Clean-Energy Strategies CanGenerate Job Growth

A new study by economists at the Political Economy Research Institute of the University of Massachusetts at Amherst examines the types of jobs that are needed to create a clean-energy economy and pinpoints six specific energy strategies that reduce pollution and can lead to job growth:

- Building retrofitting
- Mass transit
- Energy-efficient automobiles
- Wind power
- Solar power
- Cellulosic biofuels

New jobs will certainly be needed for building a green economy, but the vast majority of jobs associated with these six green strategies are in the same areas of employment that people already work in today, in every region and state of the country. For example, constructing wind farms creates jobs for sheet metal workers, machinists, and truck drivers, among many others. Increasing the energy efficiency of buildings through retrofitting relies, among others, on roofers, insulators, and building inspectors. Expanding mass transit systems employs civil engineers, electricians, and dispatchers. What makes these entirely familiar occupations “green jobs” is that the people working in them are contributing their everyday labors toward building a green economy.
**Job Opportunities in a Green Economy: Virginia Can Gain from Fighting Global Warming**

Train operators who currently deliver furniture may one day deliver wind turbine component parts, meaning that their work will be contributing to building a green economy, and that a green economy is creating new employment in rail transportation.

By examining the number of people who are employed in each of the occupations that will be affected by these six green economy strategies, and the average wages in each state for each of these job types, it becomes clear that millions of U.S. workers, across a wide range of occupations, states, and income levels, will all benefit from defeating global warming and transforming the United States into a green economy.

**Green Jobs in Virginia**

Solving global warming will require all kinds of workers with a wide range of skills. Tens of thousands of Virginians have good-paying job skills that are representative of a broad range of skills needed to build clean energy solutions:

- **Carpenters** will be needed to make buildings more energy efficient. There are over 29,000 carpenters in Virginia, paid an average of nearly $17 per hour.
- **Electricians** are essential to expanding mass transit solutions. There are nearly 20,000 electricians in Virginia, paid an average of over $20 per hour.
- **Operations managers** are needed to manufacture of energy-efficient automobiles. There are nearly 33,000 operations managers in Virginia, paid an average of over $51 per hour.
- **Machinists** craft essential components for wind power. There are nearly 7,000 machinists in Virginia, paid an average of nearly $18 per hour.
- **Welders** are vital to solar power manufacturing. There are 8,000 welders in Virginia, paid an average of $17 per hour.
- **Industrial truck drivers** transport supplies and fuels for the cellulosic biofuels sector. There are nearly 16,000 industrial truck drivers in Virginia, paid an average of nearly $13 per hour.²

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**Jobs that Will Build the Green U.S. Economy**

<table>
<thead>
<tr>
<th>Green Economy Strategy</th>
<th>Representative Jobs</th>
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</thead>
<tbody>
<tr>
<td>Building Retrofitting</td>
<td>Electricians, heating/air conditioning installers, carpenters, construction equipment operators, roofers, insulation workers, carpenter helpers, industrial truck drivers, construction managers, building inspectors</td>
</tr>
<tr>
<td>Mass Transit</td>
<td>Civil engineers, rail track layers, electricians, welders, metal fabricators, engine assemblers, production helpers, bus drivers, first-line transportation supervisors, dispatchers</td>
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<tr>
<td>Energy-Efficient Automobiles</td>
<td>Computer software engineers, electrical engineers, engineering technicians, welders, transportation equipment painters, metal fabricators, computer-controlled machine operators, engine assemblers, production helpers, operations managers</td>
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<tr>
<td>Wind Power</td>
<td>Environmental engineers, iron and steel workers, millwrights, sheet metal workers, machinists, electrical equipment assemblers, construction equipment operators, industrial truck drivers, industrial production managers, first-line production supervisors</td>
</tr>
<tr>
<td>Solar Power</td>
<td>Electrical engineers, electricians, industrial machinery mechanics, welders, metal fabricators, electrical equipment assemblers, construction equipment operators, installation helpers, laborers, construction managers</td>
</tr>
<tr>
<td>Cellulosic Biofuels</td>
<td>Chemical engineers, chemists, chemical equipment operators, chemical technicians, mixing and blending machine operators, agricultural workers, industrial truck drivers, farm product purchasers, agricultural and forestry supervisors, agricultural inspectors</td>
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</tbody>
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¹ These six strategies are of course by no means exhaustive. For example, a 2007 study by McKinsey and Company, *Reducing Greenhouse Gas Emissions: How Much at What Cost?*, discusses five broad clusters of approaches to reducing greenhouse emissions, including improving energy efficiency in buildings and appliances; increasing fuel efficiency in vehicles and reducing carbon intensity of transportation fuels; improving efficiency in energy-intensive industrial production; expanding and enhancing carbon sinks; and reducing the carbon intensity of electrical power production. Within these five broad clusters, they identify a total of 41 strategies that, in combination, are capable of significantly reducing greenhouse emissions.