



DATA GUIDE

Advancing Racial Equity through Federally Funded Public Transit, Bicycle, and Pedestrian Projects

A Data Guide for Local Applicants

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A Data Guide for Local Applicants

This guide is intended for local governments or organizations interested in advancing racial equity through the pursuit of federally funded public transit, bicycle, and pedestrian projects. Specifically, the guide catalogues data sources that can help local applicants make evidence-informed decisions about project selection and provides examples of how those data sources can be used to answer key equity-centric questions, using application criteria from competitive grants funded by the Infrastructure Investment and Jobs Act (IIJA) as examples. The guide is structured as follows:

- **Part 1** describes the policy and political context relevant to public transit, bicycle, and pedestrian projects, focusing particularly on President Biden’s executive orders on racial equity and the climate crisis and how the orders might affect local project selection decisions and applications for funding.
- **Part 2** highlights six categories of data that may help localities embed racial equity commitments and impacts in project proposals and suggests both specific indicators and data sources for those indicators (see our [accompanying table](#) for details).
- **Part 3** demonstrates how localities can use the indicators in the preceding section to address key funding priorities across multiple competitive IIJA transportation grant programs.
- **The appendix** compiles a list of competitive grant opportunities under IIJA that offer funding for public transit or bicycle and pedestrian projects.

Part 1: Context and Motivation

Context

In 2020, the transportation sector accounted for the largest share (27 percent) of greenhouse gas emissions in the United States.¹ Of these, 57 percent were produced by light-duty vehicles, mostly passenger cars.² Decreasing our reliance on automobiles—combined with a shift of the entire transportation system to low- or zero-emissions propulsion—will be key to reducing greenhouse gas emissions and achieving climate goals.

But shifting the dominant mode of transportation away from cars also has important equity implications: people of color are less likely to have access to private vehicles, but they are

underconnected to public transit along with other services and disproportionately bear the brunt of pollution resulting from vehicle emissions (US Department of Transportation, Federal Highway Administration, and Federal Transit Administration 2010). They also face both higher risk of collisions with vehicles and a greater threat of injury or death when involved in such collisions.³ These disparities are the result of decades of structural racism that have manifested through exclusionary zoning, redlining, urban renewal, and disinvestment, among other practices (Stacy et al. 2022).

Improving the quality and reliability of public transit and expanding access to nonmotorized modes of transportation are thus key to making progress on the Biden administration’s twin goals of advancing racial equity and tackling the climate crisis, both of which were outlined in executive orders issued by President Biden in his first month in office. The first, the Executive Order on Advancing Racial Equity and Support for Underserved Communities, called for a comprehensive, whole-of-government approach to advancing equity for all, “including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality.” The second, the Executive Order on Tackling the Climate Crisis at Home and Abroad, included a call for the creation of the Justice40 Initiative, an effort to ensure that 40 percent of overall benefits from federal investments in seven areas, including climate change and clean transit, flowed to “disadvantaged” communities.⁴

BOX 1

Defining Equity

Equity describes the condition in which one’s characteristics—such as race and ethnicity, sex and gender, or place of birth—do not determine life outcomes. It can also refer to systems in which services are distributed according to need. This guide primarily centers racial equity as an evaluation framework for and intended outcome of federally funded projects, given the current administration’s stated racial equity goals, but equity captures multiple dimensions of peoples’ identities and experiences, and intersectional identities can compound inequities among people of color. The Biden administration’s executive order on advancing equity centers historically underserved communities, particularly Black, Latino, Indigenous and Native American, Asian American and Pacific Islander people and other people of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer people; people with disabilities; people living in rural areas; and people experiencing persistent poverty.

Together, these orders provide insight into the administration’s priorities for allocating federal resources and have since been incorporated into many federal grant programs, including those funded by the \$1.2 trillion IIJA. Also known as the Bipartisan Infrastructure Law, IIJA provides funding through new and existing programs for a range of projects across transportation, energy, water, broadband, and more (White House 2022). IIJA provides \$591 billion in funding specifically for transportation projects, which flows down to local governments and other eligible entities through formula funding to states or through competitive grants administered by federal agencies such as the Department of Transportation.⁵

BOX 2

Understanding “Disadvantage”

The Justice40 initiative identifies “disadvantaged” communities using several dimensions, such as health, transportation access, and environmental quality, captured in the federal government’s [Climate and Economic Justice Screening Tool \(CEJST\)](#). However, the tool does not include racial indicators, despite documented patterns of policy and practice leading to increased environmental hazard exposure in communities of color.⁶ Although other dimensions of climate justice correlate with race, and racial data could be layered onto CEJST indicators, the tool’s failure to explicitly capture race as a key dimension of climate and environmental justice limits its applicability to comprehensive assessments of community racial justice and equity.

The term “disadvantaged” is also a matter of contention, because deficit-based language can carry negative connotations and stigma regarding the very populations federal funds are designed to serve. Related terms that appear across federal agency documentation include “underserved communities,” “communities of concern,” and “sensitive populations,” with many focusing attention on communities of color and communities with low incomes. With acknowledgment that these terms can inadvertently reinforce negative stereotypes or pejorative connotations, the term “disadvantaged” appears throughout this guide in recognition of the language used in IIJA funding application guidelines. We encourage communities and the federal government to consider the use of terms that more positively signal populations identified for equity-driven investments, such as “priority communities.”

Motivation

Many competitive federal grants, including those funded by IIJA, now require applicants to make compelling, data-driven cases as to how proposed projects will benefit historically “disadvantaged” communities, who are often communities of color. Yet localities often face significant data challenges in their attempts to address transportation inequities. In 20 recently conducted interviews with

transportation experts and other experts in local governments, we found that although local leaders are interested in quantifying the potential racial equity and environmental justice impacts of their proposed projects, they often struggle to both obtain the necessary data and determine the appropriate methods to use (Axelrod et al. 2022).

This guide is designed to assist local government actors by cataloguing data sources that can help localities advance racial equity through the pursuit of public transit, bicycle, and pedestrian projects, and by providing examples of how those data sources can be used to make decisions about project selection. Whether to help localities form compelling applications for competitive IJJA grants or to make the case to city leaders on what projects to push forward irrespective of funding source, this guide is aimed at giving local leaders the tools to quantify the equity motivations and impacts, both positive and negative, of potential projects. We hope that it will empower localities to make evidence-informed decisions that simultaneously advance racial equity and climate action.

BOX 3

The Importance of Community Engagement throughout the Project Life Cycle

To ensure projects are responsive to community needs, local governments must include community members in decisionmaking, especially those members who have historically been excluded from such processes. Community members and people with lived experience have access to information, context, and understandings of their communities that are often not available to people outside of their communities. This “insider” knowledge—or community expertise—can help ground projects in the specific needs and ideas of a community and can often lead to more effective and sustainable solutions to local needs and challenges. Incorporating the input of members of communities who have traditionally been underserved, particularly communities of color, can also serve as a means of remedying past harms and help advance more racially equitable outcomes.

Community engagement can improve the quality and rigor of research in many ways. For instance, it can serve as a complement to data-driven approaches by helping identify questions that quantitative data can answer. It can also help validate findings from quantitative research, as in the case of data walks.⁷ Although this guide focuses on quantitative data sources, we strongly encourage users to consult resources on best practices for obtaining community input. Urban Institute researchers have published a guidebook on community voice and power sharing that includes practical advice for organizing data chats, building partnerships, establishing community advisory boards, and fielding community-engaged surveys, among other strategies (Sankofa, Daly, and Falkenburger 2021). The Greenlining Institute also hosts a Mobility Equity Framework specifically for transportation projects; this framework provides a step-by-step guide to a more community-centered planning process that puts affected communities at the center of decision-making (Creger, Espino, and Sanchez 2018).

Part 2: Useful Data Types and Sources

Many types of data might help inform how racial equity can be centered in public transit, bicycle, and pedestrian projects. But these data assets can be difficult to find and may vary widely in geographic coverage, granularity, periodicity, timeliness, and accessibility, among other attributes. The following section highlights six major categories of data that may help localities evaluate or make the case for potential projects: demographic, mobility and connectivity, economic, health and safety, environmental, and housing.

For each data category, we highlight use cases and key datasets. The [accompanying table](#) contains a more comprehensive list of specific indicators, where to find them, and relevant attributes for each dataset, including possible limitations. Datasets were chosen based on degree of availability nationally, extent of geographic granularity and, where possible, disaggregations by race and other key demographic categories. They should not be considered an exhaustive list. In addition to datasets, the table also catalogues many data tools that offer user-friendly features such as the ability to view data on a map or to filter by certain attributes. Localities with less data expertise may find these tools especially helpful when accessing and analyzing data of interest.

Although many of the datasets included contain information at the local or neighborhood level (most commonly approximated by census tracts), many are only available at the city or county levels and may not surface within-locality variation, which is often necessary for targeting investments to specific communities. In such cases, users may need to use indicators from a larger geographic area, such as a metropolitan statistical area, to illustrate their points, and they may need to supplement such data with local knowledge on areas that are disproportionately impacted or have experienced rapid change. Community input can be an invaluable source for this knowledge—for example, even if readily accessible data do not exist on the locations of sidewalks and bicycle lanes, members of the community can likely identify dangerous stretches of roads or intersections where improvements are most needed.

Demographic

Demographic data describe the characteristics or attributes of a given group of people. These include dimensions such as race, gender, income, educational attainment, disability status, and many more. Demographic data can be used to ensure that projects are serving people most in need by prioritizing lower-income neighborhoods or neighborhoods with high shares of people of color, immigrants, people with disabilities, or other marginalized groups.

The American Community Survey, an annual survey designed to be representative of the entire US population, is a major source of demographic data that often publishes aggregate estimates at very granular levels of geography, including census block groups, which generally contain between 600 and 3,000 people, and census tracts, which generally contain between 1,200 and 8,000 people.⁸ The American Community Survey also publishes a Public Use Microdata Sample, which contains a privacy-protected set of records at the individual or household levels.⁹ Because the microdata come from individual records, they offer more flexibility in creating custom crosstabulations of demographic information. Microdata are provided geographically by Public Use Microdata Areas, which have minimum populations of 100,000 and are thus not designed to enable analysis of small geographic areas.¹⁰

Although many of the data sources that follow in later sections disaggregate data by race, income, or other relevant demographic indicators, some do not. In cases where disaggregations are not readily available, it may be necessary to link the data in question with census (or other relevant demographic) data based on a common geography to obtain a more nuanced understanding of the issue at hand (box 4). When comparing two or more datasets containing demographic variables, remember that they may not use the same definitions. For instance, there are many different classifications of race and ethnicity. The Census Bureau adheres to the Office of Management and Budget standards, which require only five separate race categories: white, Black or African American, American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander.¹¹ The Census Bureau also captures race and ethnicity separately, with Hispanic origin captured in the ethnicity variable rather than in race.¹² Other data sources, however, may disaggregate race more finely, combine race and ethnicity, or use different definitions of each category. Close attention should be paid to such distinctions when merging datasets or comparing data from different sources.

Localities with less capacity to perform data linkages may be able to rely on existing data tools such as the [National Equity Atlas](#), which provides a variety of socioeconomic data for cities and larger geographies, including wages, poverty levels, car access, commute times, educational attainment, and homeownership, all disaggregated by race and other demographic factors. Although much of the data come from the American Community Survey, the National Equity Atlas also incorporates data from additional sources, including the Environmental Protection Agency and the Centers for Disease Control and Prevention.

BOX 4

Linking Data by Geography

When working with datasets that do not provide disaggregations by race or other demographic variables of interest, data users must often merge on demographic data from other sources. This is usually done by geography, because most publicly available data are not published at the individual level. Fortunately, this is generally straightforward if relying on the census geographic indicators, because each census block, block group, or tract has a unique identifier that can be used as a merge key to link between datasets.¹³ For example, a user working with a nondisaggregated dataset on car access at the census tract level can easily merge on data from the American Community Survey on the racial demographics of each census tract. Doing so will enable the user to identify correlations between the racial makeup of neighborhoods and car access and draw conclusions about the groups least likely to have access to cars and thus most in need of alternative transportation options.

When census geographic identifiers are unavailable in either or both datasets, it may be necessary for users to first perform a spatial join, using available geographic coordinates such as latitude and longitude to merge on the appropriate census geography, and then linking the datasets using the merged census geographic identifier.¹⁴ If geographic coordinates are not available, users may need to perform an additional step of geocoding the available geographic variable (for instance, street address) into coordinates before performing a spatial join.

In cases where data are available at different levels of geographic granularity, users may need to aggregate each dataset to the same geography before performing the merge. For instance, if demographic data were available only for census block groups, and data on car access were available only for census tracts, then users would need to aggregate the demographic data to the census tract level before merging the two. Often, users may find themselves limited by the availability of appropriately granular data. If data on car access are only available at the city level and are also not disaggregated demographically, then understanding disparities in transportation access becomes more difficult. One way for local governments to address the issue of data granularity is to invest in local data collection and capacity. In later sections, we suggest potential areas to target investments.

Mobility and Connectivity

Central to transportation and infrastructure investments are considerations of mobility and connectivity: how readily people can move through their communities and access key services, the quality of infrastructure like sidewalks and bicycle lanes, and the existence of services such as bus rapid transit that link major destinations.

Mobility can refer to movement in a literal sense—how people and goods move from one point to another, facilitated by roadways, highways, and different means of transportation, from scooters to cars to freight trains. A critical consideration here should be the needs of people with disabilities, such as people who use wheelchairs or assisted walking devices or have visual or auditory disabilities; children; elderly people; and people with limited English proficiency, who may have different access requirements.

Mobility can also refer to economic mobility, or socioeconomic movement to a higher income strata. Sound and equitable transportation investments can spur economic mobility by connecting people not only to major destinations, but in doing so, to economic opportunity. A bus route that serves major housing areas, employment hubs, schools, grocery stores, and medical centers can connect people without a car to jobs, educational opportunities, and health care services they may otherwise find hard to reach. Fragmented or disconnected transit systems can limit connectivity to the resources people need to acquire and sustain the employment, education, and health services essential to advancing personal and financial well-being.

Mobility and connectivity data can capture basic infrastructure and dimensions of neighborhood design, such as walkability indicators like the presence and width of sidewalks, or whether and where dedicated cycling lanes exist. Data can also reflect transportation connectivity as a means of accessing opportunity, including travel time to work in minutes by different modes of transportation, or jobs accessible within a 30-minute public transit ride. The [National Walkability Index](#), which ranks census block groups according to pedestrian accessibility; the Center for Neighborhood Technology's [AllTransit tool](#), which includes measures such as access to jobs, farmers markets, bikeshare locations, transit stops and routes, and more; and American Community Survey data on commuting methods all offer starting points to understand degrees of mobility in a given place. Locally available data can provide further context and specificity and may include bus routes and operating times, the share and location of stations that are accessible to people with disabilities or other specific needs, and the availability of nonmotorized transport options.

Economic

Ensuring that all people have access to jobs paying a living wage and can achieve financial security is foundational to an equitable society. Economic data can help guide localities in understanding employment and wage trends, where businesses and jobs are located and why, whether entrepreneurs and small businesses are able to access capital, and much more. These data can provide an

understanding of which areas have high concentrations of economic activity, which areas might need better connections to jobs and economic opportunity, and whether demographic disparities exist in access to jobs and opportunity.

The Bureau of Labor Statistics (BLS), a unit of the Department of Labor, publishes several datasets that may be useful in understanding local economies, including the Local Area Unemployment Statistics and the Quarterly Census of Employment and Wages. The Census Bureau also publishes several useful datasets, such as the Longitudinal Employer-Household Dynamics survey on job mobility, the County Business Patterns dataset, and the Small Business Pulse Survey, all of which contain useful information on business activity and employment.

The Census Bureau also hosts the [OnTheMap](#) tool, which maps the travel patterns of workers using data from the Longitudinal Employer-Household Dynamics Origin Destination Employment Statistics and can be used to identify workforce characteristics in each census tract, which may help localities prioritize their programs to specific groups or areas. Further, state and local agencies, such as employment departments and human or social service agencies, may also hold useful data, including on enrollment in social programs such as SNAP and TANF.¹⁵

For localities with the resources to purchase private data, data on consumer credit lines held by the three major credit bureaus (Equifax, Experian, and TransUnion) may provide a more complete picture of local household finances. Many universities and research institutions have partnerships with the bureaus, and some institutions have constructed longitudinal consumer credit panels from these data.¹⁶ It may be worthwhile to contact a local university's economics department or a research institution to inquire about the use of such panels.

Health and Safety

Health and safety benefits are among the most salient in transportation and infrastructure projects, and they are commonly referenced in IIJA grant application guidelines. Traffic collisions and pedestrian and bicyclist crashes are matters of both safety and public health, with data surfacing inequitable patterns. By one estimate, the rate of traffic fatalities among Black people rose 23 percent in 2020 compared with an increase of 4 percent among white people (NHTSA 2021).¹⁷

Safety can also be embedded into street infrastructure and the design of facilities like bus shelters. For instance, adequate street lighting can improve visibility and thus safety by discouraging crime, while designated lanes at bus stops can protect transit riders from oncoming traffic while waiting for

or boarding buses.¹⁸ Built environments can also either facilitate or hinder physical activity. Car-centric land use can compel people to drive to their destinations, while communities with safe and accessible sidewalks and bicycle lanes could encourage people to exercise more by walking or biking to work or for recreation.

The Fatality Analysis Reporting System and the Fatality and Injury Reporting System Tool, both housed under the Department of Transportation's National Highway Traffic Safety Administration, compile annual figures on motor vehicle crashes, pedestrian and cyclist collisions with vehicles, and injuries and fatalities resulting from these incidents. Local government departments can be another repository of safety and infrastructure data. Local or regional transit authorities maintain information on the number, locations, and types of bus stops—such as those covered or uncovered or those with or without dedicated shelters—and some municipalities offer public data on street safety elements like street lights (see, for example, [Washington, DC's Street Lights map](#)).

On health, the Centers for Disease Control and Prevention publishes the [PLACES](#) dataset, which reports a variety of health data, including asthma and obesity rates, insurance status, and usage of health services, at the neighborhood (census tract or zip code) level. The [City Health dashboard](#) also tracks several indicators that may be of use, including air pollution (both ozone and fine particulate matter), though data are only available for select cities. The Department of Transportation also hosts a [Transportation and Health Tool](#) that allows users to view 14 indicators at the metropolitan area level, such as commute mode shares (private vehicle, public transportation, bicycle, or foot), proximity to major roadways, and road traffic fatalities.

Several public health themes, such as pollution and other aspects of air quality, overlap with environmental benefits, which makes the case for investments and projects that can achieve multiple well-being outcomes by both reducing emissions and mitigating contaminant exposure.

Environmental

As noted, the environmental benefits of improved transportation systems closely intertwine with and shape public health. Reductions in carbon emissions, land use planning that limits community exposure to contaminants, and infrastructure that improves resilience to climate change-induced natural disasters all impact health and the way people move through their communities. Equity is also central to these efforts: because of historic and persistent racist and classist policies, people of color and people with low incomes live in areas that are more vulnerable to natural disasters and have higher

rates of exposure to pollutants than white people and more affluent people (Fothergill, Maestas, and Darlington 1999).¹⁹

The C40 greenhouse gas emissions [dashboard](#) allows users to see the breakdown of emissions across three sectors, including transportation, for select cities in the US and abroad. The Environmental Protection Agency also hosts a local greenhouse gas inventory [tool](#) that allows users to calculate emissions for many sectors, including transportation, thus providing a way for localities to determine baselines and track progress.

Mapping environmental data can showcase areas most vulnerable to natural disasters exacerbated by climate change. The Federal Emergency Management Agency maintains national flood hazard data and a National Risk Index describing geographic degrees of risk of coastal flooding, drought, hurricanes, and other natural hazards, and the Census Bureau's [Community Resilience Estimates](#) can help localities model the differential impacts of disasters (such as hurricanes or pandemics) and develop proactive preparedness plans. Additionally, as climate, environmental sustainability, and energy and electricity generation are interlinked, data on energy costs, such as through the Department of Energy's [Low-Income Energy Affordability Tool](#), can also surface insights on communities bearing disproportionate cost burdens in our energy system.

Housing

Housing is another important dimension to consider when attempting to understand local transit needs. Access to stable and affordable housing is a critical component of individual and household well-being and a prerequisite for economic success. Increasing access to safe and affordable housing is also an important way to advance racial equity, given that people of color disproportionately experience housing insecurity and housing cost burdens.²⁰

Local leaders considering transit projects in any area should make efforts to understand the availability of housing at different price points, the proximity of available housing to transit, and any opportunities to pursue transit-oriented housing development. The Biden administration's Housing Supply Action Plan, released in May 2022, explicitly recognized the connection between housing and transportation and directed the Department of Transportation to look more favorably on applications for IJA funding that encouraged locally driven land use reform, density, and transit-oriented development.²¹

The American Housing Survey is a biennial survey conducted by the Census Bureau that contains information on the physical condition of homes, the costs of financing and maintaining homes, the characteristics of people who live in those homes, and more. The Department of Housing and Urban Development also makes available many different datasets, including data from the Comprehensive Housing Affordability Strategy on cost burdens and housing problems, as well as tools such as the [Community Planning and Development Maps](#), which allow users to see housing, transportation, and other data at various geographic levels.

Understanding housing cost burdens on their own may not be sufficient, however, because some households may choose to live in more affordable housing that is further away from jobs and city centers. Tools such as the [Housing and Transportation Affordability Index](#), hosted by the Center for Neighborhood Technology, allow users to see the combined affordability of both housing and transportation costs at multiple geographic levels.

State and local agencies may also publish useful housing data. Although these data can often be harder to access than nationally available datasets and in some cases more difficult to use, they can also be timelier than national data sources and may be able to provide a more accurate picture of local needs. Examples of regionally or locally available data include property tax records, sales, and characteristics from local tax assessors; data on evictions from court records; data on subsidized and public housing from state housing finance agencies; data on recipients of housing choice vouchers from local public housing authorities; data on building permits from local regulatory departments; and zoning data from the local planning department.

Although expanding access to transit can help advance equity, transit projects can also induce (or accelerate) gentrification by driving housing price increases that can lead to the displacement of vulnerable residents (Dawkins and Moeckel 2016). As much as possible, localities should strive to measure both the positive and negative impacts of proposed projects. Measuring displacement is often difficult, however, because the definitions of displacement vary widely, and very few data sources explicitly track indicators of displacement (Easton et al. 2019).²² Understanding the impact of transportation on housing and displacement may require localities to move beyond readily available sources of data and collect input and information from members of their communities who have been displaced or are at risk of displacement.

Part 3: Using Data to Address Federal Funding Priorities

Although specific merit criteria for each competitive grant can differ, we analyzed common priorities for programs funded under IIJA for which 2022 applications were available and highlight some of these priorities here. In accordance with the administration's stated goals, racial equity is both woven throughout application guidance for IIJA grants and named explicitly; the Rebuilding American Infrastructure with Sustainability and Equity grant, for instance, prioritizes projects that "proactively address racial equity and barriers to opportunity."²³

But racial equity should not be a standalone component of a project application; rather, it should be a lens through which programs are conceived, executed, and evaluated. Though the data sources compiled in the accompanying table can be used across the project life cycle, from proposal to evaluation after implementation, this section focuses on the use of data to center equity in the project selection phase, such as by embedding equity impact analyses into decisionmaking or identifying ways of maximizing benefits and minimizing harms, which can often be unintended or unexpected.

Each subsection reflects questions and calls for information embedded in the notices of funding opportunities for specific programs funded by IIJA. For each priority, we suggest indicators from the data categories in Part 2 that may be helpful to consider in project selection. Just as racial equity should be a central project consideration, demographic indicators that address race, sex, and socioeconomic conditions, such as poverty rates and median incomes, should be applied throughout these sections to enrich understanding of other indicators. Though some priorities lend themselves more readily to certain thematic data sources, we encourage applicants to consider how indicators across categories can combine to craft a narrative of cumulative needs and potential impacts among priority populations.

Identifying Disadvantaged Communities to Prioritize for Investments

A prerequisite to ensuring that the benefits of federal investments flow to disadvantaged communities is to identify those communities. Many of the competitive grant programs funded by IIJA explicitly require applicants to do so. For example, the application for Low or No Emission Bus Grants and Bus and Bus Facilities Grants includes the following question: "What is the percentage of disadvantaged communities within the project area?"²⁴

There are many possible ways to both identify and quantify the presence of disadvantaged communities, and as such the White House has released its own [Climate and Economic Justice](#)

[Screening Tool](#) to aid federal agencies and localities in identifying communities to prioritize. The CEJST categorizes census tracts as disadvantaged or not in any one of eight categories: climate change; clean energy and energy efficiency; clean transit; sustainable housing; legacy pollution; clean water and wastewater infrastructure; health burdens; and workforce development. The tool is still in beta, however, and has been criticized for not explicitly accounting for race and for its binary determination of disadvantage under the above categories.²⁵ Applicants are encouraged to refer to a broad set of data sources beyond CEJST that can capture multiple dimensions of disadvantage, historic disinvestment, and inequity. Useful indicators may include the following:

- Mobility and connectivity: government spending, including revenues and expenditures on transit (Fiscally Standardized Cities Database)
- Health and safety: life expectancy at birth (US Small-Area Life Expectancy Estimates Project)
- Economic: unemployment rate (BLS Local Area Unemployment Statistics) and firm openings and closings, job creation and loss (Business Dynamic Statistics)
- Environmental: natural hazard risk, including degree of risk to coastal flooding, drought, and heat waves (Federal Emergency Management Agency National Risk Index)
- Housing: public and affordable housing stock, including number of units, owner type, and other characteristics (National Housing Preservation Database) and prevalence of renters with low incomes at risk of experiencing housing instability and homelessness (Urban Institute Emergency Rental Assistance Priority Index)

The above indicators can reflect compounded inequities that “disadvantaged” communities experience along with historic rates of investment or lack thereof in these communities. Applicants making the case for equity-driven investments should view these dimensions of disadvantage as reflections of cumulative disadvantage rather than in isolation. Poverty rates, public and affordable housing availability and occupancy, unemployment and rates of job creation versus job loss, and life expectancy all fill narratives of present-day deprivation and need, while data on government spending on infrastructure and transit can provide an understanding of where expenditures have or have not kept pace with need. Communities experiencing poverty are also disproportionately likely to live in areas of higher hazard risk and to bear a disproportionate share of the burdens resulting from climate change, including coastal flooding and heat waves. These indicators together provide a foundation for identifying and justifying equity-based investments in the proposal development phase.

In selecting communities to prioritize for investment, it is also critical for localities to identify not just potential benefits to those communities but also potential harms in order to both maximize the benefits and mitigate any unintended consequences. This is especially relevant to transportation projects, which have in some instances been linked to gentrification and the subsequent displacement of lower-income residents (Dawkins and Moeckel 2016). Resources such as the Center for Community Innovation’s “Mapping Susceptibility to Gentrification: The Early Warning Toolkit” and the National Neighborhood Indicators Partnership’s “Guide to Measuring Neighborhood Change to Understand and Prevent Displacement” can help localities approach development and investments in ways that minimize the likelihood of adverse effects on the very communities prioritized for investments.

Reducing Greenhouse Gas Emissions from Transportation

In line with President Biden’s executive order on tackling the climate crisis, a key priority across many IJJA grants is to fund projects that reduce greenhouse gas emissions. “Climate change and sustainability” is one of the selection criteria for the \$1 billion Safe Streets and Roads for All grant program. The funding opportunity states that the Department of Transportation’s goal “is to encourage the advancement of projects and strategies that address climate change and sustainability” and to “align with the President’s greenhouse gas reduction, climate resilience, and environmental justice commitments,” specifically through prioritizing projects that reduce motor vehicle-related pollution, increase the safety of lower-carbon travel modes such as transit and active transportation, or support fiscally responsible land use and transportation-efficient design that reduces greenhouse gas emissions.²⁶ Useful indicators here may include the following:

- Mobility and connectivity: number of vehicles owned by households (Federal Highway Administration)
- Health and safety: asthma prevalence among adults (Centers for Disease Control and Prevention)
- Economic: jobs within a half mile of a transit stop (Center for Neighborhood Technology via local transit agencies)
- Environmental: greenhouse gas emissions (Environmental Protection Agency)
- Housing: home values and median rents (Zillow)

Data provided by the Environmental Protection Agency can provide a baseline of greenhouse gas emissions, including carbon dioxide, methane, nitrous oxide, and fluorinated gases, that applicants can

use to understand the scale of their emissions challenge. But understanding the major drivers of greenhouse gas emission requires combining Environmental Protection Agency data with other sources, such as data on car ownership, which can be used to identify the number of motorized travelers in a given area. Data on housing costs can also inform emissions rates as rising costs in downtown areas may prompt households to seek more affordable housing further away, thus increasing travel times and the emissions of car commuters. Data on jobs located within a half mile of a transit stop can further be used to understand where more environmentally friendly public transit may be needed to simultaneously connect people to employment and reduce emissions.

Increasing Mobility, Connectivity, and Accessibility, Particularly for Nonmotorized Travelers

Increasing access to jobs, essential services, and recreation is yet another key component of working toward transportation equity. The funding application for RAISE notes that applicants should demonstrate how projects will increase equity and accessibility, as well as increase mobility and expand connectivity, particularly for nonmotorized travelers, or people who primarily walk, cycle, or use transit.²⁷ This can link well to projects such as dedicated bicycle lanes, sidewalk expansions, or greenways, and it can also be relevant to public transit investments that connect people to key destinations that were previously inaccessible because of barriers to private vehicle ownership, fragmented public transit service routes, or spatial mismatches between employment centers and housing hubs. Notably, patterns of residential segregation and historic white flight from urban cores can mean that white populations concentrated in suburban areas further from employment-dense downtowns experience this mismatch as well. Yet access to vehicles and higher incomes can mitigate the acute impacts of this distance, allowing white populations to overcome spatial barriers to employment more readily than communities of color or immigrant communities, both of which have disproportionately lower rates of car ownership and lower median incomes (Hanna 2021).

Indicators of use in measuring mobility and accessibility may include the following:

- Mobility and connectivity: number of vehicles owned by households (Federal Highway Administration), means of transportation to work (AllTransit), and walkability (National Walkability Index)
- Health and safety: crash rates and crashes involving pedestrians and cyclists (Fatality Analysis Reporting System and Fatality and Injury Reporting System Tool)
- Economic: jobs within a half mile of a transit stop (AllTransit)

- Environmental: tree cover along walkable roads (EnviroAtlas)
- Housing: residential segregation by dissimilarity and exposure indices by race and ethnicity (Decennial Census)

Localities attempting to measure mobility should capture degrees of access—who is and is not readily connected to key destinations, how many people use nonmotorized modes of travel, and how proposed projects will bolster connectivity for populations who face mobility barriers. For example, demographic data on the percentage of people in a locality with disabilities, including physical mobility challenges, can illustrate levels of need for community infrastructure that is safe and physically accessible for all people. Indicators related to walkability and amount of tree cover along walkable roads can reflect the extent to which communities are accessible, comfortable, and well-connected for pedestrians. Comfort and safety are key dimensions of mobility for all travelers, but they are especially pertinent to pedestrians and cyclists at risk of serious harm in the event of a crash, since this risk may deter people from walking or cycling altogether. Data on crashes involving vehicles, pedestrians, and cyclists can reveal areas that may need investments to be safer for nonmotorized travelers. Finally, data on jobs available within a half mile of a transit stop can showcase which neighborhoods are and are not well linked to employment destinations, while residential segregation estimates can identify neighborhoods that would benefit from more connections to the community at large.

Reducing Transportation and Housing Cost Burdens

President Biden’s goal of advancing racial equity also necessitates a focus on rising transportation and housing costs, both of which disproportionately burden people of color. One of the four priority merit criteria for the RAISE grant is quality of life, which includes “reducing transportation and housing cost burdens, including by facilitating greater public and private investments in commercial and mixed-income residential development near public transportation.” Indicators that may be useful to measure transportation and housing cost burdens include the following:

- Mobility and connectivity: location affordability (HUD Location Affordability Index) and time spent commuting (American Community Survey)
- Health and safety: asthma rates and self-rated health status among adults and number of adults reporting that their mental health is not good for more than 14 days in a month (Centers for Disease Control and Prevention PLACES)

- Economic: percentage of income spent on transportation (Housing and Transportation Index) and transportation fares (American Public Transportation Association)
- Environmental: air quality (Environmental Protection Agency)
- Housing: home values and median rents (Zillow) and percentage of renters who are cost burdened, spending 30 percent of income or more on housing (American Community Survey)

Together, these indicators reflect not only base costs of transportation and housing but also the relationship between the two. A lack of affordable housing near urban job centers may mean that households who choose to live further from downtown cores are able to save on housing costs, but at the expense of spending more money and time commuting. Conversely, households living near job centers may pay a premium for housing. Data on housing and transportation costs as well as time spent commuting may help localities identify communities facing disproportionately high burdens, both in money and time. Asthma rates and air quality indicators may also help identify areas that suffer from elevated traffic and commuter travel and whose residents could benefit from more affordable housing located near jobs and public transportation.

Creating Good-Paying Jobs

Local governments can advance racial equity in both the types of projects they pursue and the way they pursue those projects. For instance, a project working to redirect highways that racially segment communities, addressing a long-standing physical barrier to opportunity, could further advance racial equity through procurement practices, such as contracting with local Black-owned businesses or establishing quotas for engagement with Black-owned firms.

New transportation and infrastructure projects can generate immediate employment opportunities in planning, design, construction, and material supply, and in the longer term, they can also generate ongoing employment opportunities through operations and maintenance activities. Workforce development is also embedded into several IJJA programs, presenting an opportunity for applicants to highlight workforce needs tailored to programmatic funds. For instance, the Low or No Emission Bus Grants Program allows recipients to apply up to 0.5 percent of funds toward on-the-job training, management, and apprenticeships, with an additional 0.5 percent available for training completed with the National Transit Institute.²⁸ IJJA also presents an opportunity to diversify the infrastructure workforce, generally dominated by white people and men, to expand job opportunities to women and people of color (Caroline and Kane 2021).

Useful indicators may include the following:

- Mobility and connectivity: location affordability (HUD Location Affordability Index)
- Health and safety: self-rated health status (Centers for Disease Control and Prevention PLACES)
- Economic: employed persons by industry, sex, race, and ethnicity and unemployment rate (BLS Local Area Unemployment Statistics), wages (BLS Quarterly Census of Employment and Wages), and businesses by size and industry (Census Bureau Statistics of U.S. Businesses)
- Environmental: number of “green jobs” —those in which goods or services benefit the environment or conserve natural resources, or those in which employees’ duties involve making their establishments’ production processes more environmentally friendly (BLS)²⁹
- Housing: home values and median rents (Zillow)

Data on the cost of housing and location affordability can help identify what constitutes a “good-paying” opportunity by grounding pay in the realities of housing and transportation costs. In particular, applicants can consider the potential of their projects to produce well-paying “green jobs,” or jobs that either directly benefit the environment or advance environmentally friendly processes. Data on businesses by industry can also help identify how many existing businesses may qualify as “green,” and data on employment by industry might reveal disproportionate concentrations of certain populations in specific sectors, offering insights on opportunities to diversify workforces. Finally, self-rated health status can reflect the relationship between financial security stemming from well-paying employment and overall health and well-being (Downward, Rasciute, and Kumar 2020).

Conclusion

As governments and communities elevate environmental and racial justice on their agendas, confronting the climate crisis and redressing racial inequities can be parallel goals. IJJA offers localities the opportunity to prioritize investments in public transit, bicycle, and pedestrian projects that have the potential to simultaneously reduce emissions, bolster connectivity between key destinations, and improve equitable access to economic opportunity. Data sources that capture demographic, environmental, health and safety, economic, mobility, and housing dimensions can help local applicants make the case for compelling transportation and infrastructure projects that center equity as both a framework and a desired outcome for investments.

This moment of renewed attention on both racial justice and climate equity also presents an opportunity for greater investments in and commitments to data quality and access. Although this guide presents an array of data sources and tools that can help localities make the case for equity-driven programming, limitations across granularity, geographic coverage, and timeliness can hamper the potential of these data to be applied to funding applications and broader decisionmaking. A lack of disaggregated data on race, sex, disability status, and other key demographics creates knowledge gaps on the types of challenges and scales of need experienced across different constituencies, and in turn, impairs policymakers' ability to craft tailored, evidence-based programs.

Although cross-governmental efforts are needed to address these challenges in the long term, communities do not have to wait for federal guidance or the advancement of national data systems to make progress on local data capacity. Localities are encouraged to invest in staffing, technical capacity, and infrastructure to strengthen their data proficiency, and to explore ways to bolster the data capacity of community organizations such that governmental and nongovernmental groups alike can combine efforts to advance knowledge bases. Localities can also increase their data availability and transparency, such as through online open data dashboards with published methodologies, to aid easier access to more granular, localized data than may be captured in national data tools. Sharing data across departments can also help applicants craft more complete data-driven narratives that reflect broad community needs and trends, and proactive data sharing efforts that precede major grant timelines can ease logistical burdens of quick turnaround data requests. Resources like the [Contracts for Data Collaboration](#) offer sample agreement language across different thematic areas as a starting point.

Where staffing or budgetary constraints limit in-house technical expertise, partnerships with universities or data networks can fill resource gaps. For instance, the Urban Institute's [National Neighborhood Indicator Partnership](#) is a learning network of partner organizations in more than 30 cities that connects members to data and skills needed to advance equity. [MetroLab](#) is a network of city and university partnerships dedicated to civic innovation and responsible and transparent data use in government, offering convenings and partnership opportunities to members. In fall 2022, the National League of Cities and Local Infrastructure Hub will also [host bootcamps](#) for small and midsized cities on developing strong infrastructure funding applications.

As localities commit to data-driven program design, implementation, and evaluation, pairing quantitative and qualitative data (such as community feedback) is essential for developing a holistic understanding of community needs and the potential of project investments to transform the conditions of priority populations. Although statistics can aid communities in quantifying degrees of

need and evaluating program outcomes, even the most robust quantitative data can fail to capture a full understanding of challenges experienced among particular communities and thus opportunities for tailored programming. Valuing qualitative data and committing to continuous public engagement throughout project lifecycles can help ensure that projects are responsive to and representative of community priorities—merging hard numbers and community guidance to meet the moment for equity-driven investments.

Appendix

TABLE A.1

Competitive Grants under IIJA for Public Transit and Bicycle or Pedestrian Projects

Program	Purpose	Responsible agency	Funding available	New under IIJA?
Capital Investment Grants	Capital investments in transit	Federal Transit Administration	\$8 billion (\$3.848 billion in FY22)	No
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grants	Capital investments in surface transportation	Department of Transportation	\$7.5 billion (\$1.5 billion in FY22)	No
Low or No Emission Bus Grants	Capital funding for low- or no-emissions bus projects	Federal Transit Administration	\$5.6 billion (\$1.1 billion in FY22)	No
Safe Streets and Roads for All	Support local initiatives to prevent death and serious injury on roads and streets	Department of Transportation	\$5 billion (\$1 billion in FY22)	Yes
Ferry Service for Rural Communities	Ensure basic essential ferry service to rural areas	Federal Transit Administration	\$2 billion (\$200 million in FY22)	Yes
Bus and Bus Facilities Competitive Grants	Capital funding for buses or bus-related facilities	Federal Transit Administration	\$1.97 billion (\$372 million in FY22)	No
All Stations Accessibility Program	Capital funding to upgrade accessibility of public transportation systems	Federal Transit Administration	\$1.75 billion (\$350 million in FY22)	Yes
Reconnecting Communities Pilot Program	Restore community connectivity by removing, retrofitting, or mitigating highways or other transportation facilities that create barriers to community connectivity, including to mobility, access, or economic development	Federal Highway Administration	\$1 billion (\$195 million in FY22)	Yes
Crash Data	For improvement of crash data collections and analysis	National Highway Traffic Safety Administration	\$750 million (\$150 million in FY22)	Yes
Energy Efficiency and Conservation Block Grant Program	To assist states, local governments, and Tribes to reduce energy use, reduce fossil fuel emissions, and improve energy efficiency. Eligible use includes the development of infrastructure such as bike lanes and pathways and pedestrian walkways	Department of Energy	\$550 million	Yes
Strengthening Mobility and Revolutionizing Transportation Grant	For demonstration projects focused on advanced smart city technologies/systems that improve transportation efficiency and safety	Department of Transportation	\$500 million (\$100 million in FY22)	Yes

Program	Purpose	Responsible agency	Funding available	New under IIJA?
Urbanized Area Passenger Ferry Program	Capital funding for passenger ferry projects in urbanized areas	Federal Transit Administration	\$150 million (\$45.3 million in FY22)	No
Research, Development, Demonstration, and Deployment Projects	For innovative projects that advance safe, efficient, equitable, and climate-friendly public transportation	Federal Transit Administration	\$132.2 million	No
Pilot Program for Transit Oriented Development	For local communities to integrate land use and transportation planning with capital investments	Federal Transit Administration	\$68.9 million (\$13 million in FY22)	Yes
Public Transportation Technical Assistance and Workforce Development	To support workforce development and transition to safe, efficient, equitable, and climate-friendly public transportation	Federal Transit Administration	\$62 million (\$11.8 million in FY22)	No
Public Transportation on Indian Reservations Competitive	Competitive funding to federally recognized tribes to provide public transportation on and around reservations or Tribal land in rural areas	Federal Transit Administration	\$45.8 million (\$8.75 million in FY22)	No
Transit Cooperative Research Program	To develop near-term solutions to problems facing public transportation	Federal Transit Administration	\$34.4 million (\$6.6 million in FY22)	No
Pilot Program for Enhanced Mobility	Competitive funding to improve coordinated access and mobility	Federal Transit Administration	\$24.1 million (\$4.6 million in FY22)	No

Source: Authors' analysis.

Notes

- ¹ “Sources of Greenhouse Gas Emissions,” Environmental Protection Agency, accessed August 15, 2022, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>.
- ² “Fast Facts on Transportation Greenhouse Gas Emissions,” Environmental Protection Agency, accessed August 15, 2022, <https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions>.
- ³ Char Adams, “Black People Are More Likely to Die in Traffic Accidents. Covid Made It Worse,” *NBC News*, June 22, 2021, <https://www.nbcnews.com/news/nbcblk/black-people-are-more-likely-die-traffic-accidents-covid-made-n1271716>.
- ⁴ “Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government,” White House, accessed August 15, 2022, <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/>.

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“The Path to Achieving Justice40,” White House, accessed August 15, 2022, <https://www.whitehouse.gov/omb/briefing-room/2021/07/20/the-path-to-achieving-justice40/>.
- ⁵ See the Brookings Federal Infrastructure Hub for a breakdown of IIJA-funded programs. “Brookings Federal Infrastructure Hub,” The Brookings Institution, accessed August 15, 2022, <https://www.brookings.edu/interactives/brookings-federal-infrastructure-hub/>.

“Introducing the Brookings Federal Infrastructure Hub: A Comprehensive Guide to the Infrastructure Law,” The Brookings Institution, February 10, 2022, <https://www.brookings.edu/blog/the-avenue/2022/02/10/introducing-the-brookings-federal-infrastructure-hub-a-comprehensive-guide-to-the-infrastructure-law/>.
- ⁶ Anne N. Junod, Sara McTarnaghan, and Anna Shipp, “Three Ways to Improve Environmental Justice Measurement in the White House’s Justice40 Climate and Economic Justice Screening Tool,” *Urban Wire* (blog), Urban Institute, April 26, 2022, <https://www.urban.org/urban-wire/three-ways-improve-environmental-justice-measurement-white-houses-justice40-climate-and>.
- ⁷ Murray, Brittany, Elsa Falkenberger, and Priya Saxena. 2015. *Data Walks: An Innovative Way to Share Data with Communities*. Washington, DC: Urban Institute.
- ⁸ “About the American Community Survey,” United States Census Bureau, accessed August 15, 2022, <https://www.census.gov/programs-surveys/acs/about.html>.
- ⁹ “Public Use Microdata Sample (PUMS),” United States Census Bureau, accessed August 17, 2022, <https://www.census.gov/programs-surveys/acs/microdata.html>.
- ¹⁰ “How Researchers Use ACS Data,” United States Census Bureau, accessed August 17, 2022, https://www.census.gov/content/dam/Census/library/publications/2020/acs/acs_researchers_handbook_2020_ch02.pdf.
- ¹¹ “About the Topic of Race,” United States Census Bureau, accessed August 15, 2022, <https://www.census.gov/topics/population/race/about.html>.
- ¹² The OMB standards have often been criticized for their lack of granularity and inability to capture important sub-groups. See, for example, Rubin et al. (2018). The White House recently announced that they are

beginning a formal review to revise these standards. “Reviewing and Revising Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity,” White House blog, June 15, 2022, <https://www.whitehouse.gov/omb/briefing-room/2022/06/15/reviewing-and-revising-standards-for-maintaining-collecting-and-presenting-federal-data-on-race-and-ethnicity/>.

¹³ “Understanding Geographic Identifiers (GEOIDs),” United States Census Bureau, accessed August 15, 2022, <https://www.census.gov/programs-surveys/geography/guidance/geo-identifiers.html>.

¹⁴ See “How Spatial Join Works in GIS”, GISGeography, accessed August 24, 2022, <https://gisgeography.com/spatial-join/> for more information on conducting spatial joins.

¹⁵ For a catalog of administrative data sources maintained by state and local governments available at the neighborhood-level, see Coulton (2008).

¹⁶ See, for instance, Lee and van der Klaauw (2010).

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²⁰ Kathryn Reynolds and Kaitlyn You, “Three Ways Improving Housing Stability Can Make Long-Term Progress Toward Racial Equity,” *Urban Wire* (blog), Urban Institute, September 1, 2021, <https://www.urban.org/urban-wire/three-ways-improving-housing-stability-can-make-long-term-progress-toward-racial-equity>.

²¹ “President Biden Announces New Actions to Ease the Burden of Housing Costs,” White House, accessed August 24, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/16/president-biden-announces-new-actions-to-ease-the-burden-of-housing-costs/>.

²² For a more detailed discussion on measures of displacement, see Hendey and Cohen (2017).

²³ See “Notice of Funding Opportunity for the Department of Transportation’s National Infrastructure Investments (i.e., the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program) under the Infrastructure Investment and Jobs Act (“Bipartisan Infrastructure Law”), Amendment No. 1,” Notice of Funding Opportunity G4190-9X, accessed September 15, 2022, https://www.transportation.gov/sites/dot.gov/files/2022-04/RAISE_2022_NOFO_AMENDMENT_1.pdf.

²⁴ “FY 2022 Competitive Funding Opportunity: Low or No Emission Grant Program and the Grants for Buses and Bus Facilities Competitive Program,” United States Department of Transportation, March 4, 2022. <https://www.govinfo.gov/content/pkg/FR-2022-03-04/pdf/2022-04621.pdf>.

²⁵ “Three Open Questions about Biden’s New Environmental Justice Tool,” grist.org, June 9, 2022, <https://grist.org/equity/climate-and-economic-justice-screening-tool-biden-comment-period/>.

³² “Safe Streets and Roads for All Discretionary Grant Program,” US Department of Transportation Grants Notice, DOT-SS4A-FY22-01, posted May 16, 2022, <https://www.grants.gov/web/grants/view-opportunity.html?oppld=340385>.

²⁷ The March 2023 RAISE notice of funding opportunity defines non-motorized travelers as “those walking, cycling, rolling, or using transit.” See “Notice of Funding Opportunity for the Department of Transportation’s National Infrastructure Investments (i.e., the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program) under the Infrastructure Investment and Jobs Act (“Bipartisan Infrastructure Law”),

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²⁸ “FY 2022 Competitive Funding Opportunity: Low or No Emission Grant Program and the Grants for Buses and Bus Facilities Competitive Program,” United States Department of Transportation, March 4, 2022, <https://www.govinfo.gov/content/pkg/FR-2022-03-04/pdf/2022-04621.pdf>

²⁹ Definition derived from the US Bureau of Labor Statistics’ definition of green jobs. Because data on green jobs are only most recently available from 2011 at the national level, applicants could use the industries listed under the BLS’ definition as a reference for calculating the number of environmentally beneficial jobs within industries in their region or statistical area. Jobs that meet this definition may extend beyond the industry sectors identified by the BLS, and not all jobs within these industry sectors necessarily qualify as green jobs; applicants may find it useful to adapt a green jobs definition to their community context.

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