



2022 ANNUAL REPORT

February 2023

Prepared by Greenlink Analytics, Inc.



Table of Contents

Letter from the CEO	4
Where We Work	6
Our Impact.....	7
Overview of Greenlink’s Work.....	9
Proposing Successful Pathways	10
Innovations in Energy-Equity Intersections.....	11
Advancing an Equity-First Agenda	13
Fiscal Year 2022 Financial Summary	15
Greenlink Leadership.....	17
Board of Directors.....	17
Founders	17
Leadership Team	17
Major Funders	17

When we cannot predict the outcome of a person's life because of a race, gender, or where they're from, we will have succeeded.

-Greenlink Analytics Process Guide



Letter from the CEO

Dear Friends:

Reflecting on the past year, I'm so proud of the momentum we achieved towards a fast and fair clean energy transition. When we started Greenlink, it was clear that we needed to undertake generational challenges to better democratize policy processes and make them more equitable if we wanted to meaningfully address climate change in this country. Climate change continues to be a major topic in the news and people's lives, from record breaking heat to new federal climate policies and clean energy triumphs. And the focus on equitable policy processes has not been this strong in decades.

Climate solutions need people-centered approaches to ensure the best outcomes for everyone. While climate change is a global challenge, not all communities bear the brunt equally. In the U.S., non-white and lower income communities experience the greatest health, economic, and environmental risks. If the choices of policymakers don't embrace and uphold these communities, we won't achieve the decarbonized future we need - and in that case, they're not sustainable to begin with.

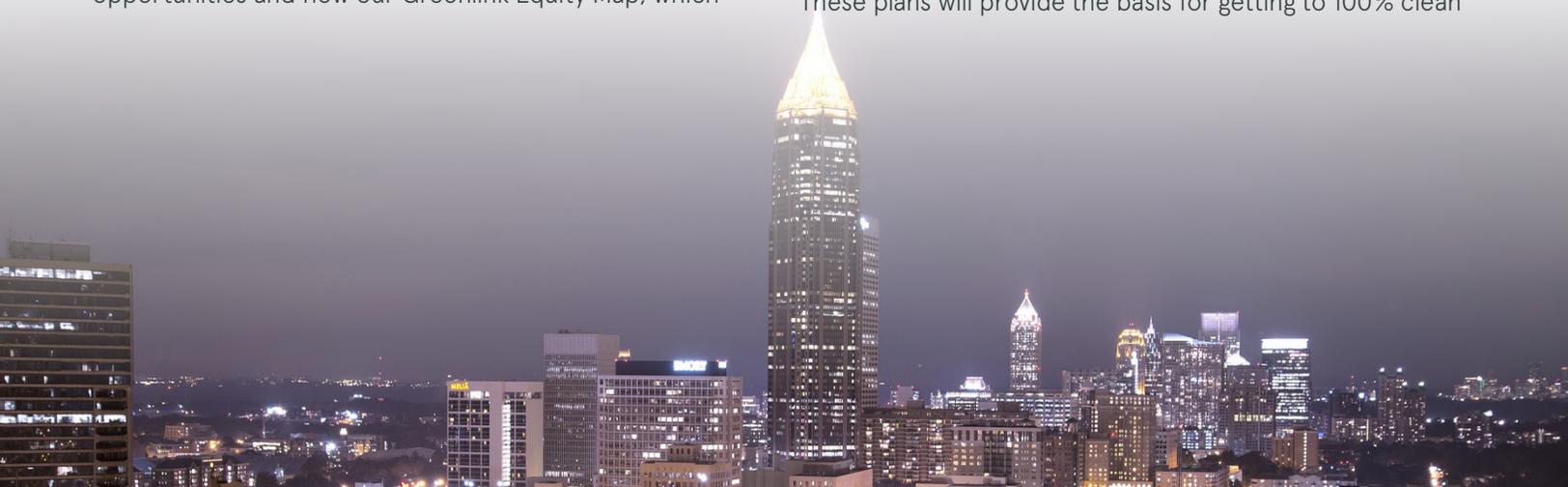
Cities and communities all over the country have been leading the real work on climate policy for years. Those efforts are getting a massive boost from the Federal Government now through a series of major investments and initiatives. Foremost in our minds is the Inflation Reduction Act (IRA) of 2022, a huge climate win signed into law in August. The IRA invests \$369 billion in clean energy projects and incentives for energy-efficient technologies such as heat pumps and electric vehicles. It also includes historic investments in environmental justice and economic development, calling for several new grant and incentive programs focused on righting past wrongs. This injection of funding will help us collectively move from planning to doing; implementation is now the name of the game.

And we're here for it. We are helping hundreds of cities and organizations across the country learn about funding opportunities and how our Greenlink Equity Map, which

now has more than 500 members, can guide the distribution of these funds. Investments in wind and solar power are outpacing the billions of dollars spent on fossil fuels for the first time ever, with global renewables set to pass coal as the biggest source of electricity generation by 2025. The clean energy transition is happening in front of our eyes. Our challenge, our daily work, is to ensure that it takes place as intentionally and as promptly as possible.

After three and a half years, the Bloomberg Philanthropies-funded American Cities Climate Challenge came to a close. The Climate Challenge cities' total emissions reductions surpassed their original target of achieving the goals of the Paris Climate Agreement by several million metric tons, a significant milestone. We analyzed the energy burdens and correlated inequitable outcomes for all 25 cities, assisted with policy and program analysis in most of them, and kept track of progress for the entire effort. We built new state-of-the-art energy analysis software and assisted with programs that will reduce childhood asthma from vehicle exhaust, create thousands of good-paying, high road jobs, and make energy affordable for all while simultaneously cutting emissions. What. A. Rush. This was one of my favorite programs ever; getting to help government and community come together to build resilient, impactful climate policies all over the country is a special experience you don't get every day.

On the analytical front, the team completed several clean energy plans, including the Georgia Institute of Technology, City of Athens, GA, and City of Decatur, GA. Both governments adopted the plans unanimously after multiple years of challenging community work through Covid-19. These plans will provide the basis for getting to 100% clean



Letter from the CEO

energy in these communities far sooner, and far more equitably, than would occur otherwise.

Our GEM Community of Practice told us what they needed to see in order to make better progress on their equity initiatives and we went to work. GEM 2.0 launched with an improved user interface, new color schemes and correlational graphs, and new datasets. Two new novel datasets were deployed within the mapping tool - Urban Heat Index and Urban Tree Canopy - and more are in development. GEM's data saw increasing scope and scale of impact in 2022, now guiding the deployment of over \$150M of equity-improving energy efficiency funding for low-income single and multifamily housing across the nation. These efforts led by cities, utilities, and community-based organizations (CBOs) are helping address distributional inequities on things like energy burden which are connected to displacement, eviction, and the housing affordability crisis striking many communities across the nation. We're honored to help and look forward to seeing even more of this activity in 2023!

Additionally, we're deep into the development of Better Power - the first-of-its-kind energy generation and carbon intensity forecasting tool using high-resolution hourly data

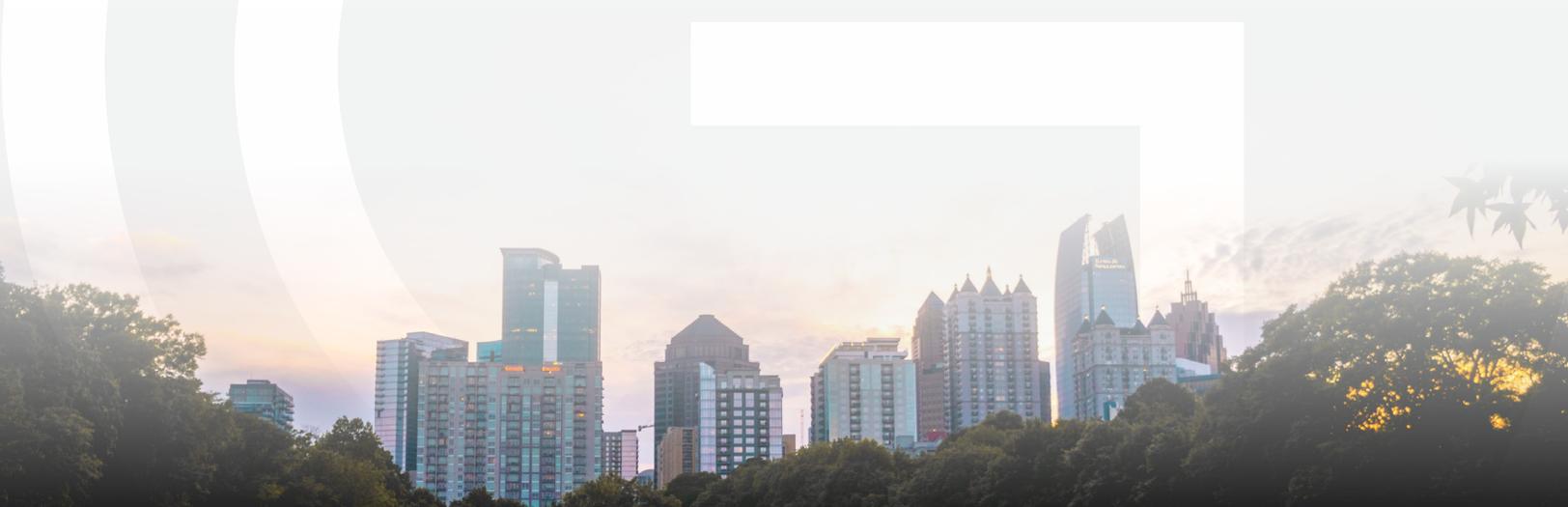
from our in-house machine learning models to compare the investments, job creation, and public health impacts of various clean energy scenarios with business-as-usual trajectories. Accounting for the temporal and geographic aspects of energy use are key to making carbon accounting more effective and accurate. We often correct errors that exceed 30% when carbon footprints are estimated using annualized, regional values. Hourly, localized information is the path to informed decision making and the future we need.

In 2023, we see tremendous opportunities to collaborate and enable the most significant community-driven, data informed energy action that has ever happened in this country because of the significant set-up work done in 2022. The focus on disproportionate burdens will remain central and important, but our optimism for developing and creating new stories of job growth, local economic development, better health outcomes, and first-of-their-kind initiatives to realize more just and fair outcomes are there for the making. We'll see you changemakers out there this year!

Enthusiastically data-informed and community driven,

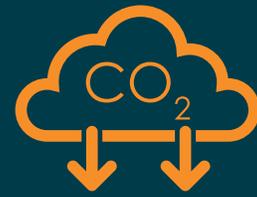


Matt Cox, PhD
Co-Founder & CEO
Greenlink Analytics



Since our founding

Greenlink has identified



8.4 Billion Metric Tons of CO₂

8.4 billion metric tons of carbon dioxide that can be and are avoided through our analyses and implementation of our clean energy recommendations. That's an incredible 62% more than the US's annual carbon emissions.



\$760 Billion

\$760 billion dollars of savings found through analyzing and suggesting clean energy options. That money can be put to better community and economic development uses.



Over 20K Lives Saved

Pathways for saving 20,000 lives through clean energy options that reduce life-threatening outcomes caused by air pollution.

Our Impact: Estimates represents the expected impact of implementing analyzed policies



In Addition, Greenlink

Enabled

90+

Enabled over 90 equitable policy and planning processes through our work and our data.

Helped

1.7M

Helped 7 major cities develop and pass 100% clean energy plans, impacting 1.7 million residents.

Donated

\$1M

Donated over \$1 Million in equity mapping services to community-based organizations to help them advance climate justice work.

OVERVIEW OF GREENLINK'S 2022 WORK

PROPOSING SUCCESSFUL PATHWAYS

INNOVATIONS IN ENERGY-EQUITY INTERSECTIONS

ADVANCING AN EQUITY-FIRST AGENDA



PROPOSING SUCCESSFUL PATHWAYS

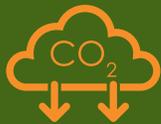
Climate change is one of the biggest challenges of our time. The solutions require a rapid, yet thoughtful transformation of infrastructure and energy use, as well as change of the hardest kind – social structures. Many cities want to embrace a carbon free future but are not aware of the multiple viable pathways available for achieving the goal. Moreover, it’s difficult for city officials and policy makers to assess the tradeoffs of different decarbonization strategies and then communicate the outcomes to colleagues and residents in a way that gains traction. Greenlink helps fill the gaps.

Supporting cities in developing clean energy plans is one focal point of our work. The process involves contextualizing, forecasting, and prioritizing workstreams. Context setting relates to calculating and assessing a city’s emissions. The focus is frequently on electricity and natural gas related emissions from buildings and vehicle tailpipe emissions. Depending on

the city, it may also be relevant to focus on municipal, industrial, or waste related emissions. Forecasting involves using best practices and current data to quantify the trajectory of emissions and identify opportunities for clean energy interventions. Greenlink provides multiple impact estimates for prioritizing interventions, including on emissions, financial costs and benefits, economic development, and the equitable distribution of burdens.

The plans guide cities toward the goal of 100 percent clean energy. In 2022, we developed clean energy plans for the Georgia Institute of Technology, City of Decatur, Ga., and City of Athens, Ga. In Decatur, for example, we worked closely with the Energy and Sustainability Manager to assess energy use and emissions and participated in educational town hall meetings and charrettes with residents. The City of Decatur’s Clean Energy Plan was adopted unanimously in September 2022.

Decatur’s Plan could provide:



CO₂ Avoided

1.17

Million Metric Tons



Money Saved

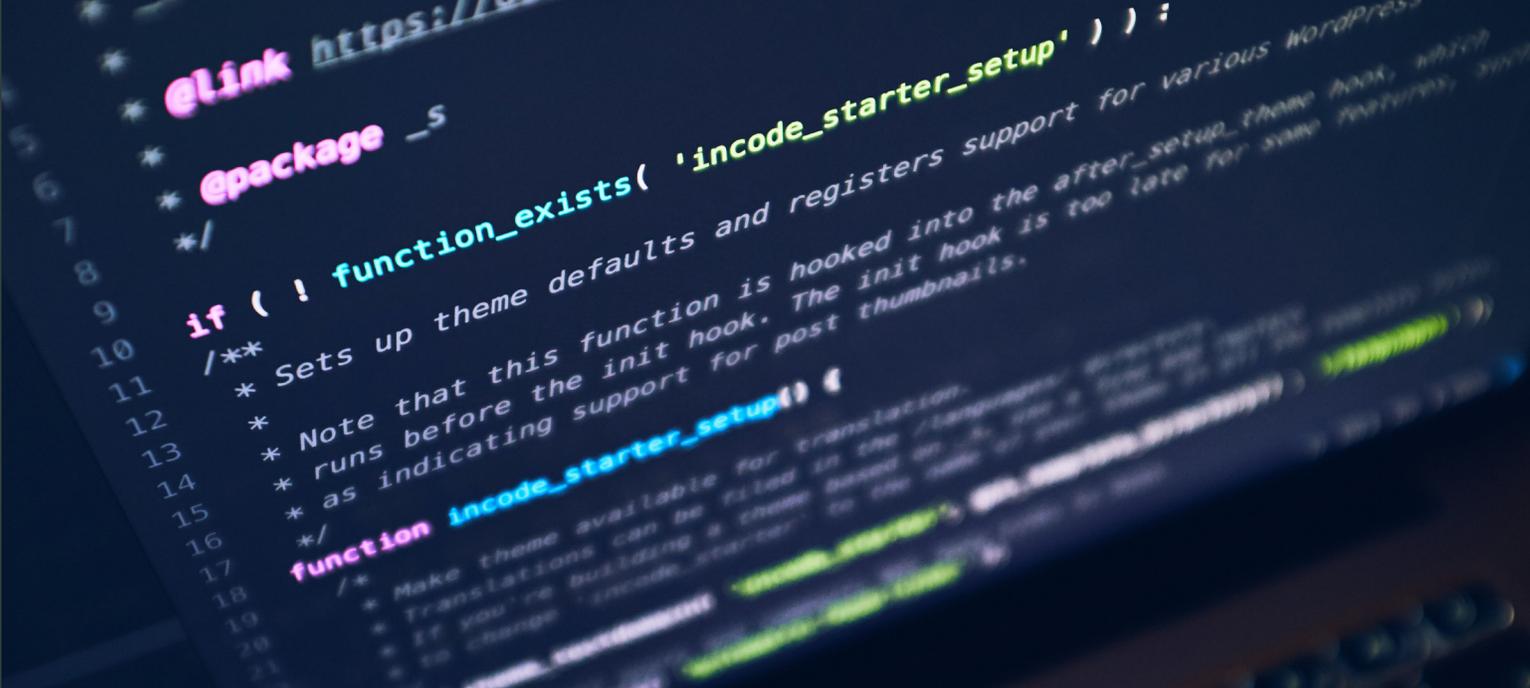
\$548

Million Dollars



Jobs Created

225



INNOVATIONS IN ENERGY-EQUITY INTERSECTIONS

Facilitating a fast and fair clean energy transition requires responsible analysis and high quality data. Our advanced methods deliver detailed, accurate, and novel insights regarding the economic, social, and environmental impacts of energy use. This drives our mission to investigate the hidden stories at the nexus of energy and equity. Our research continually reveals that the people most harmed by climate change are non-white, low income, rural, Indigenous, underserved, and underrepresented communities. At Greenlink, we believe society can do far better and produce a brighter future: Greenlink works towards improving the perpetual issues impacting communities across the US. We leverage our expertise in data modeling to identify pathways towards an economy that prioritizes a cleaner environment, produces meaningful employment opportunities, and creates resilient communities.

Our flagship tool that provides a backbone for our analyses is ATHENIA, a machine learning model that forecasts energy generation, carbon intensities, and public health costs (physical and fiscal) from the energy sector for many cities and regional energy grids. This year, we've been working to extend this system nationwide to give us comprehensive coverage in the contiguous US. ATHENIA's data are directly used to support the Better Power dashboard, our first user-facing tool that allows cities to compare the costs and benefits of various clean energy scenarios.

Another tool under development is the Better Power dashboard. It demystifies the raw energy generation, carbon emissions, and public health impact forecasts

from our ATHENIA model by visually representing a city's hourly future energy operation through different lenses such as grid mix, carbon free energy score (CFE), and expected energy procurement. Better Power allows people to view the anticipated costs and benefits for standard decarbonization scenarios (i.e. 80% CFE, 90% CFE, 100% renewable energy, and 100% CFE) as well as for customized scenarios tailored to individual cities. With this tool, cities now have the power to construct a pathway to a 24/7 carbon free energy future.

Data science can also help reveal inequities across communities, cities and states. Greenlink's data science team developed our first Urban Heat Island index dataset spanning every census tract in the contiguous US. The data is available on the Greenlink Equity Map (GEM), a visual tool that highlights the social and environmental disparities across communities. Urban heat islands are a phenomenon of our cities where the impervious surfaces used to provide urban infrastructure also collect and reradiate heat throughout the day more intensely than we would see in the natural environment. In the summer, this can create hotter urban centers for longer periods of the day. Knowing where these centers are helps us identify communities that are at risk of dangerous summertime temperatures and increased electricity usage. The Index enables ongoing work with cities and communities to highlight neighborhoods that are at risk of high urban heat. It also provides insight into the connections with other energy, environment, and social burdens that cluster with increased heat, including energy, health, and income burdens.



INNOVATIONS IN ENERGY-EQUITY INTERSECTIONS

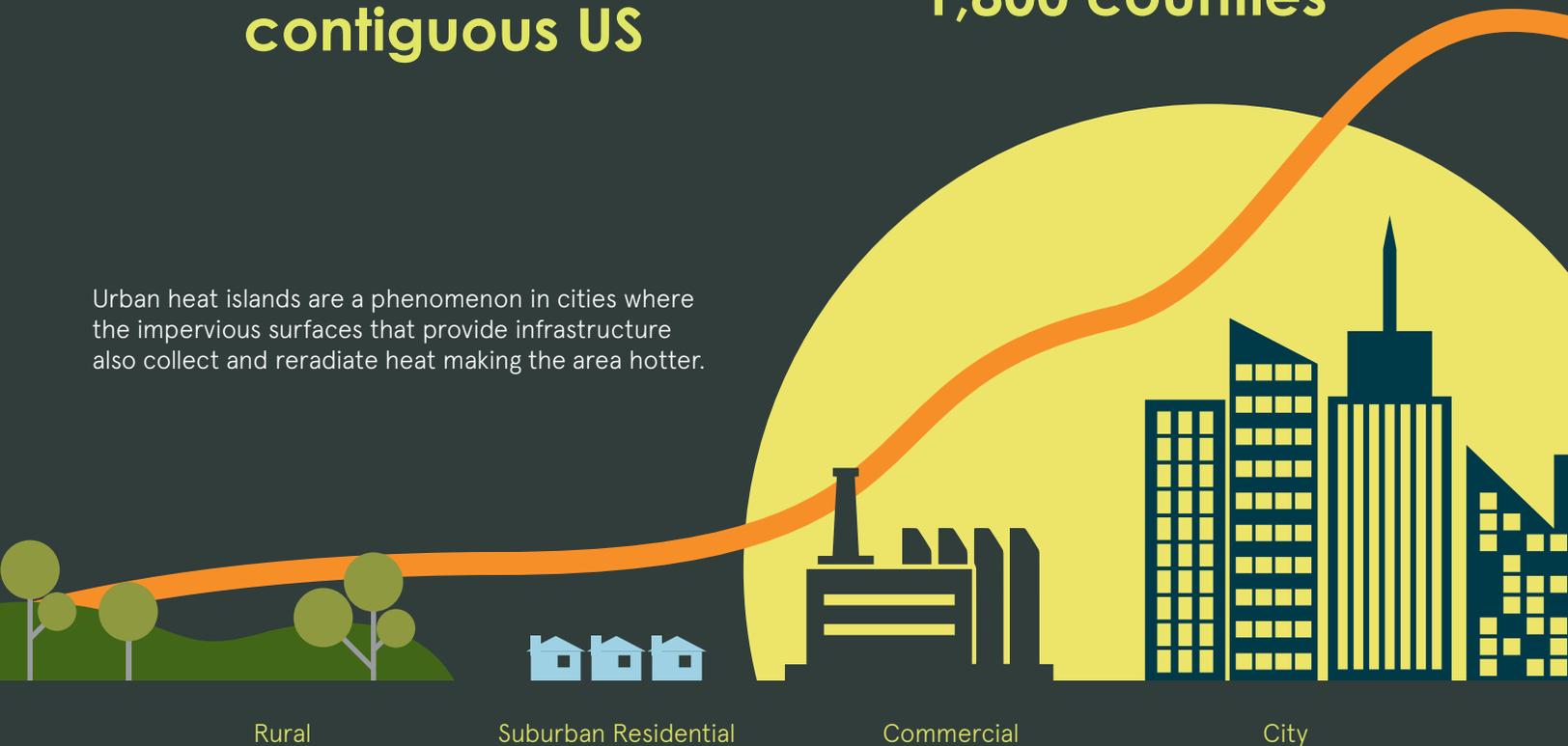
Provides heat island index for about 58,000 census tracts

One of the most referenced indicators on the Greenlink Equity Map

Mapping all 380 metros in the contiguous US

Covering over 1,800 counties

Urban heat islands are a phenomenon in cities where the impervious surfaces that provide infrastructure also collect and reradiate heat making the area hotter.



Rural

Suburban Residential

Commercial

City



ADVANCING AN EQUITY-FIRST AGENDA

At the heart of our equity work is one of our organization's values: service for the greater good. That's why we lead with community in everything we do. Approaching the clean energy transition through a racial justice lens not only advances equitable outcomes for those most negatively harmed by climate change, but also promotes healing for all communities and the planet. Behind the raw numbers of our data, there are stories of individuals, neighborhoods, and cities. We're here to listen, learn, and leverage these insights to ensure a more just and healthy world.

Equity is an iterative and ceaseless process – a conduit toward systemic change, not a means to an end. We understand that elevating the communities most negatively impacted by many injustices is a commitment, and one that requires intention and reflection. The Greenlink Equity Team continually receives feedback from energy, policy, and justice experts across the country regarding gaps in accessible and digestible equity data and robust community engagement processes.

This year, Greenlink embarked on its third Listening Tour with clean energy and environmental justice experts from across the country to inform the direction of our equity work streams. An insight that emerged from the tour was the lack of accurate and updated data on rural and Indigenous communities who are among the most vulnerable and marginalized from data collection and climate policies. To begin shoring up this gap, we're trying to collaborate and develop partnerships with Indigenous communities with the aim of incorporating

their wisdom and science into our data science, community engagement, and policy workstreams.

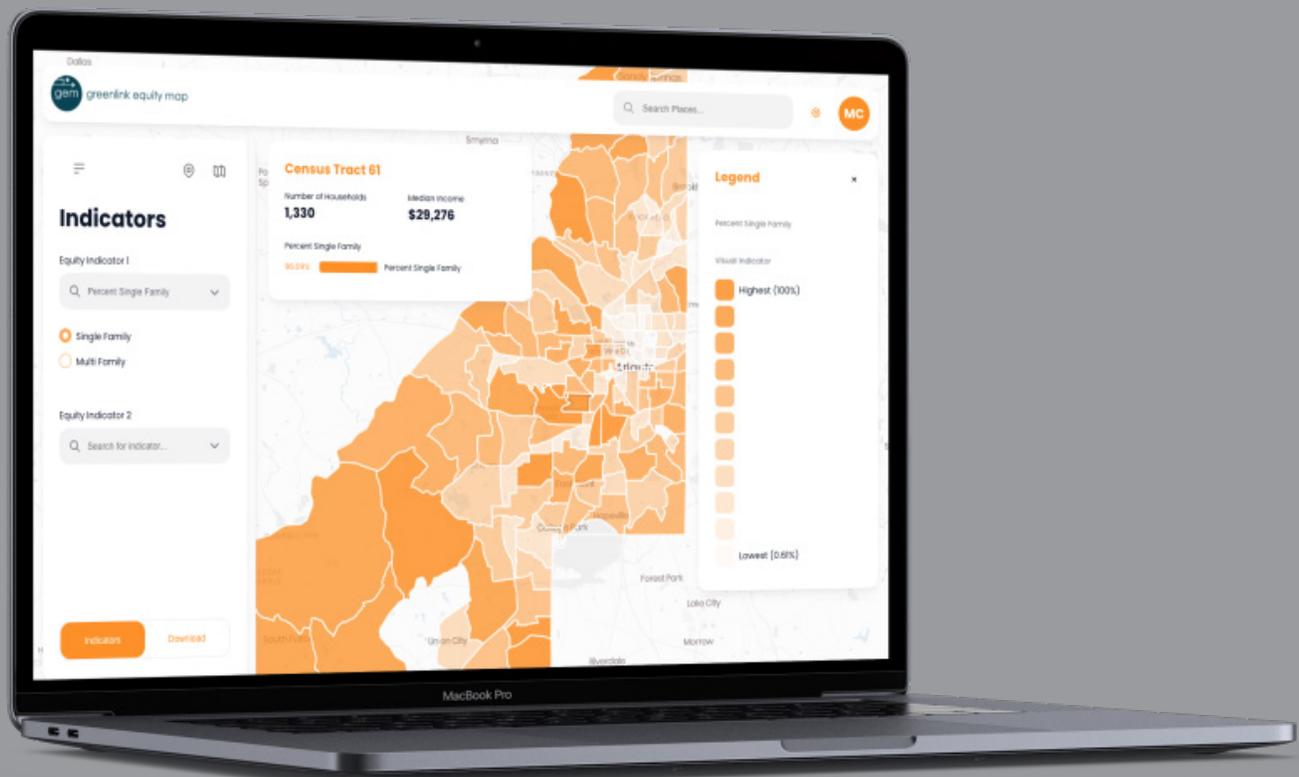
One large focal area for 2022 was launching GEM 2.0. GEM is an online map designed to help cities and organizations visualize equity-related issues at the neighborhood level scale so they can see how burdens are spread across their communities. The platform provides over 40 equity indicators at a neighborhood/census tract level, providing critical data resources to build strong city-community partnerships, and building more equitable climate solutions. The launch provided a revised user interface, new color schemes and correlational graphs, additional functions, and new datasets. Two new novel datasets were also deployed within GEM – Urban Heat Index and Urban Tree Canopy – with the expertise of our dedicated GEM data scientist, Sharanya Madhavan. There are currently 578 members using the platform, of which 80 community-based organizations have been granted free access. Additional indicators and functions are in our development pipeline, including transportation burden, indigenous territories and redlining.

Other equity focused projects included: a correlational analysis for a Federally Qualified Health Center in Wyandotte County, Kansas; the publication of research on the drivers of gentrification and displacement; and development of the Atlanta Equity Index, which is an interactive report card for neighborhoods.



ADVANCING AN EQUITY-FIRST AGENDA

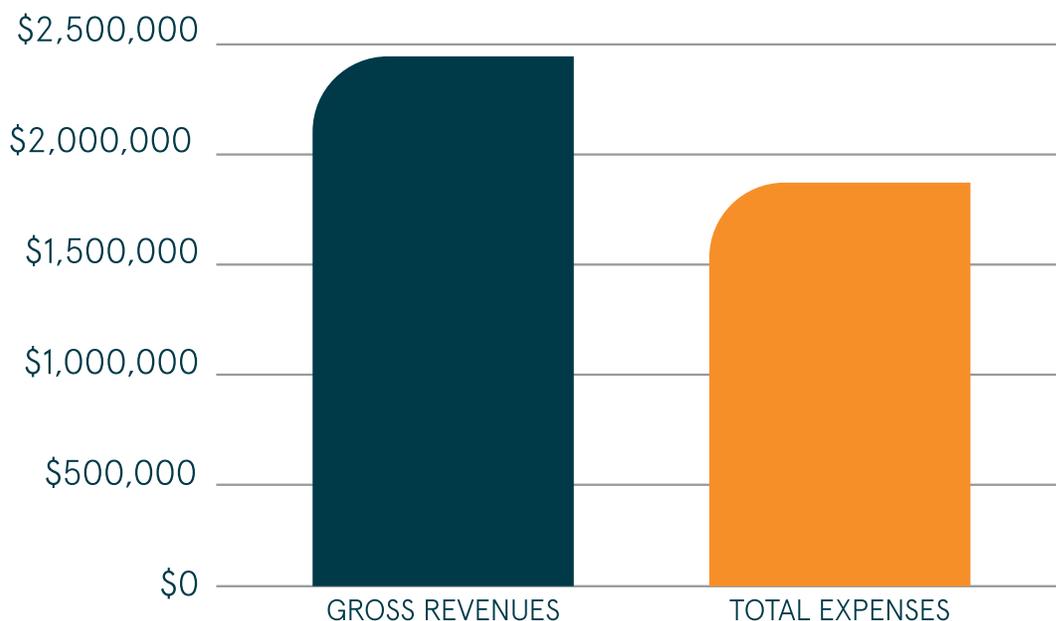
- Grown to over 40 equity indicators
- 2 novel datasets
- 578 members using the platform
- 80 community-based organizations have been granted free access to GEM
- Guided over \$150M of energy equity funding
- Expansion of equity data research
- 2 equity-focused deeper engagement work streams, 1 co-creative data process
- Gentrification & Displacement research publication
- Indigenous communities as a growing focus area
- 8 Community of Practice workshops



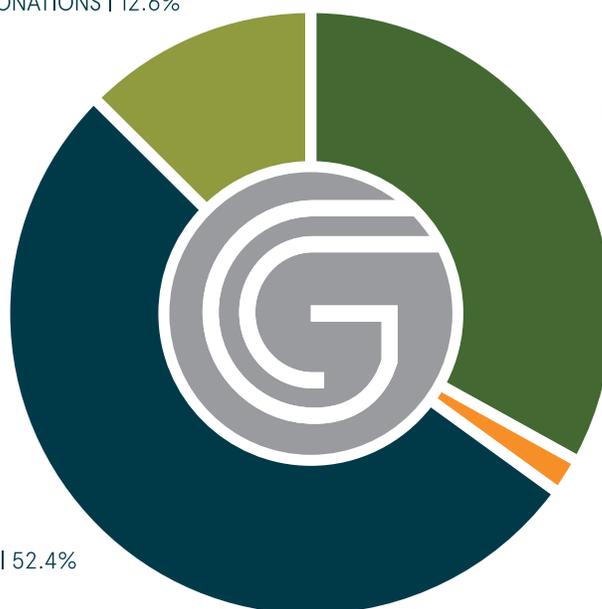
FISCAL YEAR 2022 FINANCIAL SUMMARY



Fiscal Year 2022 Financial Summary



UNRESTRICTED GRANTS / DONATIONS | 12.6%



RETAINERS AND RESEARCH PROJECTS | 33%

GEM MEMBERSHIPS | 2%

RESTRICTION-RELEASED REVENUES | 52.4%

Revenues	2022	Expenses	2022
Retainers and Research Projects	\$789,973	Contractors	\$295,515
GEM Memberships	\$47,407	Operating Expenses	\$269,175
Restriction-Released Revenues	\$1,253,892	Payroll Expenses	\$1,259,405
Unrestricted Grants / Donations	\$301,159		
Total Income	\$2,392,431	Total Expenses	\$1,824,095

Greenlink Leadership

Board of Directors

Matt Cox
CEO and Executive Director, Greenlink Analytics

Marilyn Brown
Regents' and Brook Byers Professor of Sustainable Systems, Georgia Institute of Technology

Xiaoqing Sun
Manager of Energy Analytics, Meta

Brian McCormack
Mentor at Venture Lab, Georgia Institute of Technology

Chandra Farley
Chief Sustainability Officer, City of Atlanta

Founders

Caroline Golin, PhD and Matt Cox, PhD

Leadership Team

Matt Cox, CEO and Executive Director, Greenlink Analytics

Etan Gumerman, Lead Analyst

Kavin Mancikaraj, Chief Data Scientist

Angelica Chavez Duckworth, Director of Community Initiatives

Major Funders

**Bloomberg
Philanthropies**

THE
KRESGE
FOUNDATION



Our Mission

Together, we can drive a fast and fair clean energy transition.



@GreenlinkOrg