

C. Glossary of Terms

Building Envelope. The physical barrier between the inside and outside of a building (walls, roof, windows, doors) that controls heat, air, and moisture flow.

Carbon Credits. Permits that represent the right to emit a certain amount of carbon dioxide (or equivalent); they can be traded in carbon markets.

Climate Adaptation vs. Resilience. Adaptation and resilience are similar, but different!

- **Climate Adaptation.** Adjustment or preparation of natural or human systems to the effects of climate change in ways that reduce harm or exploit beneficial opportunities e.g. planting heat-tolerant trees as local climates warm up.
- **Climate Resilience.** The capability to anticipate, prepare for, respond to, and recover from climate impacts with minimum damage to social well-being, the economy, and the environment. Resilience doesn't guarantee that bad things, e.g. a damaging flood, will have no impact, but it does speak to the ability of a community to bounce back i.e. return to intact homes and resume daily life.

Cross-departmental collaboration. Coordination and teamwork between different departments within the same organization.

Embodied Carbon. The total greenhouse gas emissions associated with producing, transporting, and installing a material or product (not just using it).

Energy Management. The process of monitoring, controlling, and optimizing energy use to improve efficiency and reduce costs and emissions.

Evapotranspiration. The combined process of water evaporating from land and transpiring (releasing moisture) from plants into the atmosphere.

Gleaning. Collecting leftover crops from fields after harvest, from a market, or a restaurant to prevent food waste and redistribute food.

Global Warming. The long-term increase in Earth's average surface temperature, mainly due to human-caused greenhouse gas emissions.

Global Warming Potential (GWP). Different greenhouse gases warm the atmosphere differently and stay in the atmosphere for different periods of time. Understanding this is important when calculating the GHG inventory: you aren't counting just one currency – you have dollars and euros and pounds and pesos and yen that you need to compare and add up to a single number. Global warming potential (GWP) is a way to create a single currency of how much warming each gas contributes. Each greenhouse gas is compared to carbon dioxide which has GWP of 1, and remains in the atmosphere for thousands of years. However methane (natural gas) has a GWP of 27-30 versus carbon dioxide: it a powerful GHG, but doesn't remain in the atmosphere for as long as carbon dioxide. GWP allows for the conversion of different greenhouse gas emissions into the same emissions unit, carbon dioxide equivalent (CO₂e) – similar to how we compare foreign currencies to the dollar.

Green Electricity. Electric power generated from renewable sources like wind, solar, or hydropower with little or no greenhouse gas emissions.

Green Infrastructure. Natural or nature-based systems (like parks, green roofs, wetlands) that manage water, reduce heat, and improve environmental quality.

Greenhouse Gases (GHGs). Gases in the atmosphere (like carbon dioxide, methane, and nitrous oxide) that trap heat and warm the Earth.

Greening the Grid. Transitioning the electricity system to rely more on renewable energy and lower-carbon sources.

Grey Infrastructure. Traditional, engineered systems (like roads, pipes, sewers, and buildings) used for transportation, water, and other services.

Intergovernmental Collaboration. Cooperation between different levels of government (local, state, federal, or international).

Location-Based Electricity Emissions. The location-based approach to calculating electricity emissions is based on the electricity physically delivered to an entity, in this case the City of Syracuse by National Grid. It relies on average regional electric grid emission factors to calculate emissions.

Market-Based Electricity Emissions. The market-based approach is where it gets more complicated. When you buy green power on your electricity bill, or buy solar from a community solar projects, or buy RECs, the GHG grid-based emissions will be adjusted based on the amount of green power that is purchased. Syracuse does not participate in any green power programs or purchase RECs, but if it did, it would use the market-based calculation.

Micromobility. Small, lightweight transportation modes (like bikes, e-scooters, and e-bikes), typically used for short distances.

New York Climate Leadership and Community Protection Action (CLCPA). A major New York State law (passed in 2019) that commits the state to reducing greenhouse gas emissions, transitioning to clean energy, and prioritizing environmental justice.

Positive Feedback Loop. A process where an initial change triggers effects that amplify that change (e.g., melting ice reduces reflectivity, causing more warming and more melting).

Rate of Change. How quickly something increases or decreases over time (e.g., temperature rising per decade).

Renewable Energy Certificate. A renewable energy certificate, or REC, allows entities to buy and sell the environmental, social, and other non-power attributes of renewable electricity (e.g., the “greenness”) even if the electricity they are consuming directly from the grid is not carbon-free. RECs are typically purchased in one megawatt-hour (MWh) increments and include identifying information such as the source of the electricity and when it was generated.

Scope 1 GHG Emissions. This is a term used in GHG inventories, and it describes the category of emissions that occur on-site e.g., burning natural gas or oil to heat a building, or burning gasoline or diesel in a vehicle. These are typically calculated from figures reported in utility or fuel bills. Scope 1 emissions are a mandatory component of both municipal and community GHG inventories.

Scope 2 GHG Emissions. This term describes the categories of emissions from the power plants that supply electricity to the grid. These are typically calculated based on electricity consumption reported in electric bills, multiplied by the emissions factor (kg of CO₂ equivalent per megawatt hour of electricity) of the power plants which made the electricity in a certain region. Scope 2 emissions are a mandatory component of a municipal or community GHG inventory.

Scope 3 GHG Emissions. These are indirect or life-cycle emissions generated through activity (this is regardless of where these emissions generating activities occur) such as waste generation, consumption of food and water, the manufacturing of the clothing you wear, and building the buildings you live and work in. Comprehensive Scope 3 emissions are optional for municipal and community GHG inventories today: they are complicated and, in many cases, impossible or impractical to calculate. However, certain categories within Scope 3 such as employee commute can be estimated and are useful to measure certain impacts of government operations on GHG emissions.

Unrestricted Air Flow. Air can move freely through a space, system, or object without significant blockage, resistance, or obstruction. In buildings, unrestricted air flow created by modern HVAC systems decreases asthma symptoms and allergic reactions to dust particles.

Urban Heat Island Effect. A phenomenon where cities and densely built urban areas become significantly warmer than nearby rural areas, especially at night, because of a lack of tree canopy and dark pavement.

D. Frequently Asked Questions (FAQs)

What Is a Climate Action Plan (CAP)? A CAP is a strategic document that presents the risks (and opportunities!) posed by climate change and the actions that must be taken to 1) reduce emissions of greenhouse gases (GHG) that cause climate change, and 2) increase adaptation and resilience to climate risks to protect communities and the environment.

Why does Syracuse need a CAP? Climate change is accelerating, with negative impacts to our daily lives from everything from nuisance flooding to the erosion of City budgets, buildings, infrastructure, and the natural environment. With a plan, the City and the community can prioritize actions and programs to protect the things we care most about, reduce GHG emissions, and be better positioned to obtain funding for projects that will improve resilience – for everyone.

What is a greenhouse gas inventory (GHGI) and what is it for? A greenhouse gas inventory (GHGI) lists emissions sources and quantifies the emissions from each source using standardized calculations. Organizations develop GHG inventories for a variety of reasons, including:

- To establish accountability for their contribution to global climate change.
- To identify the important GHG sources so these sources can be reduced
- To “keep score” as projects reduce emissions over time
- To compare against peer entities i.e. other counties, towns, and cities in New York

- To participate in voluntary or mandatory GHG programs (e.g. New York State’s Climate Smart Communities program) and achieve recognition for actions taken.
- To calculate how many carbon credits or renewable energy certificates to buy.
- Syracuse has an emissions inventory from 2010, so it will be very interesting to see how the City and community performed over the last 14 years.

What is the different between climate and weather?

“Climate is what you expect. Weather is what you get.” As the climate changes, seasonal weather patterns and events we remember growing up are happening at different times of year, or are happening at different times of year, or aren’t happening at all. In some cases, we are seeing weather we have never seen before.

What are the effects of climate change and the risks posed to Syracuse? In general the effects from climate change include things that we are already seeing around us today: shorter winters, hotter and longer summer temperatures, heatwaves, wildfire smoke (local or regional), extreme weather events (especially rainfall, wet snowfalls with sudden thaws). The risks include flooding at any time of year, heat stress/stroke in the summer, damage to public and personal property, less outdoor activities in hot summer months, and changes to natural ecosystems. Some of the effects may not be 100% negative – warmer temperatures may be welcome in Syracuse! But as the climate changes, so must we.

What is a Government Operations CAP? A Government Operations CAP covers municipally owned assets such as City buildings, streets, streetlights, drinking water treatment facilities, and parks. In addition, it covers the day-to-day City operations and policies. A Government Operations CAP will include actions to reduce GHG emissions from City buildings and operations, actions the City should take to support resilience throughout the community, and changes to City policy instruments such as zoning ordinances that will increase climate resilience or reduce emissions.

What is a Community CAP? A Community CAP applies to actions across an entire geographic area. For example, the area within the city limits of Syracuse, comprising its citizens, its businesses, its organizations, and other stakeholders. Writing these plans is built on deliberate public outreach process to gather input and reach agreement on what the actions are going to be. Sometimes the goals are more general, less specific as they require collective action. But the community CAP provides the vision and goals that everyone in Syracuse can strive towards. The most meaningful projects often have benefits beyond just being a climate action: for example, planting more street trees doesn't just provide shade and pull carbon out of the atmosphere, but helps to cool entire neighborhoods, mitigate stormwater runoff, and beautify urban landscapes.