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## **Mount Kisco Conservation Advisory Council Climate Change Report for 2014**

### **Part 1**

#### **Adaptation to Climate Impacts**

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## Introduction

The primary purpose of this report is to share information from two recent conferences on climate change that were attended by CAC members. The report is divided into two parts. This first part is on adaptation and resilience. “The Intergovernmental Panel on Climate Change defines adaptation as an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, an adjustment that moderates harm or exploits beneficial opportunities.”<sup>1</sup> Climate change resilience may be defined as “the ability to plan for, survive, recover from, and even thrive in changing climatic conditions.”<sup>1</sup> The second part will be on mitigation. Climate change mitigation may refer to efforts to reduce or prevent emission of greenhouse gases.<sup>2</sup> One conference was the Westchester Climate Change Summit, which was held on September 12, 2014 at the Judicial Institute – Pace Law School in White Plains. The other conference was the 2014 NYS Conference on the Environment which was held on October 2-4, 2014 in Binghamton.

The Westchester Climate Change Summit focused on the impacts of climate change in Westchester County and the surrounding New York Metropolitan region. It was hosted by Pace Law School’s Global Center for Environmental Legal Studies and Federated Conservationists of Westchester County. The keynote speakers were Dr. Cynthia Rosenzweig, Senior Research Scientist at the NASA Goddard Institute for Space Studies, and Michael Gerrard, Director for the Center for Climate Change Law at Columbia Law School, and who is well known to many of us in Mount Kisco for his work on protecting Byram Lake from a golf course proposal by Donald Trump. The PowerPoint presentations given at the conference can be viewed at <http://www.law.pace.edu/westchester-climate-change-summit>.

The 2014 NYS Conference on the Environment was the annual conference of the New York State Association of Conservation Commissions, which the Mount Kisco CAC is a member of, and the New York State Association of Environmental Management Councils. The theme of the conference was Walking the Walk: Best Practices for Climate Mitigation, Adaptation and Resilience in New York State. The keynote speaker was John Rhodes, President and CEO of NYSERDA. The conference included three tracks: Local Food Systems; Climate Change, Adaptation and Natural Resource Management; and Renewable Energy & Energy Efficiency. The PowerPoint presentations given at the conference can be at <http://www.nyscoe.org/agenda>.

This first part of the report includes future climate projections for this region and some measures for adaptation and resilience that could be applicable in Mount Kisco.

## Climate Trends and Projections for the NYC Metropolitan Area

Cynthia Rosenzweig gave a presentation entitled “Enhancing Resilience to Climate Change in the New York Metropolitan Area” which included data on climate trends dating back to the beginning of the 20th century and projections until the end of this century. Much of the data were specifically for New York City and Long Island (located in NYS Climate Region 4) but she noted that the projections of mean annual changes which she presented, in general, are similar for Westchester County (located in NYS Climate Region 5). New York State is divided into 7 climate regions (see page 4 of Cynthia Rosenzweig’s presentation for a map showing the climate regions).

Some observed climate trends are the following:

- Mean annual temperature in NYC increased 4.4°F from 1900 to 2011.
- Mean annual precipitation increased 7.7 inches in Central Park from 1900 to 2011 (1.4%/decade).
- There was a 75% increase in heaviest rain events in the Northeast over the last 50 years.

Below are tables showing projected mean annual changes in temperature and precipitation. The data for these tables were taken from a report issued in 2014 by NYSERDA.

<b>Air temperature baseline (1971-2000) 54.6°F</b>	<b>Low-estimate (10th percentile)</b>	<b>Middle range (25th to 75th percentile)</b>	<b>High-estimate (90th percentile)</b>
2020s	+1.5°F	+2.0°F to 2.9°F	+3.2°F
2050s	+3.1°F	+4.1°F to 5.7°F	+6.6°F
2080s	+3.8°F	+5.3°F to 8.8°F	+10.3°F
2100	+4.2°F	+5.8°F to 10.4°F	+12.1°F

Based on 35 global climate models and two Representative Concentration Pathways. Projections are for New York City and Long Island. Baseline data are from the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) and are for New York City (Central Park).

<b>Precipitation Baseline (1971-2000) 49.7 inches</b>	<b>Low-estimate (10th percentile)</b>	<b>Middle range (25th to 75th percentile)</b>	<b>High-estimate (90th percentile)</b>
2020s	-1 percent	+1 to + 18 percent	+10 percent
2050s	+1 percent	+4 to +11 percent	+13 percent
2080s	+2 percent	+5 to +13 percent	+19 percent
2100	-6 percent	-1 to +19 percent	+ 25 percent

Based on 35 global climate models and two Representative Concentration Pathways. Projections are for New York City and Long Island. Baseline data are from the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) and are for New York City (Central Park).

<b>Number of days/year with maximum temperature at or above 90°F (1971-2000) 18 days/year</b>	<b>Low-estimate (10th percentile)</b>	<b>Middle range (25th to 75th percentile)</b>	<b>High-estimate (90th percentile)</b>
2020s	24	26 to 31	33
2050s	32	39 to 52	57
2080s	38	44 to 76	87

Based on 35 global climate models and two Representative Concentration Pathways. Projections are for New York City and Long Island. Baseline data are from the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) and are for New York City (Central Park).

<b>Number of days/year with minimum temperatures at or below 32°F (1971-2000) 71 days/year</b>	<b>Low-estimate (10th percentile)</b>	<b>Middle range (25th to 75th percentile)</b>	<b>High-estimate (90th percentile)</b>
2020s	50	52 to 58	60
2050s	37	42 to 48	52
2080s	25	30 to 42	49

Based on 35 global climate models and two Representative Concentration Pathways. Projections are for New York City and Long Island. Baseline data are from the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) and are for New York City (Central Park).

## **Community Climate Adaptation and Resilience Measures**

### *Climate Smart Communities Certification Program*

Mark Lowery, Climate Policy Analyst in the Office of Climate Change of the New York State Department of Environmental Conservation, gave presentations on the Climate Smart Communities program at both conferences which included information on the Climate Smart Communities certification program. This certification program provides local communities with a more structured framework for local climate actions and encourages local action through recognition. The certification manual and checklist can be downloaded at <http://www.dec.ny.gov/energy/96511.html>. One of the sections is on planning for adaptation to the impacts of climate change (pages 7-1 and 7-2).

Communities in the certification program can adopt no-regrets strategies for dealing with extreme heat, drought, and flooding. These strategies are the following:

#### Extreme Heat

- Develop and implement a heat emergency plan
- Require shade structures and features in public spaces
- Open new or expand existing cooling centers

#### Drought

- Implement a water conservation and reuse program
- Encourage xeriscaping (water efficient landscaping)
- Implement a source water protection program

#### Flooding

- Use green infrastructure to manage stormwater in developed areas
- Conserve wetlands and forests to manage stormwater, recharge groundwater, and mitigate flooding
- Develop or enhance early warning systems and community evacuation plans

Communities in the certification program can audit policies and plans by doing the following:

- Review existing community plans, policies, and projects to identify climate adaptation strategies and policies or projects that may decrease vulnerability.
- Use the Climate Smart Resiliency Planning tool which can be downloaded at [www.dec.ny.gov/energy/82168.html](http://www.dec.ny.gov/energy/82168.html). The tool has five self-assessment checklists:
  - Vulnerability and risk assessments
  - Public outreach and engagement
  - Integration of municipal plans
  - Disaster preparedness and recovery
  - Hazard mitigation
- After the audit has been completed communities can do the following:
  - Update and integrate the comprehensive and hazard mitigation plans
  - Amend zoning, subdivision, and stormwater policies and regulations to match plans



## *Microgrids*

At the Westchester Climate Change Summit Jordan Gerow of the Pace Energy and Climate Center gave a presentation on microgrids. He substituted for Thomas Bourgeois, Deputy Director of the Pace Energy and Climate Center, who was unable to attend.

- Microgrids can provide a means of maintaining power without using generators even when power is lost such as during a strong storm.
- Usually a microgrid is connected to the grid but it can operate independently.
- Microgrids can combine a variety of technologies to serve different types of energy users such as a hospital, supermarket, retirement home, and multi-family housing complex.
- Combined heat and power (CHP), which is sometimes called cogeneration, is often a central feature of a microgrid. CHP provides both electrical distribution and thermal distribution.
- A microgrid can also include renewable energy distributed generation such as wind and solar.
- A microgrid can use energy storage to create a hybrid system that can provide clean and reliable power.

New York State is encouraging the use of microgrids through funding

- Governor Cuomo's Community Grid NY Prize Commission will offer \$40 million for the development of microgrids in 2014
- There is NYSERDA funding available for CHP projects that qualify

The U.S. Department of Energy provides resources for CHP at <http://www.energy.gov/eere/amo/chp-deployment>.

## References

1. <http://www.rockefellerfoundation.org/uploads/files/c9725eb2-b76e-42eb-82db-c5672a43a097-climate.pdf>.
2. <http://www.unep.org/climatechange/mitigation/Home/tabid/104335/Default.aspx>).