UNDER 2°

Secretariat

CLIMATE GROUP

ROCKY MOUNTAIN INSTITUTE

This document is excerpted from *Regions Take Action: The Benefits of Major Climate Policy.*

Regions Take Action:

Carbon-Free Buildings

Construct and upgrade our buildings to be all-electric and efficient, which will also create local jobs and healthier, comfortable places to live and work.

Carbon-Free Buildings

The buildings sector is on the verge of a major renovation, and technologies and strategies for carbon-free buildings are in style. More than being fashionable, policies supporting carbon-free buildings, when done right, provide multiple direct benefits to improve health, equity, and resilience and drive economic growth.

These benefits can hardly be overstated. Building energy efficiency and electrification strategies lead to improved indoor and outdoor air quality, saving lives and improving health. Better access to technology and services lowers energy bills for disadvantaged populations and addresses energy affordability. Energy efficiency and flexibility in buildings help balance the grid's loads and reduce grid infrastructure costs. With adequate support and policies, the energy services and retrofit industry will continue, if not accelerate, its current rate of impressive growth, providing widespread economic growth and job opportunities.

Now more than ever, transformative solutions are available, and well-designed building sector policies are aimed at three core tenets to maximize the benefits for the sector:

Electrify: Removing fossil fuel use in buildings by upgrading to all electric equipment.

With Efficiency: Reducing energy use and enabling smart, flexible adjustment of energy needs through better design and retrofit of buildings.

And Low-Carbon Materials: Using low-carbon materials in new construction and major retrofits; reusing rather than manufacturing new carbon-intensive materials where possible.

Furthermore, with increased awareness that the building sector is one of the largest sources of anthropogenic CO_2 emissions, it has come under sharp focus as an opportunity for decarbonization policy across the globe. About 40% of global energy–related CO_2 emissions are attributable to the buildings sector—28% from building operations and 11% from building materials and construction.[1] To limit climate change to 1.5°C, we need to drastically accelerate the rate of energy retrofits for existing buildings as well as ensure that all new buildings are zero or near-zero net carbon. In addition, since people spend approximately 90% of their time in buildings, creating healthy indoor environments is very important. Increasing awareness about the health and wellness opportunities of building design is also beginning to drive important policy changes with both health and climate benefits.

Improving buildings remains one of the largest untapped and cost-effective decarbonization strategies, and regions will do well to participate in this revolution of the building industry. The path toward a carbon-free building sector is a path toward prosperity.

1 Global Alliance for Buildings and Construction.2019. *2019 Global Status Report for Buildings and Construction.* http://wedocs.unep.org/bitstream/handle/20.500.11822/30950/2019GSR.pdf?sequence=1&isAllowed=y.

Leadership in Action

New York State, USA: Climate Leadership and Community Protection Act

In 2019, New York State enacted the Climate Leadership and Community Protection Act (CLCPA), sweeping legislation that establishes the strongest economy-wide GHG emissions limits in the United States.

The policy calls for New York to realize carbon neutrality, with direct emissions reductions of 85% by 2050, including a 40% reduction from 1990 levels by 2030.

Buildings are explicitly addressed as a core consideration in achieving these targets, and the CLCPA is supported by a large set of complementary policies in the buildings sector.

For state agencies, much of their new and existing building decarbonization efforts now occur under CLCPA framing. The state's comprehensive strategy to move its building stock to carbon.

Key Milestones

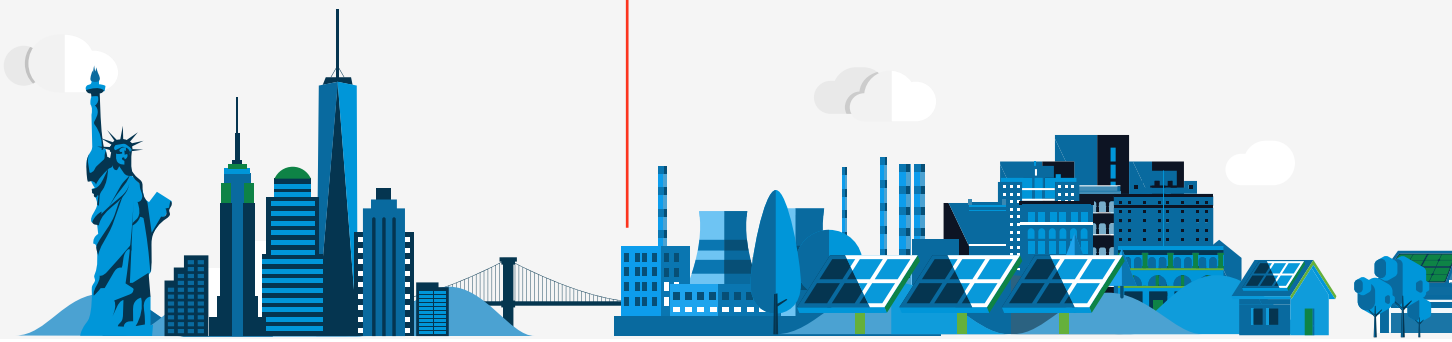
The CLCPA exists in an ecosystem of connected state policies. Key policies are listed below in order of issuance:

Statewide emissions targets set

The New York State Energy Plan sets ambitious GHG emissions reduction targets, which are subsequently embedded in the CLCPA.

Analysis reveals key role of energy efficiency

The state publishes *New Efficiency: New York*, and its analysis reveals that New York will not meet these GHG reduction targets unless stronger action is taken regarding energy efficiency; one-third of the emissions reductions needed to achieve the 40% by 2030 goal will come from building energy efficiency strategies.



NYSERDA launches Clean Energy Fund

NYSERDA launches the $5 billion Clean Energy Fund, spanning four portfolios: market development, innovation and research, solar affordability through NY-Sun, and the New York Green Bank.

Utilities required to drive emissions reductions

The state Public Service Commission (PSC) issues its Accelerated Efficiency Order, which more than doubles utility energy savings goals through 2025 relative to historic levels.

neutrality includes a process of committing nearly $5 billion between 2020 and 2025 to incentives and market development activities for energy efficiency and heat pump deployment. Much of these investments are funded by ratepayers and administered by utilities to achieve ambitious energy savings targets. These initiatives are expected to save customers much more on energy costs and will simultaneously accelerate market adoption of low-carbon technologies.

The New York State Energy Research and Development Authority (NYSERDA), the state's clean energy and innovation agency, plays a complementary role in these efforts. NYSERDA's investments emphasize reducing the costs of energy efficiency retrofits, building electrification, and high-performance new construction; advancing and demonstrating strategies to achieve deeper energy savings; providing financial and technical assistance, including to low-income consumers; and providing financing for market participants. Other components of New York's strategy include advancing building energy codes and stretch codes; procuring state agency commitments to lead by example in their facilities; and continuing to develop a Carbon Neutral Buildings Roadmap and a Building Electrification Roadmap to articulate policies and programs for longer-term market transformation.

Governor commits to advancing toward a carbon-neutral building stock

Governor Andrew M. Cuomo launches the state's Green New Deal, including a directive to chart a path to making New York's statewide building stock carbon neutral.

New initiative significantly scales up funding

The PSC issues "Order Authorizing Utility Energy Efficiency and Building Electrification Portfolios through 2025," a large-scale undertaking aimed at advancing energy efficiency and heat pump deployment in the state.

CLCPA helps unify the existing policy landscape

The CLCPA is signed, and it provides an avenue for codifying, uniting, and strengthening much of the state's work in the building sector, with exact details to be set through a scoping process.

Driving Forces

Factors that led New York to enact the CLCPA include:

Threat of climate impacts.

New York and its leadership increasingly recognize that dramatic decarbonization is necessary to mitigate climate impacts that pose a significant threat to the state's economy and infrastructure. The effects of Hurricane Sandy represent a tangible example of what the state hopes to avoid.

Green economic opportunity.

New York recognizes that the development of green technologies and sustainable practices creates jobs and strengthens the state's economy.

Grassroots advocacy.

Multiple groups of stakeholders (e.g., environmental, labor, and community interests) came together with clear demands to advance the state's new energy economy, address climate change, advance climate justice, and enhance resilience.

Keys to Success

Core factors in New York State's success include the following:

Establishing a clear mandate

Provides a framework under which many other existing initiatives now fall. The CLCPA is a guiding document that codified a number of Governor Cuomo's goals and executive orders, and it ensured that existing and future decarbonization programs reflect the CLCPA mandate.

Reflecting constituent interests

Incorporates stakeholder feedback into the planning and policy process. Key stakeholders include affordable housing advocates, who have helped to elevate equity considerations, and market actors, who have encouraged the use of energy efficiency and heat pump incentives that are easy to understand and access.

Incentives and information

Gains support from consumers and market actors as a result of state policies that advance goals through a portfolio of incentives, technical assistance, and demonstration projects.

Scalability and consistency

Achieves statewide consistency through unprecedented collaboration between utilities and state agencies. For statewide heat pump and low- to moderate-income (LMI) initiatives, the overall program structure, customer experience, and contractor experience are designed to be similar throughout the state.

Optimizing impact

Tracks progress on a number of key performance indicators, which allows the state to better understand and then adjust its initiatives. For specific initiatives, metrics include the number of utility programs implemented, cost reductions in certain technologies, and the number of heat pump installations.

Accelerating market adoption

Removes barriers to advanced technologies, such as heat pumps, so they become the default options. This includes ensuring that high-quality, affordable installations become standard practice; market fragmentation is reduced; and consumers have easy access to information.

Benefits

The CLCPA's main goal is to build an equitable and inclusive clean energy economy in New York. The benefits of the state's proactive leadership in this sector include:

Economic Development

Keep revenue in state while supporting clean technologies. New York residents spend $14 billion on heating every year, including $8 billion on gas heating and $4 billion on oil heating. Most of this money leaves the state. Eliminating fossil fuel heating would keep billions of dollars in New York.

Job creation. Policies that support transformative technologies like heat pumps create jobs directly through installation and indirectly through multiplier effects and private sector investments. In addition, New York's policies directly fund workforce development, including, for example, training people to install heat pumps in their communities.

Infrastructure costs savings. Policies that promote "non-wires alternatives" can reduce capital investments associated with electric transmission and distribution infrastructure,[2] and policies that promote electrification may avert expensive gas pipeline infrastructure.[3]

Desirability. As cities around the world grow rapidly, regions with sustainable building policies that promote a cleaner, healthier environment are more able to attract and retain residents and are seeing a greater influx of foreign direct investment as well.[4]

Health

Air quality. Fuel combustion in buildings affects indoor air quality and poses serious health risks from particulate pollution and gases like NO_2 and

2 Stanton, Tom. 2015. *Getting the Signals Straight: Modeling, Planning, and Implementing Non-Transmission Alternatives Study.* National Regulatory Research Institute. https://pubs.naruc.org/pub.cfm?id=536EF440-2354-D714-51CE-C1F37F9B3530.

3 Golden, Rachel. 2019. *Building Electrification Action Plan for Climate Leaders.* Sierra Club. https://www.sierraclub.org/sites/www.sierraclub.org/files/Building%20Electrification%20Action%20Plan%20for%20Climate%20Leaders.pdf.

4 Pisani, Niccolò, Václav Ocelík, and Ganling Wu. 2019. "Does It Pay for Cities to Be Green? An Investigation of FDI Inflows and Environmental Sustainability." *Journal of International Business Policy* 2 (1): 62–85.

CO. In New York City alone, research shows that $PM_{2.5}$ particulate pollution, for example, causes 3,000 premature deaths, 2,000 hospitalizations for respiratory and cardiovascular diseases, and 6,000 emergency department visits for asthma annually.[5] Policies that advance efficiency and electrification mitigate these problems.

Equity

Benefiting LMI communities. The CLCPA explicitly states that at least 35% of the benefits of spending on clean energy and energy efficiency must go to disadvantaged communities. Examples of equity benefits of the CLCPA and related New York energy policies include:

- Providing bill payment assistance/ discounts through the Low-Income Affordability Program
- Conducting energy literacy outreach, education, and awareness campaigns through a customer hub
- Increasing access and affordability of key technologies (e.g., efficiency technologies, heat pumps, renewables)
- Coordinating and improving access to information by aligning LMI initiatives with other state and local programs
- Continuous improvement of LMI-related initiatives by tracking progress (e.g., households served, costs, and savings) and modifying initiatives to maximize benefits and minimize costs

Resilience and Security

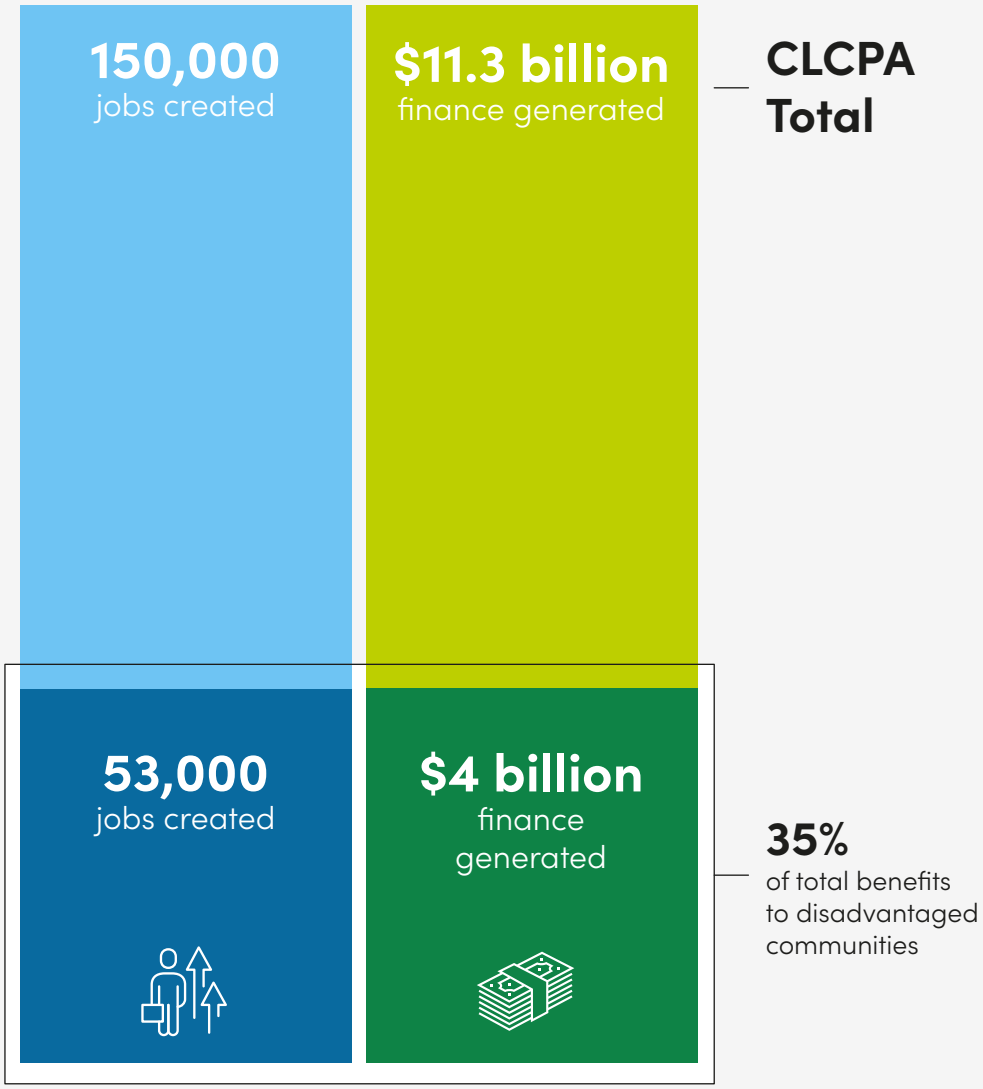
Climate resilience. These policies advance climate resilience for New York, which, like many places around the world, faces worsening climate impacts. Extreme weather, sea level rise, increased temperatures, air pollution, and health effects are already being experienced and are of particular concern.

Community resilience. These policies advance community resilience by providing career opportunities in marginalized communities.

5 Kheirbek, Iyad, Katherine Wheeler, Sarah Walters, Grant Pezeshki, and Daniel Kass. 2011. *Air Pollution and the Health of New Yorkers: The Impact of Fine Particles and Ozone.* New York City Department of Health and Mental Hygiene. https://www1.nyc.gov/assets/doh/downloads/pdf/eode/eode-air-quality-impact.pdf.

Building policy can create equity.

Estimated Average Annual Job and Income Benefits of the CLCPA, Total and to Disadvantaged Communities[6]



Note: The CLCPA requires that at least 35% of the benefits from spending on clean energy and energy efficiency go to disadvantaged communities.

6 Total jobs created and income generated based on Demos policy brief (The Climate and Community Protection Act). Jobs and income going to disadvantaged communities extrapolated by multiplying Demos figures by the CLCPA requirement that 35% of spending benefits disadvantaged communities. Jobs created and income generated apply to direct and indirect employment only.

New York Resources

New York Climate Leadership and Community Protection Act[7]

The following resources relate to key building sector policies that interface with the CLCPA:

"Governor Cuomo Announces Additional $2 Billion in Utility Energy Efficiency and Building Electrification Initiatives to Combat Climate Change"[8]

"In the Matter of a Comprehensive Energy Efficiency Initiative"[9]

Toward a Clean Energy Future: A Strategic Outlook 2020-2023[10]

New Efficiency: New York[11]

NYS Clean Heat: Statewide Heat Pump Program Implementation Plan[12]

7 Bill No. A08429. 2019. New York State Assembly. https://nyassembly.gov/leg/?default_fld=&leg_video=&bn=A08429&term=2019&Summary=Y&Actions=Y&Text=Y.

8 New York State. 2020. "Governor Cuomo Announces Additional $2 Billion in Utility Energy Efficiency and Building Electrification Initiatives to Combat Climate Change." News release, January 16, 2020. https://www.governor.ny.gov/news/governor-cuomo-announces-additional-2-billion-utility-energy-efficiency-and-building.

9 "In the Matter of a Comprehensive Energy Efficiency Initiative." 2020. Matter no. 18-00381. New York State Department of Public Service. http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=18-M-0084.

10 NYSERDA (New York State Energy Research and Development Authority). 2020. *Toward a Clean Energy Future: A Strategic Outlook 2020–2023*. https://www.nyserda.ny.gov/-/media/Files/About/Strategic-Plan/strategic-outlook.pdf.

11 NYSERDA (New York State Department of Public Service). 2018. *New Efficiency: New York, New York.* https://www.nyserda.ny.gov/-/media/Files/Publications/New-Efficiency-New-York.pdf.

12 *NYS Clean Heat: Statewide Heat Pump Program Implementation Plan.* 2020. New York State Energy Research and Development Authority, Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., Niagara Mohawk Power Corporation d/b/a National Grid, New York State Electric & Gas Corporation, Orange and Rockland Utilities Inc., Rochester Gas and Electric Corporation, 2020. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b4DCD9A46-A766-4AEC-9D11-B042B4905251%7d.

Broader View

Policy solutions for modernizing buildings are relevant across the globe but can vary depending on climatic, infrastructure, economic, and political contexts. Many cities around the world—New York City; Vancouver, Canada; and Vienna, Austria, to name just a few—are leading the charge to modernize their building stock. However, cities and states must work together to align as closely as possible on goals, policies, and building codes.

We are adding to the planet the equivalent of another New York City every month.[13] Emerging economies are driving this massive boom in new construction, and these regions may drive significant progress by focusing on building sector policies that facilitate carbon-free new construction.

On the other hand, over 80% of buildings that will exist in 2030 are already built.[14] Regions with a higher proportion of existing building stock compared with new development, including many developed countries, may do well to focus on policies that improve the performance of existing buildings.

Furthermore, as building systems and technologies are evolving, policymakers are faced with a growing list of options to consider. For example, in some cases, hydrogen may be a viable alternative fuel for buildings.[15] Nevertheless, as the electric grid gets cleaner, whether it be through electrification of buildings or use of renewable hydrogen in buildings, policies that support carbon-free buildings provide a pathway for improved health, economic benefits, and carbon emissions reductions.

Building sector policies also have the potential to work synergistically to advance progress in other sectors. For example, policies that promote the use of low-carbon building materials or access to electric vehicle charging at certain buildings can create jobs in upstream manufacturing or service industries.

There is not a one-size-fits-all policy framework. In certain contexts, such as New York, jurisdictions can pursue building strategies within a larger agenda that accomplishes other interconnected social, economic, and environmental goals. Alternatively, building sector policies can be implemented through targeted legislation, executive action, existing regulatory authority, or other means, depending on the jurisdiction's political context and priorities.

13 Architecture 2030. n.d. "New Buildings: Operational Emissions." Accessed July 13, 2020. https://architecture2030.org/new-buildings-operations/.

14 Bradtner, Stefanie. "The Global Building Stock Is Expected to Exceed 183 Billion Square Meters in 2026." *Guidehouse Insights*, April 26, 2018. https://guidehouseinsights.com/news-and-views/the-global-building-stock-is-expected-to-exceed-183-billion-square-meters-in-2026.

15 Fuel Cells and Hydrogen Joint Undertaking. 2019. *Hydrogen Roadmap Europe: A Sustainable Pathway for the European Energy Transition*. https://www.fch.europa.eu/sites/default/files/Hydrogen%20Roadmap%20Europe_Report.pdf.

These pages are excerpts from Regions Take Action: The Many Benefits of Major Climate Policies. This action is one of five featured actions which may be relevant to others in your region. Download and share the full guide for free at under2coalition.org/news/regions-take-action or rmi.org/regions-take-action.

About Rocky Mountain Institute

Rocky Mountain Institute (RMI)—an independent nonprofit founded in 1982—transforms global energy use to create a clean, prosperous, and secure low-carbon future. It engages businesses, communities, institutions, and entrepreneurs to accelerate the adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewables. RMI has offices in Basalt and Boulder, Colorado; New York City; the San Francisco Bay Area; Washington, D.C.; and Beijing.

This guide was produced in partnership with the Under2 Coalition and The Climate Group.

About the Under2 Coalition and the Climate Group

The Under2 Coalition is driven by a group of ambitious state and regional governments committed to keeping global temperature rises to under 2°C. The coalition comprises more than 200 governments that represent over 1.3 billion people and nearly 40% of the global economy.

The Climate Group is the Secretariat to the Under2 Coalition and works with governments to accelerate climate action through three work streams: planning deep decarbonization pathways, scaling innovative policy solutions, and mainstreaming transparency and reporting.

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