

# **Four Crises and a Moment of Opportunity:** *A Call to Climate Leadership in the Hudson Valley*

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*Executive Summary*

New York recently adopted one of the strongest laws in the nation for tackling the climate crisis while promoting economic innovation and social justice, the Climate Leadership and Community Protection Act (CLCPA). As implementation for the CLCPA was beginning, three crises emerged into a radically new level of public awareness: the covid-19 pandemic, the resulting economic shockwaves, and a new level of advocacy in support of racial justice. To support regional and community action, the Mid-Hudson Regional Sustainability Coalition is organizing a regional planning process to achieve the goals of the CLCPA in ways that also help our region to tackle the three additional urgent crises with high impact. In parallel with the state's planning, we are identifying opportunities and best practices, creating conceptual plans, designing programs and projects, attracting resources and organizing for action.

An outgrowth of the stakeholder network that developed the 2013 Mid-Hudson Regional Sustainability Plan, the Coalition is an informal network that brings together local and county government representatives, nongovernmental organizations, businesses and expert centers for regular knowledge sharing. Our work will be organized around the key themes that were the pillars of the 2013 Regional Sustainability Plan and re-emerge in the organization of today's Climate Leadership Council, including energy, transportation, land use, agriculture and forestry, water and materials (as unrecognized greenhouse gas sources and sinks). Across these areas, we are also addressing four essential cross-cutting themes: climate and social justice, economic development, resilience, and education.

In addition to directly supporting the state's climate leadership planning, we will be paying special attention to opportunities to build on recent changes in this time of readjustment, such as sustaining the trend of increased remote work, supporting the reclamation of streetscapes for commercial and social activity, and shifting investment portfolios into more climate-positive, equitable and innovative businesses. This is an ambitious agenda, but necessary. We welcome collaboration to achieve these goals.

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## **Introduction**

The Hudson Valley faces four interconnected crises: climate, economy, the covid-19 pandemic and the sustained outpouring of public outrage about racial injustice as exemplified in law enforcement. New York recently adopted one of the strongest laws in the nation for sharply reducing greenhouse gases in the atmosphere while promoting *economic innovation and social justice*, the Climate Leadership and Community Protection Act. The CLCPA sets up a system for developing and implementing climate mitigation and adaptation measures that are to be reviewed with an eye on *justice and economic benefits* for all.

As planning for implementing this visionary legislation was gearing up, the state was hit hard by the pandemic known as covid-19. Environmental scientists have long predicted pandemics due to the deterioration of natural systems and the human health impacts of pollution. As our communities were getting used to stay-at-home lives and coming to terms with the emotional impact of the pandemic, another crisis burst into being: the widespread outrage at a new cycle of police murders of innocent black people. All these circumstances have deep roots, but they are all newly visible and urgently demanding more ambitious, strategic response. Together, they send a signal that we must up our game in restoring the environment and transitioning the economy to a low-carbon, low-waste system that can create good jobs while improving the environment, with equitably distributed benefits. We must do this as a matter of public health and safety, and to give long overdue attention to considerations of fundamental justice. And we can only do it by engaging people and institutions in every community, to support phased-in steps toward large-scale change in the ways we all live and work.

As we address the four crises, regional and local leadership are more critical than ever. Why? Because regions, counties, and the communities within them, are big enough to matter yet small enough to organize.

New York already has a unique regional planning and development structure, which works to distribute funding resources and organize programs and services. Regions, counties and communities have been on the front lines of the covid crisis and economic recovery. Racial justice and human rights

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have been capturing imagination at a very local level in the same way. And regional planning -- with coordination for implementation at the community level -- is the best way to support rapid, effective organization to implement the CLCPA.

This convergence gives rise to an opportunity for creative engagement -- for every business, nongovernmental organization, government, agency and individual to bring their talents into the game. While the state is developing policy tools and funding streams to build a zero-emissions economy and invest in environmental restoration, regional and local partners can be identifying specific opportunities and strategies, and can develop specific initiatives that support the state's goals for building back better from the four crises to improve community resilience, health, justice and also innovative economic solutions.

This white paper is an invitation to plan together for action to capture the opportunity of this time -- for example, to:

- share opportunities and best practices for decarbonization and regeneration in the short, medium and long term;
- nimbly create conceptual plans and commitments to participate;
- design programs and projects to advance those plans;
- attract resources and
- organize for action.

The Hudson Valley is a dynamic region where artists, investors, writers, architects, restaurant developers, technology innovators, farmers and so many others are working together in a spirit of enterprise and public purpose to create a positive future. How can we use our signature creativity to capture these opportunities?

The Mid-Hudson Regional Sustainability Coalition is tackling that question. This group of professionals and interested citizens has evolved from the stakeholder network that created the 2013 Mid-Hudson Regional Sustainability Plan<sup>1</sup> and continues to meet. Because it was interdisciplinary

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<sup>1</sup> In 2011, New York announced funding for each of its ten regions to create plans for deep reductions of greenhouse gas emissions, while building economic prosperity and tackling climate justice. The assignment was specifically to develop actionable plans, with targets and milestones at 2020 and 2035. Along with our counterparts across the state, Mid-Hudson stakeholders worked together to develop a Regional Sustainability Plan that was published in 2013 and endorsed by dozens of

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and focused on unifying regional themes, we consider the Mid-Hudson Regional Sustainability Plan as a valuable framework to identify strategies that will get us to the goals of the CLCPA, including economic and social justice and resilience. We have been reviewing progress toward the vision outlined there, as well as emerging issues and opportunities such as the catalogue of climate solutions identified by Project Drawdown. Before the pandemic hit, we were preparing to develop a Regional Climate Action Plan that parallels and supports the state's efforts. Our intention has been to address greenhouse gas emissions in the transportation, building, industrial, commercial, and agricultural sectors, as the CLCPA does; we are also examining materials management and water as areas of opportunity to reduce embodied carbon and capture new approaches to sequestration of greenhouse gases. Our planning process is intended to address climate change mitigation and adaptation, and the opportunities they present to advance economic development, social justice and just transition for workers and communities that are impacted by these changes. We are also focusing seriously on the aspects of resilience that have been brought into focus by the pandemic, economic crisis and public outcry for human rights and racial justice.

Late in 2018, the Intergovernmental Panel on Climate Change issued a worldwide call to action for "rapid, far-reaching and unprecedented changes in all aspects of society," just to keep global warming from going beyond 1.5 degrees centigrade. According to Rob Jackson, Stanford Professor of Earth Sciences and chair of the research consortium, "We are blowing through our carbon budget the way an addict blows through cash." Even the sharp reductions in transportation emissions, from stay-at-home orders to fight the pandemic, are only yielding modest reductions in atmospheric greenhouse gas levels (around 17% at the height of the "pause"), as electricity consumption remains high. From Paris to Poughkeepsie, there is majority public support for the notion that 2020 must be a turning point to achieve faster and deeper removal of greenhouse gases from the atmosphere, while also promoting public health, inclusive economic development, social justice and community resilience. The goal of a Regional Climate Action Plan for the Mid-Hudson region is to identify courses of action that collaborating organizations can take through our own work, that in turn can inspire wider

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government agencies and organizations. From 2014 – 2016, the Cleaner, Greener Communities funding program invested \$93 million, statewide, into projects aligned with the Plans.

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participation to build a coalition that is broad enough to achieve the state's goals. We will look at actions that can make a difference right now, such as encouraging the continuation of remote working wherever possible. We will also look at the medium and long range needs to bring our region along the path to 2050 that is outlined in the state Climate Leadership Council's recently commissioned study on Pathways to Deep Decarbonization.

## **Planning Frameworks for Today's Realities**

The rest of this document will review strategies in each of the five subject areas of the 2013 Mid-Hudson Regional Sustainability Plan, and identify new science-based recommendations and emerging issues. We will also identify strategies for tackling the cross-cutting issues of economic development including housing, resilience, climate justice and education. Finally, we will lay out our vision for a regional initiative to accelerate progress toward the CLCPA goals, and discuss ways that regional and state level efforts can synergize.

### **Land Use and Transportation**

Transportation is the largest segment of the Hudson Valley's greenhouse gas emissions. The CLCPA calls for land-use and transportation planning measures aimed at reducing greenhouse gas emissions from motor vehicles, as well as measures to achieve long-term carbon sequestration and/or promote best management practices in land use, agriculture and forestry. The 2013 Plan provides a strong foundation for this analysis with a strong and holistic commitment to "smart growth" through widely accepted principles like transit-oriented development, complete streets, and revitalization of existing centers. The Plan set specific goals to:

1. Strengthen centers supported by transit;
2. Create "complete" communities;
3. Reduce transportation fossil fuel consumption through multi-modal transit systems;
4. Improve safety, efficiency and resilience of transportation systems for all users through infrastructure improvements.

There is not a simple connection between these land use strategies and actual reductions in vehicle-miles travelled or transportation emissions. Driving patterns are influenced by many other factors, including employment distribution, fuel prices and lifestyle choices. Nationally, in recent years, VMT has been creeping up, and

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the reasons are not all within drivers' control. Transportation infrastructure is mainly planned at the MPO, state, interstate and federal levels. Still, we as a region can and should advocate for reliable and expanded mass transit, not only for the major commuter corridors but also serving rural towns and hamlets along state and county corridors with "trail to town" initiatives. Along with this, we need transit-oriented development, and the integration of transit with community development plans and patterns, so that transit systems are attractive to users and take them to the places they need to go. While working to modernize and expand transportation infrastructure in ways that reduce single passenger car use, we can make a difference locally by encouraging and celebrating those transportation alternatives, with creative campaigns that encourage ride-share, care share, carpooling, cycling, and working from home.

Meaningfully shifting our patterns of movement requires having a coherent set of choices that work well together -- access to viable, reasonably comfortable transit, options for walking or biking to that transit, and linkage between transportation hubs and human activities. All these elements must work together to allow for a real reduction in dependence on single occupancy, fossil-fueled cars. Creative placemaking approaches, transportation demand management and the shift to electric vehicles are three highly interconnected aspects of transportation footprint reduction that can be productively advanced through regional and community-based strategies. Encouraging the use of transit, ride sharing, biking, walking, and telework all involve engaging communities and providing a spectrum of meaningful choices. Too often, these opportunities are addressed separately; we believe that the new focus on transportation footprint reduction connected with the CLCPA provides an opportunity to think more holistically about how communities can advance these dimensions of transportation planning and demand shifting together. Many communities have shown a commitment to these aspects of "smart growth", but fully achieving this promise requires major coalition building, leadership, strategic thinking and financial resources -- "deep dives" that are not always possible even for motivated local leaders.

The COVID-19 pandemic experience has given rise to more widespread remote working than ever before. This provides an additional leverage point for exploring possibilities. Workplaces no longer have the luxury of deferring their plans for remote and flexible work; so many have figured out how to accommodate remote working out of necessity. Now they have the option to return to the "old normal" of centralized work locations, or to continue taking advantage of the adaptive possibilities presented by more telecommuting, costing employees less time and money for commuting, allowing for less office maintenance and nurturing a more productive workforce.

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A key approach to cutting transportation emissions is transitioning to electric vehicles - both for personal use and as replacement vehicles for aging transit services and other fleets. EVs are moving into the mainstream, with more competitive prices and lower operating costs than gas vehicles. New York has established a major commitment to rolling out charging infrastructure and catalyzing the EV marketplace with a Drive Clean rebate, marketplace initiatives and participation in the nine state Zero Emissions Vehicle compact whose combined goal is to get 12 million EV on the road by 2030 (at least a million in New York). The New York Power Authority's ongoing investments in fast charging infrastructure on major highways is a good beginning as it illustrates the growth in state commitment and sends the visible signal that an EV is a realistic choice now. And the Hudson Valley is one of two areas in New York that currently have a nonprofit "EV Accelerator" program, Drive Electric Hudson Valley. However, to meet the state's goals, the market must sustain annual growth of 60% (compared to just 6% in 2019). This breakthrough growth will only be possible with more active and widely distributed support. This includes:

- major investment in charging infrastructure in workplaces and neighborhoods as well as on the highways,
- training and support for car dealerships, and for public and private transit fleet managers,
- and much more widespread consumer education.

The transition to electric vehicles will have an impact on the workforce, potentially creating new jobs (e.g. installation of chargers as a new line of business for electricians), changes to skills or responsibilities in some current jobs (e.g. car sales and auto repair), and possible reduction in demand for certain jobs (such as auto repair mechanics of whom there are 5,789 in the 7 counties). Electric vehicles require far less maintenance than conventional cars, but some specific skills will be needed, such as repair and maintenance of regenerative braking systems.

Broad-based input is also important to build resilience into the system of transportation and transit infrastructure. The Lower Hudson Valley was a focus area for the Post-Sandy Transportation Vulnerability Assessment conducted by a major partnership of federal and state agencies in 2017, calling for the integration of climate change projections into transportation infrastructure design guidelines across the board. But implementing these recommendations will take decades of work and new funding sources. Local and regional inputs must help inform and advocate for the massive investments and political will that are required to make that resilient infrastructure a reality.

Land use is a critical factor in addressing climate change. The siting of renewable energy facilities is a key example that will be discussed later. Another is connectivity in large landscapes to preserve biodiversity and ecosystem health in a

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changing climate. Climate change specific open space planning has been taken on as a major project by Scenic Hudson, the Nature Conservancy and partners. The resulting Hudson Valley Conservation Strategy has identified 760,000 acres in 11 counties that represent the best conservation investments. Efforts to mobilize funds for protecting those lands are ongoing.

Equally important is the emerging field of “natural climate solutions” (NCS) which are gaining recognition and support. While reducing emissions of greenhouse gases at their source, we can also remove them from the atmosphere by expanding and enhancing sinks such as healthy soils, plants and water bodies. A 2017 review of 20 top natural climate solutions found that “NCS can provide over one-third of the cost-effective climate mitigation needed between now and 2030 to stabilize warming to below 2 °C. Alongside aggressive fossil fuel emissions reductions, NCS offer a powerful set of options for nations to deliver on the Paris Climate Agreement while improving soil productivity, cleaning our air and water, and maintaining biodiversity.” The CLCPA includes a call for measures to achieve healthy forests that support clean air and water, [promote] biodiversity, and sequester carbon. This is a major opportunity to connect land and water based strategies for emissions sequestration with other aspects of land use and urban design, including complete streets, trails, greenways, floodplain terraces and conventional transportation infrastructure to optimize climate benefits along with community quality of life.

Planning focus:

- Engaging communities and workplaces in effective transportation demand management campaigns;
- Facilitating a more rapid transition to electric vehicles;
- Identifying the most productive opportunities for transit-oriented development connected with community revitalization and resilience plans, including connecting rural trails with town centers so that walking and biking can be more integrated into lifestyles;
- Integrating land use and water management in the context of sea level rise, flood management options, carbon sequestration (especially coastal areas known as “blue” carbon sinks) and placemaking opportunities at the intersection of land and water;
- Scaling up land use strategies to promote ecosystem regeneration, greenhouse gas sequestration and resilience - for example, through widespread education and financial incentives for private landowners at every scale.

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**Energy**

Power generation, building heating, hot water and cooling, transportation and industrial processes all use energy. Together, they constitute most of the region’s greenhouse gas emissions. The CLCPA commits us to 70% renewable power by 2030 and to the greater goal of cutting greenhouse gas emissions, economywide, 100% by 2040. The 2013 Regional Sustainability Plan was also oriented in this direction, and identified a set of strategies to expand renewables:

- Expand energy efficiency programs
- Create community energy districts
- Expand renewable energy production and distribution
- Increase demand response participation
- Develop energy storage capacity
- Develop innovative project, financing and policy models.

The 2013 strategies do not actually call for a phasing out of fossil fuel use. But since then, there has been a sea change in politics and public opinion regarding fossil fuels, thanks to improved scientific understanding of carbon budgets. This has led to new recognition of the urgency of fully replacing fossil generation with solar and storage technology -- as well as the viability of that change. Reflecting this shift, in 2018, the energy developer GlidePath was persuaded to withdraw its proposal for a natural gas peaker plant in the Town of Ulster, and replace it with a solar-storage combination. This facility was recently awarded \$8.8 million in NYSERDA funding and will serve as a showpiece for a new era in energy development.

The CLCPA sets concrete targets for renewable energy and energy-efficiency.

<b>Energy type</b>	<b>Statewide target</b>	<b>Timeframe</b>
Distributed solar	6 gW	2025
Offshore wind	9 gW	2035
Energy efficiency	185 trillion BTU below 2025 forecast	2025
Energy storage	3 gW	2030

The conditions supporting fast growth for renewables, and especially solar power, have never been more favorable, according to Bard College economists Eban Goodstein and Hunter Lovins who argue that falling costs of solar components and storage could well lead to “solar dominance” as an electric power source by 2030.

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As of 2019, 28% of electricity generation in New York came from renewables. But 80% of this was long-established hydroelectric plants such as Niagara Falls. As an indicator of near-term possibility, NY-SUN, the state's program of financial and technical assistance for rooftop and community solar, is aiming for 3GW of solar capacity by 2023.

As a key technology to enable the mainstreaming of solar power, energy storage capacity has been a state level commitment since Governor Cuomo's 2018 executive order to install 1,500 mW of storage by 2025 and 3,000 by 2030. This goal creates as many as 30,000 good jobs across New York State. Current implementation efforts include an Energy Storage Road Map, guidance and incentives for local policies and codes, and the work of the technology development consortium NY-BEST. By the end of 2019, funding had been awarded or contracted for 706 mW, the first 47% of the 2025 goal, mostly in metropolitan areas (in our region including some in Westchester County).

***Economic Development Snapshot: Cadenza Innovations***

Cadenza Innovations is a producer of more efficient, safer lithium ion batteries using a modular structure, with production facilities just outside the Hudson Valley in Bethel, CT. The company's product is being beta-tested in the Valley, in partnership with the New York Power Authority. And Cadenza is scaling up its production by licensing not only the technology but the design of the production facility itself, creating a major production opportunity and market for our region.

Expansion of renewables and distributed generation must also align with utilities' efforts to upgrade the grid. While this is generally understood in principle, the allocation of costs and responsibilities is debated, and so are other aspects of utilities' role in accommodating distributed energy services. A recent advance in this area is consolidated billing, which coordinates customers' electric bills from utilities and alternative suppliers in a single invoice, which was only achieved after a hard push from advocacy organizations which eventually won the support of industry. Renewable energy progress will be smoothest if utilities and their stakeholders are able to develop more robust and transparent processes for addressing conflicts like this, another argument for a decentralized approach to energy planning.

However, progress in developing new renewable generating capacity depends on the policy climate as well as technology and economics. It also depends upon the availability of a skilled workforce. New York's Reforming the Energy Vision initiative has enabled important new business models for providing large scale renewable power, such as Community Shared Solar and Community Choice Aggregation. It

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has supported the state's far-reaching programs for investment and technical assistance to speed the uptake of energy efficiency and renewable energy, with a budget of approximately \$1.5 billion in 2018. But inevitably there are differing views of the effectiveness and equity of these programs in terms of sharing burdens and benefits. The state's upcoming energy planning process will provide an opportunity for fresh thinking and hopefully have room for regional inputs.

***Economic Development Snapshot: RetrofitNY***

RetrofitNY is a program designed to achieve breakthroughs in building efficiency technologies for retrofitting large multi-family and commercial buildings, using innovative financing, business consortium development, and incentives for partnership. Focusing initially on multi-family residential buildings, the program brings together industry groups with energy-efficiency solutions like external wrap insulation, high-efficiency lighting and plumbing, cool roofing materials and more. A NYSERDA program inspired by a successful Dutch model, RetrofitNY is creating markets for innovative businesses in building materials and processes.

Energy siting is particularly important to tackle in a decentralized manner, in order to respect home rule, control "energy sprawl," and protect high-value lands such as farms and forests, and guide renewable development to fit with community sensibilities when it is done in town and village centers. It can also encourage siting on low-value lands and regenerative land use practices like pollinator-friendly crop cultivation wherever possible. Scenic Hudson is developing a solar zoning handbook and a comprehensive GIS-based solar siting decision support tool designed to guide land use decisions in accordance with environmental protection and community values. Its basis is a five-point road map, focusing on state policy and outreach:

1. New York State should create a statewide master plan for land-based renewables build-out.
2. New York State should pursue an effective information and public awareness campaign to build a mindset of collaboration before projects are proposed.
3. New York State should provide financial and technical support for local planning and zoning that promotes smart renewable energy development.
4. The Siting Board should adopt rules to accelerate and incentivize large-scale renewable energy that has demonstrated local support and meets conservation goals.
5. Align agricultural protection and renewable energy policy.

With acceptance of the need for a rapid shift to a renewable energy economy, stakeholder groups around the country have begun to undertake collaborative planning processes in order to minimize conflicts and delays. For example, Long

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Island's Solar Roadmap process is being led by an environmental organization, the Nature Conservancy, with a steering committee that includes utilities, state agencies and a wide range of stakeholders. Energy planning at the scale of the economic region, the utility service area, and the local community brings the opportunities for renewable energy growth and use into the awareness of local stakeholders, and allows local values to guide development. That is the best way to shift community sensibilities from NIMBY to YIMBY - "Yes in my backyard," by building public consensus on guiding principles for renewable energy development. The Energy Working Group associated with this planning initiative has begun to create such a process to develop a Regional Renewable Energy Implementation Plan.

One opportunity connected with community-driven renewable energy siting is the development of Community Energy Districts that are designed to make the benefits of these technologies highly visible and provide savings through economies of scale. The 2030 District is one model for bringing energy innovation to an entire commercial center -- as illustrated nearby in Stamford, Connecticut. Recommended in the 2013 plan but not yet visible, this model is timely to test out as energy storage costs fall, and micro-grids become less exotic and more affordable. Local planning for Community Energy Districts can provide for energy security, resilience and creative place-making opportunities while identifying appropriate sites that have public support.

The CLCPA will ultimately be implemented through state energy plans and programs. But more place-specific planning remains important to inform policy direction and lay groundwork for resolving conflicts.

Planning focus:

- Engaging the full range of stakeholders proactively to address potential conflicts through a transparent consensus building process to create a Regional Renewable Energy Implementation Plan ;
- Specific areas of overlap with water and agriculture that point to innovative opportunities and best practices;
- Local education and consensus building for the acceptance of renewables and for siting on already disturbed lands.
- Inventorying the current energy jobs in the region and the shutdown's impacts to those jobs as the foundation for a work force transition plan for 100% renewable energy.

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## **Water**

Water is a signature asset of the Hudson Valley. Hundreds of businesses and institutions are engaged in managing water resources with high levels of expertise.

*The Mid- Hudson Regional Sustainability Plan set goals to:*

1. Increase available water supply by reducing water consumption and improving efficiency of water collection, treatment, and distribution systems;
2. Reduce energy use and GHG emissions at water and wastewater treatment infrastructure;
3. Improve the reliability of water treatment and distribution systems and wastewater treatment and collection systems;
4. Reduce impervious surface cover and connect permeable surfaces to infiltrate and treat stormwater;
5. Protect habitat and water quality;
6. Encourage watershed management planning.

These are still key strategies for protecting water resources and maximizing the performance of water infrastructure. Substantial work is being done on each one, with the leadership of major public agencies and partnerships. Efficiency of water treatment and the energy that powers it are emerging priorities in the water management industry that can bring economic as well as environmental benefits. For example, hydroelectric power is being utilized by the New York City Department of Environmental Protection to power some water treatment facilities. Current water conservation efforts, including a program focusing on infrastructure leak management, are being spearheaded by the New York City Department of Environmental Protection, especially in conjunction with communities that source their drinking water from the river. The remaining goals are also being pursued by many parties. New York State has greatly increased funding for watershed management planning in recent years, supporting an integrated planning network across 37 watersheds. The state has also made major financial commitments to water infrastructure funding, including \$58 million for the Hudson Valley in 2019 and nearly \$500 million in the 2020 budget.

However, the climate and covid-19 crises today make the protection and restoration of water bodies, and the conservation of water resources, more important than ever. While water is not an explicit focus of the CLCPA and it is rarely discussed as a contributor to climate change, water vapor is a greenhouse gas. Even though it cycles more rapidly through the atmosphere than other greenhouse gases, it is so abundant that its overall climate impact may be large. Wetlands, lakes, streams and rivers are habitats to many organisms that are sources and sinks of carbon dioxide, nitrous oxide, and methane. While research to understand the implications

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of these connections is still at an early stage, this understanding has the power to unify our strategies for water stewardship as it connects with climate action.

In particular, new research shows how healthy water bodies can be carbon sinks, especially the coastal areas that are rich in salt marshes and sea grasses. Research is still in its early stages on the dynamics of carbon sequestration in these “blue carbon” ecosystems, and the conditions for optimizing it; however, it is already clear that the potential for these carbon sinks as natural climate solutions can contribute significantly to achieving the goals of the CLCPA. The Hudson Valley is an area of research interest on blue carbon for important national organizations such as Woods Hole and NOAA, in collaboration with regional research and demonstration centers such as Hudson Carbon.

Furthermore, degraded aquatic ecosystems (such as waters with harmful algal blooms and combined sewer overflows) can be serious greenhouse gas emitters. Combined sewer overflows, in particular, are well documented as a determinant of poor water quality and increased greenhouse gas emissions, and now are showing their ability to circulate viruses from waterways through aerosolized byproducts. At the same time, research and technology have advanced to identify treatment options such as ultraviolet processes and de-chlorination for wastewater treatment - technologies that are commercially viable but not yet in wide use.

Fully achieving the water goals of the Mid-Hudson Regional Sustainability Plan is likely to be a multi-generational effort, but there is a new opportunity for innovation that arises from water’s connection to climate and public health. An underlying challenge is in finding ways to finance the work to be done at the necessary scale, and to find engineering solutions that reduce water management costs for local governments. There is growing availability of new financing tools like local carbon credit systems, green bonds, and increasing use of new economic development strategies that can improve the cost-effectiveness of green infrastructure -- for example, Opportunity Zones and Stormwater Management Tax Districts. In addition, the number of water-related business startups in the region has been growing, providing a new focus for natural resource based economic development which is one of the Mid-Hudson Regional Economic Development Council's areas of strategic focus. Since water infrastructure and management needs far outweigh the capacity of governmental financing, there is an opportunity in developing public-private partnerships for water innovation -- in essence, a blue facet of the Green New Deal.

**Economic and Conservation Snapshot:** Albany Water Department and Working Woodlands Program

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The City of Albany's drinking water reservoirs are surrounded by about 5,000 acres of forest that filter surface and groundwater and improve water quality. To protect these lands, the Albany Water Board has joined The Nature Conservancy's Working Woodlands Program,

which preserves forest land and generates revenue by marketing carbon credits to a voluntary carbon market. This Program creates new revenue for Albany's Water Department.

The need for innovation is growing as new stresses on water systems emerge. These include novel pollutants (such as perfluorinated chemicals found in Newburgh's drinking water); harmful algal blooms triggered by higher than normal temperatures (a source of methane spikes); more frequent and severe droughts; and local conflicts over water supply. Added to this is the recent discovery of evidence that the Covid-19 virus has been detected in combined sewer overflows in the New York metropolitan area. While these may look like a troubling array of special issues, they are all signs of ecosystem disturbance and climate stress. The complexity and evolving nature of these challenges calls us to think beyond piecemeal responses to strengthen systemic approaches to prevent pollution and restore aquatic ecosystems.

With the fast-track economic stimulus funding programs now in play, technology companies and public-private partnerships may have an unprecedented opportunity to create jobs by embracing innovation in these areas. Alternative approaches to wastewater treatment, such as ultraviolet technology and decentralized system design, are a major leverage point for reducing conventional pollution while protecting us from emerging public health threats.

### Planning focus:

- Develop strategic analysis of opportunities to reduce greenhouse gas emissions and increase carbon sequestration through better water management, especially those with co-benefits for soil and forest health that present a dual opportunity to reduce atmospheric carbon and marketing carbon credits;
- Investigate new ways to pay for water infrastructure upgrades, efficient water management, and restoration of water environments while limiting water costs;
- Identify business and economic development strategies connected with restoration of water resources -- essentially creating a "blue" dimension of the Green New Deal.
- Identify opportunities to promote flooding resilience in conjunction with public space, affordable housing, wellness and greening cities.

### **Food, Agriculture and Open Spaces**

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At a time when farmland was being rapidly lost to increasing and serious development pressure, the 2013 Regional Sustainability Plan set the following goals:

- Increase agriculture and silviculture activities in the Region
- Improve access to sustainable agriculture and silviculture training and technologies
- Increase intra-regional consumption of food and fiber
- Reduce energy use and GHG emissions from farm and farm-related activities
- Increase open space
- Increase the economic viability of agriculture and silviculture in the region
- Protect wildlife and maintain biodiversity

These recommendations affirmed the strong commitment to open space, productive farm and forest lands, biodiversity and connectivity that have been advanced in the region by public and private organizations for generations. The economic and cultural value of open space is a stated principle of economic development through the Green Circle of the REDC's strategic plan, especially as it relates to tourism. But local and state policy are not consistently tuned to support this value. A study by the Regional Plan Association and SUNY New Paltz estimates the economic value of open space in just four mid-Hudson counties to be over \$3.5 billion, and notes that ⅔ of this land is at risk for development. Effective climate action will require maximum protection of agricultural lands from development of all kinds - including managing the impacts of large-scale renewable energy development by prioritizing other land types for new power facilities. Best practices for renewable energy siting in any agricultural context should be developed with leadership and expertise drawn from the farming community.

A highly effective regional food, farm and forestry sector has been maturing, and supports a renaissance of agriculture, agribusiness, food and beverage industries. This is built on a broad partnership including institutions such as Glynwood Center, the Culinary Institute of America, the Hudson Valley Agribusiness Development Corporation, the Hudson Valley Farm Hub, Hudson River Valley Greenway, Rondout Valley Growers' Association, NOFA-NY, Young Farmers Coalition, other growers' associations and a strong network of land trusts. Even before the pandemic struck, Hudson Valley farms were vulnerable to national economic trends, and over 90% of Hudson Valley farms face some degree of economic risk. Food and beverage industries are a cluster of focus for the Mid-Hudson Regional Economic Development Council, which has nurtured regional businesses including a wine and spirits cluster, and helped to attract national food businesses such as Amy's Kitchen to open up a major facility in Orange County. Active attention to farmland preservation will always be needed, but Hudson Valley farmers and their supportive institutions are better organized than ever for this purpose.

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**Economic development snapshot: Community Compost Company**

Community Compost Company is a "Table-to-Farm©" picks up food scraps from 250-plus residential and commercial collection service systems.

A fundamental condition for regenerative agriculture, and benefit of it, is soil health, an increasing focus for research and policy as reflected by the Soil Health Roundtable sponsored by Senator Jen Metzger and Assemblymember Donna Lupardo in early 2020.

A key component of regenerative agriculture is managing and reducing runoff that that pollutes with nutrients and may emit greenhouse gases; this dimension of agriculture is intimately connected with wastewater and stormwater, and the materials management issue of sludge. The ways to do this are well known, but can be labor-intensive in design and implementation. In portions of our region connected with the New York City Water Supply, farmers can receive free assistance with "whole farm planning" through the Watershed Agricultural Council, an innovative and effective nonprofit funded by New York City for its value in keeping the City's water supply clean. This is a unique funding mechanism arising from the needs of this major water user; there would be huge value in figuring out a viable approach to financing whole farm planning on a wider scale. Regenerative practices should not be thought of as add-on projects but as integral aspects of farm infrastructure development and business planning. Work has begun to identify ways of creating business value for farm products that are produced in climate- and soil-friendly ways - notably in textiles, where the "Fibershed" label for regeneratively produced fibers has been taken up by companies like Patagonia, North Face and the Hudson Valley based Eileen Fisher.

**Economic Development Snapshot: Faraway Farm**

In northern Westchester County, Faraway Farm has built a successful business model on a herd of 15 alpacas, the most eco-friendly livestock around as the fiber needs no chemicals to process and the animals have a low environmental impact. "Diversification is the key to our business model," says co-owner Leda Blumberg. The farm sells home-grown yarn, locally-knit creations, animals, breedings, and shiitake mushroom logs. It also has a thriving agri-tourism business, hosting weddings, foraging training, and a site for photo and film shooting. The Watershed Agricultural Council has created a whole-farm plan to manage runoff by redesigning their drainage system, and designed an award-winning composting system.

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When practiced sustainably, forestry is a naturally regenerative practice with enormous potential for carbon sequestration in the Hudson Valley. Maple syrup production is just one example of a forest-based industry that maintains forest health, replants trees and produces a popular product.

We are seeing the beginning of a shift of investment resources from fossil fuels into regenerative agriculture and forestry, along with sustainable farm infrastructure, creating opportunity for education and incentives to scale up adoption. At the same time, the agricultural community has been acutely destabilized by the effects of the covid-19 crisis on farm labor, combined with a crisis in food access, making the current season a hard time for farmers to think about innovation. Still, to support the agricultural sector's recovery, it is a good time to develop resources to support a larger scale shift to sustainable and regenerative agriculture and forestry. These could include incentives for farmers, pilot projects, an information clearinghouse, training and technical assistance, planning help and certification program. Land protection tools, such as customized conservation easements, may also be useful.

Planning focus:

- How to scale up regenerative agriculture practices and develop strategies to improve their economic viability and returns;
- Infrastructure improvements for energy efficiency and appropriately sited renewable energy throughout the agribusiness sector, and integrating these with overall farm business development;
- Specific linkages with water and land use;  
Resolving land use and siting issues in connection with agricultural renewable energy. clients. Their companion business, Hudson Soil Company, sells the finished compost to landscapers, farmers, garden centers and others.

Agriculture is an energy-intensive field that still relies substantially on fossil fuels for farm operations and transportation of products. To help reduce the greenhouse gas emissions of the sector, NYSERDA has a program to promote energy-efficiency for farms through assessments and in-depth technical recommendations. That program has reached 980 farms to date, with 16% implementing at least one recommendation and another 30% planning to. Public-private financing resources such as Energize-NY are also available to help agribusiness improve efficiency and shift to renewables. But new, higher-leverage approaches are needed to scale up on-farm renewable energy applications.

To capture and sequester greenhouse gases, regenerative agriculture is being increasingly explored by farmers and policymakers. There is fast growing recognition of the opportunity for increased linkage of farming to strategies for

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climate mitigation as well as adaptation. The “natural climate solutions” discussed earlier are fundamentally connected to farmlands, forests and other open spaces. While some regenerative practices are labor-intensive and require investment, others are low-risk and straightforward to adopt. For example, spreading carbonate rock dust on farmlands provides fertilizing benefits while greatly improving the ability of soils to sequester carbon. Glynwood, the Hudson Valley Farm Hub and Scenic Hudson and American Farmland Trust are among the leaders in research and demonstration projects to develop this potential. These include an important pilot carbon sequestration project involving up to ten farms in five counties, to develop methods of quantifying the outcomes of regenerative practices to allow for the design of financial incentive

### **Materials Management and Zero Waste Strategies**

“Stuff” in all its forms is a contributor to climate change and environmental pollution in well known ways: through transport of waste and landfill emissions, and through the embodied energy of producing the goods and commodities we use, including our food. The Mid-Hudson Regional Sustainability Plan set the goal “to shift from the status quo, where much of the material used in the Region is shipped to other parts of NYS or the US for disposal, to a future where the Region is self-sufficient in materials management, ultimately achieving a ‘zero waste’ outcome.” The framework for achieving this shift was based on “developing regional solutions to maximize the value of materials and extend their useful lifecycle,” by:

- Reducing waste generation;
- Decreasing the impact of materials transportation for disposal/recovery;
- Increasing reuse, recycling, composting and
- Enhancing local market creation for improved materials recovery outcomes.

Toward these goals, the Plan set out strategies to:

- Expand organics recycling
- Increase material reuse
- Promote product stewardship and Environmentally Preferable Purchasing
- Pilot new technologies
- Implement transportation improvements
- Facilitate inter county cooperation
- Change policy to improve local management capacity.

All these efforts are underway to some extent. To reduce waste generation, prevent pollution and increase reuse, repair, recycling and composting, New York already endorses the “Beyond Waste” framework. The Mid-Hudson Valley’s county recycling and materials management practitioners work closely together. They have explored regional strategies for reducing the carbon footprint of waste and

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recycling through source reduction to reduce truck transport and stresses on the landfill system, as well as new options for food waste composting and diversion of edible food through education and online matching tools. Recycling rates have plateaued and in some cases fallen. Compared to the potential, however, there has been limited effort to enhance local market creation for improved materials recovery outcomes. These outcomes require some combination of new economic models, policy and social innovation.

**Economic Development Snapshot: The Repair and Reuse Movement**

One illustration of the potential for social innovation is the fast growing Repair Cafe movement. A Dutch-inspired community event in which people help each other to fix broken belongings in a supportive social environment, Repair Cafes have been organized in dozens of Hudson Valley communities and are growing virally. They are part of an international repair movement which not only promotes product stewardship; it has begun to reach back to consumer product companies to advocate for “design for repairability”. County waste management and resource recovery agencies have organized or strongly supported Repair Cafes in 10 Hudson Valley & Catskill counties--from Westchester to Albany. The public enthusiasm for reuse is illustrated also by the town of Warwick’s “Too Good to Toss” event which brings together dozens of volunteers to collect usable giveaways for the community to pick up for free. This hopeful trend is the subject of a new book, Repair Revolution (New World Library, October 2020), by Hudson Valley “zero waste” leaders John Wackman and Elizabeth Knight.

The Mid-Hudson Regional Sustainability Plan addressed mainly the materials management issues connected with consumer and industrial waste reduction through the promotion of source reduction, reuse and recycling. Materials selection at the front end of production processes, and design for recycling and reuse, were not addressed. This represents a major opportunity to shift from a linear to a circular economy, a concept that has matured in industrial design in the last decade. A major opportunity for zero waste thinking is in the built environment to address embodied carbon in building materials by means of three strategies:

- Materials selection - such as the use of mass timber rather than steel for structural systems, and the use of low-embodied-carbon insulation;
- Materials improvement - such as replacing Portland cement with fly ash or low-embodied-carbon ingredients in concrete;
- Creative design to match materials use to exact need for structure and function.

A key strategy for realizing these opportunities is to educate contractors, building code officials and architects, and to create strong incentives for waste-reducing choices in construction.

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These new approaches to building materials bring the potential for growing industries in our region such as low-emissions cement-making, cool roofing materials and methods, and other low-emissions building materials. With a newly ambitious state building code that allows for local “stretch” codes, ambitious goals for lower emissions products and materials may drive markets for new products and services.

### **Economic Development Snapshot: NY Heartwoods**

NY Heartwoods is a growing company that reclaims damaged wood from urban forests and uses it to produce furniture for homes and offices. Turning waste into material for high-value products is the basis of a scalable reclamation and craft industries in every community.

In addition, certain materials in consumer products and commercial equipment were not addressed in the 2013 Plan – including the most potent greenhouse gases, the refrigerants found in cooling and refrigeration equipment. Some widely used refrigerants have a Global Warming Potential (GWP) of more than 2000 times carbon dioxide. While national and international efforts, working with the refrigeration industry, are making progress in phasing out harmful refrigerants in new equipment, there are huge opportunities to reduce refrigerant emissions in existing equipment by reducing leaks and by capturing refrigerants when equipment reaches end of life. Unfortunately, there are disincentives in the form of fees and expenses associated with many aspects of proper recycling and with capturing and reclaiming the vast amounts of refrigerants used in large building air conditioning systems and supermarket refrigeration equipment when these are retired or repaired.

New York is currently taking an important step toward phasing out high GWP refrigerants by importing aspects of the federal SNAP rules into state policy. But state and local laws that prohibit venting and encourage capture of used refrigerants are limited by their reliance on EPA regulations that fall short by focusing only on ozone depleting refrigerants. New York should update its refrigerant laws comprehensively. Counties could lead the way by adopting local laws based on the need to prevent emissions of greenhouse gases.

While encouraging best practices at the county level, the region could consider

- an Extended Producer Responsibility program to tackle the refrigerant management challenges of recycling appliances, which could be designed at the county level and serve as a model for the state

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- piloting a program that pays incentives to heating, ventilation, air conditioning, and refrigeration (HVACR) contractors for capturing refrigerants during replacement or repair
- designing a job training program around refrigerant management for the HVACR field.

Refrigerant management is one of the most complex greenhouse gas reduction challenges and requires well designed regulatory programs with the backing of state and federal authority. Still, it provides an opportunity to capture lots of greenhouse gases at a relatively low cost. The region can provide a valuable test bed for new policies and programs.

The Hudson Valley's materials management sector continues to innovate, with recent gatherings to address getting beyond plastic; Ulster County is going farther by developing a zero waste strategy. Now is the time to be sure that the emerging issues, such as building materials and refrigerant management, are integrated into this vision, and that its full economic development potential is captured.

Planning focus:

- Supply chain and regional production capacity for low-GWP building materials;
- Increase opportunities for reuse and repair, and link these activities to a more comprehensive "circular economy" by developing new business opportunities and new practices for existing businesses;
- County or regional programs to close serious gaps in the management of refrigerants;
- Strategies for scaling up organics composting and food waste reduction by building institutional capacity and expanding current programs.

**Prosperity, resilience, justice, and education– cross-cutting themes**

Climate change is a source of economic and human stress as well as an environmental concern. We are living with greater risks from storms, floods, heat waves, drought, and the impacts of changing conditions such as increases in vector-borne diseases. Climate change hits all communities with extreme weather and other stresses. But these stresses have even greater effects on lower-income and disenfranchised communities. A Regional Climate Action Plan can uncover ways that climate resilience strategies can protect public health; it can also explore ways that a stronger focus on wellness and quality of life can engage new health- and community-oriented networks in the response to the four crises. The plan can also explore the opportunities for the regional workforce and a just transition.

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**Spotlight on Climate Justice: Flooding**

Throughout our region, extreme weather events have brought catastrophe to riverfront communities and reminded us that climate-induced storms and floods do the most damage to the most vulnerable. There has already been significant investment in shoreline and floodplain planning by the state, local governments, and nonprofits. Some communities have been moving beyond emergency preparation to create inter-agency partnerships that can tie climate resilience with community revitalization. One example is Poughkeepsie's Northside Collaborative (NSC), involving dozens of organizations, the City and County. Hurricanes and floods have caused major physical damage and social trauma in this part of the city. NSC has spearheaded a master plan for daylighting the Fall-Kill Creek, designing the surrounding landscape for flood resistance and diverse public benefits. The collaborative is also engaging the whole community in hands-on projects and exploration of deeper issues such as gentrification, as a strategy for resilience and equity.

We are now seeing just how hard "black swan" events hit workers, communities, social services and small business, impacting food production, supply chains, and essential services. Over 2,000,000 New Yorkers have filed for unemployment benefits since the start of the COVID health crises. This amplifies existing stresses and inequities. Recent research shows that there are much higher rates of death from coronavirus in areas with higher air pollution, as well as in communities of color. These findings make it clear that economic recovery, resilience and social justice are intimately connected. Planning and organizing on all these fronts must tackle the underlying social and economic conditions that influence public health, economic success and the ability to respond in a crisis. Energy, water, materials management, transportation, land use, and agriculture -- all aspects of this planning process have justice dimensions. In this aspect of our planning, two elements will be critical:

- Identifying an agenda that is truly actionable and bringing together an effective, inclusive coalition to implement it; and
- Making sure that the justice agenda is framed by the people who are most impacted.

A model to consider is New York City's annual Climate Justice Agenda, which in 2020 focuses on strategies to (1) reduce harmful greenhouse gases and localized emissions; (2) advance a just transition toward an inclusive, regenerative economy; and (3) cultivate healthy and resilient communities.

Even before the pandemic, resilience had become a mainstream concern, identified as a key theme for regional strategies by the US Economic Development Administration, as illustrated by the Mid-Hudson's Comprehensive Economic

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Development Strategy (CEDS) with its strong emphasis on resilience through connectivity. This provides a foundation for linking the Regional Climate Action Plan with economic development, on the one hand, and with community benefits and a more comprehensive understanding of environmental justice.

The CLCPA explicitly links climate protection with economic opportunity, as the 2013 Regional Sustainability Plan did. But while the earlier plan simply called for planning to make sure that “all growth is smart growth,” it did not make specific economic development recommendations for this purpose. Today, it is clear that more specific economic strategies are needed, not just to support clean energy industries, but to promote equity, resilience and innovation. Economic development decisions can contribute to all these goals by:

- Attracting and expanding businesses that are engaged in the full spectrum of climate goals laid out in materials management, water efficiency, regenerative agriculture, and transportation, just as we have already been investing in the energy sector;
- Advancing industry cluster strategies for economic development that can strengthen the regional supply chain and reduce dependency on imports, especially in critical areas for community well being such as medical and pharmaceutical products, energy production and storage, sustainable water and materials management, as a natural outgrowth of the region’s commitment to life sciences, agriculture, food and beverages as industries;
- Developing systematic import replacement strategies can strengthen the region’s economy by retaining assets and circulating wealth while reducing product shipping distance. For example, the MHRSP notes that sourcing just 3% more of our energy from within the region would retain an additional \$129M in the Mid-Hudson economy;
- Recognizing the economic and environmental significance of “ecosystem services,” the ways that natural systems can avert risks and reduce costs, and using this as the basis for an interdisciplinary effort to create new ways of financing and incentivizing environmental benefits such as tax incentives for regenerative practices;
- Investing in work force development across the board to mobilize talent and build skills;
- Placemaking strategies that integrate sustainable land use, housing, enterprise, energy, mobility, public spaces, food production and materials choices. Placemaking can make mixed use neighborhoods more resilient while preserving and expanding affordable housing and small business opportunities, encouraging transit-oriented development and creative urban design.

The region has many business incubators and investor groups - including some, like the Hudson Valley Venture Hub, that are specifically devoted to building a stronger

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upstate entrepreneurial ecosystem. Resources and models for multiple bottom line development can also come from private businesses and organizations such as the Westchester Business Council's Green Business Partnership and the national B Lab. Participating companies show the way for the Hudson Valley's economy to advance climate goals while innovating economically. But until now, there has not been active collaboration between the economic development and environmental communities to chart a course for economic development that encourages these best practices. We will capture this opportunity by making every effort to engage leading businesses and economic development organizations as active stakeholders.

The region has a highly-skilled and well-trained workforce. However, the shift to a low carbon economy will result in a shift in the workforce as well. There will be new opportunities, some jobs will have changes in required skills or responsibilities, some jobs will not change and yet others will be eliminated. Any plan that seeks to implement climate action must account for these changes.

Workforce and economic development strategies can be especially useful in improving climate resilience if they are addressed in a coordinated fashion. For example, training in new skills can include apprenticeships and internships in communities committed to rapid climate action. If training and job creation, work force housing, transit-oriented development, local food production, energy security and resilient mixed-use neighborhoods are considered as a set of connected strategies rather than separately, they will do the most good to advance climate justice, local resilience and shared prosperity.

Education is proving to be a major strategy for scaling up climate action and sustainable development in the Hudson Valley by bringing together educators as leaders. This encompasses climate and environmental literacy, and education regarding the many economic and creative opportunities that are connected with sustainable development. Two annual Drawdown Learn conferences, for educators and advocates throughout the region, were held at the Omega Institute in 2018 and 2019 and live-streamed globally. These events gave rise to a number of educational initiatives with region-wide impact including discussion groups hosted by the New York Library Association, a school-based Drawdown Eco-Challenge competition, and the creation of a regional Hudson Valley Climate Solutions Network with a speakers bureau. Directly inspired by these gatherings, school superintendents have begun to hold in-service professional trainings on climate change education with their peers.

The Mid-Hudson Valley has abundant educational assets, from private and public K-12 schools to a high quality community college system and numerous centers for adult education and personal development. Several dozen institutions of higher education are already organized in an Environmental Consortium, a network that

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could serve as the institutional platform for real world collaboration for research and community project-based learning. As educational institutions consider their own options for rapid climate action, there is enormous potential to set ambitious goals in both physical operations and curricula. While educational activity continues to bubble up around the region, a more coordinated regional effort could leverage resources and build momentum much better.

## **Bringing it all Together with a Regional Climate Action Plan**

Reviewing all these opportunities, and how specific they are to our region, we conclude that it is timely and valuable to go forward with the creation of a new Regional Climate Action Plan. We have begun to do so, building on the conceptual foundations of the Mid-Hudson Regional Sustainability Plan while incorporating new knowledge about climate solutions and current progress. We will align with the implementation efforts connected with the CLCPA, and the “Pathways to Deep Decarbonization” analysis that was conducted in 2020 to guide the state’s work. At the same time, we will look carefully at the opportunities that are specific to our region, and consider how to translate them into action as quickly and effectively as possible.

This work is being organized primarily along the subject areas of the 2013 Mid-Hudson Regional Sustainability Plan, to make use of the conceptual foundation that it established. We have assembled networks of experts and advocates in Energy, Materials Management, Water, Transportation and Land Use, Agriculture and Open Space. We are paying increasing attention to the linkages among areas. In recognition of the cross-cutting issues that need to be addressed within all those topics, we have also assembled experts and advocates on economic development, climate justice, resilience and education; we are pushing hard for actionable recommendations in these areas. Each working group has been asked to review opportunities for greenhouse gas reduction and sequestration in its domain, focusing especially on ways that regional actions can help achieve year by year goals of at least 7% reduction, as recommended by the IPCC.

The product of each group will be twofold: (1) a strategic framework for action to achieve deep decarbonization, economic revitalization and social justice in each sector, and (2) a detailed analysis of potential programs and projects, with partners for implementation identified, progress metrics established and estimated budgets developed. We are making every effort

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to get this done in the year 2020. Later in the year, the Coalition will review these strategic frameworks and action items, establish priorities for immediate and longer term action, and coordinate the development of funding resources to implement the activities that come out of the process.

Our focus is on opportunities for action that are at least substantially within the control of the collaborating organizations and other stakeholders they can involve. Because the Coalition members include public officials and staffs, major NGO and private sector representatives across the interest areas we've identified, the partnership's reach is already broad. We will use the planning process to develop more systematic ways of leveraging our networks, and **a transparent approach to allocating any funding that may be raised through our work together.** We believe that our work across the sectors can come together in scalable programs that, together, will create vibrant sustainable communities in our region.

The partnerships needed to accomplish this work are complex. The 2013 planning process taught us that it is no easy task to bring established local and county governments, NGOs and associations into a formal partnership to implement an ongoing program. This time around, as part of our planning process, we will review a broad range of options for effective, **accountable** coordination of the actions we recommend -- ranging from a formal, membership-based coalition to a more fluid, self-organizing network model.

Serious progress in drawing down climate pollution will require ambition and conscious attention to scale. Two big ideas from the 2013 Plan could be especially helpful to organize this work -- suggesting that the Hudson Valley could:

- Be an epicenter for education for sustainability, a place people come to for professional development and inspiration. We have the institutions, motivated educators, and a wealth of curricula. What we need is to help them focus on the wider world with more applied research and project-based learning that can attract skilled professionals and non-traditional learners to work together helping to address the climate challenge.
- Be a test bed for new technology and policy approaches. From low-carbon building materials to climate-friendlier wastewater treatment technologies to materials to replace plastics, there is a major and timely opportunity to remove barriers for demonstrating replicable new approaches (e.g. educating and engaging health departments on innovative water treatment technologies). Removing barriers to innovation can help technology companies' work forces to stabilize while innovating in their products and

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services. Making these opportunities visible will help grow both businesses and political support.

These two big ideas hold the potential to scale up, diversify and strengthen climate action by engaging institutional partners with their own resources and the capacity for ongoing work. These strategies can also contribute to a stronger connection between environmental and economic initiatives including research, service learning, educational tourism, continuing and professional education and training through the region's more than 20 colleges and universities. This is an example of the institutional partnerships that can be drawn in and leveraged through a regional planning process.

New York State can play an important role in supporting regional initiatives like ours-- for example, by:

- Conducting regular greenhouse gas emissions inventories at a regional or county scale, to track progress in a way that can support the assessment of regional mitigation strategies.
- Establishing dedicated funding streams for periodic, action-oriented planning and implementation of priority projects by the regions, at least every five to ten years, including climate mitigation and adaptation, and associated work force and economic development planning.
- Strengthening the Climate Smart and Clean Energy Communities programs, redesigning these successful efforts to go beyond promoting initial, high-impact actions and help communities go all the way to deep decarbonization.
- Establishing new funding streams for wide-reaching programs to encourage consumer, household and community behavior change as the only way to dramatically scale up the adoption of sustainable practices. These have already been widely supportive and effective in the adoption of energy efficiency and renewable energy, but not yet in the full range of needed activities such as scaling up green infrastructure, food waste composting, and proper refrigerant management. These are some of the many activities that are essential for meeting our GHG reduction goals, but are not being scaled up by current funding levels and programs that focus mainly on government or business operations.
- Promoting greater coordination between economic and environmental goals by charging the REDCs with integrating environmental sustainability and climate action thoroughly into their next generation strategic plans.

We are sharing these views during a time of uncertain reopening of workplaces and public spaces, after a statewide pause in non-essential public activity. Nobody is untouched by the loss, trauma and uncertainty of this situation, which has been described as "the new swirled order." Because of this disruption, and the need to

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re-imagine so many aspects of our lives and work, there have been breakthrough responses to the crisis that may open up new possibilities for addressing the four crises in a more systemic way:

- Remote work is more common than ever, and workplaces have developed this capacity that never expected to. If this trend can be sustained wherever possible, the footprint of transportation will go down and working people will gain control over their time.
- As downtowns figure out ways to reopen safely, some are reclaiming streets and parking lots from cars to create more expansive public gathering space for outdoor dining and socializing. This is an opportunity to reclaim streetscapes that were over-designed for traffic generations ago, to expand social and commercial uses while keeping people safe.
- During this period, renewables have been the only portion of the energy economy to show growth. Socially and environmentally screened investments have been less damaged by the economic downturn than the market as a whole. This creates a moment of opportunity for private investors and public funds alike to seek opportunities to divest from fossil fuel companies and invest proactively in businesses with a social or environmental mission.

In response to the four crises, we have seen the logistical capacity of government and industry, along with the creativity of working people and the general public. This same level of organization can be redirected over time to restore the economy by addressing the interconnected crises of climate, environment, public health and justice.

The Hudson Valley is a globally connected place, and a strategic corridor for New York's economy and environment. With strong leadership in both the environmental and economic arenas, the region is in a good position to create a model action plan and alliance for implementation that can address the four crises in a systemic way.

What we have outlined is an ambitious vision. But many aspects of it are already being pursued. We hope this experiment will provide a model that can be adapted in other regions, and contribute a great deal to state policy and community well-being.

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