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Implementation Tools for Climate Justice
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Reliable, Equitable Energy Access for Chinatown, Manhattan
A Plan for Chinatown's Sustainability and Resilience

Feasibility Study Proposal Scope

Sustainable development has historically been a difficult status to achieve in Manhattan's Chinatown in New York City. This paper first seeks to establish the historical context of Chinatown's burdens and then address ways to improve economic, environmental outcomes for one of the oldest enclaves of Chinese in North America. Exploring an equitable energy solution for residents and business owners, access to clean energy has the potential to cut costs and create a much-needed resource in the event of a power outage. Opportunities for workforce development exist if the community can identify teams to operate and maintain these resources and thereby ushering in a just transition to a regenerative economy.

Historical Context

In the past two decades, Chinatown in New York City's Manhattan borough has experienced a cumulative trauma no other neighborhood in the United States of America has shouldered. From the devastating effects of the September 11, 2001 (9/11) terrorist attacks on the World Trade Center,¹ to the 2008 financial crisis, to the "double pandemic"² of 2020's novel COVID-19 virus and 339% rise in domestic anti-Asian hate crimes³, the people of Chinatown have endured innumerable environmental and socioeconomic blows.

Amidst these national and global disasters, extreme weather events have plagued the neighborhood with mass power outages, dealing severe economic consequences on a population disproportionately affected by hardship when compared to the surrounding neighborhoods of TriBeCa and Soho. In a recent report jointly published by nonprofit Robin Hood and Columbia University's Center on Poverty & Social Policy, it was revealed that nearly 1 in 4 adult Asian New Yorkers currently lives in poverty. This ratio reflects 23% of the entire adult Asian New Yorker population, a number that is 8% above the citywide rate (16%).⁴ When observing overall disadvantage, the report found that almost half (48%) of all Asian New Yorkers faced at least one form of disadvantage in 2020, disadvantage being defined as "facing

¹ Chao, Evelin. "9/11 20 Years Later: The Forgotten Neighborhood: How New York's Chinatown survived 9/11 to Face a New Crisis". The Guardian. 5 September 2021. Accessed 30 April 2022. ([Link](#)).

² Gao, Qin, Liu, Xiaofeng. October 2021. "Double Pandemic: Discrimination Experiences of New Yorkers of Chinese Descent During COVID-19". Robin Hood Poverty Tracker. Retrieved 3 May 2022 ([Link](#))

³ Yam, Kimmy. "Anti-Asian hate crimes increased 339 percent nationwide last year, report says" NBC Asian America. Retrieved 8 May 2022. ([Link](#))

⁴ Robin Hood, Columbia University Center on Poverty & Social Policy. April 2022. "The State of Poverty and Disadvantage in New York City". Robin Hood Poverty Tracker, Volume 4. Retrieved May 6, 2022 ([Link](#))

poverty, material hardship, or health problems.” Diving deeper into the stratified disadvantaged subgroups, the disparity grows even more. Asian New Yorkers with limited English proficiency faced a 60% disadvantage overall, and Asian seniors at 65+ in age faced a 68% disadvantage metric when compared to the citywide senior disadvantage metric (57%).³

For a neighborhood whose economy relies heavily on slim profit margins through food-service businesses like grocery markets or restaurants, an electricity blackout deals a devastating financial burden if they cannot operate. Without electricity, basic business operations are unable to take place. Refrigerators needed for keeping food products fresh fail to do their job. Point of Sales systems for conducting transactions and inventory surveillance become unavailable. Lighting, important for visibility and safe operations, cannot be summoned. All of these ripple effects from a lack of electricity access result in economic losses, adding to an already financially-burdened population. The high poverty rate and general disadvantage that the population of Chinatown experiences makes living through the damage of extreme weather events—which are projected to increase with the global rise in climate change—very difficult.

During 2012, the historic weather event Superstorm Sandy swept across the Northeast as a Category 2 hurricane and was documented as the largest Atlantic hurricane on record.⁵ The night of October 29th, 2012 at the storm’s peak, a transformer explosion at the East 13th Street Con Edison substation occurred when the Alphabet City facility flooded.⁶ The result was an electrical grid power failure and the majority of buildings below 30th street were without power and water. Zhang Shengbao, owner of Chinatown’s NY Mart, reported that electrical power was restored to his market five days after the storm had caused the city’s electrical grid to fail.⁷ All of the food contained within his store’s freezers and refrigerators had to be discarded because of spoilage. Other recounted stories from Chinatown during that time describe how the neighborhood had largely felt forgotten by city officials, reminiscent of the era after 9/11.⁸ Federal Emergency Management Agency (FEMA) representatives and city officials arrived days after the peak of the storm to canvas the neighborhood and if it weren’t for the efforts of a Chinatown volunteer group called Committee Against Anti-Asian Violence (CAA AV) climbing flights of stairs in apartment buildings and public housing, many families and elderly Chinatown residents would have not had access to food, blankets, or drinking water.

The aftermath of Superstorm Sandy felt familiar. A decade before, Chinatown was also neglected amidst the citywide disaster recovery efforts following the tragic 9/11 attacks. At the time, the neighborhood was referred to as “The Frozen Zone”. In the first two weeks following 9/11, 60-100% of business across all industries in Chinatown dropped. 3 months following, 1/3 of workers in the neighborhood were still unemployed, and 40% underemployed. Restaurants reported a 70% decline in business and retail declined by 55%. The 4-lane roadway

⁵ “Modeling Sandy: A High-Resolution Approach to Storm Surge”. Risk Management Solutions, Inc. October 2013. Retrieved 4 May 2022. ([Link](#))

⁶ Plitt, Amy. “The Night the Lights Went Out in Manhattan”. Curbed NY. 29 October 2017. Accessed 4 May 2022. ([Link](#)).

⁷ Wei, Yu. “NY Chinatown recovering from storm”. ChinaDaily.com. 5 November 2012. Accessed 2 May 2022. ([Link](#)).

⁸ “NYC’s Chinatown Residents Turn to Community Group for Relief as Storm Isolates Elderly, Immigrants”. Democracy Now. 2 November 2012. Accessed 2 May 2022. ([Link](#)).

connecting Chinatown to the rest of lower Manhattan was shut off completely as a security measure. What once was a lively main transportation artery that fed into the neighborhood became a New York Police Department headquarters that remains shut off to public thru traffic to this day. The results were devastating to Chinatown's garment industry, the main business sector of the neighborhood at the time. 40 garment factories closed⁹ and an estimated 14,000-15,000 workers (the majority of whom were immigrant women supporting families) lost their jobs.¹⁰ What seemed like perfect circumstances for receiving federal and local aid was judged to be unqualified by FEMA in the recovery process and the Lower Manhattan Development Corporation (LMDC) in the rebuilding process.

The barriers to recovery felt insurmountable. The first act of exclusion was cultural: barriers to language, inability to produce immigrant papers, and "nonstandard bookkeeping and lack of credit history typical of immigrant small businesses" caused FEMA to reject 70% of Chinatown loss claims. The anti-immigrant climate in the moments following the 9/11 attacks contributed to this barrier of recovery. The second act of exclusion was geographical. FEMA limited the "disaster area" to areas south of Canal Street, bisecting Chinatown and excluding 80% of the rest of the neighborhood. Once FEMA declared this boundary as a way to demarcate where recovery funding should be funneled, it became the official threshold for other charitable organizations as well: The American Red Cross, agencies distributing \$20 billion of federal funds, and the NYC Department of Health.¹¹ The large swath of Chinatown located above the Canal Street line was not considered for aid because of FEMA's declaration. A year later it would be discovered through a survey of 580 households that 1 in 5 people surveyed in Chinatown suffered from asthma, with half of them being diagnosed with asthma after they moved into Chinatown post-9/11.¹² A medical study 8 years afterwards produced results showing high asthma rates among children in Chinatown. The closer their homes were located to the site of the twin towers' destruction site, the higher the asthma rate.¹³ Through local community groups who worked to produce the burden of proof to prove that smoke and asbestos from the twin towers site affected the population of Chinatown, some health funds were eventually given to residents who lived above the Canal Street disaster zone upper limit.¹⁴

The barriers to recovery for government funding that affected Chinatown through the 9/11 recovery process and Hurricane Sandy were the same culprits for slow aid during the first year of the COVID-19 global pandemic. A data analysis conducted by Mastercard's Center for Inclusive Growth revealed that language barriers and Chinatown businesses' bookkeeping systems "made it difficult to provide the documentation required to apply for government relief

⁹ Gotham, K. F., & Greenberg, M. (2014). *Crisis Cities: Disaster and Redevelopment in New York and New Orleans*. Oxford University Press. (pp. 144-152).

¹⁰ Chao, Evelin. "9/11 20 Years Later: The Forgotten Neighborhood: How New York's Chinatown survived 9/11 to Face a New Crisis". *The Guardian*. 5 September 2021. Accessed 30 April 2022. ([Link](#)).

¹¹ Gotham, K. F., & Greenberg, M. (2014). *Crisis Cities: Disaster and Redevelopment in New York and New Orleans*. Oxford University Press. (pp. 144-152).

¹² Asthma in Chinatown. *The Chinese Progressive Association*. ([Link](#)).

¹³ Szema AM, Savary KW, Ying BL, Lai K. Post 9/11: high asthma rates among children in Chinatown, New York. *Allergy Asthma Proc*. 2009 Nov-Dec;30(6):605-11. doi: 10.2500/aap.2009.30.3283. Epub 2009 Sep 18. PMID: 19772715. ([Link](#))

¹⁴ Chao, Evelin. "9/11 20 Years Later: The Forgotten Neighborhood: How New York's Chinatown survived 9/11 to Face a New Crisis". *The Guardian*. 5 September 2021. Accessed 30 April 2022. ([Link](#)).

funding”.¹⁵ This lack of government relief funding has made it difficult for longtime members of Chinatown to remain in the neighborhood where they’ve grown up. Corporate real estate developers have looked to Chinatown buildings as valuable investments, with its central Lower Manhattan location and proximity to wealthier neighborhoods. One of the last bulwarks against redevelopment of Chinatown into luxury developments are the existence of Chinatown civic groups like the Lee Family Association or the Wong Family Benevolent Association. These civic groups own 42 buildings, possibly more, in Chinatown for the purpose of serving the historic Chinese diaspora who live and work in Chinatown with low income. As the coronavirus pandemic continues, financial challenges like “rising taxes, unpaid rent, and mounting maintenance costs” might force these building owners to sell, dwindling the population and boundaries of Chinatown. Since 2000, the resident Chinese population declined from 51,000 people to 34,000¹⁶ There are many forces pointing to the need for system modernization for these civic groups’ building portfolios and in the wake of climate change, the neighborhood has been positioned at a disadvantage in comparison to surrounding communities.

Powering an Entire Community

Meeting the financial challenges of the residents of Chinatown requires examining processes that can cut costs and bolster operations. As NYC gears up to meet low carbon futures in its OneNYC’s 80x50 agenda,¹⁷ there is a great need for prioritizing Chinatown’s sustainable development and ensuring the neighborhood does not get left behind by city decisions yet again. Preparing the city for sweeping energy measures like 2019’s Local Law 97 should include providing resources for Manhattan’s Chinatown, one of the only working-class neighborhoods below Harlem besides the Lower East Side. Buildings over 25,000 in Chinatown¹⁸ will have to comply with Local Law 97’s strict greenhouse gas emissions cap measures beginning in 2024, or else risk severe fines of \$268 per metric ton over the building’s limit.¹⁹ Chinatown has proven its ability to survive even the toughest of disasters because of the strength of its community, but in the wake of intense, frequent extreme weather events projected to affect NYC with climate change, the neighborhood will require extra resiliency measures and may find itself with the need to adapt.

Creating distributed renewable energy resources for Chinatown would be one solution for increasing neighborhood resiliency in the wake of another disaster. Not only would renewable energy provide inexpensive electricity options to the financially burdened population, but another benefit would include mitigating greenhouse gas emissions to curb air pollution that might affect better health outcomes for asthma. Possible renewable energy

¹⁵ Lee, Edward. “Asian American communities hit earlier and harder by COVID-19”. Center for Inclusive Growth. 8 June 2021. Accessed 3 May 2022. ([Link](#)).

¹⁶ Chen, Elaine. Chen, Stefanos. “Chinatown’s Civic Groups Have Held Developers at Bay. Can They Survive?” NY Times. 23 April 2022. Retrieved 5 May 2022. ([Link](#))

¹⁷ New York City’s Roadmap to 80x50. (n.d.). [www1.nyc.gov](#). Retrieved 4 May 2022. ([Link](#))

¹⁸ [www1.nyc.gov](#) (n.d.). [Sustainability Compliance Maps showing Local Law 97 Lot Information]. Retrieved 7 May 2022 ([Link](#))

¹⁹ Local Law 97. (n.d.). [www1.nyc.gov](#). Retrieved 1 May 2022. ([Link](#))

implementations for Chinatown would be a community solar farm to generate low-cost electricity and a microgrid to create guardrails against power outages.

Community solar projects have already begun positively impacting the Asian American community of NYC. UPROSE, a nonprofit with environmental justice goals, has implemented a community-led solar farm that serves a neighborhood often recipient to new migrants from Manhattan's Chinatown. When residents of Chinatown are forced to move because of financial challenges, their next option is to look for lower-rent neighborhoods with a Chinese-speaking community. This typically brings them to Sunset Park, Brooklyn which fulfills both of those criteria.²⁰ UPROSE's model for community ownership of renewable energy sources may serve as a great case study for Manhattan's Chinatown, where the uniqueness of each block and the individuals who live there are part of intricate, strong networks for decision making and have been for almost 200 years.²¹ Community solar would allow the residents of Chinatown to partake in renewable energy solutions without having to pay the high installation costs on individual buildings. With a large proportion of renters, a community solar farm centrally located to serve multiple buildings seems like a viable option.

When fully built, the Sunset Park Solar program will serve around 200 households and businesses. The estimated savings from implementing the project would net out at \$1.34 million, with each participant saving \$6,700. The estimated lifetime solar energy production of the project would be 19.6 million kilowatt hours (kWh) generated.²² For Manhattan's Chinatown, restaurant owners who make up the largest portion of income from renters for the Chinatown civic groups, would especially benefit from these cost savings. In the East Village, Taiwanese-American restaurant owner Eric Sze of 886 on St. Mark's Place reported that his energy bill increased unexpectedly by 60% in 2022. His December 2021 monthly rate was \$2,846, but January saw the restaurant's highest bill from Con Edison ever: \$4,588.²³ With 886 located just 1 subway ride away from Chinatown, this is a good indicator that the same price hikes experienced by Sze's restaurant affected the disproportionately burdened business owners just south. Doing a quick calculation, 886 is 3,120 square feet (ft²), meaning their energy bill reflected \$1.47 per ft². Using this cost input, estimations can be created for popular Chinatown restaurants like Bo Ky at 80 Bayard Street whose floorplan reflects 4,200 ft² and a possible \$6,176 monthly energy bill. Joe's Shanghai at 46 Bowery's floor plan has a square footage of 16,000 ft², estimating their monthly energy bill last January to be a possible \$23,520.²⁴ Implementing a distributed energy resource in Chinatown, like community solar, could help alleviate the shock of these price jumps by placing ownership of electricity generation into the hands of the community.

²⁰ Cohen, Marjorie. "Chinatown's Civic Groups Have Held Developers at Bay. Can They Survive?" NY Times. 23 April 2022. Retrieved 5 May 2022. ([Link](#))

²¹ "Chinatown and Little Italy Historic District New York, New York". National Park Service. Accessed 4 May 2022. ([Link](#))

²² "Sunset Park Solar Project Details". Sunset Park Solar. Accessed 4 May 2022. ([Link](#))

²³ Orlow, Emma. "NYC Restaurants Blindsided by Skyrocketing Restaurant Bills" Eater NY. 11 February 2022. Accessed 8 May 2022. ([Link](#))

²⁴ NYC Planning (n.d.). [New York City's Zoning & Land Use Map]. Retrieved 7 May 2022 ([Link](#))

For extra resiliency measures, installing a microgrid alongside a power generation tool like community solar would bolster the community against power outages like what happened during Hurricane Sandy. Microgrids are localized electrical networks that can operate independently or alongside municipal-level electrical supplies. While NYC's electrical grid is ramping up renewable energy production, its electrical grid still depends upon fossil fuels to deliver the bulk of its power. Microgrids rely upon the heavy use of renewables such as photovoltaic cells and wind turbines for energy generation to serve a specific client such as a building, development, or community.²⁵

Microgrids create resiliency for multiple reasons: First, if a power outage affects the greater electricity grid, microgrids can disconnect from the greater grid and continue to serve the buildings connected to it. Second, because they rely on renewables, they're able to power their systems without burdening the wider electrical network and possibly even add alleviation. Onsite energy production and storage allows buildings to become self-sufficient and assist in energy supply when electrical grids are overstretched. Third, the use of microgrids has the possibility of achieving emissions-free electricity generation for NYC buildings whilst better insulating large urban areas from potential power failures.

The city of Boston, Massachusetts has conducted a feasibility assessment for a microgrid in their local Chinatown, whose residents face similar challenges as NYC's. A microgrid will be installed to alleviate the pressures of the community such as reducing energy bills as a displacement safeguard, providing energy security in times of disaster, and better health outcomes from asthma and heart disease rates.²⁵ Through the assessment, feasibility was achieved. This Boston Chinatown case study shows that a just transition is possible, with residents in this environmental justice community able to control their own narratives when the transfer of power (quite literally) is placed in their control.

Recommendations

Now that the modern history of harms suffered by Manhattan's Chinatown has been established, next steps for implementing identified solutions should be met. Following the case studies mentioned previously, it would be worthwhile to follow the steps outlined in their success, but tailored to the needs of the people in Chinatown.²⁵

- First, a site assessment for distributed energy resource location and residents most in need should be conducted. Inputs like health vulnerability, income, isolation vulnerability, and age should be considered.
 - Center the United Front Table's strategic questions for a regenerative economy: "Who tells the story? Who makes the decisions? Who benefits, and how? What else will this impact? How will this build or shift power?"²⁶
 - Which community leaders need to be contacted in order to learn about these needs?

²⁵ "Chinatown Community Microgrid Feasibility Assessment: Task 6 Report". The Green Justice Coalition. June 2020. ([Link](#))

²⁶ "Chinatown and Little Italy Historic District New York, New York". National Park Service. Accessed 4 May 2022. ([Link](#))

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- Next, assessing technical design costs and configuration once installation location has been determined should take place.
 - What components are needed and how?
 - What facilities will those components serve and what electrical loads are they able to carry?
 - How will these components be connected to the larger electrical network?
- Commercial and financial feasibility should be established.
 - Who will serve as the project stakeholders and what are their responsibilities?
 - Financing
 - Contractors, vendors, and suppliers
 - Legal and regulatory needs and advisors
 - Financially, what is needed for development, installation, and construction?
 - What are the capital costs?
 - What are the start-up costs?
 - What are the maintenance costs?
- Cost and Benefit Analysis
 - What are the full qualitative and quantitative benefits of installing distributed energy resources?
 - Are there opportunities for community revenue streams?
 - What are the limitations of this system?
 - What are scalability options?

Conclusion

Grid modernization coupled with environmental justice action will help allow the neighborhood of Chinatown to become the premier stakeholders of their circumstances by transferring control of electrical resources into their hands. Many technical stakeholders, allies, and community members will need to assemble to make this future possible. For a neighborhood that was unjustly forgotten during times of great disaster in New York City, it's time to center the importance of security for the Chinatown community which serves as an invaluable resource to immigrant, working-class families.