

# Municipal Climate Action Plans

## PURPOSE

A municipal climate action plan is an important tool for engaging communities in the work of reducing GHG emissions and adapting to unavoidable local impacts of climate change.

## HOW IT WORKS

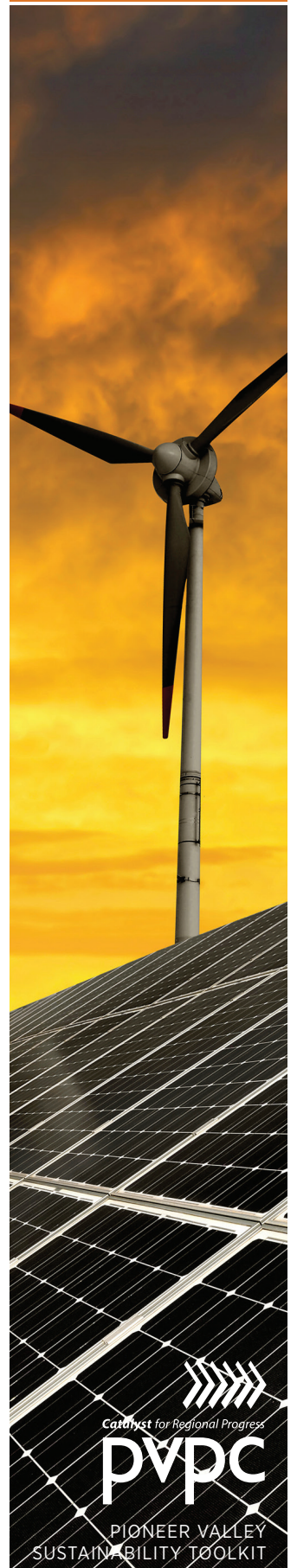
A municipal climate action plan is an effective tool for guiding local actions to: 1) reduce greenhouse gas (GHG) emissions, and 2) improve a community's ability to withstand the effects of climate change that are now unavoidable, such as more floods, excessive and prolonged heat, and power outages. A good municipal climate plan typically includes:

- » An inventory of existing GHG emissions produced within the community.
- » GHG reduction targets and timeframes.
- » Strategies to reduce, or mitigate, GHG emissions.
- » Strategies to improve the strength and resiliency of local infrastructure, roads, power systems and social services for heat-vulnerable residents.
- » A prioritized schedule for implementing selected strategies and monitoring progress.

Critical to any municipal climate action plan is the convening and ongoing participation of a task force or advisory committee of stakeholders that includes elected officials, citizens, and business owners. The participation of municipal staff, especially public works and facilities personnel, is especially helpful. You may also wish to include members of regional and state agencies that are involved in climate action planning and have resources to share. If your budget allows, the assistance of an engineering or technical consultant with experience producing climate action plans will be important. Lastly, it is important that the plan have a clear rationale and mission statement. Why is it important for your community to respond to climate change and its related impacts? What will be the consequences if you don't?

## GHG EMISSIONS INVENTORIES

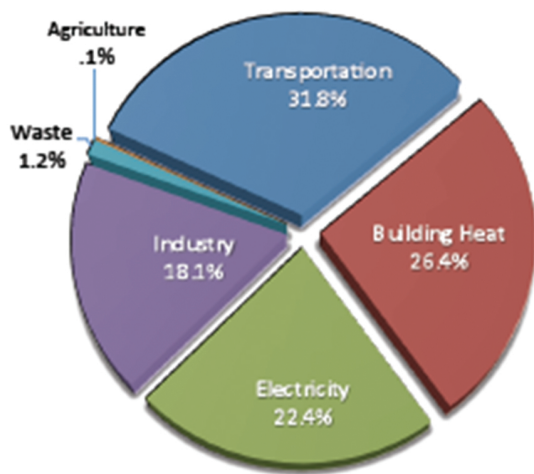
Greenhouse gas (GHG) emissions inventories estimate the quantities of these gases that are emitted within a city or town, as well as by power plants outside the municipality that supply electric power to customers within it. A typical GHG inventory lists energy



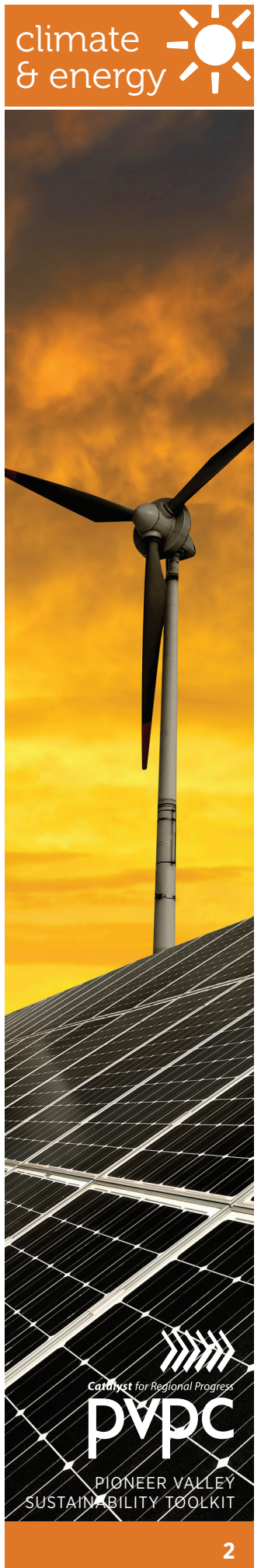
consumption from the municipality itself, as well as that of local businesses and households (if that information is available). Energy use is usually summarized in the following categories: electricity, building heat (oil, natural gas or wood/biomass), transportation (gasoline and diesel), agriculture (methane from livestock flatulence), and industry. Municipalities can help “lead by example” by tracking the energy use and emissions of public infrastructure, including water treatment plants, landfill methane off-gassing, power for street lights, and other typical public facilities.

Based on the type and quantities of fuels consumed, as well as the presence (or not) of other GHG-emitting activities, it is possible to estimate the quantities of GHGs that are released within the municipality.

### Example GHG Inventory by Sector: Pioneer Valley



Above is the 2010 GHG inventory for the 9.2 million tons of carbon dioxide and equivalent GHG gases emitted in the 43 cities and towns of the Pioneer Valley that year. Similar GHG inventories can be produced for a municipality using data from utility companies, state transportation agencies and other sources.

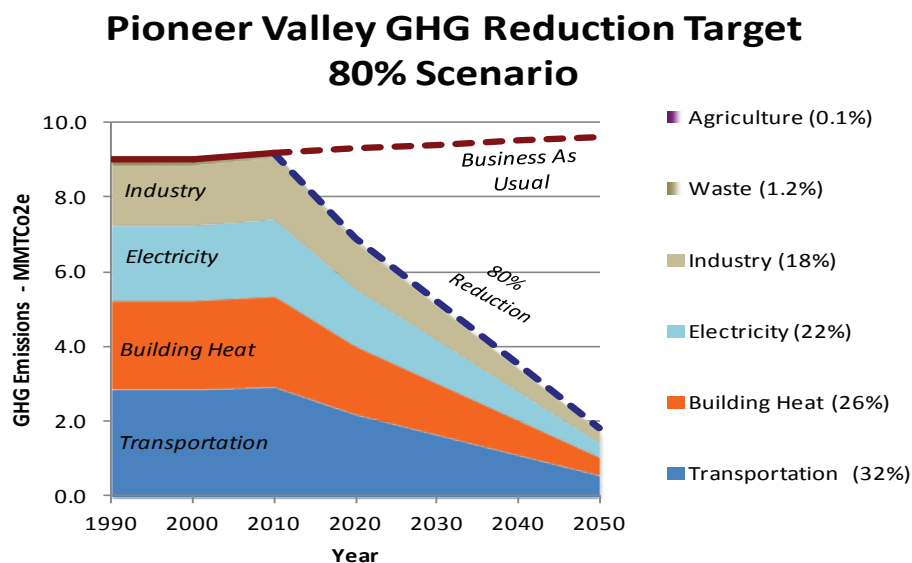


# SETTING GHG REDUCTION TARGETS

Setting GHG reduction targets means deciding the amounts by which your municipality wishes to reduce its GHG emissions and by when. It's helpful to imagine more than one scenario for doing this. For example, the [Massachusetts Climate Action Plan](#) sets two incremental target scenarios: a 20% reduction of GHGs (from 1990 emissions levels) by 2020, and an 80% reduction of GHGs by 2050. The [Pioneer Valley Climate Action Plan](#) has adopted this statewide 80% reduction goal for 2050 (see below) and also contemplates a “carbon neutral” scenario of a 100% GHG reduction (no net GHG emissions) by 2050.

Your community may wish to consider the feasibility of these targets, depending on the amount of GHG-emitting activities within your town boundaries, as they are consistent with established statewide goals. However, it may be easier for a small town that is largely residential to make short-term progress toward these goals than an urban area that depends on a heavily GHG-emitting industry for employment. Thus, the stakeholder discussion about setting feasible GHG reduction targets is a critical plan activity; achievable yet inspirational goals are essential to obtain the necessary “buy-in” of leaders and key participants for the long-term success of the plan.

## Example GHG Reduction Targets: Pioneer Valley 80% GHG Reduction by 2050



This is an example of a GHG reduction scenario that assumes equal reductions in all sectors by the horizon year (2050). Your community may wish to set other targets and horizon years, based on the amount of commuting by residents, age and size of buildings, and the nature of local industrial facilities (if any).





# STRATEGIES TO REDUCE GHG EMISSIONS

There are dozens of ways to reduce GHG emissions. Many are as simple as carpooling; others can require years of engineering work and financing. So it's important not to try to do them all at once, but rather to choose a few to start with on which your community can make some real progress—and get results. Chapter 8 of the [Pioneer Valley Climate Action and Clean Energy Plan](#) offers dozens of possible strategies for reducing GHG emissions that are tailored to communities in Western Massachusetts. Some highlights are offered below.

## Short-term GHG reduction strategies

- » Use car sharing (i.e., Zip Car) and carpools
- » Bike, walk and/or ride the bus instead of driving whenever possible
- » Incentives to switch to a more fuel-efficient personal vehicle
- » Install solar photovoltaic and/or solar hot water panels
- » Get a no-cost Mass Save home energy assessment to receive free weather-stripping, LED and compact fluorescent light bulb replacement
- » Plant trees to shade your house and soak up carbon dioxide

## Longer-term GHG reduction strategies

- » Promote zoning that allows a greater mix of uses to help reduce distances and the need to drive
- » Encourage green building practices and investments in energy efficiency in homes, commercial buildings and industrial facilities
- » Establish and improve recycling and composting programs
- » Support the production and consumption of local and organic foods to help reduce long distance shipping and the use of petroleum-based fertilizers



# STRATEGIES TO IMPROVE RESILIENCY TO UNAVOIDABLE CLIMATE IMPACTS

While GHG mitigation can reduce the future effects of climate change, it will not eliminate the effects of climate-related changes that are already happening. These include severe weather, early winter storms, more frequent flooding and record breaking heat. A Climate Action Plan can help your community decide which strategies are most needed to adapt to these and other climate-related impacts. Chapter 8 of the [Pioneer Valley Climate Action and Clean Energy Plan](#) offers dozens of possible strategies for adapting to climate impacts that are tailored to communities in Western Massachusetts. Example climate adaptation strategies include:

1. Update municipal emergency response and communication plans
2. Change agriculture practices to use less water and help prevent soil degradation and erosion
3. Reduce impervious surfaces and encourage on-site stormwater infiltration
4. Encourage efficient water use and establish back-up municipal water sources
5. Upgrade stormwater systems, inspect dams for safety, and keep buildings out of floodplains and stream channels
6. Use low impact development (LID) and “green infrastructure” landscape management

## MONITORING PROGRESS

A climate action plan is never “done.” But once you begin, it’s important to track the progress you’ve made from your starting point. For GHG mitigation, the ongoing monitoring of energy use and GHG emissions is essential, as well as the cost of energy. Monitoring the progress of adaption measures is not as simple, but can be tracked by recording indicators such as the cost and square footage of flood damage, number and severity of road repairs, the number of people using cooling centers, admissions to local hospitals for heat-related illness and injuries, changes in property insurance rates (usually flood insurance), the number of households affected by power outages and their durations, and so on. Collecting all this information is essential to gauging the value of the plan.

A climate action plan should be updated at least every five years – or sooner if needed. Your community may experience a severe weather event that could affect your choice of strategies. Or new information may become available about energy use that will suggest new opportunities for improving efficiency. And so it’s important to be flexible; you can also add new monitoring indicators as you go along.

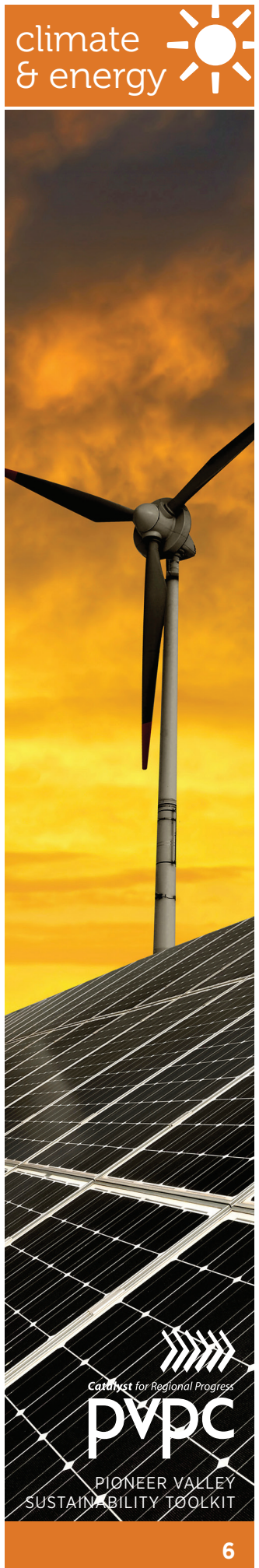


# EXAMPLES OF SUCCESSFUL CLIMATE ACTION PLANS

In Massachusetts, the communities of [Amherst](#), [Northampton](#), [Falmouth](#) and [Marshfield](#) have produced notable municipal climate action planning documents and GHG inventories. Some of these are stand-alone plans; others are supplemental chapters to local comprehensive plans.

Marshfield first created a GHG emissions inventory in 2008 by gathering community energy use data through billing records obtained from the local utility providers NSTAR electric and Bay State Gas. This information included residential, commercial, solid waste and transportation energy usage. Data about the energy use of municipal buildings, vehicles, waste, water treatment, street and traffic lights, as well as solid waste, was collected from the Department of Public Works. Additional information was estimated from national energy surveys, as well as transportation estimates from the Massachusetts Department of Transportation Highway Division. Marshfield then used Clean Air and Climate Protection software provided by ICLEI to estimate existing GHGs and future emissions. The inventory provided the baseline information necessary to [set a municipal GHG reduction target of 20%](#) within five years of the plan's adoption date (2009).

The City of Boston in 2009 adopted a comprehensive [Climate Action Plan](#) with the goal of reducing GHG emissions by 25% by 2020, developing green businesses and workforce skills, engaging all parts of the community in climate leadership, and integrating climate change considerations into all planning decisions. Boston's plan estimates the adverse effects of climate change on the community including: more urban air pollution, longer summer heat waves, rising sea levels, unreliable water quality, loss of revenue from seasonal activities, and changes in agricultural production. The Boston plan presents many strategies to improve energy efficiency in buildings, transportation, and waste management. The plan also proposes new ways to generate more clean energy within the city.





## LINKS TO MORE INFORMATION AND EXAMPLES

AMHERST, MASSACHUSETTS CLIMATE ACTION PLAN:

<https://www.amherstma.gov/DocumentCenter/Home/View/612>

CITY OF BOSTON, MASSACHUSETTS CLIMATE ACTION PLAN:

<http://www.cityofboston.gov/climate/bostonsplan/>

INTERNATIONAL COUNCIL FOR LOCAL ENVIRONMENTAL INITIATIVES:

<http://www.iclei.org/>

MARSHFIELD, MASSACHUSETTS GREENHOUSE GAS INVENTORY

<http://marshfieldenergy.org/wordpress/wp-content/uploads/2013/03/GHGInventory-MarshfieldMA.doc>

MARSHFIELD, MASSACHUSETTS ENERGY MANAGEMENT PROJECT

<http://marshfieldenergy.org/projects/>

MASSACHUSETTS CLIMATE CHANGE ADAPTATION REPORT:

<http://www.mass.gov/eea/waste-mgmt-recycling/air-quality/green-house-gas-and-climate-change/climate-change-adaptation/climate-change-adaptation-report.html>

MASSACHUSETTS STATE CLEAN AIR ACT EMISSIONS INVENTORY:

<http://www.mass.gov/eea/agencies/massdep/air/reports/emissions-inventories.html>

PIONEER VALLEY CLIMATE ACTION AND CLEAN ENERGY PLAN

<http://www.pvpc.org/plans/climate-action-and-clean-energy-plan>

U.S. ENVIRONMENTAL PROTECTION AGENCY—HOW TO CREATE A GHG EMISSIONS INVENTORY:

[http://www.epa.gov/air/aqmpportal/management/emissions\\_inventory/](http://www.epa.gov/air/aqmpportal/management/emissions_inventory/)

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## FOR MORE INFORMATION, PLEASE CONTACT

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