Introduction to Climate Action Planning

CDRPC Planning and Zoning Workshop
October 28th, 2022
Jim Yienger, Principal

CLIMATE ACTION ASSOCIATES LLC

Do a good job.
good luck!

Josie
8 

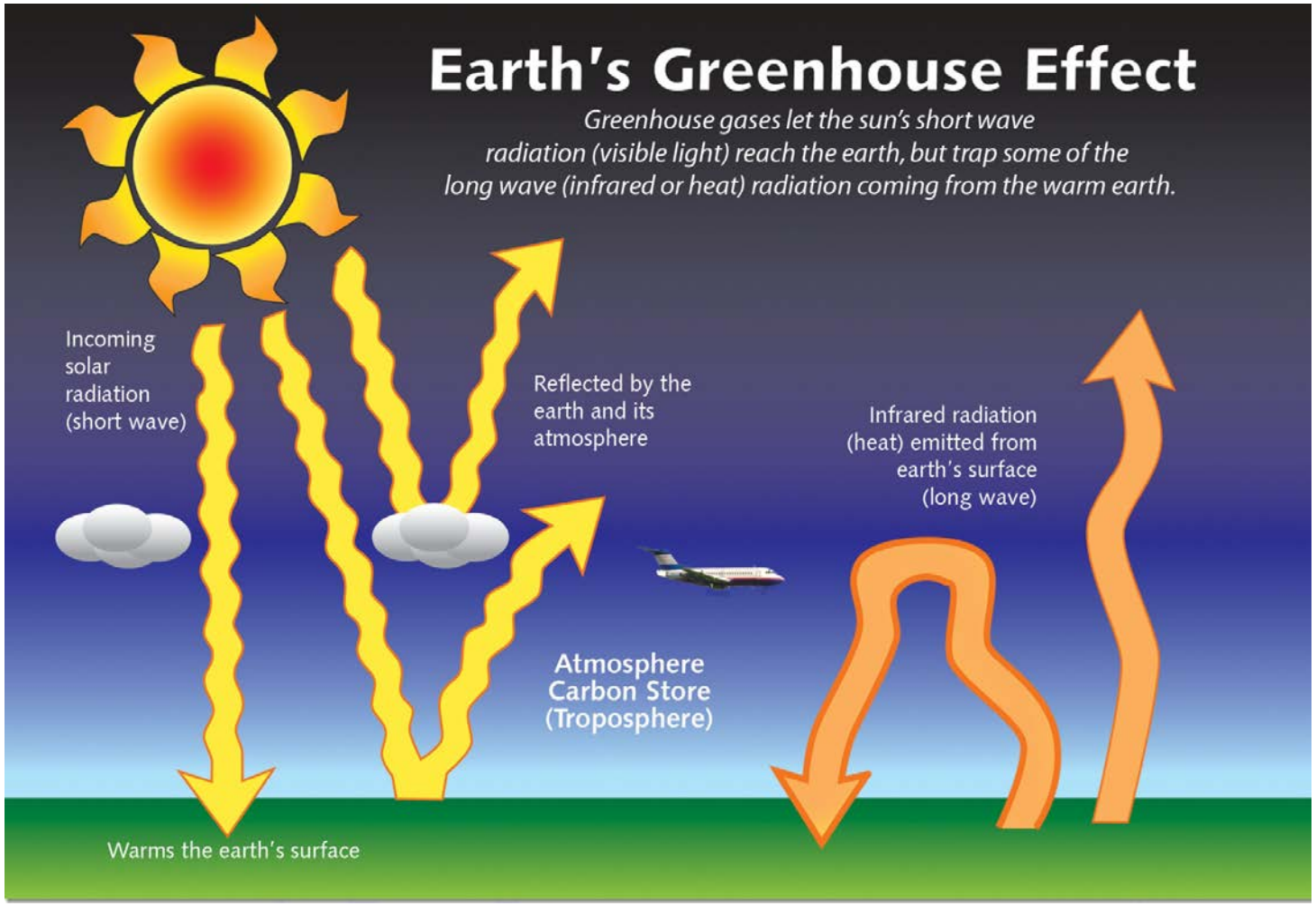
Goals

1. Review climate change science and GHG emissions
2. Introduce “Climate Action Planning”
   - How it works?
   - Why are communities doing it?
   - Relationship to planning and zoning
3. Resources and support available

1. Review- Climate Change and GHG Emissions

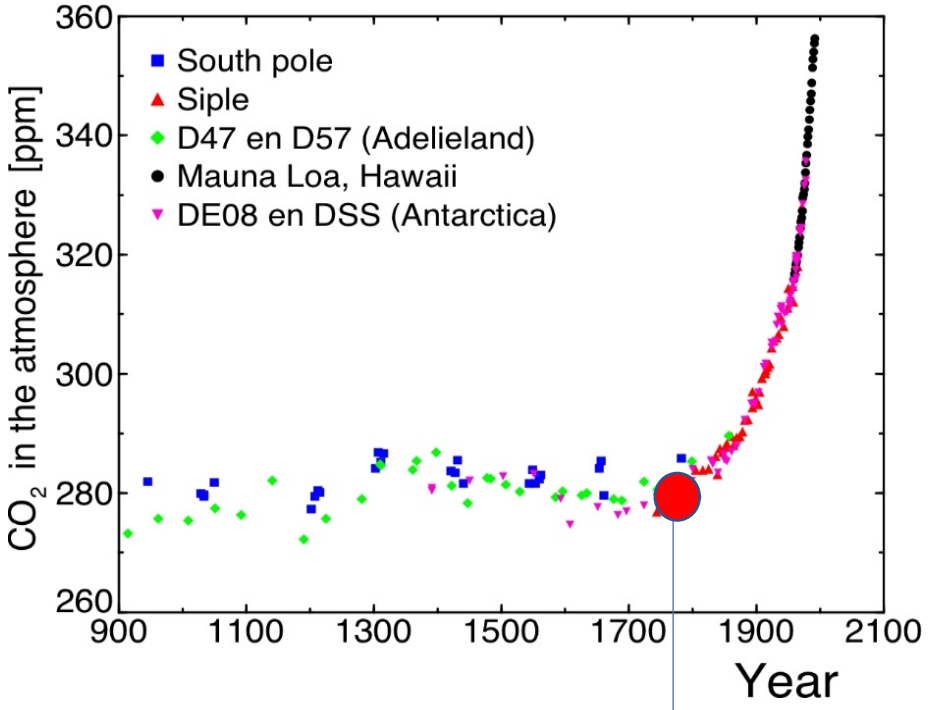
The greenhouse effect is well understood

- Greenhouse Gases
- CO_2 – Carbon Dioxide
- CH_4 – Methane
- N_2O – Nitrous Oxide
- HFCs - Refrigerants
- PFCs
- SF_6
- others

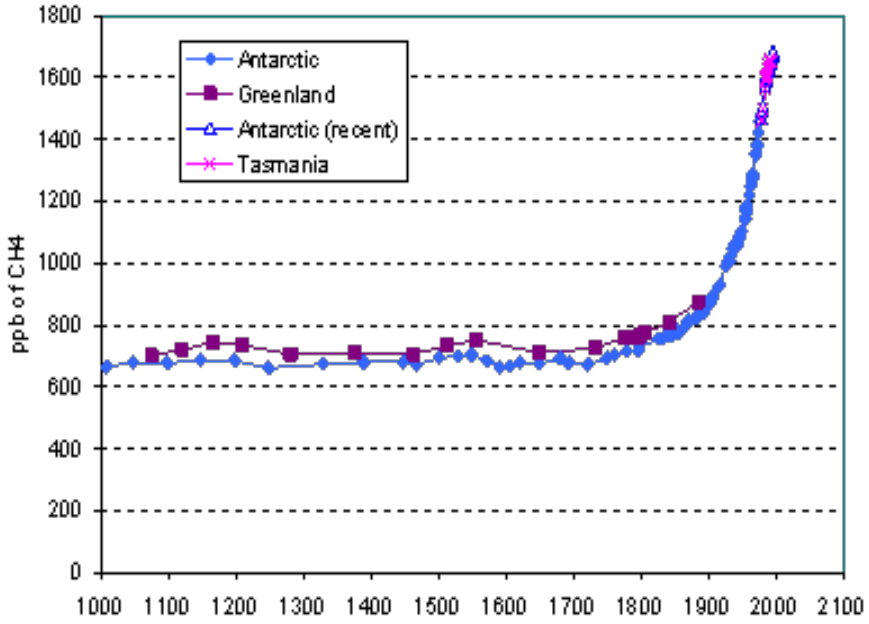


GHG concentrations are rising fast

CO2 Concentration

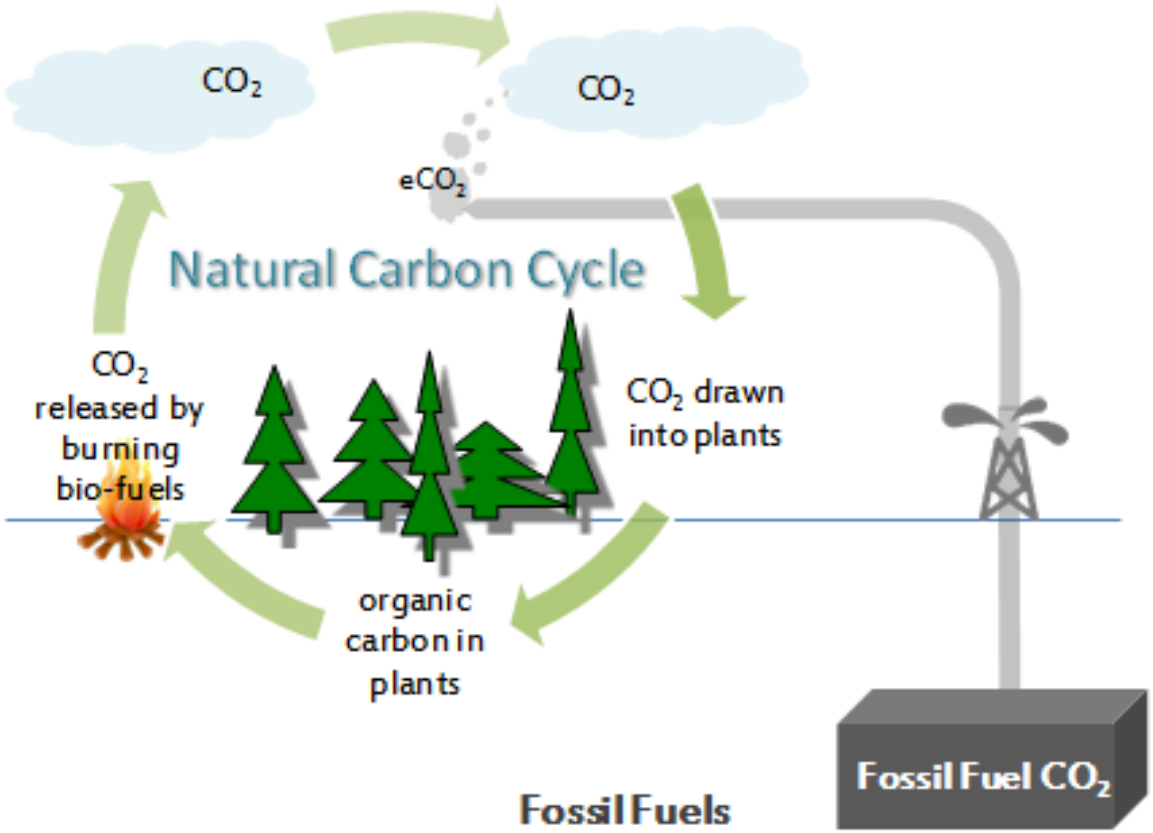


Methane Concentration



1745, world's first oil refinery in Russia

Why do fossil fuels increase CO_2 Concentrations in the air, land and water?



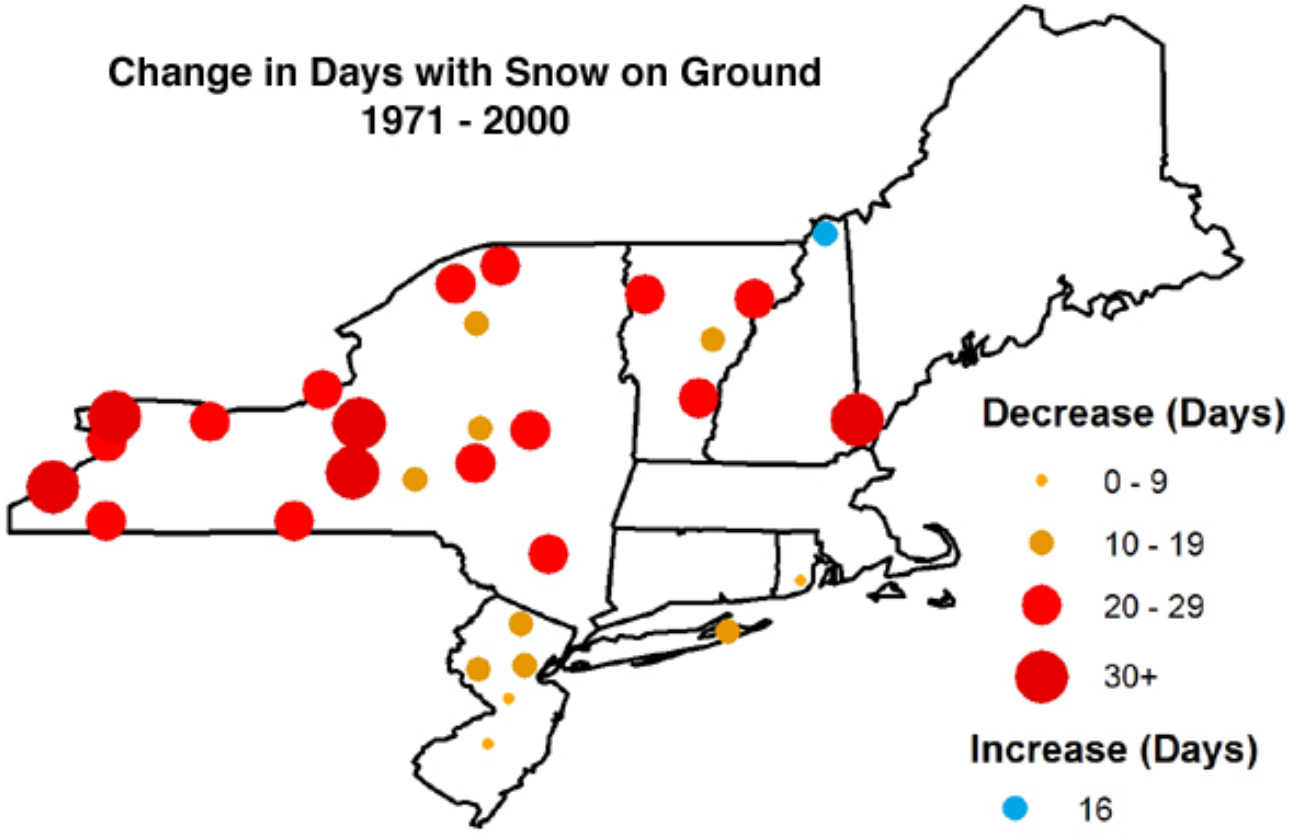
Fossil Fuels do cause climate change. Burning fossil fuels injects CO_2 into the closed natural cycle. Without a way to remove it, it builds up in the air, in plants, and in the water causing climate change and other impacts.

Climate Change Impacts

New York and the Capital Region

Higher observed temperatures, less snow

- Since 1970
- Annual mean +2.4° F
- Winter mean +4.4° F



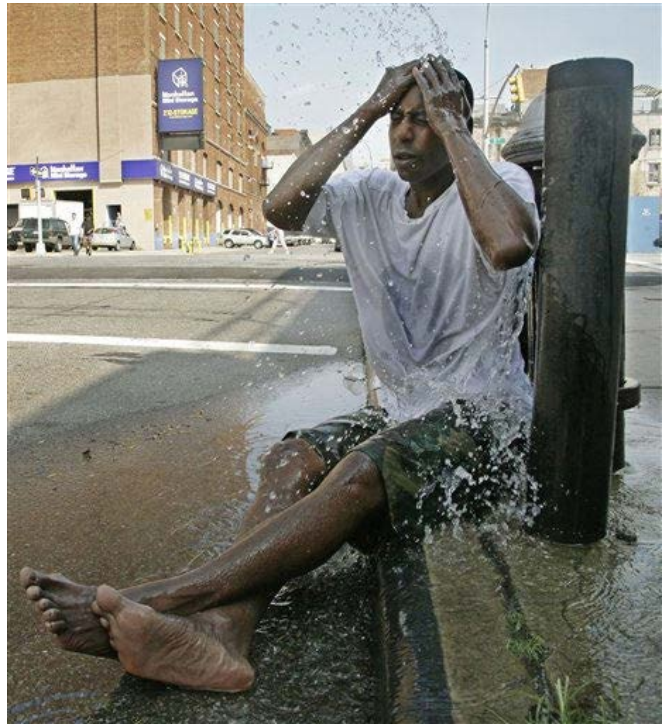
Wetter, more precipitation

Precipitation Baseline (1971-2000) 43.3 inches	Low-estimate (10th percentile)	Middle range (25th to 75th percentile)	High-estimate (90th percentile)
2020s	-1 percent	+ 2 to + 7 percent	+ 10 percent
2050s	+ 2 percent	+ 4 to + 12 percent	+ 14 percent
2080s	+ 3 percent	+ 5 to + 15 percent	+ 17 percent
2100	- 1 percent	- 5 to + 22 percent	+ 26 percent

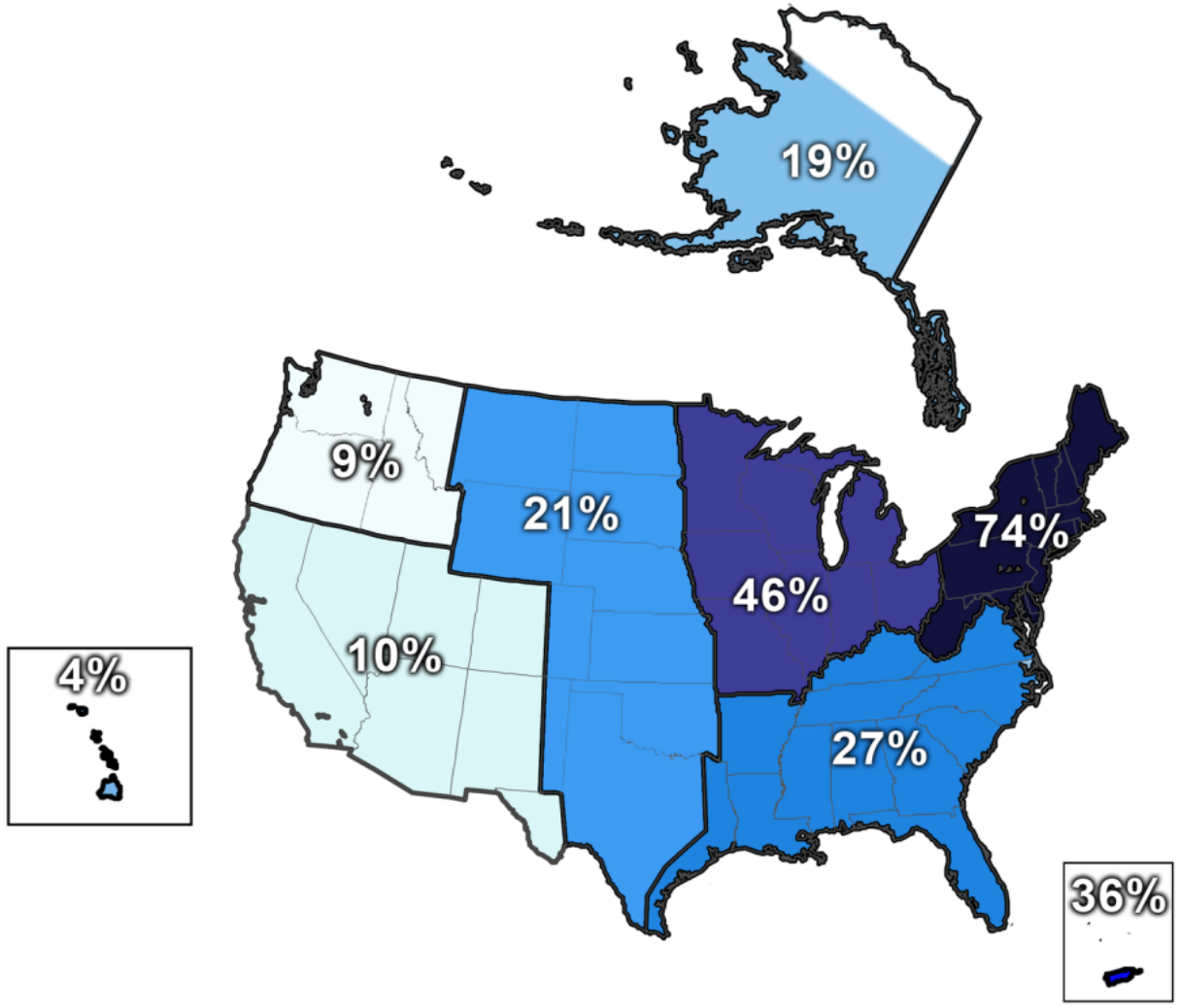
NYS ClimAID

More extreme temperature events

- **By 2030**
  - 14 to 23 days over 90°F
  - 2 to 4 heatwaves annually (lasting 2 to 5 days)
  - 1-2 days with over 2 inches of rainfall
- **By 2050's**
  - 22 to 50 days over 90°F
  - 3 to 7 heatwaves (lasting 5 to 6 days)
  - 1-2 days with over 2 inches of rainfall



Extreme precipitation, more floods, more drought



Observed trends in 1-day very heavy precipitation (1958 to 2010).

Infrastructure risks

- Flooding, Material stress and fatigue
- Ice and snow
- Insufficient drainage capacity
- Wastewater systems

- Emergency response and Telecommunications
- Flooding
- Power outage
- Emergency Response

Agricultural and ecosystem impacts

- Changing crop zones
- Delayed planting (wet springs)
- Drought / flood
- Invasive weeds and pests from the south

GHG Emissions and Land Use

Patterns in the Capital District

Capital District Regional GHG Inventory (CDRPC)

- Comprehensive GHG inventory for the Capital District REDC
- Supports local and regional planning
- Baseline Year 2010
- Available at CDRPC website

Capital District 2010 Regional GHG Inventory

With Community GHG Inventories for all 160 Municipalities in the Capital District.

Prepared for
The New York Energy Development and Research Authority (NYSERDA), Albany, NY.
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Prepared by
The Capital District Regional Planning Commission (CDRPC)
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CDRPC

and

Climate Action Associates LLC
Jim Yienger, Lead Author

NYSERDA Contract #24253

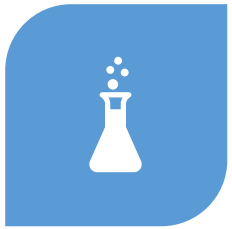
FINAL DRAFT: 5/20/2013

Sources of Anthropogenic GHG emissions

ELECTRICITY AND FOSSIL FUEL USE IN HOMES, BUSINESSES, INDUSTRIES

VEHICLES AND FLEETS

LANDFILLS



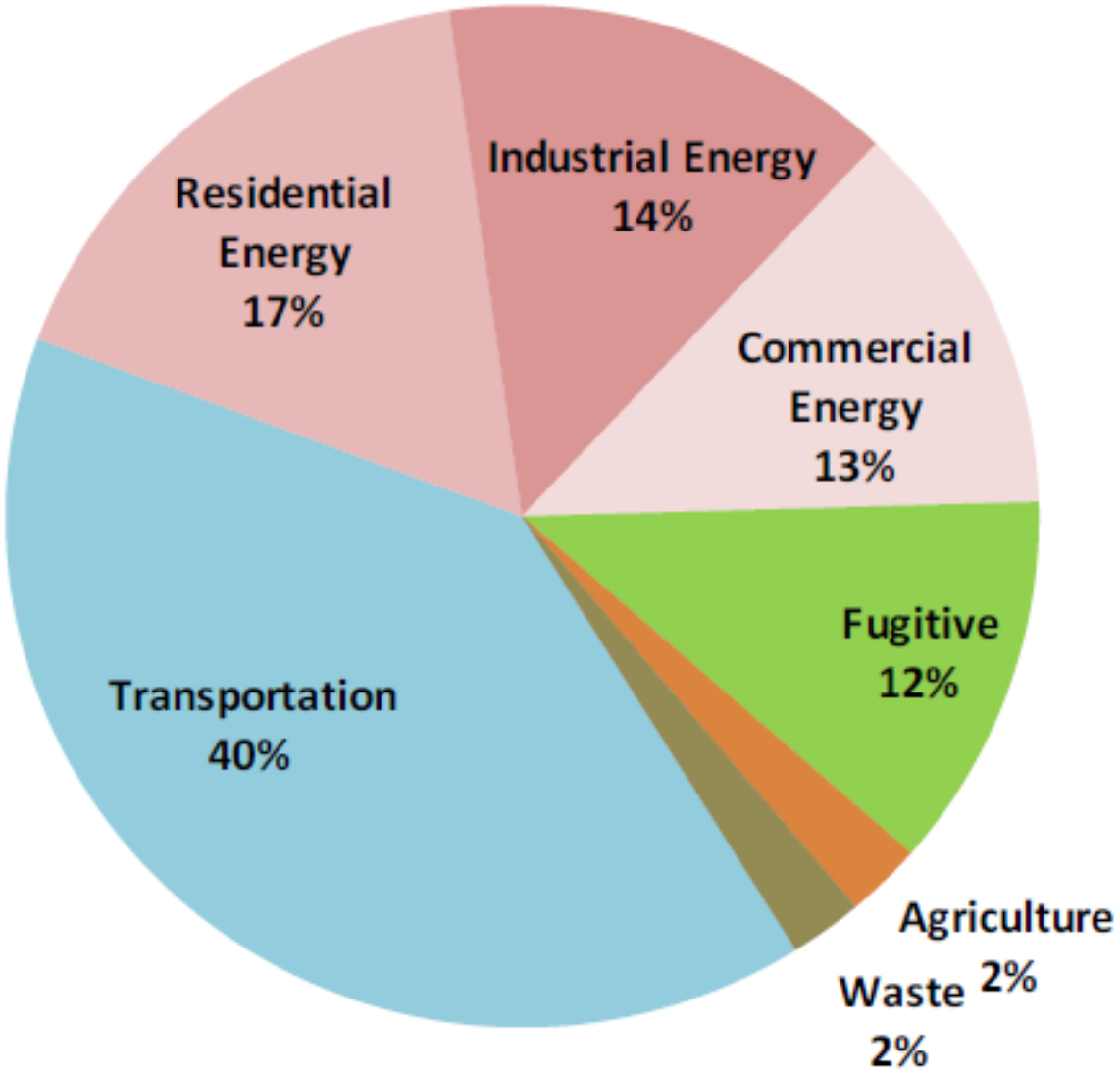
WASTEWATER TREATMENT METHANE

REFRIGERANTS

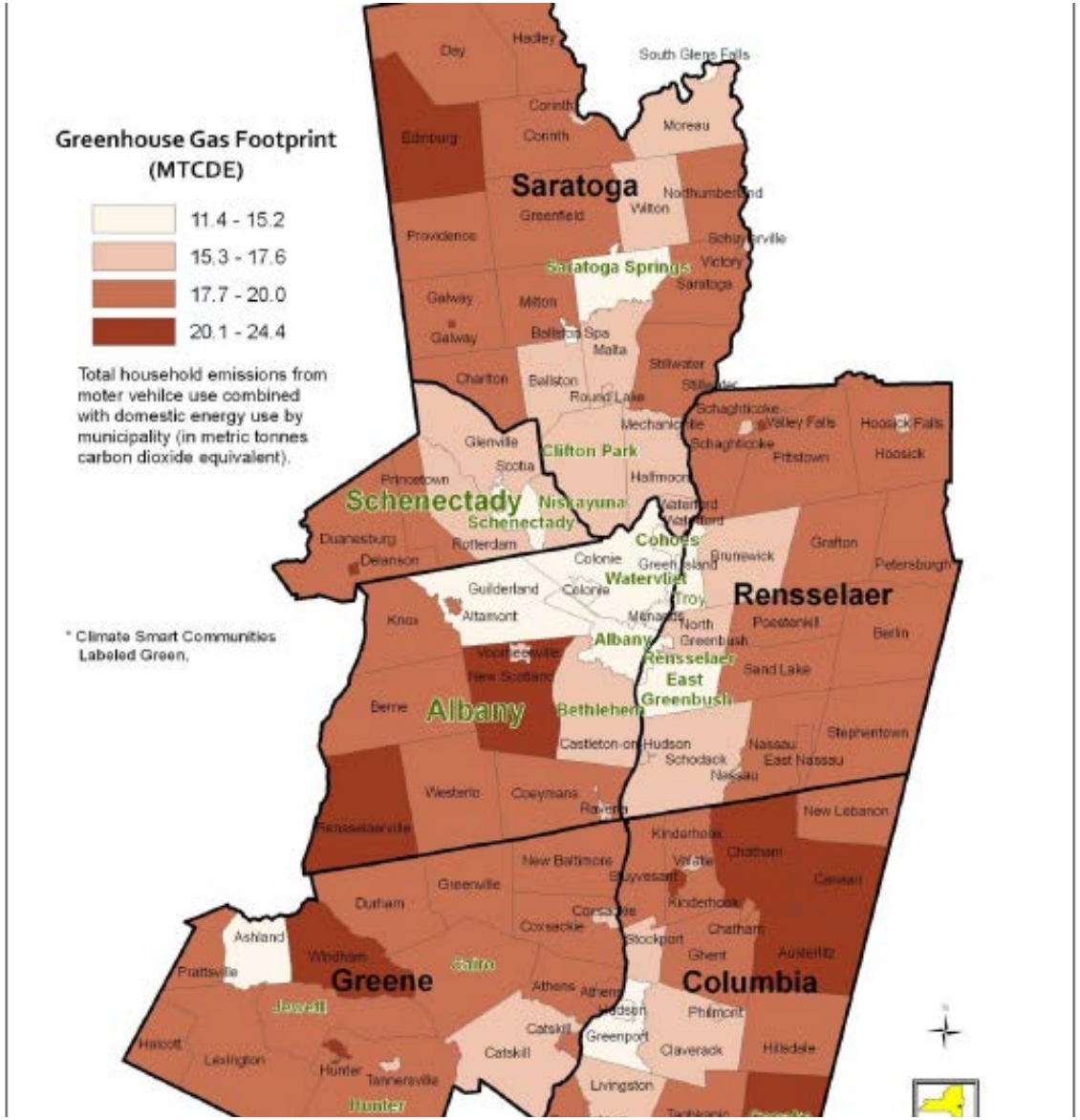
AGRICULTURE, INDUSTRIES, AND OTHER SOURCES.

GHG Emissions by Sector in the Capital Region

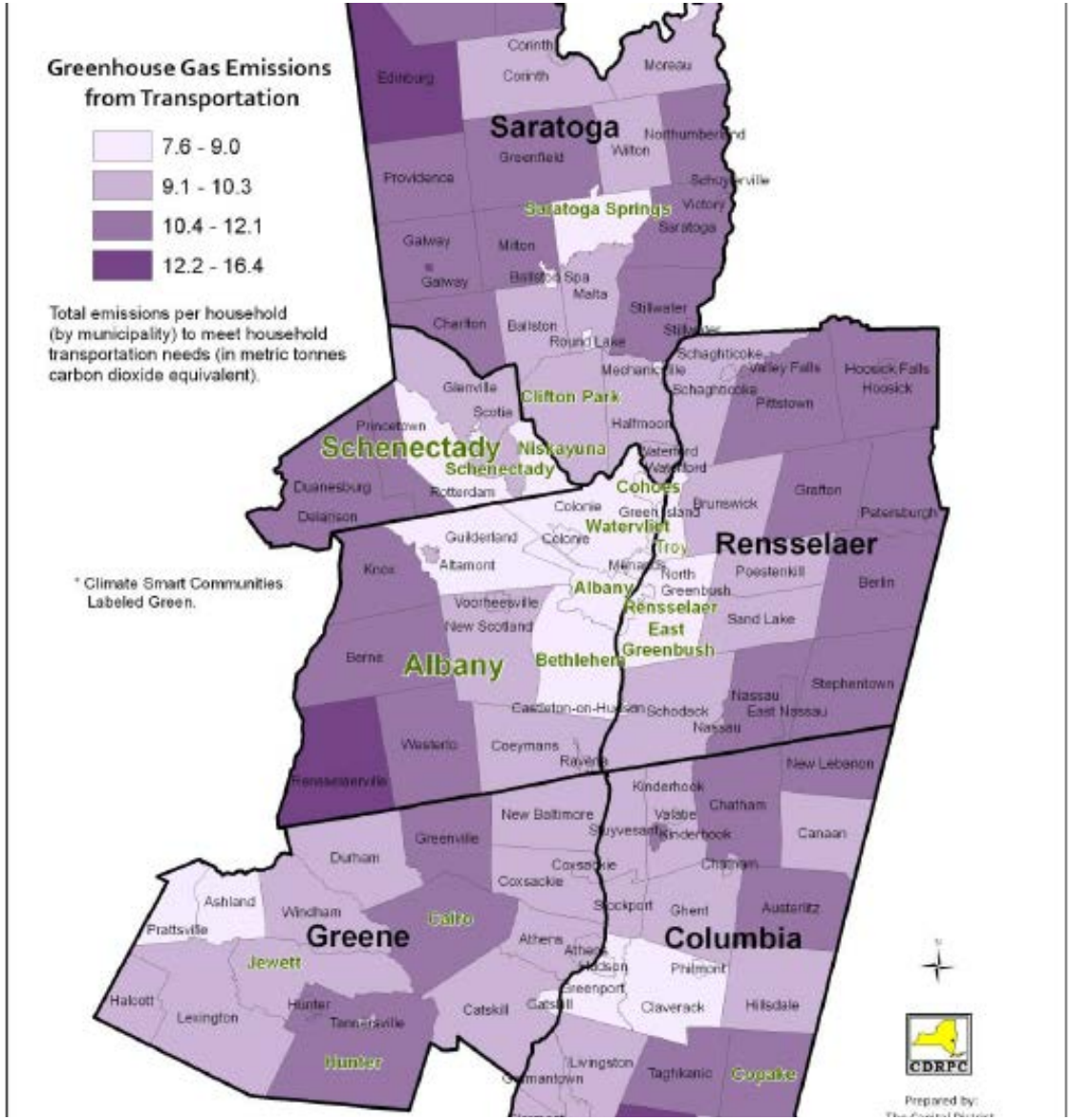
- 15.8 Million Metric Tons Carbon Dioxide Equivalent (MTCDE)
- 14.7 MTCDE per capita
- $4.5 billion spent on energy



Household GHG emissions across the region

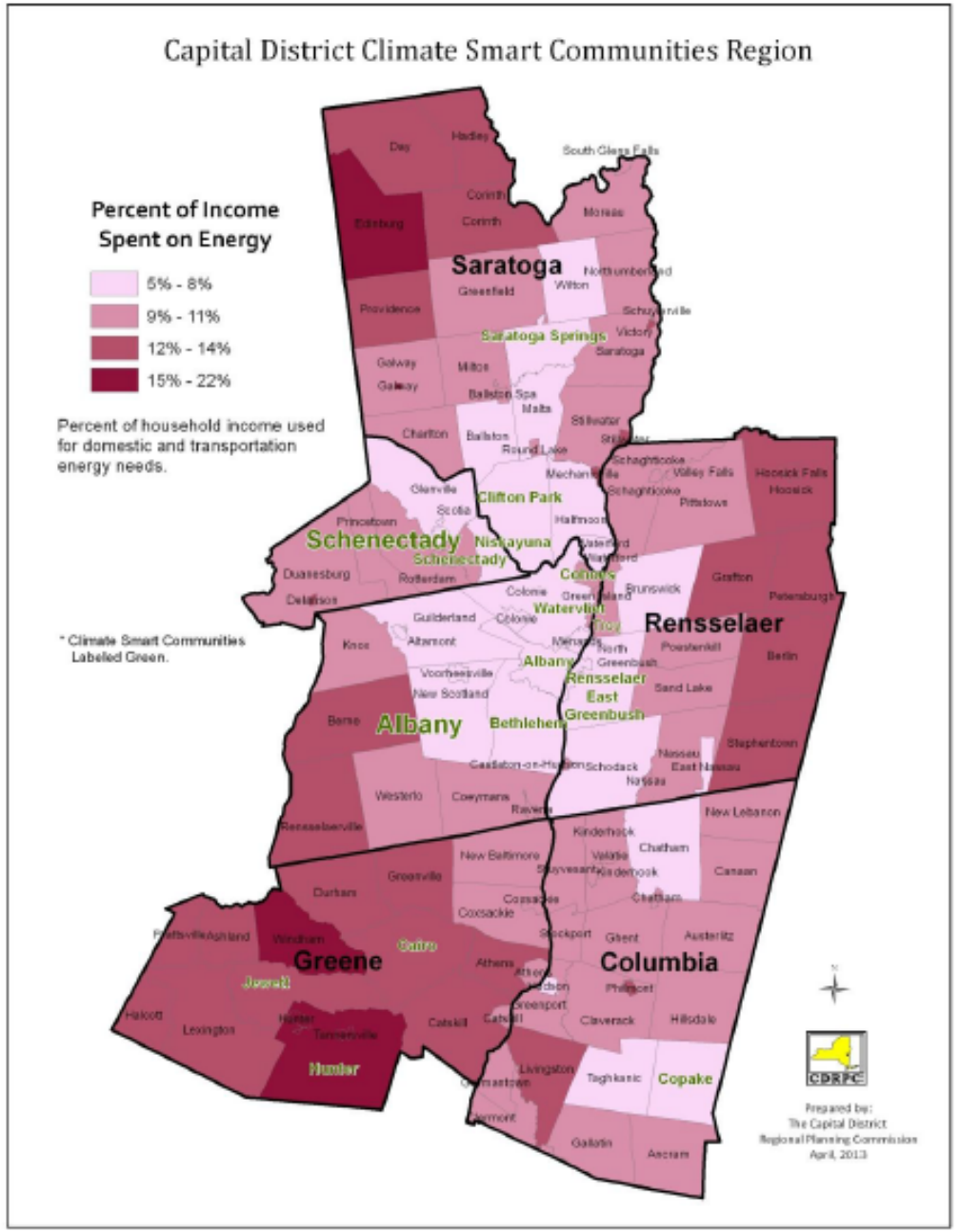


Household GHG emissions from transportation



Household Income Spent on Energy

Figure 12. Energy Cost of Living as a Percent of Income



2. Local Climate Action Planning

Addressing Climate Change, Reducing GHG Emissions

Local governments: uniquely influential on GHG emissions

- Community Emissions
  - Planning, building codes, permits
  - Zoning, Solar zoning
  - Electrification
  - E.g., mixed use zoning reduces car use by 5% (EPA, 2011)
  - Land Conservation practices – afforestation, green space, Green infrastructure, etc.
  - Outreach, campaigns, coordination.
  - Community Choice aggregation

- Municipal operations & services
  - Solid waste recycling/disposal
  - Public drinking water, sewage systems
  - Public roads, drainage, transit systems
  - Local government buildings, facilities

What is Climate Action Planning?

- Strategic planning process
  - Develop a GHG emissions inventory
  - Set goals and GHG reduction targets
  - Identify existing and potential strategies
  - Draft a plan and make it publicly available
- Why do it?
  - Consolidate interest on climate change, inspire action
  - Save energy and money, especially in services.
  - Identify resources, grants, and partnerships

Climate Action Plans (CAPs) – Two Types

"Community" CAP

- Emissions from residents and businesses
- Focusing on policies that can influence emissions
- Bigger picture, longer term

"Government Operations" CAP

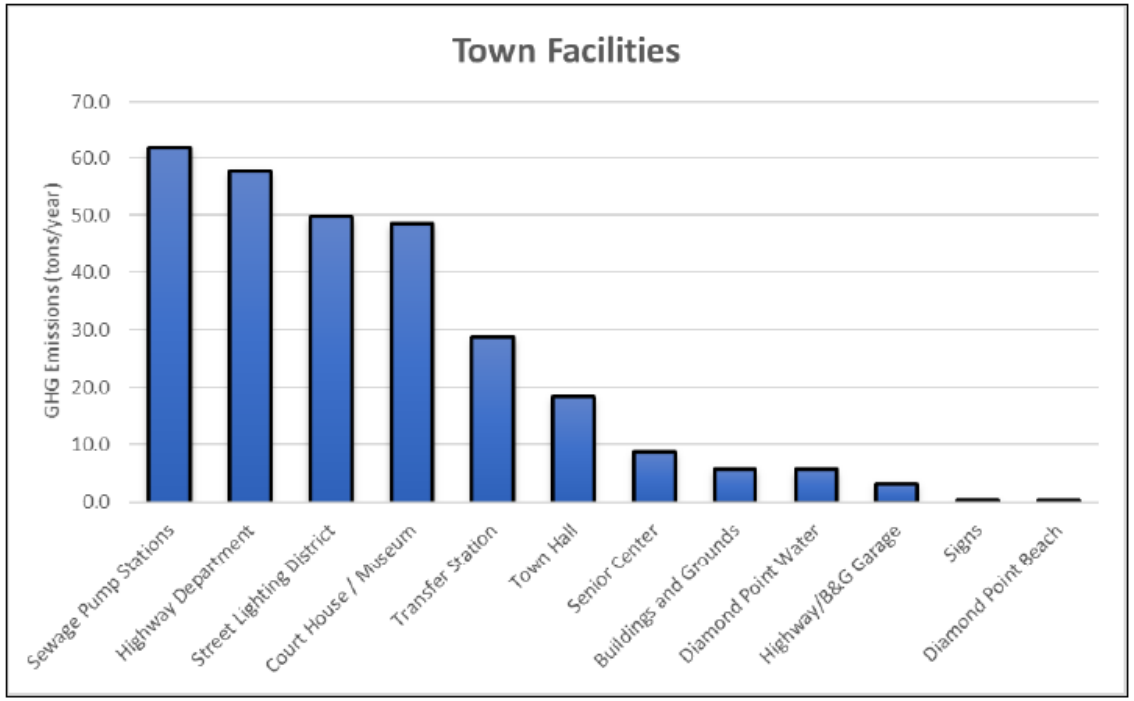
- Focused on emissions from service areas:
  - Facilities
  - Fleets
  - Wastewater and water treatment plants
  - Landfills
  - Streetlighting
  - Other facilities
- More concrete and focused

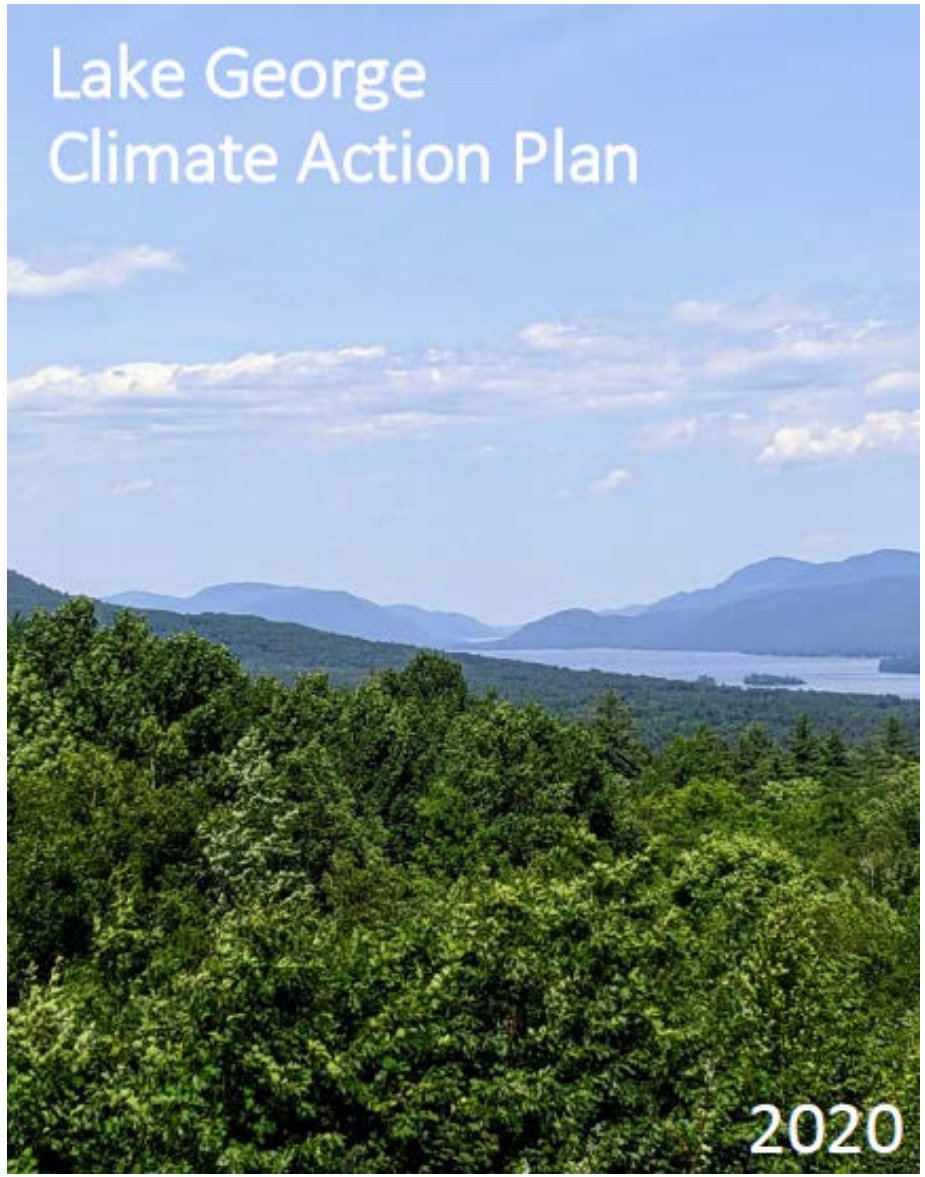
Government Operations Process

- Simpler – involves less people
  - Assemble a tight working group- staff, elected officials, other experts in operations. Identify a champion.
- Create a baseline GHG emissions inventory
  - Identify major sources
- Through multiple meetings, develop measures
  - Review each operations service area
  - Review existing initiatives, brainstorm new ideas
  - Quantify, rank, select actions
- 3-6 months is typical

Lake George GHG Emissions Inventory

Town GHG Emissions (tons)	559
Facilities/Buildings	**238**
Electricity	54
Natural gas	129
Fuel Oil	25
Propane	-
Kerosene	30
Street Lighting	**50**
Electricity	50
Fleet Fuel Use	**252**
Gasoline	82
Diesel	170
Other - Process	**19**
Refrigerants	11
Solid Waste Generation	8
WWTP Process (N2O,CH4)	





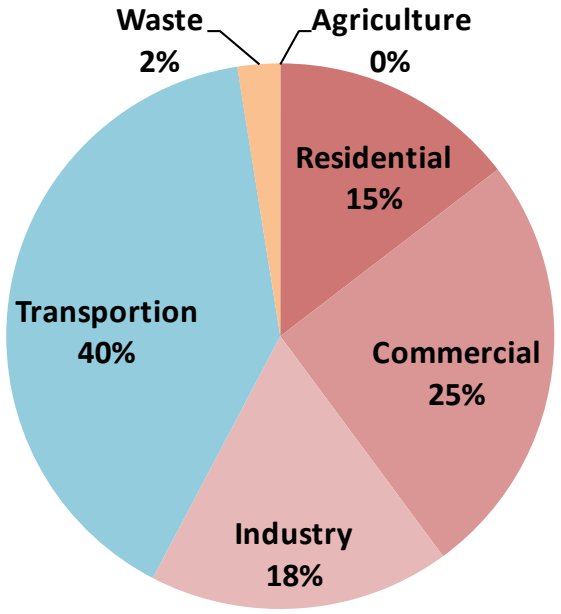
Pathways to Deep GHG Reductions

The GGC identified enough strategies to exceed the 635 tons of savings per year needed to reach the 2035 reduction goal. The committee organized strategies under five key pathways, with each characterized by their implementation timeframe:

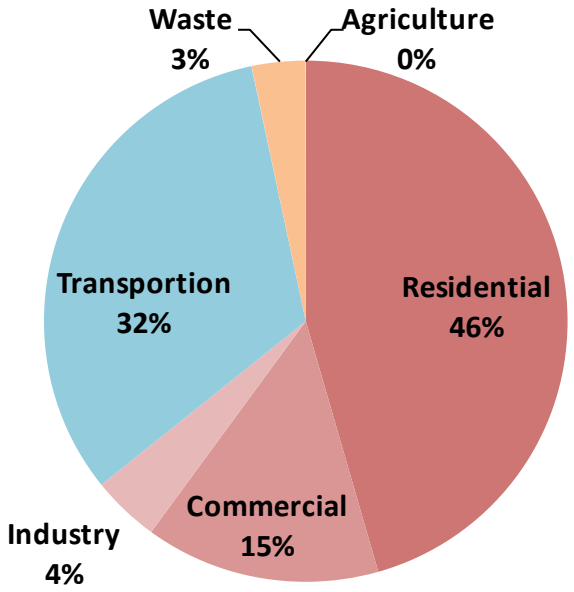
- **Near-term**: strategies are feasible and implementable within the next three years.
- **Mid-term**: strategies to be phased in gradually, or when and if technically appropriate.
- **Long-term**: strategies are ideas listed for additional feasibility study in the future.

CAP Pathway	Strategy	Timeframe	GHG Savings (tons)	% of 2035 Goal
1. 100% Renewable Electricity	1.1 Purchase Community Solar	Near	181	30%
	1.2 Facility Solar	Mid		
	1.3 Solar Farm on Town Land	Long		
2. Clean Heating and Cooling	2.1 HVAC Retrofit Plan	Near	155	26%
	2.2 Due Diligence Policy	Near		
3. Energy Conservation	3.1 LED Facility and Street lighting	Near	143	24%
	3.2 Caldwell Sewer District Improvements	Near		
	3.3 Energy Audits - Water Facilities	Near		
	3.4 Shared Services: Town Highway and Village DPW	Mid		
	3.5 Facility-specific measures (GGC Identified)	Near to Mid		
4. Fleet Management	4.1 Fleet Right Sizing and Efficiency	Near	155	26%
	4.2 Electric Vehicles	Near to Mid		
	4.3 Fleet Procurement Policy	Near		
	4.4 Shared Services: Town Highway and Village DPW	Mid		
5. Process and other Emissions	Clean Refrigerants, Waste reduction, Wastewater	Mid - Long	25	4%
TOTAL			**659**	**109%**

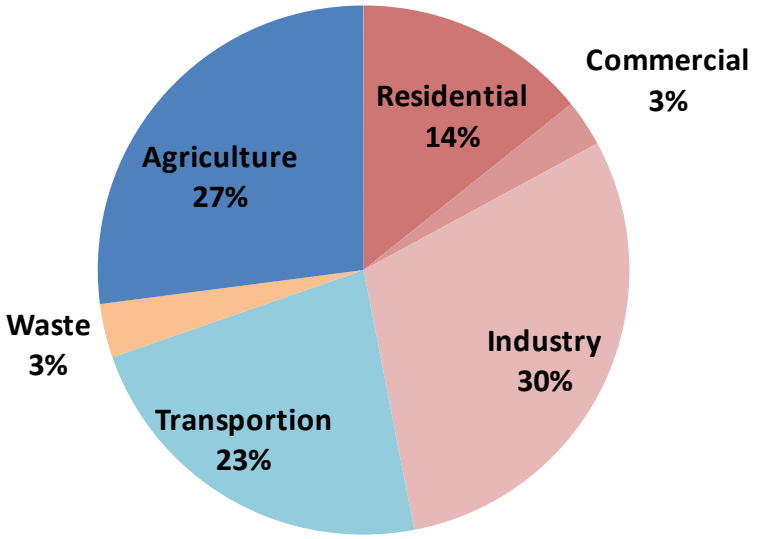
Community Climate Planning



City of Albany



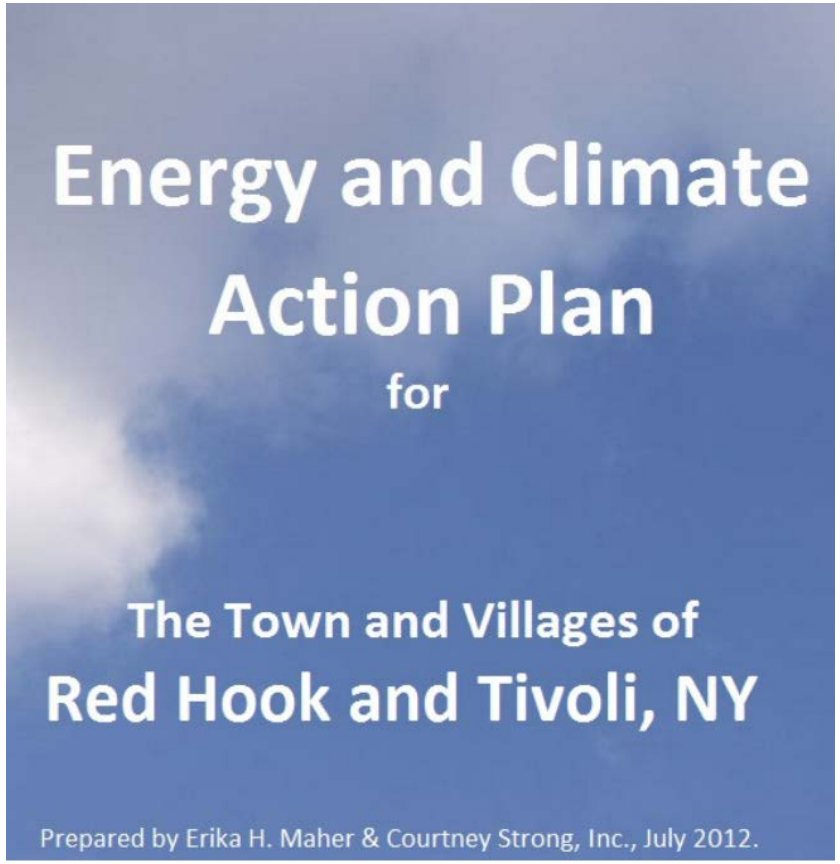
Town of Kinderhook



Town of Fort Anne

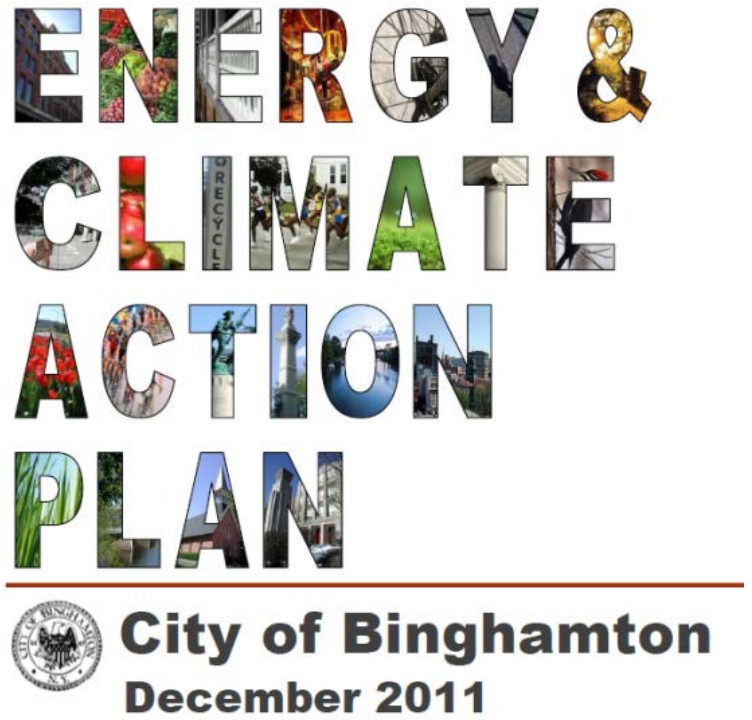
Community CAP Process

- Formulate a climate committee
  - Staff, elected officials, zoning and planning board members, business, volunteers, champions, etc.
- Develop a public outreach strategy and timeframe
- Develop a community-wide GHG inventory
- Review planning, zoning, and policy review – Gap analysis
- Review Sectors (4-6 meetings)
  - Transportation
  - Residential, commercial, industrial buildings
  - Agriculture
- Develop draft, secure public input
- Finalize and adopt
- Timeframe 6-18 months



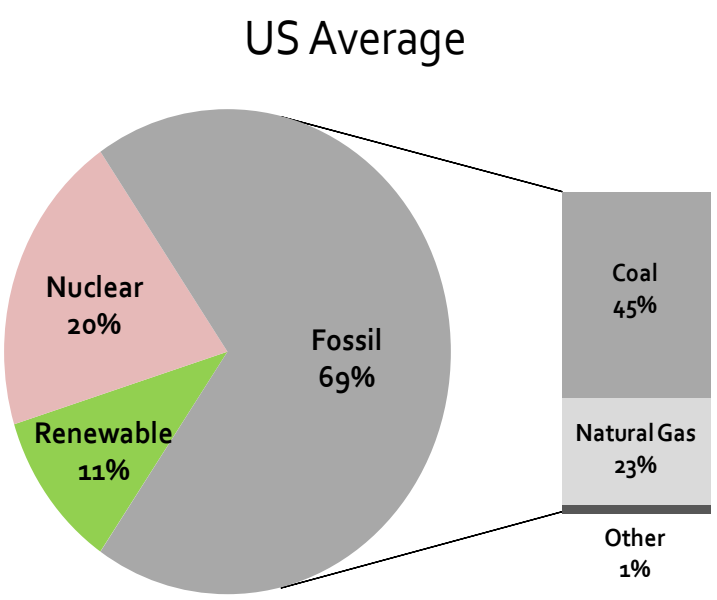
Integrate climate into current plans and procedures

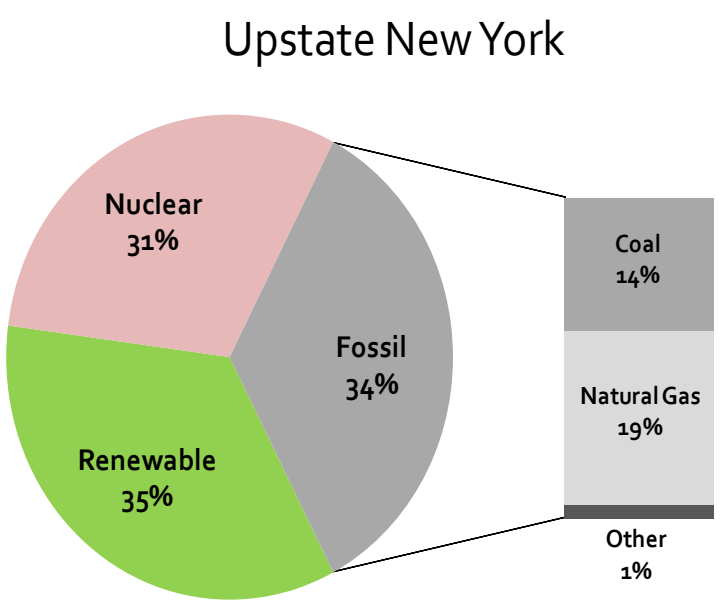
- Add climate during routine updating to:
  - Comprehensive plans
  - Subdivision plans
  - Emergency response plans
  - Infrastructure risk-management plans
  - Open space plans



Common NY State Strategy: Electrification

- Heating and Cooling- shift oil and gas to electric heat pumps
- Vehicles- shift gasoline and diesel to electric drive
- Shifting vehicles in upstate NY creates 50-80% GHG savings per mile





Other Community Actions (some examples)

Land Use / zoning

- Mixed use zoning reduces the need for driving by 5% over conventional zoning.
- Solar zoning overlays
- EV site planning
- Density incentives, permitting higher structures.

Energy Policy

- Energy Conservation Codes
- Green Buildings policy for public buildings
- Community Choice Aggregation

Renewable Energy Goals

- Solar Permitting
- Petroleum reduction goals and campaigns
- Community Distribute Generation

3. Resources and Support

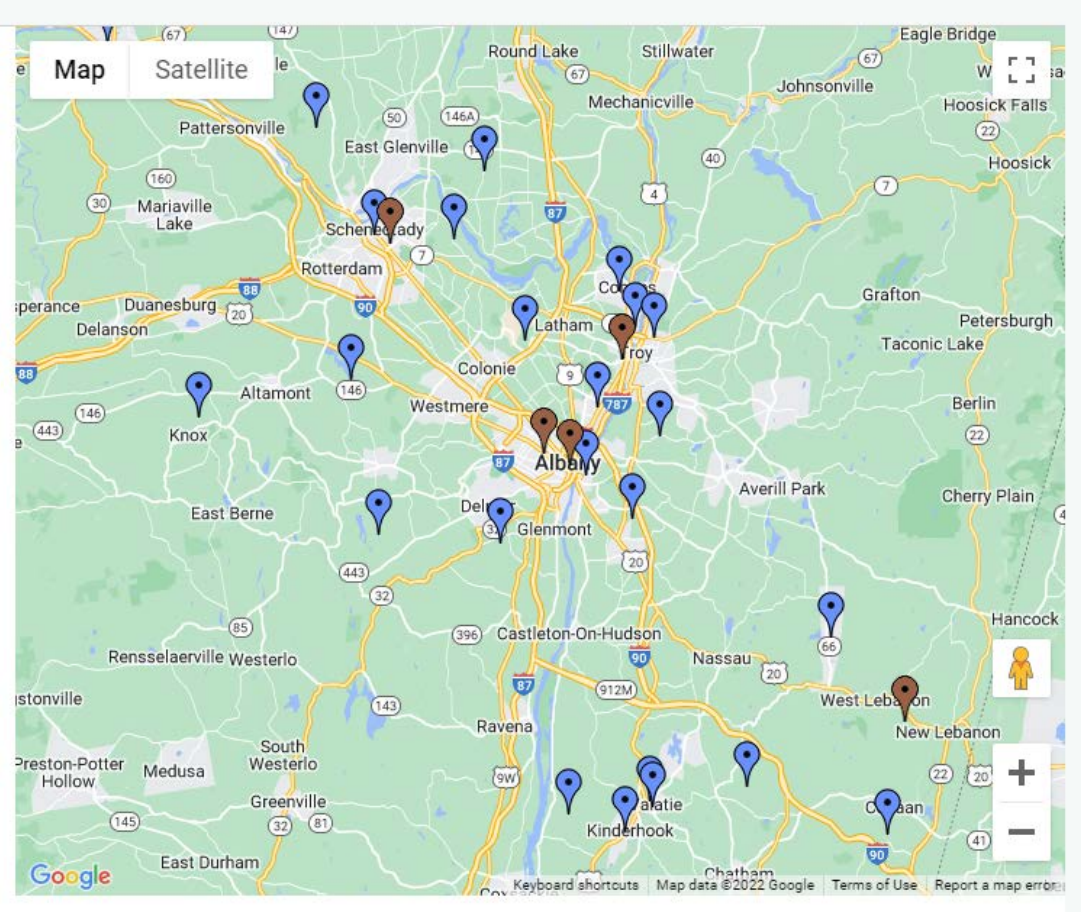
Help is available ☺

Climate Smart Communities

https://climatesmart.ny.gov/

- New York's premier climate program for municipalities
- Administered by NYSDEC
- Certification and Recognition program
  - 12 pledge elements
  - More than 100 actions
  - Peer to peer networking
- Technical resources

Capital District Communities CSCs



Community	County
Albany, City	Albany
Albany County	Albany
Bethlehem, Town	Albany
Cohoes, City	Albany
Colonie, Town	Albany
Green Island, Village	Albany
Guilderland, Town	Albany
Knox, Town	Albany
Menands, Village	Albany
New Scotland, Town	Albany
Watervliet, City	Albany
East Greenbush, Town	Rensselaer
East Nassau, Village	Rensselaer
North Greenbush, Town	Rensselaer
Rensselaer, City	Rensselaer
Troy, City	Rensselaer
Clifton Park, Town	Saratoga
Saratoga Springs, City	Saratoga
Schuylerville, Village	Saratoga
Glenville, Town	Schenectady
Niskayuna, Town	Schenectady
Schenectady, City	Schenectady

CAPITAL DISTRICT
Regional
Planning
Commission

Tara Donadio
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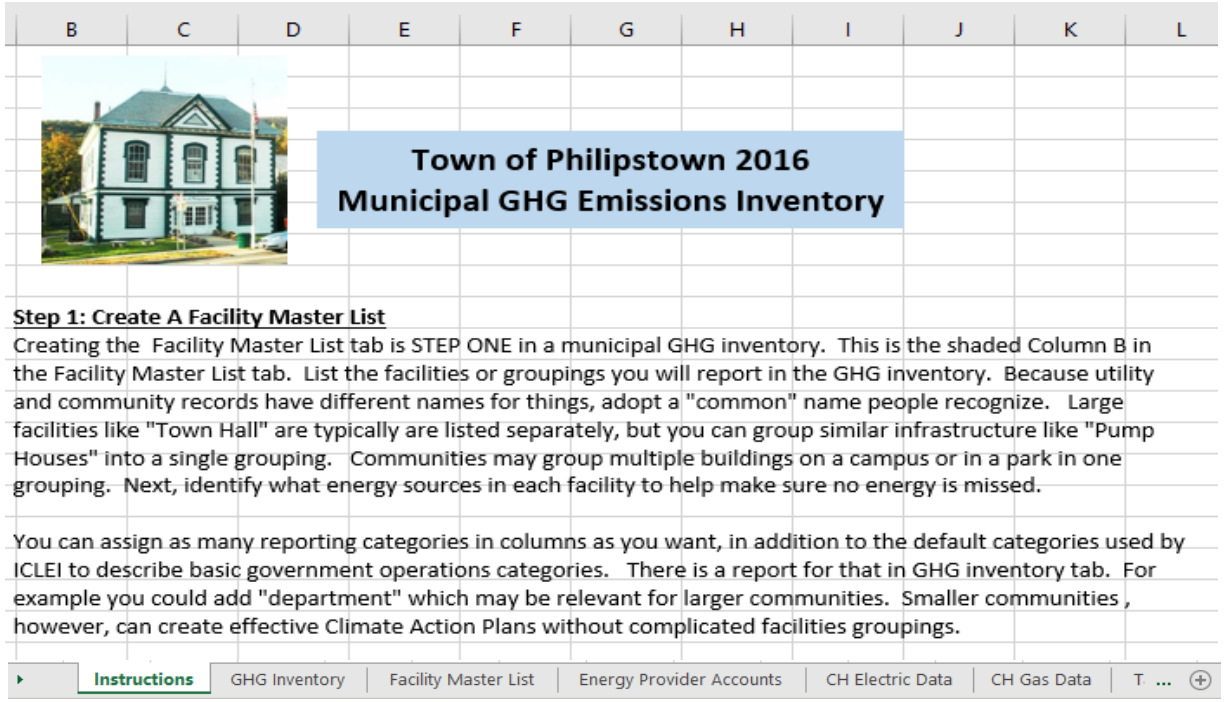
Josh Dranoff
Sustainability Planner

- New York Eastern Territory CSC Coordinator for NYSDEC
- One-on-one CAP facilitation assistance
- GHG inventory support and tools
- Best practices

Free CSC GHG Inventory Tool

CLIMATE ACTION ASSOCIATES LLC

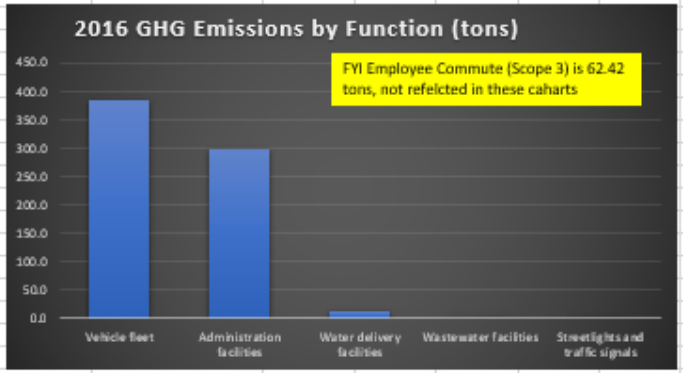
- Complete GHG Inventory Tool
- Made by Climate Action Associates, a partner of CDRPC
- Support from CDRPC and CAA

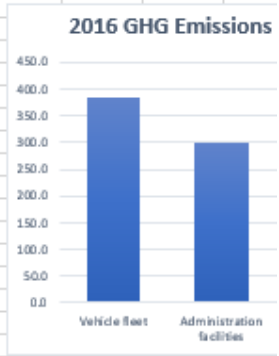


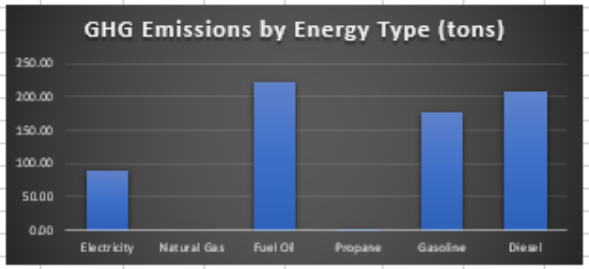
GHG Inventory Data and Charts

Dashboard contains most charts in a common Climate Action Plan.

Section GHG Emissions By Administrative Function				
Legend Entry 1				
	2015	**2016**	**2017**	
All Municipal Operations	**0.00**	**696.05**	**99.07**	
By ICLEI Category	**2015**	**2016**	**2017**	
Vehicle fleet	0.0	383.6	0.0	
Administration facilities	0.0	297.9	86.4	
Water delivery facilities	0.0	14.6	12.7	
Wastewater facilities	0.0	0.0	0.0	
Streetlights and traffic signals	0.0	0.0	0.0	
GHG Emission % By Function				
Wastewater facilities		55%	0%	
Administration facilities		43%	87%	
Vehicle fleet		2%	13%	
Streetlights and traffic signals		0%	0%	
Water delivery facilities		0%	0%	
Section GHG Emissions by Energy Source				
	2015	**2016**	**2017**	**$ Energy Cost**	**missions Percent**	**t per Ton**
All Energy Sources	0.00	696.05	99.07	$123,699	100%	$178
By Energy Source	**20**	**20**	**20**	**$ Energy Co**	**missions Perce**	**t per Ton**
Electricity	0.00	89.80	99.07	$29,838	13%	$332.26
Natural Gas	0.00	0.00	0.00	$0	0%	$0.00
Fuel Oil	0.00	221.97	0.00	$29,913	32%	$134.76
Propane	0.00	0.69	0.00	$218	0%	$316.51
Gasoline	0.00	175.60	0.00	$31,097	25%	$177.09
Diesel	0.00	207.99	0.00	$32,634	30%	$156.90







Climate Action Plan Scorecard

Baseline Emissions	1431
Reduction Goal	40%
Required Reductions	**572.4**

CAP Scorecard
Sample

Sector		Actions	GHG Savings (tons)
1. Energy Efficiency			
	1.1	LED Lighting Retrofits	50
	1.2	HVAC Replacements	35
	1.3	Etc. Etc.	
2. Renewable Energy			
	2.1	Solar Installation	60
	2.2	Geothermal / Biomass Heating	8
	2.3	Community Solar / Green Power	140
3. Sustainable Fleet			
	3.1	Higher MPG vehicles	210
	3.2	Electric Vehicles	20
	3.3	Etc. Etc.	
4. Solid Waste / Employee Commute			
	4.1	Etc. Etc.	
5. Non energy GHG emissions			
	5.1	Refrigerant reductions	5
	5.2	Etc. Etc.	
TOTAL Plan Savings			**528**
Require Savings			**572**
Difference			-44

Questions. Thank you.

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