Climate Smart Communities Webinar

Telephone call-in number

- 1-866-394-2346
- Code: 1982360347#
- No audio signal will be transmitted over the Internet

Welcome

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New York State

Department of Environmental Conservation

Climate Smart Communities Webinar

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Coming Events

Climate Smart Community Webinars

- May 9, 10:30 a.m. – *Climate Smart Waste Management.*
- June 13, 10:30 a.m. – *Beta Testing the Land-use, Transportation and Building Code Toolkit.*
- TBD – *FEMA's Community Rating System.*

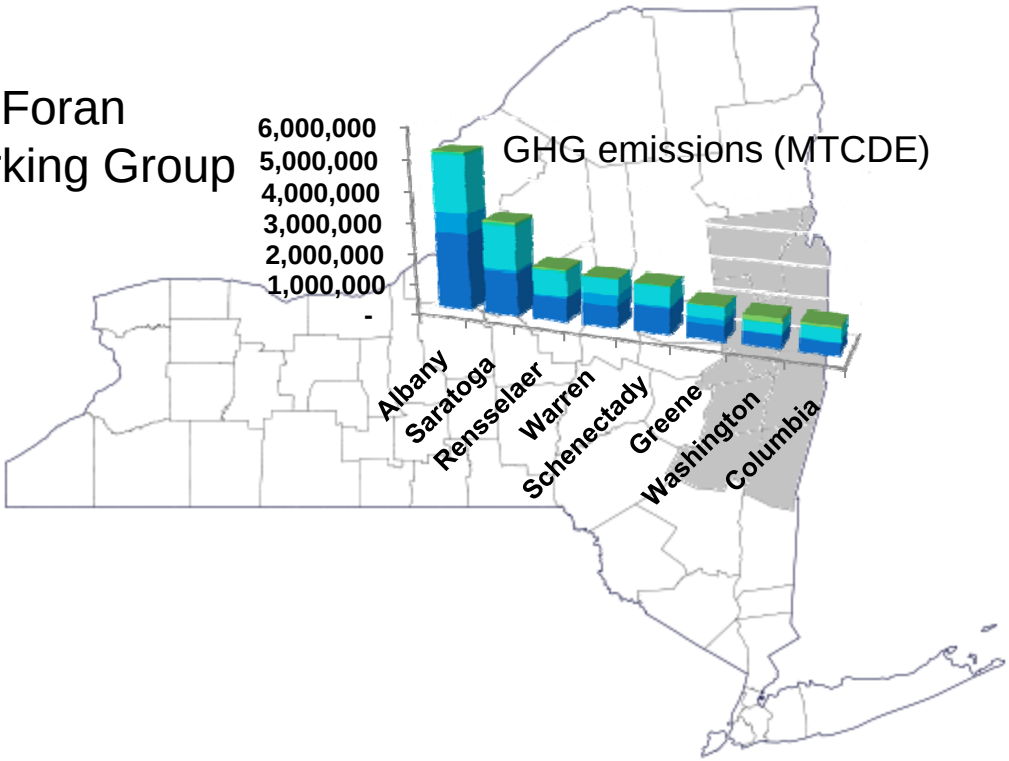
Do you have ideas for the 2013/14 Climate Smart Communities webinar season? Send them to Kim Farrow, kxfarrow@gw.dec.state.ny.us .

- April 25, 7:00 p.m. – 9:00 p.m. Saratoga Springs. *Stormy Weather: Local Climate Change in the Era of Sandy and Irene.* Information at lwvsaratoga.org. Sponsored by Sustainable Saratoga, League of Women Voters of Saratoga County and Skidmore College.
- April 26, 10:00 a.m. –3:00 p.m. Riverhead. *Alternative Fuel Fleets: Solutions for Long Island's Future*. Space is limited; e-mail info@gliccc.org to reserve a seat, information at www.gliccc.org. Sponsored by Greater Long Island Clean Cities Coalition and Climate Smart Communities.
- May 1, 8:30 a.m. – 12:30 p.m. White Plains. *Solar Permitting: Technical Assistance for Local Governments.* Register with Riana Ackley (riana.ackley@iclei.org). Funded by ICLEI and U.S. Department of Energy.

Regional GHG Inventories

Applying the Regional GHG Emissions Inventory to Your Community

Jim Yienger and Peggy Foran
Co-leads, NY GHG Working Group

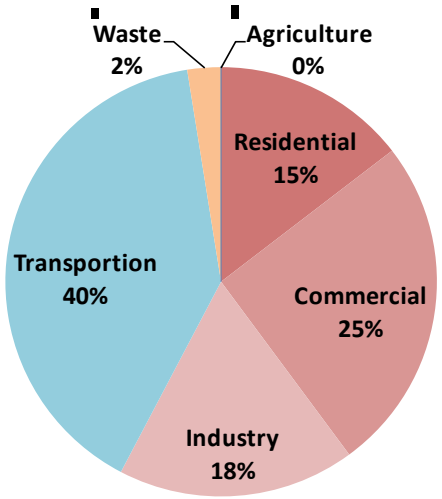


Agenda

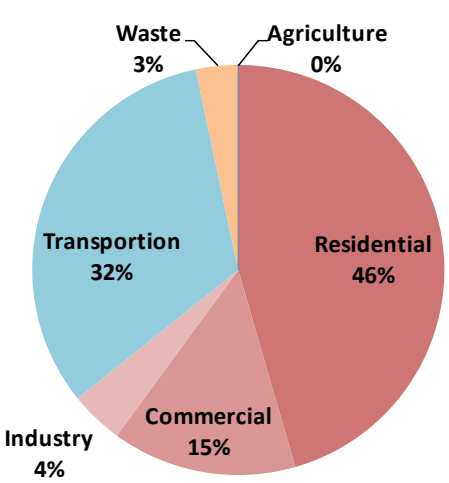
- Overview of regional GHG inventories created as part of the CSC and CGC programs.
- The New York GHG Working group
  - GHG accounting guidance for communities.
- Resources available to support CSCs.
  - Creating your community GHG inventory using regional GHG data.

Community Climate Planning

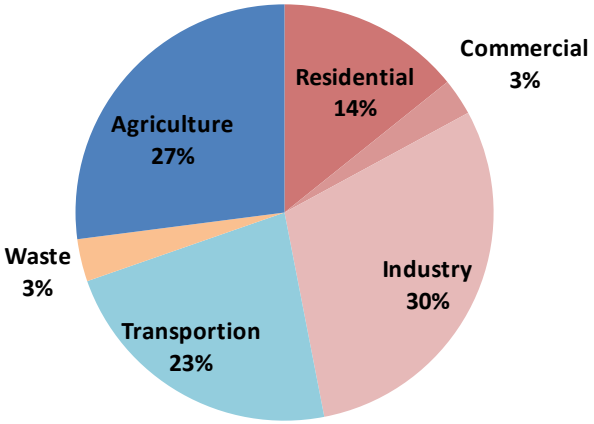
- Understand your GHG sources.
- Set goals and create a climate action plan.



City of Albany



Town of Kinderhook



Town of Fort Anne

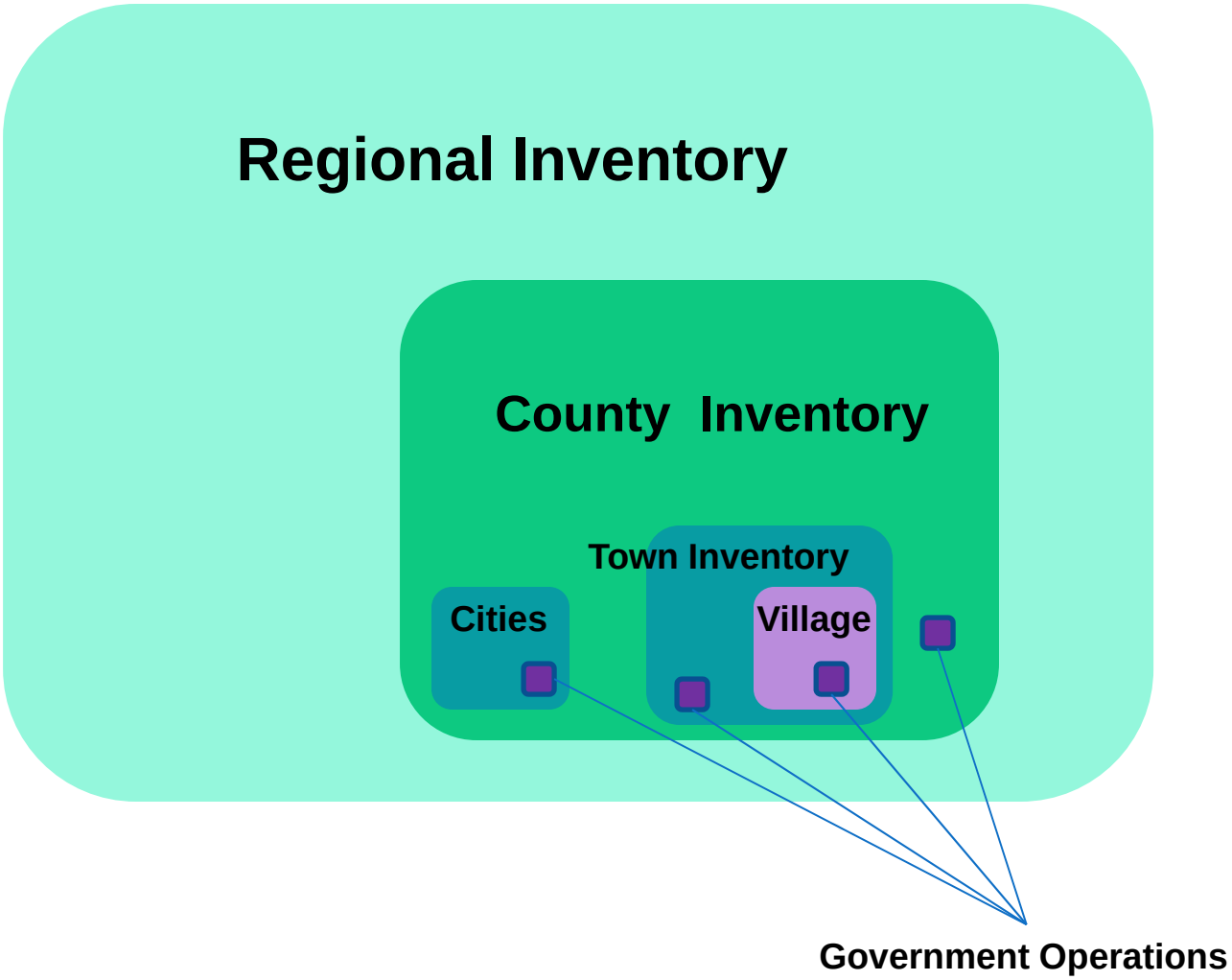
Community Inventories.

- Accounting of all GHG sources
  - Residential, commercial, industrial energy consumption.
  - Industrial processes and fugitive refrigerants.
  - Agriculture emissions- from livestock and fertilizers.
  - Waste emissions attributed to community by how much solid and sewage waste they create.
- Typically developed by communities with local data from utilities, MPOs, hauling data to estimate solid waste generation, etc.
- Updated annually or every couple of years

What is a Regional GHG Inventory?

- Same as a community inventory, but done for a large multi-county region.
- Breaks inventories into counties and communities (village, town, city.)
  - Some data and methods are high quality for communities, others are estimates.
  - Communities can adopt the breakouts as their community inventory as-is, or refine and improve them where needed.

Regional Inventory Boundaries



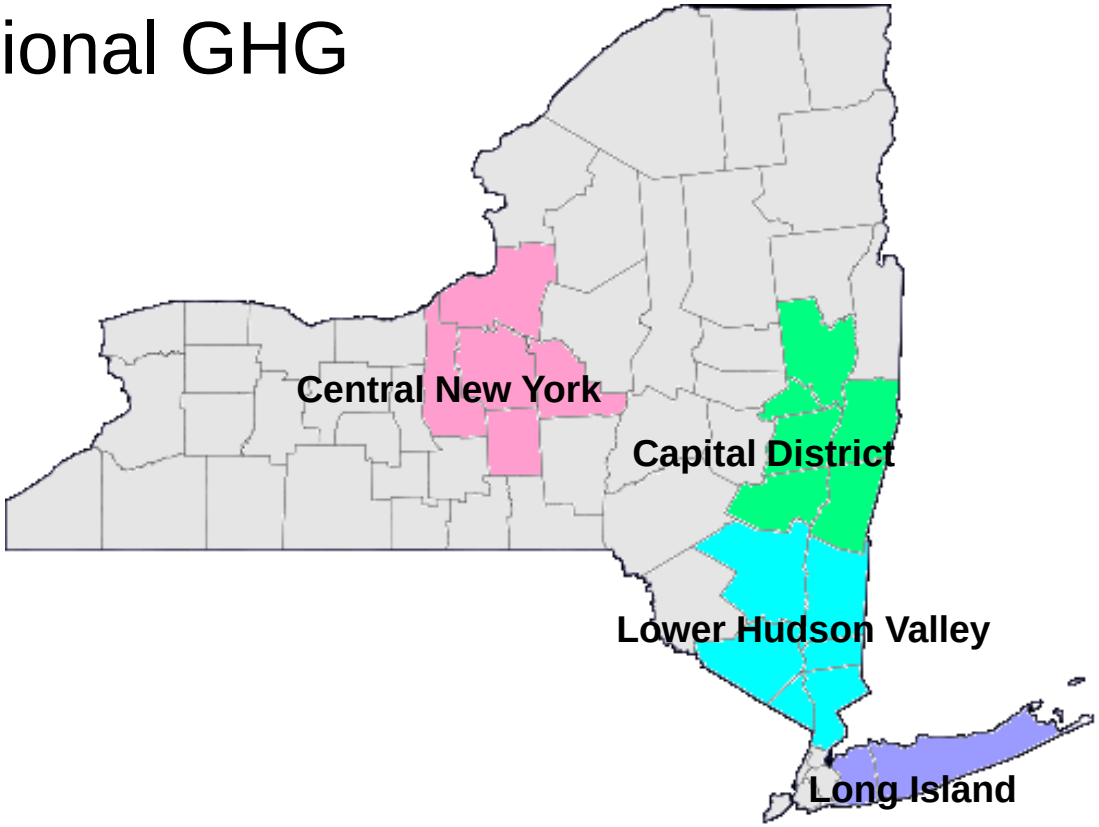
Why a regional approach?

- Economies of scale- data sources are the same for many communities.
- Resulting inventories are consistent with other communities enabling collaboration.
- Local efforts can be spent creating policy rather than building inventories from scratch.
- Creates a home for data, such as CDRPC in the Capital District to support long t updating.

CSC Coordinators Pilot Program

Contracted Coordinator Roles:

- Support communities
- Develop regional GHG inventories



Cleaner Greener Communities

- Phase I: Planning
  - Regional Sustainability Plans
  - Regional GHG Inventories
- Phase II: Implementation

Need for a New York standard

With 10 simultaneous regional GHG inventories underway, it was clear that to the extent practical the inventories should use:

- Common methods and data
- Common reporting approaches
- Common strategies for updating

THE NY GHG WORKING GROUP

Purpose of the GHG Working Group

- Indentify GHG methods and strategies that work for New York communities.
- Act as a collaborative problem solving forum to review existing protocols and adopt advanced consensus methods.
- Procure high-quality New York specific data for communities working with utilities, MPOs, state agencies.
- Develop a draft New York Community and Regional GHG Guidance to support future tracking.
- Standardize GHG reporting to NYSERDA across CSC and CGC programs and regions.

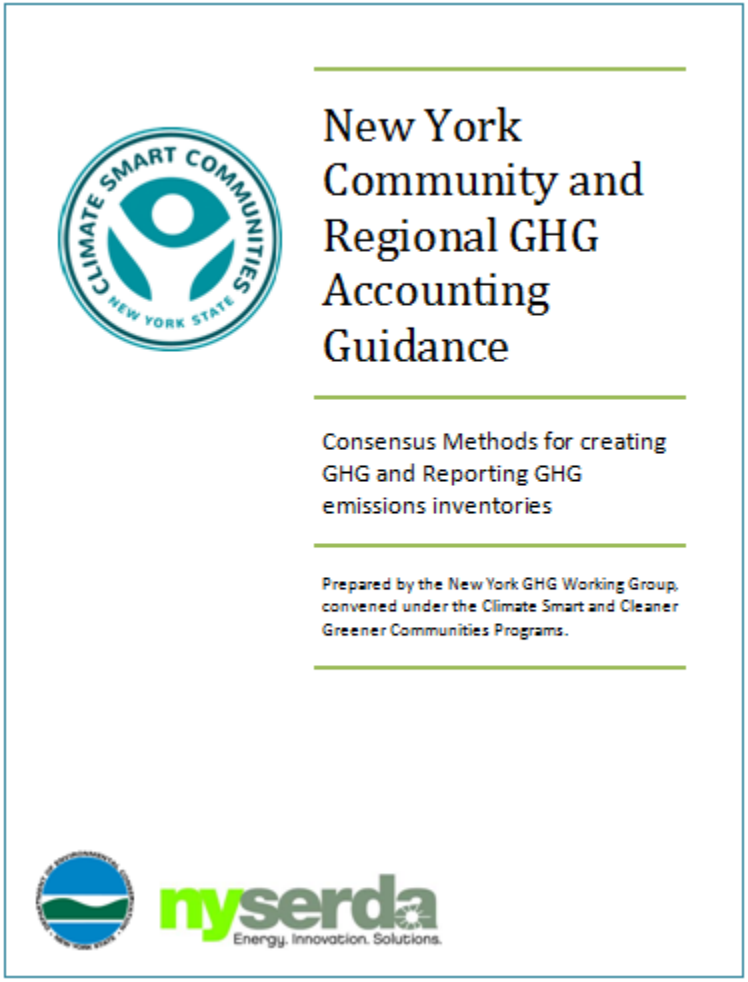
Working Group Structure

- Participants:
  - NYSERDA contractors and planning teams
  - State and local agencies
  - Universities
  - Communities
  - Other consultants
- Resources:
  - Protocol Call Series
    - Weekly calls focused on discrete subjects
  - Online community and listserv
    - Enabled ongoing discussion and resource sharing

Working Group Timeline

Protocol Topic	Date
Protocol Working Group Call Series Kick-off	3/22/12
Final Working Group Call	6/14/12
Regional Inventory Development	Spring - Fall 2012
Draft Protocol Released to Working Group	May 2013
Working Group Review Period	Spring 2013
Final Draft Released to NYSERDA	Summer 2013

The Draft Protoco



New York Community and Regional GHG Accounting Guidance

Consensus Methods for creating GHG and Reporting GHG emissions inventories

Prepared by the New York GHG Working Group, convened under the Climate Smart and Cleaner Greener Communities Programs.

nyserda
Energy. Innovation. Solutions.

Protocol Purpose

- Provide guidance to regional planning agencies and CSCs for creating regional and community GHG baselines.
- Consolidate existing approaches and data standardized for NY community inventories.
  - Specific to NY conditions and regulations
- Give flexible accounting options to enable regions to tailor inventories to their needs and abilities.
- Propose a single reporting framework, which ensures consistent reporting across regions.
- Guide regional inventory quantification going forward.

Key Background Resources

- **U.S EPA** Draft Regional GHG Inventory Guidance (2009)
- **Delaware Valley Regional Planning Commission** 2005 Regional GHG Inventory (2010)
- **NYSERDA** Regional Tier 1 Inventories (2012)
  - Developed by TRC
  - Focused on fuel consumption
  - Based on U.S. EPA Draft Regional Guidance
- **ICLEI** U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (2012)
- **C40** Draft Global Protocol for Community Scale Emissions Inventories (2012)

Protocol Contents

- Accounting Framework
  - Enables both direct and attritional emissions accounting
- Stationary Energy in the Built Environme
  - Working with utilities and estimating fuel use
- Industrial Process and Product Use
- Transportation Energy Use
  - Estimating fuel use
- Waste Management
- Agriculture
- Data Sets

Accounting Framework

Sector / Source	Description of the Source	Scope	Rolled Up?
Built Environment			
Residential Energy	Direct emissions from natural gas, fuel oils, wood, and propane consumed in boundary.	1	Yes
	Indirect emissions attributed to electricity consumption.	2	Yes
Commercial Energy	Direct emissions from natural gas, fuel oils, wood, and propane consumed in boundary.	1	Yes
	Indirect emissions attributed to electricity consumption.	2	Yes
Industrial Energy	Direct emissions from natural gas, fuel oils, wood, propane, coal, residual fuel oils, petroleum coke, and others consumed in boundary.	1	Yes
	Indirect emissions attributed to electricity consumption.	2	Yes
Power Generation	Direct emissions from grid-connected electric generating facilities of capacity 1 MW or greater in boundary.	1	No
Transmission Losses (T/D)	Direct fugitive emissions of natural gas that leaks from the gas distribution system.	1	Yes
	Indirect emissions associated with line losses when communities consume electricity.	2	Yes
	Direct fugitive well emissions from gas, oil, and coal production	1	Yes
Industrial Processes and Product Use	Direct chemical process emissions (non energy related) from the region's cement, paper, and other industries.	1 1	Yes Yes
	Direct emissions of PFCs and HFCs (refrigerants) used in vehicles, buildings, and industry.		
	Direct fugitive emissions of SF_6, a specialized coolant used in the utility industry.	1	Yes
Transportation			
On road	Direct emissions from on-road vehicles in boundary.	1	Yes
Off-road	Direct emission from off-road equipment (e.g., construction, agricultural, lawn care, etc.) in boundary.	1	Yes
Rail	Direct emissions from rail locomotives in boundary.	1	Yes
Marine	Direct emissions from boats. This includes private craft on lakes and rivers and commercial shipping on the Hudson and Mohawk Rivers.	1	Yes
Air	Indirect emissions attributed to regional domestic and international air travel demand caused by the region. (Not in community roll ups)	1	Yes
Waste			
Solid Waste	Direct emissions from regional landfills. Waste-to-energy facilities are reported under scope 1 in Power Generation.	1	No
	Indirect emissions attributed to communities based on the amount of solid waste they create in boundary.	3	Yes
Sewage Waste	Direct emissions from waste water treatment plants and septic systems.	1	Yes
Agriculture			
Livestock / Manure	Direct emissions from livestock (enteric fermentation and manure management).	1	Yes
Fertilizer and Soils	Direct emissions from cropland management and fertilizer application.	1	Yes

Key Elements

- Framework enables a consistent view of where emissions come from.
- Consistent reporting so inventories have similar meaning:
  - Detailed GHG Report showing all sources in a table.
  - Roll up GHG inventory- a single number to represent a total footprint and designed to avoid double counting.
- Focuses on data sources and methods and documents how to secure fuel use data.
- Data sets are customized for NY State and often include analysis completed by the Working Group.
- All required sources have at least one method that should be able to be completed by all communities.

THE INVENTORY PRODUCTS

CGC Regional Inventories

- 2010 Baseline
- Connected to Regional Sustainability Plans
- Inventories at the REDC level, and broken into all 62 counties
- Good starting point if you are outside of a

Albany County GHG Emissions 2010 **5,117,333** **MTCDE**

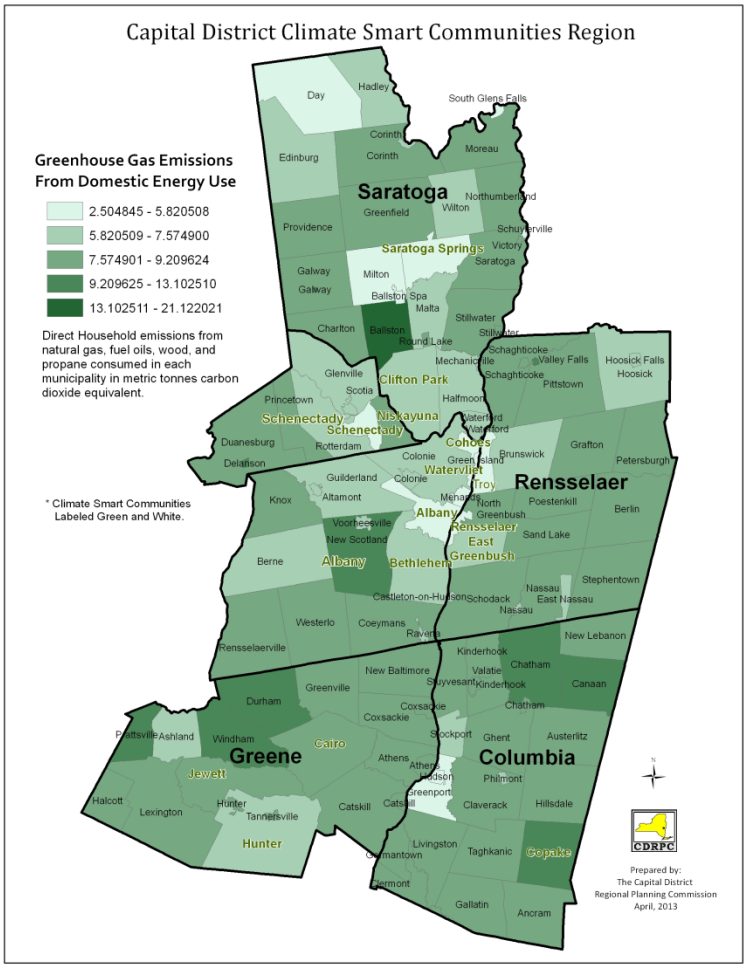
Sector / Source	GHG Emissions (MTCDE) Scope 1	Scope 2	Scope 3	Biogenic	Rolled up?	(MMBT)
Residential Energy Consumption						
Electricity / Steam		181,769			Yes	2,701,766
Natural Gas	346,111				Yes	6,521,529
Propane / LPG	16,575				Yes	268,603
Distillate Fuel Oil (#1, #2, #4, Kerosene)	91,353				Yes	1,231,029
Coal	625				Yes	6,638
Wood	1,538			73,093	Yes	779,240
Commercial Energy Consumption						
Electricity / Steam		310,454			Yes	4,614,493
Natural Gas	281,503				Yes	5,304,172
Propane / LPG	7,879				Yes	127,679
Distillate Fuel Oil (#1, #2, #4, Kerosene)	58,403				Yes	787,002
Residual Fuel Oil (#5 and #6)	57,362				Yes	761,283
Coal	99				Yes	1,050
Wood	514			24,410	Yes	260,235
Industrial Energy Consumption						
Electricity / Steam		98,676			Yes	1,466,684
Natural Gas	254,734				Yes	4,799,783
Propane / LPG	1,073				Yes	17,001
Distillate Fuel Oil (#1, #2, #4, Kerosene)	12,769				Yes	172,070
Residual Fuel Oil (#5 and #6)	3,936				Yes	52,235
Coal	496,057				Yes	5,270,079
Petroleum Coke	48,468				Yes	472,122
Motor Gasoline (E-10)	6,456				Yes	91,617
Other Oils	35,307				Yes	475,518
Wood	269			12,763	Yes	136,065
Energy Generation and Supply						
Natural Gas	2,477,641				No	104,780,116
Distillate Fuel Oil (#1, #2, #4, Kerosene)	1,346				No	25,004
MSW	0			0	No	1,592,624
Landfill Gas	145			28,820	No	553,480
Electricity T/D Losses	30,692				Yes	463,739
Natural Gas T/D Losses	121,248				Yes	299,259
Industrial Processes						
Cement Production	544,401				Yes	
Pulp and Paper Manufacturing	0				Yes	
Product Use (HFC, ODS)						
Use of SF6 in the Utility Industry	8,090				Yes	
All Refrigerants- except SF6	112,914				Yes	
Transport: On-Road						
Motor Gasoline (E-10)	1,309,225			94,935	Yes	19,964,739
Diesel	187,525				Yes	2,485,457
Ethanol (E-85)	N/A				No	
Biodiesel	N/A				No	
Transport: Rail, Marine, Off-Road, Air						
Motor Gasoline (E-10)	32,317			3,487	Yes	509,507
Diesel	116,649				Yes	1,546,064
Residual Fuel Oil (#5 and #6)	59,882				Yes	794,725
Natural Gas	917				Yes	17,277
Propane / LPG	9,415				Yes	148,903
Jet Kerosene (Air)			150,131		Yes	1,989,840
Waste Management						
Landfill Methane	122,399		60,836		Yes (S3)	
MSW incineration			5,064		Yes (S3)	
Sewage treatment	29,554				Yes	
Agriculture						
Enteric Fermentation / Manure	13,536				Yes	
Soils / Fertilizer	13,008				Yes	
Totals by Scope	**6,911,934**	**590,899**	**216,032**	**237,507**		**171,488,628**

CSC Community GHG Inventories

Over 400 + community inventories were prepared for a 2010 baseline

Community GHG Emissions By Sector (MTCDE)

Community	Type	County	Res.	Com.	Indust.	Fugitive
Coeymans	Town	Albany	22,213	13,040	554,492	547,297
Albany	City	Albany	177,473	307,650	178,464	38,796
Ravena	Village	Albany	8,963	5,654	551,922	545,672
Colonie	Town	Albany	216,847	270,913	14,404	32,714
Bethlehem	Town	Albany	92,935	50,595	138,831	13,881
Guilderland	Town	Albany	91,299	69,965	219	13,904
New Scotland	Town	Albany	30,424	16,413	31,847	3,365
Cohoes	City	Albany	30,149	15,843	41,022	6,184
Colonie	Village	Albany	21,818	21,028	0	3,097
Watervliet	City	Albany	17,824	9,905	21,256	4,025
Menands	Village	Albany	10,208	25,958	4,209	1,691
Westerlo	Town	Albany	11,111	5,147	573	1,300
Green Island	Village	Albany	5,840	8,160	12,882	1,115
Green Island	Town	Albany	5,840	8,160	12,882	1,115
Berne	Town	Albany	8,511	3,969	0	1,077
Knox	Town	Albany	8,291	3,645	0	1,031
Rensselaerville	Town	Albany	7,076	3,317	47	715
Voorheesville	Village	Albany	7,699	3,417	0	1,070
Altamont	Village	Albany	4,993	1,947	0	661



CSC Utility Data Collaborative

- Long term approach to providing data
- Annual “Community Energy Reports”
  - Common format showing aggregate consumption, by sectors
  - Includes all community communities, reported separately by municipal boundary.
  - Prevents communities from having to request this information themselves.

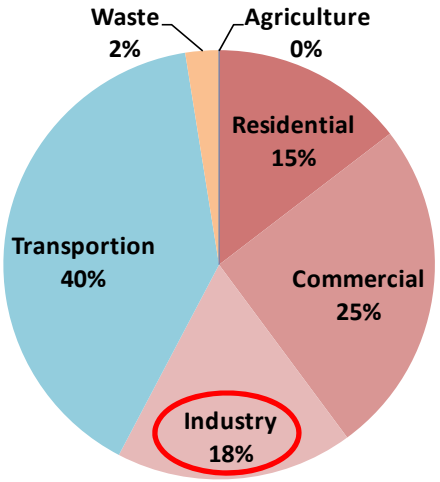
Point Source Tables

find your largest GHG sources.

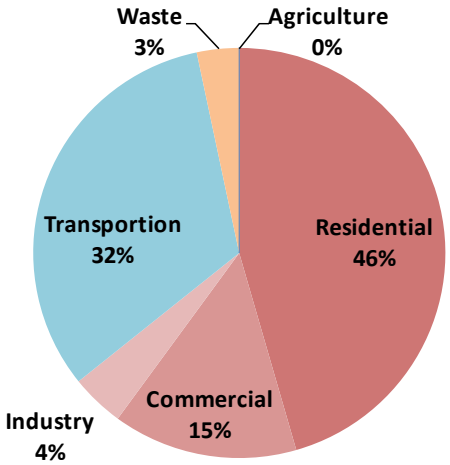
Facility Name	Industry	Municipality	County	Energy	Biogenic	Process	Total
Athens Generating Company	Power	Athens	Greene	2,319,226	0	0	2,319,226
PSEG Bethlehem Energy Cent.	**Power**	**Glenmont**	**Albany**	**1,641,254**	**0**	**0**	**1,641,254**
Lafarge Building Materials	Cement	Ravena	Albany	524,461	0	544,401	1,068,862
Selkirk Cogen Partners	**Power**	**Selkirk**	**Albany**	**837,720**	**0**	**0**	**837,720**
Lehigh Northeast Cement	Cement	Glens Falls	Warren	125,070	0	321,965	447,035
Empire Generating Co, LLC	**Power**	**Rensselaer**	**Rensselaer**	**415,212**	**0**	**0**	**415,212**
Holcim US Inc	Cement	Catskill	Greene	158,231	0	160,108	318,339
Indeck-Corinth Energy Center	**Power**	**Corinth**	**Saratoga**	**263,921**	**0**	**0**	**263,921**
Momentive Performance Mat.	Chemical	Waterford	Saratoga	133,893	0	0	133,893
Finch Paper LLC	**Paper**	**Glens Falls**	**Warren**	**113,442**	**318,416**	**3,407**	**116,849**
NYSOGS Sheridan Steam Plant	Power	Albany	Albany	72,962	0	0	72,962
Castleton Power, LLC	**Power**	**Castleton On Hudson**	**Rensselaer**	**70,193**	**0**	**0**	**70,193**
Wheelabrator Hudson Falls	Power	Hudson Falls	Washington	68,010	80,893	0	68,010
Albany Rapp Rd. Landfill	**Landfill**	**Albany**	**Albany**	**78**	**9,748**	**67,190**	**67,268**
Colonie Town Landfill	Landfill	Cohoes	Albany	95	19,598	55,209	55,304
Sabic Innovative Plastics US	**Paper**	**Selkirk**	**Albany**	**53,332**	**0**	**0**	**53,332**
SCA Tissue	Paper	South Glens Falls	Saratoga	38,433	0	0	38,433
SI Group, Inc.	**Chemical**	**Rotterdam Junction**	**Schenectady**	**26,790**	**0**	**0**	**26,790**
Iroquois Gas Transmission	Gas Distr.	Delanson	Schenectady	23,856	0	0	23,856
Owens-Corning Systems	**Chemical**	**Feura Bush**	**Albany**	**23,655**	**0**	**0**	**23,655**
GE Global Research Center	General Ind.	Niskayuna	Schenectady	22,427	0	0	22,427
General Electric Steam Turb.	**Power**	**Schenectady**	**Schenectady**	**20,933**	**0**	**0**	**20,933**
Compressor Station 254	Gas Distrib.	Riders Mills	Columbia	20,428	0	0	20,428
Hollingsworth & Vose Mill	**Paper**	**Greenwich**	**Washington**	**20,419**	**0**	**0**	**20,419**
NYS Washington Correctional	General Ind.	Comstock	Washington	16,167	0	0	16,167
Rensselaer Cogen	**Power**	**Rensselaer**	**Rensselaer**	**13,307**	**0**	**0**	**13,307**
Norlite Corp	Cement	Cohoes	Albany	10,724	0	0	10,724
Ball Metal Beverage Corp	**Metals**	**Saratoga Springs**	**Saratoga**	**10,393**	**0**	**0**	**10,393**
Buckeye Albany Terminal LLC	General Ind.	Albany	Albany	8,950	0	0	8,950
Quadgraphics	**Printing**	**Saratoga Springs**	**Saratoga**	**8,757**	**0**	**0**	**8,757**
Amri Rensselaer	Chemical	Rensselaer	Rensselaer	6,945	0	0	6,945
Hollingsworth & Vose Mill	**Paper**	**Center Falls**	**Washington**	**6,265**	**0**	**0**	**6,265**
Commonwealth Plywood Inc.	Paper	Whitehall	Washington	4,923	31,667	0	4,923
Von Roll Usa Inc	**Industry**	**Schenectady**	**Schenectady**	**3,873**	**0**	**0**	**3,873**
Hess Rensselaer Terminal	Energy Distr.	Rensselaer	Rensselaer	3,472	0	0	3,472
Saint Gobain Perf. Plastics	**Chemical**	**Hoosick Falls**	**Rensselaer**	**2,696**	**0**	**0**	**2,696**
Lehigh Northeast Cement	Cement	Catskill	Greene	933	0	0	933
Central Hudson, South Cairo	**Power**	**Cairo**	**Greene**	**235**	**0**	**0**	**235**
Central Hudson, Coxsackie	Power	Coxsackie	Greene	145	0	0	145
Manchester Wood Inc	**Paper**	**Granville**	**Washington**	**143**	**7**	**0**	**143**
Petroleum Fuel & Terminal Co	Energy Distr.	Rensselaer	Rensselaer	91	0	0	91
Global Companies LLC - Albany	**General Ind.**	**Albany**	**Albany**	**58**	**0**	**0**	**58**
Citgo Petroleum Glenmont	Energy Distr.	Glenmont	Albany	18	0	0	18

Find Key Stakeholders

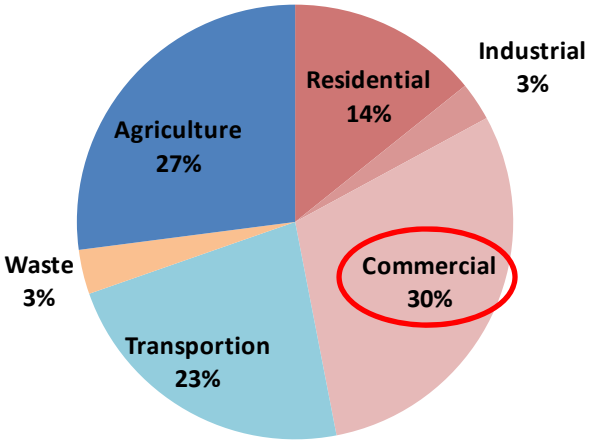
City of Albany



Town of Kinderhook



Town of Fort Anne



NYS Sheridan Steam Plant
(50% of entire sector)

NYS Great Meadows
Correctional Facility
(90% of entire sector)

How Good are the Inventories?

- County and Regional Levels (Excellent)
- Community Level (Good)
  - Utility data is best-in-class, all resolved to communities.
  - Non-utility fuels based on latest methods available to communities.
  - Large facility data is placed directly in community inventories from state and federal sources.
  - Transportation data is based on either modeled MPO or state VMT data allocated by road classes.
  - Solid waste generation is estimated for the community. Improve it with actual hauling data.
  - Wastewater emissions estimated with per-capita averages. Improve it with facility-specific methods.
  - Agricultural methods use county-level agriculture census data. Improve with municipal livestock counts if available.

Don't Have a Community Inventory?

- In many cases regional GHG breakouts can be used as-is, or with a few simple updates.
- Double Check
  - Do sectors seem correct? Is something clearly missing?
  - Placement of industry, look for point sources.
- Possible improvements
  - Solid waste generation
  - Waste water emissions
  - Improved VMT estimates with traffic counts

Have an Existing Inventory?

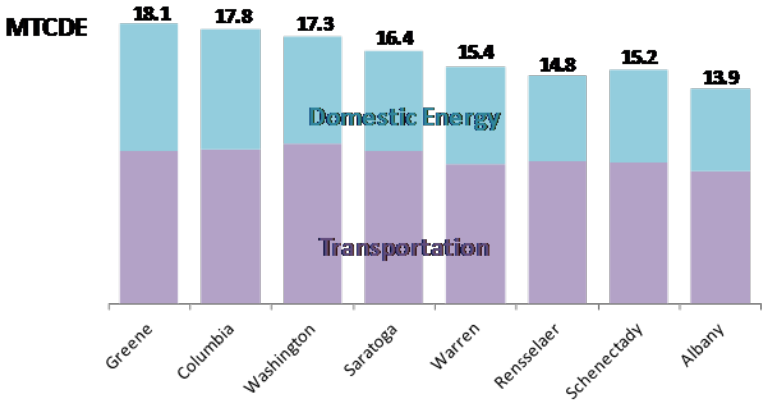
- Stick with your existing methods if the inventory is in use.
- Apply methods used in the regional inventory to update it.
- Use data in future Utility Energy Reports, in lieu of requesting data.

Mine for Sustainability Data

Regional GHG Inventories contain a wealth of municipal level details on:

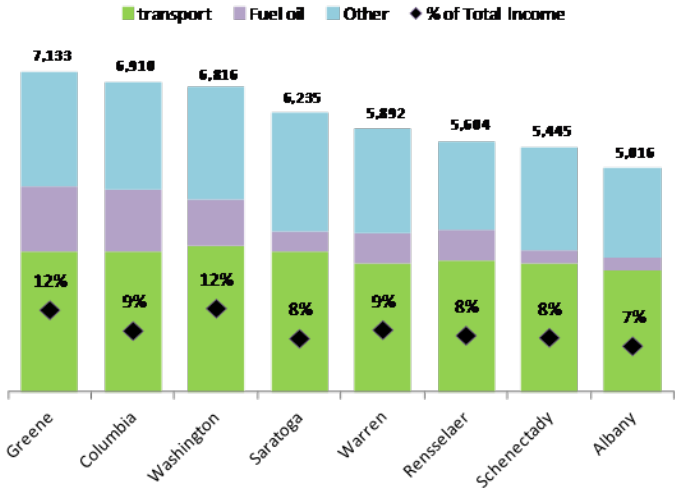
- Energy use, fuel costs, across sectors
- Transportation demand and fuel use
- Waste generation, and many other metrics.
- Related demographic information on households.

Example: Household Analysis



GHG Emissions

Total footprint attributed to households, including domestic energy use and transportation energy demand.



Energy Cost of Living

Total cost for home and transportation energy, and as a fraction of household income.

Energy Cost of Living (ECOL)

Energy Use, GHG emissions, Energy Costs for Households in Capital District

			Energy use (MMBTU)		ECOL as percent of income			GHG emissions
Community	Type	County	Home	Transport	ECOL	Income	% of Income	MTCDE/HH
Castleton-on-Hudson	Village	Rensselaer	112	126	5,667	66,177	9%	15.8
East Greenbush	Town	Rensselaer	102	114	5,320	84,059	6%	14.2
Rensselaer	City	Rensselaer	66	113	4,081	57,435	7%	11.8
Troy	City	Rensselaer	38	127	4,017	48,936	8%	11.3
East Nassau	Village	Rensselaer	59	160	3,581	71,942	5%	18.4
Edinburg	Town	Saratoga	204	232	9,148	55,749	16%	23.7
Galway	Village	Saratoga	149	183	8,692	45,926	19%	22.9
Providence	Town	Saratoga	220	169	7,942	60,906	13%	19.5
Galway	Town	Saratoga	164	162	7,792	88,709	9%	19.6
Day	Town	Saratoga	255	171	7,691	56,885	14%	17.8
Stillwater	Town	Saratoga	154	150	7,610	77,614	10%	18.6

Recap…

- GHG inventories for ALL NY counties and most municipalities within the CSC pilot regions.
- Contact your CSC Coordinator for access to the data, and for assistance in using these products.
- http://www.dec.ny.gov/energy/84508.html

Thank You.

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