

# **Measuring Green Industry Employment: Developing a Definition of Green Goods and Services**

Rick Clayton, Kristin Fairman, Donald Haughton, Robert Viégas  
Bureau of Labor Statistics, 2 Mass. Ave NE, Room 4840, Washington, DC 20212

## **Abstract**

The Bureau of Labor Statistics (BLS) intends to publish detailed economic statistics on industry employment in the green goods and services sector in the United States. This required BLS to adopt a definition of green goods and services. This paper reviews the process used by BLS to define green goods or services. This process began with an extensive review of definitions used in existing green data publications and studies from various agencies, including State governments, Eurostat, Statistics Canada, and private research institutions. With an understanding of the definitions from existing literature and after discussions with various environmental and government organizations, BLS reviewed each North American Industrial Classification System industry code to identify each industry's potential to produce green goods or services. This industry review led to the publication of a preliminary Federal Register Notice (FRN) with the BLS proposed definition for a green good or service. After reviewing input received from the public, BLS revised and published a final FRN with the definition of green goods and services that BLS intends to use in its green data collection activities.

## **1. Introduction**

Beginning in Fiscal Year 2010, the Bureau of Labor Statistics (BLS) received funding to develop and implement the collection of new data on green jobs. Green jobs are jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources.

The Green Goods and Services Survey (GGS), which collects industry data for these green jobs, will be published annually by the Quarterly Census of Employment and Wages program (QCEW), which publishes a quarterly count of employment and wages reported by employers covering 98 percent of U.S. jobs, available at the county, Metropolitan Statistical Area (MSA), State, and national levels by industry. The QCEW program also maintains a business register database of all establishments in the U.S. subject to unemployment insurance taxes.

Green jobs are also defined as those in which workers' duties involve making their establishment's production processes more environmentally friendly or consume fewer resources. Data for green processes within businesses will be collected and published in a special publication, the Green Technologies and Practices Survey (GTP). This special employer survey asks about the existence of green technologies and practices within an establishment, and the occupational employment and wages for employees who spend more than half of their time using green technologies and practices. These GTP data will be collected and published by the Occupational Employment Statistics (OES) program, which produces employment and wage estimates of the number of people employed in

some 800 occupations. OES estimates are available for the nation as a whole, for individual States, and for MSAs, metropolitan divisions, and nonmetropolitan areas; national occupational estimates for specific industries are also released by OES. This paper will focus on the process of developing the GGS definition. For more information on the GTP survey, please refer to "Counting Green Jobs: Developing the Green Technologies and Practices Survey," by Sharon Schierberg Stang.

Both categories of green jobs are contingent upon the definition of green goods and services. There is no consensus on what constitutes green goods and services; agencies and organizations often adopt their own definitions for their research purposes. This paper outlines the process undertaken by BLS to create a meaningful definition of green goods and services that takes into account definitions from the statistical community, reflects concerns from the public, and allows BLS to meaningfully quantify the number of green jobs in the economy.

## **2. Literature Review**

Currently, there is no one widely accepted standard definition of green jobs. While this is a topic of great interest across government, academia, and the business community, various studies and analyses define the term "green jobs" somewhat differently. The overarching concept throughout the literature is that green jobs are related to preserving or improving the environment. Among the categories of economic activity frequently cited in green jobs discussion are renewable energy, energy efficiency, pollution prevention and clean-up, and natural resources conservation; however, the translation from these high level categories into more specific industry or occupational categories varies across studies.

Staff at BLS reviewed many of the studies that have been published on this topic in order to understand the definitions used and how they were derived. The review included studies done by individual States' Labor Market Information (LMI) units, work by Statistics Canada and Eurostat, as well as research conducted by private organizations, such as the Pew Charitable Trusts and Global Insight. The Green Jobs Act of 2007 was also included in the review.

Various States have worked toward finding definitions in order to quantify their green economies. Florida's Agency for Workforce Innovation has published, "Selected Definitions of Green Industries and Green Jobs," a useful compendium of different State's working definitions.

Some States adopted basic definitions for green jobs, such as the Connecticut Department of Labor, which defines an occupation as green if it "contributes directly to preserving and enhancing the quality of the environment" (Jolly 2). Connecticut's approach uses the Standard Occupational Classification System (SOC) and North American Industry Classification System (NAICS) to identify occupations and industries that may be green.

Definitions offered by some States added details to what constitutes green jobs. The Michigan Department of Energy, Labor, and Economic Growth defined the green economy as "industries that provide products or services related to renewable energy, increased energy efficiency, clean transportation and fuels, agriculture and natural resource conservation, and pollution prevention or environmental cleanup" (10). Oregon's Employment Department defines green jobs as those providing a service or producing a

product that increases energy efficiency; produces renewable energy; prevents, reduces, or mitigates environmental degradation; cleans up and restores the natural environment; and provides education, consulting, policy promotion, accreditation, trading and offsets, or similar services supporting the production of green goods and services mentioned in the first four components of their green goods and services definition (Oregon Employment Department 2). California identified the green economy as any activity or service that generates and stores renewable energy; recycles existing materials; engages in energy efficient product manufacturing, distribution, construction, installation and maintenance; educates, regulates, and promotes awareness; or manufactures natural and sustainable products (Employment Development Department 1).

In its literature review, BLS also studied definitions created by international agencies. In 2008, Statistics Canada operated a pilot for a biennial publication on Canadian environmental goods and services (Canada opted to not use the term "green" when compiling environmental industry data). This release, the Survey of Environmental Goods and Services (SEGS), is part of that agency's effort to produce data estimates on the production of environmental goods and services that dates back to September 1994, when the Environment Industry Survey was commissioned. The goods and services covered under this survey are renewable energy production; management of non-hazardous waste; management of industrial air pollution or flue gas; industrial wastewater treatment and municipal sewage treatment; remediation of ground water, surface water, and leachate; remediation of soil, sediment, and sludge; and site remediation services and environmental emergency response services (Statistics Canada).

Like Canada, Eurostat has also avoided the use of the term "green" in describing environmental industry data. The OECD/Eurostat industry manual identifies the environmental goods and services sector as a "heterogeneous set of producers of technologies, goods, and services that measure, control, restore, prevent, treat, minimize, research, and sensitize environmental damages to air, water and soil as well as problems related to waste, noise, biodiversity and landscapes. This includes 'cleaner' technologies, goods and services that prevent or minimize pollution." Also included in Eurostat's definition are technologies, goods, and services that "measure, control, restore, prevent, minimize, research and sensitize resource depletion. This results mainly in resource-efficient technologies, goods and services that minimize the use of natural resources" (Eurostat 29).

BLS included definitions from private organizations in its research of green definitions. The Pew Charitable Trusts emphasized the energy sector in their definition, using the term "clean energy economy." This term was defined as "[generating] jobs, businesses and investments while expanding clean energy production, increasing energy efficiency, reducing greenhouse gas emissions, waste and pollution, and conserving water and other natural resources." Additionally, the clean energy economy was divided into five categories: clean energy; energy efficiency; environmentally friendly production; conservation and pollution mitigation; and training and support (Pew 5).

Global Insight, in a presentation to the United States Conference of Mayors, defined the green economy as the subset of the economy which aims to reduce the consumption of fossil fuels, increase energy efficiency, and lower greenhouse gas emissions (3). Green jobs were defined as "any activity that generates electricity using renewable or nuclear fuels, agriculture jobs supplying corn or soy for transportation fuel, manufacturing jobs producing goods used in renewable power generation, equipment dealers and wholesalers

specializing in renewable energy or energy-efficiency products, construction and installation of energy and pollution management systems, government administration of environmental programs, and supporting jobs in the engineering, legal, research and consulting fields" (Global Insight 5).

In 2007, the United States Congress passed legislation that is known as the Green Jobs Act of 2007. While the legislation does not specifically define "green jobs," its objective was to amend the Workforce Investment Act of 1998 to establish energy efficiency and renewable energy worker training programs across the nation. This emphasizes the virtual consensus that jobs geared towards energy conservation and renewable energy production should be included as green jobs in the GGS definition.

### **3. Proposing a Definition for Green Goods and Services**

Among the perils of defining green jobs is the creation of a definition that enables respondents to engage in "greenwashing," which occurs when the resources used by a company to promote the idea that it produces environment-friendly goods and services exceed the resources dedicated to actually implement practices that conserve resources and benefit the environment. Green jobs could be overestimated as a result of a definition that is overly inclusive and facilitates greenwashing.

BLS made efforts to curb greenwashing when drafting its definition of green jobs. The first focus while creating a definition was to find commonalities between the definitions researched in the literature review. While it is evident that there is no consensus on the overall definition of green goods and services or green jobs, industries dedicated to the production of renewable energy and the improvement of energy efficiency are widely considered to be green in nature. The same can be said about industries in pollution mitigation and cleanup. The widespread acceptance of these categories warrants their inclusion in the BLS definition.

Another potential problem in defining green jobs is creating a definition that is overly restrictive, thus leading to an underestimation of jobs that preserve the environment and conserve natural resources. BLS felt a need for the definition to be inclusive of all activities which benefit the environment and conserve natural resources. The generation of renewable energy, production of energy-efficient goods, and pollution mitigation and clean-up were necessary, but not sufficient components in the definition of green jobs.

The first definition proposed by BLS was released to the public in the March 16, 2010 Federal Register (75 FR 12571). This Comment Request sought input from the public regarding the definition, with an emphasis on the clarity of the definition, on the comprehensiveness of the definition, on whether the distribution of green goods should be included as green, and on whether the preparation and sale of organic food by restaurants and other food service industries should be included as green. BLS received 156 comments from the public as well as government agencies and private organizations. The comments received were summarized in the September 21, 2010 Federal Register (75 FR 57506). These contributions from the public and interested stakeholders were of great help to BLS in its goal to create an objective and measurable definition of green goods and services, and consequently, green jobs.

Thirty-one comments were received on whether the distribution of green goods and services should be considered a green activity. The diversity of content in these

comments illustrates the difficulty in creating a consensus definition for green jobs. Thirteen of the comments recommended that distribution activities be excluded, ten of the comments recommended that distribution be included only if it adhered to green practices, and eight comments recommended that distribution be included in the definition. BLS determined that distribution, including retail, would not be included in the GGS green goods and services definition because there is no intrinsic benefit to the environment in transporting or selling any good, green or otherwise.

There were other changes in the original definition that resulted from public comments, among which are the explicit inclusions of research and development, installation, reuse, and maintenance into the definitions to ensure those activities are counted when they benefit the environment or conserve resources. The original definition consisted of seven categories of green economic activity, which were consolidated into five categories of green goods and services in response to comments. Some comments claimed that there were overlaps between the categories. In other words, certain goods and services could be classified into more than one of the five categories. BLS maintains that these categories are not meant to be mutually exclusive and exist to determine the scope of the surveys.

The goal of the Green Goods and Services Survey is to count employment in businesses that produce goods or provide services that benefit the environment or conserve natural resources. Taking into consideration definitions put in place by other governmental and private organizations, comments from the public and interested stakeholders, and concerns about greenwashing, BLS defined green goods and services for the purposes of the GGS survey as those that fall into one or more of the following five groups:

*Energy from renewable sources.* Electricity, heat, or fuel generated from renewable sources. These energy sources include wind, biomass, geothermal heat, sunlight, ocean tides, hydropower, and landfill gas and municipal solid waste.

*Energy efficiency.* Products and services that improve energy efficiency, including energy-efficient equipment, appliances, buildings, and vehicles, as well as products and services that improve the energy efficiency of buildings and the efficiency of energy storage and distribution, such as Smart Grid technologies.

*Pollution reduction and removal, greenhouse gas reduction, and recycling and reuse.* Products and services that:

- Reduce or eliminate the creation or release of pollutants or toxic compounds, or remove pollutants or hazardous waste from the environment;
- Reduce greenhouse gas emissions through methods other than renewable energy generation and energy efficiency, such as electricity generated from nuclear sources; and
- Reduce or eliminate the creation of waste materials; collect, reuse, remanufacture, recycle, or compost waste materials or wastewater.

*Natural resources conservation.* Products and services that conserve natural resources. Included in this group are products and services related to organic agriculture and sustainable forestry; land management; soil, water, or wildlife conservation; and storm-water management.

*Environmental compliance, education and training, and public awareness.* These are products and services that:

- Enforce environmental regulations,
- Provide education and training related to green technologies and practices, and
- Increase public awareness of environmental issues.

The GGS survey will tabulate green employment by industry, area, and ownership. Data will be grouped using the North American Industry Classification System (NAICS), which is the standard used by federal statistical agencies when publishing aggregate establishment data by industry. The use of NAICS will allow comparison of green jobs data with existing measures of employment and wages that are based on NAICS or SOC, while meeting Office of Management and Budget statistical standards.

NAICS codes are structured hierarchically with five levels of detail. The lowest level of detail, sectors, consists of two-digit codes. Additional digits are added to the right of the industry code to identify industries in finer detail. National industries, the highest level of detail provided by NAICS codes, consist of six-digit codes. GGS intends to publish data aggregated at the industry group, which is a four-digit NAICS code; however, data will be collected from individual business establishments, all of which are classified at the six-digit level.

Under NAICS, there are 1,192 industries at the national industry level. Not all of these industries produce goods or provide services that benefit the environment or conserve natural resources. BLS underwent a painstaking review of industries' definitions to exclude industries whose outputs were not green goods and services within the five aforementioned categories. The exclusion of these industries will reduce the potential for greenwashing as well as improve sample allocation for the survey. Ultimately, 333 industries were identified as potential producers of green goods and services. (For a list of those industries, please consult the BLS Green Jobs Web site at [www.bls.gov/green](http://www.bls.gov/green)). The 2.2 million establishments that were classified within those 333 industries in the second quarter of 2010 will comprise the sample frame for the GGS survey. Data collection for the GGS survey began in May 2011.

#### **4. Conclusion**

By incorporating common elements within the definitions of green jobs used by state workforce agencies, international statistical agencies, and private research institutions into its own definition of green goods and services, and then subjecting the definitions to scrutiny via requests for public comments in the Federal Register, BLS should accurately represent green jobs in its tabulations of green employment. By identifying which industries have the potential for producing green goods and services, BLS should accurately quantify the green employment level by area and industry while reducing the potential for greenwashing. This process should ensure that BLS will publish meaningful data on green employment in the United States. GGS data will first be available some time before March 2012.

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