Pioneer Valley Planning Commission

Pioneer Valley Climate Action and Clean Energy Plan

Moving toward a carbon neutral future.
Adapting to create resilient communities.

Produced by the Pioneer Valley Planning Commission with the support of the U.S. Department of Housing and Urban Development Sustainable Communities Initiative Regional Planning Grant Program.

March / 2014

Catalyst for Regional Progress
PVPC

Pioneer Valley Planning Commission

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Prepared by

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Climate Action & Clean Energy Plan

Moving toward a carbon neutral future. Adapting to create resilient communities.

The purpose of this Climate Action and Clean Energy Plan is to promote greater understanding of the causes and consequences of climate change in the Pioneer Valley. The plan is intended to help the people of the region respond to climate-related changes in their communities by creating workable strategies for local and regional actions to reduce greenhouse gas emissions, including greater use and production of clean and renewable energy, and protect their communities from climate-related damage.

This plan identifies the amounts and sources of the Pioneer Valley's greenhouse gas emissions; offers regional targets for GHG reduction; and recommends strategies for both mitigating climate change impacts and actions to adapt our communities and infrastructure to the climate-related changes that are occurring and will continue to take place.

"My community is sustainable when most of its energy comes from sources other than fossil fuels and land use is consistent with the long-term conservation of natural resources and protection of ecological integrity.."

Scott Jackson
Whatley, MA

Note: This is the executive summary of our plan. To obtain or view a copy of the full plan, visit pvpc.org.

OUR GOALS

Mitigate: Promote municipal and regional actions to mitigate the impacts of our region's greenhouse gas emissions (GHG), conserve energy and move toward a carbon neutral future. Mitigation strategies include: focus on land use and zoning strategies to reduce GHGs by promoting more compact development; reducing auto trips; and planting and producing more trees; and clean energy.

Adapt: Adapt to the consequences of a changing climate and work to increase the resilience of the region's communities to withstand and recover from extreme weather events. Identify and prepare for likely impacts to the region's critical infrastructure, and prepare vulnerable people for floods and extreme heat.

Act: Seek municipal action on climate and clean energy strategies in the near term, because our climate is already changing.

Damage after tornado in Monson.
Photo: Tom Retting, Worcester Telegram

Village Hill, Northampton, an example of a compact, mixed-use energy efficient development

Photos: Chris Curtis

"Climate change is the challenge of our time, and we in Massachusetts are rising to that challenge."

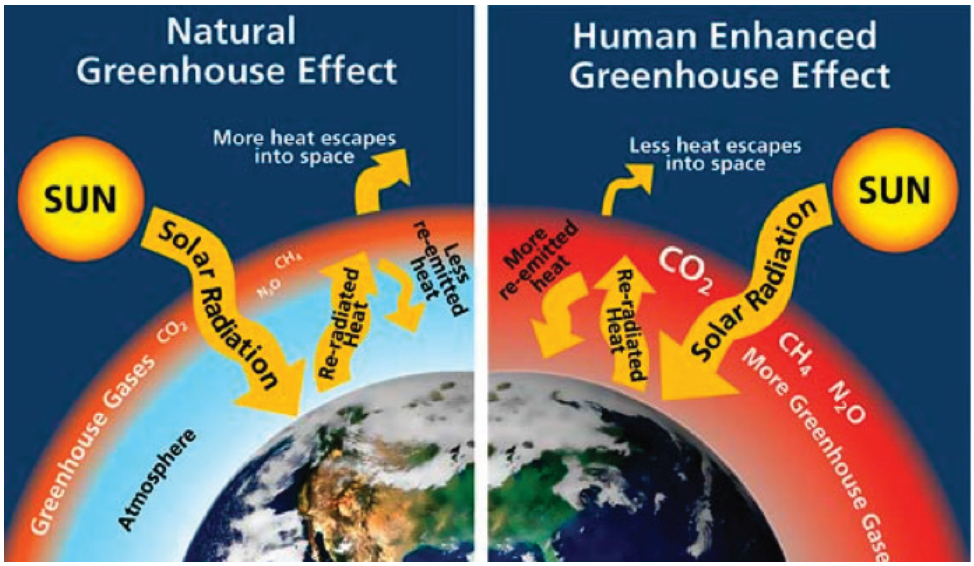
Massachusetts Governor
Deval Patrick / July 2, 2008

Our climate Is already changing.

Scientific evidence is overwhelming that our climate is changing. According to the 2010 Massachusetts Climate Adaptation Report, "climate change is already having demonstrable affects in Massachusetts".

In 2010, the National Academy of Sciences concluded that "there is a strong, credible body of evidence, based on multiple lines of research, documenting that climate is changing and that these changes are caused in part by human activities".

Even if global greenhouse gas (GHG) emissions are reduced, some climate change is now inevitable. Because climate change is a global problem, no individual government can unilaterally solve the problem, and effective solution will require the cooperative participation of federal, state, regional and local governments, as well as individuals and businesses.



Source: US National Park Service

In August, 2011 Tropical Storm Irene caused severe flood damages to Shelburne Falls and other areas in the region.
Source: H. Knox www.city-data.com

Warming and severe weather trends have been documented.

Long-term observed climate warming trends in our region include:

- The Northeast has been warming at a rate of nearly .5 degrees F per decade, and winter temperatures are rising at an even faster rate of 1.3 degrees F per decade;
- There are more frequent days with temperatures above 90 degrees;
- Snow packs are being reduced, with earlier spring snow-melts;
- Sea-surface temperatures and sea levels are rising;

One of the most significant predicted affects of climate change for our region is an increase in severe weather events. In 2011, a series of three severe weather events affect the Pioneer Valley region:

- On June 1, a series of category EF-3 tornadoes struck Springfield and nine other communities, the region's worst outbreak of tornadoes in a century, causing $90 million in damages in Hampden County alone;
- On August 28-29, Tropical Storm Irene dumped as much as 10 inches of rain on the region, causing extensive flood damages totaling over $1 billion across the Northeast;
- On October 30, a record early snowstorm of 8-24 inches snapped branches and downed power lines, leaving 3 million people without power for up to 2 weeks, and causing $3 billion in damages across the Northeast

Also in July, 2012 a brutal heat wave across the United States wilted crops, shriveled rivers, and fueled wildfires, and officially set the record for the hottest single month ever in the continental United States. In addition, the first seven months of 2012 were the hottest of any year on record, and drier than average as well.

On June 1, 2011, a tornado did substantial damage to Springfield and 17 other communities from Westfield to Charleton.

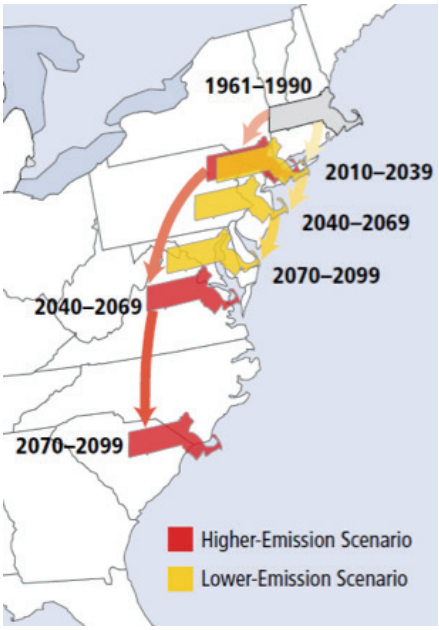
Public perception of climate change impacts is also changing. A poll released in April, 2012 found that most Americans believe that global warming has played a role in a series of unusual weather events over the past year.

"Although Massachusetts would not likely be the place in the world to suffer most from a changing climate, the potential negative impacts here are many and serious".

Rising to the Challenge / MassINC / 2012

Further climate change impacts are expected.

How Our Climate Will Change



At current rates of greenhouse gas accumulation and temperature increases, the climate of Massachusetts will become similar to those of present-day New Jersey or Virginia by 2040-2069, depending on future GHG emissions. By the end of the century, Massachusetts' climate will feel like Virginia or South Carolina.

Source:
Northeast Climate Impact Assessment 2006

The Pioneer Valley faces significant climate changes moving forward. These impacts include:

- By 2050, average temperatures will rise by 3-5 degrees Fahrenheit, with increases of 5-10 degrees possible under higher emissions scenarios.
- More days of extreme heat in the summer, by century's end we will have 30-60 days per year with temperatures above 90 degrees, compared to 5-20 now.
- The occurrence of 100-year floods will increase to one every two to three years.
- Massachusetts is expected to experience a 75% increase in drought occurrences, which could last 1-3 months.
- Precipitation is projected to increase, but the increase will likely all occur in winter as rain, with more extreme downpours.
- Health impacts, including heat stress, poor air quality, extreme weather events, and increase in infectious and waterborne diseases including those transmitted by insects and rodents.
- Economic losses, including the price, affordability and availability of insurance coverage, and the losses to the New England ski industry.
- Losses of wildlife species, as animal species are forced to migrate to new, cooler areas in order to survive.
- Agricultural impacts, including changes to growing seasons, frequency and duration of droughts, increased frequency of extreme precipitation events, and heat stress will make some areas unsuitable for growing popular varieties of produce (e.g., apples, cranberries), and increase irrigation needs.
- Changes in landscape, as temperature increases could affect New England's brilliant fall colors as trees migrate north or die out, and maple syrup production may be jeopardized.

We need to think globally.

The Great Barrier Reef in Australia is threatened by global warming.

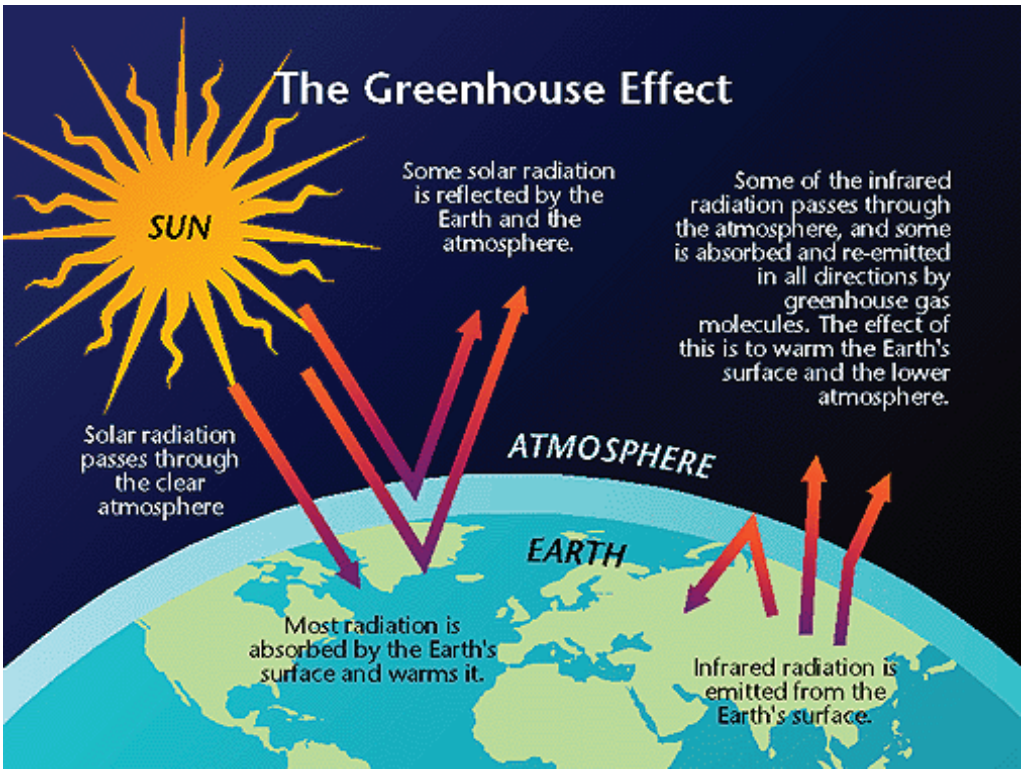
In considering local and regional actions to address climate change, it is important to understand not only the potential impacts to our region, but to our world. This is a classic case where communities and individuals must "think globally and act locally." Among the many parts of our Earth that are threatened by global climate change are:

- **Antarctica**: During the past 50 years, temperatures in parts of the continent have jumped between 5 and 6 degrees F, rate five times faster than the global average. Including Antarctica's rapid ice melt, researchers believe sea levels could shoot up 3-6 feet by the end of the century.
- **The Great Barrier Reef:** Coral cover alone has been reduced by half in the last 50 years, and the GBR as a whole only has a 50% chance of survival if global CO2 emissions aren't cut by at least 25% by 2020.
- **The Alps:** Increased carbon dioxide emissions are causing glaciers in the Alps to melt rapidly.
- **The Himalayas:** In 2010, 95% of the Himalayas' glaciers were shrinking, affecting one-sixth of the total global population-that depend on glacial melt to stave off drought and starvation.
- **The Amazon Rainforest:** At current deforestation rates, 55 % of the Amazon's 1.4 billion acres of rain forests could be gone by 2030. The rain forests contain up to 140 billion metric tons of carbon, which helps stabilize the global climate.

Massachusetts has set ambitious state GHG reduction goals.

Massachusetts has set goals to reduce our statewide GHG emissions to 25% of 1990 levels by 2020 and 80% of 1990 levels by 2050. Massachusetts has taken important and innovative steps to address climate change, including:

- **Regional Greenhouse Gas Initiative (RGGI):** A region wide, market-based program to reduce emissions from all power plants larger than 25 megawatts and to create an active carbon market and an auction that generates energy efficiency funding.
- **Green Communities Act:** The Green Communities Act of 2008 required utilities to undertake all investments in energy efficiency and renewable energy generating facilities, and established a Green Communities Program and net metering (a policy allowing customers to receive credit at retail rates for electricity they generate on-site).
- **Global Warming Solutions Act:** The Global Warming Solutions Act established a statewide legislative goal of reducing emissions to 80% below 1990 levels by 2050.
- **State Climate Plan:** The Massachusetts Clean Energy and Climate Plan for 2020 contains the measures necessary to meet state GHG goals.



"Climate change is the challenge of our age. For the obvious reason – failing to respond could alter the environment with profound and dire consequences – but also because it is a critical test of government's ability to accomplish something complex for the common good. As this report shows, Massachusetts has been a true laboratory of democracy on this issue. Working across agencies, across levels of government, and across state and national boundaries, we have put in place an array of sophisticated programs and policies to curb our greenhouse gas emissions without inhibiting economic growth or degrading our quality of life. Our progress to date is truly astounding."

From "Rising to the Challenge: Assessing the Massachusetts Response to Climate Change" 2012

Our region can help meet state GHG goals.

Our region and our communities have a key role to play in meeting state wide GHG reduction goals, as our region's share of Massachusetts' emissions is estimated at 10% of the state total, or about 9.2 million metric tons of carbon dioxide equivalent. Federal and state governments alone cannot solve the climate crisis. Success will require efforts from local and regional governments, and indeed individuals and businesses, to reduce our carbon footprint

Taking strong action to address climate change and adopt cleaner energy sources will benefit the Pioneer Valley region in ways that go far beyond reducing share of global carbon emissions. Some of these benefits include:

- **Energy Independence:** transitioning to clean energy sources, to achieve independence from the high economic, environmental, and political costs of fossil fuels.
- **Savings on Individual Energy Bills:** investment in building energy efficiency or renewable energy sources will result in significant direct savings in monthly energy bills.
- **Regional Economic Benefits and Jobs:** with clean energy sources, we can produce our own power here in the region, create jobs, and keep our dollars in the region as well.
- **Environmental Benefits:** Stabilizing the climate and reducing emissions from burning fossil fuels will have enormous global and regional environmental benefits.
- **Health Benefits:** Climate action will reduce illness and deaths due to diseases, heat waves, extreme weather events, poor air quality and reduce overall health care costs.

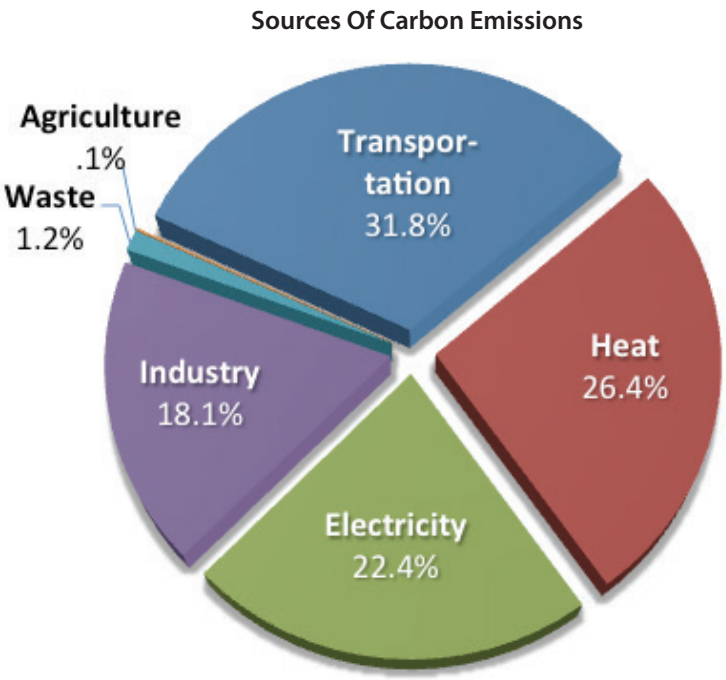
Transportation leads our region's GHG emissions inventory.

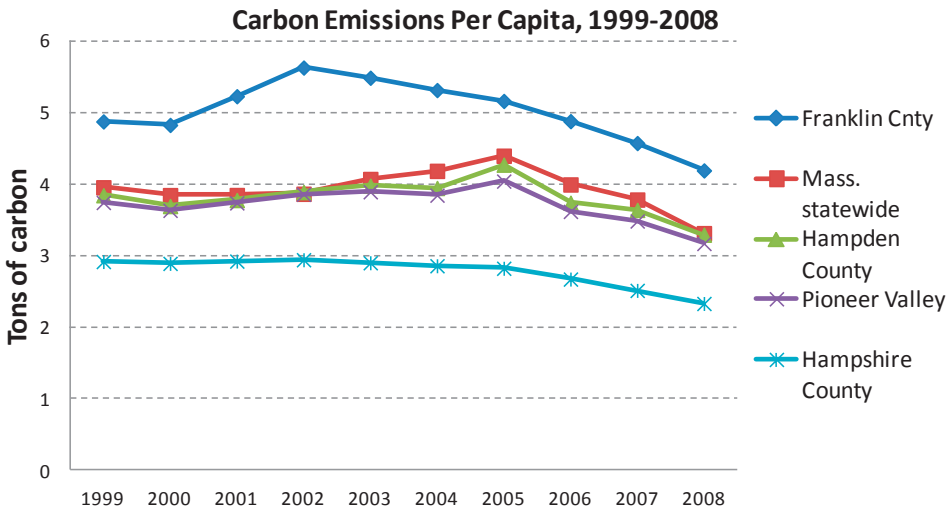
A regional greenhouse gas emissions (GHG) inventory was completed for the Pioneer Valley region, which showed that the region produces 9.2 million metric tons of carbon dioxide equivalent. The region's largest sources of GHGs were transportation, followed by heat for buildings.

Carbon Emissions by Sector

Sector	MTCO2e
Transportation	2,922,382
Heat for buildings	2,428,076
Electricity consumption	2,064,432
Industry	1,663,689
Waste	110,547
Agriculture	12,806
TOTAL	9,201,933

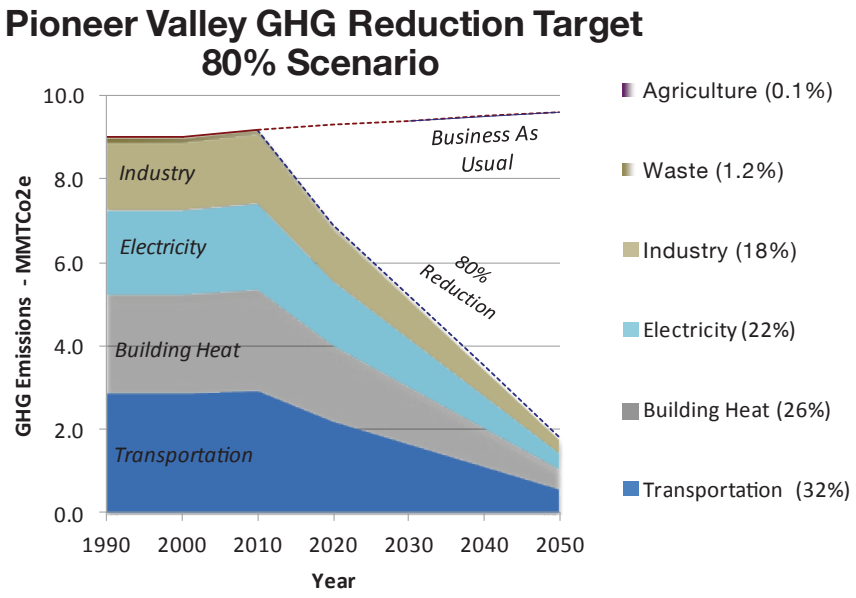
MTOC2e = million metric tons of carbon dioxide equivalent





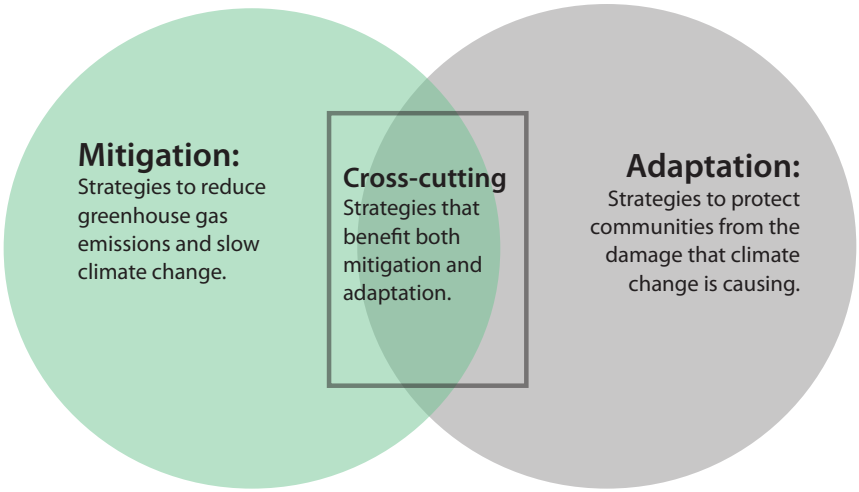
We have work to do.

The Pioneer Valley region faces a steep task in meeting our share of the state's 80% GHG reduction target, as shown in the figure below.

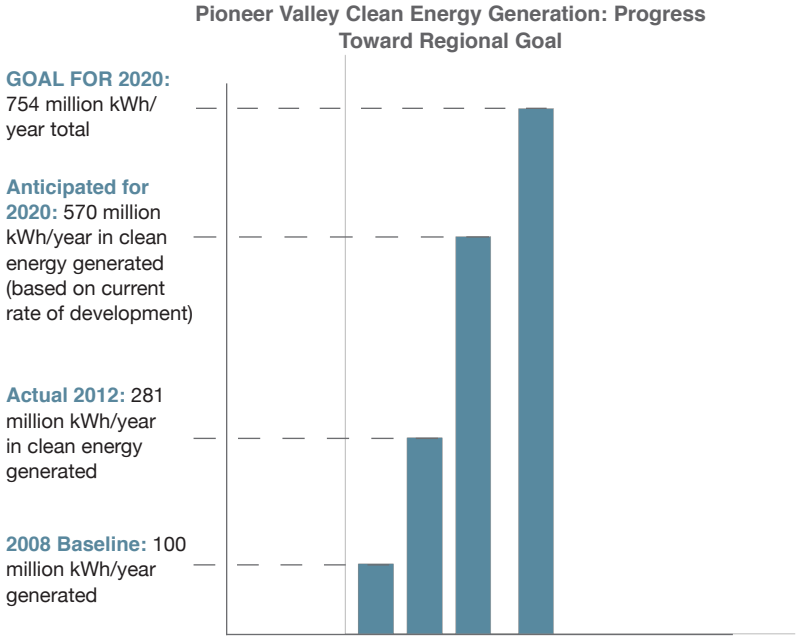


We must work on two tracks: mitigation and adaptation.

The Pioneer Valley region must address climate change on two tracks simultaneously: mitigation of greenhouse gas emissions; and adaptation to protect communities from damage due to a changing climate.



OUR FINDINGS



We are making progress toward clean energy goals.

In 2008, PVPC released the Pioneer Valley Clean Energy Plan, which outlined strategies to promote energy conservation and use of renewable clean energy sources. The Clean Energy Plan set a goal to develop a 6-fold increase by year 2020 in new clean energy facilities, with the capacity to generate an additional 654 million kilowatt hours per year (kWh/yr) of clean energy in the region (Hampshire and Hampden Counties) for a total of 754 million kWh/year total (including 100 million kWh/yr already being generated in 2008).

Between 2008 and 2012, an additional 181 million kWh/yr in clean energy generating capacity was created in the region, bringing total clean energy generation to 281 million kWh/yr in 2012. Assuming this rate of clean energy development continues, it is anticipated that by 2020 the region will achieve 72% of its original goal: a total of 570 million kWh/yr of clean energy generated.

Solar energy is gaining ground.

Solar panels at solar farm in Holyoke.

In the last five years, the amount of solar energy in Massachusetts has increased almost thirty-fold, from less than 4 megawatts in 2007 to 110 megawatts in 2012. Western Massachusetts communities and in particular Holyoke, Amherst, Springfield and Northampton are on the forefront of the solar energy movement in the state.

Holyoke is second in the state, only behind Boston, in total solar energy produced by photovoltaic panels, followed by Pittsfield in third and Springfield. Holyoke's solar energy capacity is 4,527 kilowatts, while Boston's is 5,647. In terms of the number of solar installations, Northampton and Amherst are tied for fourth, with 81 arrays each. Greenfield is tied with Framingham for 12th place, with 44, and Hatfield and Montague are 38th in the state with 28 installations each. The report was compiled using the most recent data available, but does not reflect the impact of new solar arrays that have gone online in the past few months, such as Easthampton's 2-megawatt solar array on the capped Oliver Street landfill.

Western Massachusetts is the region of the Commonwealth with the most solar energy installations and the largest amount of solar generating capacity, while the Cape and Islands lead Massachusetts in per capita measures of solar energy deployment.

Top Municipalities for Total Solar Photovoltaic Capacity

City/Town	PV Capacity	Statewide Rank
Boston	5,6471	1
Holyoke	4,527	2
Pittsfield	4,326	3
Springfield	2,959	4
Dartmouth	2,808	5

Source: Mass. DOER

A key east-west Massachusetts highway corridor, Route 2, was washed out during Tropical Storm Irene.

We have significant vulnerabilities to climate change.

Two critical areas of vulnerability to climate change in the Pioneer Valley are transportation and wastewater treatment. Transportation infrastructure, including roads, highways, bridges, stream crossing structures, railroads and airports, is vital to the daily functioning of the Pioneer Valley. There are 4,364 miles of road in the region, 74% of which are maintained by city and town governments. Significant adaption to climate change is necessary to maintain transportation facilities in safe and usable operating conditions.

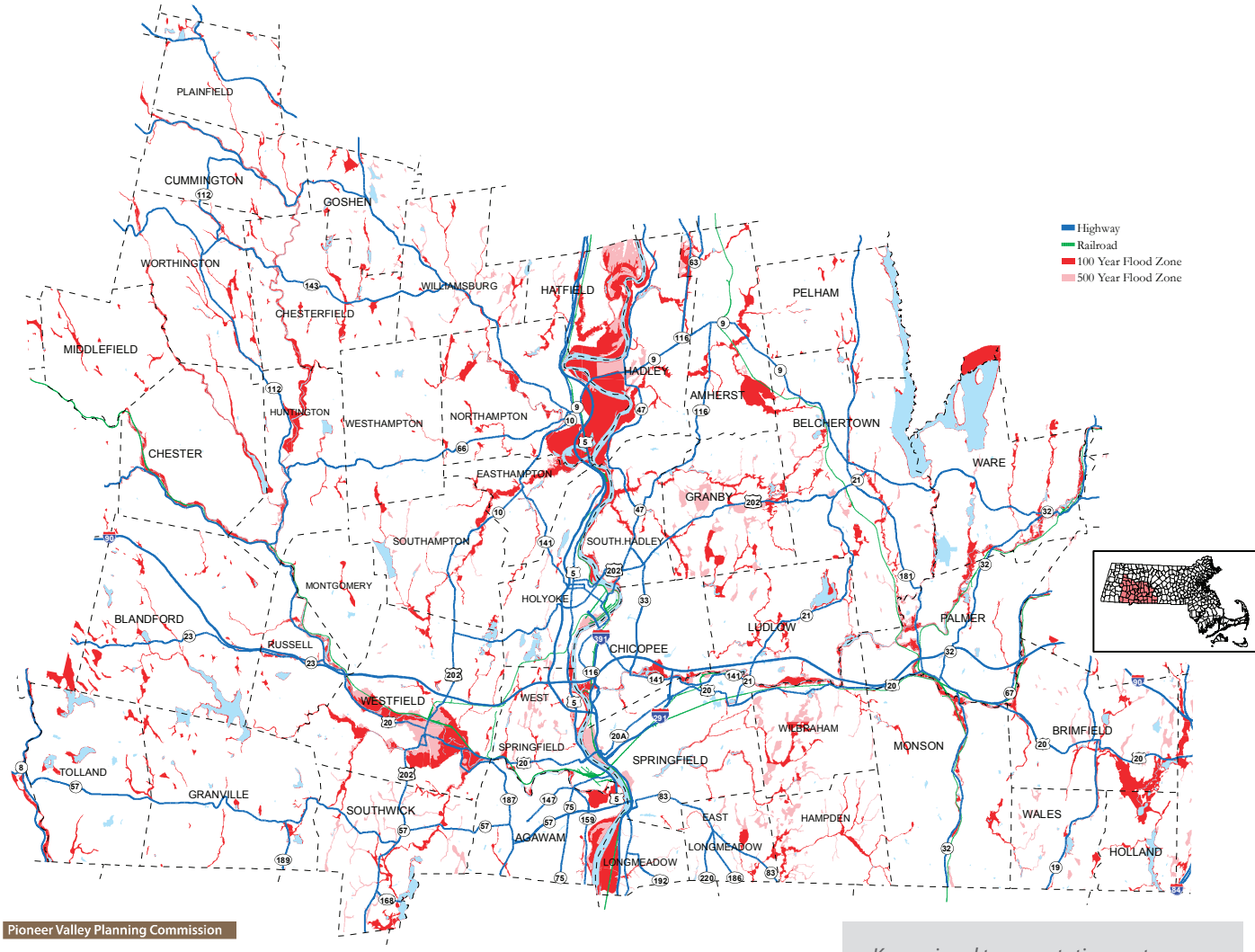
A primary threat to the region's transportation infrastructure is from flooding. Major roadways and railroad lines within and immediately adjacent to the 100-year and 500-year flood zones are considered to be at greatest risk.

Climate change poses a series of threats to wastewater infrastructure, including:

- Flooding of wastewater treatment plants, with resulting release of raw sewage to waterways.
- Flood-related erosion and damage to sewer lines, pump stations and related wastewater infrastructure.
- Electrical failures knocking out critical wastewater treatment functions, lack of back-up generators for many electric pump stations.
- Increased storm flows in combined sewers result in large-scale overflows of raw sewage to waterways.

Tropical Storm Irene demonstrated the severity of damages that can occur with catastrophic flooding due to major weather events in the region. The Greenfield wastewater facility was inundated by floodwaters, knocked off line, and discharged raw sewage to the Connecticut River for several days, sending it downstream into the Pioneer Valley, with estimated total infrastructure damage of approximately $16 million.

Flood Plains and Highways Vulnerable to Flooding



Pioneer Valley Planning Commission

Key regional transportation routes, including interstate 91, Route 20, 5, and 9 and the region's north south rail corridor are vulnerable to flood impacts.

There are other key areas of vulnerability.

Other key areas of vulnerability include:

- **Dams and Flood Control Infrastructure:** The region has 268 state-regulated dams. Of these, 43 are rated as high hazard. There are also more than 22 miles of levees, most constructed in the 194o's to meet flood needs of that era.
- **Energy and Electrical System Failures:** Overhead electrical transmission lines are particularly vulnerable to high winds, falling trees, and heavy snows, as occurred in the October, 2011 snowstorm.
- **Drinking Water Supply and Infrastructure:** Surface water reservoirs provide virtually all of the water supply for three of the region's largest cities, Springfield, Chicopee and Holyoke, all of which are vulnerable to dam or pipeline failures in severe weather .
- **Agriculture:** Crops will not only be affected by warmer temperatures but also variations in rainfall and flood damages;
- **Buildings and Structures:** Flooding is the region's potentially most expensive natural hazard threat, with10% of the region's area in the 100-year floodplain, much of which includes high density urban development.
- **Human Health:** A changing climate will have direct impacts on human health, including heat waves, insect-borne illnesses, and storm damages.
- **Fish and Wildlife:** Animals will be affected by a reduction in their natural habitats, due to changes in aquatic habitats, tree species and forest composition, and temperature increases.

Reducing auto travel is a key element in addressing the region's GHG emissions

The Climate Action and Clean Energy Plan includes strategies to mitigate greenhouse gas (GHG) emissions and adapt to the consequences of climate change that are already happening. These are summarized below.

Mitigation Strategies

REVIEW

Zoning for GHG Reduction Practices

1

Undertake zoning conformance reviews of existing municipal zoning and provide a technical assistance program to help communities adopt their zoning to improve GHG reduction in the built environment.

PARTNERS:
PVPC, Municipalities
CROSS-CUTTING STRATEGIES:

CREATE

Municipal Policies & Intergovernmental Compact on Climate Action

2

Seek approval from all 43 Pioneer Valley communities for municipal policy statements and an intergovernmental compact on climate change committing communities to specific actions to help regional GHG reduction targets.

PARTNERS:
PVPC, Municipalities

ADOPT

Transit Oriented Development (TOD) Zoning

3

Promote transit-oriented development by adopting new TOD zoning districts that promote more walkable compact development near transit station.

PARTNERS:
Planning Boards
CROSS-CUTTING STRATEGIES:

TRACK

GHG Emissions Reductions

4

Reduce and track greenhouse gas emissions to meet regional targets

PARTNERS:
PVPC
CROSS-CUTTING STRATEGIES:

CREATE
Sustainable Transportation Project Criteria
5

Work with MassDOT and the Pioneer Valley Metropolitan Planning Organization (MPO) to support efforts to adopt sustainable project review criteria for use in review and ranking of all transportation projects in regional TIPs.

PARTNERS:
PVPC, MassDOT, MPO
CROSS-CUTTING STRATEGIES:

PROVIDE
Regional Funding for TODs
6

Provide regional funding for infrastructure to support development of Transit Oriented Development districts (TODs).

PARTNERS:
MassDOT, MPO
CROSS-CUTTING STRATEGIES:

REDUCE
Methane Emissions from Landfill Waste
7

Communities with landfills should install methane recovery systems to reduce the release of methane into the atmosphere from landfills by more than half. Also, reduce food waste in land fills, which is the largest generator of methane.

PARTNERS:
Municipalities
CROSS-CUTTING STRATEGIES:

SUPPORT
Green Communities Designation
8

Encourage the region's municipalities to seek designation under the state Green Communities Act to promote greater energy efficiency and the development of renewable energy.

PARTNERS:
Municipalities, PVPC
CROSS-CUTTING STRATEGIES:

$

CREATE
Livability Program
9

Create a regional Livability Program, which is a funding initiative using transportation funding streams that support community- and land use- oriented transportation projects, such as pedestrian, streetscape, mixed-use infill, transit-oriented development and transit improvement projects.

PARTNERS:
PVPC, MPO, MassDOT
CROSS-CUTTING STRATEGIES:

Adaptation Strategies

SUPPORT

Fuel Efficient Vehicles and LED Traffic Signals and Lights

10

Support municipal purchase of fuel efficient vehicle fleets and LED traffic signals and lights.

PARTNERS:
Municipalities
CROSS-CUTTING STRATEGIES:

FORMALIZE

Emergency Intermunicipal Water Connections

12

Formalize agreements creating emergency water supply inter-connections with neighboring communities.

PARTNERS:
Municipalities
CROSS-CUTTING STRATEGIES:

UPDATE

Flood Maps and Zoning

13

Work with municipalities, state agencies, and Federal Emergency Management Agency (FEMA) to update 100-500 year FIRM flood zone boundaries.

PARTNERS:
PVPC, FEMA, MEMA
CROSS-CUTTING STRATEGIES:

INVENTORY AND

Storm-proof Infrastructure

14

Inventory, conduct vulnerability assessments and stormproof critical infrastructure, including energy generation, electrical transmission and distribution, drinking and wastewater facilities, roads and highways, dams and flood dikes to better withstand extreme weather.

PARTNERS:
Municipalities
CROSS-CUTTING STRATEGIES:

ASSIST

Vulnerable Populations, Provide Cooling Shelters

15

Educate the people who are most likely to be vulnerable to extreme weather about what they can do during severe weather events, including floods, storms, heat waves. Seek funding for a network of notification procedures for vulnerable populations, "check your neighbor" programs and new cooling shelters.

PARTNERS:
Municipalities, PVPC
CROSS-CUTTING STRATEGIES:

ESTABLISH

Extreme Weather Warning System

16

Consider establishing a public warning system for extreme weather events, to send emergency alerts to residents by email, text message or telephone.

CROSS-CUTTING STRATEGIES:

UPGRADE

Stream Crossings, Bridges and Culverts

17

Pro-actively prioritize and replace under performing culverts and bridges with structures that are correctly designed to accommodate floods and allow wildlife passage.

PARTNERS:
Municipalities, MDOT
CROSS-CUTTING STRATEGIES:

CONDUCT

Dam Inspection and Removal or Repair

18

Inspect dams and remove or repair poor condition dams that are rated as significant or high hazard.

PARTNERS:
Municipalities, Mass Office of Dam Safety
CROSS-CUTTING STRATEGIES:

RE-LOCATE

Powerlines Underground

19

Investigate costs and feasibility of re-locating powerlines underground, on a long-term phased basis.

PARTNERS:
Utilities
CROSS-CUTTING STRATEGIES:

PLAN

For Municipal Hazard Mitigation

20

Include climate adaptation strategies, inventories of vulnerable infrastructure and updated flood mapping in all municipal Hazard Mitigation Plans. Seek funding for improved preparedness, including funding for dam inspection, maintenance and removal.

PARTNERS:
Municipalities, MEMA, FEMA
CROSS-CUTTING STRATEGIES:

UPGRADE
Aging Water/Wastewater Infrastructure
21

Protect and upgrade aging water and wastewater infrastructure, with particular attention to wastewater treatment plant flood damages, similar to those experienced in Greenfield, MA, and provide emergency backup equipment.

PARTNERS:
Municipal water and sewer departments, DPWs
CROSS-CUTTING STRATEGIES:

SUPPORT
State Loans for Green Infrastructure
22

Support changes in the State Revolving Fund (SRF) Program, which provides $100 million in low-interest loans to water and wastewater projects, to address climate vulnerabilities, and promote green infrastructure.

PARTNERS:
State Legislature, DEP, Municipalities
CROSS-CUTTING STRATEGIES:

PREPARE
For Severe Droughts
23

Prepare municipal water supply systems for severe droughts, including repairing leaks, installing water efficient fixtures, and installing greywater re-use systems for lawns and gardens.

PARTNERS:
Municipal water departments
CROSS-CUTTING STRATEGIES:

Energy Conservation & Clean Energy

ACHIEVE
Greater Energy Efficiency
24

- Assist homeowners with completing energy assessments through Mass Save program, and in making recommended energy efficiency improvements such as insulation, air sealing, boiler and hot water heater replacements.
- Assist businesses and industries in new cost-saving energy efficient strategies, such as electrical demand management.
- Support municipal energy committees in producing and updating their local energy reduction plans as part of the Green Communities program.

PARTNERS:
Municipalities, PVPC, Utility
CROSS-CUTTING STRATEGIES:

GENERATE
More Clean Energy, Greener Power
25

Reduce the carbon intensity of our electricity supply by investing in solar, wind, and hydro projects.

PARTNERS:
Utilities, municipalities
CROSS-CUTTING STRATEGIES:

$

ADOPT
Solar and Wind Zoning
26

Adopt local bylaws for solar and wind zoning to streamline permitting for renewable energy sources and promote passive solar access in citing of new buildings.

PARTNERS:
Planning Boards, PVPC
CROSS-CUTTING STRATEGIES:

ADOPT
The "Solarize Mass" Program
27

Assist municipalities in joining the Mass Department of Energy Resources Solarize Mass Program, which assists homeowners in purchasing photovoltaic solar systems, by reducing costs through bulk purchasing, tax incentives and rebates.

PARTNERS:
Municipalities
CROSS-CUTTING STRATEGIES:

RETROFIT
Municipal Buildings for Energy Efficiency
28

Conduct energy assessments and upgrade energy efficiency in older leaky municipal buildings. A municipality can partner, with an Energy Service Company (ESCO) with assistance from various agency programs.

PARTNERS:
Municipalities, utilities
CROSS-CUTTING STRATEGIES:

CREATE
Clean Energy Financing Districts
29

Adopt state legislation to enable local programs for clean energy financing (also known as PACE, Property Assessed Clean Energy) programs to set up a revolving loan fund that can pay for energy efficiency retrofits or renewable energy systems.

PARTNERS:
Municipalities
CROSS-CUTTING STRATEGIES:

CROSS CUTTING STRATEGIES ICONS: The following icons are used in reference to issues and strategies related to other element plans of this report.

- TRANSPORTATION
- LAND USE
- HOUSING
- ENVIRONMENT
- ECONOMIC DEVELOPMENT
- FOOD SECURITY
- GREEN INFRASTRUCTURE
- CLIMATE ACTION
- BROWNFIELDS

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