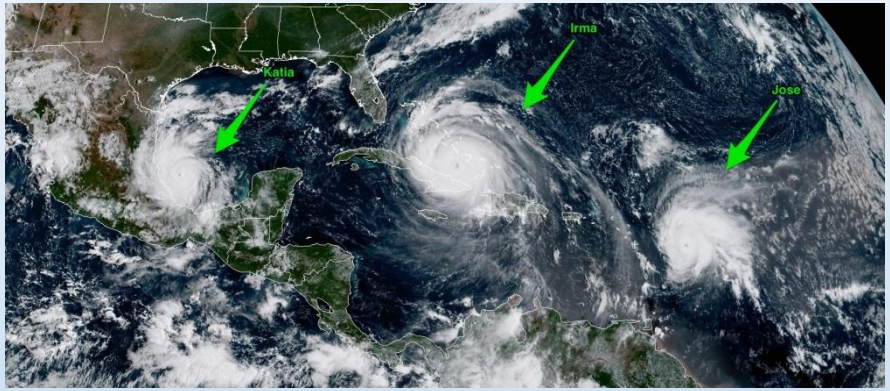
Ulster County 2018 Green Business Challenge

$aving money being green.

WHY A GREEN BUSINESS CHALLENGE?



Puerto Rico after Hurricane Maria made landfall.

The Green Business Challenge Goal: 100 Ulster County businesses, organizations, or municipalities will complete an energy retrofit, install solar or other renewable energy, or implement another action that will both save money and significantly reduce carbon emissions. **Help is available from a team of trained volunteer Ambassadors, local Green Business Leaders and area experts.**

GREEN BUSINESS CHALLENGE CLIMATE SOLUTION ACTIONS

- **Energy Audit:** Undertaking an energy audit will help GBC participants to prioritize the most effective actions, however the audit must be followed by one or more of the following actions:
- **Energy Retrofit:** Undertake an energy retrofit, which can include: Air-sealing and insulation; Installing energy efficient HVAC -- ground-source (geothermal) or air-source heat pump for heating and cooling; switching to LED lighting: interior, exterior or municipal street lighting.
- **Install a solar array or other renewable energy system to generate your own power:** Wind or small, low-impact hydroelectric would also qualify.
- **Purchase 100% renewable energy from a LOCAL source of renewable energy**, such as a Community Solar Project or hydroelectric facility.
- **Purchase an electric vehicle or install one or more electric vehicle charging stations.** Switching to EV fleets is a great way to improve transportation, especially if combined with renewable energy generation.
- **Restaurants and other food waste generators implement food reuse with Food Bank of the Hudson Valley and/or composting** via local haulers who will take it to the UCRRA or other composting facilities.
- **Significantly reducing single use plastic** and host of **other actions** that reduce energy use and greenhouse gas emissions, or otherwise addresses climate change are welcome.

Key Roles in the Green Business Challenge

- **Volunteer GBC Ambassadors:** Represent the Ulster County Green Business Challenge, educate people about it, **and help businesses navigate their way through investing in green business solutions**. Specifically, they:
  - Make the initial contact with a business, ideally one they already have a relationship with.
  - Help the business to assess their needs and concerns and identify green business solutions for further exploration.
  - Help the business to connect with the right people to answer their questions.
  - Check in on them throughout the process, following up on any needs that arise.
  - They *do not* have to be a content expert!
- **Businesses**: For simplicity we are saying "businesses", but non-profit organizations and municipalities are also welcome to participate! Business who successfully implement a climate solution will become a **Green Business Leader** and will be acknowledged as such on the County website.
- **Steering Committee Members**: A group of local advisors and experts on the Steering Committee are available to help businesses learn more. Ambassadors will help connect businesses with the appropriate Steering Committee members to address their interests and questions.
- **Central Data Collection**: Nick Hvozda, Deputy Director of the Ulster County Department of the Environment will keep a master list of business contacts and their movement through the process. Ambassadors will report back to Nick each time they talk with a business. Businesses can work directly with Nick as well, especially if they already know what their project is, have a contractor and are ready to move forward. He will help record baseline data and energy cost and greenhouse gas savings.
- **Providers**: It's important to remember that the GBC Ambassadors and Steering Committee members cannot recommend any particular provider or set of providers. For each action area, we will have either a list of *all* providers in the area, or pointers for how businesses can find providers to choose from.

Case Study: Ryan & Ryan Insurance
Bob Ryan, President

Built in Sept. 2013, this **16 kilowatt photovoltaic array,** located at 400 Stockade Dr., Kingston, has **64 solar panels** with individual inverters. **$500 metering costs saved each year** plus tax and operating savings. **100% solar NET ZERO ELECTRICITY** use since commissioning!

Need: To support this growing insurance brokerage more efficiently. Peak air-conditioning use created a **demand-metered billing "basic service charge" of $84/month** on two meters **($2,016 annually) --** ***even if no electricity used!***

Agreed Upon Objectives: **1. Save money by producing solar electricity.**
2. Create a smart plan for owner's use of tax credits and depreciation.

Bill Analysis and Smart Design = Project Success: By reviewing recent bills and understanding the owner's plans for the business and building, the developer, Tom Kacandes of Inside Track solar, designed a project that could completely displace utility electricity with solar energy generated on the roof. The **low-profile solar design** did not change the look of the business and did not require any penetrations of the rubber roof or risk of leaks -- with **zero maintenance**.

- The electrical work and cost to eliminate the tenant's meter was built into the solar project at no additional cost and **has saved $1,008 per year**.
- Solar shades the roof and produces electricity at the same time the sun causes peak AC demand, reducing peak enough **to save another $500/year in demand charges** for the remaining meter, now reclassified as "non-demand". Net Zero Electricity and Excellent Return on Investment ***Now Bob Ryan is considering a second project!***

Case Study: Mohonk Mountain House

Doug Comeau, Director of Properties

ENERGY AND RESOURCE CONSERVATION

1. **Lighting Retrofit:** Converted from incandescent to LED
   - Higher cost per bulb (8-10x)
   - Longer life (15-20x)
   - Lower operation cost (1/6th)
   - 180 bulbs in Main Dining Room – **potential savings of $20K/year**

2. **Composting:** since 1992
   - 180 tons/yr of kitchen waste 6 month turnover
   - 125 cu. yards compost
   - Use in gardens and grounds; Saves on carting costs and landfill space
3. **Renovations:** Increased building i**nsulation**; reduces drafts
   - Reduced heating oil consumption and cost **by 30% over last 30 years**
4. **Geothermal Heat Pump:** Transfers heat to and from ground for cooling and heating
5. **Venmar Heat Recovery Economizer:** Heat exchange system for building make-up air. In cooling mode, removes heat from outdoor air; in heating mode, recovers heat from indoor air
6. **Poolpak Natatorium Heating & Cooling:** Dehumidifies Natatorium air; recovers heat from dehumidification process to heat the pool water and air.
7. **Reuse excavated stone** for landscaping, retaining walls and veneers.

Case Study: SUNY New Paltz Sustainable Energy Management

Lisa Mitten, Campus Sustainability Coordinator

1. **Conduct an Energy Audit**
2. **Energy Retrofit: LED Lighting Upgrades:**
   All Exterior Lighting; Interior LED Lighting
   in 6 buildings and more in process!
3. **Energy Retrofit: Insulating Blankets in Mechanical Rooms**
4. **Energy Retrofit: Install Air-Source Heat Pumps**
5. **Other Energy Retrofits:** Upgrades to digital heating controls;
   Retrocommissioning; **Chiller optimization;** Boiler efficiency study;
   4 completed LEED buildings + 5 LEED buildings in process
6. **Generate your own Solar Power** with State-of-the-Art **Battery Storage**
7. **Purchase 100% Renewable Energy** from a LOCAL source
8. **Purchase an electric vehicle & install EV charging stations**

9. **Compost Food Waste**
10. **Significantly Reduce Single-Use Plastics**
11. **Green Stormwater Infrastructure project:**
    12 GI Sites showcasing 8 types of GI methods

Results

Energy Conservation Measures from 2015 to 2018					
Year	**Energy Conservation Measure**	**Utility Savings**		**Rate**	**Total Cost Avoided**
2015	2.8 KW Ground-Mount Array at Resnick	2,705	kwh	$ 0.08	$ 216.40
2015	Exterior Lighting Upgrades - Phase 1	382,362	kwh	$ 0.08	$ 29,862.47
2016	Exterior Lighting Upgrades - Phase 2	424,428	kwh	$ 0.08	$ 33,147.83
2017	HTHW Thermaxx Insulating Jackets	90,571	therms	$ 0.65	$ 58,581.07
2017	Interior LED Lighting Upgrades - Phase 1	843,816	kwh	$ 0.08	$ 65,902.03
2018	Steam Trap Repairs, 21 steam traps	37,994	therms	$ 0.65	$ 24,574.52
2018	217 KW Solar Photovoltaic & Battery Storage	253,331	kwh		$ 36,041.10
				Total Annual Cost Avoidance	**$ 248,325.41**

Cost Avoidance: Electricity: Saves 2 million kwh every year.
Natural Gas: Saves 130,000 therms of natural gas every year.

Case Study: Frost Valley YMCA

Tom Holsapple, Chief Operating Officer

1. **Build a Sustainability Culture**
2. **Emission Reductions: Lighting Efficiency**
   - CFLs, LEDs and Occupancy Sensors
3. **Solar Thermal Hot Water and Heat**
   - reduces Propane use
4. **Install Solar Photovoltaics (PV):**
   - 40% On-Site Solar Electricity – Breaking ground 7/9/18
5. **Biomass: Wood Pellet Boiler** to reduce dining hall propane consumption
6. **EV Charging Station**
7. **Composting** – since 1990
8. **Expand Local Food Production**

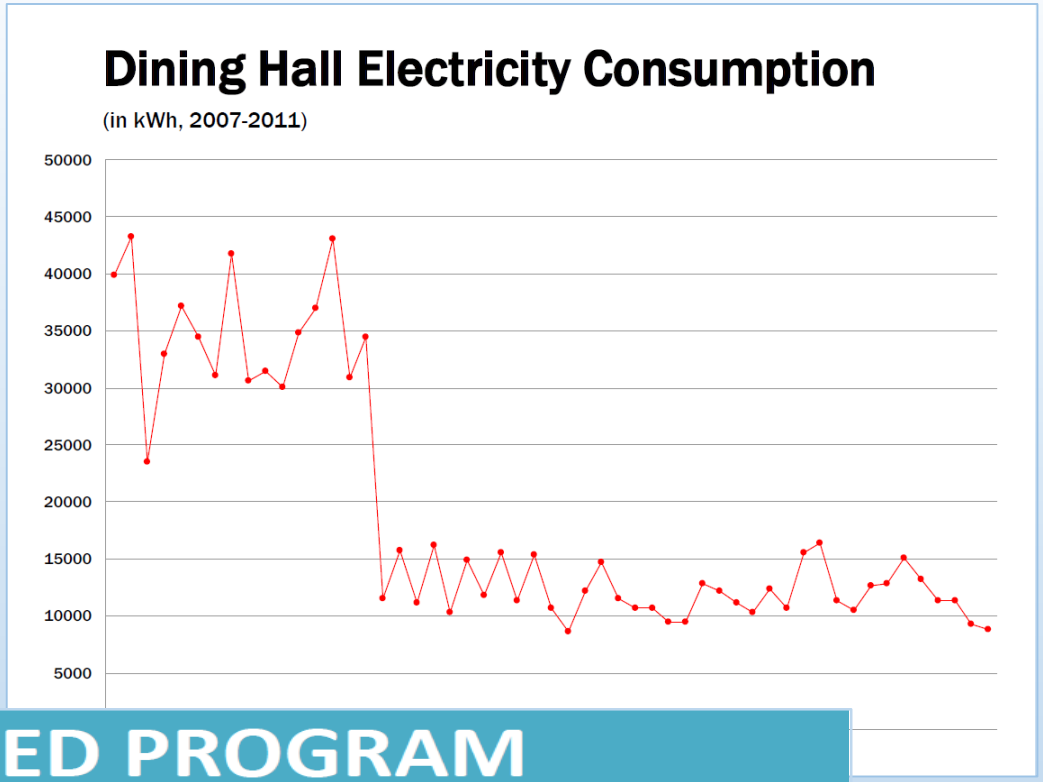
9. **Water Conservation:** All faucets and fixtures are low-flow with aerators.
10. **Non-Toxic Cleaning Products; recycled paper; extensive recycling, and more…**

2011 CH RETROFIT PROGRAM

CHANGE T-12'S TO T-8'S

Building/Pole	Project Cost	CHGE Incentive	Net Cost For FV	Est. Monthly Savings	Est. Annual Savings	Est. Annual Payback (yrs)
Maint. Shop	$6,230.22	$4,361.16	$1,869.07	$181.71	$2,180.58	0.86
Pole C	$5,090.80	$3,563.56	$1,527.24	$148.48	$1,781.78	0.86
Margetts/Laundry	$5,299.84	$3,709.89	$1,589.95	$154.58	$1,854.94	0.86
Pole D	$7,167.89	$5,017.52	$2,150.37	$209.06	$2,508.76	0.86
Pole A	$263.95	$184.77	$79.19	$7.70	$92.38	0.86
Dining Hall	$24,581.11	$17,206.78	$7,374.33	$896.19	$10,754.23	0.69
Totals	$48,633.81	$34,043.68	$14,590.15	$1,597.72	$19,172.67	

12 month 0% loan offered



2014 CH LED PROGRAM

	Project Cost	CHGE Incentive	Net Cost for FV	Est. Monthly Savings	Est. Annual Savings	Est. Annual Payback
Totals	$64,112.39	$38,995.19	$25,117.20	$1,355.50	$16,266.00	1 yr 6 months

24 monthly payments

Case Study: Bread Alone Bakery

Sharon, Dan and Nels Leader, Owners

Also composting food waste, turning unsold bread into beer, and installing energy efficient cooling system, and more.

FINANCING: All projects are eligible for financing from a variety of sources. Ulster County is a member of the Energy Improvement Corporation (EIC), which offers low cost, long-term, easily accessible Energize NY **Property Assessed Clean Energy (PACE) financing** to fund clean energy projects in commercially-owned buildings. Local banks and credit unions also offer financing for energy improvements and other climate solutions, as do the Ulster County Revolving Loan Fund and the New York State Energy Research & Development Authority (NYSERDA).

ACKNOWLEDGEMENT: Participating businesses, organizations and municipalities will be acknowledged for their contribution to this important, if ambitious, challenge with a Certificate of Appreciation and/or a Pride of Ulster County award, a Green Business decal and more!

For further information, please contact: UlsterCountyGBC@gmail.com or call 845-340-4298

CLIMATE SOLUTIONS

Electricity

Wind Turbines (#2) (On and Offshore)

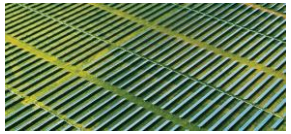
Proliferation of turbines, dropping costs and heightened performance can supply the world with clean power. Wind farms are at the forefront of addressing global warming.

Rooftop Solar (#10)

As cost falls, economies of scale in manufacturing and advances in phototechnology make rooftop solar available worldwide.

Energy Storage

Vital to reduce emissions from polluting "peaker" plants and shift to variable renewables.



Solar Farms (#8)

Tapping the sun's unlimited clean and free fuel using large-scale arrays of hundreds, thousands, or millions of photovoltaic panels.

Food and Farming

Reduced Food Waste (#3)

Uneaten food squanders resources and generates 8% of GHG emissions. We can greatly reduce waste as food moves from farm to fork.

Plant-Rich Diet (#4)

Meat-centric diets come with a steep climate price tag: 1/5 of global GHG emissions. Plant-rich diets dramatically reduce emissions and chronic disease.

Silvopasture (#9)

Integrating trees and pasture into a single system for raising livestock sequesters carbon while improving animal health and productivity.

Regenerative Agriculture (#11)

Carbon-rich soil increases organic matter, enhances and sustains soil health, sequesters carbon, and improves productivity.

Building and Cities

Green Roofs

Use soil and vegetation as living insulation and reflect solar energy. Both reduce energy use for heating and cooling.

Insulation

One of the most cost-effective ways to improve energy efficiency, both in new construction and retrofitting older buildings.

Net Zero Buildings

With zero net energy consumption, net zero buildings produce as much energy, through onsite renewables, as they use in a year.

Walkable Cities

Prioritize two feet over four wheels through planning and design. Emissions decrease with less driving and more walking.

Transportation

Mass Transit

Riding a streetcar, bus, or subway averts greenhouse gases, relieves traffic congestion and reduces air pollution.

High Speed Rail

One of the fastest way to travel between 100 to 700 miles, high speed rail can reduce emissions up to 90%.

Electric Vehicles

If powered by solar energy, carbon dioxide emissions from EVs drop by 95% compared to gas-powered cars.

Electric Bikes

The most environmentally sound means of motor transport in the world today.

Forestry and Land Use

Indigenous People's Land Management

Growing acreage under secure indigenous tenure can increase carbon stocks and reduce greenhouse gas emissions.

Tropical Forests (#5)

Have suffered extensive clearing, fragmentation, degradation and depletion of biodiversity. Restoring them may sequester as much as six gigatons of carbon dioxide per year.

Coastal Wetlands

Salt marshes, mangroves and sea grasses provide vital habitat, flood protection and water filtration, and sequester huge amounts of carbon.

Afforestation/ Reforestation

Creating forests where there were none and restoring those that were depleted draws carbon in and distributes it into the soil.

Coming Attractions

Ocean Farming

Small-scale farms can provide food and biofuel, while oysters filter nitrogen and seaweed sequesters CO_2.

Living Buildings

Benefitting both people and the planet, living buildings produce more energy than they use.

Marine Permaculture

Floating, latticed structures grow rich kelp forests and foster marine life, while sequestering billions of tons of carbon dioxide.

Telepresence

Enabling people who are geographically separated to interact, it reduces emissions by reducing travel.

Women and Girls

Family Planning (#7)

Securing women's right to voluntary, high-quality family planning dramatically improves the health and well-being of women and their children. Smaller families create less emissions.

Educating Girls (#6)

Lays a foundation for vibrant lives for girls and women, their families and their communities. It also avoids emissions by curbing population growth.

Materials

Refrigerant Management (#1)

The primary chemical refrigerant, HFCs, is a potent greenhouse gas. Emissions are avoided by managing leaks and disposal and by ultimately phasing out the use of HFCs with less harmful alternatives.

Industrial Recycling

Reduces emissions when new products are made from recovered materials, and can also address the challenge of resource scarcity.

DRAWDOWN SOLUTIONS

"When it comes to global warming we've been focusing too much on the problem instead of the solution… Regenerative development actually heals the future as opposed to stealing from it, which is what we're doing today." ~ Paul Hawken, *Drawdown*

Rank	Solution	Sector	TOTAL ATMOSPHERIC CO2-EQ REDUCTION (GT)	NET COST (BILLIONS US $)	SAVINGS (BILLIONS US $)
1	Refrigerant Management	Materials	89.74	N/A	$-902.77
2	Wind Turbines (Onshore)	Electricity Generation	84.60	$1,225.37	$7,425.00
3	Reduced Food Waste	Food	70.53	N/A	N/A
4	Plant-Rich Diet	Food	66.11	N/A	N/A
5	Tropical Forests	Land Use	61.23	N/A	N/A
6	Educating Girls	Women and Girls	59.60	N/A	N/A
7	Family Planning	Women and Girls	59.60	N/A	N/A
8	Solar Farms	Electricity Generation	36.90	$-80.60	$5,023.84
9	Silvopasture	Food	31.19	$41.59	$699.37
10	Rooftop Solar	Electricity Generation	24.60	$453.14	$3,457.63
11	Regenerative Agriculture	Food	23.15	$57.22	$1,928.10
12	Temperate Forests	Land Use	22.61	N/A	N/A
13	Peatlands	Land Use	21.57	N/A	N/A
14	Tropical Staple Trees	Food	20.19	$120.07	$626.97
15	Afforestation	Land Use	18.06	$29.44	$392.33
16	Conservation Agriculture	Food	17.35	$37.53	$2,119.07
17	Tree Intercropping	Food	17.20	$146.99	$22.10
18	Geothermal	Electricity Generation	16.60	$-155.48	$1,024.34
19	Managed Grazing	Food	16.34	$50.48	$735.27


Recycle
Close the loop and remake.
Refuse
Don't consume what you don't need to.
Recover
Energy and materials recovery. And upcycle!
Rethink
Be mindful of your consumption, your relationship with 'things' and your relationship with the Earth.
Reduce
Reduce consumption of energy and materials.
Re-gift
Share, and be a part of the gift economy.
Repair
Fix or upgrade your objects rather than throwing them away.
Re-use
Share with others. Find new uses for old objects.

Thank you!

The 2018 Ulster County Green Business Challenge is a project of the Ulster County Climate Smart Committee and is sponsored by Ulster County Executive, Michael Hein, the Ulster County Department of the Environment and the Ulster County Office of Economic Development.

See: **http://ulstercountyny.gov/environment/green-business-challenge**

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