



CLIMATE AND ENERGY PLANNING

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OCTOBER 15, 2015

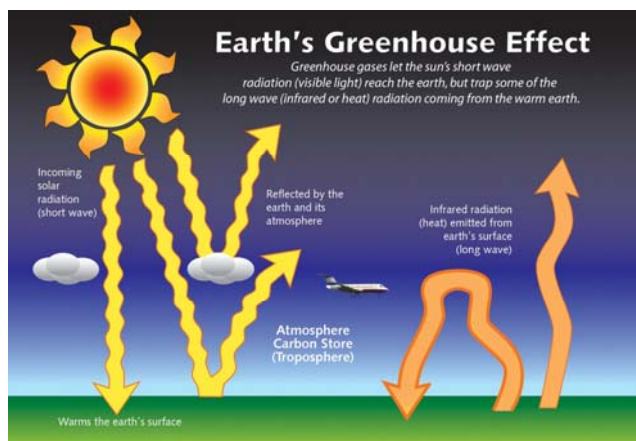


Overview

- Jim – The Problem.
 - What is Climate Change?
 - What can we do about it and why?
- Robyn – The Solution.
 - Climate and Energy Planning
 - Local Policies and Case Studies
 - Resources and Future Opportunities
 - Sign up for CDRPC Sustainability and Climate Consultation

Basics Of Climate Change And Global Warming

The greenhouse effect is well understood



Greenhouse Gases

CO₂ – Carbon Dioxide

CH₄ – Methane

N₂O – Nitrous Oxide

HFCs - Refrigerants

PFCs

SF₆

others

Sources of GHG emissions

- Electricity and fossil fuel use in facilities
 - Electricity, natural gas, fuel oil, propane, used in buildings, operations & for lighting
- Vehicle and equipment fleet
 - Gasoline, diesel, natural gas & LPG used in on and off-road equipment
- Landfills
 - Direct methane emissions from landfills you own
 - Indirect methane emissions caused by waste you create
- Wastewater treatment methane
 - Methane and N₂O from biological processes
- Refrigerants
 - HFC coolants used in vehicles, ice rinks and HVAC systems in large buildings
- Agriculture, industry, and other sources.

How are communities responsible for GHG emissions?

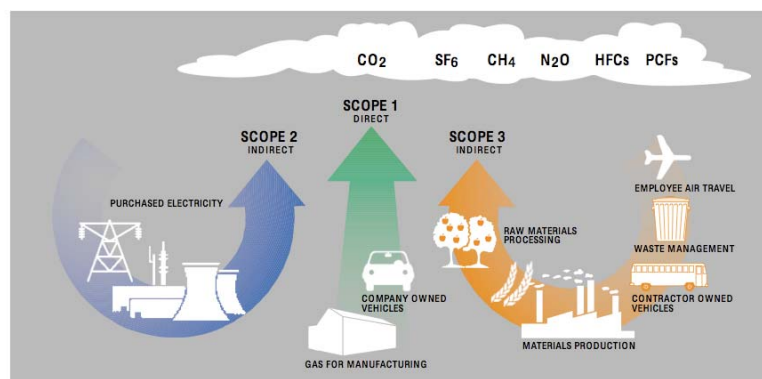
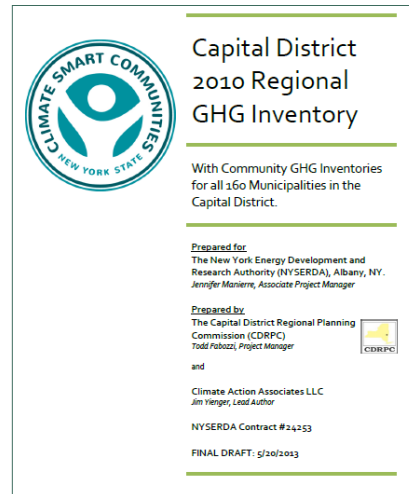


Photo Source: www.cnx.org

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



GHG Emissions by Sector in the Capital Region

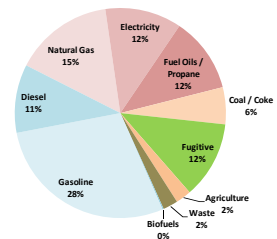
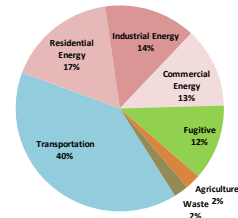
- 15.8 Million Metric Tons Carbon Dioxide Equivalent (MTCDE)
- 14.7 MTCDE per capita
- \$4.5 billion spent on energy

Table 1. Regional GHG Emissions By Sector and Source.

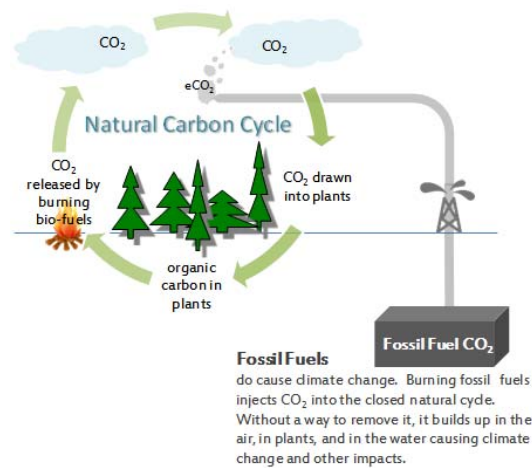
Sector	Energy (MMBTU*)	GHG (MTCDE)	Cost (\$)
Transportation	92,132,492	6,258,855	2,034,241,256
Residential Energy	50,545,185	2,707,593	1,253,684,694
Industrial Energy	36,851,803	2,258,018	426,936,148
Commercial Energy	32,956,047	1,984,986	839,997,242
Process and Fugitive		1,883,042	
Agriculture		379,096	
Waste		359,648	
Totals	212,485,527	15,831,238	4,554,859,339

Source	Energy (MMBTU)	GHG (MTCDE)	Cost (\$)
Natural Gas	45,417,113	2,410,377	499,434,373
Electricity	27,576,233	1,855,273	1,369,241,326
Fuel Oils / Propane	25,402,850	1,836,073	534,756,704
Coal / Coke	9,481,109	898,503	48,430,800
Biofuels	18,441,223	27,075	196,904,506
Gasoline	64,068,955	4,514,875	1,429,764,082
Diesel	22,098,044	1,667,275	476,327,547
Process and Fugitive		1,883,042	
Agriculture		379,096	
Waste		359,648	
Totals	212,485,527	15,831,238	4,554,859,339

*MMBTU is an energy unit equal to 1 million British thermal units

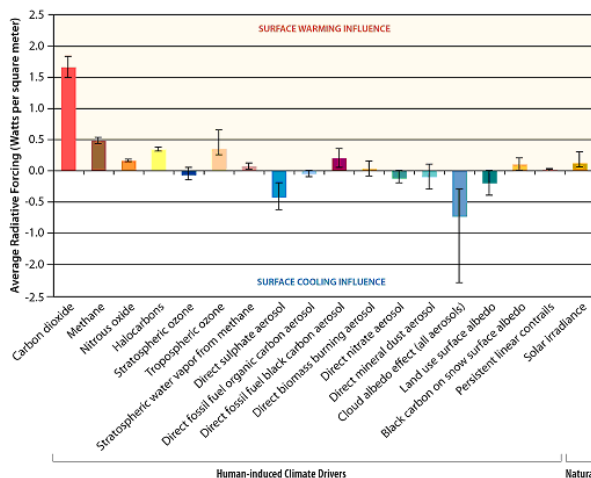


Why do fossil fuels increase CO₂ Concentrations in the air, land and water?



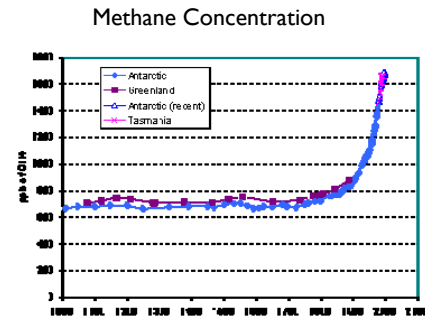
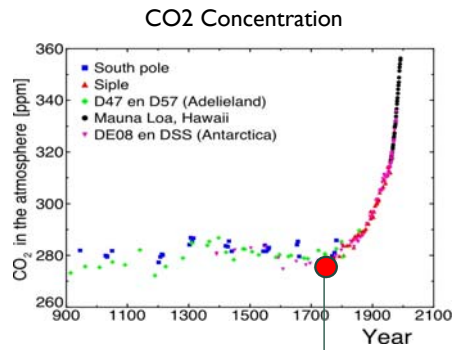
Why does everyone focus on Carbon Dioxide?

Climate Influence Between 1750 and 2005

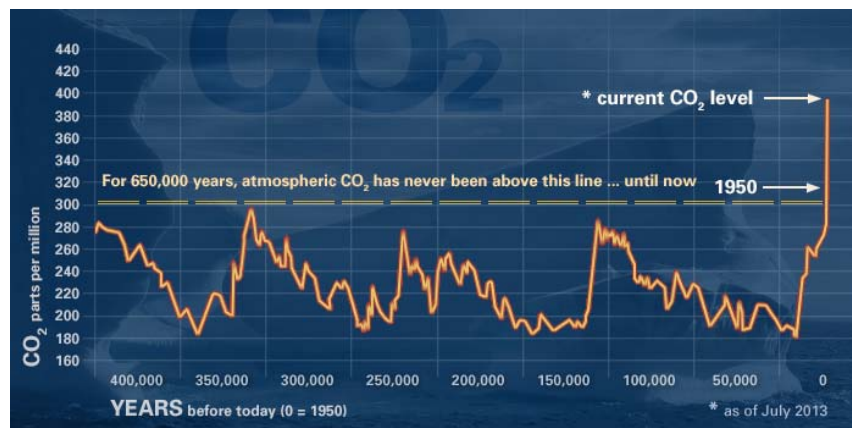


- Although other GHGs have higher **Global Warming Potentials** Carbon Dioxide (CO₂) has caused most of the warming and contributed most to climate change between 1750 and 2005
- Primary GHG emitted by human activity (82% of all GHG emissions from human activity)
- Other GHGs are not as abundant and are being added more slowly

GHG Concentrations are quickly rising...

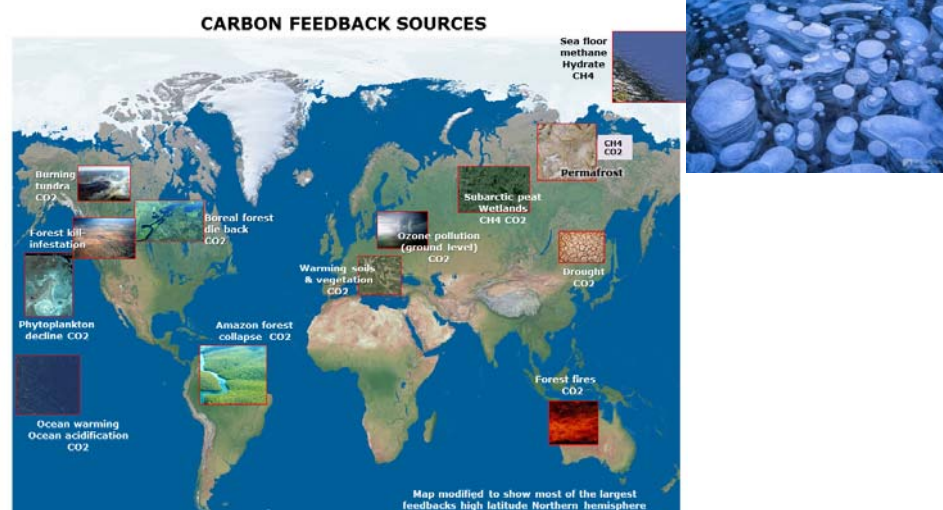


Past 600,00 Years?

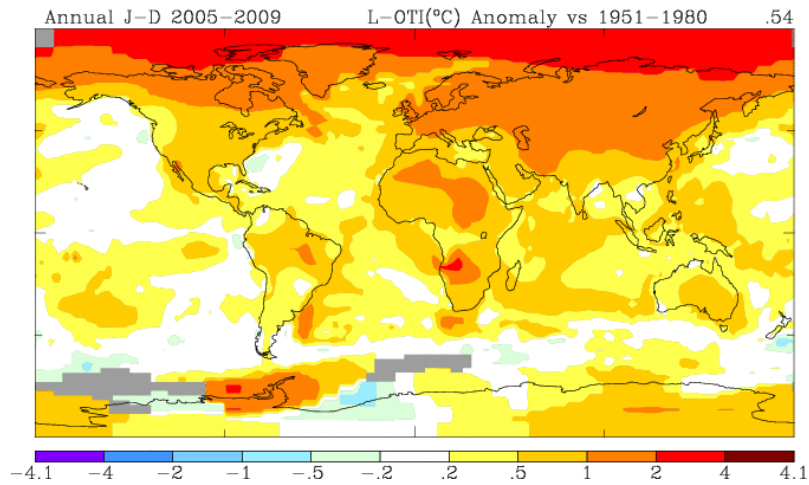


At the end of the Ice Age, it took 7,000 years for carbon dioxide levels to rise by 80 parts per million. We've added that in the last 50 years.

“Feedbacks” increase GHG emissions



Observed average surface temperature changes since 1950

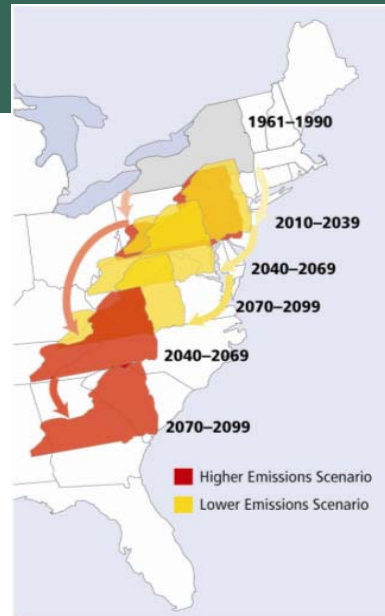


Climate Impacts

NEW YORK AND THE CAPITAL REGION

NY climate is heading south...

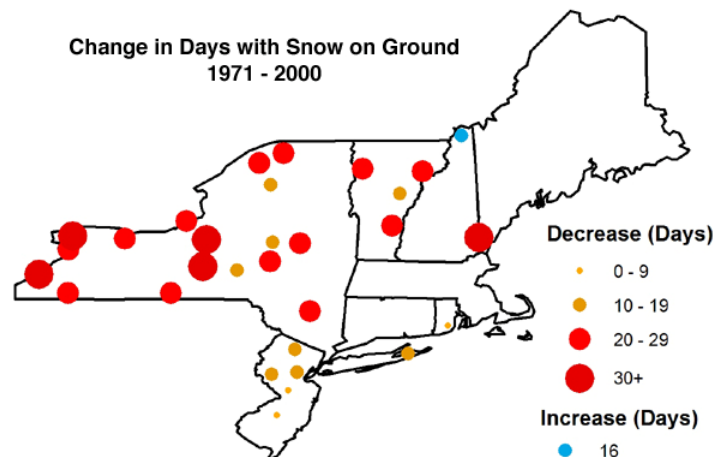
- Climate Zone is shifting southward
- +1.7 to 3.7°F by 2020s
- +3.5 to 7.1°F by 2050s
- +4.1 to 11.4°F by 2080s
- +4.4 to 13.6°F by 2100
- Less snow cover
- Hello Atlanta!



Higher observed temperatures, less snow

Since 1970

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



NYS
ClimAID

Wetter, more precipitation

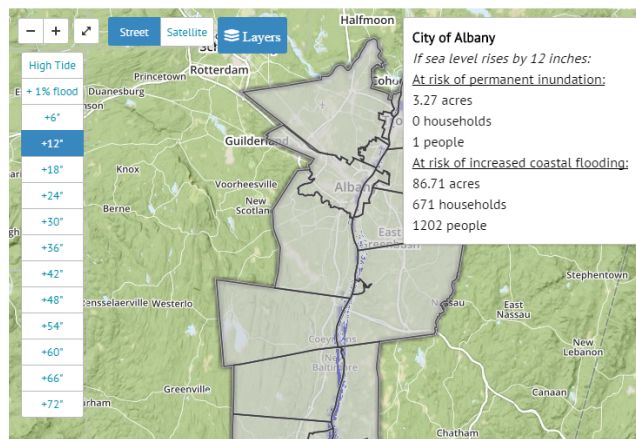
Precipitation Baseline (1971-2000) 43.3 inches	Low- estimate (10 th percentile)	Middle range (25 th to 75 th percentile)	High- estimate (90 th percentile)
2020s	- 1 percent	+ 2 to + 7 percent	+ 10 percent
2050s	+ 2 percent	+ 4 to + 12 percent	+ 14 percent
2080s	+ 3 percent	+ 5 to + 15 percent	+ 17 percent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



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Sea level rise

Sea Level Rise Mapper

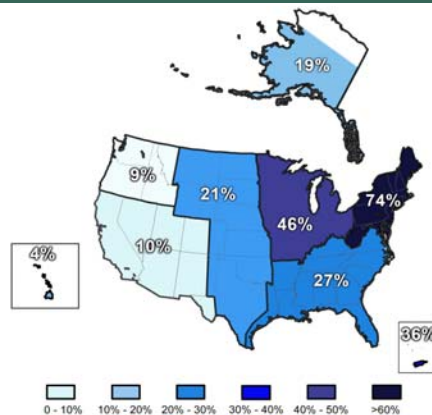


More extreme temperature events

- **By 2020's**
 - 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



Schoharie / Irene



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So What Can Be Done?



We can, well....

Mitigate

(a.k.a saving lots of \$\$)

Adapt

(a.k.a not losing lots of \$\$)

Reduce GHG emissions

- Reduce energy use
- Introduce renewable energy
 - Solar, biomass, wind, hydro
- Electrify on-road transportation
 - NY Electricity is cleaner than US average electricity

OH RIGHT. ENERGY IS EXPENSIVE

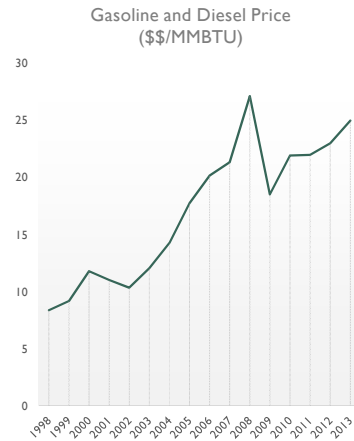
(The other reason to act!)

- Energy use causes 80% of all GHG emissions.
- Costs are unpredictable, and a risk to government operations.
- Expenditures are not monitored- and grow quietly.
 - Communities often do not know how much they spend on energy.
- **Typical energy bill for a community of 10,000 – 20,000**
 - \$500,000 / year
 - 10% Savings Target is \$50,000 / year



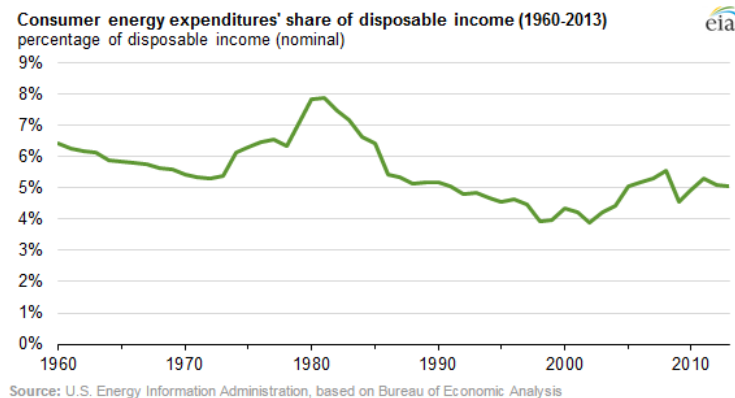
Trends show that costs of petroleum have skyrocketed.

- The Capital District spent \$4.5 billion for energy (\$4100 / person), paying 60% more than it did 10 years ago after adjusting for inflation.
- Much of the increase was driven by rising petroleum fuel prices.
- \$2.9 billion purchased imported petroleum that takes money of our economy.



U.S. Average Percent Of Household Income Spent On Energy

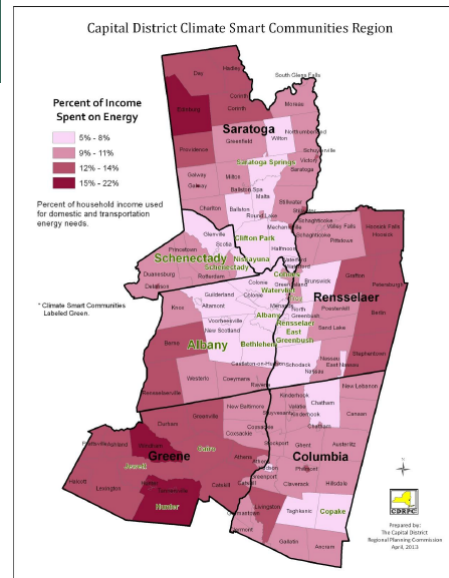
- For vehicles and homes



Household Income Spent on Energy

- US Average is about 5%
- Urban areas spend 5-10% on energy
- Suburban and rural areas spend 12-20%
 - Driven by our dependence on petroleum
 - Car dependency
 - Fuel oil

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



Local Governments are uniquely powerful

- Municipal operations & services
 - Solid waste recycling/disposal
 - Public drinking water, sewage systems
 - Public roads, drainage, transit systems
 - Local government buildings, facilities
- Zoning, planning, building codes, permits
- Emerging Options
 - PACE Financing
 - Community Choice Aggregation





Start Here



The GHG Inventory

Government Operations vs. Community GHG Inventories

Government Operations

- Buildings/Facilities
- Government Fleet
- Street lighting
- Wastewater Treatment
- Solid Waste/Landfills
- Other Sources as appropriate

Community-Wide

- Residential, Commercial, and Industrial Energy Use
- Solid Waste Practices
- Land use planning and zoning
- Transportation Planning
- Other Sources as appropriate




Community Wide
GHG Emissions

Government Operations
2-4%

How do you conduct a Local Gov't Ops GHG Inventory?

1. Choose a baseline year(s)
2. Identify your government operations
3. Gather and organize the data (the biggest effort!)
4. Perform GHG Calculations/Data Entry
5. Report GHG emissions, energy cost & energy use

Sector	Difficulty	Contribution	95% + GHG emissions 
Facility energy use	Easy	30-50%	
Fleet fuels	Easy	30-50%	
Streetlights	Easy	10-15%	
Wastewater	Moderate	2-3%	
Refrigerants	Difficult	1-3%	
Indirect landfill methane	Difficult	1-2%	

Typical Outcomes

- A detailed accounting of energy use and costs from all facilities and operations
- Inventory of energy use and cost by facility and department group

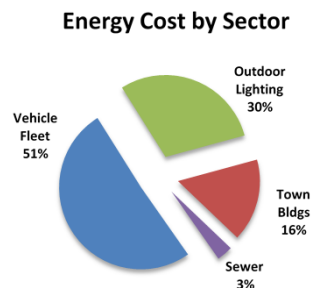
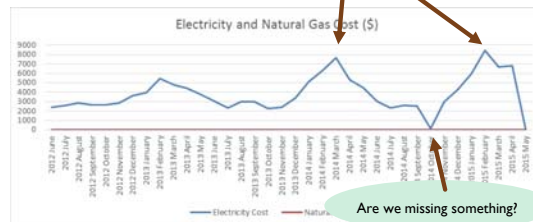


Table 4. 2013 Energy Use, Cost, and Emissions associated with Individual Town Facilities.

Town Facilities	Electricity (KWH)	Electricity Cost (USD)	Nat. Gas (therms)	Nat. Gas Cost (USD)	GHG (MTCO ₂ e)	Energy Use (MMBtu)	Total Cost (USD)
CJC Little League Facility	39,680	\$13,623	-	\$-	11	135	\$13,623
Town Hall	181,155	\$8,423	3,858	\$3,706	72	1,004	\$12,129
Public Safety Bldg	180,969	\$8,726	6,083	\$3,175	84	1,226	\$11,902
May Main Bldg	79,640	\$4,880	12,763	\$3,507	91	1,548	\$8,386
Senior Center	105,080	\$6,148	4,963	\$1,720	57	857	\$7,869
CJC Soccer Facility	24,935	\$6,618	1,532	\$817	15	238	\$7,435
Locust Lane Pool	49,926	\$2,737	2,412	\$2,353	27	412	\$5,090
CJC Softball Facility	34,308	\$4,861	-	\$-	10	117	\$4,861
Hwy Storage Bldg	3,908	\$810	4,100	\$3,832	23	423	\$4,142
B&G Auto/Mount Bldg	24,321	\$1,760	1,749	\$1,782	16	258	\$3,542
Barney Rd Pool	98,471	\$3,329	-	\$-	28	336	\$3,329
Grooms Tavern	6,079	\$562	3,225	\$2,461	19	345	\$3,023
Transfer Station	16,395	\$2,896	-	\$-	5	56	\$2,896
CJC Baseball Facility	10,612	\$896	-	\$-	3	36	\$896
CJC Garage	9,759	\$868	-	\$-	3	33	\$868
Dog Park	3,213	\$695	-	\$-	1	11	\$695
CJC Stage	4,800	\$609	-	\$-	1	16	\$609
B&G Workshop	-	\$-	677	\$521	4	68	\$521
Burning Bush Pool	-	\$-	487	\$451	3	49	\$451
Veterans Park	2,742	\$425	-	\$-	1	9	\$425
CJC Restrooms	1,144	\$404	-	\$-	0	4	\$404
Collins Park	2,078	\$377	-	\$-	1	7	\$377
M. Valley Grange Hall	-	\$249	-	\$-	-	-	\$249

Mine the Data, find opportunities.

Real Example: Why are our electricity costs growing so fast at our water filtration plant?

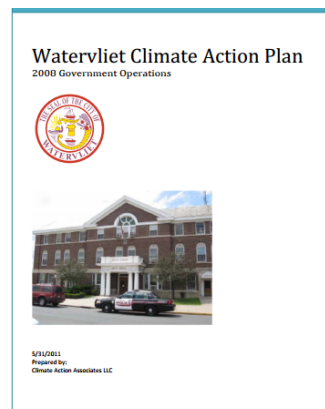


Climate Planning: Watervliet, NY

- Joined CSC and developed simple baseline.
- Adopted a 20% energy and cost reduction goal.
 - Cost savings equivalent to a FTE staff
 - Good incentive for action

TABLE 1: Energy and Emissions by Sector

	Electricity (MWh)	Natural Gas (Therms)	CO ₂ e (Metric Tons)	Energy Cost (\$)
Buildings and Other Facilities	496.89	43173.81	398.14	\$138,352.38
Streetlights and Traffic Signals	687.41	0.00	225.99	\$174,974.67
Water Delivery Facilities	381.73	6529.70	161.01	\$67,934.15
Vehicle Fleet (Gasoline + Diesel)			343.37	\$102,666.35
TOTAL GOVERNMENT:	1566.03	49703.51	1128.51	\$483,927.55



Develop policies and measures

Target: 20% GHG Savings, Watervliet Climate Action Plan

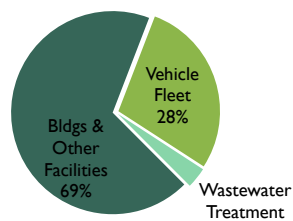
Table 2: Watervliet Climate Action Summary (Metric Tons GHGs)				
Sector	Measure	Status	Reductions	Offsets
Energy Efficiency	Performance Contracting	Underway	208	
Renewables	Solar Installations	Complete	27	
	Rome Hydro Project	Planning		6539
	Geothermal at Cultural Center	Concept	20	
Waste Recycling	Single Stream Recycling	Complete	N/A	
	Anaerobic Digestion	Concept	N/A	
Vehicle Fleet	Fuel Additives	Complete	20	
	Green Fleet Procurement	Concept	69	
Totals			344	6,539



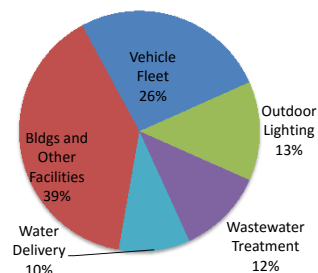
Many local communities have conducted inventories

- Through the Climate Smart Communities Regional Coordinators Pilot and other sources of community assistance, at least 11 communities within the Capital Region have completed local government and/or community inventories

**Albany County
GHG Emissions by Sector**

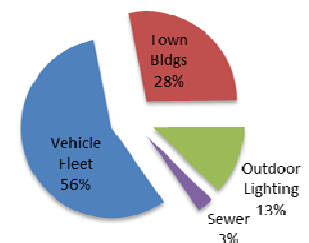


**City of Cohoes
GHG Emissions by Sector**



Town of Clifton Park

GHG Emissions by Sector

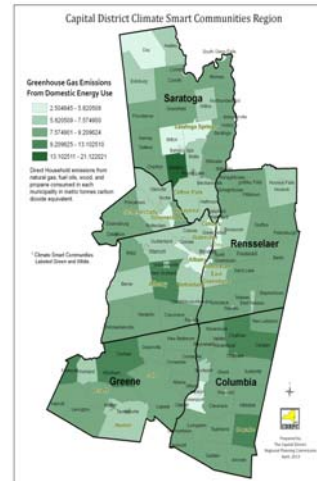


Community GHG Inventories- ALREADY done for you.

Community GHG Emissions By Sector (MTCDE)

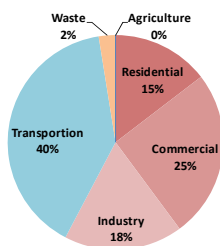
Community	Type	County	Res.	Com.	Indust.	Fugitive	Transport	Waste	Agr.	Totals
Coeysmans	Town	Albany	22,213	13,040	554,492	547,297	84,755	2,328	2,685	1,226,809
Albany	City	Albany	177,473	307,650	178,464	38,796	484,002	30,706	0	1,217,091
Ravena	Village	Albany	8,963	5,654	551,922	545,672	17,709	1,025	0	1,130,946
Colonie	Town	Albany	216,847	270,913	14,404	32,714	573,016	25,602	2,997	1,136,493
Bethlehem	Town	Albany	92,935	50,595	138,831	13,881	172,624	10,561	2,626	482,053
Guilderland	Town	Albany	91,299	69,965	219	13,904	202,311	11,077	3,102	391,878
New Scotland	Town	Albany	30,424	16,413	31,847	3,365	54,459	2,714	3,080	142,302
Cohoes	City	Albany	30,149	15,843	41,022	6,184	33,003	5,073	0	131,275
Colonie	Village	Albany	21,818	21,028	0	3,097	58,995	2,445	0	107,384
Watervliet	City	Albany	17,824	9,905	21,256	4,025	49,672	3,218	0	105,899
Menands	Village	Albany	10,208	25,958	4,209	1,691	54,997	1,252	0	98,315
Westerlo	Town	Albany	11,111	5,147	573	1,300	17,535	1,055	3,096	39,817
Green Island	Village	Albany	5,840	8,160	12,882	1,115	8,114	822	0	36,933
Green Island	Town	Albany	5,840	8,160	12,882	1,115	8,114	822	0	36,933
Berne	Town	Albany	8,511	3,969	0	1,077	13,962	877	3,430	31,825
Knox	Town	Albany	8,291	3,645	0	1,031	11,512	845	2,237	27,561
Rensselaerville	Town	Albany	7,076	3,317	47	715	10,966	578	3,292	25,991
Voorheesville	Village	Albany	7,699	3,417	0	1,070	9,040	875	0	22,101
Altamont	Village	Albany	4,993	1,947	0	661	4,830	540	0	12,972

Includes 160 community inventories with a 2010 baseline
APPENDIX B

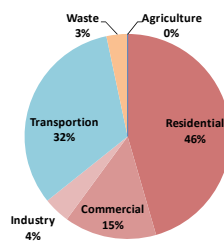


Understanding your community profile

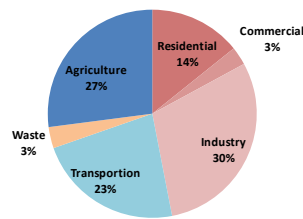
- 2010 CDRPC Regional GHG Inventory
- Help understand your community GHG sources
- Set goals, plan for climate action, and implement



City of Albany



Town of Kinderhook



Town of Fort Anne

Where do we start?

It's Time to Plan for Our Future...

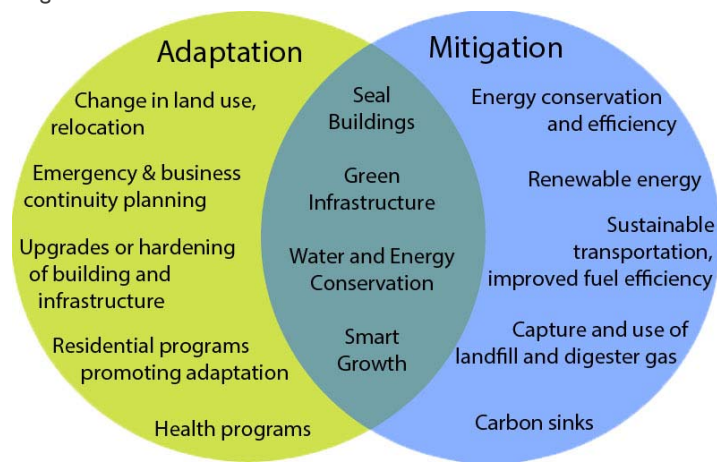
- Climate Planning breaks down to two specific categories:

- Climate Change Mitigation**

- Understanding GHG sources
 - Setting goals and creating plans
 - Implementing measures and tracking success

- Climate Change Adaptation**

- Projecting Climate Reliably
 - Assessing risk & vulnerability
 - Acting to increase resilience



Source: Center for Clean Air Policy

What kind of plan is best for the community?

Energy Plan ?

- Cost
- Services
- Environment

Climate Change Vulnerability Assessment?

- Environment
- Risk
- Adaptation Strategies

Sustainability / Comprehensive Plan ?

- Livability
- Environment
- Cost

Climate Action Plan ?

- Environment
- Cost
- Services

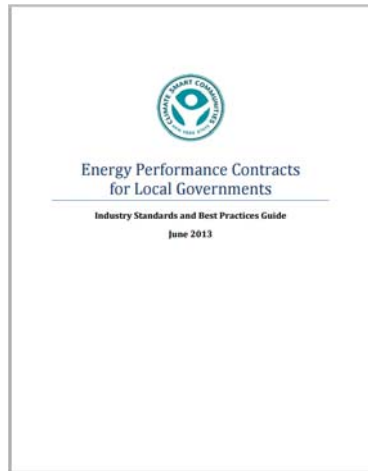
Decreasing local government energy use - buildings

- Building energy use often largest source of energy consumption and GHG emissions
- **Consider high-impact cost-effective actions:**
 - Conduct energy audits
 - Upgrade interior lighting (35% of total commercial building energy use)
 - Upgrade HVAC equipment (30-40% of commercial energy use)
 - Water-efficient fixtures
 - Wastewater treatment facilities upgrades (20-40% of energy consumed by local government)
 - Green buildings (LEED Certification, ECCNYS, IgCC)



Source: DEC Office of Climate Change

That all sounds great – but also expensive...



- There are resources available to help you!
 - NYSERDA Energy Efficiency Programs
 - Utility Energy Efficiency Programs
 - Energy Performance Contracts
- Other technical assistance and guidance offered through State-sponsored local support programs

Decreasing local government energy use - fleets



Photo Source: Albany Clean Communities Coalition



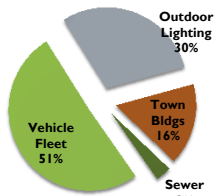
Photo Source: The Daily Gazette

- Fleet efficiency policies
- Route efficiency
 - GPS, publicly available route optimization software
- Right-sizing your fleet
 - Are your vehicles being correctly used?
- Purchasing Advanced Vehicles (hybrids, plug-in hybrids, electric vehicles, alt-fuel vehicles)
 - Consider vehicle use and potential paybacks
- Anti-Idling Policies
 - 1 hour = 1 gallon of gas!

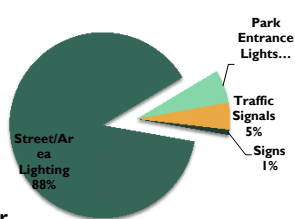
Source: DEC Office of Climate Change

Streetlighting – the silent culprit

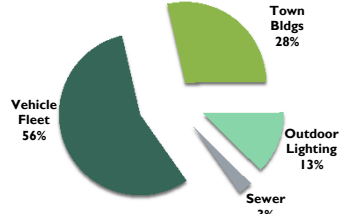
Energy Cost by Sector



Energy Costs of Outdoor Lighting



GHG Emissions by Sector



- Streetlighting is often found to be a relatively low GHG emissions source, but high energy cost
- Most streetlights are owned by utilities – 74% (omitting NYC)
- Only O&R has tariffs for LED streetlights
- LED Upgrades/retrofits offer tremendous opportunity (annual savings potential statewide - **\$97 million**)
- Stay tuned!

Local government operations and renewable energy



Source: Farrell, Times Union



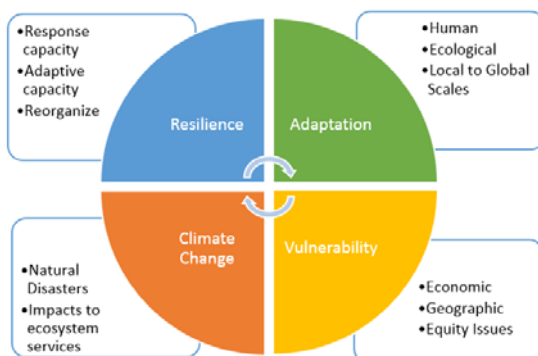
- Renewable energy includes:
 - Solar PV, Thermal, Concentrating Solar Power
 - Geothermal heat pumps/geothermal technology
 - Wind
 - Biomass
 - Biofuel
 - Low-impact hydro
- New opportunity – MICROGRIDS!
- More and more governments are becoming interested in solar:
 - Power Purchase Agreements, Leasing, Owning
 - Incentives
 - Community Distributed Generation

Local governments and community GHG reduction techniques



- Local governments can influence community energy use and community behavior:
 - Smart Growth policies
 - Streamlined permitting and zoning for solar PV, EV charging stations**
 - Resource-efficient site design
 - Green space protection
 - Complete Streets
 - Transit Oriented Development
 - Energize NY Financing**
 - Community Choice Aggregation**

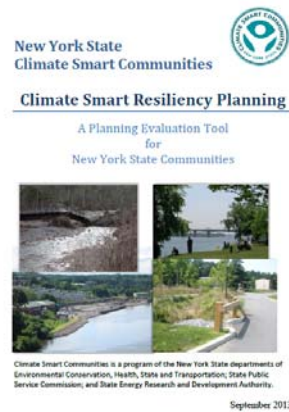
Climate Adaptation Planning – Key Concepts



- Adaptation** refers to actions or steps taken to minimize impacts from stresses, extreme events, or changing conditions
- Resilience** is the ability to plan for, withstand, and recover from severe events – without suffering permanent loss of functions, devastating damage, diminished productivity or quality of life
- Vulnerability** is the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes.
- Risk** is the likelihood of an event happening and the consequence should that event take place

Source: Resilient Catskill, 2014, Albany 2030, 2009

Climate Adaptation Planning – Basic Steps



1. Assess local climate change hazards
2. Identify local vulnerabilities to climate change
3. Evaluate local climate risk

Source: DEC Office of Climate Change

Don't wait for plans – “no-regrets” actions and policies

- **“No-regrets”** – help protect against effects of climate change and provide enhanced protection from current climate risks
- Identify actions and potential impacts
 - Green Infrastructure policies/projects
 - Emergency preparedness
 - Community outreach and education



Source: NYS DEC



Source: NYS DEC

Source: DEC Office of Climate Change

Municipal and Community Renewable Energy Use – Town of Clifton Park

- Town of Clifton Park recognized as a leader in solar and associated regulations in New York State
- Selected to participate in U.S. DOE SunShot Initiative Rooftop Solar Challenge II
- NYSolar Smart – project to streamline solar installation process and lower cost of solar
- Gave input in the development of the New York State Unified Solar Permit (as of March, 65 adopters statewide)
- Continues to contribute in NYSolar Smart in development of Model Solar Zoning
- 2014 – Adopted the Unified Solar Permit
 - Noticeable increase in installation of residential solar pv



www.energysage.com



Municipal and Community Renewable Energy Use – Town of Clifton Park

- **Solar Array on Closed Landfill**
 - 3,000 panels, 1 mW array at Clifton Park Transfer Station
 - Used a **Power Purchase Agreement** – Third party developer develops, owns, operates and performs maintenance while municipality purchases electric output, sometimes at a fixed rate, for a certain time period.
 - Expected to offset 90% energy use, \$2.5 million in savings over 25 years



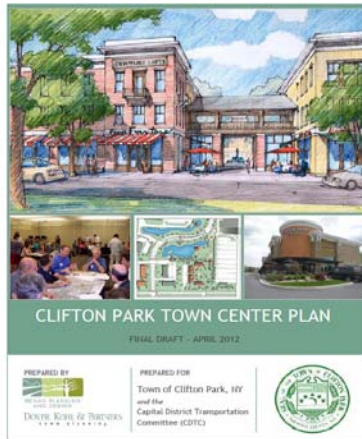
Home Topics Local News

Clifton Park and Halfmoon win grants for solar power

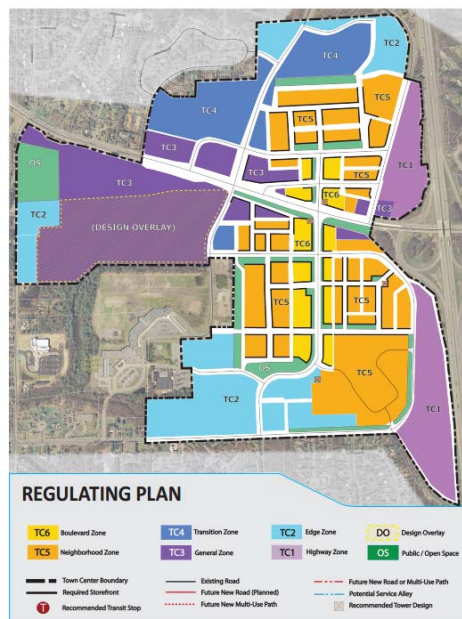


Clifton Park Supervisor Philip Barrett points to where solar panels will be installed on the town's capped landfill in 2015. clinton@cliftonpark.com

Encouragement of Smart Growth Practices – Town of Clifton Park



- **Town of Clifton Park & CDTC Clifton Park Town Center Plan**
 - Focuses on area surrounding I-87 and Exit 9
 - “Town Center” – a central place where people can live, work, shop, play, and participate in the social and civic life of the community
 - Recommends practices and strategies to increase infill, mixed-use, compact development, increased walkability, green infrastructure
- **Form Based Code Adopted April 2015**
 - Implementation of the Town Center Plan
 - Specifications for Streets, Form Standards, Architectural Standards, and Site Standards



Use Type (See Definitions)	TC6 Boulevard	TC3 Neighborhood	TC4 Transition	TC1 General	TC2 Edge	TC5 Highway
Animal, pet grooming	•	•				
Animal, veterinary services	•	•		•		•
Assembly or auditorium, indoor	•	•				•
Automotive, fuel sales				•		
Automotive, service or wash						
Automotive, sales						
Bank	•	•	•	•	•	•
Bank, drive thru	•	•	•	•	•	•
Bar or tavern	•	•				
Club, live performance						
Club, indoor	•	•		•		•
Commercial amusement, indoor	•	•		•		•
Dry cleaning	•	•	•			•
Home occupation	•	•	•		•	
Hotel	•	•				•
Laundromat	•	•				•
Medical services, outpatient	•	•	•			•
Office	•	•	•	•	•	•
Personal care	•	•		•	•	•
Repair and maintenance, light	•	•		•	•	•
Restaurant	•	•		•		•
Restaurant, drive thru	•	•		•		•
Restaurant, outdoor seating	•	•		•	•	•
Retail	•	•		•		•
Retail, drive thru	•	•		•		•
Retail, outdoor display	•	•		•		•
Nursing home	•	•			•	
Residence, multifamily	•	•			•	
Residence, mixed-use multifamily	•	•	•		•	
Senior housing	•	•	•		•	
Cultural center	•	•		•		•
Day care home	•	•	•		•	
Municipal office or public safety facility	•	•			•	
Parking, structured above grade	•	•			•	•
Parking, structured below or at grade	•	•	•	•	•	•
Public open space or park	•	•	•	•	•	•
Religious facility	•	•			•	•
School, nursery or K-12	•	•	•		•	•
School, vocational	•	•	•		•	•
Transit node	•	•	•		•	•
Transit hub	•	•	•		•	•
Utility, telecommunication tower	•	•		•	•	•
Utility, general public service	•	•		•	•	•

Notes: • = Use Permitted; • = Special Permit. Uses not listed, or blank cells, indicate use not permitted. Some not permitted uses are still listed in order to avoid ambiguity with similar functions. See Section 3.5 for special permit use considerations.

Community Renewable Support – Solarize!

What is Solarize?

- A volunteer-driven effort to increase knowledge and understanding of solar pv and be able to offer affordable solar to community residents.

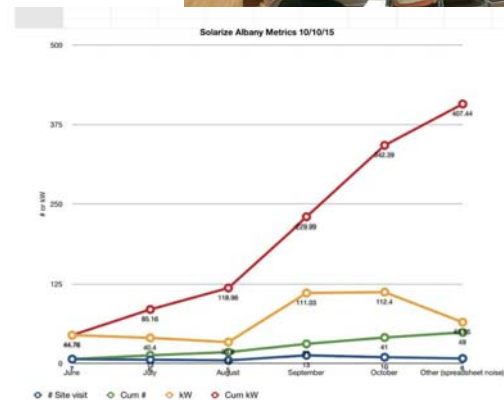
What are the benefits?

- Reduces traditional barriers for solar installations – complexity, cost, misinformation
- Community-driven effort, inspires action and brings community closer together
- State supported – **NYSERDA's Community Solar Program**, \$5,000 grants for Solarize Campaigns, Deadline is November 16th



Solarize – how does it work?

- A solar installer or several installers are vetted and selected based on identified criteria via an RFP Process
- The Solarize Campaign is launched – the Solarize group conducts extensive outreach and education and encourages community members to sign up to participate within a certain time frame (usually 4 or so months)
- Interested participants (community members) sign up to receive assessments from selected installer(s) and enter into contracts
- Solarize participant receives reduced rate for solar installation (in Albany – 3 cents/kW)



Solarize the Capital District



- 5 Solarize Campaigns in the Capital District:
 - **Albany, Saratoga, Troy**, Schenectady, Southern Saratoga
 - 3 funded by NYSERDA under the first round of Community Solar
- Separate campaigns – but also working collaboratively in the region
- You can get involved!
 - Visit CDRPC website for Solarize Campaign details
 - Volunteer for a Solarize Campaign, or help spread the word
 - Campaign enrollment period almost over for Albany and Saratoga – if interested, sign up now!

Innovative Waste Management – City of Watervliet



- One of the initiatives highlighted in the government ops climate action plan was an anaerobic digester and organic waste collection
- In January 2012, with funding from the Cargill Corporation, a six month organic waste curbside collection pilot was launched
- 50 households participating – received kitchen catcher, outside bin, 1 box compostable liners
- Collections biweekly, waste transported to Albany County Sewer District South Plant

Innovative Waste Management – City of Watervliet



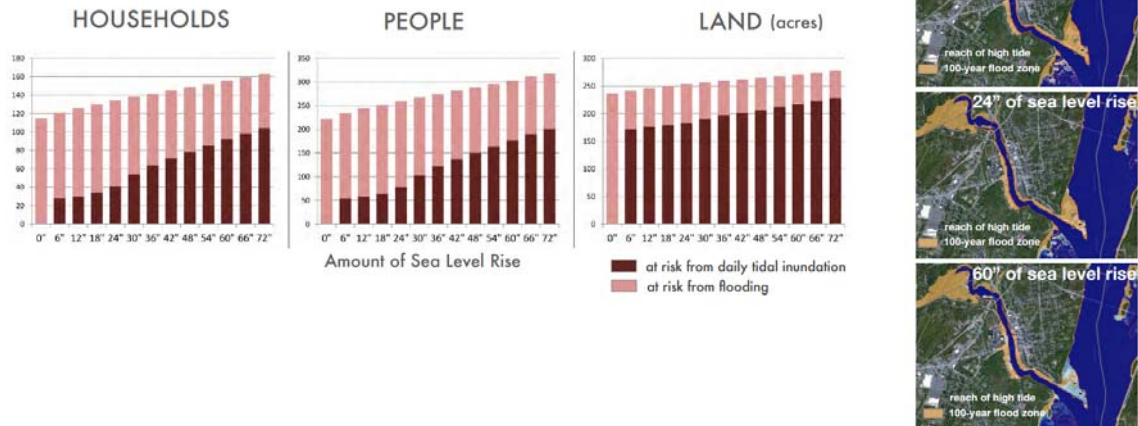
- The WOW Pilot was very successful:
 - In 6 months, 7,552 pounds of waste collected
 - Equivalent of taking 6.84 cars off the road
 - Experienced reduction in GHG emissions, reduction in expenses due to tipping fees, global recognition
- Due to the success of the pilot, the City continues to operate the WOW Program
 - Facilities for processing at Hudson Shores Park
- In 2014, awarded a grant by NYSERDA under the CGC Program to create Capital Region Organics Waste Management Plan

Resilient Catskill



- Joint effort of several organizations, staff, and community members under NYS DEC Hudson River Estuary Program
- Covers sea level rise scenarios for the years 2020, 2050, and 2100
 - Opted to choose strategies to address potential severe impacts – over-prepared better than under-prepared
- **24** recommendations, **6** established as “top priorities”
- Actions cover:
 - Physical, natural, and social fabric of Village
 - Immediate recovery needs and long-term adaptation goals

Resilient Catskill



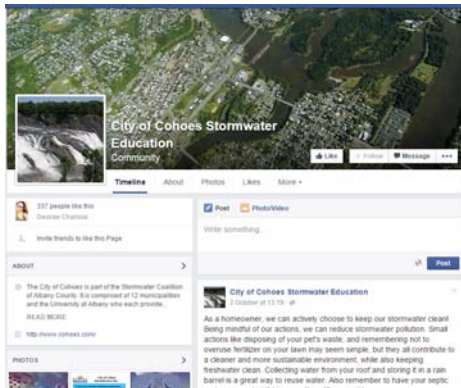
Incorporating Green Infrastructure Into Planning Practice – City of Cohoes

- City of Cohoes – member of Stormwater Coalition of Albany County
 - Participated in Green Infrastructure Model Local Law Project
- On January 27th, 2015, the City signed into law several components of the Model Local Law including:
 - Open Space Management provisions
 - Parking lot landscaping and design standards and green infrastructure practices
 - Parking specifications (Shared, Off-site, Land Banked)
 - Soil Erosion Safeguards, tree planting and tree protection
 - Integrated GI and Low Impact Development practices into Site Plan Review



Source: City of Cohoes Stormwater Education Facebook Page

The City's Continued Commitment to Stormwater Management



- Outside of Coalition activities, City is committed to going above and beyond MS4 permit requirements in regards to public outreach and education
- Robust website page – fact sheets, workshop & event information
- Maintains City of Cohoes Stormwater Education Facebook Page
 - 337 Likes
 - Regular postings with best practices and other tips

Advanced Vehicles and Energy Reductions – City of Cohoes

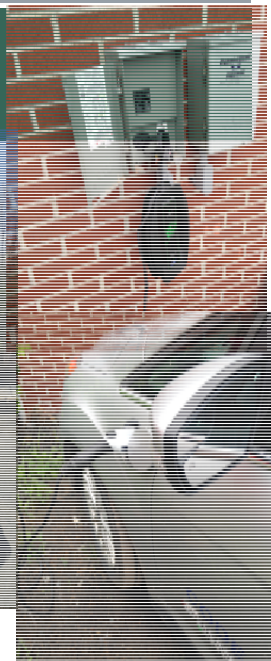


Photo Source: Troy Record

- Opportunity identified
 - \$115,000 clean-air focused grant, NYS DEC
 - Decided to use part of funding for the purchase of advanced vehicles
- Code Enforcement Vehicles – Prime Opportunity
 - Annual Mileage = 7,000 to 10,000
 - Short trips, no rapid acceleration

City of Cohoes – Code Goes Green!

- Purchased two Ford CMAX Energi, 2014
 - Plug-in hybrid
 - Charged at DPW Garage – Charging station installed by City Staff
 - Vehicles charged overnight and during the day while not in use
- Cost-savings benefits:
 - Annual Fuel Cost Estimate = \$900
 - Estimated savings in fuel costs over five years = \$4,250
- GHG emissions savings
 - Per vehicle, ~3,800 lbs/CO₂E – 2,660 lbs/CO₂E annually



Data Estimates: Alternative Fuels Data Center

And the list goes on and on....

timesunion

State awards \$900,000 for local micro grid projects

\$900,000 awarded for small-scale power generation stations

By Larry Rabinowitz. Published 2:05 p.m. Wednesday, July 8, 2015

Sustainable Bethlehem

BETHLEHEM, NEW YORK
Sustainable Bethlehem Program

Albany County Team Green

Highlighted as Developing the Greenest County in New York State

Albany County has developed a comprehensive green policy that applies to all county facilities and is provided to all employees during orientation. In addition to this, each departmental public representatives to a five-member county green council to develop ideas and check on its implementation in each department.

Albany County took the Greenest County in New York State award in 2012, and continued to add to its green initiatives (GRI) (Page 10, 2012, and 2013) (Page 10, 2013) (Page 10, 2013) (Page 10, 2013)

Albany Climate Change

Energy Sustainability

Albany County has developed a comprehensive green policy that applies to all county facilities and is provided to all employees during orientation. In addition to this, each departmental public representatives to a five-member county green council to develop ideas and check on its implementation in each department.

Albany County took the Greenest County in New York State award in 2012, and continued to add to its green initiatives (GRI) (Page 10, 2012, and 2013) (Page 10, 2013) (Page 10, 2013) (Page 10, 2013)

Four men standing in front of a solar panel array.

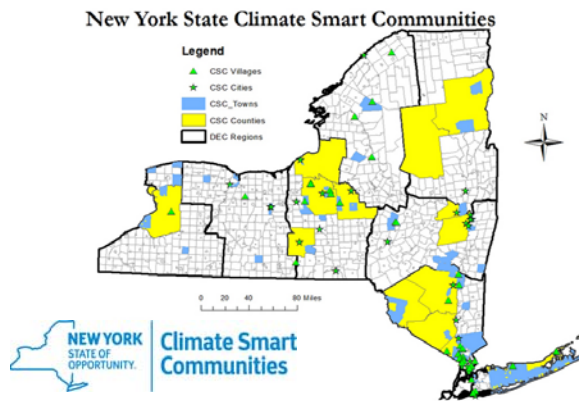
How to take action NOW

New York State is committed

- Focusing on both adaptation and mitigation
- Goals:
 - **40%** reduction in GHG emissions from 1990 levels by **2030**
 - **80%** reduction in GHG emissions from 1990 levels by **2050**
 - **50%** generation of electricity from renewable energy sources by **2030**
 - **600** trillion Btu increase in statewide energy efficiency (23% decrease in energy consumption in buildings)
- State policies
 - Regional Greenhouse Gas Initiative (RGGI), Community Risk and Resiliency Act, Reforming the Energy Vision
- State support of local governments
 - Climate Smart Communities and Cleaner, Greener Communities
 - DOS, DOT, DEC Initiatives



Climate Smart Communities Program



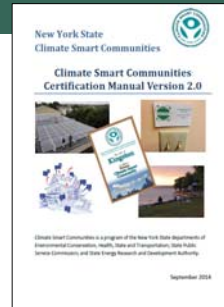
- State-local partnership to meet the economic, social, and environmental challenges of climate change
- Joint effort by 6 state agencies
- No fee to join, no cost to receive support
- Voluntary and flexible
- Climate Smart Community Goals:
 - Reduce Greenhouse Gas Emissions
 - Adapt to a Changing Climate
 - Save Tax Payer Dollars
 - Advance Community Goals
- 168 Climate Smart Communities across NYS, 21 in the Capital District

Climate Smart Communities Pledge

1. Pledge to Combat Climate Change by Becoming a Climate Smart Community
2. Set Goals, Inventory Emissions, & Move to Action
3. Decrease Energy Demand for Local Government Operations
4. Encourage Renewable Energy for Local Government Operations
5. Realize Benefits of Recycling & Other Climate Smart Solid Waste Management Practices
6. Promote Climate Protection Through Community Land Use Tools
7. Plan for Adaptation to Unavoidable Climate Change
8. Support a Green Innovation Economy
9. Inform & Inspire the Public
10. Commit to an Evolving Process

Climate Smart Communities and Benefits

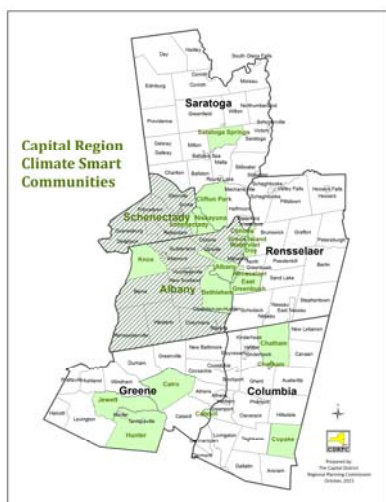
- Pledge: commitment to address energy and climate issues
- Information: online guidance, webinars, listserv, decision-support tools, best management practices guides
- Certification: leadership recognition framework
 - Certification Manual – Resource for idea generation, resources, and more,,
- Funding: may receive preference for funding, generally better positioned to compete for funds
- <http://www.dec.ny.gov/energy/50845.html>



CLIMATE SMART COMMUNITIES TOOLKIT



Climate Smart Communities Regional Coordinator Pilot Program 2012 - 2015



- Capital District Climate Smart Communities Coordinator – **Capital District Regional Planning Commission**
- Technical assistance provision for climate action and mitigation – action under 10 Pledge Elements
- Visit CDRPC's website for tools, resources, and guidance documents
 - Capital Region GHG Inventory
 - Climate Action Plan Guide
 - Local examples of climate action
 - Much more!
 - www.cdrpc.org

The New York State Community Partnership

- Announced in Governor Cuomo's 2015 Opportunity Agenda
- Collaborative effort lead by NYSERDA, working with the Governor's Office, New York Power Authority, Department of Public Service, and Department of Environmental Conservation
- Goals:
 - Streamline municipal access to state energy programs, tools, resources
 - Programming to meet local government priorities and needs

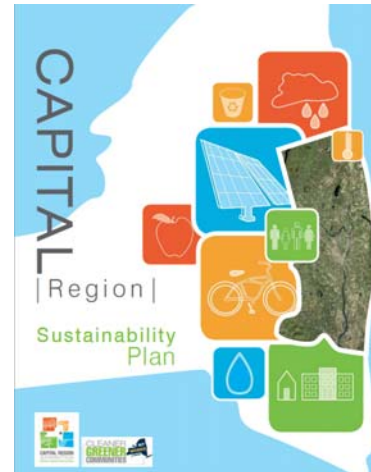
NY-Sun

- Statewide goal of 3 GW
- \$961 Million Total Budget
 - Goals are to stimulate the marketplace and reduce soft costs
- Programs include:
 - NY-Sun Incentive Program
 - NY-Sun PV Trainers Network
 - Shared Renewables Program
 - Solarize
 - K-Solar
 - Installer Resources

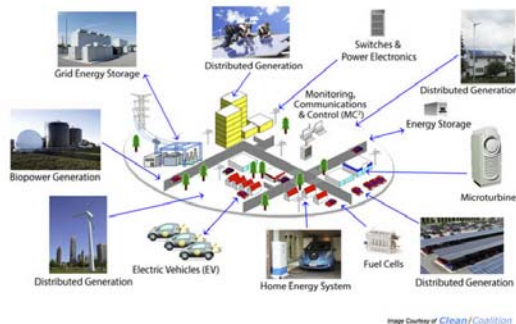


NYSERDA's Cleaner, Greener Communities Program

- Phase I – Regional Sustainability Plans
- Phase II – Implementation Grants
- **Category I** (Available until September 2019 or funds run out)
 - \$2,500 - \$5,000 for adoption of the Unified Solar Permit
 - \$2,500 - \$5,000 for adoption of EVSE permitting/zoning language or EVSE incentives
- **Category 2** – Flexible Funding Pilots (Available until September 2019 or funds run out)
 - \$25,000 to \$250,000 available (cap of 250,000 annually)
 - Eligible Project Types
 - Required Steps



NYSERDA's NY-Prize



- \$40 million competition – first in the nation
- Focuses on microgrid development – combination of energy and climate resiliency
- Three Phases:
 - Phase I: Feasibility Studies (completed)
 - Phase II: Design (Potential proposal due date – April 2016)
 - Phase III: Project Build-Out (Potential proposal due date – March 2018)
- 9 projects awarded in the Capital Region for Phase I

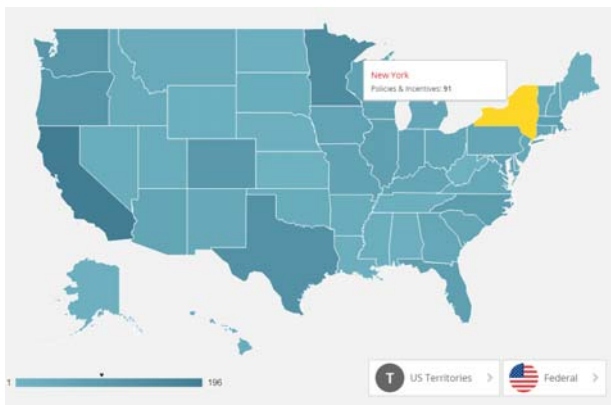
Resiliency-Specific Support Programs



Photo Sources: Environmental Facilities Corporation, City of Rensselaer

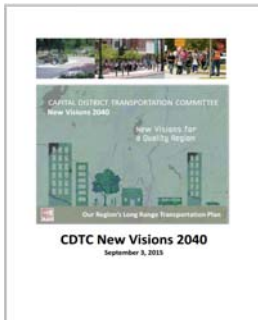
- **Department of State**
 - Environmental Protection Fund – Local Waterfront Revitalization Program
 - Water Quality Planning and Implementation Grants
 - New York Rising Community Reconstruction Program
- **Department of Environmental Conservation**
 - Hudson River Estuary Program
 - Water Quality Improvement Projects
- **Environmental Facilities Corporation**
 - Clean Water State Revolving Fund
 - Green Innovation Grants Program

There's also additional state programs, federal assistance and utility-sponsored programs...



- Smart growth and green infrastructure grants available periodically through EPA, EPA website also offers many resources
- DSIRE (Database of State Incentives for Renewables and Efficiency)
- Opportunities for energy efficiency sometimes available through utilities:
 - E.g. NYSEG Small Business Energy Efficiency Program – FREE energy assessments, 70% cost coverage for recommended equipment upgrades
- Additional NYSERDA energy efficiency programs available – many closing in 2015

And don't forget about local support

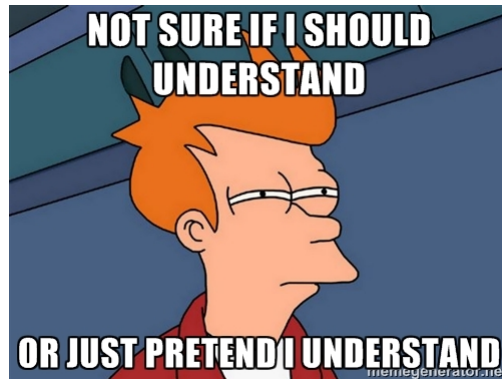


- **CDTC Linkages Program**
 - Transportation planning assistance in support of *New Visions 2040*
 - **79** planning studies in **40** Capital Region communities so far
- **Capital District Clean Communities Coalition**
 - *"Think outside the barrel"*
- **Capital District Regional Planning Commission**

So now it's in your hands...

- Whether you are here as a community member, local government official, or local government staff member, the time to act is now!
- Energy and climate planning offers something for everyone:
 - Short-term and long-term cost savings
 - Environmental and ecosystem enhancement
 - Increased livability and quality of life
 - Community building
- You can be a local climate champion!

QUESTIONS?



We realize that there was a lot of information covered today...

Please see us after today's presentation to sign your community up for a **FREE** climate smart consultation through the Capital District Regional Planning Commission



THANK YOU!

Jim Yienger

Principle, Climate Action Associates

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Robyn Reynolds

Community Engagement Manager, Climate Action Associates

robyn.reynolds@climatetools.com

(518) 669 - 4080

