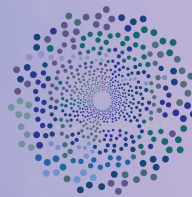


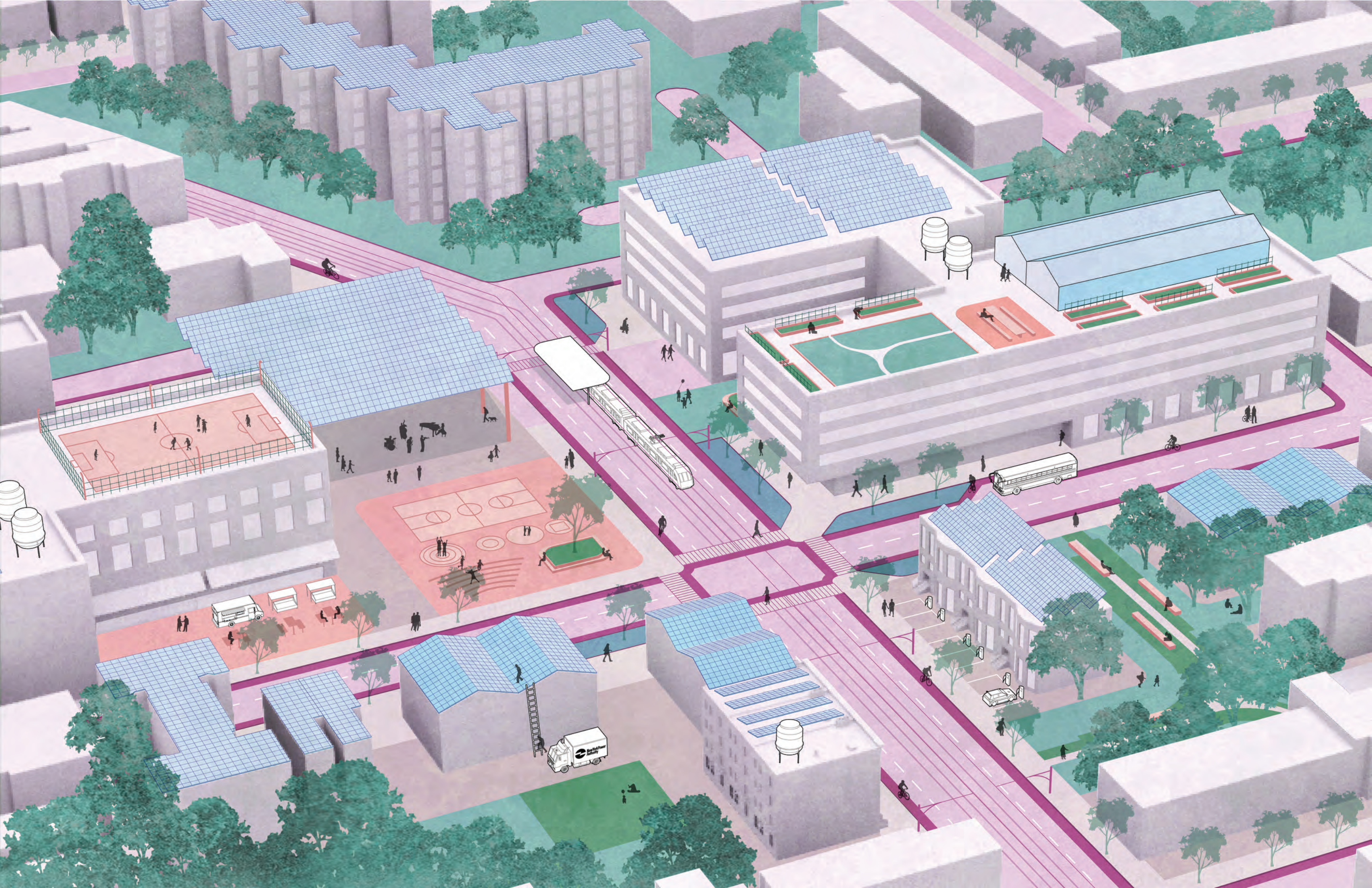
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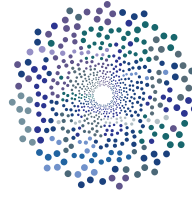
A vision for New York Power Authority in pursuit of climate justice

April 22, 2021



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A NEW ERA OF PUBLIC POWER

April 22, 2021

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The **Democracy Collaborative** is a research and development lab for the democratic economy—one that equitably shares prosperity and power; repairs legacies of oppression, bias and harm; and is grounded in climate justice. <https://democracycollaborative.org>

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EXECUTIVE SUMMARY

“

The NYPA energy transition investments proposed in this report could create somewhere between 28,410 and 51,133 total direct and indirect jobs and between \$48.6 billion and \$93.5 billion of additional economic activity by 2030.

”

In 2019, New York State lawmakers passed the most ambitious state-level climate legislation in the country—and among the most ambitious in the world. The Climate Leadership and Community Protection Act (CLCPA) mandates that New York’s electricity sector become greenhouse gas emission free by 2040 and achieve an 85% reduction in all emissions by 2050.

Crucially, it also establishes that a minimum 35–40% of the investment-led benefits to decarbonizing the state’s energy system go directly towards disadvantaged communities: communities that have borne the social, environmental, and public health costs of the fossil fuel energy system, the climate crisis, and economic insecurity. This report proposes that the New York Power Authority (NYPA)—the largest state-owned energy provider in the United States—play a key role in implementing this ambitious, and equitable, climate plan.

We show that NYPA is uniquely positioned to carry out CLCPA mandates in alignment with the rapid and just decarbonization goals of the law. NYPA’s public ownership structure also opens up new and more equitable financing opportunities for the entire state. Furthermore, because it is a publicly owned energy provider, its activities can be democratically accountable to New Yorkers, particularly those historically burdened by the impacts of energy infrastructure and climate crisis.

As both the owners and customers of NYPA, New Yorkers have the opportunity to demand, build, and benefit from a more democratic and equitable energy system. **The NYPA energy transition investments proposed in this report could create somewhere between 28,410 and 51,133 total direct and indirect jobs and between \$48.6 billion and \$93.5 billion of additional economic activity by 2030.**

WHY NYPA CAN LEAD ON EQUITABLE DECARBONIZATION:

- **Fewer profit incentives:** As a nonprofit entity, NYPA has incentives that are not driven by the focus on quarterly earnings statements and shareholder value that dictates the behavior of private utilities and independent power producers (IPPs). This means NYPA can consider additional sources of value and benefits in designing its goals, strategies, and structure. It also enables NYPA to be a supportive partner in reducing energy consumption through efficiency gains—something largely antithetical to the private utility business model—and creating transparent, mutually

beneficial relationships with community partners. Any revenues generated by NYPA can be reinvested into the grid, lowering customer bills, or in other economic development projects throughout the state that create jobs and wealth in disadvantaged communities.

- **Coordination with the state:** Instead of attempting to induce better behavior from private utilities and producers through complex and costly incentives and regulations, the state can leverage its own power via NYPA to quickly and effectively implement the CLCPA. There is also the possibility to create efficient partnerships with other governmental agencies, especially NYSERDA (New York State Energy Research and Development Authority) and the Office of Renewable Energy Siting (ORES).
- **Democratizing energy:** Because it is a public entity owned by and accountable to New Yorkers, there are more opportunities to mold NYPA into a more democratic institution than a private company would allow. Legally, NYPA is already held to statewide standards of open meeting laws, freedom of information, prevailing wage laws, and more. Robust democratic reforms, including heightened accountability, transparency, and stakeholder participation standards, would help ensure that the CLCPA's 40% benefits standard is realized in New York's disadvantaged communities.
- **Cheap and equitable financing:** NYPA's standing as a public institution means that it has access to the municipal bond market, lowering the cost of capital and the price of electricity compared to private companies. This access to cheap capital, combined with the lack of a profit-maximization incentive and a mandate to prioritize disadvantaged communities, should allow NYPA to increase its investment in a host of decarbonizing strategies without significantly raising costs for communities. These features also distinguish NYPA from NYSERDA, which has provided necessary financial resources, but is funded in large part via a line item on consumers' utility bills.

For NYPA to realize its full potential to achieve the CLCPA timeline and equity goals, this report proposes that New York should:

- **Ban ESCOs and make NYPA a public option energy provider:** Right now, NYPA is limited in terms of who they can provide energy to in the state. NYPA should be empowered to provide energy to end-use consumers in the state as well as towns with Community Choice Aggregation (CCAs). The state should also ban the use of for-profit Energy Service

Companies (ESCOs), transitioning those customers to NYPA as their energy provider. Eliminating for-profit ESCOs would both eliminate predatory operators in the state and replace them with publicly owned power production that has clear mandates for renewable energy. Additionally, NYPA could act as an alternative energy provider, with progressive rate structures that support low-income households. For a truly just and competitive energy market in the state, New Yorkers deserve a public option for electricity.

- **Expand NYPA's development of renewable energy and phase out fossil fuels:** The state should establish mandates for NYPA to fully decarbonize its existing energy infrastructure, and decommission its fossil fuel plants by 2025. NYPA should be given the "right of first refusal" for all renewable projects over 25 MW to give the public more agency in the renewables scale-up process. This would ensure that utility-scale projects in the state are deployed with high levels of community participation, and strong labor, environmental, and community benefit standards. It would guarantee that benefits of the new infrastructure reach disinvested communities, creating between 75,750 and 34,700 total jobs and between \$15.0 billion and \$59.8 billion in additional economic activity between now and 2030. Moreover, by investing in distributed renewable energy, NYPA will help build up climate resiliency in the state, build close ties with residents, and lower bills for users. NYPA's programs, processes, and funding should explicitly support and streamline environmental justice community-led clean energy projects. This sort of investment will be critical to meeting, and hopefully surpassing, the state simply cannot meet the minimum 35–40% benefit standard of the CLCPA without such a provision.
- **Expand efficiency and electrification efforts:** NYPA has already positioned itself as a major player in efficiency and electrification efforts. NYPA should accelerate its efficiency programming, with a particular focus on supporting low-income housing to alleviate energy poverty. This could create 16,425 sustained jobs between now and 2030, and an economic impact of \$25.3 billion in additional economic activity. Historically, NYPA has used bulk purchasing power to lower energy costs from appliances in

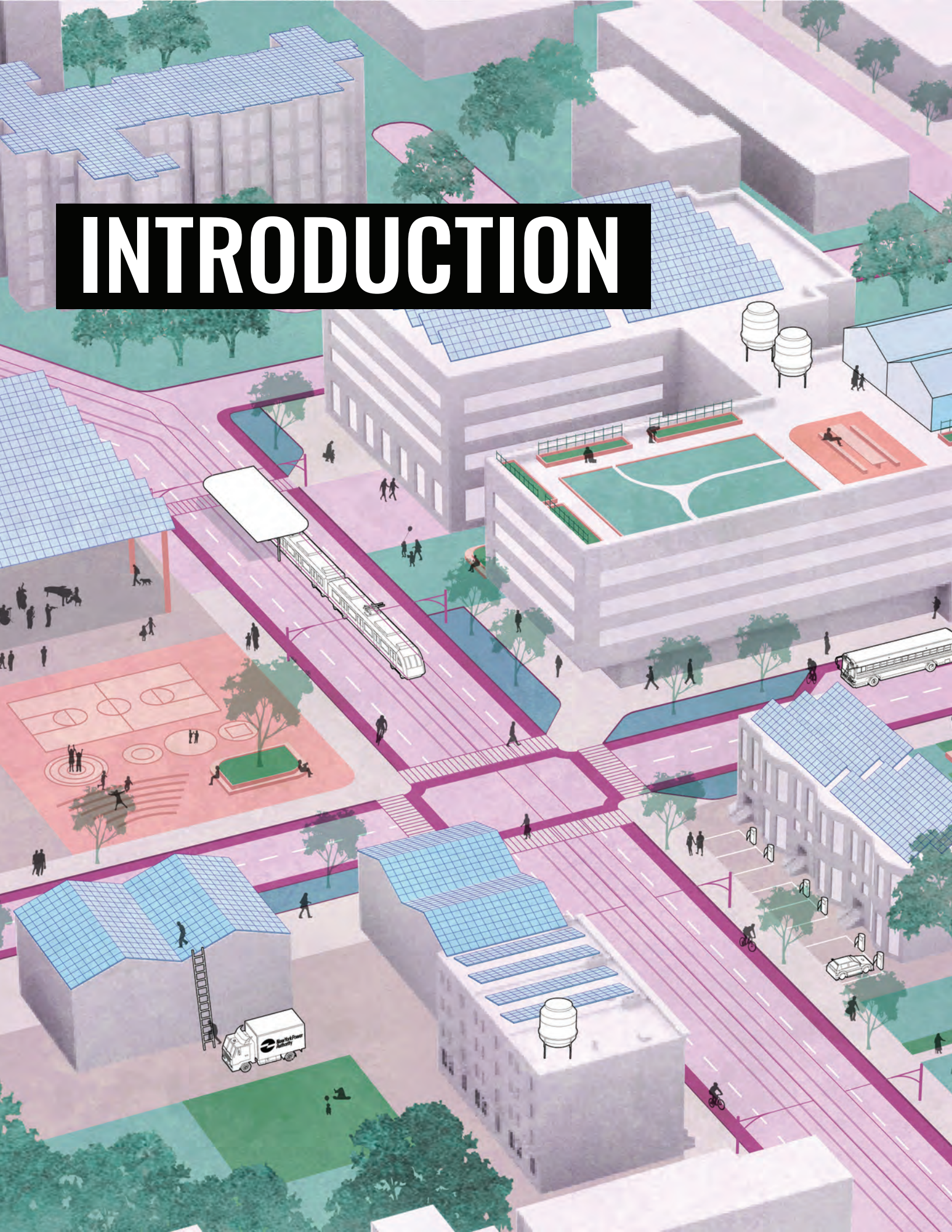
1. L. F. Kinney, G. Lewis, R. G. Pratt, and J. Miller, *New York Power Authority/New York City Housing Authority refrigerator replacement program, first program year evaluation. Final report*, No. NYSERDA-97-12, New York State Energy Research and Development Authority, Albany, New York, 1997.

low-income housing—a strategy that could be used again to lower efficiency and electrification costs.¹ NYPA should also expand its transportation electrification programming for a more comprehensive transition to electrified transport infrastructure.

- **Invest in equitable transmission and storage infrastructure:** Because NYPA is a major transmission actor, its continued investment in public transmission infrastructure will be key to connecting upstate renewables to downstate residents, while also curtailing unnecessary transmission buildouts. NYPA should also maintain its existing energy storage infrastructure while promoting just sourcing of new grid-scale battery projects.
- **Increase democracy in NYPA:** Its expanded role in the energy ecosystem of New York also comes with significant responsibility. The enterprise should be held to high standards of transparency, accountability, equity, and participation. Any changes at NYPA should come with structural reforms that reflect New York’s commitment to disadvantaged communities and workers. NYPA should shift its utility board structure towards a multi-stakeholder model, including representation from community and labor groups. Specifically, it ought to create an Office of Community Engagement, co-hosted with NYSERDA, to coordinate transparency, community input, and accountability. To reflect differing regional needs, Regional Hubs could operate as conveners of job opportunities, community review, and more. Structural reforms not only would reflect New York’s commitment to environmental justice communities and workers, but would strengthen NYPA by building grassroots support.
- **Set high labor standards for green jobs in New York:** The transition towards a renewable energy economy will take a massive commitment and has the potential to create a huge number of jobs in New York. Expanding NYPA’s role in that transition could create new baselines for the renewable energy sector—where salaries need to be raised, and avenues to unionization encouraged, to appeal to workers with unionized jobs in the fossil fuel sector. It can do so by requiring high-level labor standards and unionization for projects, lifting up small, women-owned, and minority-owned businesses; and accelerating the cooperative and social enterprise economy in the state. By being intentional about project development, NYPA can be an anchor for positive forms of economic development in disadvantaged and environmental justice communities via workforce training, pathways to unionized employment, and clear community benefits and project labor agreements.

Ultimately, by prioritizing equity and environmental justice, NYPA will re-create a New York that is not only more livable, but also more sustainable looking forward into the future. NYPA plays a monumental role in simultaneously mitigating and adapting to the climate crisis in New York State, while serving as a model for public power authorities in other states that might also follow NYPA’s bold example.

INTRODUCTION



INTRODUCTION

In the midst of the climate crisis and federal rollbacks to environmental policies, in 2019 the people of New York passed the Climate Leadership and Community Protection Act (CLCPA). The CLCPA calls for massive public investments in renewable energy, energy efficiency, and electrification that will set New York on a path toward 100% clean electricity by 2040 and an 80% reduction of total greenhouse gas emissions by 2050. Most importantly, this landmark piece of climate legislation requires 35–40% of the benefits of investments accrue with “disadvantaged communities”—the frontline climate and environmental justice communities that bear the brunt of pollution, disinvestment, and other health and quality of life disparities produced by the fossil fuel industry, as well as communities with high concentrations of low- and moderate-income households. As New York begins to implement the CLCPA, it is becoming clear that private utilities and energy markets alone will not move with the necessary speed or intention toward disadvantaged communities to meet the law’s targets. But New York is not destined to fall short of these critical goals.

New York has an important institution at its disposal that could play a critical role in developing an energy system organized around climate and environmental justice: the New York Power Authority (NYPA). As the largest state-owned energy provider in the US, NYPA is uniquely positioned to carry out CLCPA mandates in alignment with the rapid and just decarbonization goals of the law. NYPA’s ownership structure also opens up new and more equitable financing opportunities for the entire state. Furthermore, because it is a publicly owned energy provider, its activities can be democratically accountable to New Yorkers, particularly those historically burdened by the impacts of energy infrastructure and climate crisis. As both the owners and customers of NYPA, New Yorkers have the opportunity to demand, build, and benefit from a more democratic and equitable energy system. Additionally, an expanded NYPA would deliver thousands of high-wage, dignified jobs to New Yorkers.

By aligning the goals of the CLCPA and NYPA, New York can:

- **Become a major developer in renewable power:** With the right of first refusal over all renewables projects over 25 MW, NYPA could lead the low-cost and publicly owned renewable energy infrastructure buildout in New York. It could also support the development

of community-owned and -distributed renewables, working with community partners to build wealth, resilience, and self-determination throughout the state.

- **Expedite investments in electrification, energy efficiency, and grid infrastructure:** NYPA can improve energy efficiency as it invests in housing retrofits, vehicle and appliance electrification, and innovative storage and transmission solutions to optimize systemwide resiliency, with the majority of investment going to households and communities experiencing energy poverty.
- **Expand NYPA’s customer base and democratize its governance:** Given the failure of for-profit Energy Service Companies (ESCOs) to provide affordable and renewable energy, they should be banned and their customers transitioned to NYPA power.² The state should transform NYPA from its current role as an energy provider to the government to an institution that provides a public option to all New Yorkers with low-cost, clean energy. To do this well, NYPA should further democratize its operations so that investments reflect the demands of New Yorkers, particularly the disadvantaged communities specified in the CLCPA.

To develop this vision for a more just, ambitious NYPA, this report begins by describing the system and operations of NYPA today. Then it describes how NYPA can lead implementation of the CLCPA by (1) developing renewable energy, (2) accelerating efficiency, (3) electrifying transportation, (4) democratizing the energy system, (5) increasing accessible financing, and (6) creating jobs and economic development in the region.

2. US Department of Health and Human Services, “NY Regulators Call to End ESCOs,” accessed March 31, 2021, <https://liheapch.acf.hhs.gov/news/dec16/ESCO.htm>; See also, the archive of complaints against ESCOs at: <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=19-00950&submit=Search>

BACKGROUND

1. How the Energy System Works in New York

Prior to the 1990s, the electricity sector in New York had two primary actors: utility companies and the Public Service Commission (PSC) (its regulator). Most utility companies were privately owned and generated electricity in their own plants, sold that electricity to consumers, and delivered that electricity through their own transmission and distribution grids. They operated as monopolies in the electricity sector, and the PSC regulated each utility accordingly. Publicly owned and cooperative utilities operated in much the same way, with one key exception: they regulated their own operations.

In 1996, private utility companies were required to sell off their electricity generation facilities within a year, under the auspices of creating a more competitive, market-based exchange for electricity service in New York. To this end, the state created the New York Independent System Operator (NYISO) to act as a clearinghouse for these new wholesale electricity transactions, matching power producers of electricity with buyers from across the grid. Rather than private utilities owning and operating every element of New York's energy system, NYISO facilitated breaking up the power-generating facilities from the utility companies responsible for providing electricity to consumers throughout the state. New independent power producers (IPPs)—public or private companies that own generating capacity (e.g., gas, nuclear, wind) and sell energy to energy providers—entered the energy system and now dominate the market.

New York also liberalized the retail side of the energy system via customer choice and opened up the market to Energy Service Companies (ESCOs). Unlike the prior system, in which New Yorkers received their energy from one monopoly provider, ESCOs buy electricity from power producers and compete for customers. In 2016, New York also passed a law enabling Community Choice Aggregation (CCAs) so municipalities or towns can act as a supplier for their community.³ Customers without a CCA and who do not choose an ESCO get their energy from the default supplier, coordinated and bought by their distribution utility.

3. NYSERDA, "Community Choice Aggregation," accessed March 31, 2021, <https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Communities/How-It-Works/Toolkits/Community-Choice-Aggregation>

The utility companies, now relegated to distribution-only utilities, deliver that energy to customers' homes and businesses (see Figure 2, page 18). These utilities maintain monopolies over the poles and wires in the local distribution system. In places served by publicly owned utilities, they can still own the power and distribute it to customers.

Three state entities regulate and coordinate the electricity sector: the **New York Public Service Commission (PSC)**,⁴ the **New York Independent System Operator (NYISO)**, and the **New York State Energy Research and Development Authority (NYSERDA)**.

- **PSC** regulates power producers, ESCOs, and distribution utility companies. It sets maximum prices for electricity, controls permitting, and enforces safety, reliability, and environmental standards. It does not regulate publicly owned power producers or distributors in the state.
- **NYISO** is a nonprofit, nongovernmental company that manages the wholesale electricity marketplace.
- **NYSERDA** is a government-controlled public benefit corporation that is responsible for administering programs related to energy efficiency, energy planning, and renewable energy development.

2. How NYPA works in the New York Energy System

New York founded NYPA in 1931 under New York State's Public Authorities Law as a counterweight to the power of private utilities like ConEd (owned at the time by Wall Street tycoon J.P. Morgan). NYPA operated as a public alternative to the private utilities and speculative electric utility holding companies and drove down electricity costs for New Yorkers. The state legislature also founded NYPA to ensure that hydropower from New York's public waters would not be used solely to enrich

4. The New York Public Service Commission is also known as the New York Department of Public Service, or DPS.

private corporations and “waterpower barons,” but rather would be used for public benefit and revenue generation.⁵

The state established NYPA amidst the early 20th century movement for utility reform, which also saw the creation of the PSC to regulate privately owned utilities. Despite reformers’ aims, bodies like the PSC that regulate highly consolidated sectors are vulnerable to regulatory capture. In contrast, NYPA directly competed with private utilities on cost, and also provided a structure less liable to cooptation.

Today, NYPA is the largest and oldest state-owned public power provider in the United States. NYPA is a fiscally independent entity that generates its own revenue, accrues its own debts, and is not supported by state tax revenues. Though NYPA operates independently from the State of New York and is not regulated by the PSC, it is transparent and accountable to the public via mechanisms embedded within its Power Authority Act.⁶ For instance, NYPA is required to report annually to the governor and legislature about its operations, financials, and transactions.⁷

NYPA owns and operates sixteen electric generation facilities in New York, providing up to 25% of the state’s electricity, primarily (83%) from hydropower.⁸ It owns and operates over 1,400 circuit-miles of electricity transmission infrastructure, a third of the state’s high-voltage transmission grid.⁹ More recently, it has invested in electric vehicle charging infrastructure and renewable energy. And NYPA operates 534 miles of canals, linking the Hudson River with the Great Lakes, the Finger Lakes, and Lake Champlain.¹⁰ Beyond these physical infrastructures, NYPA provides energy services, from those related to efficiency to programs for jobs and economic development.

NYPA produces power, energy services, and transmission, but it does not own the poles and lower-voltage wires that distribute energy throughout communities and into homes. Right now, NYPA sells its low-cost energy to public entities like the MTA; nonprofit healthcare providers, schools and universities, and cultural institutions; and 47 municipal utilities and 4 rural electric cooperatives, thus benefiting rural communities across the state. NYPA also provides discounted power to more than 800 businesses as part of New York State’s economic development planning.¹¹ Finally, NYPA sells a portion of its generated power on NYISO’s wholesale market, where it is purchased by other utilities. NYPA does not provide power to residential customers, but its energy services programs may include them.

Despite NYPA’s foundational charter to deliver statewide public benefits, it has often failed to live up to this charge. The public authority model used by NYPA can often be opaque and unaccountable, given that this quasi-private benefit corporation operates independently, and can bypass mechanisms such as voter approval for its investments through the use of revenue bonds in lieu of general obligation bonds. It has also been led at times by controversial figures like Robert Moses (NYPA Chairman from 1954 to 1962). Moses helped pioneer NYPA’s revenue bond model that is often used by publicly owned utilities today. But he also played a key role in building dams that dispossessed Indigenous peoples.

Specifically, NYPA’s dam construction and hydroelectric power came at the price of displacing Native communities like the Tuscarora. In 1968, NYPA flooded Tuscarora lands to build the Niagara Power Project without tribal consent.¹² NYPA also has a long history of siting fossil fuel generation infrastructure in environmental and climate justice communities, particularly in New York City. Their

5. Rock Brynner, *Natural Power: The New York Power Authority’s Origins and Path to Clean Energy* (New York: Cosimo Books, 2016); “A History of Innovation,” NYPA, accessed March 1, 2021, <https://www.nypa.gov/about/timeline>.

6. NYPA, *Approved 2021 Budget and 2021–2024 Financial Plan*, (White Plains, NY: NYPA, 2020).

7. Section 1002, Power Authority Act of New York, <https://www.nysenate.gov/legislation/laws/PBA/1002>.

8. “New York Power Authority: The Journey to World Class Asset Management,” NYPA, accessed March 23, 2021, <https://cdn.osisoft.com/osi/presentations/2019-uc-san-francisco/US19NA-D2PG03-NewYorkPowerAuthority-Raman-The-New-York-Power-Authoritys-Journey-to-World-Class.pdf>.

9. NYPA, “Transmission Overview,” accessed March 1, 2021, <https://www.nypa.gov/power/transmission/transmission-overview>.

10. “Statement from NYPA President and CEO Gil C. Quinones,” NYPA, accessed March 24, 2021, <https://www.nypa.gov/news/press-releases/2021/20210204-canal>.

11. NYPA, “NYPA Customers,” accessed March 1, 2021, <https://www.nypa.gov/power/customers/nypa-customers>; NYPA, “NYPA Offers Low-Cost Power for Regional Economic Development,” accessed March 1, 2021, <https://www.nypa.gov/services/incentives-and-grants/economic-development>; NYPA, “ReCharge New York: A New York Power Authority Program,” April 2016, <https://www.nypa.gov/-/media/nypa/documents/document-library/operations/recharge-ny/rny-presentation.pdf>.

Poletti plant was for years the City's largest air polluter before it was shut down in 2010. New York City's oil and gas peaker plants, owned by NYPA and others, are disproportionately sited in communities of color in the Bronx, Brooklyn, and Queens, subjecting residents to respiratory ailments.¹³ NYPA has now come to the table with allied environmental justice groups in the PEAK coalition to negotiate potential transition of the plants to cleaner technologies.¹⁴ In re-envisioning NYPA, there is an opportunity to repair its past harms *and* deliver clean electricity throughout the state.

3. The Climate Leadership and Community Protection Act (CLCPA)

Grassroots organizations in New York have been fighting for climate justice for decades—from stopping the construction of gas pipelines to shutting down coal plants and fighting for a just transition to renewables. In 2019, the climate justice organizing community won an important victory by passing the Climate Leadership and Community Protection Act (CLCPA). Under the CLCPA, New York's electricity sector must become emission free by 2040 and achieve an 85% reduction in all greenhouse gas emissions by 2050.¹⁵ Crucially, the law mandates that 35–40% of the investment benefits to decarbonizing the state's energy system go directly toward, “communities that bear burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or comprise high-concentrations of low- and moderate-income households.”¹⁶ The CLCPA also instituted advisory groups to inform the process, including the Climate Action Council, Just Transition

Working Group, and Climate Justice Working Group.

To achieve the CLCPA's goals, New York must massively and rapidly expand its renewable electricity generation capacity, especially as transportation, housing, and other major energy consuming sectors become electrified—and it must do so in a way that prioritizes the mandate to invest in disadvantaged communities. To do this, New York will have to act quickly and decisively. The state remains highly reliant on the fossil fuels driving the climate crisis and concentrating pollutants in low-income communities of color. The CLCPA risks failure if left in the hands of the utility companies and other private actors that designed New York's dirty and unjust energy system. Three actors are dominant:

- **1. Independent power producers:** Since the 1990s, advocates of deregulation and privatization have promised that increased competition would result in more renewable energy generation. But that growth has not materialized. As of 2019, only 4% of all the electricity generated in New York comes from wind and 2% from solar.¹⁷ Fossil fuel power producers are more interested in gas infrastructure than investing in renewables, and they have fought against the transition.¹⁸ Utilities in the state wield significant political power and, although the private utilities were required to sell off their power-producing assets, their holding companies still operate many of the gas plants in the state as subsidiaries.¹⁹

IPP dominance means that utility-scale projects of all types are owned by a concentrated set of nationwide private project developers and owners, often operating transnationally. In 2020, the top ten owners of onshore wind and solar capacity nationwide (responsible for

12. Ken Cosentino, “GUEST VIEW: Water Crisis Remains on Tuscarora Reservation,” *Niagara Gazette*, October 26, 2019, https://www.niagara-gazette.com/opinion/guest-view-water-crisis-remains-on-tuscarora-reservation/article_45224217-e827-5005-a570-7d83c6c3dada.html; *Tuscarora Nation of Indians v. POWER AUTHORITY of NY*, 164 F. Supp. 107 (W.D.N.Y. 1958), <https://law.justia.com/cases/federal/district-courts/FSupp/164/107/1457106/>.

13. NYPA, “N.Y. Power Authority Announces First Power Production at New Clean Power Plant in Queens,” press release, July 1, 2011, <https://www.nypa.gov/news/press-releases/2011/20110701-first-power-production>; Jason D. Antos, “Poletti Plant Closes,” *Queens Gazette*, February 3, 2010; Rebecca Bratspies, “Shutting Down Poletti—An Urban Environmental Victory,” *The Nature of Cities*, August 6, 2017, <https://www.thenatureofcities.com/2017/08/06/shutting-poletti-urban-environmental-victory/>

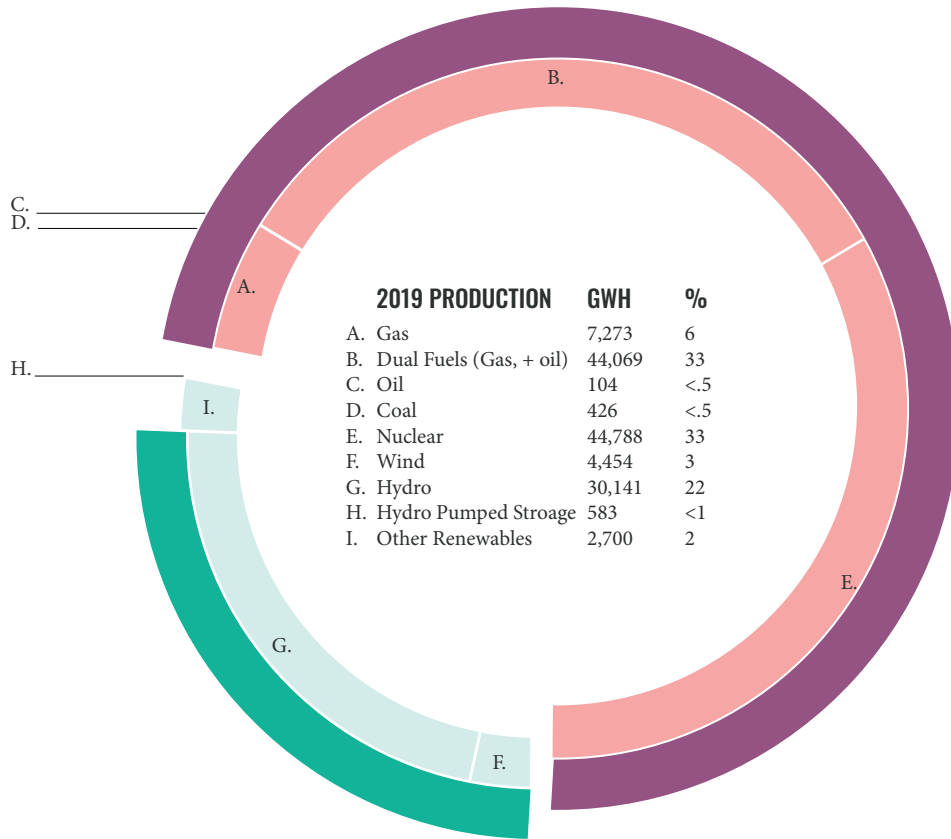
14. Emily Pontecorvo, “New York Says Goodbye to 6 Dirty Power Plants and Hello to Working With Communities,” *Grist*, October 15, 2020, <https://grist.org/justice/new-york-says-goodbye-to-6-dirty-power-plants-and-hello-to-working-with-communities/>.

15. New York State, “Climate Act,” accessed March 31, 2021, <https://climate.ny.gov/> —85% reduction from 1990 levels.

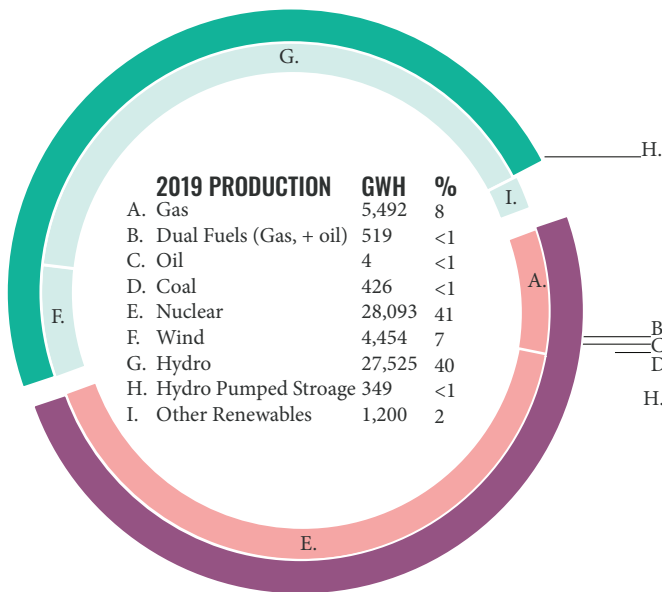
16. Jackson Morris and Miles Farmer, “Unpacking New York's Big New Climate Bill: A Primer,” NRDC, accessed February 9, 2021, <https://www.nrdc.org/experts/miles-farmer/unpacking-new-yorks-big-new-climate-bill-primer-0>; CLCPA §2, amending Environmental Conservation Law §75-0101(5); “Equity Memo,” NY Renew, accessed February 9, 2021, <https://www.nyrenews.org/equity-memo>.

17. USA Energy Information Administration, “U.S. Overview,” accessed March 31, 2021, <https://www.eia.gov/state/analysis.php?sid=NY>.

NEW YORK STATE ENERGY PRODUCTION BY FUEL SOURCE



UPSTATE PRODUCTION



DOWNSTATE PRODUCTION

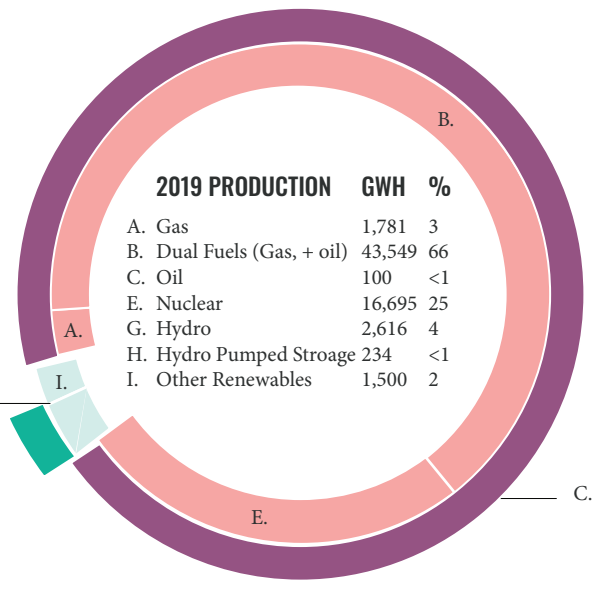


FIGURE 1. NEW YORK STATE ENERGY PRODUCTION BY FUEL SOURCE — Statewide, Upstate & Downstate New York:2019 graphic originally published by New York ISO
<https://www.nyiso.com/power-trends-downloads-and-resources>

43% and 35% of that capacity overall) included major US-based developers like NextEra and Invenergy, some US-based infrastructure funds, and a larger set of European IPPs. Like NextEra, these players are typically the unregulated subsidiaries of utility companies operating beyond their home territories.²⁰

- **2. Distribution utilities:** Distribution utilities are a source of substantial backlash against distributed renewables (like rooftop solar). When a distributed generation source produces more electricity than the source's owner needs, that excess electricity enters the grid and gets distributed to other consumers. For distribution utilities, this lowers the need for new capital infrastructure and reduces their profits. In other words, renewables hurt their bottom line. To overcome this roadblock, the 2014 **Reforming the Energy Vision (REV)** program implemented incentives for utility companies to support the development of distributed renewables.²¹ In 2017, however, utility companies lobbied to adopt a **Value of Distributed Energy Resources (VDER)** policy, arguing that utility companies should not have to compensate distributed renewable energy providers the retail rate for energy.²² The companies succeeded, and VDER undermined the REV.
- **3. ESCOs:** ESCOs have also failed to deliver on promises of cheaper energy rates and faster decarbonization of the state's energy sector. Instead, many ESCOs have acted in predatory and manipulative ways to

maximize profits. Many target non-native English speakers and low-income and elderly individuals with deceptive marketing and promises of discounts, sign up as many customers as possible, and then charge those customers premiums for their electricity (ESCO customers pay on average 17% more for their utility bills).²³ These scams can entrap low-income customers in a cycle of debt that can even result in homelessness.²⁴

To date, New York has relied heavily on deregulation and facilitating market-based strategies to drive decarbonization. However, this strategy has failed to decarbonize the energy system. And it has not prioritized the frontline communities at the heart of the CLCPA—at least in part because the state has been unable to break the political power of the IPPs and distribution utilities. The private utility-led system is simply not designed to deliver substantial benefits to disadvantaged communities.

18. Alexander C. Kaufman, "New York City's hottest new energy fight," *Grist*, August 23, 2020, <https://grist.org/climate/new-york-citys-hottest-new-energy-fight/>.

19. According to EIA 2020 power plant data, National Grid Generation LLC owns five gas plants, PSEG owns two, and Consolidate Edison Co. NY owns two. EIA 923 Schedules 2020M <https://www.eia.gov/electricity/data/eia923/>; FollowtheMoney.org, "Utility Companies and Independent Power Producers Spend Millions on Lobbying over the Past 5 Years," accessed March 31, 2021, <https://www.followthemoney.org/show-me?dt=3&lby-s=NY&lby-f-cci=36&lby-f-fc=2#{1}gro=lby-f-eid>; See, ConEd: \$3,446,397, National Grid: \$3,998,978, PSEG: \$583,148.

20. David Feldman, Mark Bolinger, and Paul Schwabe, *Current and Future Costs of Renewable Energy Project Finance Across Technologies*, (Golden, CO: National Renewable Energy Laboratory, 2020). NREL/TP-6A20-76881, <https://www.nrel.gov/docs/fy20osti/76881.pdf>.

21. Gavin Bade, "Little less talk: With new revenue models, New York Starts to Put REV into Action," *Utility Dive*, June 9, 2016, <https://www.utilitydive.com/news/little-less-talk-with-new-revenue-models-new-york-starts-to-put-rev-into/420657/>.

22. Kerry Thoubborun, "VDER: NY's replacement to net metering," *energy sage*, December 20, 2018 <https://news.energysage.com/vder-ny-replacement-net-metering/>.

23. Liz Krueger, "Senator Krueger's ESCO 'Slamming' Bill Becomes Law," The New York State Senate, November 26, 2019, <https://www.nysenate.gov/newsroom/press-releases/liz-krueger/senator-kruegers-esco-slamming-bill-becomes-law>; Jumaane D. Williams, *Municipalizing New York City's Electric Grid*, August 7, 2020, <https://www.pubadvocate.nyc.gov/reports/municipalizing-new-york-citys-electric-grid/>.

24. Jon Campbell, "Why Is Albany Letting These Energy Companies Scam Thousands of New Yorkers?," *The Village Voice*, February 2, 2016, <https://www.villagevoice.com/2016/02/02/why-is-albany-letting-these-energy-companies-scam-thousands-of-new-yorkers/>.



NYPA: A PROPOSAL FOR NEW YORK'S PUBLIC ENERGY TRANSFORMATION

NYPA: A Proposal for New York's Public Energy Transformation

1. Why NYPA could be a key actor in the CLCPA

As a publicly owned and accountable institution, the New York Power Authority (NYPA) could be a key actor in implementing the CLCPA vision. Since it is not a profit-seeking business, NYPA is uniquely able to drive just, equitable, and rapid investments in clean energy, for four reasons:

- **1. Fewer profit incentives:** As a nonprofit entity, NYPA has incentives that are not driven by the focus on quarterly earnings statements and shareholder value that dictates the behavior of private utilities and independent power producers (IPPs). This means NYPA can consider additional sources of value and benefits in designing its goals, strategies, and structure. It also enables NYPA to be a supportive partner in reducing energy consumption through efficiency gains—something antithetical to the private utility business model—and creating transparent, mutually beneficial relationships with community partners. Any revenues generated by NYPA can be reinvested into the grid, lowering customer bills, or in other economic development projects throughout the state that create jobs and wealth in disadvantaged communities.
- **2. Coordination with the state:** Instead of attempting to induce better behavior from private utilities and producers through complex and costly incentives and regulations, the state can leverage its own power via NYPA to quickly and effectively implement the CLCPA. There is also the possibility to create efficient partnerships with other governmental agencies, especially NYSERDA and ORES (Office of Renewable Energy Services).
- **3. Democratizing energy:** Because it is a public entity owned by and accountable to New Yorkers, there are more opportunities to mold NYPA into a more democratic institution than a private company would allow. Legally, NYPA is already held to statewide standards of open meeting laws, freedom of information, prevailing wage laws, and more. Robust democratic reforms, including heightened accountability, transparency, and stakeholder participation standards, would help ensure that the CLCPA's 40% benefits standard is realized in New York's disadvantaged communities.

- **4. Cheap and equitable financing:** NYPA's standing as a public institution means that it has access to the municipal bond market, lowering the cost of capital and the price of electricity compared to private companies. This access to cheap capital, combined with the lack of a profit-maximization incentive and a mandate to prioritize disadvantaged communities, should allow NYPA to increase its investment in a host of decarbonizing strategies without significantly raising costs for communities. These features also distinguish NYPA from NYSERDA, which has provided necessary financial resources, but is funded in large part via a line item on consumers' utility bills.

2. Expanding & Re-envisioning NYPA for Climate and Environmental Justice

The CLCPA is currently only enforceable for private utilities, but the New York government expects NYPA to cooperate.²⁵ In fact, NYPA is already assuming an expanded mandate under the CLCPA. Amendments made in 2019 to the Power Authority Act enabled NYPA to develop infrastructure for vehicle electrification, offshore wind transmission, energy-efficient products, and renewable power generation.²⁶ This last point, renewable power generation, remains limited. Besides prescriptions on the number and size of renewable energy projects (it can only contract six large utility-scale projects of 25 MW+ before its expanded authority expires in 2024), NYPA's role to date has largely been to purchase or finance new renewable generation from private actors rather than developing, owning, and operating projects in-house.²⁷ If left unchecked, this will likely steer NYPA toward a

25. New York State, NYS Department of Public Service, and NYSERDA, *White Paper on Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act*, June 18, 2020, <https://www.hodgsonruss.com/assets/htmldocuments/70x30%20white-paper.pdf>.

26. NYPA, *Approved 2021 Budget and 2021–2024 Financial Plan*, (White Plains, NY: NYPA, 2020), p.2, <https://www.nypa.gov/-/media/nypa/documents/document-library/financials/approved-2021-budget-and-2021-2024-financial-plan.pdf>.

THE NEW YORK STATE ENERGY SYSTEM

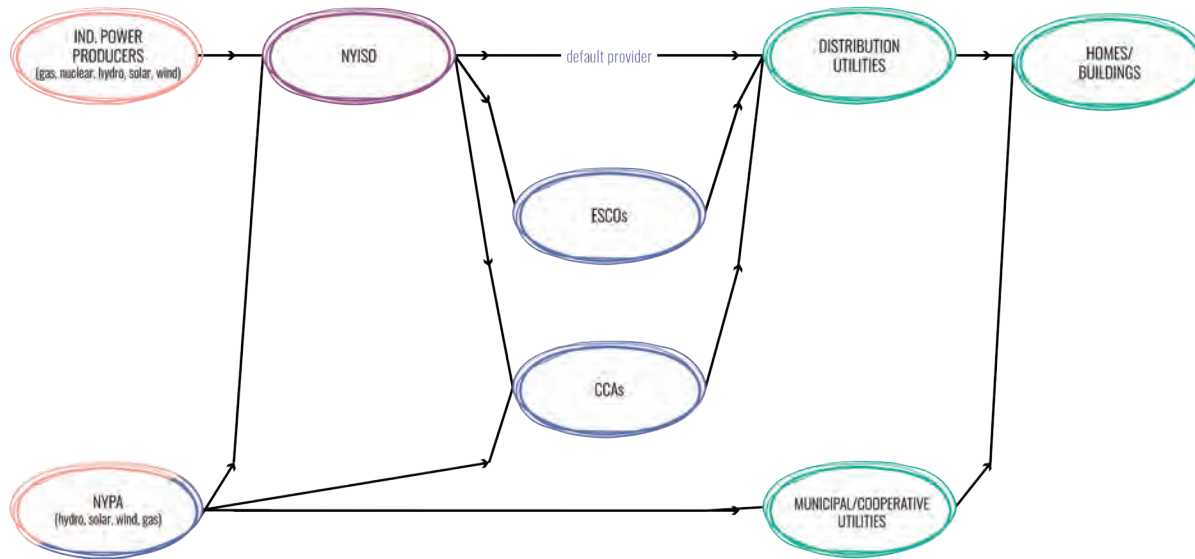


FIGURE 2. The New York energy system BEFORE recommendations have been adopted

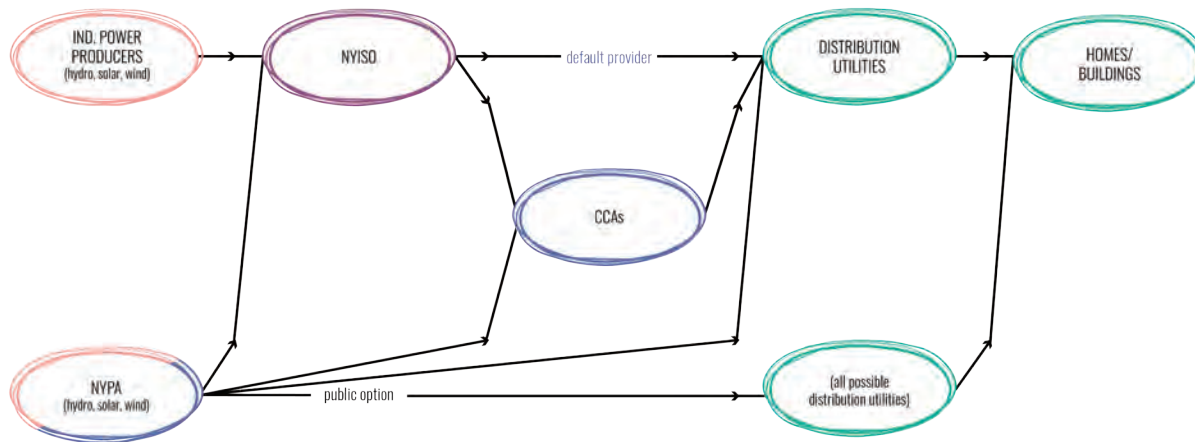


FIGURE 3. The New York energy system AFTER recommendations have been adopted

- ▭ production
- ▭ market
- ▭ supply
- ▭ distribution

public-private model of renewable energy deployment by private companies via power purchase agreements. This model dominates most US renewable energy development, including NYPA's most recent investments in utility-scale renewables.²⁸ It reinforces New York's philosophy that deregulation is the best approach to the energy system. However, the public-private partnership model is distinct from NYPA's historic role as developer, owner, and operator of renewable energy assets in the public interest.

FOR NYPA TO ACHIEVE THE CLCPA TIMELINE AND EQUITY GOALS, NEW YORK SHOULD:

- **Ban Private ESCOs and make NYPA a public option energy provider:** Right now, NYPA is limited in terms of who they can provide energy to in the state. NYPA should be empowered to provide energy to end-use consumers in the state as well as towns with CCAs. The state should also ban the use of for-profit ESCOs, transitioning those customers to NYPA as their energy provider. Eliminating for-profit ESCOs would both eliminate predatory operators in the state and replace them with publicly owned power production that has clear mandates for renewable energy. Additionally, NYPA could act as an alternative energy provider, with progressive rate structures that support low-income households. For a truly just and competitive energy market in the state, New Yorkers deserve a public option for electricity.
- **Expand NYPA's development of renewable energy and phase out fossil fuels:** The state should establish mandates for NYPA to fully decarbonize its existing energy infrastructure, and decommission its fossil fuel plants by 2025. NYPA should be given the "right of first refusal" for all renewable projects over 25 MW to give the public more agency in the renewables scale-up process. This would ensure that utility-scale projects in the state are deployed with high levels of community participation, and strong labor, environmental, and community benefit standards. It would guarantee that benefits of the new infrastructure reach disinvested communities. Moreover, by investing in community-led

and distributed renewable energy, NYPA will help build up climate resiliency in the state, build close ties with residents, and lower bills for users. This commitment could help the state provide direct investment to disadvantaged communities and hopefully far exceed the minimum 40% benefit of investment in the CLCPA.

- **Expand efficiency and electrification efforts:** NYPA has already positioned itself as a major player in efficiency and electrification efforts. NYPA should accelerate its efficiency programming, with a particular focus on supporting low-income housing to alleviate energy poverty. Historically, NYPA has used bulk purchasing power to lower energy costs from appliances in low-income housing—a strategy that could be used again to lower efficiency and electrification costs.²⁹ NYPA should also expand its transportation electrification programming for a more comprehensive transition to electrified transport infrastructure.
- **Invest in equitable transmission and storage infrastructure:** Because NYPA is a major transmission actor, its continued investment in public transmission infrastructure will be key to connecting upstate renewables to downstate residents, while also curtailing unnecessary transmission buildouts. NYPA should also maintain its existing energy storage infrastructure while promoting just sourcing of new grid-scale battery projects.
- **Increase democracy in NYPA:** Its expanded role in the energy ecosystem of New York also comes with significant responsibility. The enterprise should be held to high standards of transparency, accountability, equity, and participation. Any changes at NYPA should come with structural reforms that reflect New York's commitment to disadvantaged communities and workers. NYPA should shift its utility board structure towards a multi-stakeholder model, including representation from community and labor groups. Specifically, it ought to create an Office of Community Engagement, co-hosted with NYSERDA, to coordinate transparency, community input, and accountability. To

27. The wording is far more expansive for its ownership of new offshore transmission projects and electric vehicle charging stations.

28. David Feldman, Mark Bolinger, and Paul Schwabe, *Current and Future Costs of Renewable Energy Project Finance Across Technologies*, (Golden, CO: National Renewable Energy Laboratory, 2020), NREL/TP-6A20-76881, <https://www.nrel.gov/docs/fy20osti/76881.pdf>. Though long-term PPAs (e.g., 20 years) have been the model, this may be changing as new "merchant" IPPs and financial models grow in the sector

29. L. F. Kinney, G. Lewis, R. G. Pratt, and J. Miller. *New York Power Authority/New York City Housing Authority refrigerator replacement program, first program year evaluation. Final report*. No. NYSERDA-97-12. New York State Energy Research and Development Authority, Albany, New York, 1997.

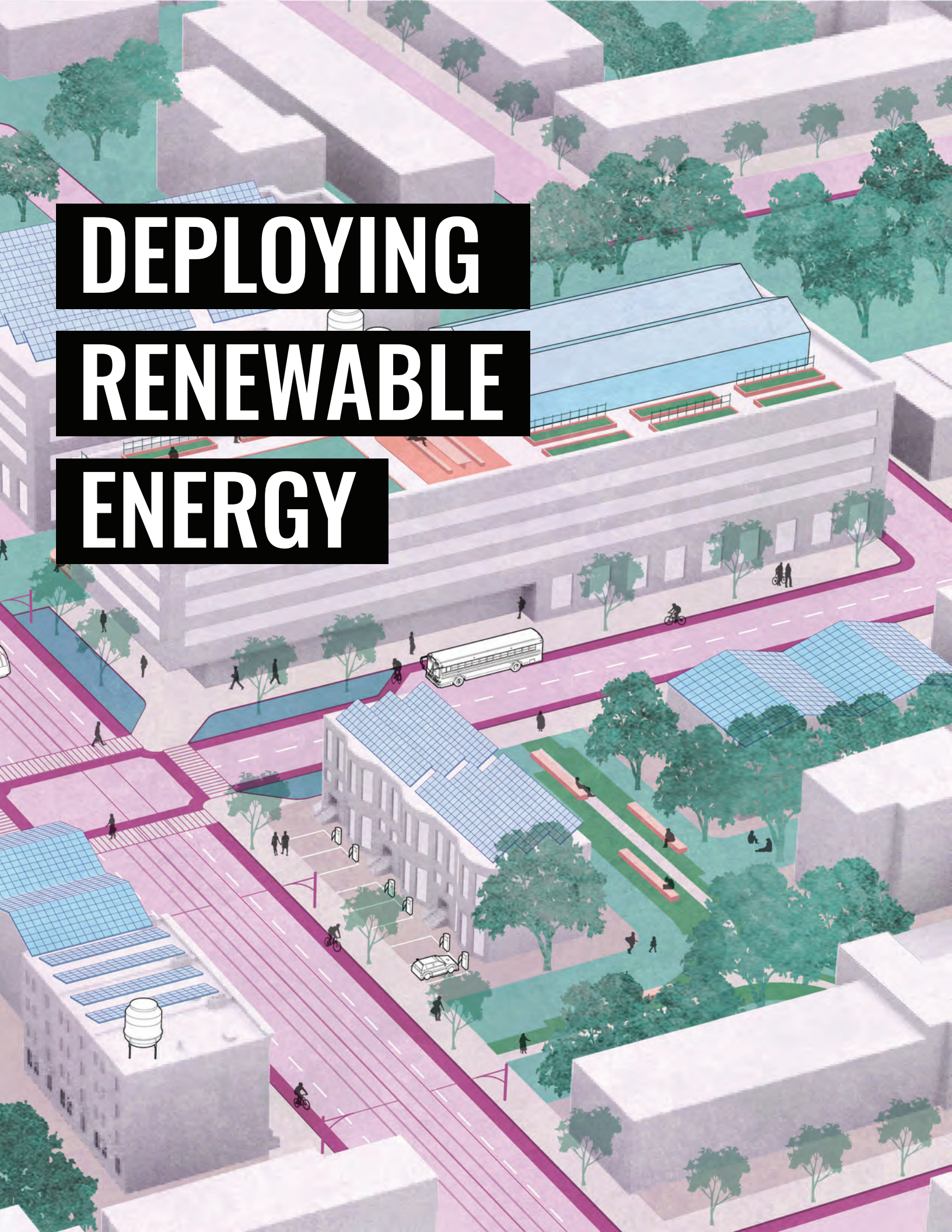
reflect differing regional needs, Regional Hubs could operate as conveners of job opportunities, community review, and more. Structural reforms not only would reflect New York's commitment to environmental justice communities and workers, but would strengthen NYPA by building grassroots support.

- **Set high labor standards for green jobs in New York:** The transition towards a renewable energy economy will take a massive commitment and has the potential to create a huge number of jobs in New York. Expanding NYPA's role in that transition could create new baselines for the renewable energy sector—where salaries need to be raised, and avenues to unionization encouraged, to appeal to workers with unionized jobs in the fossil fuel sector. It can do so by requiring high-level labor standards and unionization for projects, lifting up small, women-owned, and minority-owned businesses; and accelerating the cooperative and social enterprise economy in the state. By being intentional about project development, NYPA can be an anchor for positive forms of economic development in disadvantaged and environmental justice communities via workforce training, pathways to unionized employment, and clear community benefits and project labor agreements.

The subsequent sections investigate the benefits of and benchmarks for an expanded and democratized NYPA. Specifically, they address:

- the role of NYPA in renewable energy deployment
- how NYPA could become an instrumental player in efficiency and electrification projects
- how NYPA should increase its community accountability in its expanded role
- the implications for financing the energy transition, and
- the types of jobs and economy that could be created with NYPA's expansion

DEPLOYING RENEWABLE ENERGY



DEPLOYING RENEWABLE ENERGY

SUMMARY

- **End NYPA's fossil fuel fleet:** Decommission all of its fossil fuel infrastructure by 2025, in direct consultation with impacted community members and workers.
- **Invest in land-based renewable energy:** Receive the “right of first refusal” over all New York renewable energy projects over 25 MW and allow NYPA to outright own and operate the renewable infrastructure. This report advocates for NYPA to initially focus on land-based renewable energy, and models the investment and benefits that would result if NYPA took up 25%, 50%, and 75% of land-based solicitations. These levels of investment have the potential to create between 34,700 and 75,750 total jobs and between \$15.0 billion and \$59.8 billion in additional economic activity by 2030. In particular, NYPA must work with disadvantaged communities in New York so that renewable assets create high-wage jobs and local wealth in the places that need it most.
- **Collaborate on distributed renewable energy:** Invest in at least 2 GW of distributed renewables, from now to 2030, seeking community partnerships in financing and deployment to support resilience with at least 70% of investment directed to disadvantaged communities. This could create 4,400 jobs from now to 2030.
- **Ban for-profit ESCOs and make NYPA a public option energy provider:** Eliminate ESCOs in New York, transition those customers to energy provision by NYPA, and open up NYPA as an alternative energy service provider. This would expand who receives energy from NYPA: a democratic renewable energy provider for all New Yorkers.

While NYPA has increased renewable energy development in recent years, this proposal moves NYPA from a relatively minor role in the sector into a major player in renewables by allowing it to own and operate the projects in-house. As a baseline, this proposal mandates that NYPA fully decarbonize its current energy portfolio, decommission its fossil fuel plants, and stop all new investments in fossil fuels by 2025. It also would also move from passive alignment with the CLCPA to being one of the state's primary vehicles for achieving the justice and timeline goals of the law. According to NYSERDA, New York still needs to

contract and construct 11.5 GW of land-based renewables, 4.1 GW of offshore wind, and 3.3 GW of distributed energy resources to meet its goals by 2030.³⁰ NYPA should be given the right of first offer and refusal to build, develop, contract, and operate all bids for land-based renewable energy over 25 MW to ensure those goals are achieved in alignment with the CLCPA's minimum 35–40% benefit standard in disadvantaged communities. Simultaneously, the proposal intends to preserve and substantially expand NYPA's support for smaller-scale, distributed renewables. These changes would bring a variety of benefits, discussed below.

NYPA's entry into renewable energy is a clear opportunity to build out new patterns of energy ownership. Specifically, it can facilitate direct public ownership stakes in large-scale projects. Evidence shows that community-public partnership of renewable energy development creates strong community relationships with the projects, ensuring that the local community receives benefit of the development and can fast-track the development.³¹ NYPA will likely not be able to fully own all of its projects, and will need time to build out its capacity to own and operate new infrastructure. Thus, this proposal expects some continuation of power purchase agreements, with a transition to more outright ownership over time.

In this new paradigm, the state's wholesale electricity market, NYISO, would continue to operate and NYPA could buy or sell energy on the market, as deemed in the public interest and to fill gaps in energy needs. NYPA would also have the flexibility to enter into contracts directly with customers or sell to NYISO as needed. Similarly, many of the systems set up for distributed renewable ownership in New York would continue to operate, with new and additional support from NYPA.

30. “White Paper: Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act,” NYSERDA, July 2020, <https://www.nyserda.ny.gov/-/media/Files/Programs/Clean-Energy-Standard/20200714-CLCPA-white-paper.pdf>

31. Andrew Cumbers, “Making Space for Economic Democracy: The Danish Wind Power Revolution,” *United Nations Research Institute for Social Development*, March 8, 2013, <https://www.unrisd.org/think-piece-cumbers>.

ESTIMATED RENEWABLE ENERGY DEPLOYMENT FROM 2020-2030 TO ACHIEVE 70% RENEWABLE ENERGY

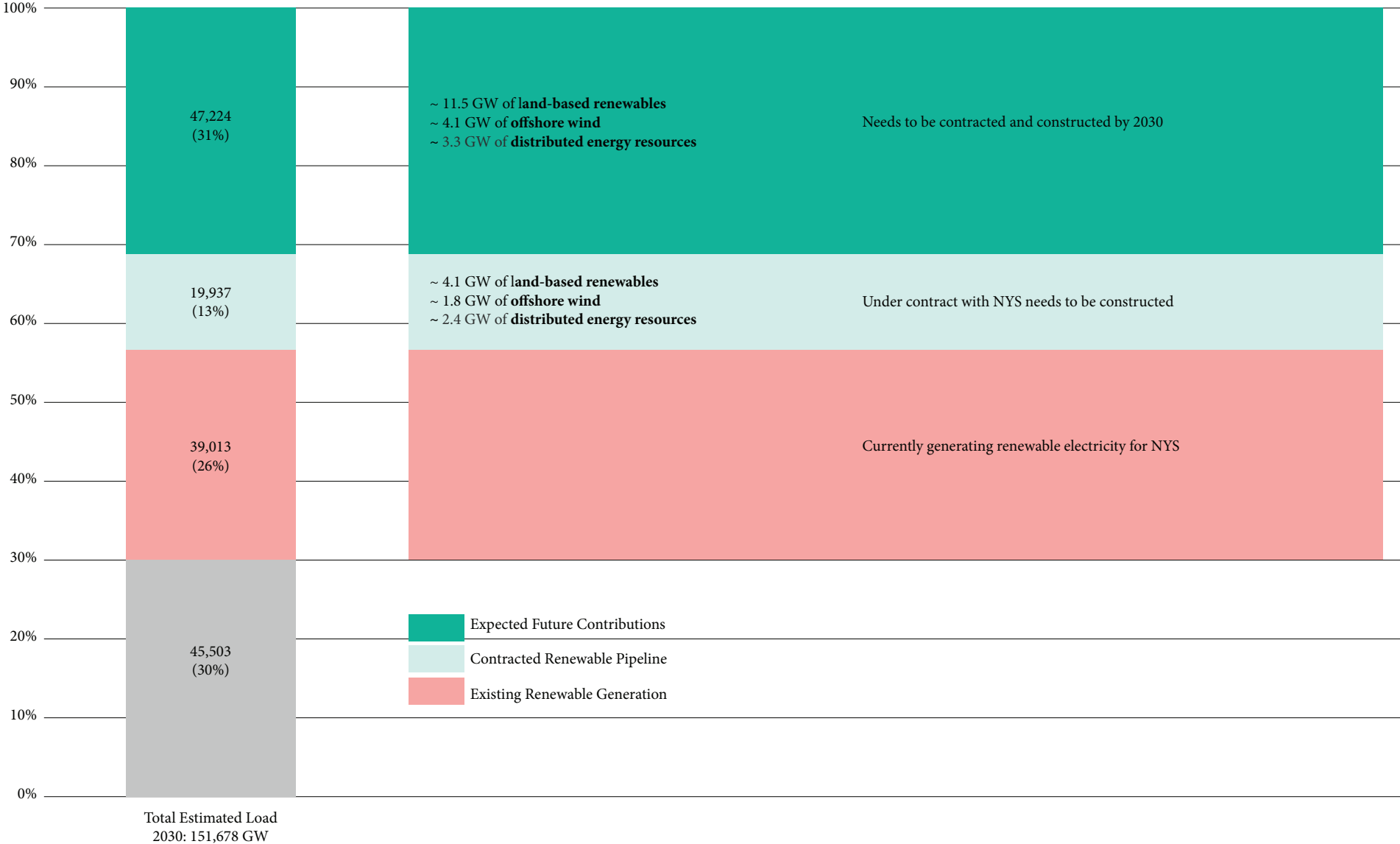


FIGURE 4. ESTIMATED RENEWABLE ENERGY DEPLOYMENT FROM 2020-2030 TO ACHIEVE 70% RENEWABLE ENERGY, graphic originally published from NYSERDA white paper, “Clean Energy Standard Procurements to implement New York’s Climate Leadership and Community Protection Act (July 2020).

CURRENT NYPA RENEWABLE ENERGY PROJECTS

NYPA has long produced hydropower for New York (three major dams and four smaller hydroelectric projects make up 83% of its energy generation),⁸ but it continues to contract or operate natural gas baseload and peaker plants. Amendments to NYPA's enabling legislation in 2019 opened up its capacity to be a more active player in the renewable energy transition, and that same year, NYPA contracted its first non-hydro renewable power project, awarding a 20-year agreement to the 290 MW Canisteo Wind Energy LLC project in Steuben County.³² In 2020, NYPA joined NYSERDA to procure up to 4,000 MW of new renewable energy, the largest combined clean energy solicitation ever issued in the United States.³³ These new renewable energy projects follow a pattern of partial privatization via the “power purchase agreement” model where NYPA contracts with a private company to receive the energy from renewable infrastructure they build.³⁴

Expanding NYPA's Customer Base by Creating a Public Option: The increase in renewable energy investment by NYPA would empower it to become a public option for providing energy to New York households. New York should eliminate for-profit ESCOs—companies that have failed to bring cheaper prices and have exploited low-income New Yorkers—and allow NYPA to provide affordable clean energy for those customers. NYPA should continue to provide energy to its current customer base (public buildings, schools, municipal utilities, CCAs), while additionally providing energy services and products to customers previously served by ESCOs.³⁵ It could also provide the option for households served by default energy providers (coordinated by the private distribution utilities), allowing them to choose a public option for power. NYPA should enact a progressive rate structure that mandates that no residential household pay above 6% of its income on electricity if it is supplied by NYPA. This proposal does not eliminate CCAs, municipal utilities, or nonprofit ESCOs, who could all continue

to operate; instead, those suppliers could receive (or continue to receive) renewable energy from NYPA's fleet.

Investments Prioritization: All NYPA investments should be reviewed prior to deployment along a matrix of value, scored to consider job potential and quality, community benefit, resilience, environmental impact, and electricity costs (See Figure 8). Such a matrix should be actively developed alongside New Yorkers, with particular engagement with disadvantaged communities to proactively align with the needs of neighborhoods on the ground. The goal of this matrix is to prioritize measures like energy efficiency and community solar that bring additional benefits to local neighborhoods. As is clear from Figures 6 and 7, there is also substantial opportunity in New York to co-locate new renewable energy infrastructure in areas of historic disinvestment and pollution to build new systems of clean energy and community wealth. Of course, co-location is not enough and must be paired with active partnership building so that the benefit accrues with those communities instead of operating as a new form of extraction.

Utility-Scale Energy, Investment, and Job Creation: Receiving the right of first offer and refusal over all project solicitations over 25 MW in the state would make NYPA a major player in utility-scale renewable projects. NYPA is particularly suited to develop utility-scale solar and on-shore wind and has already made considerable investments, including the 290 MW wind project in Steuben County and the combined solicitation with NYSERDA for land-based renewables.

Bringing development, siting, and ownership in-house allows for additional public oversight and management, ensuring accountability to commitments to improved communication and community benefits laid out in the 2020 Accelerated Renewable Energy Growth & Community Benefits Act (AREGCBBA) and its new statewide Office of Renewable Energy Siting (ORES).³⁶ In New York, tensions have arisen as a result of rural

32. Andrew Coffman Smith, “New York Power Authority agrees to 1st large renewable energy contract,” *S&P Global Market Intelligence*, February 1, 2019, https://www.spglobal.com/marketintelligence/en/news-insights/trending/j0w4GQLW_fqfbvNzQ1Akwg2

33. Paul Ciampoli, “NYPA takes part in new large-scale renewables procurements,” *American Public Power Association*, July 21, 2020, <https://www.publicpower.org/periodical/article/nypa-takes-part-new-large-scale-renewables-procurements>.

34. EPA, “Physical Power Purchase Agreements,” accessed March 21, 2021, <https://www.epa.gov/greenpower/physical-power-purchase-agreements-physical-ppas#:~:text=How%20do%20Physical%20PPAs%20work,site>.

35. “Community Choice Aggregation,” Environmental Protection Agency, accessed February 20, 2021, <https://www.epa.gov/greenpower/community-choice-aggregation>.

36. NYSERDA, *New York State Announces Passage of Accelerated Renewable Energy Growth and Community Benefit Act as Part of 2020-2021 Enacted State Budget*, April 3, 2020, <https://ores.ny.gov/system/files/documents/2020/07/ores-2.pdf>.

ENERGY INFRASTRUCTURE AND ENVIRONMENTAL JUSTICE COMMUNITY SCORE FOR NEW YORK CENSUS TRACTS.

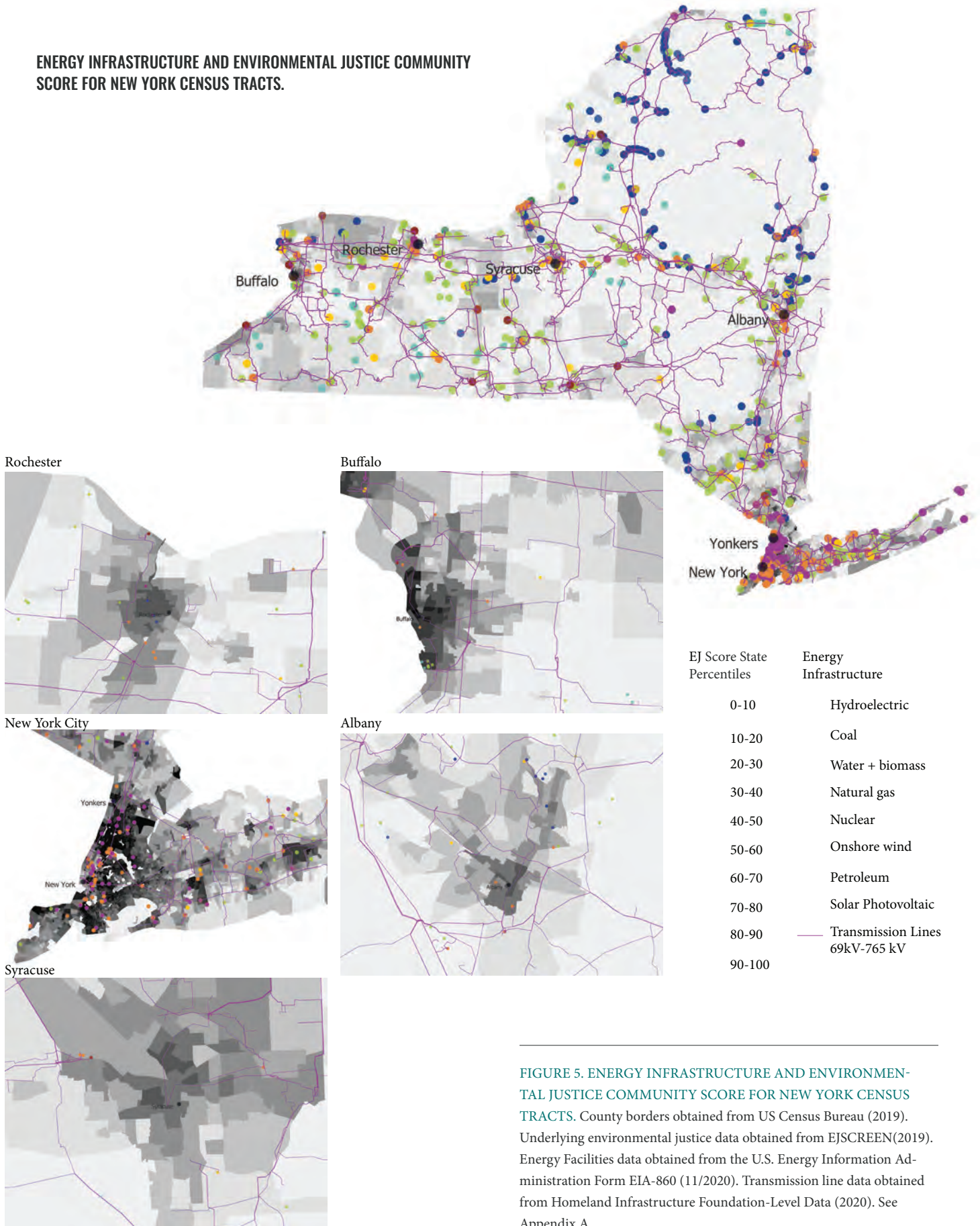


FIGURE 5. ENERGY INFRASTRUCTURE AND ENVIRONMENTAL JUSTICE COMMUNITY SCORE FOR NEW YORK CENSUS TRACTS. County borders obtained from US Census Bureau (2019). Underlying environmental justice data obtained from EJSCREEN(2019). Energy Facilities data obtained from the U.S. Energy Information Administration Form EIA-860 (11/2020). Transmission line data obtained from Homeland Infrastructure Foundation-Level Data (2020). See Appendix A.

MULTI-YEAR AVERAGE GLOBAL HORIZONTAL IRRADIANCE AND ENVIRONMENTAL JUSTICE SCORE FOR NEW YORK CENSUS TRACTS.

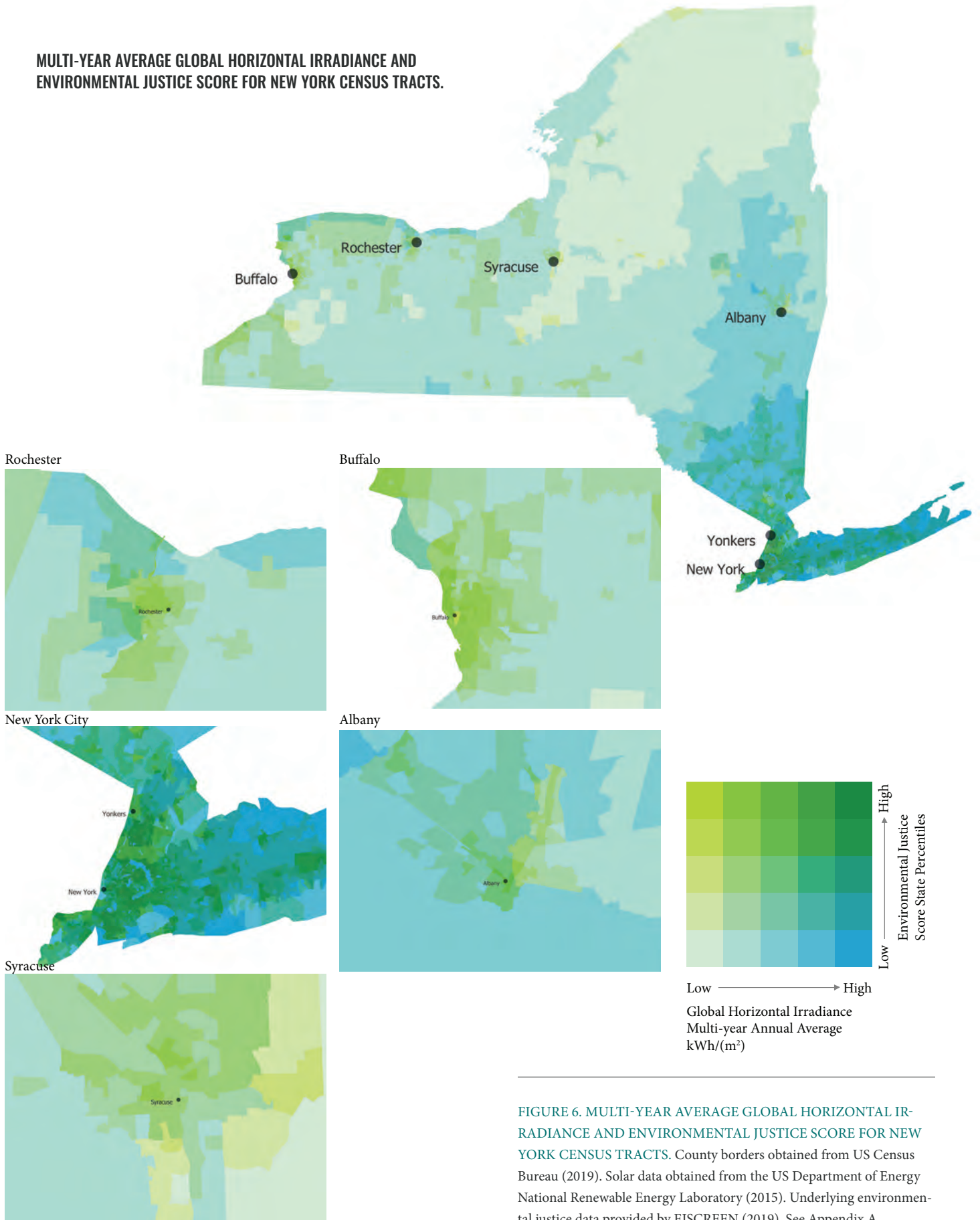


FIGURE 6. MULTI-YEAR AVERAGE GLOBAL HORIZONTAL IRRADIANCE AND ENVIRONMENTAL JUSTICE SCORE FOR NEW YORK CENSUS TRACTS. County borders obtained from US Census Bureau (2019). Solar data obtained from the US Department of Energy National Renewable Energy Laboratory (2015). Underlying environmental justice data provided by EJSCREEN (2019). See Appendix A.

MULTI-YEAR AVERAGE WIND SPEEDS AND ENVIRONMENTAL JUSTICE SCORE FOR NEW YORK CENSUS TRACTS

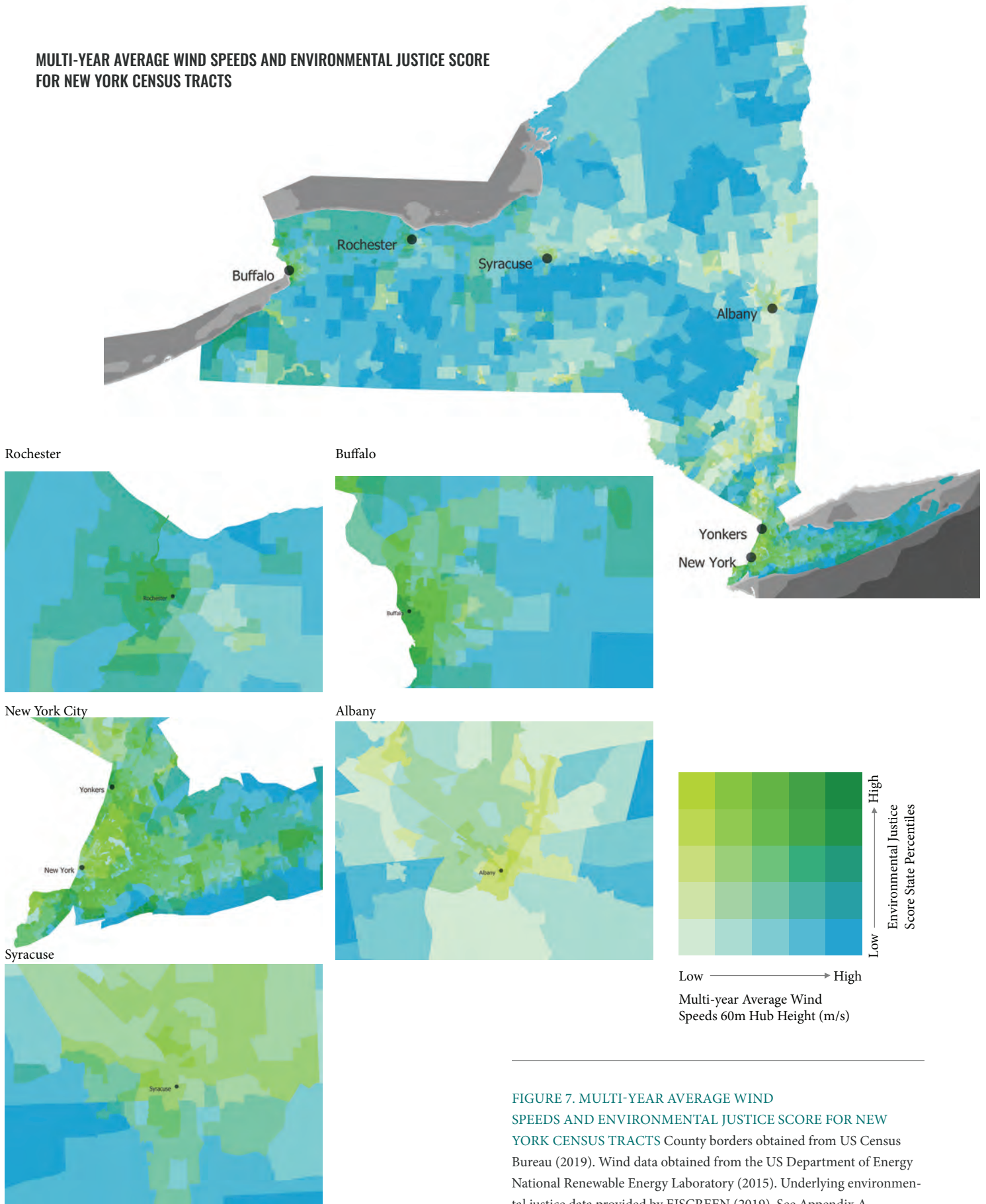


FIGURE 7. MULTI-YEAR AVERAGE WIND SPEEDS AND ENVIRONMENTAL JUSTICE SCORE FOR NEW YORK CENSUS TRACTS County borders obtained from US Census Bureau (2019). Wind data obtained from the US Department of Energy National Renewable Energy Laboratory (2015). Underlying environmental justice data provided by EJSCREEN (2019). See Appendix A.

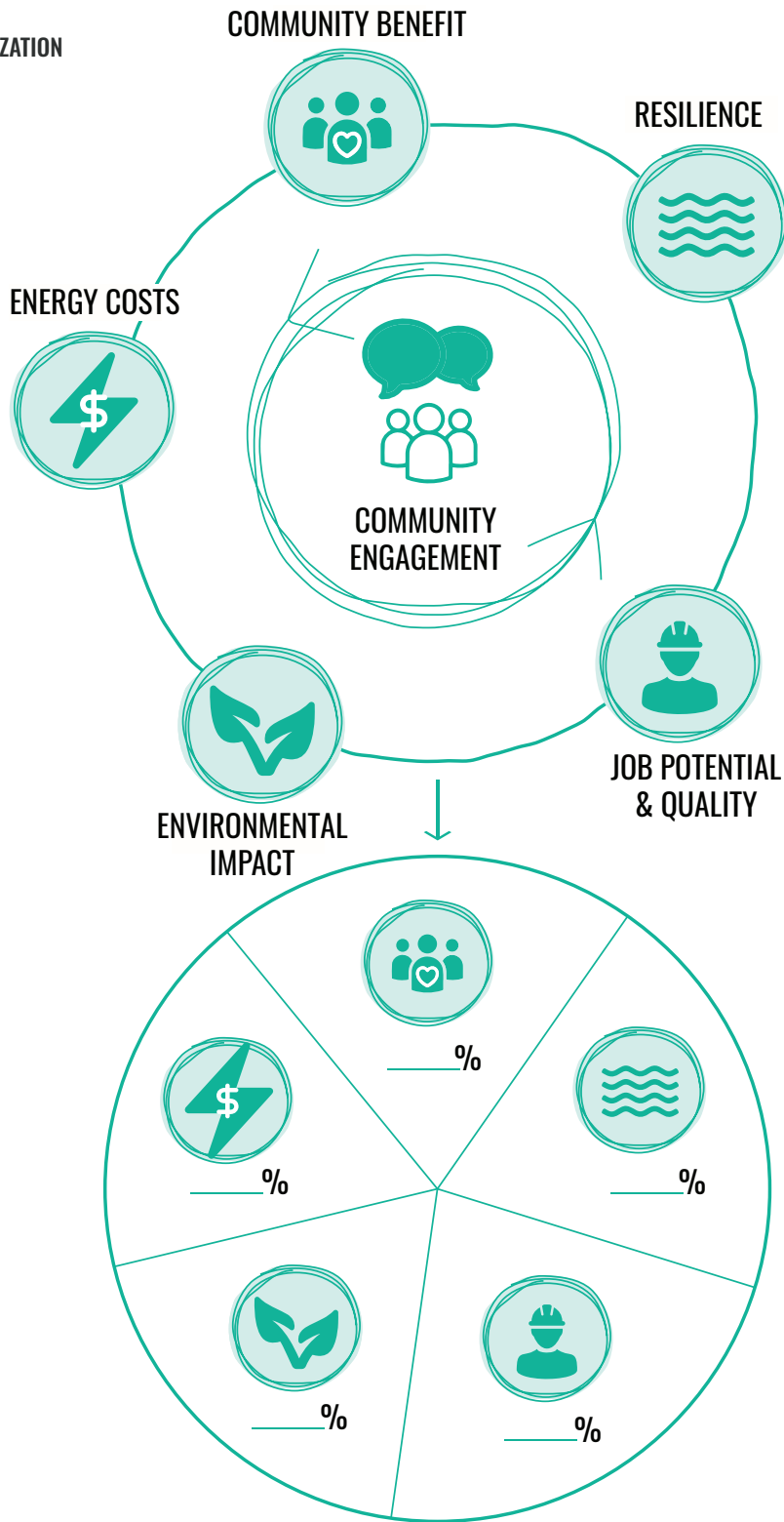


FIGURE 8. INVESTMENTS PRIORITIZATION: Investments in new projects at NYPA should be scored across a series of values, including community benefit, resilience, energy cost, job potential, and more. This matrix should be determined in partnership with community members, particularly disadvantaged communities so as to ensure at least 40% of investment benefits are reaching those households.

Utility-Scale Onshore Solar and Wind Development over 25 MW				
Scenario	Amount of renewable energy	Level of investment 2021–2030	Sustained direct and indirect jobs 2021–2030	Additional economic activity 2021–2030
NYPA develops 25% of all utility-scale renewable projects	2.9 GW	\$9.8 billion	7,575 sustained jobs	\$15.0 billion
NYPA develops 50% of all utility-scale renewable projects	5.75 GW	\$19.5 billion	15,149 sustained jobs	\$29.9 billion
NYPA develops 75% of all utility-scale renewable projects	8.6 GW	\$29.1 billion	30,298 sustained jobs	\$59.8 billion
Distributed Renewable Energy				
NYPA supports distributed solar	2 GW	\$4.8 billion	4,407 sustained jobs	\$8.4 billion

FIGURE 9. Investment in Renewable Energy Type by Percentage of Renewables that NYPA Accepts as Its Right of First Offer

communities unwillingness to host renewables largely headed for downstate.³⁷ While utility-scale energy will be a necessary intervention, NYPA's role lies in how such projects are designed and implemented. Specifically, a public entity could better articulate community benefits agreements, provide good jobs and public-community partnerships, and engage the public in siting decisions.

A recent NYSERDA white paper projects that New York still needs to build out 11.5 GW of onshore utility-scale renewables, or the equivalent of putting an additional 4,500 MWh online every year until 2026.³⁸ Figure 9 evidences the resulting levels of economic investment and job creation if NYPA took up its right to build 25%, 50%, and 75% of all onshore utility-scale renewable energy projects put forth in the CLCPA.

Distributed and Community-Scale Solar: A major intervention point for NYPA to rapidly decarbonize the state and support commitments to disadvantaged communities is to invest in distributed and community renewable projects. Distributed renewables can build resilience in the grid (necessary to meet the more volatile demands for electricity that come with the uptick of extreme weather events and heat waves created by the climate crisis), frequently have more community economic benefits, can draw down energy costs that are often major burdens for low-income community members, and can facilitate community-building opportunities.³⁹ NYPA's Vision 2030 plan sets out a goal of facilitating 325 MW of distributed and customer-sited solar by 2025.⁴⁰ While this is a good step, NYPA should ratchet up its ambition so that New York State can meet the CLCPA's goal of 3.3 GW more distributed renewables online by 2030.

37. David Iaconangelo, "N.Y.'s Plan to Fast-Track Renewables Could Get 'Ugly,'" *E&E News*, February 25, 2020, <https://www.eenews.net/stories/1062441241>.

38. "White Paper: Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act," NYSERDA, July 2020.

39. Summer Dean, *The Contribution of Distributed Solar to Reliability, Grid Resilience, and Community Resilience*, August 2018, http://solar-plusnw.org/wp-content/uploads/RNW_ODOE_Resiliencepaper_2018-2.pdf.

40. Kelsey Misbrenner, "New York Power Authority plans to enable 325 MW of distributed and customer-sited solar by 2025," *Solar Power World*, December 10, 2020, <https://www.solarpowerworldonline.com/2020/12/new-york-power-authority-distributed-solar-renewable-transmission-upgrades/>.

NYPA AND OFFSHORE WIND

Though offshore wind is the locus of ambitious goals in New York State, it also poses challenges, including high levels of capital intensity, a history of long development times, and roadblocks to permitting. Offshore wind's uncertainties warrant NYPA exercising initial care and potentially reevaluating its role in offshore wind in the future.

It may make initial sense for NYPA to invest in the supporting infrastructure associated with offshore wind, like state-level bids on federal offshore lease blocks; ownership over infrastructure like assembly and servicing vessels; and equitable, union-protected regional employment in manufacturing, transmission, and servicing. Electrifying and greening the ports that will be critical to offshore wind production—as well as decarbonizing New York's ports—also stands as a task for NYPA. It could look to the Sunset Park Green Resilience Industrial District report that charts out community demands on revitalizing New York City's Sunset Park port area.⁴¹

In particular, NYPA could play a role in holistically planned and shared transmission, instead of taking a fragmented, privatized approach where offshore projects incrementally develop their own lines. This would avoid over 650 miles of seabed disturbance and significantly mitigate impacts on fisheries and marine ecosystems, among other benefits.⁴²

NYPA should support the development of at least 2 GW of the goal, with at least 70% of its investment targeted at supporting distributed energy, like community or rooftop solar, in disadvantaged neighborhoods. This could create a total of 472 direct jobs and a total 4,407 jobs. In particular, NYPA should focus on distributed renewables in the

downstate New York City region, like Queens or Yonkers, where there is large solar potential and where environmental justice screen (EPA EJ Screen) data indicates higher environmental burdens and vulnerable populations (see Figure 6). This investment could also utilize rooftops in a space-constrained urban area as well as alleviating the need to overbuild utility-scale renewables upstate. NYPA could expand distributed and community solar in three ways:

- **1. Build a unionized distributed renewable workforce:** One way that NYPA could help catalyze good jobs is to operate as an aggregator of distributed renewable projects, giving it both the power and economy of scale to facilitate a project labor agreement that may not be possible on a house-by-house basis. NYPA could also bring a distributed renewable workforce in-house, supporting the deployment of rooftop solar projects across the state with high-roads labor standards. According to the UC Berkeley Labor Center, paying a prevailing wage to residential installers would increase costs somewhere between 5% and 7%. However, most solar installers are paying net profits of 12–13% of total costs.⁴³ NYPA does not have to make profits in the same manner and therefore can absorb the increased cost of labor in return for providing public benefit in the form of good jobs, increased resiliency, and less carbon in New York.
- **2. Close the capital gap:** The upfront costs associated with “going solar” or initiating a community renewable energy project are often major barriers to implementation, particularly for communities of color and low-wealth families.⁴⁴ As a public benefit corporation with access both to its own revenues for reinvestment and ability to raise cheap capital through bonds, NYPA is primed to be a partner in financing distributed

41. Collective for Community, Culture, and Environment, *Sunset Park Resilient Industrial District*, September 9, 2019, https://static1.squarespace.com/static/581b72c32e69cfaa445932df/t/5d7fa701be8e5528f6bece11/1568646954044/GRID_UPROSE+EDITS.pdf.

42. Nadja Skoplj, “Shared Grid Offshore New York Cuts Over USD 500 Million in Costs (Report),” <https://www.offshorewind.biz/2020/08/06/shared-grid-offshore-new-york-cuts-over-usd-500-million-in-costs-report/>.

43. Betony Jones, “Prevailing Wage In Solar Can Deliver Good Jobs While Keeping Growth On Track,” UC Berkeley Labor Center, November 12, 2020, <https://laborcenter.berkeley.edu/prevailing-wage-in-solar-can-deliver-good-jobs-while-keeping-growth-on-track/>.

44. Ben Bovarnick and Lucas Johnson, “Barriers and Solutions to Low and Moderate-Income Solar Adoption,” *Yale Center for Business and Environment*, August 8, 2018, <https://cbey.yale.edu/our-stories/barriers-and-solutions-to-low-and-moderate-income-solar-adoption>; John Farrell, “5 Barriers to and Solutions for Community Renewable Energy,” Grist, September 9, 2012, <https://grist.org/article/5-barriers-to-and-solutions-for-community-renewable-energy/>; Ben Bovarnick and Lucas Johnson, *Research Review on Residential Solar Access: Barriers and Solutions for Low and Moderate Income Communities*, October 2019, https://cbey.yale.edu/sites/default/files/2019-10/Barriers%20and%20Solutions%20LMI%20Solar_FINAL_0.pdf; Emily Moss, Kriston McIntosh, Wendy Edelberg, and Kristen Broady, “The Black-White Wealth Gap Left Black Households More Vulnerable,” *Brookings*, December 8, 2020, <https://www.brookings.edu/blog/up-front/2020/12/08/the-black-white-wealth-gap-left-black-households-more-vulnerable/>.

solar. This could take the form of grants, loans, or co-ownership of renewable assets for distributed renewables to support and streamline environmental justice community-led clean energy projects.

- **3. Supply an anchor tenant:** Via its relationships with public buildings and institutions, NYPA could work as a coordinator between residents, small businesses, nonprofits, and local government to cultivate community solar projects that support disadvantaged community members. Particularly, a public institution like a school or municipal building could establish itself as the anchor tenant to community solar, creating a stable energy user, and allow for subscription to disadvantaged community members who otherwise might not have had access to renewable energy because of the high point of entry.⁴⁵

Ending Fossil Fuels: In order to become a beacon of renewable investment, NYPA has to cut its ties with dirty fossil fuels that have harmed communities. NYPA currently owns, operates, or has a power purchase agreement with at least 13 different gas plants in the state, in addition to energy it may buy off the market.⁴⁶ In NYPA's sustainability plan from 2019, they still project emissions from gas.⁴⁷ Under this proposal, NYPA would have to wind down all those assets by 2025. Winding down those plants on a timeline that supports the worker transition and surrounding community dependence will be paramount over the next five years. (See figure 5)

A core component of NYPA's wind-down strategy must be ending and replacing the New York City peaker plants. Peaker plants are generally inefficient and polluting, and are often sited in low-income neighborhoods.⁴⁸ For instance, according to a recent study, peakers contribute as much as 94% of the state's nitrogen oxide emissions on a high-ozone day.⁴⁹ Ushered into action after tireless advocacy by environmental justice groups, NYPA has entered into a memorandum of understanding with the PEAK Coalition, a team including champions like UPROSE and the NYC Environmental Justice Alliance and others, to investigate the decommissioning of its Astoria peaker plants.⁵⁰

The MOU between the PEAK Coalition and NYPA investigates the possibility of the peaker plants being displaced by a combination of renewable energy sources and battery backups. In a March 2021 report, the PEAK Coalition articulated clear and achievable pathways to full decommissioning of the plants by 2025, if paired with renewable, transmission, and efficiency investments.⁵¹ The report should operate as a roadmap for NYPA's decommissioning plans, and NYPA should work in lockstep with environmental and climate justice activists and workers to make good on its promise for wind-down, and engage in similar planning for its other infrastructure.

45. Johanna Bozuwa and Carla Skandier, "An Anchor Strategy for the Energy Transition," The Democracy Collaborative, September 3, 2018, <https://democracycollaborative.org/learn/publication/anchor-strategy-energy-transition>.

46. NYPA, "NYPA Generating Facilities," accessed February 9, 2021, <https://www.nypa.gov/power/generation/all-generating-facilities>.

47. New York Power Authority, *SUSTAINABILITY PLAN | 2019-2023*, June 19, 2019, <https://www.nypa.gov/-/media/nypa/documents/document-library/environmentaljustice-sustainability/nypa-sustainability-plan-2019-2023.pdf>.

48. Rachel Ramirez, "The Drive to Replace Summer-Only 'Peaker' Power Plants," *Wired*, May 19, 2020, <https://www.wired.com/story/the-drive-to-replace-summer-only-peaker-power-plants/>; Clarisa Diaz, "The Push to Turn NYC's Polluting Peaker Plants into Publicly-Owned Solar Power," *Gothamist*, July 7, 2020, <https://gothamist.com/news/the-push-to-turn-nycs-polluting-peaker-plants-into-publicly-owned-solar-power>; Elena M. Krieger, Joan A. Casey, and Seth B.C. Shonkoff, "A Framework for Siting and Dispatch of Emerging Energy Resources to Realize Environmental and Health Benefits: Case study on peaker power plant displacement," *Energy Policy* 96 (2016): 302-313, <https://doi.org/10.1016/j.enpol.2016.05.049>.

49. PEAK Coalition, *The Fossil Fuel End Game*, March 2021, <https://www.cleangroup.org/wp-content/uploads/Fossil-Fuel-End-Game.pdf>.

50. The PEAK Coalition, *PEAK Coalition Campaign to Replace Polluting Power in NYC EJ Communities*, https://8f997cf9-39a0-4cd7-b8b8-65190bb2551b.filesusr.com/ugd/f10969_ef889c19b69c4dad880dcc3f-990d959c.pdf.

51. PEAK Coalition, *The Fossil Fuel End Game*, March 2021, <https://www.cleangroup.org/wp-content/uploads/Fossil-Fuel-End-Game.pdf>.

An aerial illustration of a smart city. The scene features several buildings with blue solar panels on their roofs. A tram is traveling on a dedicated track, and a bus is on a nearby road. There are also pedestrian walkways, a basketball court, and a water tower. The overall color palette is soft, with pinks, purples, and blues. The text 'GRID MANAGEMENT, ELECTRIFICATION, & EFFICIENCY' is overlaid in large, bold, white letters on a black background.

GRID MANAGEMENT, ELECTRIFICATION, & EFFICIENCY

GRID MANAGEMENT, ELECTRIFICATION, & EFFICIENCY

1. Transmission & Energy Storage Investments

SUMMARY

NYPA plans to spend \$726 million on upgrading transmission between now and 2030. This report suggests the following two recommendations:

- **Invest in equitable & public transmission:** Without going beyond what NYPA has already planned, this report confirms the necessity for transmission to stay in public ownership, ensuring it can be devised with process and equity in mind.
- **Enable energy storage:** Energy storage is critical to a renewable energy future, and sits as an important investment by NYPA to build redundancies and support the grid during intermittency.

Renewables are located in different places from the old fossil fuel infrastructure. Coal and gas plants relied on a centralized grid that did not have to consider where the sun shines or winds blow. Reorganizing the energy system also means changing how energy is transmitted from these places to where it is used. New York State has faced long-identified congestion challenges in transmitting upstate electricity generation, including from new renewable power projects, to downstate load centers. Upgrading and expanding transmission, paired with storage, will be a key to achieving the CLCPA's goals of bringing more renewable energy and energy storage options onto the grid.

52. Yves Noel, *New York Power Authority's Vision2030—Ten-Year Strategic Plan*, NYPA, December 9, 2020, <https://www.nypa.gov/-/media/nypa/documents/document-library/news/NYPAs-Vision-2030-Trustees-Meeting-Presentation-12-9-20.pdf>; Paul Ciampoli (2020) "NYPA Sells More Than \$1.2 Bil in Bonds to Finance Capital Expenditures," *American Public Power Association*, June 3, <https://www.publicpower.org/periodical/article/nypa-sells-more-12-bil-bonds-finance-capital-expenditures>.

53. W. Hicks, "Declining Renewable Costs Drive Focus on Energy Storage," Natl. Renew. Energy Lab, January 2, 2020, <https://www.nrel.gov/news/features/2020/declining-renewable-costs-drive-focus-on-energy-storage.html>. Over 95% of the US's current installed energy storage capacity (22 GW) at the grid scale still lies in conventional pumped hydroelectric power plants, the other 5% (~1 GW) in newer battery projects, mostly lithium-ion.

CURRENT ROLE OF NYPA

NYPA's 2030 strategic plan is most ambitious in its vision for the utility's future leadership in New York State energy transmission—investing \$726 million in modernizing and expanding transmission buildout by 2030.⁵² Most recently, the AREGCBA designates NYPA the first choice to lead transmission expansion in the state. NYPA also plays a significant role in New York State's energy storage capacity. Hydroelectric pumped-storage is still the dominant existing source of grid-scale energy storage in the US,⁵³ which NYPA provides for New York. In 2019, NYPA initiated its first battery storage development, a large-scale lithium-ion project in Northern New York—the second transmission grid-scale battery project in the state and the first to be publicly owned and operated.⁵⁴

Invest in equitable and public transmission: This proposal does not imagine transmission infrastructure beyond what NYPA has already proposed, but instead focuses on the value of those assets being held in public ownership. Though transmission is an important part of NYPA's public power investment, development, and ownership role, it should not unduly dominate NYPA's focus, and future investments should not come at the cost of investing in distributed energy, battery storage, and other resilience-based technologies.⁵⁵ Nevertheless, NYPA's role is significant to protecting public ownership of transmission infrastructures, particularly given the rise of private and public-private ownership models and ideas of "competitive transmission" that could incentivize unnecessary transmission.⁵⁶

54. All other battery systems are deployed at the distribution level. Paul Ciampoli, "Construction starts on NYPA large-scale, 20-MW energy battery storage project," *American Public Power Association*, August 27, 2020, <https://www.publicpower.org/periodical/article/construction-starts-nypa-large-scale-20-mw-energy-battery-storage-project>, Andy Colthorpe, "Publicly-Owned and Operated 20MW Battery Project Begins Construction in New York," *Energy Storage*, August 28, 2020, <https://www.energy-storage.news/news/publicly-owned-and-operated-20mw-battery-project-begins-construction-in-new>.

55. Gridworks and Gridlab, *The Role of Distributed Energy Resources in Today's Grid Transition*, Utah Clean Energy, August 2018, http://gridlab.org/wp-content/uploads/2019/04/GridLab_RoleOFDER_online-1.pdf.

Public transmission is a compelling strategy to invest in the transmission now online: utilities do not make as much money on maintenance as compared to new infrastructure, trending them towards new transmission instead of maintaining what is currently available.⁵⁷ A public role is also crucial in equitably resolving ongoing community challenges to transmission infrastructure siting. NYPA can promote new public, justice-oriented practices and priorities in geographies where those resources are sited. In both capacities, NYPA is again well positioned to advance and hold accountable state commitments made with the AREGCBA and Office of Renewable Energy Siting.⁵⁸

Enable energy storage: On energy storage, this report again does not propose new projects nor advocate for the construction of new dams and hydroelectric pumped-storage projects, whether by NYPA or private developers.⁵⁹ However, NYPA should continue investing in its existing public hydro and in publicly owned battery projects, whether lithium-ion or other emerging technologies.⁶⁰ Nonetheless, with protests growing against ecologically damaging and unjust ramp-ups of lithium mining for new battery applications in vehicle electrification and grid-scale storage, NYPA should use its purchasing power to promote effective regulation and responsible sourcing practices.⁶¹

2. Energy Efficiency Programming

SUMMARY

Between now and 2030, NYPA should invest \$13.8 billion in energy efficiency programs, with an explicit focus on supporting communities experiencing energy poverty. This could create direct and indirect 16,425 sustained jobs and an economic impact of \$25.3

56. National Grid Ventures, “Competitive Transmission,” accessed February 10 2021, <https://www.nationalgrid.com/our-businesses/national-grid-ventures/what-we-do/competitive-transmission>; Chris Nelder, “Adapt or Die? Private Utilities and the Distributed Energy Juggernaut,” *gtm*, April 15, 2013, <https://www.greentechmedia.com/articles/read/Adapt-or-Die-Private-Utilities-and-the-Distributed-Energy-Juggernaut>.

57. Russell Gold, Rebecca Smith, and Katherine Blunt, “PG&E: Wired to Fail,” *The Wall Street Journal*, December 28, 2019, <https://www.wsj.com/articles/pg-e-wired-to-fail-11577509261>.

58. NYSERDA, New York State Announces Passage of Accelerated Renewable Energy Growth and Community Benefit Act as Part of 2020-2021 Enacted State Budget, April 3, 2020, <https://ores.ny.gov/system/files/documents/2020/07/ores-2.pdf>.

billion in additional economic activity. NYPA should:

1. Reduce emissions in public buildings: In state-owned buildings, NYPA should invest \$4.5 billion by 2030 to increase efficiency an additional 25%. It could also directly target public school efficiency programs, focusing on low-income and Title 1 schools.

2. Invest in low-income housing efficiency: By 2030, NYPA should invest \$4.5 billion in deep energy retrofits in the form of grants or no-interest loans, with two thirds specifically designated to families experiencing energy poverty. NYPA should also deepen its partnership with the New York City Housing Authority by supporting its efficiency and decarbonization goals, providing \$4.8 billion of investment directly to the housing authority.

3. Bulk purchase and recycle: NYPA should leverage its purchasing power to buy efficient appliances and other physical goods that could help lower the cost of efficiency projects, while also coordinating a recycling initiative.

This proposal focuses on how NYPA could expand energy efficiency programs to further invest in public buildings as well as how it can expand its purview to help support residential efficiency. NYPA can target its investment in public infrastructure and residential buildings to support communities struggling with persistent problems like air pollution and energy poverty.

CURRENT ROLE OF NYPA

NYPA has a long history of leading on energy efficiency programs and has championed innovative models for action.⁶² NYPA started one of the first efficiency audit

59. Sammy Roth, “Environmental Disaster or Key to a Clean Energy Future? A New Twist on Hydropower,” *Los Angeles Times*, March 5, 2020, <https://www.latimes.com/environment/story/2020-03-05/is-hydropower-key-to-a-clean-energy-future>.

60. NYPA, “Vision 2030 Strategic Plan,” accessed March 31, 2021, <https://www.nypa.gov/about/vision2030>.

61. Scott Sonner, “Federal Lawsuit Challenges Construction of Lithium Mine Approved During Trump’s Final Days,” *reno gazette journal*, March 5, 2021, <https://eu.rgj.com/story/news/2021/03/05/federal-lawsuit-challenges-thacker-pass-lithium-mine-nevada/4601075001/>. See also Y. Freemark, C. Samaras, C. McCoy, R. Meyers, T. Riofrancos, X. Lillehei, B. Fleming, D.A. Cohen, *Toward a Green New Deal for Transportation: Establishing New Federal Priorities to Build a Just and Sustainable Future*. climate + community project, 2021.

programs, called Button Up, in the 1980s. Then-CEO David Freeman took on efficiency as one of the core functions of the authority. Under his management, NYPA ran the energy-efficient refrigerator swap program with the New York City Housing Authority (NYCHA), where it bought efficient refrigerators in bulk, incentivizing manufacturers to create higher-efficiency products.⁶³

NYPA's efficiency program continues today. Through more than 2,400 energy efficiency projects, NYPA has upgraded over 6,600 facilities.⁶⁴ NYPA runs the BuildSmart NY program focused on coordinating the efficiency program to lower energy costs in all public buildings, where it has reduced public building emissions by 20%.⁶⁵ NYPA's role as an energy service provider has been a major revenue builder for the state authority, generating \$200–\$300 million each year.⁶⁶

Reduce emissions in public buildings: NYPA should invest \$4.5 billion by 2030 to reduce emissions from state-owned buildings an additional 25%, focusing on projects that serve as investments in disadvantaged communities—from government offices to community centers—that often are not supported. NYPA should have a specific commitment to public schools and invest \$1.5 billion in school retrofits by 2030. By prioritizing Title 1 schools, NYPA could be an agent for eliminating pollutants in communities that often suffer from high asthma rates because of disinvestment and industrial plant siting (see box on page 40).⁶⁷

62. NY Power Authority, "A History of Innovation," Timeline, 2021, <https://www.nypa.gov/about/timeline/>; NYPA Media Relations, "NYPA Recognizes Top Public-Sector Energy Services Customers for Reducing Energy Consumption and Leading the Charge to Achieve New York's Clean Energy Goals and Fight Against Climate Change," NYPA press release, October 8, 2019, <https://www.nypa.gov/news/press-releases/2019/20191008-energyefficiency>.

63. L. F. Kinney, G. Lewis, R. G. Pratt, and J. Miller, New York Power Authority/New York City Housing Authority refrigerator replacement program, first program year evaluation. Final report, August 1, 1997, <https://doi.org/10.2172/527929>.

64. NYPA, "Energy Efficiency," accessed March 31, 2021, <https://services.nypa.gov/services/clean-energy-solutions/energy-efficiency>.

65. NYPA, EO88 2018 ANNUAL REPORT, 2018, <https://www.nypa.gov/-/media/nypa/documents/document-library/operations/eo88-2018-annual-report.pdf>.

66. Kedar Raman, "New York Power Authority: The Journey to World Class Asset Management," Conference Presentation, PI World, San Francisco, 2019, <https://cdn.osisoft.com/osi/presentations/2019-uc-san-francisco/US19NA-D2PG03-NewYorkPowerAuthor>

Invest in low-income housing efficiency: Low-income households are disproportionately burdened by energy costs, paying three times more than average households as a percentage of income.⁶⁸ Past efficiency pilot programs, run primarily through NYSEERDA, have successfully ameliorated some energy burden, but have fallen short for those most in need as a result of their financing and pricing structure.⁶⁹ It is essential that investments intended to support low-income households are not structured in a way that is cost prohibitive or racks up debt for low-income households, nor disallow renters from participating.

As a public entity, NYPA should conduct efficiency projects at no or very little cost for those unjustly saddled with high energy burdens, investing \$4.5 billion in residential efficiency with two thirds of that investment going to community members paying more than 10% of their income on energy. This could be done through a direct efficiency grants program for those households. Additionally, NYPA could provide no-interest loans paid over time through the households' savings on energy, akin to the Pay As You Save program model that eliminates upfront costs and pays back the efficiency measures via a bill line item without creating debt for the customer.⁷⁰ It could also look to New York's Environmental Facilities Corporation, a public benefit corporation that services localities with financial (grants and low-cost loans) and technical assistance to build quality water infrastructure.⁷¹ The ultimate program design should prioritize equitable

ity-Raman-The-New-York-Power-Authoritys-Journey-to-World-Class.pdf.

67. Sara Grineski, and Timothy W. Collins, "Geographic and Social Disparities in Exposure to Air Neurotoxicants at U.S. Public Schools," *Environmental Research* 161 (February 2018): 580-587, <https://www.sciencedirect.com/science/article/pii/S0013935117317188>.

68. Ariel Dreobl and Lauren Ross, "Lifting the High Energy Burden in America's Largest Cities: How Energy Efficiency Can Improve Low-Income and Underserved Communities," American Council for an Energy-Efficiency Economy (ACEEE), 2016, <https://www.aceee.org/research-report/u1602>.

69. E. Gelman, "Lessons from NY for a Green New Deal," *Medium*, September 22, 2020, <https://medium.com/@emmaigelman/lessons-from-ny-for-a-green-new-deal-c7e1028580c1>.

70. This may require coordinating with distribution utilities for ease of billing program. Clean Energy Works, "PAYS® for Energy Efficiency – Q&A," accessed March 21, 2021, <https://www.cleanenergyworks.org/pays-for-energy-efficiency/>.

ENERGY BURDEN BY RACE AND ETHNICITY BY COUNTY

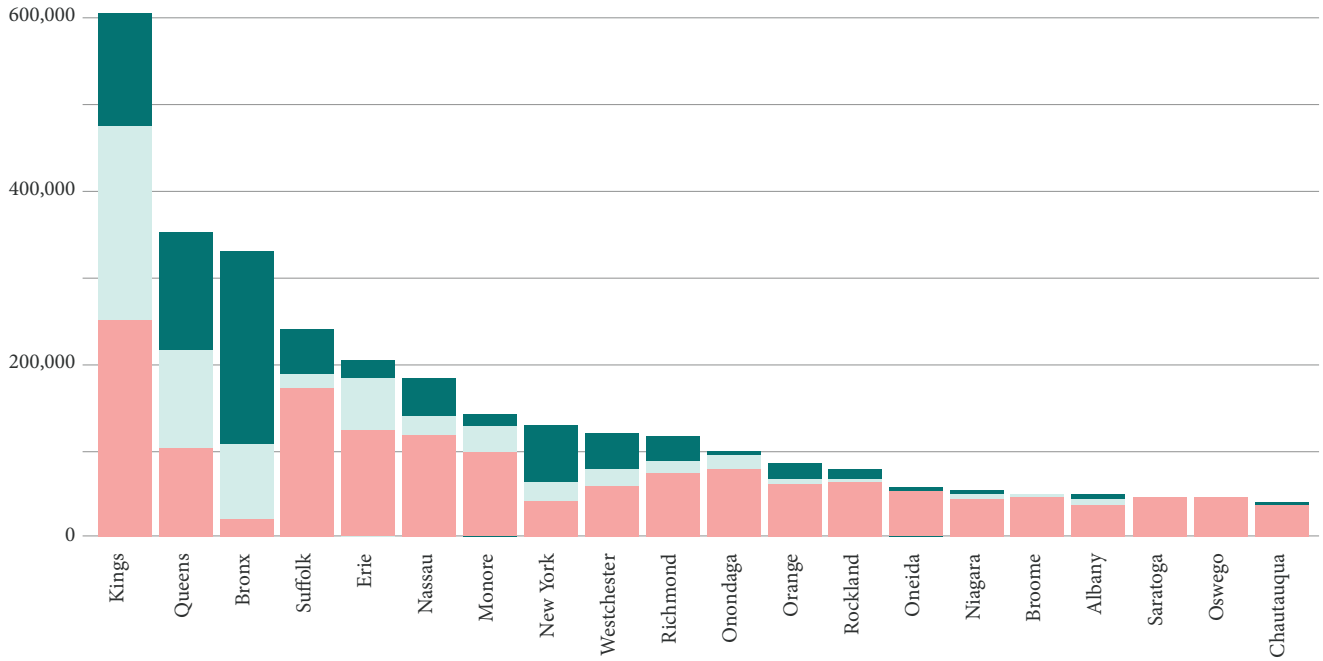


FIGURE 10. Total individuals in a household paying >=6% of monthly income on electricity and gas costs

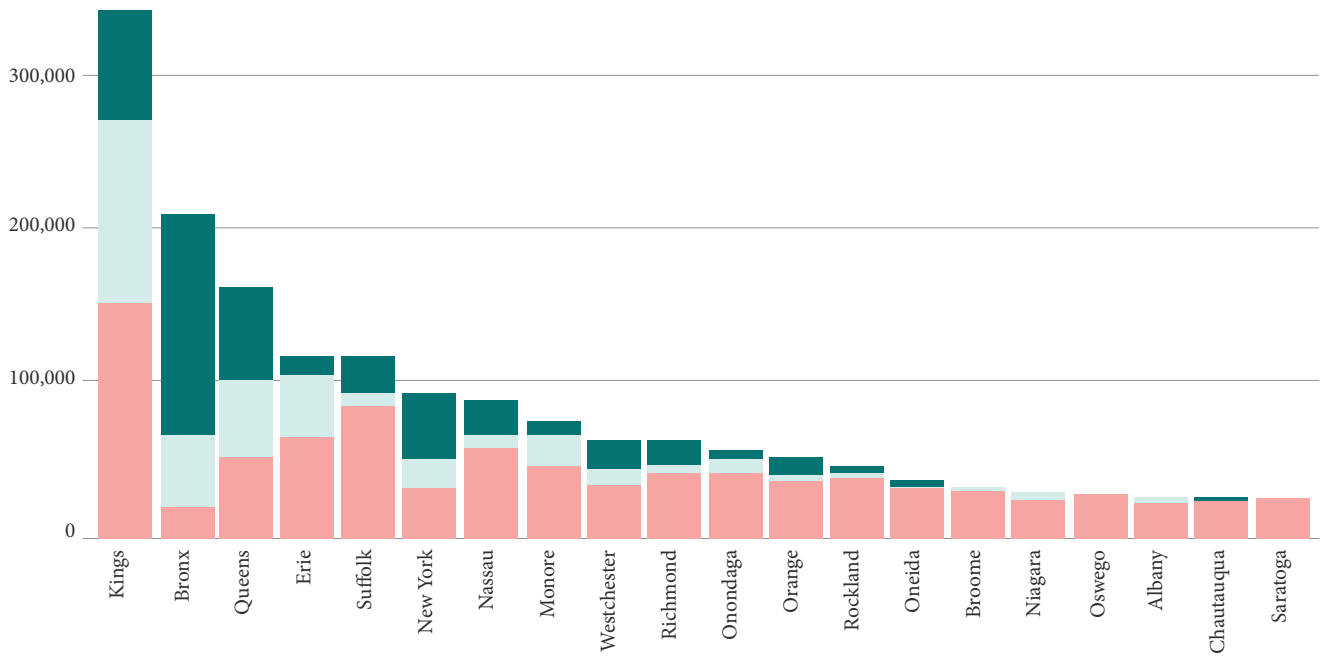
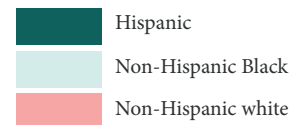
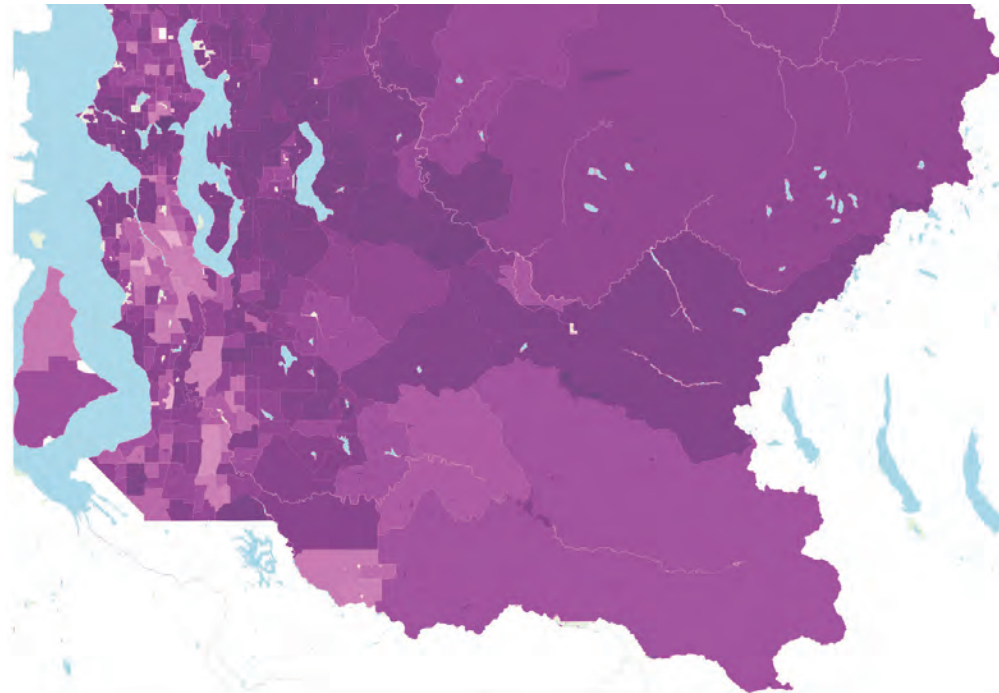



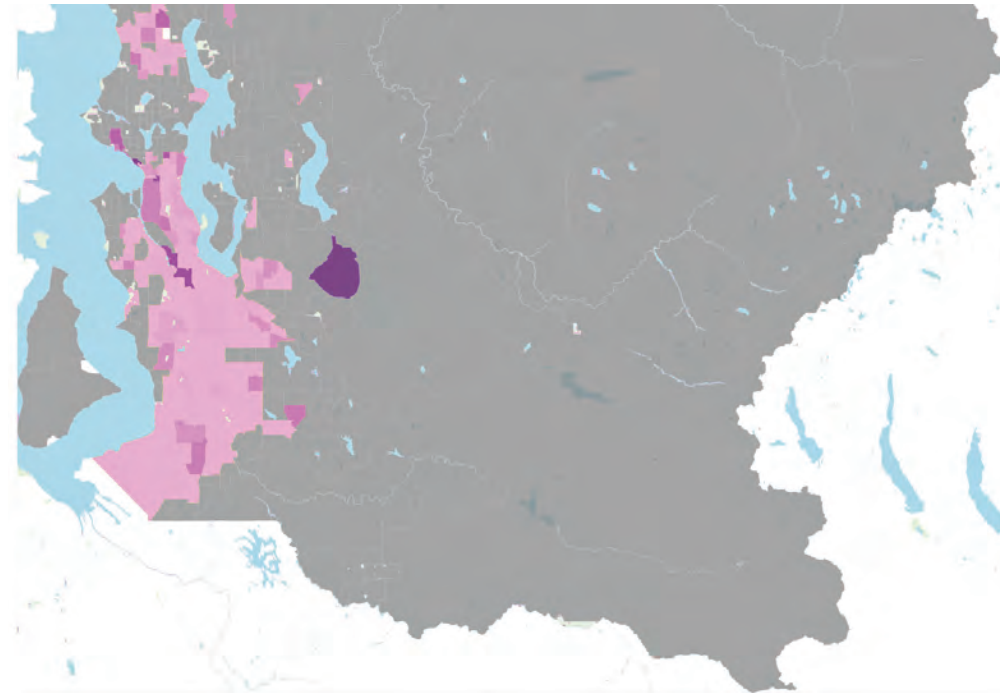
FIGURE 11. Total individuals in a household paying >=10% of monthly income on electricity and gas costs




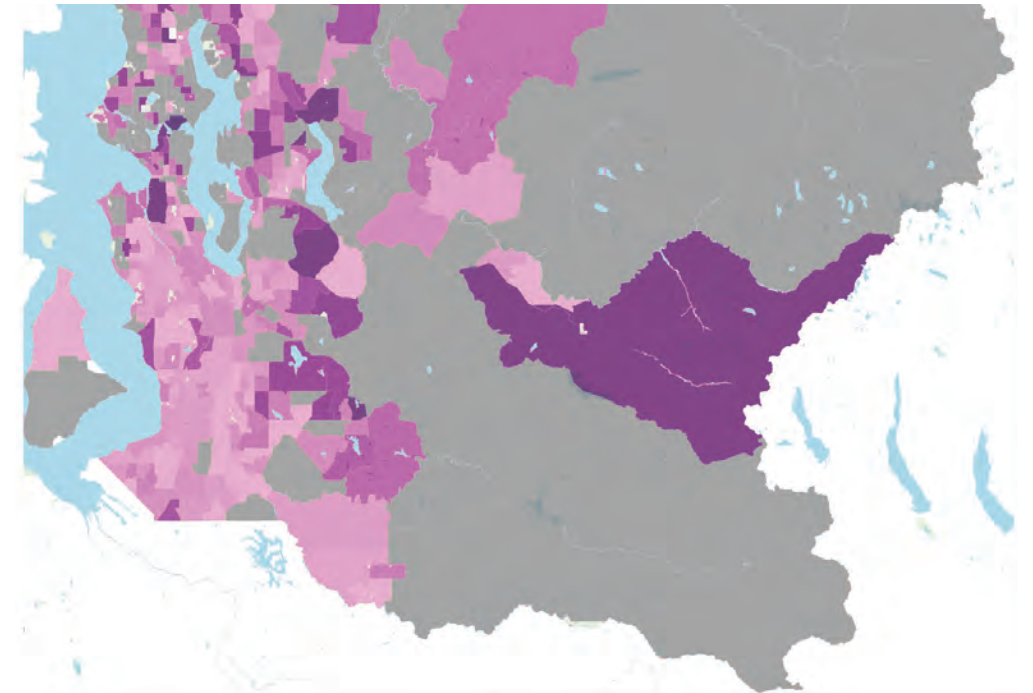
ENERGY BURDEN BY RACE AND ETHNICITY IN KINGS COUNTY




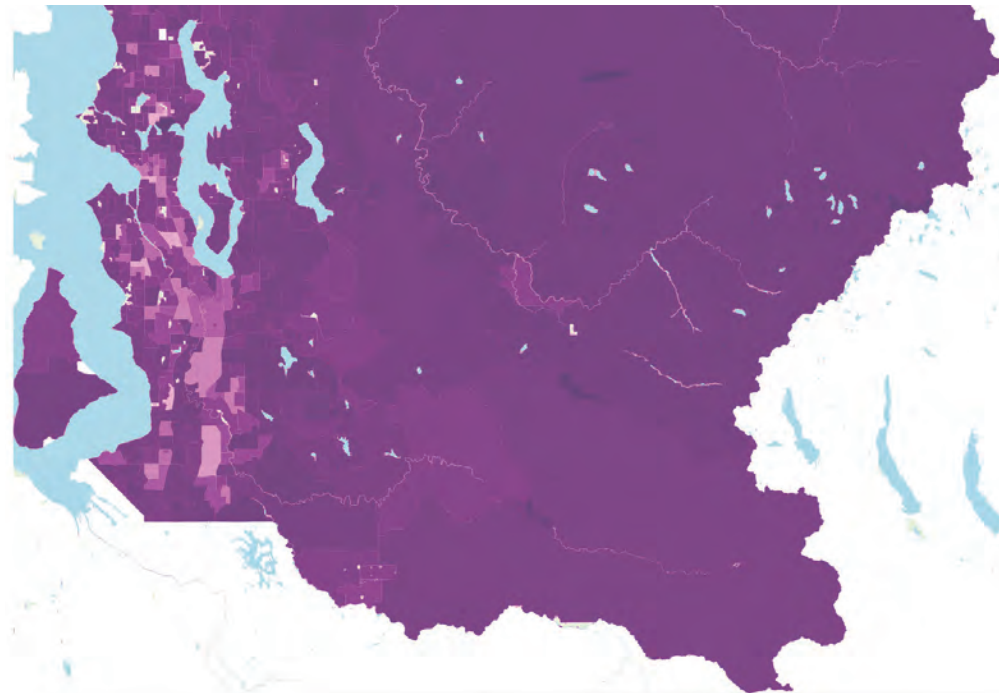
Non-Hispanic white: % paying $\geq 6\%$ monthly on electricity and gas costs
 ≤ 0  $\geq .3$




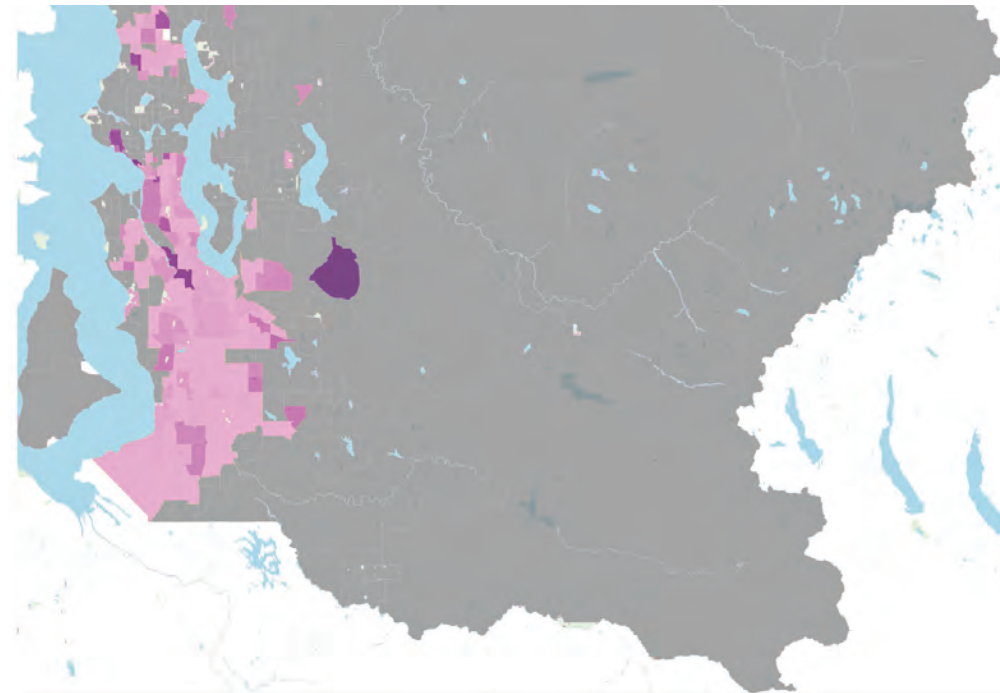
Non-Hispanic Black: % paying $\geq 6\%$ monthly on electricity and gas costs
 ≤ 0  $\geq .3$




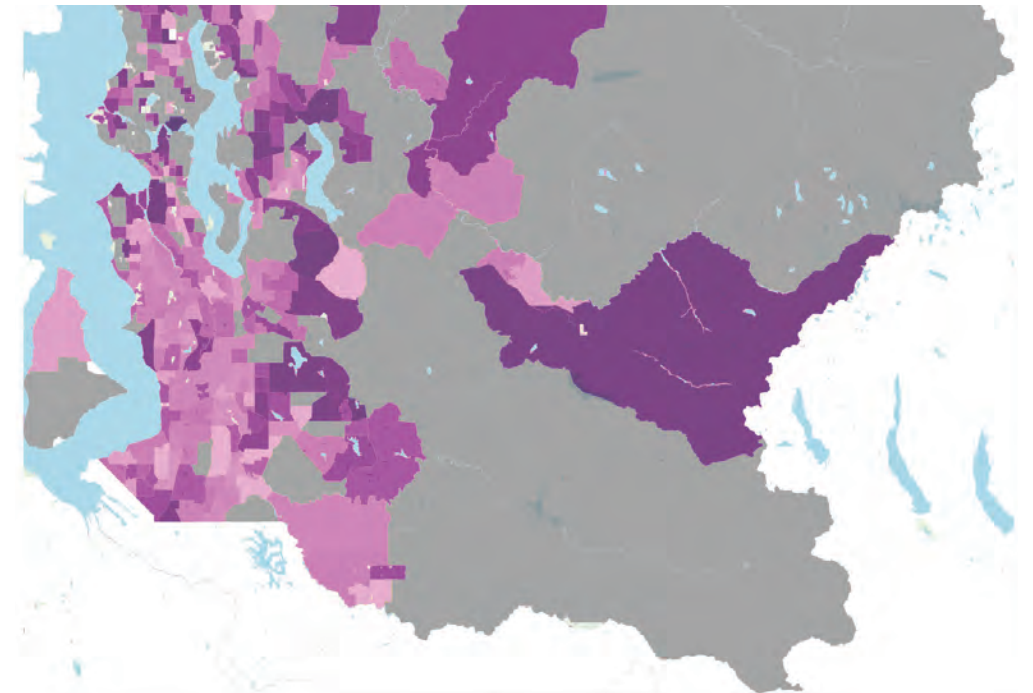
Hispanic: % paying $\geq 6\%$ monthly on electricity and gas costs
 ≤ 0  $\geq .3$



Non-Hispanic white: % paying $\geq 10\%$ monthly on electricity and gas costs
 ≤ 0  $\geq .2$



Non-Hispanic Black: % paying $\geq 10\%$ monthly on electricity and gas costs
 ≤ 0  $\geq .2$



Hispanic: % paying $\geq 10\%$ monthly on electricity and gas costs
 ≤ 0  $\geq .2$

FIGURE 12. Maps of Kings County energy burden by race and ethnicity

financing (see Financing NYPA's Transition , pg 46). NYPA should also continue to invest in public housing projects, particularly with NYCHA. NYCHA has committed to 40% reduction in emissions by 2030, and NYPA should actively collaborate on that goal with them, much like they did in the 1980s on the refrigerator replacement program, and invest at least \$4.8 billion into efficiency and electrification projects.

These upgrades should prioritize building an in-house staff of efficiency experts and workers. It should also partner with community groups that have close relationships with neighborhoods that should be receiving the most help. PUSH Buffalo, a community-based organizing and direct service housing and efficiency provider, is an example of such a group. PUSH's understanding of Buffalo and its community puts it at a clear advantage to deliver on projects.⁷² Building trust in either scenario will be paramount to supporting communities experiencing energy poverty—especially since they have been targeted by ESCOs promising cheaper service while delivering the opposite.⁷³

Figures 10-12 paint a picture of energy poverty in New York, drawing out the racial disparities up- and downstate. This map can support NYPA in making informed decisions about how to target efficiency investments to alleviate energy poverty in historically marginalized communities, while recognizing that investment decisions should be made in consultation with those communities. The highest number of households living in energy poverty (over 10% of their income paid on utilities) are located in Kings, Bronx, and Queens counties, predominantly Black and Latinx neighborhoods. While in sheer numbers those counties deserve significant investment, there are also large racial inequities in energy poverty outside New York City. For instance, in Niagara County, about 36% of Black households are living in energy poverty as compared to 11% of white households. NYPA should direct its investment into places where the volume of people in energy poverty is highest, as well as where there are the highest racial inequalities.

Cumulatively, the efficiency and electrification programming across public buildings, NYCHA, and housing investments could create 4,093 direct and a total 16,425 sustained jobs, and an economic impact of \$25.3 billion in additional economic activity between now and 2030.

71. Environmental Facilities Corporation, "Homepage," accessed March 21, 2021, <https://www.efc.ny.gov/>.

72. PUSH Buffalo, "Mission," accessed March 21, 2021, <https://www.pushbuffalo.org/mission/>.

Support a bulk purchase and recycling program:

In conjunction with weatherization and retrofits for low-income housing, NYPA should play a key role in supporting bulk purchasing for a host of different appliances or physical assets including heat pumps, efficient refrigerators, insulation, and more. NYPA could enter into major procurement contracts with certain standards that could increase innovation in the manufacturing sector for hyper-efficient appliances like induction stoves and fridges by operating as a wholesale buyer, then distributing the products at a lowered price to public institutions, nonprofits, residences, social enterprises, and more.

NYPA could pair its projects with a recycling program, wherein NYPA would guarantee that all replaced appliances would be recycled in an environmentally safe manner, as much as possible in-state. For example, the refrigerator upgrade program with NYCHA included a comprehensive recycling component for utilizing old, inefficient refrigerators. The replaced fridges were recycled in Syracuse, New York. NYSERDA does some of this recycling work, and NYPA could help ramp it up further.

3. Electrifying Transportation

SUMMARY

NYPA could invest \$534 million between now and 2030 in transportation infrastructure to electrify the public fleet and build charging infrastructure for buses and trucks:

1. Electrify the public fleet: NYPA should particularly supply and expand electric school and mass transit buses in the state. Transitioning this sort of public transit could provide transit access for families and take cars off the road. NYPA should also help coordinate the electrification of state-owned passenger vehicles.

2. Build charging infrastructure: NYPA should invest in and control planning related to the location of charging stations to ensure an equitable distribution of this critical infrastructure.

Transportation is the single largest source of New York's greenhouse gas emissions, producing 36% of the state's emissions.⁷⁴ In transforming the transportation sector,

73. eLab, Voices on Energy Issues in Low-income Communities, May 2015, https://rmi.org/wp-content/uploads/2017/04/eLab_Leap_Voices_On_Energy_Issues_Reports_REOS.pdf.

New York has an opportunity to begin to remedy the harms produced by decades of inequitable transportation policy. Communities of color and low-income communities have often been planned out of transportation systems, leaving them with far less access to clean, affordable transportation than white and wealthier communities.⁷⁵ If its role were expanded in the ways outlined below, NYPA could invest in public fleet infrastructure like transit and school buses. It could also support a coherent electric vehicle charging system across the state.

CURRENT ROLE OF NYPA

NYPA is a leader in the electrification of New York's transportation sector. In 2019, the state legislature expanded the Power Authority Act to give NYPA more authority to plan, install, and operate electric vehicle infrastructure.⁷⁶ With that authority, NYPA undertook the EVOlve NY project, which has NYPA building 200 chargers in 50 locations across the state by the end of 2021.⁷⁷ NYPA has also been instrumental in helping public transit authorities to electrify their fleets. In October 2020, NYPA worked with NYSERDA and a local utility company to help Rochester's Regional Transit Service source and deploy 10 electrified buses and related charging infrastructure.⁷⁸

Electrify the public fleet: Much like the state- and municipal-owned building stock, much of New York's state, municipal, and public transit vehicle fleets need to be updated and electrified. Governor Cuomo also recently signed an agreement to electrify at least 30% of New

York's trucks and buses by 2030. To achieve this goal, New York will have to electrify over 38,000 trucks and buses.⁷⁹

As a public institution, NYPA can more easily work across agencies, thereby preventing the kind of fragmented, duplicative procurement processes that could lead to a poorly planned system. And as a long-standing partner of the MTA, NYPA has experience and expertise in working with public transit authorities to meet the new energy needs brought on by electrification. Putting NYPA in the driver's seat of fleet electrification could ensure that clean transportation and infrastructure reach the communities that need them most— not only supporting the move towards electrification, but making public transit more accessible overall. School buses, mass transit, and public vehicles are all clear candidates for investment.

School buses: For operators willing to electrify their school bus fleets, NYPA should cover \$100,000—about half of the upfront costs per bus.⁸⁰ NYPA could then use these buses as energy storage during the summer months, obtaining an immediate return on the state's investment.

Public transit: The five largest transit operators in New York operate over 1,300 buses.⁸¹ Governor Cuomo has committed \$16.4 million of the Volkswagen settlement to helping these operators to electrify their fleets, and NYPA has committed \$1 million to supporting that effort.⁸² NYPA should expand its commitment to a matching \$16.4 million so that it can provide more

74. "Reducing Greenhouse Gas Emissions," NY Department of Environmental Conservation, accessed February 9, 2021, <https://www.dec.ny.gov/energy/99223.html#:~:text=The%20transportation%20sector%20is%20the,greenhouse%20gas%20emissions%20and%20growing>.

75. Low income is defined as under \$57,000 annual income.

76. NYPA, Approved 2021 Budget and 2021–2024 Financial Plan, (White Plains, NY: NYPA, 2020), p.2, <https://www.nypa.gov/-/media/nypa/documents/document-library/financials/approved-2021-budget-and-2021-2024-financial-plan.pdf>.

77. NYPA, "EV Charging Stations," accessed February 9, 2021, <https://nypa1.maps.arcgis.com/apps/webappviewer/index.html?id=11ea18ded-ab744bb801534ba763c9fe7>.

78. Regional Transit Service, "RTS Celebrates the First 10 Buses in Its Bus Fleet," RTS Newsroom, October 7, 2020, <https://www.myrts.com/Newsroom/News/Article/310/RTS-Celebrates-the-First-10-Electric-Buses-in-its-Bus-Fleet>.

79. NRDC, "New York Pathways to Bus & Truck Electrification," *CleanTechnica*, October 10, 2020, <https://cleantechnica.com/2020/10/10/new-york-pathways-to-bus-truck-electrification/>.

80. Steven Nadel and Eric Junga, *Electrifying Trucks: From Delivery Vans to Buses to 18-Wheelers*, ACEEE, January 1, 2020, <https://www.atlasevhub.com/resource/electrifying-trucks-from-delivery-vans-to-buses-to-18-wheelers/>.

81. Charles Morris, "State of New York Announces Transit and School Bus Electrification Initiatives," *Charged*, January 5, 2021, <https://chargedevs.com/newswire/state-of-new-york-announces-transit-and-school-bus-electrification-initiatives/>.

82. NYSERDA, "Governor Cuomo Announces Initiatives to Electrify Transit Buses, Boosting Access to Clean Transportation and Building Healthier Communities," Dec. 29, 2020, <https://www.nyserdanyc.gov/About/Newsroom/2020-Announcements/2020-12-29-Governor-Cuomo-Announces-Initiatives-to-Electrify-Transit-Buses-Boosting-Access-to-Clean-Transportation-and-Building-Healthier-Communities>.

extensive support. This extra support could be critical to smaller transit authorities with likely less capacity to manage transitioning or expanding their fleets.

Publicly Owned Passenger Vehicles: The state owns almost 7,000 passenger vehicles, only a tenth of which are electric or hybrid vehicles.⁸³ Local and regional governmental agencies own countless more passenger vehicles.

GREEN PUBLIC SCHOOLS AND NYPA: A LOOK AT AN INTEGRATED APPROACH

As Cha and Skinner propose in their report, “Reversing Inequality, Combating Climate Change,” public schools—from K-12 to higher education—are a core opportunity for NYPA to advance environmental justice and decarbonization.⁸⁴ The report also carries lessons for an integrated approach to public buildings that NYPA could apply more broadly.

By prioritizing schools, NYPA can ensure that students study in healthy, modernized buildings with a comfortable temperature year round, with excellent air circulation to enhance respiratory health. Students should be invited to participate in retrofits, with schools becoming living labs. And retrofits should add storage and, where appropriate, micro-grid capabilities so that schools can be community resiliency centers during extreme weather disasters.

Run off of renewable energy (with some energy even developed on site). In Westchester County, NYPA is already working on community solar programs with the local schools.⁸⁵

Increase efficiency. This would lower costs for overburdened schools. NYPA has worked with the State Universities of New York (SUNY) on a clean energy roadmap that includes efficiency projects.⁸⁶ NYPA could similarly do projects for K–12.

Create clean transport for students via electric school buses. NYPA supported Rochester transit in developing its electric bus fleet, and could do similar projects alongside school districts.⁸⁷

Since schools are points of community, these investments can work as important educational opportunities, develop hubs for workforce development, and even set themselves up to operate as important centers of resilience in the face of climate disasters like storms.

NYPA’s BuildSmart NY program focuses on skills, but ambitious prioritization is needed of the Title I schools that are so often left behind. According to NYPA, between 12,800 and 18,400 jobs could be created by making public schools more efficient. Cha and Skinner argue in 2016 that the total cost for those deep retrofits would come to \$1.1 billion and 1.5 billion, which is only a third of the full cost of utility bills for schools in the state.⁸⁸

83. Jen Metzger, “Senate Passes Metzger Bill to Electrify New York’s Fleet of Passenger Vehicles,” New York State Senate, June 19, 2019, <https://www.nysenate.gov/newsroom/press-releases/jen-metzger/senate-passes-metzger-bill-electrify-new-yorks-fleet-passenger#:~:text=According%20to%20the%20Office%20of,electric%20or%20gas%2Delectric%20hybrids>.

84. J.Mijin Cha and Laura Skinner, *Reversing Inequality, Combatting Climate Change: A Climate Jobs Program for New York State*, June 2017, <https://archive.ilr.cornell.edu/sites/default/files/InequalityClimateChangeReport.pdf>.

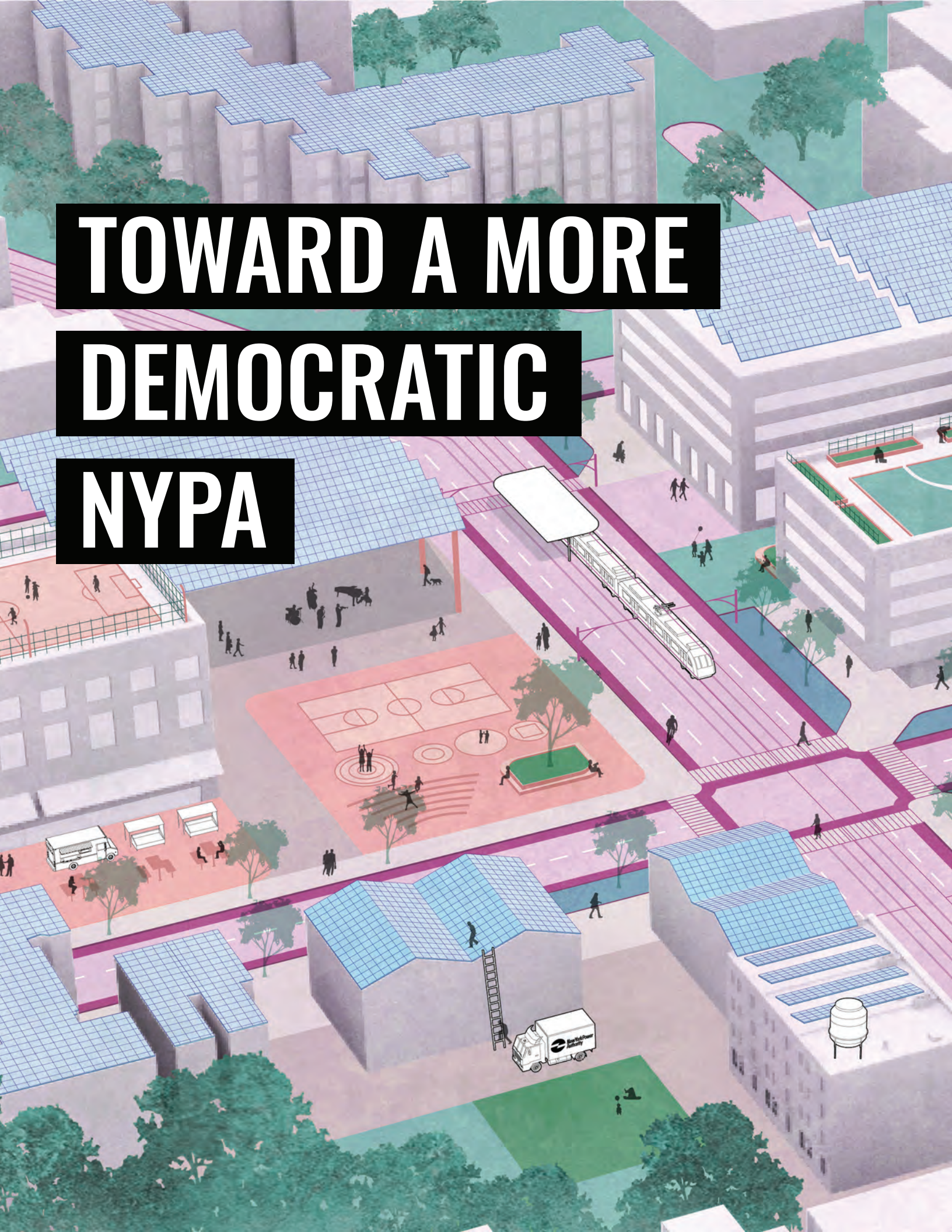
85. NYPA, “NY Power Authority Announces First K-Solar School to Turn on Solar Power,” June 7, 2017, <https://www.nypa.gov/news/press-releases/2017/20170607-nypa-ksolar>.

86. NYPA, “Chancellor Kristina Johnson Announces New SUNY Clean Energy Roadmap in Partnership with New York State Agencies to Accelerate Progress Toward Governor Cuomo’s Goals,” April 30, 2019, <https://www.nypa.gov/news/press-releases/2019/20190430-suny-clean-energy-roadmap>.

87. Regional Transit Service, “RTS Celebrates the First 10 Buses in Its Bus Fleet,” RTS Newsroom, October 7, 2020, <https://www.myrts.com/Newsroom/News/Article/310/RTS-Celebrates-the-First-10-Electric-Buses-in-its-Bus-Fleet>.

88. J.Mijin Cha and Laura Skinner, *Reversing Inequality, Combatting Climate Change: A Climate Jobs Program for New York State*, June 2017, <https://archive.ilr.cornell.edu/sites/default/files/InequalityClimateChangeReport.pdf>.

TOWARD A MORE DEMOCRATIC NYPA



TOWARD A MORE DEMOCRATIC NYPA

SUMMARY

Expanding NYPA's role in the New York energy system and the renewed commitment to environmental justice requires a democratization of the institution itself. This should include actions to:

- **1. Expand Board Representation:** NYPA should move from its seven governor-appointed board members to a 10-person multi-stakeholder Board of Trustees that would better represent the interests of key constituents.
- **2. Establish an Office of Community Engagement:** An Office of Community Engagement, with 10 regional loci called Regional Hubs and held between NYPA and NYSERDA, could coordinate robust deliberation and development of action plans.

An expanded NYPA will require oversight over every area of investment and programming to ensure equity-oriented decision-making protocols and achieve the vision laid out in the CLCPA. As a publicly owned utility, NYPA has opportunities to build out community accountability and implement new systems of democratization that would be impossible in private entities. A major benefit of public ownership is its malleable form as well as its increased local control not seen in the highly consolidated utility sector.

This is an important juncture to reorganize NYPA so that it achieves higher levels of accountability and participation to reflect the needs of New Yorkers and ensure that the benefits flow to them. This report's proposals have the potential to achieve the environmental justice commitments proposed in the CLCPA, but this will not occur without improved structures of community input, transparency, and accountability. Plus, the new roles that NYPA would play—from supporting community solar to deep energy retrofits to building out school bus systems—require novel partnerships and ownership forms that center community benefit. These changes in decision-making structure require nothing further than a legislative intervention. The Power Authority Act establishes NYPA's existing board structure and terms of governance, which can be modified by legislation.

89. NYPA, "Leadership," accessed March 21, 2021, <https://www.nypa.gov/about/leadership>

CURRENT ROLE OF NYPA

All six members of the Board of Trustees are appointed by the governor with the advice and consent of the Senate. NYPA's President and Chief Executive Officer is appointed by the Board of Trustees and confirmed by the Senate.⁸⁹ NYPA is subject to open meetings and freedom of information laws as a public institution. While not subject to regulation by the PSC, it largely commits to abide by programs like REV or partners with NYSERDA and is further regulated by its Power Authority Act.⁹⁰

Expand board representation: NYPA could introduce some of the values of environmental justice into its board by reorganizing the board structure to reflect the needs of decarbonization and multiple important constituencies. NYPA should move from its seven governor-appointed board members to an expanded 10-person, multi-stakeholder board. This could include four representatives from environmental justice constituencies, four experts on issues related to renewable energy and community engagement, and two representatives from NYPA rank and file workers.

The four representatives derived from the environmental justice constituents would represent approximately 40% of the Board of Trustees, mirroring the CLCPA's commitment to direct 40% of investment to disadvantaged communities. The environmental justice representatives should be nominated by a predetermined body of environmental justice groups, one that either already exists—for instance, the Climate Justice Working Group created by the CLCPA to represent community interests—or is newly created. Putting representatives from environmental justice communities in positions of leadership at NYPA would provide them the opportunity to actively steer investments and bring concerns of their communities to discussion.

The labor representatives could be determined by rank and file workers via a process determined by their union. Having workers from NYPA's unions at the decision-making table is a way to create more worker voices in the institution, which could have positive effects on working conditions and salaries, as well as providing support on key infrastructure decisions with their know-how from experience on the job.

90. "Power Authority Act," accessed March 31, 2021 <https://www.nypa.gov/-/media/nypa/documents/document-library/governance/power-authority-act-2019.pdf>.

The additional four expert representatives could be appointed by the governor or come directly from the Office of Community Engagement (described below). By identifying key areas of necessary expertise, like renewable energy, management systems, or community engagement, these representatives could support NYPA in making informed decisions.

This should be a phased process wherein NYPA's existing, outgoing board members would be tasked with developing a list of requirements for board membership within the new structure, as well as with identifying methods to provide technical and educational training to candidates or appointees that may not currently hold those qualifications. Particularly in the case of the environmental justice board members, both funding and technical support should be provided to allow members to adequately engage in their role. These parameters could be approved by the governor, the legislature, and/or voters via a referendum prior to being included in the board's by-laws alongside mechanisms for future revision and modification if necessary.

Establish an Office of Community Engagement: An expanded NYPA will require deeper relationship building with communities, and particularly the CLCPA will require NYPA to increase its capacity and knowledge on concerns of environmental justice. Thus, this report proposes that NYPA establish an Office of Community Engagement. Such an office could run as a semi-independent Office, coordinated between NYPA and NYSERDA, to allow for increased systems of participation and accountability. It could also hold specific regional hubs that engage in decision making within local contexts to inform the whole of NYPA. The Office of Community Engagement will be essential for coordinating action plans to ensure that at minimum 40% of the transition investments reach disadvantaged communities.

Regional Hubs: Ten Regional Hubs should circulate information and gather perspectives that are reflective of each community. Sharing information about and dialogue around siting, community benefit, and integrated planning would be held in these spaces. The hubs are a bi-directional channel of energy information between communities and agencies such as NYPA, the PSC, and NYSERDA, ensuring that programs designed and implemented by these agencies have direct input and leadership from the communities where policies will be implemented and/or projects will be sited. The

Regional Hubs would also operate as a connector to work and training opportunities, particularly catering to those seeking jobs or phasing out of fossil fuel jobs (see Job Creation & Economic Development section). Funding for these hubs could come from a combination of existing systems benefit charge funds or be supported directly by NYPA. Elected representatives from all the Regional Hubs could even operate as an Advisory Board to the Board of Trustees, to inform them of the local dynamics and impacts of NYPA's operations.

Convening: The Office of Community Engagement should act as a space to convene stakeholders, and facilitate a range of public engagement and democratic processes. It could operate by bringing in College University of New York (CUNY) and SUNY scholars, NYPA representatives, community representatives, and labor.⁹¹ Programs for community engagement and consent could include quarterly public engagement meetings where all stakeholders, including workers and ratepayers, would provide suggestions for improvements in NYSERDA's and NYPA's operations, investments, and technologies. Plus, longer-term working groups could be convened for across-state development dovetailing with ongoing processes conducted by the CLCPA's Climate Action Council. Since the Climate Action Council will ultimately dissolve after it meets targets, these working groups could absorb the groups that coalesced under that banner as is necessary. Such ongoing working groups could include topics including fossil fuel phaseouts and just transitions; community impact mapping to plan investments; and standards for community benefits of energy projects, partnerships, and economic development.

Democratization and Transparency: With specific expertise on democratization held within the Office, the team could lead the charge on new forms of democratic process, including tools such as Participatory Budgeting or deliberative process. The office could also serve as a repository and custodian for financial, technical, and other information and data on NYPA, NYSERDA, and the Regional Hubs (and their activities), and could provide community groups, researchers, Regional Hubs, policymakers, and others access to this information according to parameters that it establishes (and that could be approved by state policymakers and/or the public) that balance the goals of maximum transparency, personal privacy, and public benefit.

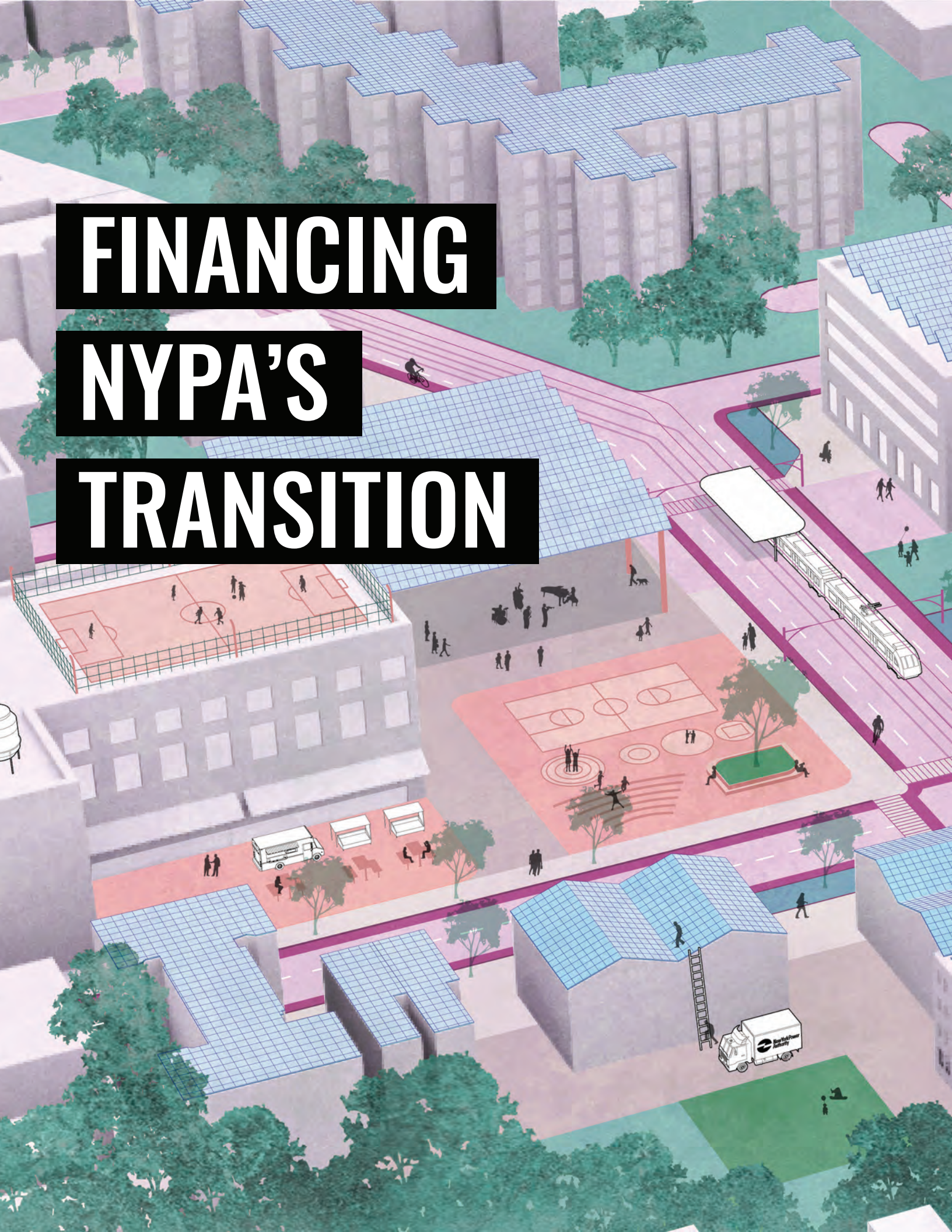
91. Anne Le Strat, "The Remunicipalisation of Paris' Water Supply Service," Conference Presentation, Paris, France, <https://research.ncl.ac.uk/media/sites/researchwebsites/gobacit/Anne%20Le%20Strat.pdf>; Anne Le Strat, "A New Water Policy for Paris, Democratic and Socio-

Environmental Sustainable," *Solutions for a Sustainable and Desirable Future*, May 14, 2020, <https://www.the-solutions-journal.com/article/new-water-policy-paris-democratic-socio-environmental-sustainable/>.

Research: A latent New York Energy Policy Institute at SUNY Stony Brook produces guidance on energy policy in the state and conducts much-needed research.⁹² This research wing should be increased to deploy funding across the CUNY/SUNY system for research necessary to lower energy poverty in the state, predict energy needs, meet climate goals, and more—coordinating via Regional Hubs and other fora for community input. In particular, this research program could support the production of a 10-year climate and resiliency plan for NYPA to achieve this report’s ambitious goals, and consult with communities via the Regional Hubs.

92. Stony Brook University, “Governor Paterson Names Stony Brook University to Lead New York State Energy Policy Institute,” Stony Brook University News, December 14, 2009, <https://news.stonybrook.edu/newsroom/press-release/general/121409energypolicy/>.

FINANCING NYPA'S TRANSITION



FINANCING NYPA'S TRANSITION

SUMMARY

Based on the level of additional investment across the sectors discussed in this report, NYPA would invest an additional \$27.1 billion to \$44.2 billion between now and 2030.

- **1. Pursue opportunities for more direct ownership of renewables:** As an owner, partner, and/or financier, NYPA should act as a transparent and straightforward partner in project development, cutting financing costs by simplifying deals via more direct funding and rejecting rentier extractions.
- **2. Relieve roadblocks for financing:** NYPA should support distributed renewables and efficiency services by providing grants or access to upfront capital at no or very low cost. NYPA should create these programs with care so that they support disadvantaged communities and do not create new debt burdens.
- **3. Consider financial impacts of NYPA's expansion:** NYPA is primed to increase its investment over the next period in order to achieve the goals set out in this report, but consideration should be paid to keeping a strong rating while ramping up investment.

NYPA's institutional status as publicly owned sets it up for a better financial deal than individual users, nonprofits, or smaller municipalities could get on their own—especially fiscally stressed or financially excluded communities. This is also a clear moment for intervention, as existing and more privatized models of renewable energy financing are seeing major turbulence. Expiring

federal tax credits, Trump-era tax cuts, and COVID-related economic recession have caused bottlenecks in traditional sources of finance like tax equity.⁹³ Tax equity is the financial tool that describes the “monetizing” or “selling” of those tax credits to a small set of major US banks and corporations so that one party gets a legal tax shelter in exchange for investing in the project.⁹⁴ Mainstream private financial players are increasingly interested in lending to and owning “mature” renewables like utility-scale onshore wind and solar projects. Meanwhile, energy efficiency, distributed renewables like community solar, storage solutions, and other vital infrastructures get worse deals and may be excluded entirely.⁹⁵

Thus, there is a growing opportunity for public owners like NYPA. Expanding public ownership of renewable energy generation at various scales, as well as other energy products and services, provides opportunities to fund these activities in more inclusive ways while guarding against shifting risks to the vulnerable or ratepayers, as is seen by some private financial actors in the sector. Years of dramatically falling prices for onshore wind, solar, and lithium-ion batteries also make these renewable resources increasingly resemble NYPA's core low-cost hydropower resource, though with even lower operating costs and less upfront capital needed than its legacy publicly financed hydropower (and former nuclear) fleet. NYPA's public finance model, combined with its strong fiscal position, will likely remain competitive even amidst a flood of new private lenders into the sector. This report proposes that NYPA invest an additional \$27.1 billion to \$44.2 billion between now and 2030, the equivalent of \$3.0 billion to \$4.9 billion a year in investments.

93. Norton Rose Fulbright, “Costs of Capital: 2021 Outlook,” Project Finance Newswire, February 2021; Norton Rose Fulbright, “Disappearing Tax Equity,” *Project Finance Newswire*, August 2020; David Feldman, Mark Bolinger, and Paul Schwabe, *Current and Future Costs of Renewable Energy Project Finance Across Technologies*, Golden, CO: National Renewable Energy Laboratory, 2020. NREL/TP-6A20-76881, <https://www.nrel.gov/docs/fy20osti/76881.pdf>; Gregory Meyer, “US renewables look to plug funding gap as pandemic hits tax incentives,” *The Financial Times*, December 12, 2020.

94. EveryCRSReport.com, “Tax Equity Financing: An Introduction and Policy Considerations,” accessed March 31, 2021, <https://www.everycrsreport.com/reports/R45693.html>.

95. Financier Worldwide, “Financier Worldwide Q&A: Capital Stacks for Investment in the US Renewable Energy Sector,” *Financier Worldwide*, October 2018, <https://www.financierworldwide.com/qa-capital-stacks-for-investment-in-the-us-renewable-energy-sector#.YEAATZP7TBI>; Marjorie Glover and Keith Martin, “Pension investments bring new opportunities and some challenges,” Norton Rose Fulbright, *Project Finance Newswire*, February 18, 2021, <https://www.projectfinance.law/publications/2021/february/pension-investments-bring-new-opportunities-and-some-challenges/>; Rex Tiller, “INSIGHT: Tax Equity Remains an Under-Utilized Tool for Corporate Tax Strategy,” *Bloomberg Tax Daily Tax Report*, January 29, 2019, <https://news.bloombergtax.com/daily-tax-report/insight-tax-equity-remains-an-under-utilized-tool-for-corporate-tax-strategy>.

CURRENT ROLE OF NYPA

NYPA is in a very strong financial position. It largely uses revenue bonds—a type of municipal bond that supports specific projects that will turn around revenues—for much of its large investment projects like hydropower or transmission. Fitch, Moody's, and S&P give NYPA's long-term revenue bonds very strong ratings—among the highest ratings given to public electric utilities.⁹⁶ NYPA holds about \$2.1 billion in outstanding debt largely because of its recent investments in new transmission projects to serve the CLCPA; it was able to obtain this public finance very cheaply at 3.5% interest, the lowest rate in its history. By 2024, it expects to make revenues off those investments, making strides in paying back that debt.

So far, NYPA has not used revenue bonds as readily for new renewable infrastructure, like energy efficiency, solar, or wind investments. Instead, it largely relies on third parties or competitive procurement processes so that a (largely private) third party ultimately holds ownership or control and NYPA pays for its access to the service.⁹⁷ A clear example was its recent 2020 competitive procurement process for onshore renewable energy (discussed in the Renewable Energy section). On energy efficiency, NYPA similarly does not actually hold debt on its \$1 billion in projects but instead uses its public financing power to negotiate borrowing with and for third-party players, which ultimately means the debit does not show up on its balance sheet. The responsibility for repaying this debt (and the risk of non-repayment) is passed on to customers, usually paid back through their energy savings from the efficiency improvements.

Pursue direct ownership of utility-scale renewables: Much like NYPA has financed its transmission infrastructure so that it can fully or partially own the assets it builds

via revenue bonds, it should do so for more of its non-hydropower renewable energy procurement. As an owner, partner, and/or financier, NYPA could act as a transparent partner in the development of projects, cutting financing costs by simplifying deal structures via direct funding and rejecting rentier extractions. NYPA could also invest in partial ownership of various projects, and ramp up to full ownership over time if it could not take on full ownership immediately.⁹⁸ While a shift towards more ownership would affect the amount of debt NYPA holds, the power authority's strong financial standing puts it in a good position to do so. This public ownership model is particularly important given the concentrated, frequently transnational, and increasingly opaque patterns of ownership in major renewable energy projects nationwide, dominated by deregulated IPPs⁹⁹—there are real risks of long-term accountability and affordability problems if these sectoral trends go unchallenged.

FEDERAL RENEWABLE INCENTIVES IMPACT ON NYPA

Though electric utility deregulation is one reason that IPPs now dominate US renewable energy development and ownership, another reason is how the US federal government has organized its long-standing tax credits for renewable energy. The Production Tax Credit (PTC) is used mainly for onshore wind, the Investment Tax Credit (ITC) mainly for solar and most recently enabled for offshore wind, and five-year accelerated depreciation benefits for most renewables under the Modified Accelerated Cost Recovery System (MACRS). This federal subsidy has been substantial and significant in the growth of US renewables.¹⁰⁰ However, it has also placed major constraints on and ownership biases within the system. Publicly owned utilities like NYPA and nonprofit cooperatives are systematically excluded by the tax code from benefiting from this federal subsidy.¹⁰¹ In essence, therefore, federal tax credits have systematically privileged

96. (-10.8% and -19.6%)

97. NYPA, Approved 2021 Budget and 2021–2024 Financial Plan, (White Plains, NY: NYPA, 2020), p.2, <https://www.nypa.gov/-/media/nypa/documents/document-library/financials/approved-2021-budget-and-2021-2024-financial-plan.pdf>.

98. Financier Worldwide, “Financier Worldwide Q&A: Capital stacks for Investment in the US Renewable Energy Sector,” Financier Worldwide, October 2018, <https://www.financierworldwide.com/qa-capital-stacks-for-investment-in-the-us-renewable-energy-sector#.YEAAATZP7TBI>. For example, the IRS has recently permitted investor-owned utilities to trial a “build-transfer” model in partnerships with project developers, a move to make traditional utilities more competitive with the IPPs and deregulated model that dominate US renewable energy ownership.

99. David Feldman, Mark Bolinger, and Paul Schwabe, Current and Future Costs of Renewable Energy Project Finance Across Technologies, Golden, CO: National Renewable Energy Laboratory, 2020, NREL/TP-6A20-76881, <https://www.nrel.gov/docs/fy20osti/76881.pdf>; Rex Tiller, “INSIGHT: Tax Equity Remains an Under-Utilized Tool for Corporate Tax Strategy,” Bloomberg Tax Daily Tax Report, January 29 2019, <https://news.bloombergtax.com/daily-tax-report/insight-tax-equity-remains-an-under-utilized-tool-for-corporate-tax-strategy>.

100. Molly Sherlock, “The Renewable Electricity Production Tax Credit: In Brief,” Congressional Research Service Report, R43453, April 29, 2020; Molly Sherlock, “The Energy Credit: An Investment Tax Credit for Renewable Energy,” Congressional Research Service, November 2, 2018.

independent power producers and a privatized system over traditional regulated and publicly owned utilities.

However, the PTC and residential ITC (for distributed energy, predominantly rooftop solar) are winding down and set to expire in 2022 and 2024, respectively, after a COVID extension; the ITC used by utility-scale projects will remain at a lower 10% rate starting in 2024. This environment creates space for rethinking US renewables development and ownership in a new context of low-cost and low-risk renewables-based power generation.

Relieve roadblocks for financing smaller-scale renewable energy, storage, and/or energy efficiency projects:

Working with NYSERDA, NYPA should continue to develop new public-public and public-community partnerships to provide access to funding for smaller and nonprofit entities building distributed renewable energy generation (community-scale or rooftop projects) and smaller battery storage projects, or energy efficiency services and products.

NYPA can leverage its public financing power to help community and nonprofit players obtain affordable capital to build and own systems, as well as support in efficiency services. Additionally, it could use its financing power to act as a wholesale buyer on behalf of the state for energy products (see the Efficiency section). NYPA could even offset some of the cost of grant programs or more expensive community projects elsewhere across its large balance sheet—a role that private actors cannot and will not play despite their growing interest in owning other segments of renewable energy generation (see Economic Development section).

NYPA's choice of funding models or financing instruments for these sorts of investments should be considered with care. NYPA's current financing model for energy efficiency passes financial risks on to customers (e.g., the risk of energy efficiency retrofit projects not returning sufficient savings to fully pay back upfront loans).¹⁰² While this may work for large institutional customers, residential models like Property Assessed Clean Energy (PACE) loans and utility on-bill financing provoke concern around exclusions (e.g., renters excluded from PACE programs)¹⁰³ and risks of growing customer debt loads or utility shutoffs for nonpayment.¹⁰⁴ Any financing systems that NYPA develops should have the proper customer safeguards so that the programs directly serve disadvantaged communities—to avoid shifting risks to these customers, as well as exacerbating overall debt burdens and risks for those least able to bear them.

Consider financial impacts of NYPA's expansion: The expansion envisioned here—between \$3.0 billion and \$4.9 billion of additional investment annually—should ensure that NYPA remains financially stable. NYPA's history of fiscal conservatism paired and the strength of its predominantly renewable generation fleet to date are some of the reasons why it has strong ratings, which have factored into NYPA's cheap bond borrowing rates. Aggressive expansion in NYPA's debt might provoke a downgrading action by credit rating agencies, frequently a financial disciplining tool for progressive public actors like US urban governments. "Stranded" NYPA assets in early retirements of natural gas plants should be taken into account but will be partially mitigated by saved costs in purchasing fossil fuels and in paying associated costs for emissions credits.¹⁰⁵ These political risks should be noted,

101. David Feldman, Mark Bolinger, and Paul Schwabe, *Current and Future Costs of Renewable Energy Project Finance Across Technologies*, Golden, CO: National Renewable Energy Laboratory, 2020. NREL/TP-6A20-76881, <https://www.nrel.gov/docs/fy20osti/76881.pdf>; Financier Worldwide, "Financier Worldwide Q&A: Capital stacks for investment in the US renewable energy sector," Financier Worldwide October 2018, <https://www.financierworldwide.com/qa-capital-stacks-for-investment-in-the-us-renewable-energy-sector#.YEAATZP7TBI>.

102. NYPA, *Approved 2021 Budget and 2021–2024 Financial Plan*, (White Plains, NY: NYPA, 2020), p.2, <https://www.nypa.gov/-/media/nypa/documents/document-library/financials/approved-2021-budget-and-2021-2024-financial-plan.pdf>.

103. Yerina Mugica, "Can C-PACE Be Effective Financing for Multifamily Housing?," NRDC Expert Blog, January 4, 2018, <https://www.nrdc.org/experts/yerina-mugica/can-c-pace-be-effective-financing-multifamily-housing>.

104. PACENAtion, "PACE Financing Cited as Strategy to Meet New York's Ambitious Energy Efficiency Target," PACENAtion, April 27, 2018, <https://pacenation.org/pace-financing-cited-strategy-meet-new-yorks-ambitious-energy-efficiency-target/>; Sweeny Law, "Pace Loans in Florida: The Evil is Always in the Details," accessed February 9, 2021, <https://www.sweenylawpa.com/pace-loans-in-florida-the-evil-is-always-in-the-details/>; Andrew Khouri, "Some homeowners struggled to pay PACE improvement loans. The coronavirus made it harder," Los Angeles Times, June 29, 2020, <https://www.latimes.com/homeless-housing/story/2020-06-29/pace-home-improvement-loans-coronavirus-foreclosure>); Philip Henderson, *On-Bill Financing Overview and Key Considerations for Program Design*, NRDC, July 2013, <https://www.nrdc.org/sites/default/files/on-bill-financing-IB.pdf>; "On-Bill Recovery Financing Program Frequently Asked Questions," NYSERDA, accessed February 9, 2021, <https://www.nyserda.ny.gov/all-programs/programs/small-business-financing/faq>.

even if they cannot be entirely avoided. Based on NYPA's current debt and the schedule of payments over the next few years, it is clear that NYPA still has room to do more.¹⁰⁶

105. RGGI requires NYPA to buy emission credits for its owned fossil fuel plants, as well for energy contracted from the Astoria Energy II plant. NYPA projected costs from purchasing fuel and credits to be \$119.2 million in 2021. NYPA, Approved 2021 Budget and 2021–2024 Financial Plan, (White Plains, NY: NYPA, 2020), p.2, <https://www.nypa.gov/-/media/nypa/documents/document-library/financials/approved-2021-budget-and-2021-2024-financial-plan.pdf>.

106. The Board of Trustees' current policy is for NYPA to maintain a Debt Service Coverage Ratio (DSCR) of at least 2.0. NYPA projected its DSCR to be 10.4x in 2021 and 4.8x in 2024. NYPA, Approved 2021 Budget and 2021–2024 Financial Plan, (White Plains, NY: NYPA, 2020), p.2, <https://www.nypa.gov/-/media/nypa/documents/document-library/financials/approved-2021-budget-and-2021-2024-financial-plan.pdf>.

An aerial architectural rendering of a city street scene. The scene features several buildings with blue-tiled roofs and grey facades. A tram is traveling along a purple-paved street. People are walking on sidewalks, and there are trees and green spaces interspersed throughout the urban layout. The overall style is clean and modern, with a focus on urban infrastructure and public spaces.

JOB CREATION

AND ECONOMIC

DEVELOPMENT

JOB CREATION & ECONOMIC DEVELOPMENT

SUMMARY

- **Scale economic development:** NYPA should increase the amount of power it allocates towards economic development for enterprises that meet various environmental, renewable energy, and community/labor benefit standards. NYPA should also enact Community Benefits Agreements where it is conducting big projects to build community wealth and jobs programs.
- **Create jobs:** NYPA should move to bring workers associated with its new operations in-house, moving with intention and skilling up alongside the scale-up. Under this proposal, NYPA could create (both directly and indirectly) between 28,000 and 51,000 jobs from now to 2030.
- **Increase procurement:** With increasing procurement needs and its role as a potential wholesale buyer, NYPA should enhance and extend its procurement standards to ensure maximum community benefit as well as climate innovation.
- **Distribute earnings:** Earnings should be reinvested into NYPA's transition programming, and could be specifically earmarked for projects in disadvantaged communities like rooftop solar, efficiency, or fuel switching programs.

NYPA's expanded role gives it the opportunity to create good, green, family-sustaining jobs and proactively deliver new opportunities for a healthy, equitable economy in the state. For instance, by scaling up economic development activities, co-locating energy jobs in disadvantaged communities, integrating apprenticeship programs, and using its procurement and contracting power to incentivize diverse, local businesses and worker cooperatives, NYPA could catalyze an

extraordinary transformation in economic development and begin pointing in the direction of an approach that builds, rather than extracts, community wealth.

CURRENT ROLE OF NYPA

NYPA has an explicit focus on economic development, with a mission to “power the economic growth and competitiveness of New York State.”¹⁰⁷ Traditionally, a large focus has been on attracting businesses to the state and encouraging their expansion to create and retain jobs (especially in areas around NYPA facilities). This is usually done through partnerships with public and cooperative utilities, regional economic development councils, and other economic development agencies and entities.¹⁰⁸ NYPA employs 1,900 people, and has union contracts with the International Brotherhood of Electrical Workers upstate for 550 workers (as of 2018) and Local 1-2 of the Utility Workers Union of America for the Combined Cycle plants in Queens.¹⁰⁹ Earnings made by NYPA are typically reinvested into the utility's operations and established economic development activities, though they may, upon approval by the Board of Trustees, also be transferred as “voluntary contributions” into New York's General Fund. In FY 2019-2020, for instance, NYPA transferred \$20 million to the state treasury, the proceeds of which will be utilized to support energy-related state activities.¹¹⁰

Scale economic development: As previously mentioned, one of the major tools NYPA uses for economic development is low-cost power provided to companies that bring in or retain jobs in a particular area. These sorts of incentives could be extended and further targeted to increase the number of renewable energy, clean manufacturing, energy efficiency, and climate mitigation technology jobs, as well as to achieve certain standards with regards to labor and community benefit and/or ownership (such as worker cooperatives and community-owned nonprofits).

107. NYPA, “About,” accessed February 9, 2021, <https://www.nypa.gov/about>.

108. NYPA, “Meet NYPA,” accessed February 9, 2021, <https://www.nypa.gov/about/the-new-york-power-authority>.

109. NYPA, “New York Power Authority Announces Three-Year Contract Agreement with International Brotherhood of Electrical Workers,” press release, August 7, 2018, <https://www.nypa.gov/news/press-releases/2018/20180807-nypa-announces-contract-agreement>;

NY Power Authority, “NYPA Announces Three Year Contract Renewal with the Utility Workers Union of America,” NY Power Authority Press Releases, January 30, 2020, <https://www.nypa.gov/news/press-releases/2020/20200130-union>.

110. NYPA, Financial Report December 31, 2018 and 2017, March 26, 2019, <https://www.nypa.gov/-/media/nypa/documents/document-library/financials/2018-nypa-finance-report.pdf>.

In addition to project labor agreements on NYPA projects, NYPA should explore the use of Community Benefits Agreements (CBAs) to ensure that the local community gets to determine and realize economic development benefits from large-scale investments in infrastructure (like wind projects). This can include everything from workforce training and pathways into unionization for local residents to profit redistribution from the infrastructure. Even without a CBA, NYPA should proactively work to increase community and stakeholder participation around its various projects and programs to ensure that benefits are tailored to community needs.

Create Jobs: As has been discussed in previous sections, NYPA should target investment in high-need or disadvantaged areas where there is also a high potential for renewable energy, efficiency, or related projects, and also coordinate to create local induced or indirect jobs in an area. Throughout the various investment proposals, this report highlights the opportunity for NYPA to bring more of its operations in-house and therefore provide direct public service employment to New Yorkers. This will likely take intentional thought in scaling up the number of workers within NYPA so that it is prepared for new responsibilities. Particularly as its mandate expands, NYPA should respect union organizing by being neutral in unionization drives, negotiate in good faith with new and existing unions, and disallow the creation of emergency strike funds. Project Labor Agreements also offer a clear way to make high-roads and unionized jobs and could attach specific requirements for projects to support training or apprenticeship programs as well as employ a certain number of people from the region. In coordination with NYSEDA and the Just Transition Working Group created by the CLCPA, NYPA should organize for the Regional Hubs to create clearinghouses for apprenticeships, jobs, and other important worker information at NYPA to build connectivity between workers, community, and NYPA in a place-based manner. In particular, these Regional Hub spaces could be a resource

111. Since 1983, NYPA has procured almost \$1 billion from MWBEs. This includes direct contracts, sub-contracts (where an MWBE is a subcontractor on to a prime vendor), and discretionary purchases. See: “A Guide to the Supplier Diversity Program,” NY Power Authority, March 8, 2017, accessed March 15, 2021, <https://www.nypa.gov/-/media/nypa/documents/document-library/procurement-and-real-estate/supplier-diversity-doing-business-guide.pdf>; see also: “Supplier Diversity,” NYPA, accessed March 15, 2021, <https://www.nypa.gov/procurement/supplier-diversity>. The cap on discretionary purchases from MWBEs is currently \$500,000. There is no cap for SDVOBs. All discretionary purchases must be approved by the vice president for Strategic Supply Management, and published on the open-access Contract Reporter website to allow for transparency and accountability. See “NYPA Guidelines for Procurement

for those workers affected by fossil fuel infrastructure closures and other related wind-down programs. Figure 13 breaks down the total sustained number of jobs that NYPA’s investments could create between now and 2030, and the ways that the investments have been proposed throughout the report to directly invest more than 40% in disadvantaged communities (see Appendix B for more information).

Increase procurement: NYPA currently procures millions of dollars’ worth of goods and services annually. As NYPA increases and scales its activities, it will also inevitably take on a bigger procurement role—giving it an opportunity to create a more equitable, resilient, and sustainable economy in the state. It voluntarily created a Supplier Diversity Program in 1983 and now complies with the state’s Minority and Women’s Business Development (MWBE) and Service-Disabled Veteran Owned Business (SDVOB) standards, among others.¹¹¹

As NYPA’s procurement increases, these standards should be expanded to ensure maximum community benefit. This could include adding worker and employee ownership standards, preferences, and technical assistance (e.g. a worker ownership program) and/or setting wage and benefit rates in its procurement contracts above the state’s existing prevailing wage standard. New York City has a cutting-edge worker cooperative development and procurement program. NYPA could adopt some of this program’s best practices and support the types of businesses that help drive down inequality through increased access to ownership.¹¹²

Procurement by NYPA also has the opportunity to push whole sectors towards new forms of innovation, much like the refrigerator program with NYCHA that catalyzed a whole new industry standard for efficient refrigerators. Similar advances could be made with heat pumps, electric vehicle charging stations, and other efficiency products if NYPA acts as a large wholesale purchaser and establishes ambitious production standards.¹¹³

Contracts, Exhibit A,” NY Power Authority, December 9, 2020, accessed March 15, 2021, <https://www.nypa.gov/-/media/nypa/documents/document-library/procurement-and-real-estate/nypa-2020-guidelines-for-procurement-contracts.pdf>.

112. “Worker Cooperative Business Development Initiative,” NYC Business, accessed February 9, 2021, <https://www1.nyc.gov/nycbusiness/article/worker-cooperatives>.

113. Norine H. Karins, et al. New York Power Authority/New York City Housing Authority Refrigerator Replacement Program: First Program Year Evaluation (Syracuse and Richland: Synertech Systems Corporation and Pacific Northwest National Laboratory, August 1997), accessed March 15, 2021, <https://www.osti.gov/servlets/purl/527929>.

Type of investment	Subcategory	Level of investment by 2030	Sustained total direct + indirect jobs created between 2021-2030	New GDP from Investments	Disadvantaged community stipulations
Renewable Energy	Utility-scale onshore solar and wind over 25 MW	75%: \$25.7 billion 50%: \$17.1 billion 25%: \$8.6 billion	75%: 30,298 50%: 15,149 25%: 7,575	75%: \$59.8 billion 50%: \$29.9 billion 25%: \$15.0 billion	Utility-scale projects should be determined based on a matrix of value, weighting investment toward disadvantaged communities
	Distributed solar	\$4.74 billion	4,407	\$8.4 billion	\$3.32 billion investment earmarked for disadvantaged communities
Efficiency	Public buildings	\$4.5 billion	16,425	\$25.3 billion	Prioritize Title 1 schools, low-income neighborhood government buildings, etc.
	Private households	\$4.5 billion			Two-thirds of investment earmarked for disadvantaged communities
	NYCHA households	\$4.8 billion			Affordable housing program for low and middle income families*
Transportation	School buses	\$500 million	3	\$8.8 million	Prioritize Title 1 schools,
	Public fleet	\$16.4 million			Prioritize low-income-serving transit systems
	Electric vehicle charging	\$17 million			Prioritize low-income-serving transit systems
Total proposed increase in NYPA investment:	75%: \$44.2 billion (\$4.9 billion per year) 50% : \$35.7 billion (\$3.9 billion per year) 25%: \$27.1 billion (\$3.0 billion per year)				

* "Eligibility," New York City Housing Authority, accessed March 22, 2021, <https://www1.nyc.gov/site/nycha/eligibility/eligibility.page>

FIGURE 13. Total Number of Direct and Indirect Jobs created through an Expanded NYPA based on levels of investment

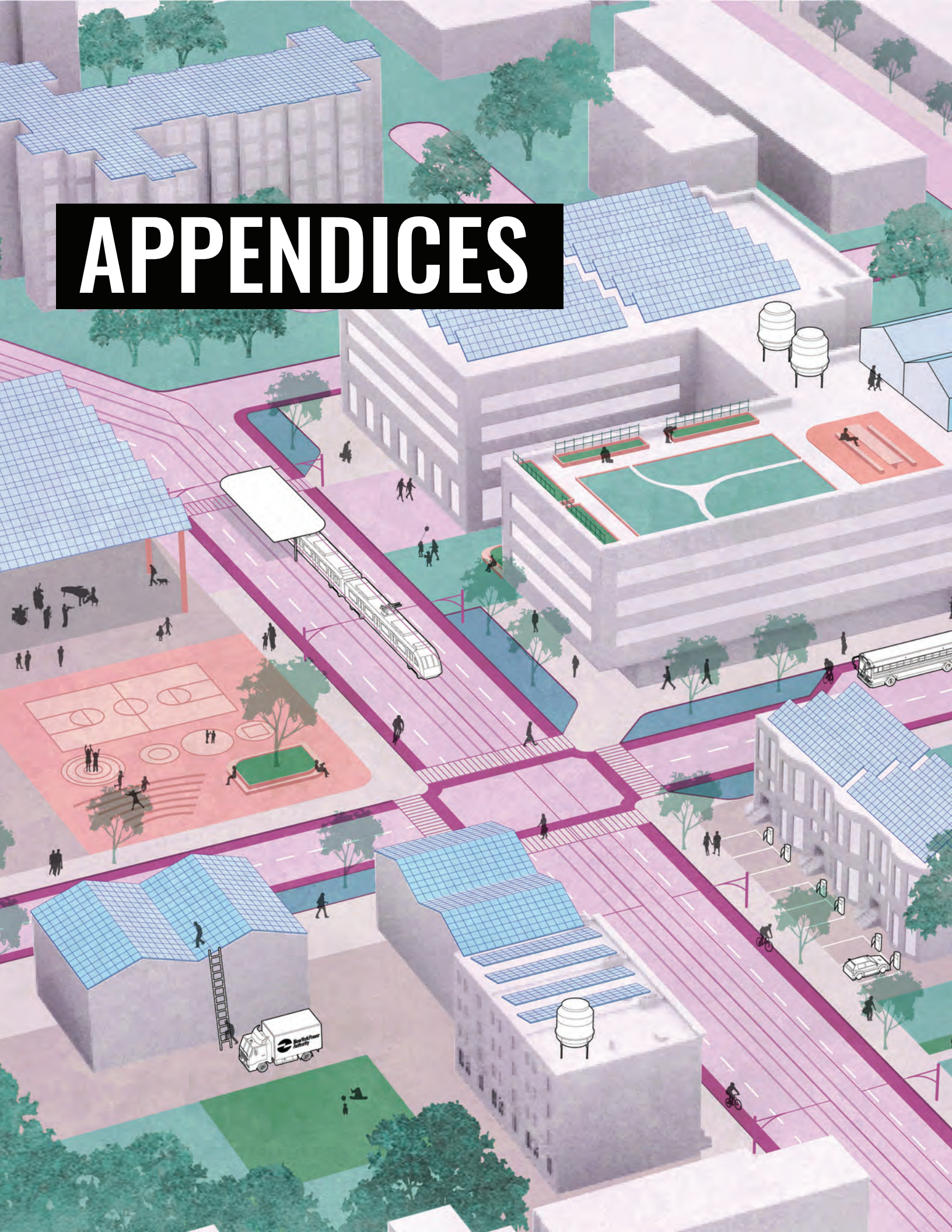
Distribute earnings: Currently, NYPA's earnings are usually reinvested in its activities and allocated towards economic development activities or sent to the state's general fund. If and when NYPA's earnings increase as a result of its expanded role, it should increase economic development activities to support the general welfare and climate goals. Because NYPA is a publicly owned utility, all New Yorkers are its "shareholders" and should benefit in various ways from its energy generation and distribution activities—unlike a privately owned utility that usually extracts its returns and distributes them to a small, elite group of wealthy shareholders. These revenues should then be reinvested in system maintenance and earmarked for programs that support disadvantaged communities, such as broad-based efficiency measures, electrification initiatives, and distributed renewable generation projects.

CONCLUSION

This report presents a vision and direction for NYPA to embody its potential as a leading power authority in the era of the climate crisis. NYPA could be a catalyst in New York's transition to renewable energy, while authentically remedying historic climate, environmental, and racial injustices. As a public entity, NYPA is poised to broadly deploy renewable energy, invest in transmission and storage, increase energy efficiency projects throughout the state, electrify transportation, and further democratize its own organizational structure to safeguard public ownership into the future. While undertaking these bold initiatives, NYPA could create up to 51,133 jobs total, employing union workers with fair salaries and benefits, further bolstering New York's economy and revitalizing the state's rural communities.

This research demonstrates ample room for opportunity and reform. By prioritizing equity and environmental justice, NYPA will recreate a New York that is not only more livable, but also more sustainable looking forward into the future. NYPA plays a monumental role in simultaneously mitigating and adapting to the climate crisis in New York State, while serving as a model for public power authorities in other states that might also follow NYPA's bold example.

APPENDICES



GLOSSARY

CLIMATE LEADERSHIP AND COMMUNITY PROTECTION ACT (CLCPA): New York's landmark climate legislation that sets goals for 100% clean electricity generation by 2040 and 80% decarbonization by 2050. It also specifies that at least 35% (and aiming for 40%) of the benefit of investment goes to disadvantaged communities.

DISADVANTAGED COMMUNITIES: Communities that bear burdens of negative public health effects, environmental pollution, and impacts of climate change, and possess certain socioeconomic criteria, or comprise high concentrations of low- and moderate-income households.

ENERGY SERVICE COMPANIES (ESCOs): Companies that competitively sell electricity to customers in New York State.

INDEPENDENT POWER PRODUCER (IPP): Private or public company that generates energy to be sold via bilateral contracts or to sell on the NYISO market.

INVESTMENT TAX CREDIT (ITC): A federal tax credit provided to solar installations, and more recently offshore wind.

MEMORANDUM OF UNDERSTANDING (MOU): a non-legally binding but formal agreement between two parties.

POWER PURCHASE AGREEMENT (PPA): A contract between two parties, one that generates electricity (the seller) and one that is looking to purchase electricity (the buyer). It is often used as a financial tool to build renewable energy infrastructure.

PRODUCTION TAX CREDIT (PTC): A federal tax credit largely provided to onshore wind production.

NEW YORK CITY HOUSING AUTHORITY (NYCHA): A public development company based in New York State that provides public housing in New York City. More than 600,000 New Yorkers reside in a NYCHA property or rely on Section 8 leased housing.

NEW YORK POWER AUTHORITY (NYPA): A public benefit corporation based in New York State dedicated to providing public power.

NEW YORK PUBLIC SERVICE COMMISSION (PSC): Also called the New York Department of Public Service (DPS). A public utilities commission that oversees the regulation of electric, gas, water, and telecommunications in New York State.

NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY (NYSERDA): A New York State public benefit corporation that promotes energy efficiency and the use of renewable energy sources.

REFORMING THE ENERGY VISION (REV): A government policy strategy to build a clean, resilient, and affordable energy system in New York State.

RIGHT OF FIRST REFUSAL (ROFR): A contractual right that gives its holder the option to enter into a transaction with the owner of something before that owner enters into a contract with a third party.

VALUE OF DISTRIBUTED ENERGY RESOURCES (VDER): A mechanism established by the New York Public Service Commission to replace net energy metering in order to promote renewable energy development such as solar.

APPENDIX A

Mapping Renewable Energy Potential in Environmental Justice Communities

As a part of the implementation of the CLCPA, there will be a focus on clean and renewable energy development in environmental justice communities. This requires defining and identifying environmental justice communities and cross-referencing them with regions with substantial renewable energy.¹¹⁴ The intersection of renewable energy potential and environmental justice communities is visualized using bivariate mapping.

IDENTIFYING ENVIRONMENTAL JUSTICE COMMUNITIES: NEW YORK CENSUS TRACTS

Generally, “environmental justice communities” refer to communities, defined by census tract, that have been historically marginalized or have borne more than their share of the environmental burden. Environmental justice communities can also go by other terms such as the CLCPA’s definition of “disadvantaged communities,” HUD-identified Low-Moderate Income communities (LMI), or (common in the study of health) marginalized communities.¹¹⁵ While the language will likely change as the community of practice continues to expand and develop, the identifying parameters are often the same and largely align with the CLCPA definition, which defines disadvantaged groups as:

Communities that bear burdens of negative health effects,
Communities with environmental pollution,
Communities that are impacted by climate change,
Communities that meet socio-economic criteria (high minority population, low levels of education, etc.), and
Low- and moderate-income communities.

These parameters are broad by design, as consensus on both the exact measures used to reflect them and the effect of the interplay between them is still a matter of important debate. However, several approaches have been used to identify these social justice communities at both the state and federal levels. At the federal level, EJSCREEN¹¹⁶ is a mapping tool that was developed during the Obama administration pursuant to President Clinton’s Executive Order EI 12898.¹¹⁷ This executive order requires the collection, maintenance, and analysis of information related to environmental justice communities. True to the requirements of the executive order, EJSCREEN provides useful national datasets, however, it does not calculate cumulative impacts, but rather displays the concentration of one pollutant or one demographic data set at a time. Like EJSCREEN, the California state-based CalEnviroScreen is a mapping tool focused on environmental justice communities that takes the analysis a step further by leveraging EJSCREEN data in combination with other statewide parameters to calculate an overall score.¹¹⁸

In order to create an environmental justice score for each census tract in the state of New York, this analysis combines data from the EJSCREEN with methodology based on the CalEnviroScreen’s cumulative approach. EJSCREEN data was obtained at the Census block group level. Population-weighted aggregation was used to calculate Census tract-level values. This analysis does not provide an exact replication of the CalEnviroScreen approach applied to the state of New York, as not all data used in CalEnviroScreen was readily available for New York State. However, it was used as a guide. The Environmental Justice Score for this analysis uses two primary indicators: pollution burden and population characteristics.

114. Jackson Morris and Miles Farmer, “Unpacking New York’s Big New Climate Bill: A Primer,” *NRDC*, June 20, 2019, <https://www.nrdc.org/experts/miles-farmer/unpacking-new-yorks-big-new-climate-bill-primer-0>; CLCPA §2, amending Environmental Conservation Law §75-0101(5). <https://www.nyrenews.org/equity-memo>.

115. F. Baah, A. Teitelman, and B. Riegel, “Marginalization: Conceptualizing patient vulnerabilities in the framework of social determinants of health—an integrative review,” *Nursing Inquiry* 26, no. 1, (2018). https://onlinelibrary.wiley.com/doi/full/10.1111/nin.12268?casa_token=vk-myGZwzLWIAAAAA%3AYe3S9gBJayr0qeP9Pweo0IPpxNkGxVs-2rXaeCTAN4JAEb8KNleN8_dl3gJBDol4adjBg8K1EA-fgmsf6

116. United States Environmental Protection Agency, “EJSCREEN,” accessed March 31, 2021, www.epa.gov/ejscreen.

117. EPA, “How Was EJSCREEN Developed?” accessed March 31, 2021, www.epa.gov/ejscreen/how-was-ejscreen-developed#:~:text=The%20presidential%20Executive%20Order%2012898,by%20populations%20identified%20by%20race%2C.

118. “California office of environmental health hazard assessment,” accessed March 31, 2021, <https://oehha.ca.gov/media/downloads/calenviroscreen/report/ces3report.pdf>.

RENEWABLE ENERGY POTENTIAL: NEW YORK CENSUS TRACTS

This analysis uses a simplified renewable energy potential measurement. Solar potential is measured as the global horizontal irradiance multi-year annual average kWh/m². Data was obtained from the National Renewable Energy Lab (NREL)¹¹⁹ in 4 km x 4 km resolution raster format. The average pixel value for each tract was calculated using GIS software. Wind potential is measured both onshore and offshore. Onshore potential is measured as US multiyear average wind speeds at 60m hub m/s. Offshore wind potential was measured as the US multiyear average wind speeds at 90m hub m/s. Wind data was obtained from NREL¹²⁰ in 4 km x 4 km resolution raster format. The average pixel value for each tract was calculated using GIS software. These simplified measurements do not take into account other important considerations for siting renewable resources, such as available buildable land, residential buffer zones for wind turbines, etc.

BIVARIATE MAPPING RESULTS

Files are available upon request.

¹¹⁹. M. Sengupta, Y. Xie, A. Lopez, A. Habte, G. Maclaurin, & J. Shelby, "The national solar radiation data base (NSRDB)," *Renewable and Sustainable Energy Reviews*, 89, 51-60 (2018).

¹²⁰. C. Draxl, B.M. Hodge, A. Clifton, and J. McCaa. *Overview and Meteorological Validation of the Wind Integration National Dataset Toolkit* (Technical Report, NREL/TP-5000-61740), (Golden, CO: National Renewable Energy Laboratory, 2015).

Parameter	Components	Source	Measurement
Exposure	Ozone	EJSCREEN (2019)	State percentile of raw value
	PM 2.5	EJSCREEN (2019)	State percentile of raw value
	Traffic density	EJSCREEN (2019)	State percentile of raw value
Environmental effects	Proximity to national priority sites	EJSCREEN (2019)	State percentile of raw value
	Proximity to risk management plan facilities	EJSCREEN (2019)	State percentile of raw value
	Major direct dischargers to water	EJSCREEN (2019)	State percentile of raw value
	Proximity to treatment storage and disposal facilities	EJSCREEN (2019)	State percentile of raw value

FIGURE 14. Pollution Burden Components

Parameter	Components	Source	Measurement
Socioeconomic factors	Low income	EJSCREEN (2019)	State percentile of raw value
	Educational attainment	EJSCREEN (2019)	State percentile of raw value
	Linguistic isolation	EJSCREEN (2019)	State percentile of raw value
	Minority population	EJSCREEN (2019)	State percentile of raw value

FIGURE 15. Population Characteristic Components

	Pollution burden		Population
	Exposure	Environmental effects	Socioeconomic factors
Parameter Score	Average of exposure measurements	Average of environmental effects x .5	Average of socioeconomic factors
Average of parameter score	(Exposure parameter score x environmental parameter score) ÷ 1.5		
Environmental effects	(average of parameter score ÷ statewide maximum average of parameter score) x 10		(Average of parameter score ÷ statewide maximum average of parameter Score) x 10
Environmental justice community score	Scaled parameter score (pollution burden) x scaled parameter score (population characteristics)		

FIGURE 16. Environmental Justice Community Score Calculation

APPENDIX B

Financial Standing at NYPA and Assumptions

In 2019, NYPA's operating revenues from customer and wholesale energy market sales were \$2.4 billion, while its costs from purchased power, fossil fuels consumed, wheeling, maintenance, and other operating expenses amounted to \$2.2 billion. Adding non-operating return from its investment income (\$46 million) and subtracting interest payments on its outstanding debt and other non-operating expenses (\$135 million), NYPA netted \$23 million in tax-exempt income in 2019.¹²¹

To fund the construction of new infrastructure, NYPA uses a combination of internally generated revenue streams and debt in the form of bonds and notes sold to investors. Public debt in the form of revenue bonds is the chief financing mechanism here, repaid through returns from generating and transmitting power. NYPA's financial position is generally very strong, significantly aided by the low cost of its publicly owned hydropower assets. Moody's reflected this assessment in a recent rating decision, citing:

NYPA's unique position as the provider of reliable, low-cost, primarily hydro-electric power in the State of New York (Aa2; stable) and its role as an engine for business development in the state, in addition to its execution of prudent financial management policies that have historically resulted in financial metrics that rank among the strongest of all US public power electric utilities with generation ownership in our rated universe.¹²²

NYPA's strong financial position and history of "fiscal conservatism"¹²³ have received other favorable private market appraisals (including but not limited to high credit ratings) that have helped it borrow capital cheaply. Fitch and S&P give NYPA's long-term revenue bonds a very strong AA rating, while Moody's assigned them an only slightly lower Aa2 in 2020 amid the COVID pandemic—among the highest ratings given to public electric utilities.¹²⁴ Both NYPA's operating expenses and outstanding debt decreased during the 2014–2018 period (–10.8% and –19.6%).¹²⁵

In a departure from its recent history of decreasing debt, NYPA projects that it will have \$2.1 billion in outstanding debt in 2021 (about \$1.6 billion in revenue bonds), growing to \$2.4 billion (\$1.9 billion) by 2024. This additional debt is due to NYPA's expanded capital investment program of \$2.41 billion through 2023, half of which has been debt financed.¹²⁶ Central here is a major revenue bond issuance in April 2020—the largest in NYPA's history at \$1.2 billion, including more than \$790 million in green bonds. NYPA was able to obtain this public finance very cheaply at 3.5% interest, the lowest rate in its history.¹²⁷ When its 2021–2023 investment program is completed, in the absence of new capital investments NYPA's debt would again decline; additionally, current investments in NYPA-owned transmission infrastructure are expected to return sizable new revenues once completed in 2024. Finally, it is worth noting that in analyzing NYPA's debt, Moody's excludes \$1 billion in public financed energy efficiency programs. This finance is run off balance sheet in a practice known as "conduit" finance, where NYPA uses its public

121. NYPA, "New York Power Authority Consolidated Net Income - Actual vs. Budgeted For The Year ended December 31, 2019," accessed March 31, 2021, <https://www.nypa.gov/-/media/nypa/documents/document-library/financials/nypa-net-income-actual-vs-budgeted-2019.pdf?la=en>; NYPA, *Approved 2021 Budget and 2021–2024 Financial Plan*, White Plains, New York: NYPA, 2020.

122. Moody's Investor Service, "Rating Action: Moody's downgrades New York State Power Authority's outstanding revenue bonds to Aa2 from Aa1; outlook stable," 12 October 2020, https://www.moodys.com/research/Moodys-downgrades-New-York-State-Power-Authoritys-outstanding-revenue-bonds--PR_906766171.

123. Reuters, "TEXT - Fitch rates NY Power Authority subordinate taxable notes," 10 December, 2012, <https://www.reuters.com/article/idUSWNA084020121210>.

124. NYPA, *Approved 2021 Budget and 2021–2024 Financial Plan*, White Plains, New York: NYPA, 2020.

125. Authorities Budget Office, *Annual Report on Public Authorities in New York State*, Albany, NY: Authorities Budget Office, 2019.

126. Moody's Investor Service, "Rating Action: Moody's downgrades New York State Power Authority's outstanding revenue bonds to Aa2 from Aa1; outlook stable," 12 October 2020, https://www.moodys.com/research/Moodys-downgrades-New-York-State-Power-Authoritys-outstanding-revenue-bonds--PR_906766171.

127. Paul Ciampoli, "NYPA sells more than \$1.2 bil in bonds to finance capital expenditures," *American Public Power Association*, 3 June 2020, <https://www.publicpower.org/periodical/article/nypa-sells-more-12-bil-bonds-finance-capital-expenditures>.

financing power to negotiate borrowing with and for third-party players. These loans are “non-recourse” to NYPA: the responsibility for repaying this debt (and risk of non-repayment) is passed on to customers, via realized savings from upfront spending on efficiency improvements.¹²⁸

In terms of total public debt load, NYPA is placed to do more, including issuing new bonds to fund further expansion of its current capital investment program. A 2011 Policy Statement from NYPA’s Board of Trustees suggested that NYPA should maintain a Debt Service Coverage Ratio (DSCR) of at least 2.0. NYPA projected its DSCR to be 10.4x in 2021 and 4.8x in 2024, around the phasing of payments from its current bond measures.¹²⁹ Though an expanded capital program should continue to model flows of new debt and repayments over time, this number suggests that NYPA has unused financing capacity.

¹²⁸. Moody’s Investor Service, “Rating Action: Moody’s downgrades New York State Power Authority’s outstanding revenue bonds to Aa2 from Aa1; outlook stable,” 12 October 2020, https://www.moodys.com/research/Moodys-downgrades-New-York-State-Power-Authoritys-outstanding-revenue-bonds--PR_906766171; NYPA, Approved 2021 Budget and 2021–2024 Financial Plan, White Plains, New York: NYPA, 2020.

¹²⁹. NYPA, Approved 2021 Budget and 2021–2024 Financial Plan, White Plains, New York: NYPA, 2020.

APPENDIX C

Number of Sustained Jobs by Sector created by NYPA Renewable Energy Investment

Number of sustained jobs 2021–2030 based on all NYPAs additional investments and the 75% ROFR of onshore over 25 MW onshore solar and wind	
Sector	Number of sustained jobs
Construction	16,800
Durable goods manufacturing	8,330
Professional, scientific, and technical services	4,480
Retail trade	3,320
Health care and social assistance	3,030
Real estate and rental and leasing	2,970
Administrative and support and waste management and remediation	1,810
Food services and drinking places	1,560
Nondurable goods manufacturing	1,300
Other services*	1,280
Finance and insurance	1,210
Wholesale trade	990
Transportation and warehousing*	930
Educational services	670
Management of companies and enterprises	580
Arts, entertainment, and recreation	570
Information	490
Accommodation	310
Households	220
Utilities*	130
Agriculture, forestry, fishing and hunting	110
Mining, quarrying, and oil and gas extraction	50

FIGURE 17. Environmental Justice Community Score Calculation

	Direct jobs	Indirect jobs
Utility-scale solar	1,298	16,171
Distributed solar	472	4,407
Onshore wind	2,523	14,127
Retrofits	3,137	10,712
NYCHA retrofits	956	5,713
Fleet electrification	1	3

FIGURE 18. Total direct and indirect jobs for 75% utility scale renewable energy

	Direct jobs	Indirect jobs
Utility-scale solar	865	8,086
Distributed solar	472	4,407
Onshore wind	1,682	7,063
Retrofits	3,137	10,712
NYCHA retrofits	956	5,713
Fleet electrification	1	3

FIGURE 19. Total direct and indirect jobs for 50% utility scale renewable energy

	Direct jobs	Indirect jobs
Utility-scale solar	433	4,043
Distributed solar	472	4,407
Onshore wind	841	3,532
Retrofits	3,137	10,712
NYCHA retrofits	956	5,713
Fleet electrification	1	3

FIGURE 20. Total direct and indirect jobs for 25% utility scale renewable energy

APPENDIX D

NYPA Jobs and Economic Feedback Methodology

LEVEL OF INVESTMENT

The level of investment across different renewable sectors were estimated by taking generation targets ratios in line with CLCPA. In particular, the ratios 25%, 50%, and 75% of the onshore renewable energy that still needs to be contracted as of July 2020—approximately 11.5 GW by 2030 to achieve 70% renewable energy by 2030. Levels of renewable build out based on projections by NYSERDA in the 2020 White Paper, Clean Energy Standard Procurements to Implement New York’s Climate Leadership and Community Protection Act in July 2020.¹³⁰ It also used the McKinsey projections to derive the onshore utility scale portion of the renewable energy commitments.¹³¹ These target energy capacities were then converted to dollars using cost ratios in other studies, with additional energy for new grid infrastructure estimated from EIA cost outlooks for electricity generation.¹³³

The level of investment for efficiency programming was derived from multiple sources. For public building retrofit and electrification, the report used the total investment for the first 25% emission reduction over 2010 levels NYPA conducted between 2010 and 2020 as a guide.¹³⁴ Using the Green New Deal for NYCHA

Communities, the report estimates that NYPA could provide 1/10th of the full cost of necessary investments.¹³⁵

JOBS

Two categories of jobs were estimated: Direct jobs in on-site construction and operation of new renewable energy resources or building retrofits, created by the proposed renewable energy investments, a certain number of which would be under the new, expanded NYPA. Total jobs from the renewable energy investments, including indirect and feedback effects on the economy.

DIRECT JOBS

Direct, on-site construction and operations jobs were estimated by finding the proportion of costs going to labor from studies on cost compositions of renewable energy sources and building retrofit projects.¹³⁶ This could be combined with our investment targets to yield total dollars going to labor from these investment projects. This amount was then divided by a rough average of prevailing wage rates¹³⁷ to get direct jobs.

TOTAL JOBS & ECONOMIC FEEDBACK

Total jobs include not only direct jobs created by the investment, but indirect jobs in supplier industries and induced jobs created by workers spending their

130. NYSERDA “Clean Energy Standard Procurements to Implement New York’s Climate Leadership and Community Protection Act,” July 14, 2020, <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=15-E-0302&submit=Search>.

131. Rory Clune, Jesse Noffsinger, & Humayun Tai, “The Global Relevance of New York State’s clean power targets,” McKinsey & Company, July 19, 2019, <https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-global-relevance-of-new-york-states-clean-power-targets#>.

132. Robert Pollin, Jeannette Wicks-Lim, Shouvik Chakraborty, Gregor Semieniuk, “Impacts of the Reimagine Appalachia & Clean Energy Transition Programs for West Virginia,” PERI Institute, February 24, 2021, <https://www.peri.umass.edu/component/k2/item/1404-impacts-of-the-reimagine-appalachia-clean-energy-transition-programs-for-west-virginia>.

133. “Levelized Costs of New Generation Resources in the Annual Energy Outlook 2021,” U.S. Energy Information Administration, February 2021, https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf.

134. “EO88 Final Report,” NYPA, accessed March 31, 2021, <https://services.nypa.gov/Services/Incentives/-/media/475420C205334686A772D-256DE27788C.ashx>.

135. Daniel Aldana Cohen, Billy Fleming, Kira McDonald, Nick Graetz, Mark Paul, Alexandra Lillehei, Katie Lample, Julian Brave Noisecat, A *Green New Deal for New York City Housing Authority (NYCHA)*, November 2019, <https://www.filesforprogress.org/reports/green-new-deal-public-housing-nycha.pdf>

wages, local government jobs from increased taxes, etc.

These jobs were estimated using RIMS II multipliers for New York State.¹³⁸ RIMS II is an input-output model that uses relationships between industries within a region to model feedback effects and total economic effects and new jobs based on an increased level of spending into one or more sectors of the economy.

To model new spending across the proposed renewables, we decomposed spending across the renewable sectors to the RIMS sectors, following allocations suggested in recent studies.¹³⁹ This allowed us to decompose our proposed spending and get modeled effects of each category of renewables on the New York State economy at large and by sector.

136. A. Elia, M. Taylor, B. Ó Gallachóir, F. Rogan, “Wind turbine cost reduction: A detailed bottom-up analysis of innovation drivers,” *Energy Policy*, Volume 147, (2020), <https://doi.org/10.1016/j.enpol.2020.111912> ; Betony Jones, “Prevailing wage on solar can deliver good jobs while keeping growth on track,” UC Berkeley Labor Center, November 2020, <https://laborcenter.berkeley.edu/prevailing-wage-in-solar-can-deliver-good-jobs-while-keeping-growth-on-track/>.

137. “Wage Determinations,” Sam Beta Gov, accessed March 25, 2021, <https://beta.sam.gov/search?index=wd&keywords=&sort=-modified-Date&wdType=dbra&page=1>.

138. “RIMS II Online Order and Delivery System,” BEA, accessed March 25, 2020, <https://apps.bea.gov/regional/rims/rimsii/>.

139. Heidi Garrett-Peltier, “Green versus brown: Comparing the employment impacts of energy efficiency, renewable energy, and fossil fuels using an input-output model,” *Economic Modelling*, Volume 61, (2017): 439-447, <https://doi.org/10.1016/j.econmod.2016.11.012>.

