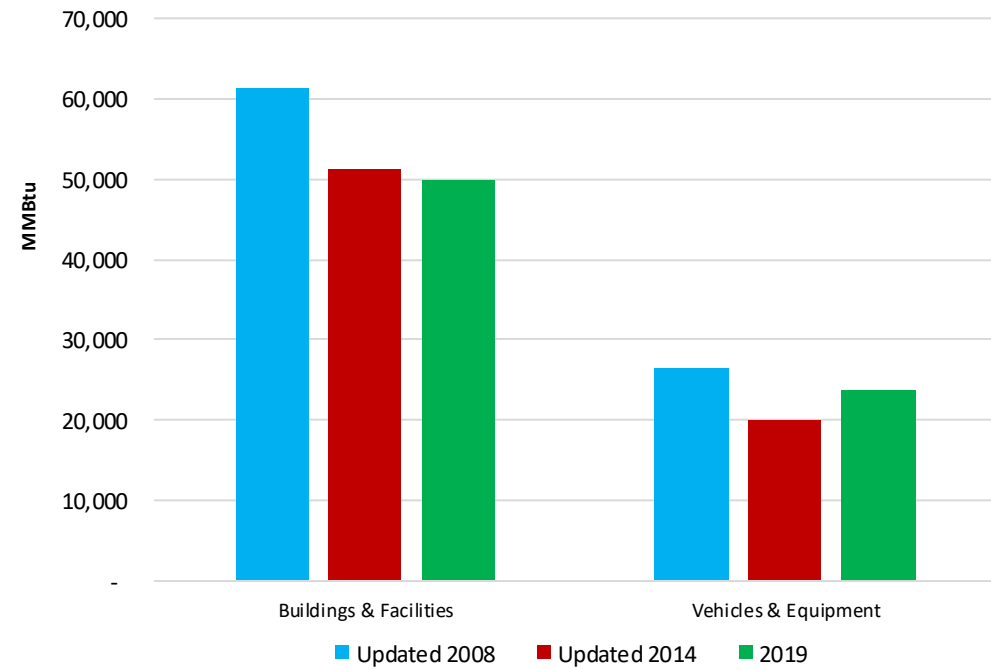


# How does that compare?

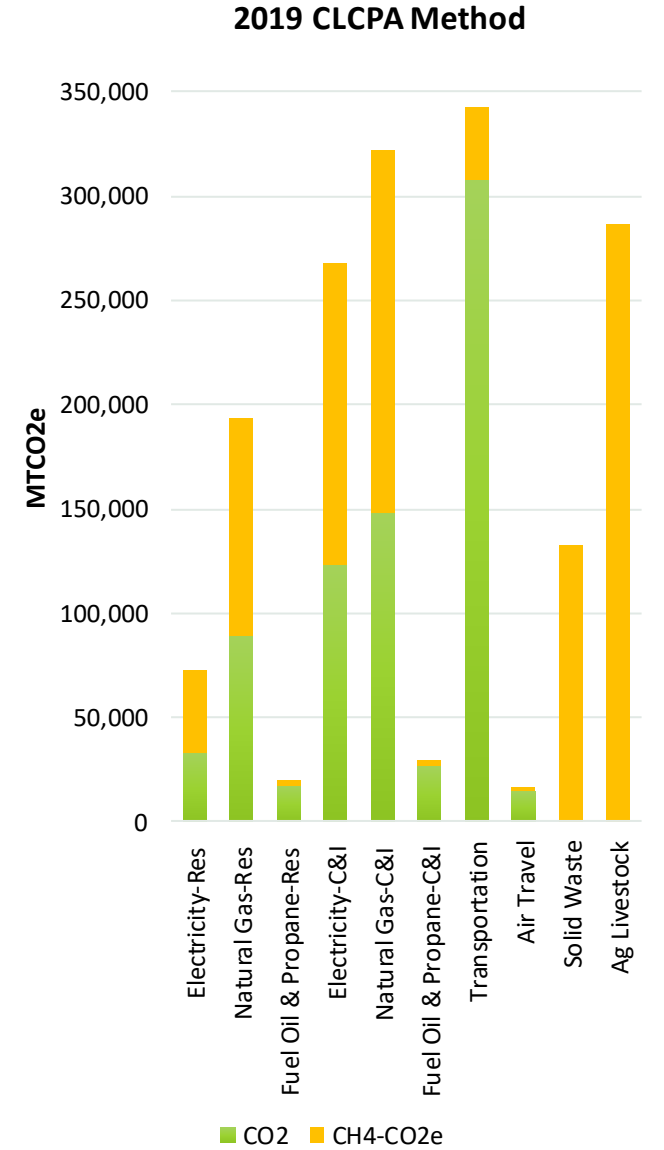
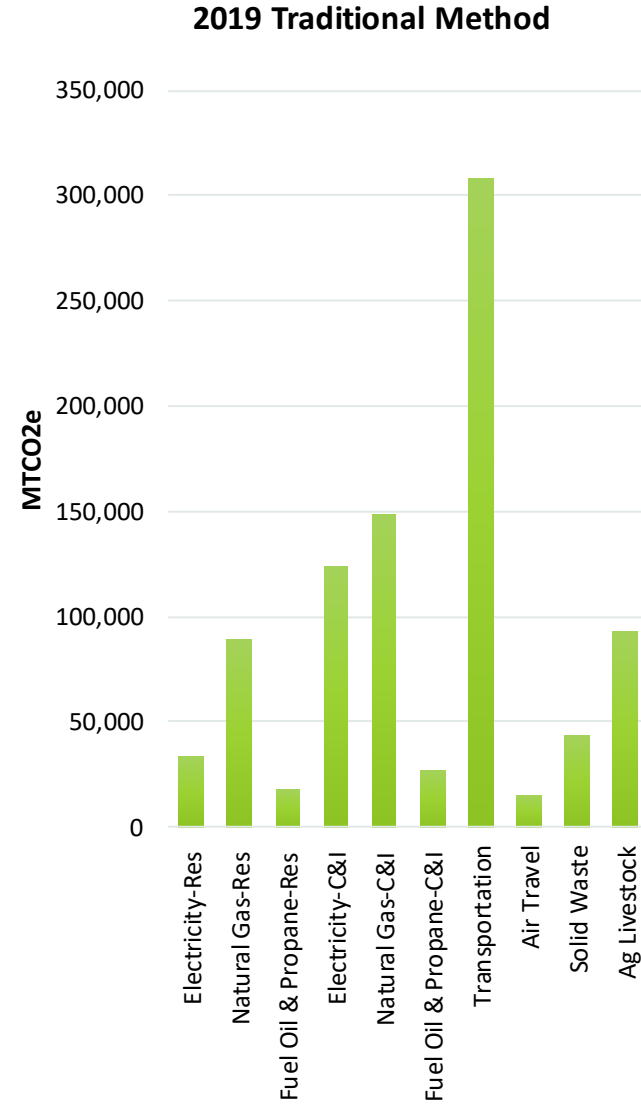
## EMISSIONS



## ENERGY USE

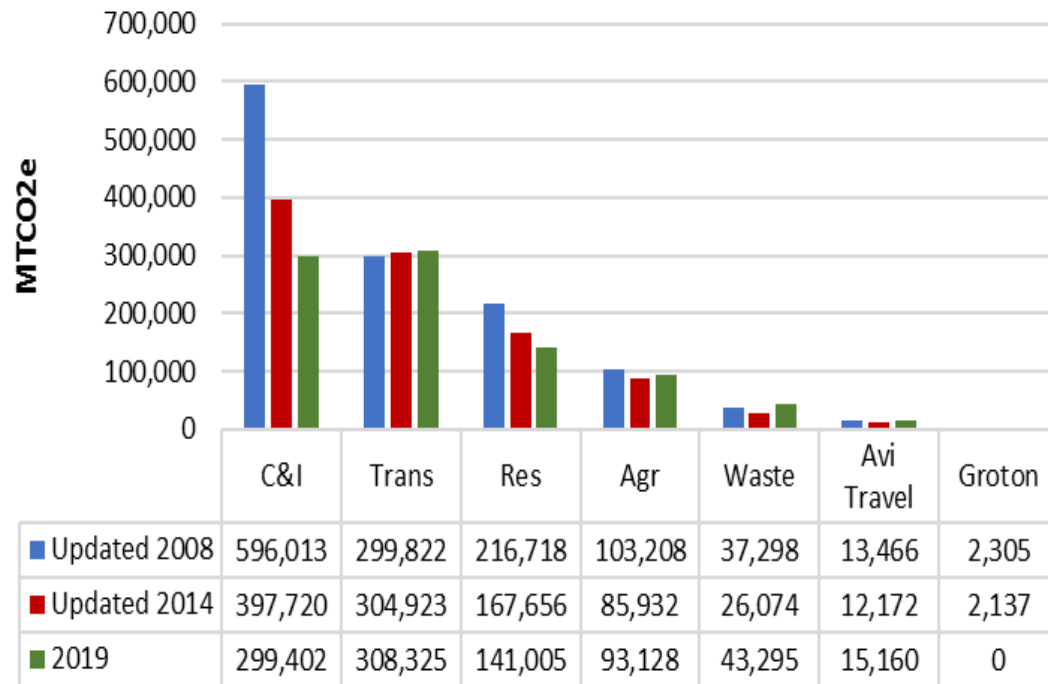


# Where are we today for Community Emissions?

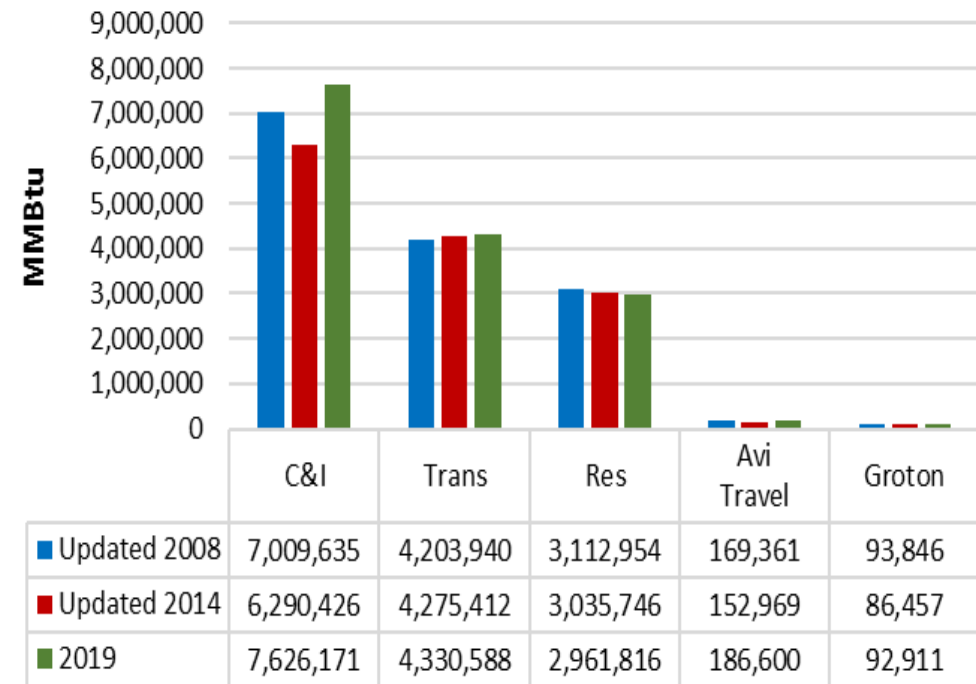


# How does that compare?

### Comparison of GHG Emissions



### Comparison of Energy Use





# Focus Areas for Net-Zero

Green Fleet

Green Facilities

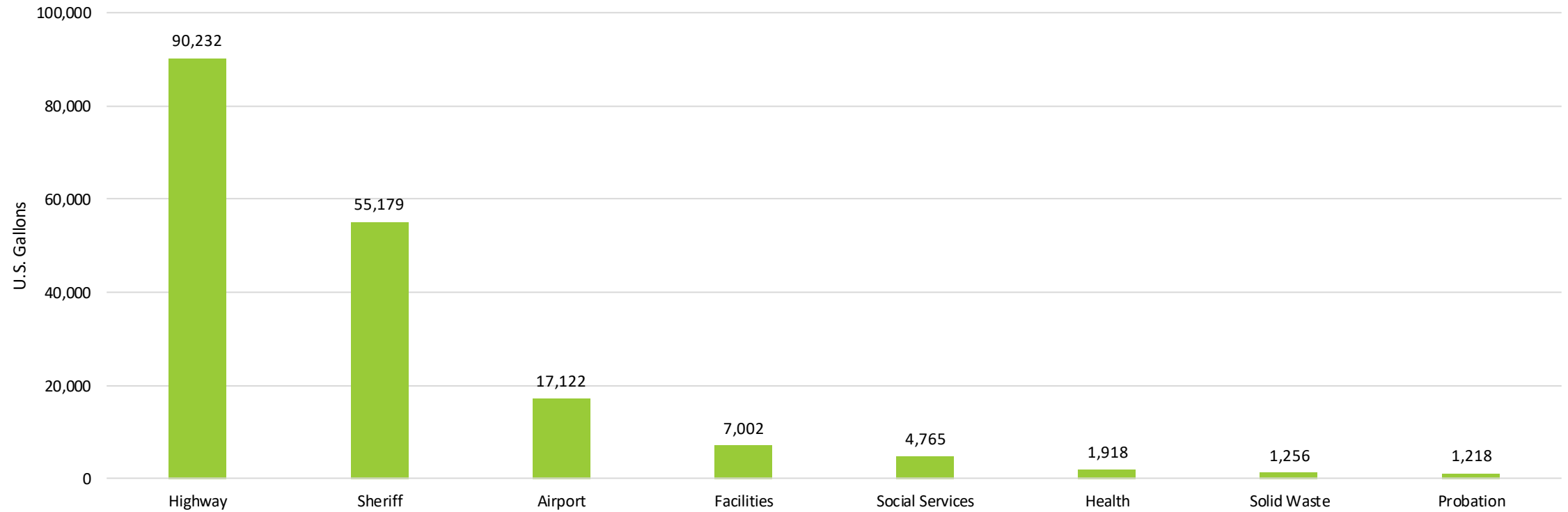
Renewable Energy

External Programs



# Green Fleet

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## Fuel Use By County Departments

# Green Fleet

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## Green Fleet Policy/Capital Fund

- Focus on fully-electric vehicles
- Targeting vehicles that are producing highest amount of emissions

## Right-sizing using data

- Telematics

## Branding

- Helping community and employees know more about EVs
- Sharing our insight and lessons learned with other municipalities

## Infrastructure

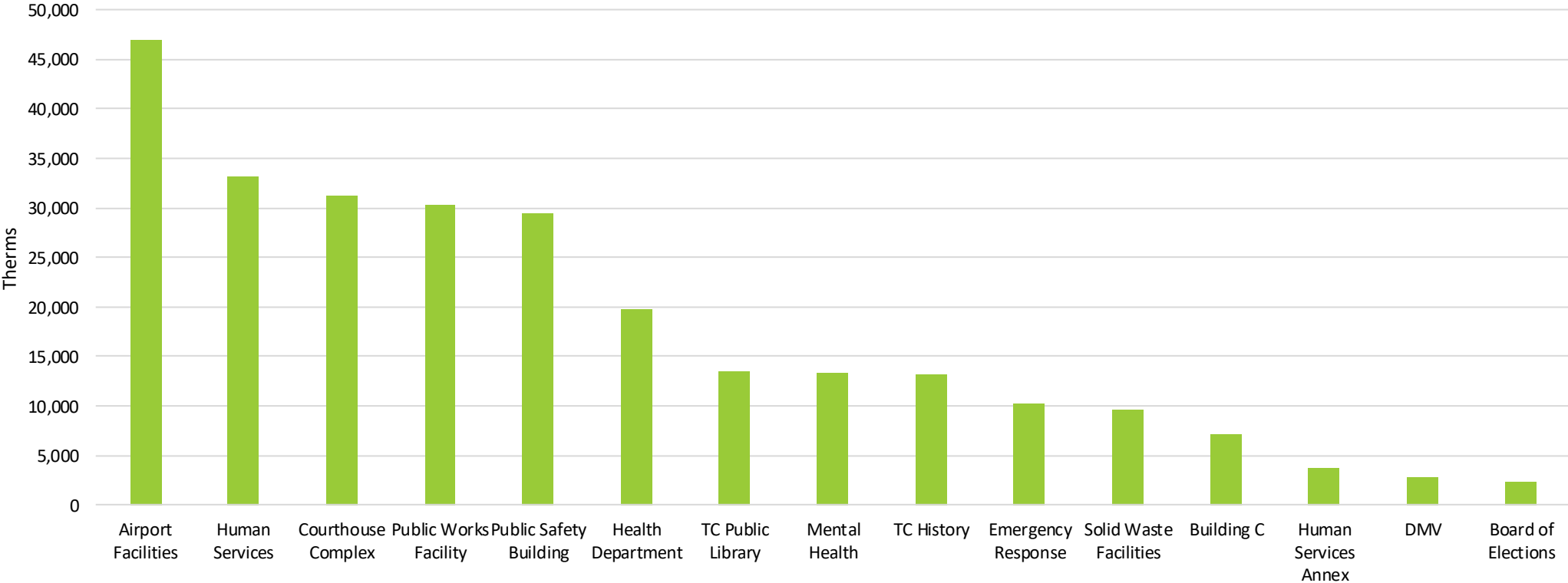
- Developing a charging network for County vehicles



# Green Facilities

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# Natural Gas Use at County Facilities



# Green Facilities Plan

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## Priority – Get off natural gas

- Electrification of heating and domestic hot water
- Air Source and Ground Source Heat Pumps

## Increased energy efficiency

- Better windows
- More insulation
- Air-sealing

## Operations

- Lighting controls
- Plug-load controls
- Upgrading electric infrastructure



Energy Project Comprehensive Scope													
Measure	Public Works Facility	Human Services Building	Library	Mental Health Building	Main Court House	Old Jail	Old Court House	Health Dept	Household Waste Facility	Recycling & Materials Mgmt.	Emergency Response	Annual Savings (\$)	Carbon Emissions Reduction (MT)
LED Lighting Upgrade	X	X	X	X	X	X	X	X	X	X	X	\$58,561	92.6
Building Envelope - Weatherization	X	X	X	X	X	X	X	X		X		\$3,543	34.5
Water Conservation	X	X	X	X	X	X	X				X	\$17,386	3.9
Pipe and Valve Insulation	X	X	X		X	X	X	X			X	\$3,153	30.8
Plug Load Controls	X	X	X	X	X	X	X	X		X	X	\$756	1.7
Window Film	X	X										\$1,364	9.0
TEGG (Electrical Panel Inspection)	X	X	X	X	X	X	X	X	X	X	X	\$6,066	9.8
Computer Power Management	X	X	X	X	X	X	X	X	X	X	X	\$3,149	6.9
Transformer Replacement		X	X	X								\$7,730	14.7
VFD on Hot Water Pumps	X											\$395	0.6
VRF Installation				X								\$6,157	71.4
Controls Optimization	X	X	X	X	X	X	X	X		X	X	\$13,369	73.8
Window Replacement				X								\$1,221	2.8
Roof Replacement			X									\$329	3.1
Geothermal Installation	X											\$6,094	122.3
Boiler Replacement		X									X	\$2,933	28.4
Rooftop Unit Replacement			X									\$2,349	117.2
Solar PV - Roof Mount	X		X						X		X	\$85,798	176.3
Solar PV - Car Port		X						X				\$25,343	48.9
Garage Door Controls	X											\$1,189	11.9
DHW Heater Replacement	X	X										\$776	6.2
PTAC Replacement										X		-\$434	9.3
Geothermal Installation								X				\$6,637	98.6
Retro-Commissioning	X	X	X	X	X	X	X	X		X	X	\$21,444	66.1
Solar PV - Field Mount												\$135,823	265.5
Distributed Energy Storage - Battery		X										\$5,813	-0.7
Geothermal Installation					X							\$5,127	67.8

**Phasing Legend**

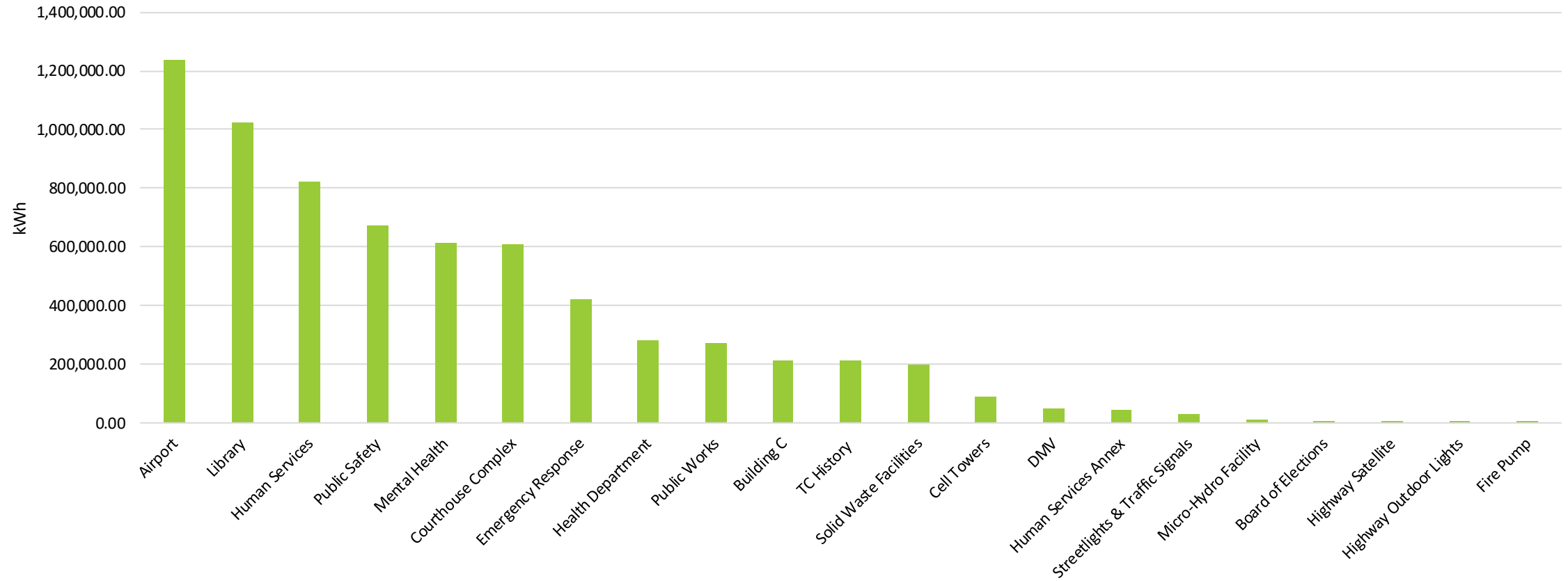
	Phase I	2022-2023
	Phase II	2024-2025
	Phase III	2026

Total Annual Savings All Phases \$422,071

# Renewable Electricity

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# Electricity Use at County Facilities

# Renewable Electricity

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County Uses 6 – 7 Million kWhs per year

- Only going to up with electrification of buildings and fleet
- Solar production at County facilities less than 200,000 kWh

Waterloo Hydro Generation

- County has a Power Purchase Agreement (PPA) with hydro facility in Waterloo, NY
- Generates 3-5 million kWhs per year
  - Provides County both RECs and Electricity at a fixed price

County Purchases Renewable Energy Certificates to cover gap in kWh use and existing renewables production

- Need to find New York Sources and to help generate new renewables development



# External Programs

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# External Focus

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County Business Energy Advisor Program

IDA Green Tax Incentive

County Leadership

- EV Procurement
- Green Facilities
- 2030 District Advisory Group
- Earth Source Heat Advisory Group

Working with City of Ithaca on Green New Deal

- Opportunity to help broaden beyond City/Town of Ithaca borders

Having a voice in State policy-making



## What's next?

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Looking for a Sustainability Coordinator to work on our external focus

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Continue our electrification efforts for fleet and facilities

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Look for new opportunities for expanding renewables

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Take advantage of Federal infrastructure Funding

# Can we get there? / Major Barriers

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## COUNTY OPERATIONS

Technology for Buildings and Fleet needs to develop further

Need to understand better how to change how our employees commute and how to incentivize low/zero-carbon alternatives

Need assistance from State Policies (minimal)

## COMMUNITY

Need major assistance from State Policies

New York State Grid needs to reach 100% renewable electricity

Major technology break-throughs required

- Heating, Grid Distribution and Transmission

Innovative funding mechanisms (Ithaca GND) are necessary



Questions?

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