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In July...

Nonfarm Employment

Connecticut..... 1,620,100
 Change over month -0.08%
 Change over year +0.1%

United States 130,242,000
 Change over month -0.10%
 Change over year -0.0%

Unemployment Rate

Connecticut..... 8.9%
 United States 9.5%

Consumer Price Index

United States 218.0
 Change over year 1.2%

It's Not Easy Defining Green (with apologies to Kermit the Frog)

By Patrick J. Flaherty, Economist, DOL

Concern about the environment, unstable world energy markets, a desire to find new and creative ways to grow the economy, and significant public investment have kept interest high in the definition of “green jobs.” Approximately \$60 billion of the \$787 billion stimulus package passed by Congress in 2009 was devoted to green activities.¹ Data available on the Governor’s website show over \$200 million in grants to state agencies and another \$200 million in tax credits and grants to other entities in Connecticut in the areas of energy and the environment from the stimulus legislation.²

However, a definitive definition of “green jobs” remains elusive. As noted by the Federal Register on the March 16, 2010, “There is no widely accepted standard definition of ‘green jobs.’” Fortunately, the lack of a consensus definition has not prevented continued research efforts in this area, the development of policies to promote the green economy, nor the efforts of those working to grow the economy in a sustainable way. Indeed the work to define green jobs can provide insight into this set of economic activities.

One such effort was made by the Workforce Information Council (WIC) which formed a Green Jobs Study Group including participation by the Connecticut Department of Labor’s Office of Research. The Study Group’s final report proposed the following working definition of a “green job”:

“A green job is one in which the **work is essential** to products or services that improve energy efficiency, expand the use of renewable energy, or support environmental sustainability. The job involves work in any of these green economic activity categories:

- Renewable Energy and Alternative Fuels
- Energy Efficiency and Conservation
- Pollution, Waste, and Greenhouse Gas (GHG) Management, Prevention and Reduction
- Environmental Cleanup and Remediation and Waste Cleanup and Mitigation
- Sustainable Agriculture and Natural Resource Conservation
- Education, Regulation, Compliance, Public Awareness, and Training and Energy Trading.”

Along with many others, this report was reviewed by the U.S. Bureau of Labor Statistics (BLS), the federal agency charged with developing and implementing the collection of new data on green jobs. The BLS plans to use two approaches to identify and count green jobs:

- 1) The *output approach*, which identifies establishments that produce green goods and services and counts the associated jobs
- 2) the *process approach*, which identifies establishments that use environmentally-friendly production processes and practices and counts the associated jobs.

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Under the output approach, “BLS has identified whether a good or service has a discernible positive impact on the environment or natural resources conservation” and identified seven economic activities: 1. renewable energy, 2. energy efficiency, 3. greenhouse gas reduction, 4. pollution reduction and cleanup, 5. recycling and waste reduction, 6. agriculture and natural resources conservation, and 7. education, compliance, public awareness, and training. These are nearly identical to the activity categories identified by the WIC study group with the addition of making recycling its own category. the BLS has identified four types of green goods and services produced by these activities: 1. Direct green goods and services (such as pollution control equipment) 2. Indirect goods and services (such as electricity produced from renewable sources) 3. Specialized inputs (such as mass transit rail cars) and 4. Distribution of green goods (examples include wholesale and retail trade services and restaurants and food services).

The BLS has proposed a list of over 550 industries where businesses that produce or distribute green goods and services are classified. However, we cannot simply call these industries “green” and count all the employees in the industry as having “green jobs” because the industries may also produce goods and services that are not considered green. What’s wrong with calling every job in these industries “green”? Because it makes the

definition so broad that the word becomes almost meaningless. A quick look at the Connecticut data shows why.

In 2009, total covered employment in Connecticut averaged 1,615,437 jobs³ of which more than 625,000 or 39% were in the 556 potentially green industries identified by the BLS. Restricting the list just to those producing direct green goods and services shows nearly 121,000 jobs or 7.5%, still much higher than the portion of jobs that are green estimated by other methods.⁴ An examination of the direct industries in the “Energy Efficiency” reveals the reasons for the apparent overcount. As seen in the table below, the industry with the highest employment is “School and Employee Bus Transportation.” While school bus drivers do important work, and have the responsibility for the safety of thousands of Connecticut schoolchildren every day, the job has not changed much, if at all, due to the “greening” of the economy. Or to use the words of the WIC report, it is hard to argue that the work of the bus driver, while essential to the transportation of schoolchildren, is “essential” to the products and services that improve energy efficiency, expand the use of renewable energy, or support environmental sustainability. Then why is this industry on the list at all? Because there may be some employees within this industry, for example, those who work to install pollution control equipment or convert buses to alternative fuels, who do have

Table 1. Connecticut Industries with at least some Jobs in Direct Green Goods and Services in the Energy Efficiency Category

NAICS	NAICS Title	Jobs	Example
485410	School and Employee Bus Transportation	6,918	School bus transportation
236118	Residential Remodelers	3,058	Weatherization
334513	Industrial Process Variable Instruments	2,025	Water quality monitoring and control systems
511210	Software Publishers	2,022	Training software, software used to reduce or monitor energy usage, pollution
485113	Bus/Other Motor Vehicle Transit Systems	1,071	Mass transit systems
485991	Special Needs Transportation	675	Commuter-based transportation
237210	Land Subdivision	334	Smart growth developments, power site development
334514	Fluid Meters and Counting Devices	316	Water meters, consumption registering
483114	Coastal/Great Lakes Passenger Transport	287	Great Lakes or coastal ferry commuter services
485999	All Other Ground Passenger Transport	215	Vanpools
334515	Electricity & Signal Testing Instruments	197	Energy measuring equipment, electrical
485111	Mixed Mode Transit Systems	153	Mass transit systems

Sources: Employment data, CT DOL; Identification of industries, U.S. Bureau of Labor Statistics

Table 2. Largest CT Occupations Affected by Greening Economy

Green Increased Demand	2009Q1 Jobs
Customer Service Representatives	29,300
Laborers and Freight, Stock, and Material Movers, Hand	20,750
Team Assemblers	9,520
First-Line Supervisors/Managers of Production and Operating Workers	8,640
Carpenters	8,030
Green Enhanced Skills	
General and Operations Managers	29,380
Truck Drivers, Heavy and Tractor-Trailer	13,170
Maintenance and Repair Workers, General	10,930
Machinists	9,810
Shipping, Receiving, and Traffic Clerks	8,930

Table 3. Green New and Emerging Occupations with Large Employment in Related Occupations

Solar Sales Representatives and Assessors
Securities and Commodities Traders (Energy/Carbon Credit)
Sustainability Specialists
Energy Auditors
Fuel Cell Engineers

“green jobs.” But it is likely that these employees are only a small portion of the overall workforce in this industry.

So how will we know how many jobs in these industries really are green? The BLS will be conducting a survey of businesses in these industries to determine what portion of the industries’ jobs should be classified as “green” based on the portion of revenue generated by green goods and services within an industry. This approach is similar to that taken by the U.S. Department of Commerce’s Economics and Statistics Administration (ESA) in a report published in April. Using data from the 2007 Economic Census,⁵ The ESA examined 22,000 product and service codes and identified 497 as green under a narrow definition (near unanimous consensus that these products are green) and 732 under a broader definition (which includes products and services where there is some disagreement). These green products and services fall into five categories:

- Pollution Control
- Renewable/Alternative Energy
- Energy Conservation
- Resource Conservation
- Environmental Assessment

The economic census includes dollar values of shipments and receipts – so the value of these green products and services can be directly determined. Employment is estimated by industry along the same proportions as the value of the shipments/receipts of the green products and services. The result is that the number of green jobs is around 1.8 million under the narrow definition and 2.4 million under the broad definition, about 1.5% to 2.0% of total private employment – a number that is consistent with studies conducted in other states and nationally by reputable academic institutions and research organizations.

Both the BLS industry approach and the ESA study examine the product or service and determine “greenness” based on the product or service being produced, not how it was made. What about the process approach? Part of the greening of the economy is that businesses can take measures to reduce any impact on the environment. Those whose job it is to accomplish that goal might be said to have “green jobs” even if they aren’t in a green industry. According the BLS Federal Register Notice “Environmentally-friendly production processes and practices are those that reduce the environmental or natural resources impact resulting

from production of any good or service.” The BLS plans to survey businesses to find out whether they use environmentally-friendly processes and if so whether there are workers whose primary duties are related to these tasks. What this survey will find and how the jobs will be quantified remain to be determined, but the results will likely boost the estimates of the number of green jobs. While there will be some overlap – producers of green products and services who also employ workers to help make the production process itself greener – process approach employees can occur in any industry, not just those identified as green.

Another approach has been taken by O*NET, the Occupational Information Network, a program sponsored by the U.S. Department of Labor’s Employment and Training Administration. In its February 2009 report, “Greening of the World of Work,” O*NET identified occupations affected by the greening of the economy in three categories: Green Increased Demand Occupations, Green Enhanced Skills Occupations, and Green New and Emerging Occupations (See tables 2 and 3 above).

“Green Increased Demand Occupations” are existing occupations where employment demand will increase due to green economy activities. Examples include a variety of occupations: electricians, carpenters, chemists, architectural drafters, and hydrologists. “Green Enhanced Skills Occupations” are existing occupations where the work or work requirements (such as credentials) may be changed due to green economy activities. Again, a variety of occupations fall into this category including aerospace engineers, construction laborers, financial analysts and landscape architects. Green New and Emerging Occupations are ones where there are unique work and worker requirements due to the greening economy and the creation of a new occupation. Examples include solar energy systems engineers and sustainability specialists.

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Looking at Connecticut's occupational profile shows that the greening of the economy has the potential to affect workers at every level of the economy.

Workers with general skills, such as Customer Service Representatives and Laborers will see new employment opportunities in companies producing and selling green products and services. Other workers will find that employment in the green economy will require new skills and knowledge: Management teams in companies throughout the economy will increasingly include sustainability officers which will require all of the general management skills plus knowledge of sustainable business practices. Finally Connecticut's workforce may be well positioned to take advantage of some of the new and emerging occupations identified by O*NET. For example, professionals with expertise and experience in the financial services industry may find opportunities as the market for carbon credits develops.

Almost by definition, the green jobs associated with new and emerging occupations are not here yet. While some workers will find

opportunities in the green economy, these may not develop fast enough to reduce the unemployment rate significantly. As the ESA report stated, "The green economy is in a position to grow quickly, but the relatively small size of the green economy suggests that a majority of the jobs that will be created during this recovery are likely to come from the production of products and services outside the green economy."

Nevertheless, any sector of the economy that is in a position to grow deserves attention, particularly with the unemployment rate near 9%. The growth of the green economy will create new opportunities for workers in a wide range of industries and occupations. With regard to definitions, as one professional involved with measuring the green economy said, definition of "green jobs" is intrinsically iterative. Research efforts will inform programs to support the green economy, and as the green economy develops and changes, the focus of research efforts (and the definitions used) will change as well. But progress need not wait, in fact cannot wait, for THE definition of "green jobs."

Connecticut is not waiting but is working as part of an eight-state consortium of northeast states to develop a new approach to identifying green jobs that goes beyond job titles and keywords by also examining the job descriptions of job openings for skills and knowledge associated with green activities. Information about the skills and knowledge needed by the green economy can then be used in designing educational and training programs to ensure that the workforce is ready to meet the demands of the green economy. ■

¹ Stone, Daniel, "What Green Jobs?" *Newsweek*, July 28, 2009.

² <http://www.recovery.ct.gov/recovery/site/default.asp>

³ Employment statistics by industry in this article are from the Quarterly Census of Employment and Wages (QCEW) – all employment covered by the unemployment insurance system. This is not a measure of full employment because some workers, most notably the self-employed, are not covered by UI.

⁴ Several states have conducted green jobs surveys and studies have been conducted by reputable academic and research institutions which generally show much lower estimates of the number of green jobs.

⁵ The Economic Census is conducted every five years and includes responses from more than 4.7 million companies nationwide.

GENERAL ECONOMIC INDICATORS

	2Q	2Q	CHANGE		1Q
	2010	2009	NO.	%	2010
<i>(Seasonally adjusted)</i>					
Employment Indexes (1992=100)*					
Leading	115.5	111.9	3.6	3.3	115.1
Coincident	102.4	103.2	-0.8	-0.8	102.0
General Drift Indicator (1986=100)*					
Leading	NA	NA	NA	NA	NA
Coincident	NA	NA	NA	NA	NA
Farmington Bank Business Barometer (1992=100)**	119.0	120.0	-1.0	-0.8	118.5
Philadelphia Fed's Coincident Index (July 1992=100)***	JUL	JUL			JUN
<i>(Not seasonally adjusted)</i>	2010	2009			2010
Connecticut	155.5	152.7	2.8	1.8	155.1
United States	158.6	156.7	1.9	1.2	158.7

Sources: *The Connecticut Economy, University of Connecticut **Farmington Bank ***Federal Reserve Bank of Philadelphia

The Connecticut Economy's **General Drift Indicators** are composite measures of the four-quarter change in three coincident (Connecticut Manufacturing Production Index, nonfarm employment, and real personal income) and four leading (housing permits, manufacturing average weekly hours, Hartford help-wanted advertising, and initial unemployment claims) economic variables, and are indexed so 1986 = 100.

The **Farmington Bank Business Barometer** is a measure of overall economic growth in the state of Connecticut that is derived from non-manufacturing employment, real disposable personal income, and manufacturing production.

The **Philadelphia Fed's Coincident Index** summarizes current economic condition by using four coincident variables: nonfarm payroll employment, average hours worked in manufacturing, the unemployment rate, and wage and salary disbursements deflated by the consumer price index (U.S. city average).