New York City Adapts To Deal with Projected Increase of Heat Waves

Heat waves are one of the leading weather-related causes of death in the United States. According to New York City's vulnerability assessment, this vulnerability is expected to worsen with climate change. New York City has taken substantive actions to reduce its current vulnerability (i.e., increasing its resiliency to current conditions) as well as its future vulnerability (i.e., adapting to the projected future climatic conditions).

In order to promote resiliency, NYC is increasing use of cooling centers and supports outreach through the Be-a-Buddy Program to share life-saving information with particularly vulnerable populations. In order to adapt to future increases in temperature, the city promotes green infrastructure, reforestation and reflective, or "cool" roofs, to moderate the urban heat island effect and reduce the severity and frequency of future projected extreme heat events. New York City is continuing to evaluate their climate vulnerability and the effectiveness of its adaptation actions using the most up-to-date information.

How Did They Do It?	Applicable EPA Tools
Assess climate vulnerability within Climate Risk Information Report (2013) • New York City (NYC) derived temperature and precipitation projections using a matrix of 35 Global Climate Model simulations under two Representative Concentration Pathways ◦ Learn more at Climate.gov. • NYC analysis identified an average baseline of 2 heat waves per year between 1970-2000. Under the 90th percentile high estimate, the number of heat waves could increase to up to 7 per year by 2050 and the number of days over 90°F could triple from an 18 average baseline to 57 by 2050.	The National Climate Assessment Future Climate Section can provide a broad projection of temperature change extreme heat risk for your region based upon emissions scenarios. National Climate Assessment Future Climate Section <https://nca2018.globalchange.gov/chapter/2/#key-message-2>

How Did They Do It?	Applicable EPA Tools
- NYC Incorporated this climate risk within local hazard mitigation plans and supported actions to reduce vulnerability and adapt to climate changes.	

How Did They Do It?	Applicable EPA Tools
Promoted resiliency to current extreme conditions, particularly for vulnerable populations • NYC promotes resiliency through outreach efforts to particularly vulnerable populations including the elderly, the poor, and those already suffering from chronic illnesses. One example, the “Be-a-Buddy Program” shares life-saving information with vulnerable residents. This and other similar programs constitute resiliency actions as they reduce vulnerability under current conditions, and can be scaled accordingly, but do not reduce the level of increased future climate risk.	CDC’s Assessing Health Vulnerability to Climate Change helps identify the communities most at risk, including th infirm, and communities dealing with environmental justice challenges. Assessing Health Vulnerability to Climate Change (PDF) <https://stacks.cdc.gov/view/cdc/24906#:~:text=this%20document%20provides%20a%20suggested,factors%20(e.g.%2c%20socioeconomic% (24 pp, 4.3 MB, About PDF <https://epa.gov/home/pdf-files>) ** (This is a non-EPA resource from the Centers for Disease Control and Prevention.)*

How Did They Do It?	Applicable EPA Tools
Implemented adaptation actions that provide co-benefits to air quality, water management and emergency preparedness • NYC implemented several adaptation actions to address the increasing risk of heat events including promoting 'cool roofs,' urban forestry initiatives, and other strategies to prepare for the projected increase in future heat waves, including reducing urban heat island effect.	EPA's Excessive Heat Events Guidebook <https://epa.gov/heat-islands> helps identify extreme heat resilience and adapt strategies. For more on using green infrastructure to provide co-benefits, see the "Reduce the Urban Heat Island <https://epa.gov/green-infrastructure/reduce-urban-heat-island-effect>

How Did They Do It?	Applicable EPA Tools
• NYC Cool Roofs Program trains local individuals to work with a team to coat city rooftops with a white reflective coating. In its recent 2013 Annual Report, the NYC Cool Roofs Program had “cooled and coated” 2,077,537 square feet of rooftop by utilizing over 1,000 local volunteers and funding from corporate and individual donations, sponsorships, and local government. • NYC adopted the Million Trees initiative to plant 1 million trees in the city by 2017. This action anticipates the future climate change risks and provides adaptation benefits for reducing the urban heat island, as well as resulting in greenhouse gas mitigation benefits.	

How Did They Do It?	**Applicable EPA Tools**
Evaluating performance and risk under the best-available science • The city partnered with the Princeton Plasma Physics laboratory to help analyze, evaluate and quantify its climate resiliency, adaptation and mitigation actions. • The city updated its vulnerability assessment in 2015 (“Building the Knowledge Base for Climate Resiliency”), including projecting climate risk out to 2100 for the first time.	The Green Infrastructure to Reduce Urban Heat Island Effect webpage provides resources to model and evaluate performance of green infrastructure strategies that reduce the urban heat island effect. Green Infrastructure to Reduce Urban Heat Island Effect <https://epa.gov/green-infrastructure/reduce-urban-heat-island-effect

Similar Cases

To see how New York conducted a vulnerability assessment for climate change and extreme heat events, view the NYC Heat Plan case. Remember, extreme heat events and other weather extremes can disproportionately impact at-risk or vulnerable communities, to view a case study that identifies and actively engaged vulnerable communities in adaptation planning for heat events, view Chicago Heat Emergency Response. To see how a community has used green infrastructure to both reduce the impact of future extreme heat events and reduce stormwater runoff during extreme precipitation events, view Chicago Green Infrastructure to Reduce Heat.

- NYC Heat Plan case <https://epa.gov/arc-x/new-york-city-assesses-extreme-heat-climate-risk>
- Chicago Heat Emergency Response <https://epa.gov/arc-x/chicago-il-adapts-improve-extreme-heat-preparedness>

References

- NYC Cool Roofs: 2013 Annual Report (PDF) <http://www.nyc.gov/html/coolroofs/downloads/pdf/annual_report_2013.pdf>(13 pp, 12 MB, About PDF <https://epa.gov/home/pdf-files>)
- Heat Related Brief (PDF) <http://www1.nyc.gov/assets/doh/downloads/pdf/epi/databrief47.pdf>(3 pp, 257 K)
- NYC Panel on Climate Change: Climate Risk Information 2013, Observations, Climate Change Projections, and Maps (PDF) <http://www.nyc.gov/html/planyc2030/downloads/pdf/npcc_climate_risk_information_2013_report.pdf>(38 pp, 1.2 MB)
- NYC Climate and Health Profile (PDF) <http://www1.nyc.gov/assets/doh/downloads/pdf/environmental/climate-health-profile-report.pdf>(3 pp, 16 K)
- US Climate Resilience Toolkit: Extreme Heat <https://toolkit.climate.gov/topics/human-health/extreme-heat>
- New York City Panel on Climate Change 2015 Report, Chapter 5: Public Health Impacts and Resiliency <https://nyaspubs.onlinelibrary.wiley.com/doi/10.1111/nyas.12588>

Climate Change Adaptation Resource Center (ARC-X) Home <https://epa.gov/arc-x>

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EPA Contacts & State Websites <https://epa.gov/arc-x/epa-regional-climate-adaptation-contacts-state-websites>

Contact Us <https://epa.gov/arc-x/forms/contact-us-about-climate-change-adaptation-resource-center> to ask a question, provide feedback, or report a problem.

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