

Miami Forever Carbon Neutral: Growing the New Green Economy

Analysis of City of Miami's Green Economy
and Action Plan for Expansion

Draft July 2021

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Executive Summary

2021 finds Miami at a unique and consequential moment in time, as the impact of COVID-19 begins to wane, our city and regional economy are poised for growth while simultaneously being confronted by existential challenges linked to climate change and longstanding socio-economic inequities that threaten our residents, communities, and economy. As a low-lying, subtropical, coastal city, Miami is particularly vulnerable to the impacts of climate change, including flooding due to sea level rise, intensifying tropical storms, and extreme heat. The city's climate vulnerability is viewed in context with existing socioeconomic inequities, such as wage disparity and higher unemployment rates among people of color, which have only worsened with COVID-19. Over the last decade, with increasing intensity and frequency of hurricanes and the COVID-19 pandemic, we have learned that cities are at the frontlines of climate change and economic recessions. This convergence of factors underscores the immense opportunity, and challenge, that Miami has to create policy responses to the COVID-19 recession that both address climate change and socioeconomic disparities.

At the core of this Analysis and Action Plan is the expectation that achieving greenhouse gas reduction (GHG) targets and adapting to other facets of climate change will drive incremental, but ultimately substantive, transformation of the South Florida economy. The City of Miami has already shown decisive leadership in mitigating our role in climate change and protecting our city from future impacts, as evidenced by adoption of Miami Forever Climate Ready and Resilient 305. This Analysis and Action Plan is intended to advance strategies to ensure that residents and businesses economically benefit from prioritized green investments that have potential to accelerate job growth, encourage economic diversification, and incrementally achieve GHG mitigation goals.

What is the Green Economy?

The concept of the “green” or “clean” economy has been evolving for almost 20 years, with initial progress linked to strategies advanced by the Organization for Economic Cooperation and Development (OECD) to encourage job growth in sectors which preserve and/or restore the environment through energy efficiency, resource consumption, decarbonization, and waste diversion. Domestic efforts to define “Green Jobs” expanded after the Great Recession (2008) as the Federal government's efforts to re-start the economy prioritized green investments (including public transit, clean vehicles, and ecosystem restoration) within the American Recovery and Reinvestment Act (ARRA).

This Analysis and Action Plan builds on this research to advance a refined view of the now emerging “green economy” across South Florida and the City of Miami on two levels:

1. A broad focus on economic growth, job creation, and capital investment in industries that significantly reduce the impact of human activity on the environment, focused on sectors that either supply a green output (e.g. renewable energy, climate mitigation services, electric vehicles, or mass transit); or consume a green output (healthcare, higher education, construction, manufacturing, etc.).
2. A tactical focus on job creation within sectors defined as “Pure Green” (i.e. renewable energy) as well as sectors where portions of the industry have been incrementally “greening” (such as building construction) in response to market demand as well as changes in government policy and regulations.

Key Findings

Key findings from our research effort include:

- **Green jobs are resilient and poised for growth:** Miami's green industry sectors include Energy, Buildings, Transportation, Waste Management, Sensors, Instruments and related R&D, Regulation & Advocacy, and Climate Resilient Infrastructure. The “green” components of these industries supported 5,150 green jobs in 2019 and roughly \$1.1 billion in output. These sectors experienced 3.8 percent annualized growth from 2015 to 2019, compared to 1 percent annual growth for Miami's non-green industries and 1.4 percent for

the broader economy. Since the onset of COVID-19, green industries have been more resilient (with little to no job losses) in comparison to Miami's traditional sectors, such as Tourism, which were heavily impacted.

- **Traditional sectors are major consumers of green goods and services:** That traditional economic sectors (e.g. Higher Education and Healthcare), while arguably not "green" today, have clear potential to become incrementally greener in response to technical advances, market forces, and evolving government policy. This analysis reinforces the importance of underlying economic connections between traditional sectors and evolving green sectors. In 2019, traditional industry sectors purchased roughly \$5 billion in goods and services from green sectors. Given this clear economic linkage, public policy efforts that encourage the private sector to make green investments will have ripple effects throughout regional economy, and support pursuit broader carbon reduction goals.
- **Workforce training is essential for living-wage green jobs:** In general across all occupations, those defined as green tend to offer higher pay for middle-skilled workers. However, across the City of Miami, the current mix of green jobs tends to favor lower skilled and lower wage occupations. Given rapid growth across green jobs since 2010, the Analysis argues that this gap will prove temporary. Equally, it argues for strategies that intentionally align green economic development efforts with workforce development needs.
- **Municipal policies bolster the green economy:** The City of Miami, along with Miami-Dade County, is already making strides towards climate mitigation and adaptation and these efforts are already "greening" the economy. Policies related to electric vehicle (EV) infrastructure, LEED certified buildings, building efficiency guidelines, and widespread resilience efforts have helped today's green economy to blossom. Miami Forever Carbon Neutral will serve as the next incremental step in supporting economic diversification and green economic growth

Although this analysis uncovers the scale of recent growth in Miami's green economy since 2015, engagement with local civic and non-profit organizations and the private sector identified parallel weaknesses in the green economy ecosystem that will need to be overcome if the new green economy is to grow alongside Miami Forever Carbon Neutral:

- **Greater Miami needs a green economy champion:** While there is regional consensus about the importance and potential of Miami's green economy, there is no champion to focus energy on growing the green economy, ensuring that a functioning ecosystem is in place to support future job creation, conduct outreach with emerging green economy firms to clarify workforce needs and market challenges, and develop partnerships with local workforce intermediaries and universities.
- **City of Miami needs designated (green) economic development staff:** While the City of Miami has made considerable progress in working toward shared goals across sustainability and resilience, with green infrastructure investment being a clear focus, City economic and workforce development efforts related to green jobs appear fragmented. The City has limited capacity to engage with emerging green firms to better understand how evolving public sector investments (Miami Forever Carbon Neutral and the Miami Forever Bond) will impact their industries and future job creation. The lack of a city-level economic development arm was noted as a specific concern, alongside need for more deliberate strategies to leverage city procurement rules to accelerate green opportunities.
- **City of Miami's COVID-19 economic recovery needs to prioritize equity and climate action:** Although the COVID-19 pandemic and economic recession are beginning to wane, the pandemic has had consequential impact on Miami's economy with many Miamians still out of employment, particularly low-income Miamians of color. In response, City leaders have the opportunity to leverage federal and state resources to explicitly support job creation in sectors best positioned to drive growth and creation of good jobs over the next 10-20 years, which includes the industries across the green sectors. The decisions made today about economic recovery will have shape the economy, community, and the environment today and in the decades to come.

New Economy Actions

Miami's economy will necessarily be transformed by the implementation of our sustainability and resiliency goals. New Economy – spurred by growth in the green economy – is a central tenant of Miami Forever Carbon Neutral in anticipation of the way Miami's climate actions will help drive an emerging economic sector and

diversify the local economy. This Action Plan identifies four overarching goals, which are listed below, for the City to catalyse growth in the new, green economy, create quality jobs, and prepare city residents for future employment. These goals are discussed in detail, along with specific actions that the City can pursue in the next one to two years, in Chapter 6.

- **G** – Green Economy Ecosystem Growth
- **R** – Revitalize the City's Economic Development
- **O** – Opening Doors for Sustainable Industry
- **W** – Workforce Development

Chapter 1: Introduction

Miami Forever Carbon Neutral is the City's Greenhouse Gas Reduction Plan. The plan serves as a roadmap for Miami to achieve carbon neutrality in Miami by 2050, strengthen the local economy, and work towards climate justice. The plan is based on five overarching goals to transition to a GREEN Miami:

- **G** – Getting Around Miami
- **R** – Renewable Energy
- **E** – Electric Vehicles
- **E** – Energy Efficiency
- **N** – New Economy

As the City emerges from the COVID-19 pandemic, economic recovery and getting unemployed residents back into the workforce are priorities for Miami. Miami Forever Carbon Neutral provides a pathway for not only achieving the City's carbon neutrality goals but also for creating good jobs that offer living wages. This New Economy Analysis and Action Plan (Analysis) underscores the need for the City to simultaneously pursue economic development initiatives to facilitate the expeditious implementation of Miami Forever Carbon Neutral's GREEN actions and to bolster economic growth and workforce development. Pursuing both goals in tandem will result in economic recovery that is sustainable, resilient, inclusive, and equitable – delivering a green and just recovery from the COVID-19 crisis (Garcetti, et al., 2020). The New Economy goals, which are subgoals in Miami Forever Carbon Neutral, are as follows:

- **G** – Green Economy Ecosystem Growth
- **R** – Revitalize the City's Economic Development
- **O** – Opening Doors for Sustainable Industry
- **W** – Workforce Development

Miami's Greenhouse Gas Reduction Commitments & the New Green Economy

Cities are positioned at the frontlines of climate change and economic crises. Seventy percent of global carbon dioxide emissions (the primary human-caused greenhouse gas) originate from cities. As a low-lying, subtropical, coastal city, Miami is particularly vulnerable to the impacts of climate change, including flooding due to sea level rise, intensifying tropical storms, and extreme heat. The City's climate vulnerability is exacerbated by existing socioeconomic inequities, such as wage disparity and higher unemployment rates among people of color, which have only worsened as a result of the COVID-19 pandemic.

This convergence of factors, paired with high population density and exposed critical assets, makes the greater Miami region one of the most vulnerable areas to climate change in the world and requires the City to be a leader in both climate mitigation and adaptation. However, with dedicated efforts and investments to climate

adaptation and carbon mitigation, the City can combat these challenges and foster a resilient and sustainable Miami for all.

Achieving Miami's target of 60 percent reduction in GHG emissions by 2035 and 100 percent reduction by 2050, coupled with adapting to the increasing intensity and severity of weather events will require a substantive transformation of the local economy. Critical to Miami Forever Carbon Neutral and Resilient 305, among other City plans, is ensuring that local businesses and residents economically benefit from the city's sustainability and resilience efforts. Prioritizing green investments – those that support GHG mitigation and climate adaptation – in the post-COVID-19 environment will simultaneously facilitate economic development and diversification, achieve GHG mitigation goals, support climate justice priorities, and spur a green and just economic recovery.

The scale of climate change impacts facing the City and the mitigation actions needed to transition to a healthy, climate resilient future and a more sustainable, inclusive economy are far too great for any one sector to undertake alone. As such, the public and private sectors each play key roles in positioning the local economy to be responsive to these structural changes and ensuring that the local workforce is prepared for the evolving work required by green jobs. Preparing the public and private sectors now for a green future will position Miami to take advantage of federal COVID-19 economic recovery funding.

About this Report

This Analysis identifies actions that the City can take to explicitly leverage its GHG mitigation and climate adaptation efforts as workforce and economic development opportunities. It furthers many objectives established in Resilient305, including goals for building a diverse, inclusive economy, creating youth career opportunities, buying local, and collaborating with local universities. The Analysis considers the City of Miami's current green economy including key industries and assets, green industries that are poised for growth, and occupations that will be positively and negatively impacted by green economic growth. It concludes with actions that the City can take to complement its GREEN actions and Miami Forever Bond investments to transform Miami into a place that is both welcoming and conducive to green industries, thereby amplifying economic growth and job opportunities. These actions are accompanied by broad recommendations for encouraging the region to capitalize on the workforce, equity, and climate mitigation and adaptation benefits of green investments. This Analysis is predicated on the following definitions.

Climate Justice & the Green Recovery

Climate justice begins with recognizing which groups are disproportionately impacted by the environmental and economic consequences of climate change and that climate impacts can exacerbate inequitable social conditions. Typically, those groups tend to be responsible for a relatively low volume of greenhouse gas emissions.

In Miami, climate justice communities are historically underinvested neighborhoods (which tend to be inland), populated by individuals that are low-income, predominantly Black, and recent immigrants. These neighborhoods tend to be viewed as less physically vulnerable to climate change since flooding is less common but they are still vulnerable to climate impacts (hurricanes, extreme heat, flooding, pandemic, economic recession) and their residents are relatively more socially vulnerable than other parts of the City.

Inequities experienced by residents of climate justice communities include:

- Utility cost burden
- Lack of car ownership
- Renters being pushed out of homes due to increasing rent prices
- Being uninsured or underinsured
- Prolonged exposure to extreme heat in homes and worksites
- Lack of access to reliable and consistent public transportation
- Living paycheck to paycheck and being unable to afford hurricane supplies or evacuate due to flooding

- Living more than three miles from the closest grocery store

The Miami Forever Carbon Neutral plan and adaptation efforts offer the opportunity to begin to address some of these inequities by promoting economic diversification, creating living wage jobs, and preparing more Miamians for jobs in the new green economy. This Analysis gives special consideration on how the growth of the green economy – spurred by implementation of Miami Forever Carbon Neutral and the Miami Forever Bond – can specifically benefit climate justice communities. This holistic view of climate action is vital in carrying out the City’s vision to create a more resilient, safe, and vibrant Miami for all.

Defining the Green Economy

As Miami pushes forward with its goals of becoming more sustainable and resilient, the local economy will slowly transform to a new, greener economy. The **green economy** is broadly defined as any group of businesses and organizations that use practices that reduce the negative impact of human activity on the environment,¹ including those that mitigate or adapt to the impacts of climate change. Participants in the green economy can be categorized into two groups:

- Producers of green goods and services, such as renewable energy, climate mitigation services, electric vehicles, or mass transit; and
- Consumers of these goods and services, whether they be local government agencies hiring contractors to rebuild infrastructure that can withstand severe weather events, hospitals adopting more efficient energy systems, or private households purchasing electric vehicles.

For the purposes of this report, businesses that produce green goods or services are organized into industries and sectors based on their product or output. For example, transportation is a sector that incorporates industries associated with the movement of goods and people. Each green sector includes a range of industries that are either 1) actively producing or providing green outputs, 2) transitioning to green outputs, or 3) have the potential to become green in the future. The range of “green” industries – Potentially Green to Pure Green – are illustrated in Figure 3 below. For example, certain industries, such as fossil fuel reliant transportation services, do not currently provide any green outputs since they contribute GHG emissions. However, as technology advances (such as the creation of synthetic fuel or the adoption of zero-emission electric vehicles) and market forces and new policies push these industries to adopt green practices, they have the *potential* to become green over time.

This Analysis specifically quantifies the number of green jobs within the Partially Green and Pure Green industries, but also takes stock of the number of jobs in these Potentially Green industries as they too will be impacted by a transition to a greener economy. The methodology for this analysis can be found the appendix.

Chapter 2: Why the New Green Economy Matters

Miami’s Economy

As of 2019, the City of Miami’s total economy (which encompasses jobs and firms within the geographic boundary of the City of Miami)² supported 300,000 jobs and generated over \$67 billion in gross regional product (GRP). Most of those jobs and economic output exist within the sectors of Health & Education, Professional Services, and Leisure/Tourism. While the Professional Services sector has grown in Miami since 2015 and has added around 3,800 jobs despite the 2020 recession, both Health & Education and the Leisure/Tourism sectors lost jobs between 2015 and 2020. Leisure/Tourism lost almost 4,000 jobs from 2019 to 2020 alone, due largely to pandemic closures. However, the main sectors that contribute to the green economy -- Transportation, Building Construction & Materials, and Energy – experienced net growth of over 1,000 jobs between 2015 and 2020. Overall, Miami’s economy has experienced net growth since 2015. The unemployment rate for the City of

¹ C40, C40 Green Economy & Innovation Forum webinar on measuring green jobs in cities, 2019.

² Throughout this report, reference to “Miami” aligns with the “City of Miami” geography, not Miami-Dade County nor other municipalities within Miami-Dade County.

Miami reached a peak of 16 percent during the COVID-19 recession in July 2020 but has trended downward toward 7 percent as of June 2021, according to unemployment rate estimates from the US Department of Labor.

Despite the growth the City of Miami's economy over the last several years, it faces vast inequities with regards to income and job quality. Median household income estimates alone depict a stark disparity of wealth in terms of a householder's race. According to 2019 American Community Survey (ACS) 5-year estimates, the median White household earned an income of \$97,271, whereas Latino/Hispanic households earned \$40,925 and Black households earned \$29,462 (American Community Survey, 2019).³ Overall, 41 percent of Miami's workers work in an occupation with a median hourly wage that is below the living wage rate for the region (MIT, 2021).⁴

There are also a substantial number of Miamians who operate within the informal, or "gig", economy, meaning they are not employed by one formal employer. These jobs are harder to quantify as workers in the informal economy are either self-employed or hold multiple, often temporary jobs, but it has been estimated that around 16 percent of workers in the Miami metro area are in "non-employer relationships." Miami ranks as the metro area with the highest number of gig workers per capita (Tuohey, Zea, Parker, & Tuttle, 2021). While some of these workers are benefiting from a growing gig economy with more access to opportunities and flexible work schedules, others are likely immigrants who lack access to resources, institutions, and bank accounts that support economic growth (For Miami's unbanked, stimulus checks come with hurdles, 2020). Today, we have the opportunity to use the recovery from the COVID-19 economic recession to address the underlying inequities in Miami's economy and to work towards creating an economy that works better for more people.

The Potential of the Green Economy

The idea of growing a national green economy gained momentum following the 2008 financial crisis when the American Recovery and Reinvestment Act (ARRA) dedicated about 17 percent of all direct government spending to green investments. Interest in the green economy and its potential for job creation has re-emerged in recent months given proposed federal legislation to help fund economic recovery and infrastructure investment while simultaneously addressing the climate crisis. Although the US lacks a national standard method for tracking the size of the green economy and its growth, a 2019 study estimated that the green economy produced \$1.3 trillion in output while employing over 4 percent of the working age population in 2016 and that employment in the green economy grew by over 20 percent between 2013 and 2016.⁵ Numerous studies also confirm that jobs in green industries tend to be higher paying with lower barriers to entry compared to jobs in traditional industries, particularly for clean energy jobs which tend to require on-the-job training rather than a post-secondary degree.⁶

In the City of Miami, the size of the green economy is more modest. This Analysis found that roughly 5,000 jobs (about 1.5 percent of all jobs within the City of Miami) and about \$1 billion in GRP (about 2 percent of the GRP) contribute directly to the city's green economy. However, combining all industries that participate directly and indirectly in the green economy – meaning those that are Pure Green, Partially Green, or Potentially Green – comprise about 30 percent of Miami's total economic output (GRP) (Emsi, 2020).⁷ Combined, Pure, Partially and Potentially Green industries, which fall into industry groups of Transportation, Energy, Building Construction, Technical Services, Waste Management, Regulation, and Infrastructure, are estimated to support upwards of 47,400 jobs. Although it is estimated that only 11 percent of these are already green (equating to 5,000 green jobs), the total number of jobs in these industries indicates that there is significant potential for industries to become greener if the demand for green goods and services increases.

Industries that contribute to the City of Miami's green economy grew at an annual rate of 3.8 percent from 2015 to 2019, adding 5,600 jobs, compared to a 1 percent annual growth rate for Miami's non-green industries and 1.4 percent for the overall economy. During the COVID-19 recession, these trends continued, with the green economy showing little to no job loss while jobs in Miami's traditional industries lost over 6,000 jobs (US Bureau

³ American Community Survey, 5-year estimates for City of Miami

⁴ AECOM analysis of Emsi Occupation Data. Living wage based on MIT Living wage calculator of \$17 for one adult, one child.

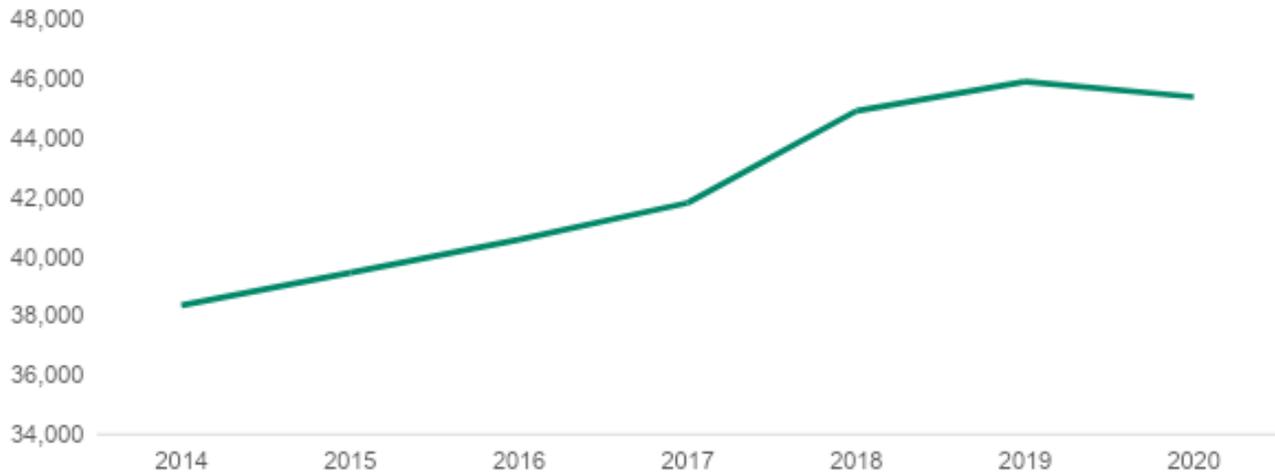
⁵ Georgeson, Maslin, "Estimating the scale of the US green economy within the global context", Nature, 2019.

⁶ Muro et al., "Advancing Inclusion through Clean Energy Jobs", Brookings Institution, April 2019.

⁷ This estimate is derived from job numbers for Pure and Partially Green industries, with a green intensity ratios used to estimate how many green jobs could exist within these Partially Green industries (details on the green intensity methodology can be found in Appendix II). All employment data is provided by Emsi.

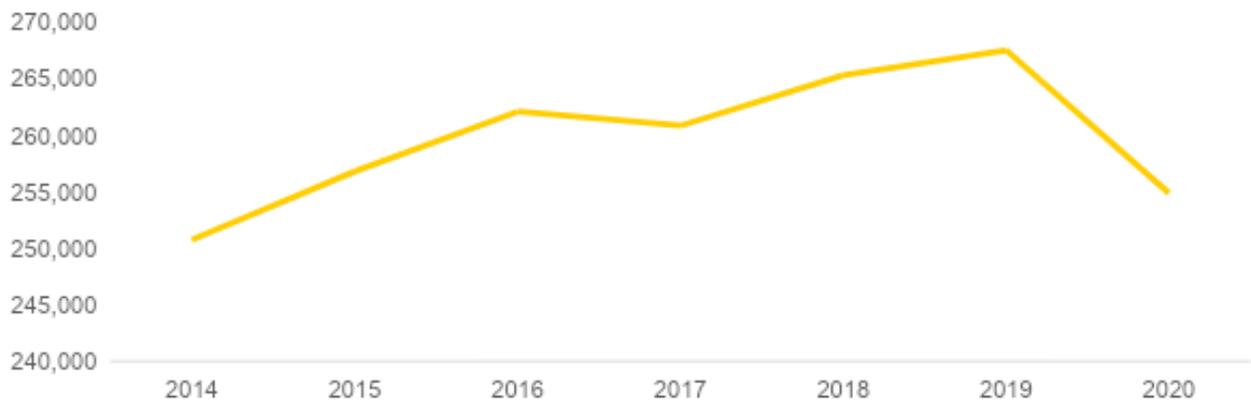
of Labor Statistics, 2020).⁸ This comparison is illustrated in Figure 1 and Figure 2. These statistics indicate that the green economy is more resilient to economic shocks and that further diversification into the green economy may protect the City of Miami’s workforce from future economic downturns.

Figure 1. Job Growth from 2014 to 2020 for Industries Participating in the Green Economy



Source: AECOM Analysis, Emsi 2019 Industry Data

Figure 2. Job Growth from 2014 to 2020 for Traditional Industries



Source: AECOM Analysis, Emsi 2019 Industry Data

This underlines the City of Miami’s strong potential to become a hub for green jobs in the future. By spurring demand for renewable energy, energy and resource efficiency, electrification, and climate adaptation infrastructure now, these growing industries can continue adding green, middle-skill jobs that provide liveable wages, all while improving the environment and economy. Targeted efforts are necessary to ensure that new jobs support communities most impacted by both climate change and economic downturns.

Chapter 3: Measuring Miami’s Current Green Economy

Industries Driving Miami’s Current Green Economy

Industries driving a local green economy are different in each metropolitan area due to geographic context, environmental challenges, state and local policies, and regional economies. This Analysis focuses on industries that are important to the City of Miami’s economy and will be impacted by Miami Forever Carbon Neutral goals,

⁸ Emsi 2020 employment data is based on BLS QCEW data through Q2 (June 2020), so 2020 estimates are subject to change.

including transportation, energy, and buildings. The analysis also evaluates green industries that are not represented in Miami Forever Carbon Neutral but have an active and growing presence in the City. These additional green industries include Waste Management, Sensors, Instruments, and R&D, and Climate Resilient Infrastructure. The players in Miami’s green economy can be organized into sectors, or groups of industries, that are connected by a shared green output or service. Based on these factors, the City of Miami’s green sectors and their associated industries are outlined in Table 1.⁹

Table 1. Sectors within Miami’s Green Economy

Green Sectors	Pure Green Industry Examples	Partially Green Industry Examples	Relevant GHG Goals & Sub-goals
<p>Transportation</p> <p><i>Includes jobs involved in passenger and freight transportation as well as jobs relating to the selling, manufacturing, and maintenance of electric vehicles^{10,11}</i></p>	<p>Commuter Rail Systems, Mixed Mode Transit Systems, Bus and Other Motor Vehicle Transit Systems</p>	<p>Automobile Manufacturing, General Automotive Repair, Freight Transportation, Deep Sea Freight Transportation</p>	<p>Goal 1 – Getting Around Miami</p> <p>15% shift away from private vehicle usage</p> <p>Goal 3 – Electric Vehicles</p> <p>36% of passenger trips from electric vehicles</p>
<p>Energy</p> <p><i>Industries involved in the generation and transmission of carbon-free energy</i></p>	<p>Solar Electric Power Generation, Wind Electric Power Generation</p>	<p>Electric Power Distribution, Electric Bulk Power Transmission and Control, Power and Communication Line and Related Structures Construction</p>	<p>Goal 2 – Renewable Energy</p> <p>100% carbon-free electricity and energy</p> <p>60% reduction in natural gas emissions from existing buildings</p>
<p>Buildings</p> <p><i>Industries participating in the design, construction, and engineering of energy and resource efficient buildings</i></p>	<p><i>No Pure Green Industries</i></p>	<p>Commercial and Institutional Building Construction, Roofing Contractors</p>	<p>Goal 4 – Energy Efficiency</p> <p>Improve energy efficiency in buildings</p>
<p>Waste Management</p> <p><i>Includes public and private waste haulers, recycling services, and waste remediation industries.</i></p>	<p>Recyclable Material Merchant Wholesales, Materials Recovery Facilities</p>	<p>Solid Waste Collection, Other Waste Collection</p>	<p>No affiliated GHG goal</p>

⁹ Industries related to agriculture and sustainable food sourcing are not included in the quantitative analysis of Miami’s green economy due to the small size of this industry within city limits. However, the discussion around urban agriculture and food sources is still a relevant and important, even if small, component of the green economy.

¹⁰ The electrical contractors’ industry, which likely captures charging station installation jobs, is included in the green buildings clusters.

¹¹ While some of these industries are currently lacking green practices, they are an important part of Miami’s local economy and have high potential to become greener in the future. For these reasons, they have been captured as part of the green economy analysis.

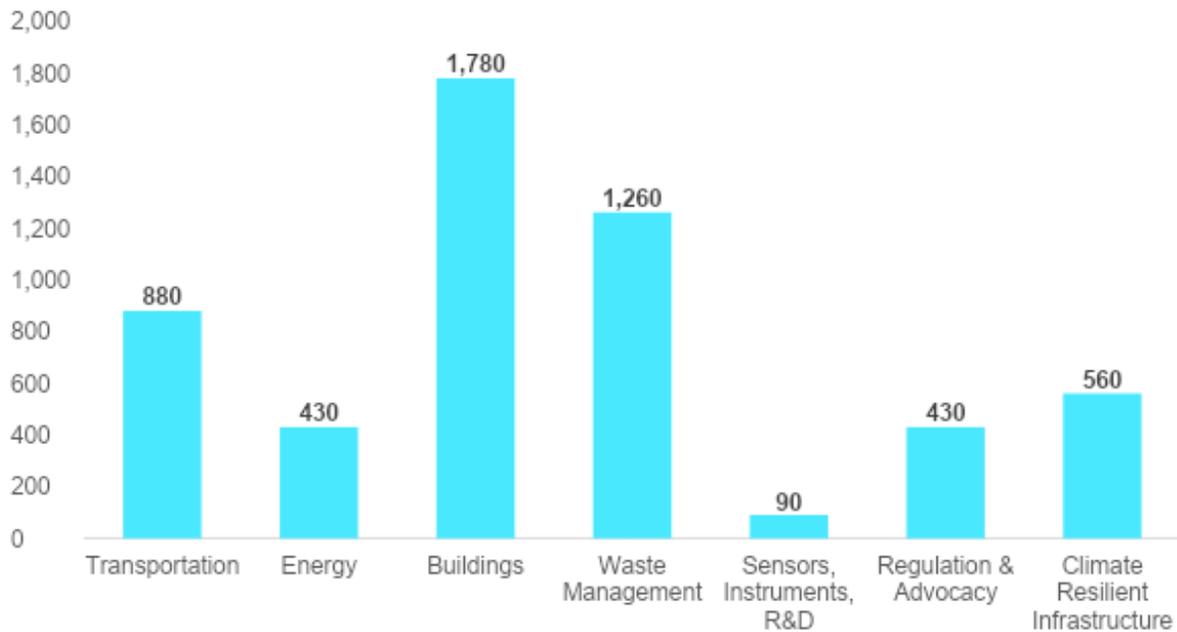
<p>Sensors, Instruments, R&D</p> <p><i>Includes industries related to the manufacturing of devices necessary to monitor temperature, environmental controls, emissions, etc., as well as scientific research industries.</i></p>	<p>Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use</p>	<p>Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)</p>	<p>No affiliated GHG goal</p>
<p>Regulation & Advocacy</p> <p><i>Includes all industries involved in environmental justice and advocacy, as well as those that enforce environmental regulations and compliance.</i></p>	<p>Environment, Conservation and Wildlife Organizations, Nature Parks and Other Similar Institutions</p>	<p>Grant-making Foundations, Offices of Lawyers</p>	<p>No affiliated GHG goal</p>
<p>Climate Resilient Infrastructure</p> <p><i>Comprises industries involved in Miami's extensive adaptation and resiliency projects to curb future threats of sea-level rise and coastal storms.</i></p>	<p>Water Supply and Irrigation Systems, Water and Sewer Line and Related Structures Construction</p>	<p>Landscaping Services, Highway, Street, and Bridge Construction</p>	<p>No affiliated GHG goal</p>

The job numbers and financial values in this Analysis solely include firms operating within the city limits of Miami – not those within greater Miami-Dade County nor neighboring municipalities. However, it is important to acknowledge that Miami's local economy is influenced by regional economic forces within Miami-Dade County and Southeast Florida, and that regional supply and demand also play a role in supporting the City's local green economy.

Jobs Within the Miami's Current Green Economy

Most green jobs within the City of Miami exist within the Transportation, Buildings, and Waste Management sectors, as illustrated in Figure 3 below. These job numbers are calculated by totalling Pure Green industry jobs with estimates of the number of green jobs within Partially Green industries (a more detailed methodology in the appendix describes the process for determining the concentration of green jobs within Partially Green Industries). Within the Partially Green industries, however, there are over 47,000 jobs of which just 11 percent are considered green (see Figure 4). The remaining 89 percent of these jobs have the potential to become green as demand for green goods and services increases.

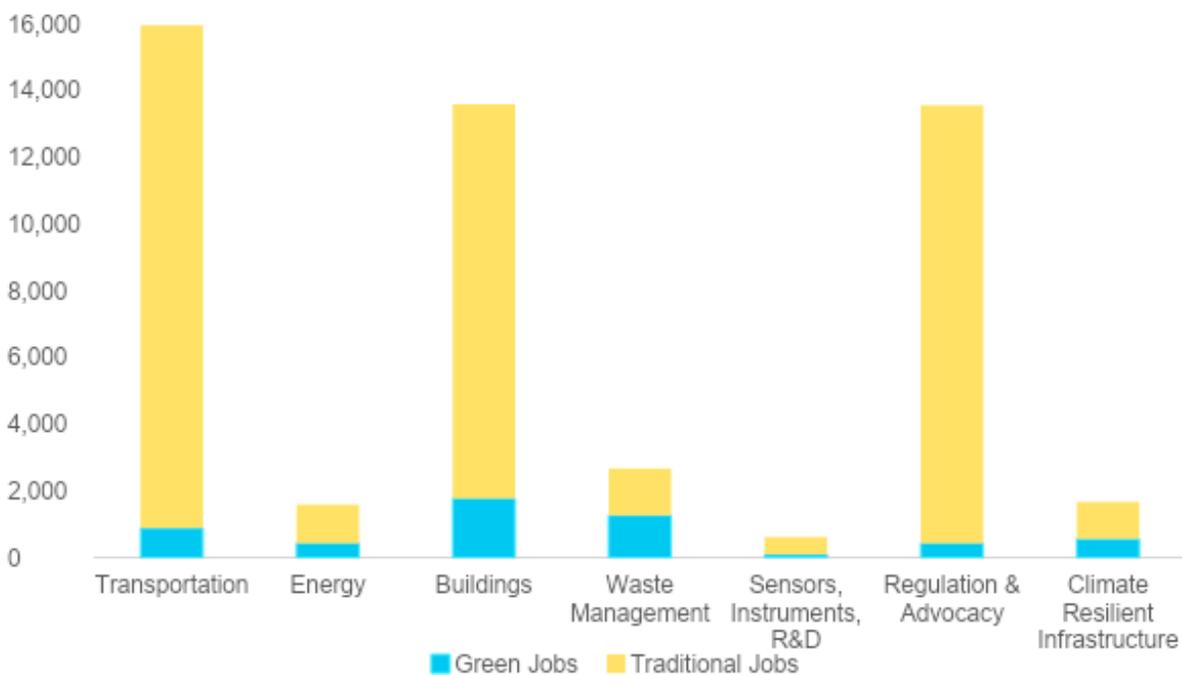
Figure 3. Estimated Green Jobs in the City of Miami by Industry Groupings (2019)



Source: AECOM Analysis, Emsi 2019 Industry Data

These statistics suggest that the City of Miami’s green economy has the potential to grow – either by transitioning existing jobs to green ones or creating new green jobs – with additional investments and supportive policies that bolster demand for green goods and services. Demand for green goods and services, particularly those in the Transportation, Energy, and Buildings sectors, will be buoyed by Miami Forever Carbon Neutral.

Figure 4. Total Job Counts in Pure and Partially Green Industries, Including Green and Traditional Jobs (2019)



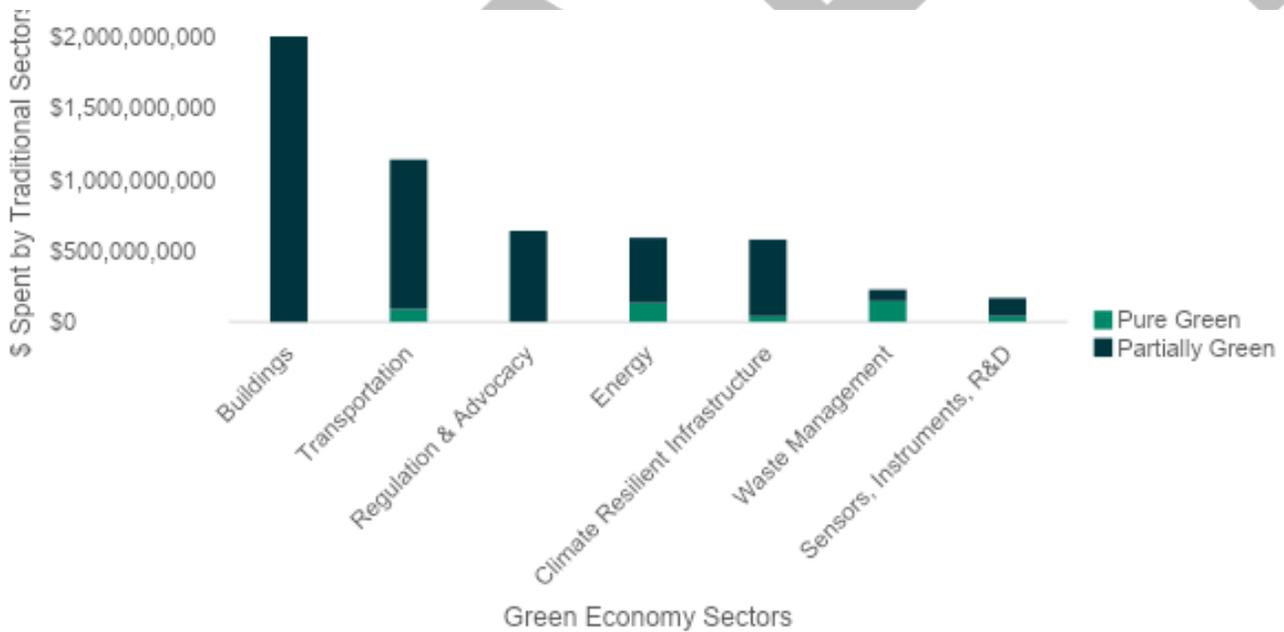
Source: AECOM Analysis, Emsi 2019 Industry Data

Expected Growth within the Green Economy

Market trends indicate that Pure and Partially Green industries within the Green Sectors, including Construction, Transportation, Energy, and Technical Services, grew and added jobs at a consistent rate (3 percent annually) over the from 2015 to 2020. Growth within these industries is likely to continue as Miami’s economy recovers and returns to pre-Pandemic levels. Concerted effort will need to be made, however, to increase demand for the specifically *green* goods and services that are offered from within these industries.

Demand for green goods and services will originate from individual households as well as businesses and the government. The sectors that have historically been the main drivers of the region’s economic success, such as Healthcare, Education, and Tourism, also contribute to the green economy as the purchasers, investors, and consumers of green goods and services. Industry purchase data suggest that traditional industry sectors rely on roughly \$5 billion in goods and services from green economy industries annually, which forms a positive feedback loop between emerging green industries and the City of Miami’s broader economy. One clear example is building construction, where traditional industries in Miami spend over \$2 billion annually on the construction and renovations of hospitals, offices, apartments, hotels, and commercial buildings. Figure 5 depicts the total amount spent by traditional, non-green industries on the industry groups that participate in the green economy.¹² As traditional sectors adopt greener practices in the future, such as purchasing EVs, investing in solar, or improving energy and water efficiency of buildings, they will rely on green firms within these industries.

Figure 5. Total Spent by Miami's Traditional Industry Sectors on Green Economy Sectors (2019)

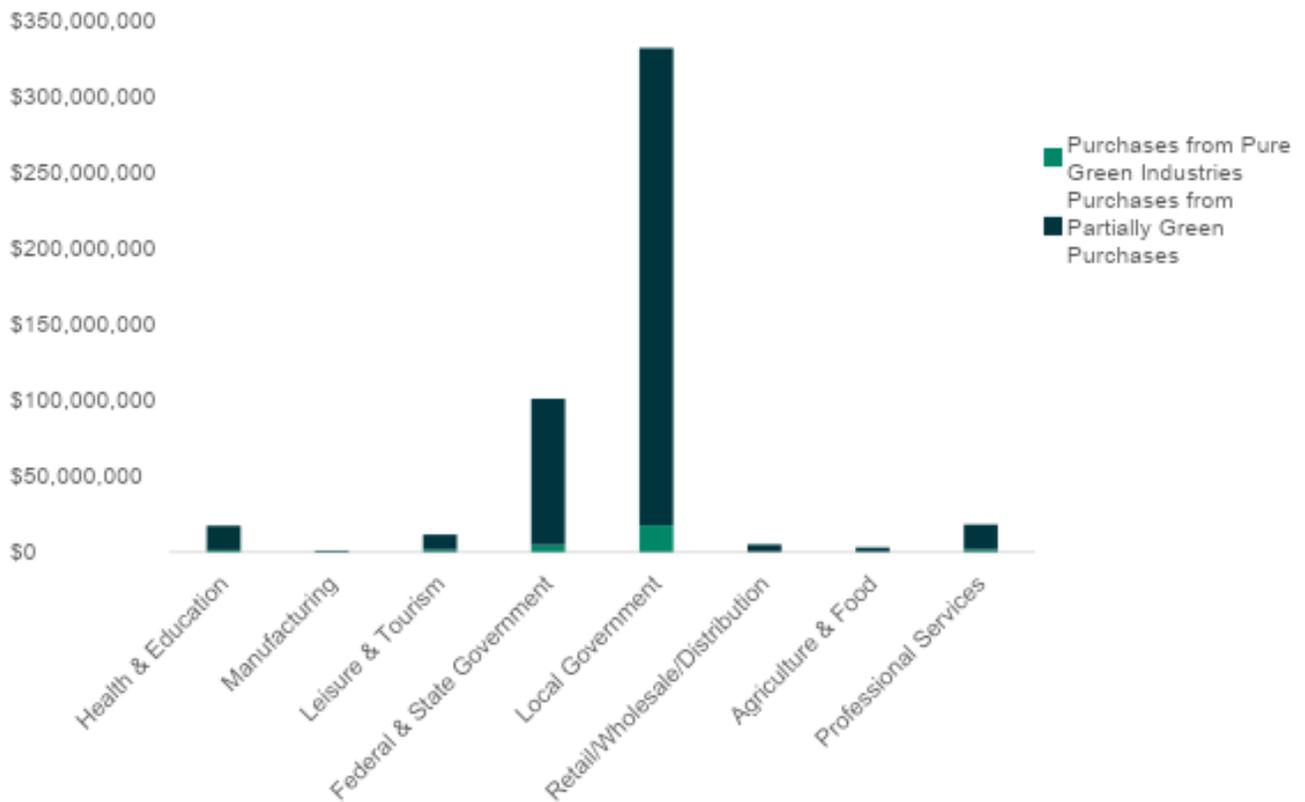


Source: AECOM Analysis, Emsi 2019 Industry Data

¹² The data should not be interpreted as the amount spent purely on green goods and services, but rather on the overall sectors which encompass evolving green industries. These data illustrate the influence that Miami’s traditional economy has had on helping its green businesses grow as it makes decisions on whether and how to make environmentally responsible investments in areas such as green building retrofitting and construction, electrification of buildings and fleets, and sustainable resource management.

Figure 6 shows the average amount spent per industry among traditional industry sectors on goods and services from either Pure or Partially Green industries. Of these industries, the highest spender is local government, totalling nearly \$330 million. This indicates that, while local government’s purchases from Pure and Partially Green industries are not *all* green, changes in City policies that lead to more green purchases will have significant influence in “greening” Partially Green industries and increasing demand for Pure Green industries. While market forces, incentives, and regulations can sway Miami’s traditional industries to invest in green goods and services, local government has notable influence in creating demand for green goods and services by enacting policies that green their procurement practices.

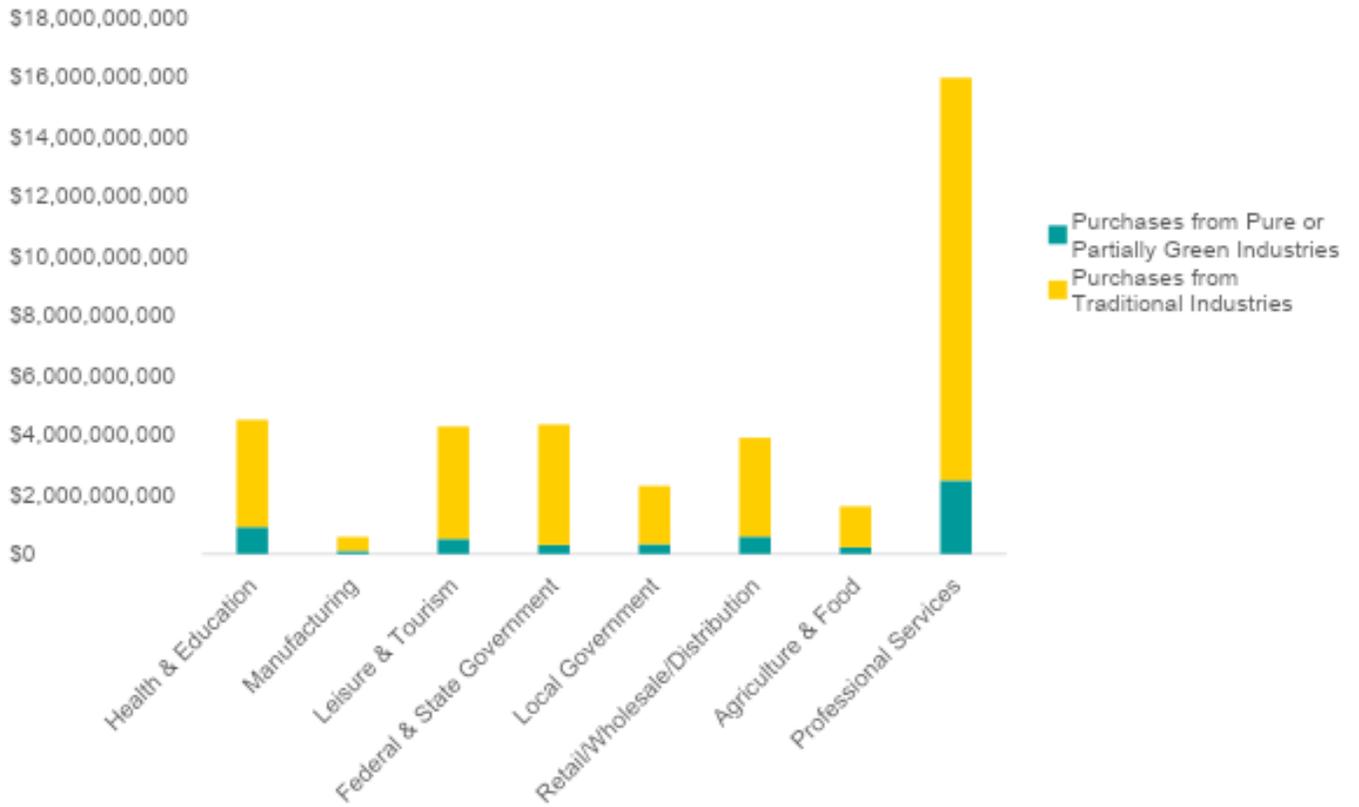
Figure 6. Average Amount Spent on Pure and Partially Green Industries by Miami’s Traditional Industry Sectors (2019)



Source: AECOM Analysis, Emsi 2019 Industry Data

Figure 7 illustrates the full range spending by traditional industry sectors on both green and non-green industries, showing significant amount of spending that occurs between industries within the City of Miami. Overall, non-green industries spend about 14 percent of total industry purchases in Pure or Partially Green industries. Healthcare and Education spends the largest share (20 percent) on Green industries, while other non-green sectors such as Leisure and Tourism and Local Government spend 12 percent and 15 percent respectively.

Figure 7 Total Purchases Made by Traditional Industry Sectors (2019)



Chapter 4: Miami's Green Economy Ecosystem

Regional economies are not only comprised of individual companies producing and selling goods and services to customers but also of entire networks of actors – including the public sector, educational institutions, funders, civic leaders, and non-governmental organizations (NGOs) – that contribute to the conditions required to support economic growth. Understanding Miami's existing green economy not only requires measuring its GRP and living wage jobs, but also understanding which parts of the local and regional ecosystem are supporting (or hindering) sustained green economic growth. Enhancing Miami's green economy ecosystem so that it drives GHG mitigation, improves resiliency, *and* grows and attracts green industries will allow the City to simultaneously achieve its GHG reduction targets, grow its local economy, and improve access to middle-skill jobs.

The following summary draws from nearly 20 interviews with local stakeholders representing public, private, and non-profit sectors and civic institutions. The summary identifies the facilitators of the green economy, or the factors that are supporting green economic growth, and barriers, or factors that are inhibiting sustained green economic growth, of Miami's growing green economy ecosystem.

Facilitators

- Local government prioritization of environmental protection and resilience are central to the Miami green economy. Expected growth in Miami's green economy will, in large part, be driven by the City's planned infrastructure investments under the \$400 million Miami Forever Bond and stormwater master plan update, and the County's Water and Sewer Department (WASD) capital upgrades related to environmental protection and climate adaptation.
 - The City has also instituted sustainability-directed policies, such as its requirements for buildings over 50,000 square feet to be LEED certified, 20 percent of off-street parking spaces to be allocated for EVs, and the removal of solar panels from contributing to building height maximums. This commitment to resilience and sustainability is only expected to grow under Mayor Suarez's leadership, which is expected to enhance the City's reputation as a hub for innovation.
- The local ecosystem of environmental regulators, management services, and advocacy groups, spurred by the adjacency of high-value natural environments, including the Everglades, the Great Florida Reef, and the beaches and ocean, are also a key component of Miami's burgeoning green economy.
 - This nature adjacency has also fostered a small but notable environmental technology industry that includes technological advancements that track ocean pollution and stormwater management. Local universities also play a key role in facilitating this growth.
 - Local, state, and federal regulatory agencies play a role in driving demand for green goods and services by issuing requirements, and incentives, for both the public and private sectors to reduce environmental impacts. This is evidenced by various regulations impacting WASD, including the state's requirement to treat wastewater for reuse rather than deep well injections and the EPA's consent decree requiring that it amend its ocean outfall system, which is leading to multi-billion dollar capital investments, many of which require specialized contractors to design and execute.
- Miami's colleges and universities are a critical pillar to the city's overall economic strength and to the local green economy, both in terms of workforce training and research and development. Today, Miami colleges and universities offer courses that directly support many of its green economy sectors, including environmental engineering and protection, sustainable management, building efficiency, and EV-related technical skills. Many of these institutions now also have their own resilience and sustainability focused initiatives that are, in turn, increasing demand for green goods and services.
- Growing demand – both nationally and locally – for sustainable, renewable, and green goods and services has led to economies of scale and, thereafter, declining costs, creating a virtuous cycle in which “green” is becoming more and more affordable. This is also evidenced by FPL's growing investment in solar energy, demand for solar panels on private residences, demand for EVs and charging infrastructure, and the airport's energy efficiency overhauls. The expectation is that costs will continue to decline as demand, in Miami and beyond, leads to increased innovation and reaches higher quantities of scale.

- The impacts of climate change have also influenced spending in the private sector as more people are investing in home weatherization improvements and using alternative financing mechanisms (such as the PACE program) to pay for these improvements.

Barriers

- While there is regional consensus about the importance and potential of Miami's green economy, there is no champion to focus energy on growing the green economy, ensuring that a functioning ecosystem is in place to support future job creation, conduct outreach with emerging green economy firms to clarify workforce needs and market challenges, and develop partnerships with local workforce intermediaries and universities. The pockets of the green economy that are particularly active and visible, such as in the Transportation, Buildings, Energy, and Climate Resilient Infrastructure, are mostly operating independently of one another. The actors within these sectors, including private enterprises, non-profits, civic organizations, and educational institutions would benefit from stronger connections and alignment of goals and resources.
- While the City of Miami has made considerable progress in working toward shared goals across sustainability and resilience, with green infrastructure investment being a clear focus, City economic and workforce development efforts related to green jobs are fragmented. The City has limited capacity to engage with emerging green firms to better understand how evolving public sector investments (Miami Forever Carbon Neutral and the Miami Forever Bond) will impact their industries and future job creation. The lack of a city-level economic development arm was noted as a specific concern, alongside need for more deliberate strategies to leverage city procurement rules to accelerate green opportunities.
- Although the COVID-19 pandemic and economic recession are beginning to wane, the pandemic has had consequential impact on Miami's economy with many Miamians still out of employment, particularly low-income Miamians of color. In response, City leaders have the opportunity to leverage federal and state resources to explicitly support job creation in sectors best positioned to drive growth and creation of good jobs over the next 10-20 years, which includes the industries across the green sectors. The decisions made today about economic recovery will have shape the economy, community, and the environment today and in the decades to come.
- Workforce development programs, middle-skill employers, and Miami's public school system require partnerships, resources, and clear direction on how to prepare the local workforce for the green economy. To ensure that Miami has the workforce to support the growth of the green economy, it will need to ensure that its workforce is trained for green occupations. Presently, employers across industries, including Transportation, Buildings, and Technology sectors, hypothesize that the region's skilled talent supply is insufficient to meet current and future demand (JPMorgan Chase & Co., 2015). Meanwhile, lower-skilled younger residents and adults report that it is difficult to access high-demand occupations for a variety of reasons, including skill and education requirements and visibility of opportunities. Indeed, many lower-income residents, particularly those who reside in communities of color, and are most often in need of middle-skill jobs, lack high school diplomas, GEDs, and/or English language proficiency and are thus not necessarily positioned to pursue these opportunities (JPMorgan Chase & Co., 2015).

Chapter 5: Preparing Miami's Workforce for the Growth of the New Green Economy

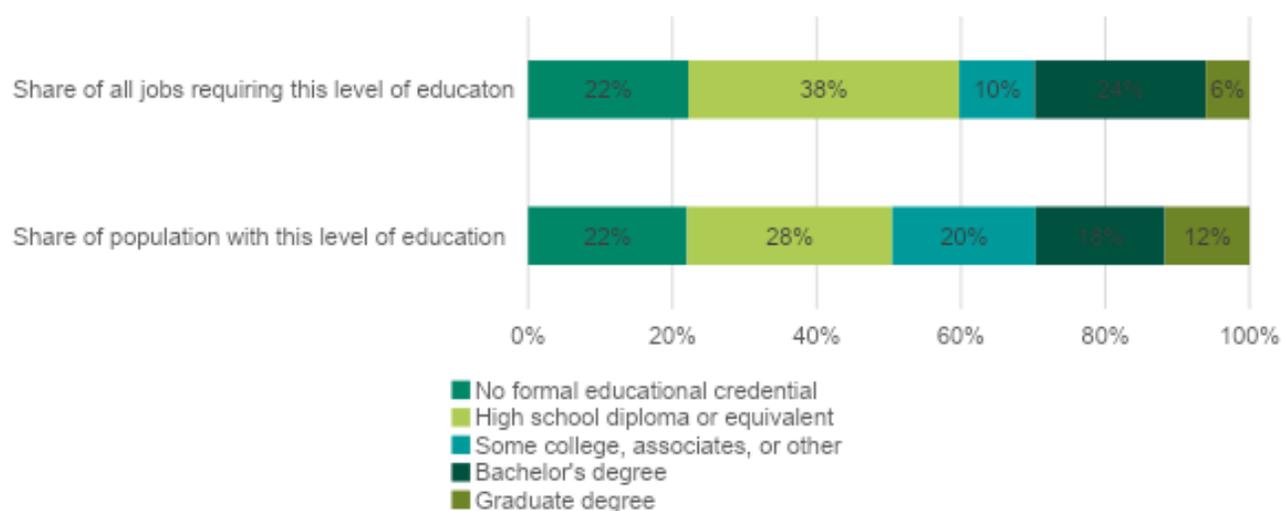
Miami's Workforce Today

As of January 2021, Miami's workforce (meaning those who live in the City of Miami and are employed or looking for work) was estimated consist of 221,000 people (US Bureau of Labor Statistics, 2020). Meanwhile there are over 300,000 jobs located within the city. The City of Miami's population comprises about 17 percent of Miami-Dade County, whereas its 300,000 jobs make up 23 percent of all job within the county. Despite there being enough jobs in Miami to employ every resident in its workforce, a majority leave the city for employment,

primarily to other cities in Miami-Dade County such as Miami Beach and Coral Gables.¹³ Sixty-seven percent of Miami residents leave the city for work, while workers who live outside of Miami occupy about 82 percent of Miami’s jobs (Longitudinal Employer-Household Dynamics, 2018).

While many factors contribute to residents’ employment outside of Miami, one important factor is the skills and education mismatch between the local workforce and available occupations. Currently, based on the typical level of education required for entry into an occupation, 60 percent of jobs located in City of Miami require a high school degree or no formal education. Many of these are lower-wage occupations that offer little to no path for upward mobility. Only 10 percent (30,000) of Miami’s jobs are considered middle-skill – requiring less than a bachelor’s degree but more than a high school diploma for entry into the occupation.¹⁴ In comparison, 20 percent (68,000) of Miami residents have some college or an associate’s or professional degree. A full breakdown of education level requirements for existing jobs and the educational attainment of City of Miami residents is shown in Figure 8.

Figure 8. Educational Attainment of City of Miami Residents versus Educational Requirements for Occupations



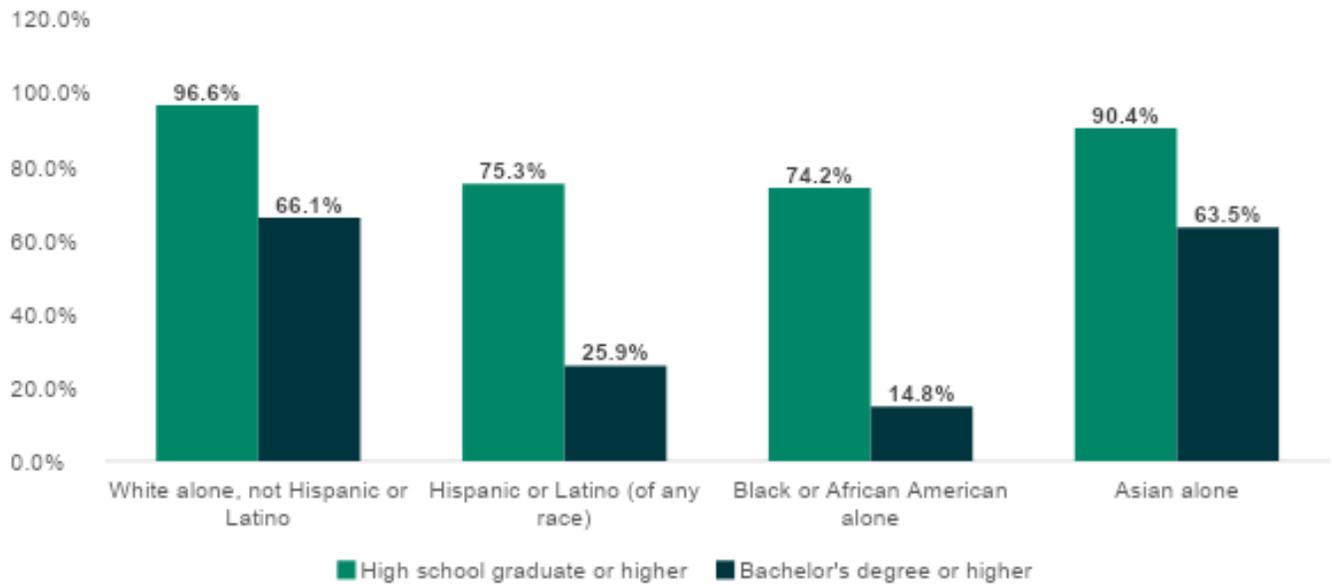
Source: ACS 2019 5-year estimates and AECOM analysis of Emsi data

Figure 9 shows how educational attainment varies by race and ethnicity. White non-Hispanic residents are far more likely than people of color to have graduated high school and obtained a bachelor’s degree. Occupations and workforce development opportunities that offer stable, living wage work for residents who have not obtained a high school diploma or bachelor’s degree are essential in addressing racial inequities among Miami’s workforce. For this data, Hispanic or Latino refers to individuals of any race of Hispanic or Latino ethnicity, while White includes those of non-Hispanic or Latino origin, whereas Black or African American and Asian may overlap with those in the Hispanic or Latino group.

¹³ As most employment data is based on the location of an employer as opposed to employees’ residents, jobs and occupation data refer to the location of the employer. Data sources such as the Longitudinal Employer-Household Dynamics (LEHD) Survey provide insight into the relationship between the residential labor force and employment within the city.

¹⁴ Typical education level for entry to an occupation is reported by BLS at the national level, so alternate paths to employment may exist at a regional level.

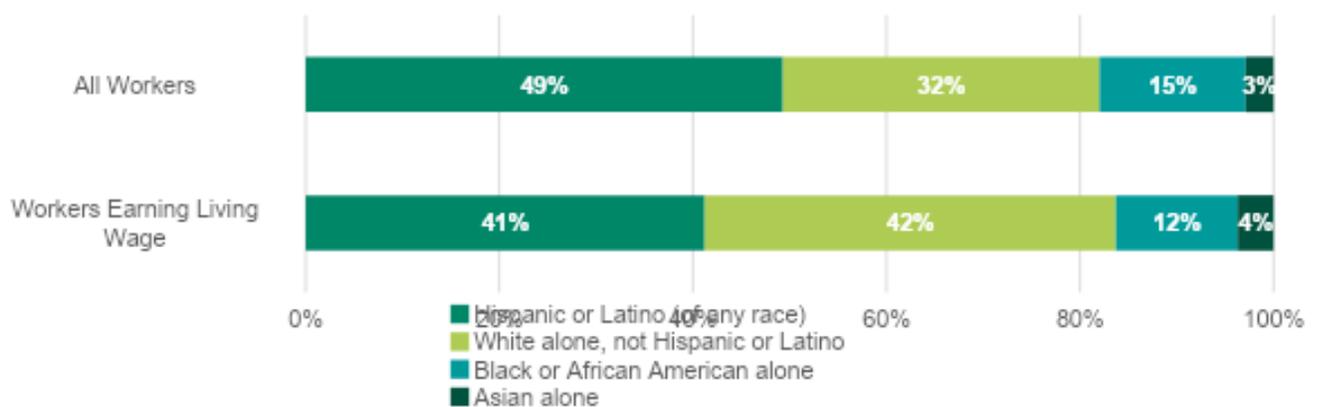
Figure 9. Educational Attainment of City of Miami Residents by Race¹⁵



Source: ACS 2019 5-year estimates

Inequitable access to stable, well-paying occupations is evidenced by the distribution of educational attainment among different racial and ethnic groups. Among the approximately 300,000 workers employed in Miami, 47 percent work in occupations that have a median hourly wage below living wage (\$17.90) (MIT, 2021).¹⁶ These jobs are more likely to be held by non-White workers, further perpetuating racial disparities in economic opportunity. Unequal access to well-paying jobs has been a longstanding issue in Miami, with younger workers and workers of color facing higher unemployment rates and lower educational attainment (Beacon Council, 2020). Figure 10 shows the Miami workforce by race, for all occupations and for occupations that pay a living wage. While White workers hold 32 percent of all jobs in Miami, they are disproportionately likely to be employed in occupations that pay a living wage.

Figure 10. City of Miami Workforce by Race¹⁷



Source: Emsi 2019 occupation data

¹⁵ 'White' race category refers to White Non-Hispanic population.

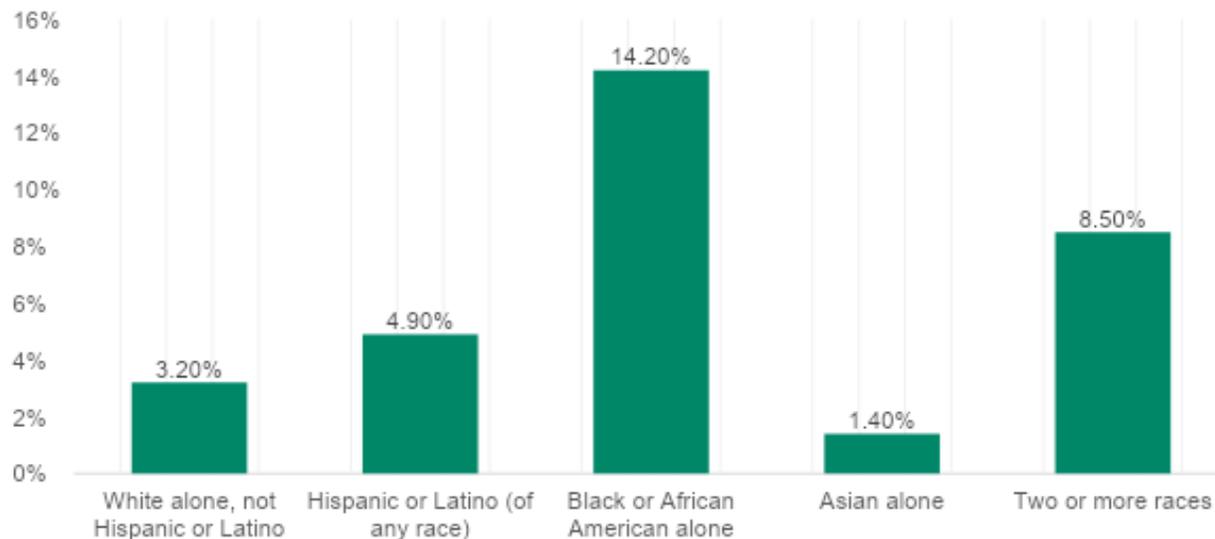
¹⁶ Estimated living wage for two working adults with one child in Miami, FL based on MIT's Living Wage Calculator, which is the same baseline used in JP Morgan's "Trading on Innovation to Expand Opportunity" report.

¹⁷ Emsi occupation demographic data treats 'Hispanic' as an additional race category, removing Hispanic population from other race categories.

Younger residents, Black, and Latino residents also face higher rates of unemployment compared to other demographic groups. Figure 11 shows unemployment estimates for 2019, with a rate of 14 percent for Black residents and 4 percent for White residents. Young people also face higher unemployment, with 11 percent of residents between the ages of 20 and 24 unemployed in 2019, compared to 6 percent of all Miami residents (American Community Survey, 2019).

These data were collected prior to the COVID-19 pandemic, which severely impacted employment in 2020 and exacerbated existing inequalities. Preliminary estimates for unemployment in January 2021 in Miami were over 8 percent. Unemployment disproportionately impacted people in service jobs and people of color (US Bureau of Labor Statistics, 2020). These numbers further underline the need for economic initiatives that are intended to address racial inequities.

Figure 11. Average Unemployment Rate for City of Miami Residents by Race (2015 - 2019)



Source: ACS 2019 5-year estimates

Green Occupations

Jobs that are defined as green due to the nature of their work can be defined as “green occupations.” An analysis of green occupations provides further detail on the activities, skills and education that will be needed in Miami’s growing green economy. Green occupations are divided into three categories (O*NET OnLine, 2020):

- **Green new and emerging:** Unique occupations created as a result of the greening of the economy (i.e., solar photovoltaic installers, automotive engineering technicians). These occupations will require new workforce training programs that provide training in specific skillsets.
- **Green enhanced skills:** Existing occupations that undergo changes to the work and worker skills as the economy becomes greener (i.e., building inspectors, mechanics, and engine specialists). These occupations are more likely to require up- or re-skilling programs.
- **Green increased demand:** Occupations that face increased demand due to the greening of the economy, but work and worker requirements remain the same (i.e., forest and conservation workers, environmental regulators). These occupations solely require more people to develop necessary skills.

The Analysis’s assessment of the median wage and educational requirement data for Miami’s current green and non-green occupations align with findings from other green economy studies, which suggest green jobs tend to be higher-paying and accessible to those without a post-secondary degree (Muro, Rothwell, & Saha, 2011). Examining current characteristics of green occupations reveal that approximately 60 percent of green occupations are considered middle-skill, and 65 percent have a median wage greater than the local living wage.

Preparing Miami’s workforce for new, greener jobs requires understanding which jobs will be in demand and associated skillsets. For example, an increase in EVs in Miami, which is a top GHG reduction goal, will reduce demand for workers related to combustion engine vehicles and will increase demand for electricians and EV technicians. It will be necessary for the City of Miami, private sector, and educational institutions to acknowledge and anticipate these changes in demand for occupations and skills.

Certain occupations are projected to grow more than others over the next ten years, but these projections do not anticipate changes in demand for occupations, such as changes in demand that will spurred by implementing Miami Forever Carbon Neutral. Table 2 shows some of the occupations likely to be needed to implement each goal and, thus, are likely to experience increased demand. The occupations summarized in Table 2 are also those that qualify as middle-skill and living wage jobs, indicating that they should be prioritized in green workforce training programs.

Table 2. GHG Reduction Targets and Associated Occupations that are Middle-Skill and Living Wage

GHG Plan Goals	GHG Plan Sub-Goals	Relevant Living Wage & Middle Skilled Occupations
Getting Around Miami	15% shift away from private vehicle use compared to 2018 levels	Operating Engineers and Other Construction Equipment Operators; Bus and Truck Mechanics and Diesel Engine Specialists; Transportation Inspectors
Renewable Energy	100% carbon-free electricity and energy	Electrical Power-Line Installers and Repairers; Environmental Engineering Technologists and Technicians; Construction and Building Inspectors
	35% reduction in natural gas emissions compared to 2018 levels	
Electric Vehicles	40% of registered passenger vehicles are electric	Bus and Truck Mechanics and Diesel Engine Specialists; Industrial Engineering Technologists and Technicians
Energy Efficiency	Improve energy efficiency in buildings to decrease overall energy consumption and support achievement of carbon-free electricity and energy	Operating Engineers and Other Construction Equipment Operators; Construction and Building Inspectors; Electrical and Electronics Repairers, Commercial and Industrial Equipment

Source: AECOM analysis of Emsi occupation data based on ONET green occupation classifications

It will be important to anticipate the changing demand for workers’ skills as the new green economy grows and evolves. While it will require efforts to monitor the changing needs of green or greening employers in Miami, some studies have tried to synthesize more broadly how skills for green jobs vary from those for traditional jobs. Skill and knowledge areas for green occupations tend to require more scientific knowledge and technical expertise (Muro, Rothwell, & Saha, 2011). As many technician occupations do not require a college degree, but rather an associate’s degree, vocational education or on-the-job training, many green job-specific training programs could be accessed through existing technical training and educational programs, such as those offered through Florida International University (FIU), Miami-Dade College, and other local colleges and universities. Training programs should be designed based on whether expected growth will occur in occupations that are already green and are experiencing increased demand, occupations that are becoming greener, or green occupations that are new.

Chapter 6: New Economy Actions

Miami’s economy will necessarily be transformed by the implementation of our sustainability and resiliency goals. In Miami Forever Carbon Neutral, the N in GREEN stands for New Economy, representing economic development actions that the City can pursue to leverage its climate actions to drive an emerging green economic sector and diversify the local economy. As demand for green goods and services grows, firms will respond over time by hiring more workers trained with green job-related skills and expanding the size of the city’s green workforce. Likewise, anticipated growth in local clean tech as a result of Venture Miami efforts will

expand the green economy, and the economy overall. Miami Forever Carbon Neutral, in particular, will lead to increased green growth in the Buildings, Transportation, and Energy sectors. The GREEN actions that are expected to directly lead to economic growth, including the creation of new jobs, are summarized below:

Goal 1: GETTING AROUND MIAMI

- T-1: Collaborate with Miami-Dade County and local advocacy groups to increase utilization of biking as a transit method by implementing the Bicycle Master Plan and expanding the number of protected, green bikeways. \$\$
- T-2: Expand micromobility options throughout the entire city including Citibikes, scooters, and electric bikes. \$\$
- T-6: Establish parking disincentives, such as parking maximums and dynamic parking prices, to discourage the use of single occupancy gas vehicles. \$\$
- T-7: Implement Transit Alliance recommendations to update trolley routes in alignment with Better Bus Project Metrobus route redesign and increase service where possible. \$\$
- T-9: Improve pedestrian experience and safety through investments in sidewalks such as ADA compliance measures and increasing number of crosswalks, especially in low-medium income areas. \$\$

Goal 2: RENEWABLE ENERGY

- E-1: Provide additional policy and financial incentives to encourage private solar installations and identify incentives that would appeal to owners of affordable housing. \$\$
- E-3: Require buildings that are re-roofing to be solar-ready. \$\$
- E-8: Partner with community organizations such as local non-profits, trade organizations, and electric and gas utilities, to develop a carbon-free building education program to provide information and technical assistance. \$\$

Goal 3: ELECTRIC VEHICLES

- EV-2: Partner with Miami Parking Authority to expand EV charging station installations in public locations. \$\$
- EV-3: Build on EV Capability Ordinance to require EV charger installations in new developments starting in 2025. \$\$
- EV-4: Partner with major employers to install EV chargers in parking lots/garages. \$\$

Goal 4: ENERGY EFFICIENCY

- B-1: Adopt commercial building energy benchmarking and reporting ordinance for private buildings over 20,000 sq. ft. \$\$
- B-2: Adopt commercial and public building energy performance standard ordinance that requires property owners to meet energy/GHG reduction targets for buildings over 20,000 sq. ft. \$\$
- B-3: Establish a home energy rating and disclosure ordinance to be implemented at point of sale or lease. \$\$
- B-4: Establish a residential energy conservation ordinance (RECO) at the point of property sale or lease with support mechanisms for low income homeowners. \$\$
- B-7: Make all non-emergency energy use in existing public buildings carbon-free by 2035. Explore and adopt as much clean energy emergency generation and battery storage as possible. \$\$

New Economy Goals and Actions

Growing the New Economy – and, thus, achieving our GHG targets and resilience goals - requires building out Miami’s green economy ecosystem, which requires fostering connections between stakeholders and building capacity and synergies across the entire ecosystem. Today, Miami’s green economy ecosystem includes many actors that are operating, for the most part, independently and without a supportive ecosystem helping them to grow, hire, and increase their impacts on the local economy. Our goal is to ensure that green industries have a pathway for growth and that the City plays an active role in paving the way for new green economic growth and employment. By strengthening Miami’s green ecosystem, not only will we provide economic opportunity, but we will also provide living wage jobs for Miamians, diversify Miami’s economy, and reduce our GHG emissions.

The below goals and actions summarized in Table 3 respond to the unique opportunity that the COVID-19 economic recovery provides and the challenges that Miami faces to realizing a new green and equitable economy. These actions are intended to be implemented within one to three years and are also listed in the New Economy section of Miami Forever Carbon Neutral.

City Authority

As defined in the Miami Forever Carbon Neutral plan, the City of Miami faces practical constraints on its ability to influence all GHG emissions. The same is true for the City’s ability to direct and influence the local economy – we can directly make change through a few select channels. For example, we can play an impactful role in creating demand for green goods and services by purchasing those items, making requirements through permitting and contracting, and leading by example and through partnerships. The Miami Forever Carbon Neutral goals will do some of these – including creating demand and making requirements – but additional supportive actions will create a stronger economic ecosystem. The New Economy actions leverage the City’s existing resources (e.g. staff), programs (e.g. Summer Youth Connect program), authority (e.g. zoning and procurement), and regional leadership to influence Miami’s economy.

Table 3 New Economy Goals and Actions

Actions	Action Details	Resilient 305 Alignment
Goal 1: Green Economy Ecosystem Growth		Action 20: Build an Inclusive Economy, Action 21: Train for Construction, & Action 27: Expand Youth Career Opportunities
NE-1: Work with regional partners, including Miami-Dade County, Beacon Council, and non-governmental organizations (NGOs), to align sustainability and adaptation goals	While ecosystems are not created overnight, coalition building with regional partners, including Miami-Dade County, Beacon Council, and non-governmental organizations (NGOs), to align sustainability and adaptation goals to intentionally foster creation of a functioning and cohesive innovation ecosystem is the first step.	
Goal 2: Revitalize City’s Economic Development		Action 20: Build an Inclusive Economy
NE-2: Dedicate staff within existing City departments to support green economic development goals and implementation of Miami Forever Carbon Neutral.	Dedicate additional full-time equivalent (FTE) employee capacity within existing City departments (planning, resiliency, housing & community development) to perform outreach to emerging green companies, with a core focus on workforce needs, and incentive requirements.	
NE-3: Develop a plan for expanded, permanent economic development capacity.	Develop business model for expanded City-level economic development capacity, either as a city department or as a public private partnership, to sustain development of a functioning green economy ecosystem, including incentives and workforce development. This office could expand upon Venture Miami efforts.	
Goal 3: Open Doors for Sustainable Industry		Action 20: Build an Inclusive Economy, Action 21: Train for Construction
NE-4: Strengthen the City’s procurement requirements so that green and sustainable are not only the preferred option, but the required option.	Use the City’s implementation of Miami Forever Carbon Neutral, forthcoming stormwater master plan update, and procurements related to the Miami Forever Bond investments as opportunities to align its sustainability goals behind its spending. Specifically, update the	

	language in Chapter 22.5 of the City Code, Articles I and III, to require City departments to purchase green goods and services rather than consider them.	
NE-5: Facilitate expedited design and permitting review of projects that will achieve Miami’s GHG and resilience goals.	Expedited review will reduce costs and encourage developers, contractors, and related businesses to pursue sustainable opportunities.	
NE-6: Preserve or enhance zoning that supports green industries.	Growth of Miami’s green economy will also change land use needs. For example, there may be less demand for land that is zoned to support auto mechanics and higher demand for land that is zoned to allow small scale manufacturing or electronic repairs. It will be important for the City to identify changes in land-use needs and preserve or create zoning that supports green industry needs. Zoning that supports green industries will also facilitate location-based economic development strategies.	
NE-7: Develop green economy performance metrics based on the Miami Forever Carbon Neutral Implementation Plan.	Performance Metrics are essential in placing climate investments and associated job creation in a broader economic, social, and environmental context, and documenting progress toward future goals. The metrics identified in Miami Forever Carbon Neutral (e.g., the number of Electric Vehicles in use) will serve as a proxy for measuring the new green economy. New Economy specific metrics for the next two to three years should reflect Miami Forever Carbon Neutral’s implementation strategy. As important, strategies to track and document performance will likely require innovations across IT and R&D, leading to support for future job creation.	
Goal 4: Workforce Development		Action 27: Expand Youth Career Opportunities
NE-8: Expand the Miami Summer Jobs Connect program to include internships that align with new green economy.	Introducing Miami youth to green jobs, particularly jobs that offer growth opportunities, early in their career can increase demand for those types of jobs, including training.	

Appendix

Appendix, which includes a detailed methodology, will be inserted into the final draft.

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