

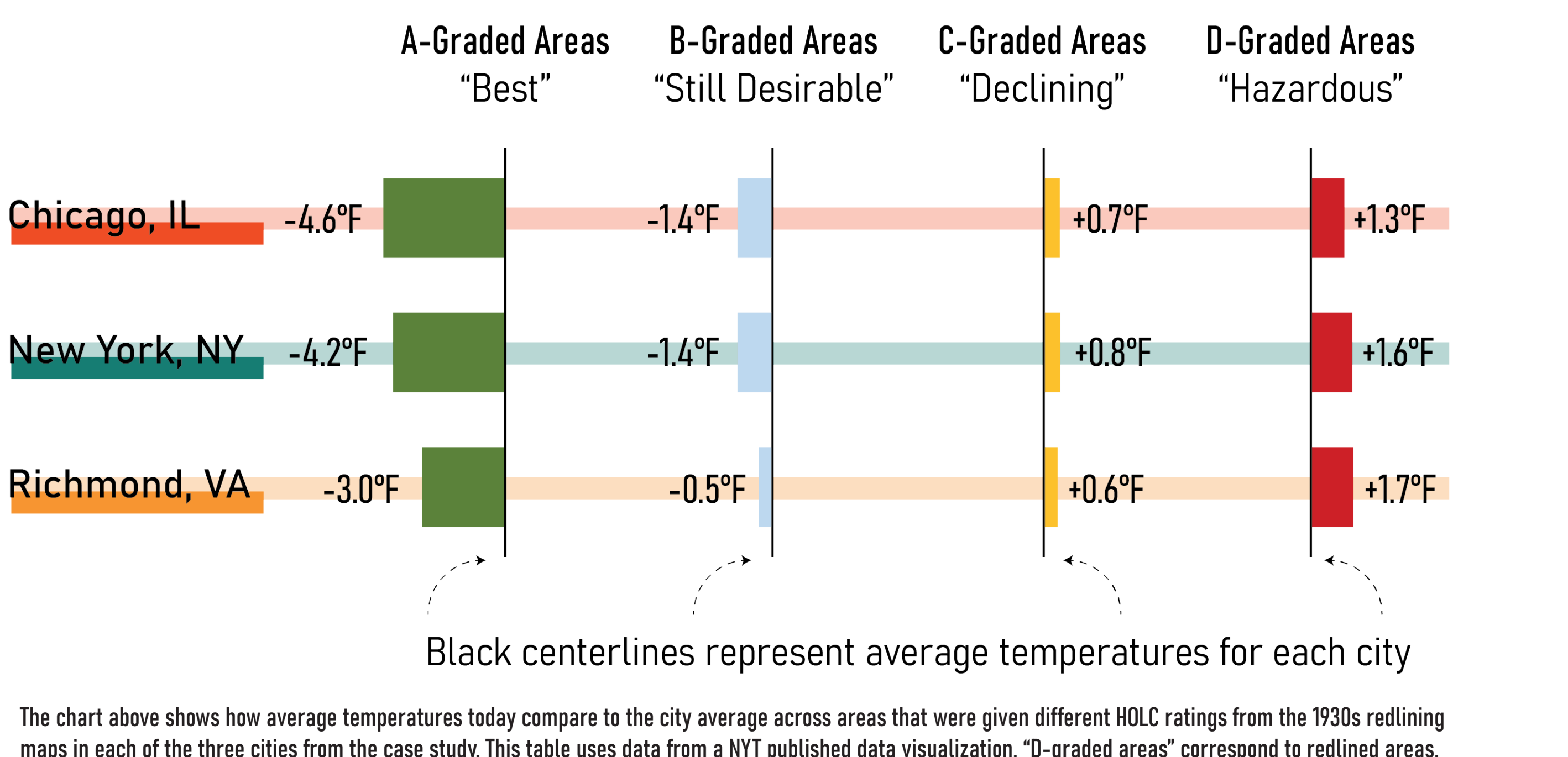
Bringing Down the Red Lines

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Urban Heat & Redlining

Across the country, the increased frequency, intensity, and duration of extreme heat waves in urban environments are the deadliest and most widely experienced consequence of climate change. Concentrated heat output intensified by urban surroundings is known as the urban heat island effect. The severity of extreme urban heat is not evenly distributed across a local urban environment. Many of the areas experiencing the most severe heat island effects coincide with the areas in which predominantly Black communities reside. These communities have been marginalized through histories of racist zoning policies, including through the practice of redlining. A 2020 study of 108 urban areas in the US by Hoffman et. al explicitly links these historical housing policies to the disparate impact of heat on residents in these urban areas, finding that “94% of studied areas display consistent city-scale patterns of elevated land surface temperatures in formerly redlined areas relative to their non-redlined neighbors by as much as 7°C.” Here, we compare three case studies in urban heat island mitigation.



West Side & South Side  
Chicago, Illinois

Chicago has faced instances of extreme heat throughout the past few decades, notably marked by the deadly 1995 heat wave. In this heat wave, temperatures rose over 100 degrees Fahrenheit, reaching as high as 125 degrees for a period of five consecutive days in July 1995, killing over 700 people.

Redlining has caused disproportionate impacts on specifically the South and West sides of Chicago that has manifested into infrastructure conducive of the urban heat island effect, that results in significantly higher temperatures in these areas, exacerbated by a lack of resources to handle the extreme heat. In the 1930s, the underwriting manual was adopted in South Side Chicago, redlining the area and deeming it “undesirable”.

The NYC Cool Roofs initiative and HOPE Program originated due to the increasing effects of urban heat experienced by New Yorkers. An annual average calculated prior to the release of the Cool Neighborhoods plan found a total of 115 deaths in NYC that were exacerbated by heat, with 13 of these directly related to heat stroke.

There is a long history of redlining and racist zoning practices that have perpetuated inequalities in NYC. Many of these actions were a direct result of racist practices and ideals forced onto minority communities by the powerful white population. The effects of these discriminatory practices can be seen today in resource allocation, demographic and population distribution, and land surface temperature distributions across the urban environment.

South Bronx  
New York, New York

Richmond area can expect about 43 days per year with temperatures of at least 90 degrees. By 2089, climate models suggest, the number of very hot days could double.” - NYT

Richmond was the site of the largest market trading enslaved people in the upper South. In 1937, it was redlined.

Northside, East End, & Southside  
Richmond, Virginia

Just Transition

The 2022 Chicago Climate Action Plan is based on a framework of just transition. This plan aims to reduce greenhouse gas emissions through fundamentally transforming the city's energy, transit, housing stock, labor market, and equity dynamics. To address extreme heat at the neighborhood level, the plan proposes to plant over 75,000 trees, minimize hard pavement, and maximize green space, particularly in the South and West Side neighborhoods.

From The HOPE Program About Page: “Equipping these communities experiencing climate change's consequences at disproportionate levels with tools to adapt and mitigate its growing effects, makes these neighborhoods livable for years to come.”

“The NYC CoolRoofs program trains jobseekers in the application of a white coating to the tops of roofs. The energy efficient coating reduces the urban heat island effect in New York City's neighborhoods, lowering air temperatures during warm months. Graduates who complete the program are fully prepared to build a career in the green economy.”

Emergent Strategy

Historic heat waves leave more than 100 million Americans under heat alerts

NYC CoolRoofs

NYC CoolRoofs provides New Yorkers with cool roofing and work experience installing energy-saving reflective rooftops.

A cool roof reflects incoming sunlight to keep buildings and their surroundings cooler and contributes to combat climate change. In 2015, the program was recognized as a workforce development training opportunity awarded job training New York with the initiative to expand cool roofs across the NYC Department of Social Business Services. The initiative is a partnership between the Department of Social Business Services, the Mayor's Office of Climate and Environmental Justice, and The HOPE Program.

Reparative Planning

The plan begins with an introduction from Mayor Lavar M Stoney stating: “The foundation of RVAgreen 2050 acknowledges the inequities ingrained in our community and historically perpetuated by local government. In creating the Climate Equity Action Plan 2030, [...] a city planning process [was centered] around racial equity [...] Frontline community members served on our Racial Equity and Environmental Justice Roundtable and were key decision makers in the process, which helped shift power to those who have been historically underrepresented in planning processes.”

Climate Equity Action Plan 2030

Equitable climate action for a healthy and resilient Richmond

	Planning Framework	Impacted Residents	Proposed Interventions: Climate Action Plans	Population Demographics & Budget	Were the interventions carried out?	Who's Involved?	Who's Responsible?	How is the community engaged?	Is this case study scaleable or replicable?	How resilient is the intervention to political or administrative change?
The South Side & The West Side Chicago, IL	Just Transition	Many victims of the 1995 heat wave were Black elderly residents in the South and West Side neighborhoods who had pre-existing health conditions and lack of access to both air conditioning and hospital care. Today, these areas still experience hotter temperatures than other parts of the city.	To address extreme heat at the neighborhood level, the 2022 Chicago Climate Action Plan (CCAP) proposes to: <ul style="list-style-type: none"><li>Plant over 75,000 trees</li><li>Minimize hard pavement</li><li>Maximize green space in specifically vulnerable neighborhoods, such as those in the South and West Side neighborhoods.</li></ul>	<b>Demographics:</b> The Far South Side neighborhood in Chicago has a population of about 76,000 residents. Approximately 98% of residents are people of color, and more than 65% are unemployed or not in the labor market.  <b>Budget:</b> The CCAP dedicates 45%, or \$53.1M of the \$118M climate initiative budget for FY2022 to “equitable development of a clean-energy future”, the category which extreme heat falls under.	The CCAP was published in April of 2022, and has since not provided any metrics or progress on implementation of the proposed plan.	The 2022 CCAP was created in partnership between: <ul style="list-style-type: none"><li>The City of Chicago</li><li>WSP technical advisors</li><li>Muse Community Engagement firm</li></ul> The CCAP's intended community of impact is the entire city of Chicago, with emphasis on marginalized communities in South and West Side Chicago.	The City of Chicago, referring to the city government, is the main party responsible for successfully implementing the policies in the 2022 CCAP and coordinating with various stakeholders to ensure its targets are reached.	Chicago residents were involved in the creation of the 2022 CCAP through “interactive virtual town halls, two online surveys, facilitated conversations with community partners, and comments on the draft plan...over 2,100 Chicagoans from 70+ community areas have shared with us their climate priorities.” (CCAP 2022)	To replicate this intervention, large mutual stakeholder partnerships and an abundance of top-down governmental resources are essential. This intervention requires a large amount of resources to implement the programs, from Inflation Reduction Act (IRA) funding to the capacity within city departments to enact these broad goals and interventions.	The successful implementation of the 2022 CCAP is relatively vulnerable to political change, evident from the failures of the original 2008 CCAP. That plan was unable to be successfully implemented largely because of the dismantling of Chicago's Department of the Environment in 2011.
South Bronx New York, NY	Emergent Strategy	Approximately 350 heat-related deaths per year occur in New York City. Low-income residents of South Bronx, Central Brooklyn, and East Harlem are unable to afford air conditioning, putting them at greater risk of fatal heat stroke. Temperatures in these areas climb up to 8°F higher than other parts of the city.	The NYC Cool Roofs program is one of three main strategies in the Cool Neighborhoods program to address urban heat. Other strategies include targeted tree plantings, understanding cool pavements, AC unit distribution, and increasing green infrastructure.	<b>Demographics:</b> Approximately 27% of residents in the Bronx live in South Bronx, or around 372,600 people. 64% of residents are Black, 32% of residents are foreign-born.  <b>Budget:</b> The adopted budget for FY2025 has a \$6.555M apportionment of city funds, chargeable to the debt limit, for the construction, reconstruction, or improvements to roofs citywide. Likely, the NYC CoolRoofs money would come from this apportionment.	The 2024 heat-related mortality report showed a relatively steady number of heat-related deaths in recent years, even as temperatures have climbed. When the NYC Cool Roofs program was first implemented in 2009, the city had a goal of installing one million square feet of cool roofs per year. They achieved this goal in each of the first 10 years of the program, with over 10 million square feet of rooftops painted.	The NYC CoolRoofs initiative is a partnership between: <ul style="list-style-type: none"><li>NYC Department of Small Business Services</li><li>Workforce Industrial &amp; Transportation Career Center</li><li>Mayor's Office of Climate and Environmental Justice</li><li>The HOPE Program</li></ul>	Success and failure are measured by the amounts of roofs painted as well as the amount of people trained by the program.  The NYC CoolRoofs program provides city funding for the painting of roofs, but it is up to community members to sign up for and receive job training and to request the funding.	The communities that install NYC Cool Roofs are the backbone of the program; they are responsible for creating and painting these cool roofs. The community benefits from the cool roofs themselves, as well as from the job training programs and paid planning, management, and construction work: a win-win for the community.	Yes, there are organizations like the HOPE program in nearly every city and such organizations would likely be more than happy to assist. It is scaleable because there are people looking for training in all areas of the country, and others who live in urban areas experiencing extreme heat that would benefit from the roofing improvements.	The NYC CoolRoofs program is particularly resilient to political or administrative change because the program builds skills, knowledge, and expertise among community members themselves. Not only do the communities learn about an effective strategy to combat urban heat, they build the tools and skills necessary to replicate this work elsewhere in the community and beyond, making possible extensions of the work.
East End, Northside, and Southside Richmond, VA	Reparative Planning	“Today, Richmond's formerly redlined neighborhoods are, on average, 5 degrees hotter on a summer day than greenlined neighborhoods,” satellite analyses reveal. Some of the hottest areas, like the Gilpin neighborhood (in Northside), can see temperatures 15°F higher than wealthier, whiter parts of town.” (NYT)	The RVAgreen 2050 Climate Equity Action Plan includes: <ul style="list-style-type: none"><li>Expanding tree canopy</li><li>Expanding parks and green space</li><li>Reducing energy burden of vulnerable communities</li><li>Creating neighborhood resilience and cooling hubs</li><li>Developing a cool surfaces and depaving program</li><li>Establishing requirements around impervious surfaces of new construction.</li></ul>	<b>Demographics:</b> There are approximately 227,000 residents of Richmond. Approximately 40% of residents are Black, 42% of residents are white, and 10% of residents are Hispanic or Latinx. White residents primarily reside in the West End.  <b>Budget:</b> The RVAgreen 2050 plan sets aside \$50K per year for equity planning process, and \$6M grant for reparative urban forestry.	The RVAgreen 2050 plan was published in 2022, and was partially successful in its goal of engaging marginalized community members. Now it is in the beginning of implementation, and has received a large grant for reparative urban forestry.	The RVAgreen 2050 Climate Equity Action Plan was created in partnership between: <ul style="list-style-type: none"><li>The City of Richmond Office of Sustainability</li><li>Racial Equity and Environmental Justice Roundtable</li><li>City of Richmond</li><li>Various partnered organizations in advisory, consulting, and supporting roles.</li></ul>	The City of Richmond, referring to the city government, is the main party responsible for successfully implementing the policies in the RVAgreen 2050 Climate Equity Action Plan and coordinating with various stakeholders to ensure its targets are reached.	Community engagement was sought through a representative process of community membership on the Racial Equity and Environmental Justice Roundtable. This was only partially successful. The demographics of the committee did not fully match the communities they were seeking to represent.	The mission to center marginalized communities in the planning process could be replicated, and lessons could be learned about community engagement process.	Inclusive processes require political leaders that value having certain voices at the table, and centering their involvement as part of the process. When there is administrative change, there is no guarantee that marginalized communities will have the same relationships or trust towards the new local leaders.

Visit our website to view the full report, interview recordings with The HOPE Program, roundtable discussion, further resources, and our citations!

What did we learn?

While each of the three frameworks centers important planning considerations, we found that our emergent strategy case study was most effective at implementing tangible actions. The reparative planning case study centered necessary histories of injustice, but did not have a commitment to implementation. Our Just Transition case study charted out paths towards a vision of the future, but lacked a foundation of action and energy from the community in the present. Emergent strategies inherently emerge from community members are built upon their strengths and perspectives. Borne of collective histories, these present actions mobilize towards a collective future.