

# Guide to Green Jobs Development

A preview of the forthcoming ICLEI  
web resource on creating green jobs in  
America's communities



[www.icleiusa.org/greenjobs](http://www.icleiusa.org/greenjobs)

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# Introduction

ICLEI-Local Governments for Sustainability USA's Guide to Green Jobs Development provides guidance and resources for local governments to create green jobs in their communities. For the purposes of this publication, ICLEI chooses to define green jobs as career-wage employment opportunities that produce products and services that directly improve environmental quality.

This Guide was developed based on the interest in this issue garnered from local government officials through the Green Jobs Pledge, sponsored by Mayor Martin Chavez of Albuquerque, NM, and former King County, WA, Executive Ron Sims. The Pledge commits signatories to focus on green-collar jobs as a central strategy for advancing environmental, economic, and climate protection goals. Furthermore, the Pledge commits governments to growing an inclusive, sustainable economy to create green-collar jobs and demonstrate the priority placed on building an inclusive green economy.

Today, green jobs represent a crucial part of the country's economic revitalization. Preserving and creating jobs to promote economic recovery is the primary purpose of the American Reinvestment and Recovery Act (ARRA). The programs were established to stimulate the economy in the short term while investing in the country's long-term health by bolstering educational, environmental, and other public services. ARRA's energy-focused priorities are based on these programs' ability to create jobs as much as their environmental merits.

The potential for green jobs development is significant. A recent report by Global Insight forecasts that 4.2 million green jobs will be generated in the United States by 2038, representing a five-fold increase over current levels. These jobs included expansions in the renewable power generation, building retrofit, and renewable transportation industries.<sup>1</sup>

On the local level, governments have a key role to play in catalyzing this transition to a greener economy. Cities and counties can develop and implement policies that support green job creation through land use planning and zoning, waste management, fees and incentives, building codes enforcement, and infrastructure investments, among others. Using these policy tools, local leaders can simultaneously fight global warming and other forms of pollution while sustainably revitalizing their communities' economies and standard of living.<sup>2</sup>

The first section of the Guide assists local governments through the process of developing a green jobs program using the following steps:

1. Make a commitment to green job development.
2. Define green jobs for your community.
3. Scale the green jobs plan: local or regional.
4. Form a government green jobs team.
5. Identify external partners.
6. Assess local green jobs opportunities.
7. Develop a green jobs plan.

For the purposes of this publication, ICLEI chooses to define green jobs as career-wage employment opportunities that produce products and services that directly improve environmental quality.

The second section of the document discusses the programs and policies that are components of a green jobs plan, and provides an array of best practices in these areas.

- Green jobs workforce training
- Green business support programs
- Policies and incentives to encourage the development of green businesses in the following areas
- Tax and zoning incentives
- Renewable energy initiatives
- Energy efficiency
- Green building and green infrastructure
- Transportation
- Waste management

Finally, the last section of the document provides an array of information regarding sources for further information and funding opportunities from local, state, and the federal government, as well as nonprofit organizations.

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*We can seize boundless opportunities for our people. We can create millions of jobs, starting with a 21st Century Economic Recovery Plan that puts Americans to work building wind farms, solar panels, and fuel-efficient cars. We can spark the dynamism of our economy through long term investments in renewable energy that will give life to new businesses and industries, with good jobs that pay well and can't be outsourced. We will make public buildings more efficient, modernize our electric grid, reduce greenhouse gas emissions, and protect and preserve our natural resources. - Barack Obama, December 15, 2008<sup>3</sup>*

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## Create a Local Green Jobs Program

This section spells out a seven-step process for developing a green jobs program. The steps are reported at the end of the section in a Green Jobs Creation Checklist.

### Step 1: Make a Commitment to Green Jobs Development

The first, most crucial step a local government can take toward creating green jobs is to formally commit the jurisdiction to addressing the issue. The government can affirm its commitment to green jobs in one or more of the following forums.

- Highlight green jobs as a key issue in any formal, overarching city/county priorities or strategies
- Address green jobs in any “State of the City/County” addresses
- Pass a green jobs resolution. One such example of this is the Green Jobs Pledge, which was developed by ICLEI with a group of partners to promote the need for local governments to formalize their commitment.

These actions underscore the importance of this issue for elected officials, government staff and the public while securing a path toward action and implementation.

**Sample Language:** To assist in the creation of any of these strategies, refer to the sample language below that highlights the importance of green jobs.

- **From the Green Jobs Pledge:** “We commit to join together as a movement of local governments across the United States to seize the economic, environmental, and social opportunities offered by building an inclusive green economy of high quality jobs and a thriving green-collar workforce. We will execute tangible actions that place priority on genuinely building an inclusive green economy that will involve our communities in developing and enacting green-collar jobs initiatives. We will invest new local government resources in programs and initiatives that build an inclusive green economy, while leveraging and aligning existing public resources, and private sources of capital and finance, toward these same goals.”<sup>4</sup>
- **Chapel Hill, NC:** “The Town of Chapel Hill is committed to fostering a sustainable community by addressing the environmental, economic, and social needs of today’s citizens with equal importance, and in a manner that does not prevent future generations from meeting these same needs” and “has adopted an Economic Development Strategy that includes a goal to welcome green and ecologically sound businesses and developments.”<sup>5</sup>
- **Philadelphia, PA:** “The Philadelphia City Council must begin to promote a greater public understanding of the advantages of green jobs and encourage job-training organizations to partner with employers and contractors that specialize in energy efficiency and renewable energy projects, demonstrating that Philadelphia is committed to conserving energy.”<sup>6</sup>
- **Minneapolis, MN:** “The City of Minneapolis believes that investments needed to solve the critical environmental challenges such as global warming represent a strategic economic opportunity to grow our economy, and create green collar jobs for Minneapolis residents.”<sup>7</sup>

## Step 2: Define Green Jobs for Your Community

It is crucial to define how your government will be using the term “green jobs.” Local governments currently employ various terminologies that expose subtle differences in what constitutes a green job. Defining the term is something to consider when developing any language around your commitment to green jobs. In some cases, a jurisdiction may also want to involve green jobs stakeholder groups in this decision-making process.

### Two Common Definitions

- **Green jobs provide mainly environmental benefits.** A green job is sometimes defined as one that simply produces environmental benefits. For example, the City of Baltimore’s Council Bill 08-0077R states that green jobs are “jobs in business whose products and services directly improve environmental quality.”<sup>8</sup>
- **Green jobs provide both environmental and social benefits.** Green jobs definitions may also require that the job is one that provides living wage or career wage and that not only creates environmental benefits but also creates pathways out of poverty and help retain middle-class and white-collar jobs.<sup>9</sup> Green jobs programs may also want to consider how these programs could target and recruit specific at risk populations including veterans, displaced workers, and high-school dropouts to people to provide them with an additional employment tool.

### Green-Collar Jobs

Sometimes the term “green-collar job” is used to distinguish between a job that produces environmental benefits and one that does so while also ensuring a living wage with a career path. For example, workers can be trained to perform residential energy efficiency improvements such as lighting changes and insulation installation; however, this tends to be a lower-wage job that requires minimal training. “Green-collar jobs,” in contrast, might include a job that requires complex skills training and education to accomplish work as HVAC technicians and building operators, engineers to develop new renewable technologies, and architects to design energy efficient businesses and homes.

### Sample Language Defining Green Jobs

- **The United Nations:** The United Nations report “Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World” defines green jobs as “positions in agriculture, manufacturing, construction, installation, and maintenance, as well as scientific and technical, administrative, and service-related activities, that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect and restore ecosystems and biodiversity; reduce energy, materials, and water consumption through high-efficiency and avoidance strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution.”<sup>10</sup>
- **The U.S. Federal Government:** Title X of the Energy Independence and Security Act of 2007 defined Green Jobs as employment in the following sectors of the economy: energy-efficient building, construction, and retrofits industries; the renewable electric power industry; the energy efficient and advanced drive train vehicle industry; the biofuels industry; the deconstruction and materials use industries; the energy efficiency assessment industry serving the residential, commercial, or industrial sectors; and manufacturers that produce sustainable products using environmentally sustainable processes and materials.<sup>11</sup>
- **The Minnesota Green Jobs Task Force:** The Minnesota Green Jobs Task Force sought community participation in drafting their definition of green jobs. The taskforce decided that green jobs are the employment and entrepreneurial opportunities offered by a green economy, as defined by an existing statute. The green economy is thus defined as “products, processes, methods, technologies, or services intended to do one or more of the following: (1) increase the use of energy from renewable sources, (2) achieve the statewide energy-savings goal (3) achieve the greenhouse gas emission reduction goals or mitigation of the greenhouse gas emissions through, but not limited to, carbon capture, storage, or sequestration;(4) monitor, protect, restore, and preserve the quality of surface waters, including actions to further the purposes of the Clean Water Legacy Act (5) expand the use of biofuels, including by expanding the feasibility or reducing the cost of producing biofuels or the types of equipment, machinery, and vehicles that can use biofuels, including activities to achieve the biofuels 25 by 2025 initiative.”<sup>12</sup> For more information on this initiative, visit: [www.mnngreenjobs.com](http://www.mnngreenjobs.com).
- **The U.S. Green Jobs Pledge:** The U.S. Green Jobs Pledge defines green-collar jobs as those that “contribute directly to preserving or enhancing environmental quality; provide pathways to prosperity for all workers; offer competitive salaries and lead to a lasting career-track, thereby strengthening the U.S. middle class; and emphasize community-based investments that cannot be outsourced.”<sup>13</sup>

## Define Green Jobs by Their Co-Benefits

The following talking points from the U.S. Green Jobs Pledge helps to further explain green jobs in the context of the benefits that they produce.

- **Green-collar jobs can rebuild a strong middle class.** Green-collar jobs are good jobs. Green-collar jobs pay family wages and provide opportunities for advancement for a career with increasing skills and wages.
- **Green-collar jobs provide pathways out of poverty.** While many green jobs require advanced technical skills, many more provide new opportunities and access to good jobs for low-income people to take the first step toward economic self-sufficiency.
- **Green-collar jobs are local jobs, and strengthen local economies.** Much of the work needed to green our economy involves transforming the places that we live and work, and the way we travel. From installing solar panels to planting trees, many green jobs are difficult or impossible to outsource.
- **Green-collar jobs can rebuild communities that are urban and rural, large and small.** Communities of any size in urban and rural America are both challenged by the need to invest in their growth, or modernize infrastructure. Green-collar jobs provide an opportunity to reinvest in these areas for the benefit of local residents. From new transit spending and energy audits in inner cities to windmills and biomass in our nation's heartland, green jobs represent a reinvestment in America's people and communities.





**Table 1:** This Matrix shows the potential for green jobs across sectors, including the definition of the sector the requirements for making it “green,” and sample occupations.

Industry Sector	Definition	Requirements	Sample Occupations
<b>GREEN BUILDING/ SUSTAINABLE/ INTEGRATED DESIGN</b> <i>Traditional Industry Sectors: Manufacturing; Construction; Utilities</i>	the design and construction of environmentally sustainable and energy efficient buildings	Manufacturing building materials; planning, design and construction	Green architects; HVAC workers; Carpenters; Plumbers; Welders; Electricians; Sheet-metal workers; Cement masons; Skilled machine operators
<b>ENERGY EFFICIENCY</b> <i>Traditional Industry Sectors: Manufacturing; Construction; Utilities</i>	the retrofitting of existing building infrastructure using healthy and more resource-efficient models of construction, renovation, operation, maintenance, and demolition.	Auditing energy use in existing buildings; Manufacturing materials and devices; Installing efficient lighting and heating systems; Installing insulation, windows and appliances; Production of appropriate technologies (fluorescent lights, water filtration systems, permeable concretes, solar panels, etc.); Maintenance & operation	Electricians; Technicians; Insulation workers; Equipment and installation specialist (solar panel installation); Home weatherizing; Energy Auditors
<b>RENEWABLE ENERGY (SOLAR/PV, WIND ENERGY, GEOTHERMAL, HYDRO/MARINE)</b> <i>Traditional Industry Sectors: Utilities</i>	the use of natural resources (other than Biomass) for energy which are naturally replenishable	Manufacturing parts; Assembly & installation of solar panels/ finished heating systems Constructing wind farms; Operating and maintaining wind turbines; repairing systems; Marketing and selling systems to consumers	Solar panel installer; Steelworkers
<b>RECYCLING/ WASTE MANAGEMENT/REMOVAL</b> <i>Traditional Industry Sectors: Manufacturing; Utilities; Technology</i>	the collection, treatment, and disposal or reuse of waste materials	Composting; Materials reuse and recycling; Pollution Control; Water Conservation & treatment; Components, Manufacturing & Distribution/ Enabling Technology; Environmental Consulting, Protection & Remediation	recycling technician;; Waste treatment operators Sustainability coordinator Bio-mimicry engineer Environmental science and protection technician
<b>SMART GRID/SMART ENERGY</b> <i>Traditional Industry Sectors: Manufacturing; Utilities</i>	auto-balancing, self-monitoring power grid that accepts any source of fuel and transforms it into a consumer's optimal renewable energy usage with minimal human intervention	Manufacturing & Installation, Distributing and marketing products	Field and control engineers Communication protocol program manager Managing consultant
<b>BIOMASS/ BIOFUELS/ BIOSYNERGY/ ETHANOL/ FUEL CELLS/ HYDROGEN</b> <i>Traditional Industry Sectors: Manufacturing; Construction; Agriculture; Transportation</i>	fuel creation from chemical/biological materials other than fossil fuels	Growing and harvesting crops for feedstock, collecting waste oils for feedstock, manufacturing parts for production facilities; construction, maintenance and operation of production facilities	Process technicians in biodiesel or ethanol companies
<b>VEHICLE ELECTRIFICATION/ ALTERNATIVE TRANSPORTATION</b> <i>Traditional Industry Sectors: Transportation</i>	A ground vehicle propelled by a motor powered by electrical energy from rechargeable batteries or other source onboard the vehicle, or from an external source in, on, or above the roadway	Public Transportation Bicycle repair & bike delivery services Transit line construction Emissions brokers Engine component manufacturing	Research and Development jobs Technology design jobs; Hybrid & Biodiesel vehicle conversion & repair jobs; Maintenance jobs; Automotive service technicians and mechanics
<b>SUSTAINABLE AGRICULTURE/ GREEN SPACE</b> <i>Traditional Industry Sectors: Agriculture</i>	an integrated system of plant and animal production practices that are efficient and sustainable	Production Marketing Processing Consumption	Sustainable/organic farming Local Food production/systems Forestry - sustainable forestry worker; Urban agriculture; Land use planning; Sustainable landscaping

Green Jobs Potential Across Sectors – excerpted from A Growing Green Economy: Opportunities of Tomorrow<sup>14</sup>

USA



### Step 3: Scale Your Green Jobs Plan: Local or Regional

Deciding on the scale of your green jobs plan effort is crucial to determining the extent of your government’s planning efforts. To scale your plan, consider the following factors.

- **Does your jurisdiction have the financial and staff resources to undertake its own, full-scale green jobs effort?**
- **Is there a broader regional effort your jurisdiction can join?** If you are a city, is there a county effort that could be stronger? If you are a county, is there a stronger, broader regional effort being forged by an MPO or COG?
- **Will your jurisdiction itself benefit from participating in a regional effort?**

### Step 4: Form a Green Jobs Advisory Team

Forming a green jobs advisory committee or green jobs team can provide an effective vehicle for defining and delegating tasks as you develop and implement your program or coordinate with a larger regional effort.

- **Define the role of the team.** Deciding who to include on the green jobs team will depend on whether this is solely a forum for interdepartmental staff to help coordinate the work, a vehicle for receiving community input, a policy advisory body, or all of the above.
- **Involve key players.** Key players often include elected officials and department heads who will be involved in plan preparation and who will be responsible for plan approval and implementation.
- **Secure the buy-in of all appropriate departments.** Including key players and associated staff in the process spreads the sense of ownership, and builds a foundation of support necessary for the implementation of the green jobs plan. If a green jobs policy will be developed in-house, determine which departments will be involved and which department will take the lead.
- **Consider including staff from other local government agencies on internal planning committees.** It is important to include officials or staff from other local government agencies such as economic development commissions or councils. While these entities may not be directly under the control of your local government, they are crucial to successful green jobs development programs. If you are considering working with a consultant, decide what parts of the project an outside contractor will be hired to perform, and whether an interdepartmental or external advisory group should be established to lay out this workplan.

### Step 5: Identify External Partners

The success of your green jobs program may depend on strong community support. This means that residents, businesses, and other entities need to be brought into the process of formulating the plan that they will eventually be asked to help implement.

**ICLEI recommends engaging the following groups in your green jobs development process:**

- Metropolitan planning organizations or other regional governments
- Chambers of commerce and other business associations
- Local and regional economic development organizations
- Workforce recruitment, training and placement organizations
- Vocational institutions and community colleges
- Leading employers
- Energy utilities
- Local unions

**The following strategies can be used to provide greater public participation:**

- Develop a community task force or advisory team to support the government committees and help develop public participation processes.
  - Host public hearings and workshops to build support among the community.
  - Use existing public processes and initiatives to address green jobs issues.

As an example of stakeholder involvement for green jobs creation, the Philadelphia City Council has resolved that it “must begin to promote a greater public understanding of the advantages of green jobs and encourage job-training organizations to partner with employers and contractors that specialize in energy efficiency and renewable energy projects, demonstrating that Philadelphia is committed to conserving energy.”<sup>15</sup>



For more details on how to conduct public outreach and develop community stakeholder processes, refer to the following ICLEI publications.

- **ICLEI Outreach and Communications Guide:** This guide is a tool to help local governments effectively communicate climate information to their constituencies. The Guide contains an array of steps and methodologies for communication and outreach efforts, as well as a compilation of best practices from around the United States. For access to the guide, visit [www.icleiusa.org/action-center/engaging-your-community](http://www.icleiusa.org/action-center/engaging-your-community)
- **National Conversation on Climate Action:** Visit [www.climateconversation.org](http://www.climateconversation.org) to access the following resources.
  - **Discussion Guide:** This guide gives sample worksheets and discussion activities that you can use to ensure an action-oriented and engaging event.
  - **Citizens Guide to Local Climate Action:** This guide is a simple primer on how everyone can be a part of local climate action.

As an example of stakeholder involvement for green jobs creation, the Philadelphia City Council has resolved that it “must begin to promote a greater public understanding of the advantages of green jobs and encourage job-training organizations to partner with employers and contractors that specialize in energy efficiency and renewable energy projects, demonstrating that Philadelphia is committed to conserving energy.”<sup>15</sup>

## Step 6: Assess Local Green Jobs Opportunities

Before charging ahead to develop a plan, it’s important to get a sense of the local potential for green job growth and development. Understanding the scope of green job opportunities will determine the scale of your green jobs effort.

- **Understand the broader political context.** Make sure to review state and federal legislation to understand how policies focusing on green initiatives, energy use or climate change might impact your local green economy and the ease of implementing green jobs programs.
- **Obtain local green jobs forecasting data.** Work with your local MPO or COG, economic development agency and state department of labor to find out if any reports have been performed that assess the green jobs development potential in your community. If not, consider working with these entities to fund such a study.
- **Inventory existing training and education programs.** Work with your educational and workforce training organizations to identify the education and job training programs that already exist within the locality. Determine their capacity to develop skills in particular job sectors. In addition to investigating programs at educational and vocational institutions, also be sure to survey an apprenticeship programs run by local governments, local utilities, and unions. Use this exercise to help determine whether existing instructional programs can be modified to fit green jobs requirements and note which might need to be retooled.<sup>16</sup>
- **Review potential funding opportunities.** Survey the same sources listed above to obtain an inventory of the current sources of workforce, technical education and job development funding currently being used in the region. This analysis will help get a sense of the size of the current effort, identify current gaps in funding and point you towards new sources of funding.
- **Assess collaborative potential.** It is critical to assess the degree of collaboration that currently exists between participating organizations and assess the degree of collaboration that will be needed. Your green jobs effort will only be successful if educational institutions, funding agencies, assessment resources, and worker recruitment, placement and support organizations can work together.

A local government green jobs plan can be a stand alone document, a chapter within a general or master plan, a sustainability plan, a climate action plan or an economic development plan. Because this is an emerging area, governments are just now developing green jobs plans. Currently, many local governments have just developed a series of related ordinances and policies focused on creating green jobs.

## Step 7: Develop a Green Jobs Plan

- **Convene a leadership team.** Select a steering committee to direct the work of all the organizations involved in the green jobs effort. If funding is available, consider whether or not a third party organization can serve as the facilitator of this effort.
- **Decide the format of the green jobs plan.** Though this can be done after a work plan is created, sometimes envisioning the final product at the outset will help focus the process.
  - A local government green jobs plan can be a standalone document, a chapter within a general or master plan, a sustainability plan, a climate action plan, or an economic development plan. Because this is an emerging area, governments are just now developing green jobs plans. Currently, many local governments have just developed a series of related ordinances and policies focused on creating green jobs.
- **Create a work plan.** List out all of the tasks of developing the green jobs program. (For a comprehensive list of the tasks involved in creating a program and plan, see Table 1).
- **Assign tasks.** Divvy up the tasks among the partner organizations involved, and ensure that there is a consistent mechanism (meetings, online reporting, etc) to report back the progress of each task.



### Tools: Assessing the Benefits of Green Jobs Programs

**Qualitative evaluation is an important first step in program and policy development.** As many local governments already currently employ a range of tools to conduct programmatic analyses, this will not be addressed at length in this guide. Qualitative analysis can be effectively used for the following purposes.

- Determine basic feasibility and effectiveness of potential job creation plans.
- Narrow a list of potential measures and programs to those that seem most promising.
- Determine the partners most appropriate for managing or undertaking a particular project or program.

**The next step is to provide quantitative evaluation of proposed job creation policies and programs.** This crucial effort will enable stakeholders to know the financial benefit from their investments. Some of the tools available to local governments will enable them to undertake the following analyses.

- **Know the current cost of doing business.** The U.S. Department of Labor's Employment and Training Administration ([www.doleta.gov](http://www.doleta.gov)) provides numerous resources to assist with such research.
  - Analyze available government incentives, tax credits, and assistance.
  - Use real-time information about workforce and career information, such as local wages and economic trends, industry competencies, and standardized training to inform your business decisions.
  - Estimate recruitment costs and increase retention through workforce solutions, such as screening and referral of job-ready candidates.
- **Translate dollars spent into jobs created.** The U.S. DOE has suggested the following rule of thumb for the Energy Efficiency and Conservation Block Grant: for every \$92,000 spent on conservation and energy efficiency, one job is created or retained. Local governments should utilize more specific or accurate methodologies if they are available.
  - DOE is currently developing a "job creation" calculator that will be available at [www.icleiusa.org/stimulusfunding](http://www.icleiusa.org/stimulusfunding) when it is released.
- **Calculate the co-benefits of energy and GHG emissions savings.** ICLEI's Clean Air and Climate Protection (CACP) Software 2009 is a one-stop emissions management tool that calculates and tracks emissions and reductions of greenhouse gases (carbon dioxide, methane, nitrous oxide) and criteria air pollutants (NO<sub>x</sub>, SO<sub>x</sub>, carbon monoxide, volatile organic compounds, PM<sub>10</sub>) associated with electricity, fuel use, and waste disposal.
  - CACP 2009 allows governments to quantify the associated co-benefits from a broad selection of energy efficiency, renewable energy, and alternative fuel measures (to name a few). As with a climate action plan, CACP 2009 can be used to quantify the energy and financial benefits of particular program proposals. The data produced would include the GHG, energy use and financial savings that you hope to achieve from each proposed measure. For more information on CACP 2009, visit: [www.icleiusa.org/action-center/tools/cacp-software](http://www.icleiusa.org/action-center/tools/cacp-software)

## Green Jobs Creation Checklist

This checklist provides an overview of the key decisions that will need to be made by your local government in developing a green jobs plan. Each of the items in this checklist is discussed in greater detail in the previous pages of this Guide.

- Make a commitment to green job development.
  - Highlight green jobs as an issue in any formal, overarching city/county priorities or strategies;
  - Address green jobs in any “State of the City/County” addresses; and
  - Pass a green jobs resolution.
- Define green jobs for your community. Decide how your government will determine what constitutes a green job.
- Scale the green jobs plan: local or regional. Confirm whether your commitment to address green jobs will be focused on a local effort, or participation in a broader, regional effort.  
(If your government engages in a regional effort, the remainder of the checklist may be modified depending on the scope of the jurisdictions involvement.)
- Form a government green jobs team.
  - Define the role of the team.
  - Involve key players.
  - Secure the buy-in of all appropriate departments.
  - Consider including regional or state agency staff on your team.
- Identify external partners. Ensure to include participants from the following groups in any stakeholder processes.
  - Employers
  - Educational institutions
  - Workforce training organizations
  - State and Federal agencies
  - Metropolitan Planning Organizations or other regional governments
  - Chambers of Commerce and other business associations
  - Local and regional economic development organizations
  - Workforce recruitment, training and placement organizations
  - Vocational institutions and community colleges
  - Leading employers
  - Energy and water utilities
  - Unions and trade associations
  - Faith Community
- Assess local green jobs opportunities
  - Educate your team on the local, regional, state and federal political context of green jobs.
  - Obtain local green jobs forecasting data
  - Inventory existing training and education programs
  - Catalogue potential funding opportunities
  - Assess collaborative potential
- Create a green jobs plan.
  - Convene a leadership team to manage plan creation.
  - Decide the format of the green jobs plan
  - Create a work plan.
  - Assign tasks.
  - Decide what assessment tools you will use to measure the efficacy of the plan.

**Table 2: Green Jobs Development Framework**

This table, adapted from the Department of Labor’s Education and Training program, provides yet another framework for developing a green jobs plan. This framework overlaps with many of the same steps already discussed in the green jobs checklist.

<b>Align Green Jobs Programs and Policies</b>	<b>Develop Education and Training Models</b>	<b>Create Strategic Workforce Solutions</b>	<b>Enhance Networking and Communications Outlets</b>	<b>Monitor and Evaluate Programs</b>
1. Inventory all green jobs and workforce programs across public and private sectors	1. Identify existing job education and training programs	1. Define workforce challenges	1. Collaborate with partners to create a centralized green jobs information portal. Leverage existing informational resources	1. Create performance reporting and benchmarking standards
2. Ensure that existing government program policies and strategic investments reflect focus on green jobs	2. Ensure job education programs meet industry standards for industry certification and credentials	2. Create an asset map of current workforce opportunities, resources and services including local, state and federal funding opportunities	2. Provide centralized career guidance tools and resources	2. Ensure consistent and ongoing research and evaluation of the green jobs plan
3. Align green jobs strategies with regional economic development growth strategies	3. Build and support the capacity of community college programs to provide education and training pertinent to green jobs	3. Project new jobs opportunities, identify areas where new skills are needed and provide occupational definitions complete with training requirements	3. Leverage conferences and other communications forums to share knowledge	3. In the event that grants or sub-grants will be awarded to partner organizations, develop a comprehensive system for grant distribution and accountability
4. Evaluate potential green jobs policies and programs. Qualitatively and quantitatively assess the benefits of these proposals	4. Develop apprenticeship programs and models	4. Work with partners to develop collaborative workforce solutions		4. Ensure that there is a transparent process for the public to understand how any budget or grant funding is being used
5. Educate staff on green jobs concepts with a focus on how to turn workforce and economic development opportunities into green jobs opportunities	5. Promote peer to peer mentorship and learning opportunities for professional development			



## Example Local Government Green Jobs Policies and Programs

This section provides examples of the policies and programs that local governments are developing and implementing to create green jobs. Local governments can unlock the potential of green jobs through existing and new areas of management such as infrastructure investments, land use decision-making, building code enforcement, and energy management, among others. A local government can establish a green jobs program from creating or retooling any combination of the following programs.

### Green Jobs Workforce Training

Given the heightened interest in green jobs development, governments may want to consider whether there is value in supporting programs to provide adequate training for potential green businesses. In many cases, lack of a trained workforce may hinder the regional development of a given industry. Green jobs training programs can be created by retooling existing job training programs to focus on green jobs or by developing new training opportunities focusing on green jobs and clean technology jobs.



### Retooling Existing Job Training Programs

Existing economic and workforce development programs can be re-tooled to integrate green curricula into existing programs. Green jobs are not necessarily new jobs. Many green jobs will involve traditional trades and skills in industries reinventing themselves for the new energy economy. For example, developing a green job may involve retraining a machinist to punch parts for wind turbines instead of other more traditional products.

The federal government's American Recovery and Reinvestment Act of 2009 is a prominent example of the opportunities that exist in re-tooling current program toward new employment opportunities. The act allows local workforce investment boards to contract with training providers to train multiple workers for high-demand occupations, including green jobs.<sup>18</sup>

### Creating New Green Jobs Training Programs

New job training programs may be necessary to fully harness the promise that green employment holds. Many existing job training programs are focused on training workers to find jobs in the healthcare, retail, food services, manufacturing industries. The California-based nonprofit organization Green For All notes that while "Oakland and the Bay Area already have excellent job training programs, most are not currently linked to green employers. These programs need the right incentives and infrastructure in order to retool for green-collar job training."<sup>19</sup> For more information on job training programs, refer to the U.S. Department of Labor's Education and Training Administration web site, [www.doleta.gov](http://www.doleta.gov).

#### Best Practices:

**Chicago, IL – GreenCorps:** Since 1994, Chicago's job training and community gardening program, GreenCorps, has designed, installed and maintained more than 800 community greening projects. In the past year, the City has expanded the program to include household chemicals handling and disposal training, a paint exchange program, a home-weatherization program, and instruction in diagnostics and repairs of salvageable computers for resale to non-profits. The program targets low-income, underemployed and ex-offender residents. Funded by grants and community contributions, the 25 to 40 trainees hired yearly into the nine-month program are paid minimum wage to start, and the city helps them find permanent jobs. Last year, 33 trainees graduated from the program, and most were placed in permanent jobs.<sup>20</sup>

**Oakland, CA – Green Jobs Corps Program:** The Oakland Green Jobs Corps is a workforce training and paid apprenticeship program that offers at-risk young adults the opportunity to enter green economy careers. The Corps was conceived in 2008 by the nonprofit organizations the Ella Baker Center for Human Rights and the Apollo Alliance in partnership with the City, which awarded the project a \$250,000 grant. The City then solicited bids from local organizations to run the program, ultimately hiring a worker training program and an apprenticeship placement firm to operate the program in a three-way partnership. Forty 18-to-25-year-olds were selected to participate in this program, to take classes in



everything from applied math for construction to hazardous waste recycling, green carpentry techniques, scaffolding, plumbing and blue-print reading as well as the principles of solar energy, electricity transfer, solar installation and the like. Successful graduates are then placed in three-month paid apprenticeships with one of a dozen local green companies that have agreed to support the program with on-the-job training.<sup>21</sup>

**King County, WA – Green Jobs Pilot Program:** In 2008, King County created a six-week Opportunity Greenway pilot program to provide youth ages 16 to 21 the opportunity to learn about and experience career opportunities in various green fields such as energy efficient construction, weatherization, energy auditing, hybrid bus maintenance, power utility work, cement masonry, and heating and cooling installation.<sup>22</sup> Created as a “learn and earn” program, Opportunity Greenway provided paid internships aimed at increasing basic skills, work habits and attitudes for success. Coordinated by the King County Work Training Program, Opportunity Greenway involved private employers as well as the King County Wastewater Treatment Division, King County Metro Transit, King County International Airport, Highline School District and the City of Kent Schools and Parks, and local community and technical colleges. Due to the success of the pilot, the program has been continued for this next year.<sup>23</sup>

**Boulder County, CO – Green Jobs Pipeline Program:** The Boulder County Green Jobs Pipeline is a pilot project that aims to create green jobs by implementing green renovations on local affordable housing units managed by the Boulder County Housing Authority. The green renovation projects include renewable energy and energy efficient retrofits that create paid internships and on-the-job training for low-income workers. The on-the-job training includes winterizing homes and installing solar panels. Workers enrolled in the training are paid with grant money, and their work focuses on low-income housing improvement projects that were already planned by the county. This pilot program started in 2008 with the renovation of Laurels Apartment, a four-unit, income-eligible apartment building.<sup>24</sup> This collaborative pilot project is a joint effort between Boulder County Housing and Human Services, Boulder County Housing Authority, Boulder County Community Services, and Workforce Boulder County.<sup>25</sup>

## Green Business Support Programs

Local governments can help area companies go green by providing services to build the capacity of businesses to institute green practices. A number of cities have partnered with local utilities, chambers of commerce and the state to provide information portals for businesses to find out about resource conservation opportunities including recycling, energy efficiency, and transportation demand management.

### Best Practices

**Portland, OR – BEST Business Center:** The BEST (Businesses for an Environmentally Sustainable Tomorrow) Business Center is a one-stop service that provides a complete sustainability audit to businesses and enables them to reach conservation goals by connecting them with service providers to improve the company’s bottom line. Businesses begin the process by visiting [www.bestbusinesscenter.org](http://www.bestbusinesscenter.org) to complete a survey on their current efforts, costs and needs, and submit their information. If preferred, the process can also be done by phone. Once this information is gathered, the BEST Business Center partners work together to provide customized recommendations for the owners and staff to take action-action that conserves resources and saves money. Partners in the BEST Business Center include the City of Portland Water Bureau, the Portland Development Commission, Pacific Power, Portland General Electric, and Metro.<sup>26</sup>

**Chicago, IL – Green Office Challenge:** The Chicago Green Office Challenge is a friendly competition for commercial property managers and office tenants to become more sustainable and, in some cases, achieve third-party green building certification through the ENERGY STAR and LEED™ rating systems. This program, led by ICLEI and the City of Chicago, works with the property managers who run commercial buildings in downtown Chicago. They are provided training and resources by City staff to reduce energy use, waste, and water use. Office tenants are provided with an evaluation of the “greenness” of their operations using the program’s innovative “Green Office Scorecard.” Tenants can be acknowledged for achievement of up to 50 green strategies that address office energy use, waste, transportation, and outreach.<sup>27</sup> For more information, visit [www.greenofficechallenge.org](http://www.greenofficechallenge.org).

## Policies to Encourage Green Business Development

Private companies have an important role to play in green job creation – and innovative public-private partnerships can be part of the solution. Expediting the ability of companies to establish themselves and develop new products, technologies, and services is a part of expanding green jobs opportunities. Local governments can help innovative

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business become established in their communities by creating a policy framework to support and reward sustainable business practices through a variety of policies and incentives.

## Tax and Zoning Incentives

Tax and zoning incentives can help to advance a community's green job goals to promote the development and growth of green industries. Governments may choose to promote the establishment or relocation of green companies by providing tax credits, a negotiated tax schedule or reduced property taxes. Zoning incentives offered to green developers or companies may include adjustments to height restrictions or modifications of some other requirements in the underlying zoning ordinance.

Investments in a communities' infrastructure can also be an important component to attract green businesses. Ensuring that a company has access to high-speed internet resources, a stable source of affordable energy and transmission lines, as well as a sound transportation and public transit system can factor into a business's decision to site offices or manufacturing in a particular location.

For more information on job training programs, refer to the U.S. Department of Labor's Education and Training Administration web site, [www.doleta.gov](http://www.doleta.gov).

### Best Practices:

**Little Rock, AR – Tax Bonds and Training Fund for a Wind Developer:** The State of Arkansas and the City of Little Rock managed to attract LM Glasfiber to produce wind turbine blades in the City through a number of incentives. First, the City issued \$150 million in industrial revenue bonds on behalf of the company, which will use the proceeds to help pay for the facility. The plant is technically owned by the City and leased to the company, which makes it exempt from traditional property taxes. Instead, LM Glasfiber pays payments equal to 35 percent of what its tax bill would have been. Furthermore, the Little Rock Port Authority provided the land for the facility for free. Hiring criteria were established to ensure the maximum benefit to the community from green jobs including a \$3.5 million job training fund.<sup>28</sup>

**Milwaukee, WI – Greenlight Economic District:** The underutilized 30<sup>th</sup> Street Industrial Corridor in Milwaukee is being developed to attract green businesses. In 2009, Mayor Barrett and the City Council declared this area Milwaukee's Greenlight District for Jobs. This neighborhood is being promoted as an incubator of green businesses by encouraging the use of Tax Increment Financing and other economic development tools within the corridor to attract green industries. Tax increment financing is a tool that local governments can use to publicly finance needed structural improvements and enhanced infrastructure within a defined area. This promotes the viability of existing businesses and can attract new commercial enterprises to the area. Tax Incremental Financing plans could include funds for job training and specific workforce development initiatives, among other uses. More information about this initiative can be found at: <http://dnr.wi.gov/org/aw/rr/rbrownfields/uri-30th-street.htm>.<sup>29</sup>

**Butte, MT – Attracting a Wind Energy Manufacturer:** The German-based wind turbine manufacturer Fuhrlander's new manufacturing facility in Butte, Montana illustrates how the renewable energy industry can help replace lost jobs from other industries. Since its gold and silver mines closed, the state has been looking for new opportunities to increase employment. In 2007, Montana passed the "Clean and Green" energy law, which reduced property taxes for wind power manufacturing companies as an incentive for investment in the state economy. Currently more than 50 wind power projects are either completed or under construction in the state. Fuhrlander's Butte plant is slated for completion by the end of 2009 and the project is expected to employ 150 people to manufacture wind turbines, with the possibility of another 600 jobs. The company's CEO Joachim Fuhrlander told the Helena Independent Record, "We have the right political support, the right financial support and we have the windy area where the wind farms and projects are close to the manufacturing line."<sup>30</sup>

**San Francisco, CA – Clean Energy Technology Business Exclusion Ordinance:** This ordinance was passed in 2006 to provide a payroll tax exemption for up to 10 years for clean technology companies located in the City with a full-time staff of at least 10 but not more than 100 employees.<sup>31</sup> For the purpose of this ordinance, a "Clean Energy Technology Business" is one in which at least 75 percent of all business activities carried on during the tax year are directly related to clean energy technology. Clean energy technology is in turn defined as the "manufacture or application of scientific advances that produce or contribute to the production of clean energy utilizing energy produced by wind, solar energy, landfill gas, geothermal resources, ocean thermal energy conversion, quantifiable energy conservation measures, tidal energy, wave energy, biomass, biofuels, or hydrogen fuels derived from renewable sources."<sup>32</sup>

**Pennsylvania – Attracting Gamesa Wind Manufacturers:** Spanish company Gamesa Corporación Tecnológica, one of the world’s leaders in wind power, is widely regarded as a model employer for the emerging U.S. green economy. Pennsylvania Governor Edward Rendell announced in September 2004 that Gamesa would establish offices in Philadelphia and open a manufacturing facility somewhere in the state to produce turbine blades. Among the factors cited by Gamesa for choosing Pennsylvania were the state’s manufacturing heritage and its skilled labor force as well as the enthusiasm for renewable energy development expressed by officials in the state, including their work to create a renewable portfolio standard for electricity producers. First, Gamesa built a turbine blade plant in the Central Pennsylvania town of Ebensburg in Cambria County, creating about 300 jobs. To assist the \$50 million project, the state put together an \$11.31 million incentive package. Gamesa expanded its involvement in Pennsylvania in March 2006, when it announced plans for a second plant. The facility, located north of Philadelphia, hired about 500 workers. For this plant, Gamesa received a \$3.93 million incentive package put together by the state. Other benefits stemming from the location of the plant in the state-sponsored Keystone Opportunity Improvement Zone bring the total value of the subsidies to about \$10 million.

### Renewable Energy Initiatives and Policies

Local government policy to increase the amount of renewable energy being produced or sited in their communities can be a part of a broader green jobs development strategy. Governments can develop policies to promote local renewable energy production, as well as to purchase the government’s own green power or biofuels from local sources developed by local companies. While all local renewable energy policies may not directly create green jobs within your community, these measures can go a long way to facilitate regional and statewide economic development. And remember, while a government program to purchase renewable energy credits or “green tags” from a local utility will encourage the development of clean energy, it is not always possible to guarantee that the energy will be produced locally.



There are also substantial green employment opportunities in developing alternative fuels. Developing advanced biofuels requires chemists, chemical engineers, chemical equipment operators, mixing and blending machine operators, agricultural workers, industrial truck drivers, farm product purchasers, agricultural and forestry supervisors, and agricultural inspectors.

#### Best Practices:

**Brockton, MA – Brightfield Solar Development:** A brightfield is a brownfield that is redeveloped using solar energy technologies, a concept created by the U.S. Department of Energy. Brockton’s Brightfield is the largest solar array in New England, consisting of 1,512 SCHOTT Solar modules and the largest brightfield nationwide. The system is projected to produce about 580 MWh per year of electricity per year, enough to power about 77 homes, or Brockton City Hall plus a portion of the police station. The brightfield provides multiple community benefits by converting an idle brownfield into a revenue generating asset that creates jobs for local installers, provides revenues to MA-based renewable energy developers, and eliminates the City’s liability for the brownfield. The project avoids annual emissions of 677,000 pounds of CO<sub>2</sub> and has enhanced local property values. Furthermore, this project encourages reinvestment in a community now viewed as cleaner and greener.<sup>33</sup>

**Ashland, OR – Solar Access Ordinance:** Since 1981, the City of Ashland has promoted the use of solar energy by passing one of the nation’s first citywide solar access protection ordinances. This ordinance attempts to guarantee access to sunlight for homeowners and renters by setting limits on the amount of permitted shading incurred by new construction. The ordinance provisions for solar setbacks are designed to ensure that shadows at the north property line do not exceed a certain height, depending on the zone in which the property is located. Property owners can apply for a Solar Access Permit for protection of shading by vegetation only. Shading by buildings is protected by the solar setback provision.<sup>34</sup>

### Energy Efficiency Initiatives and Policies

Energy efficiency programs offer one of the best ways to create employment opportunities in a local community. Demand for energy efficient products and services and for new or alternative energy technologies can expand local business and directly create local jobs that can’t be outsourced.<sup>35</sup> The U.S. Department of Energy estimates that every \$1 million spent on residential energy efficiency programs will create 52 direct and 23 indirect jobs.

At the local level, efficiency in home energy use is one the most important ways to reduce the growth in energy

demand and meet greenhouse gas emission reduction goals. The average low-income family spends 14 percent of gross income on energy bills and in many cases energy costs can exceed 20 percent of the family budget.<sup>36</sup> The implementation of cost-effective energy efficiency measures such as adding insulation, sealing leaks, and replacing inefficient appliances can reduce home energy consumption by 15 to 30 percent and generate savings of \$360 a year on the typical residential energy bill.<sup>37</sup>

**Best Practices:**

**Seattle, WA - Green Building Capital Initiative.** The Initiative is a comprehensive building energy strategy to address conservation opportunities in new and existing buildings within the City’s commercial and residential housing stock. The program is designed to create tools and financial resources to help building owners save energy, save money and help reduce Seattle’s greenhouse gas footprint. The program will accomplish the following tasks.

1. Offer 5,000 residential home energy audits, using state-of-the-art diagnostics to analyze a home’s heating and cooling systems. Funded through a partnership with Puget Sound Energy (PSE) and Seattle City Light, the audits will be available at \$95, a steep discount from the \$600 cost.
2. Develop a loan program for residents to make energy-saving home improvements. The public-private partnerships would be funded, in part, by \$1.2 million of federal stimulus money from the Federal Energy Efficiency and Conservation Block Grant.
3. Require measurement and disclosure of energy usage, beginning in 2010, for commercial buildings larger than 50,000 square feet and multifamily buildings with more than 20 units. The program will be expanded to smaller buildings over two years. The data can be used by property owners to determine energy-saving measures.
4. Increases energy efficiency requirements for new buildings by 30 percent, and launches a new expedited permit process for innovative projects that meet energy performance standards.
5. Finally, this program will ensure to expand existing training programs for auditors and other energy-efficiency technicians. Through all of the different strategies employed, the program is expected to generate about 230 jobs.<sup>38</sup>

The US Department of Energy estimates that every \$1 million spent on residential energy efficiency programs will create 52 direct and 23 indirect jobs

**Naperville, IL – Residential Energy Efficiency:** The City of Naperville is making funds available to income-qualifying residents to improve their home’s energy value by partnering with the U.S. Department of Housing and Urban Development through the Weatherization Assistance Program. In this case, the city acts as the distributor of federal grant funds. Funds are distributed to income-eligible families in amounts of up to \$5,000 until all funds have been allocated. Applicants are awarded funds on a first-come, first-served basis and may only receive City of Naperville Weatherization funding once.<sup>39</sup> This funding program drives demand for weatherization products and services within Naperville, providing employment for not only plumbers, carpenters, and journeymen, but also manufacturers of weatherization products such as insulation, caulking, and modern window panes.

### Green Building and Green Infrastructure Policies and Incentives

Roughly 30 percent of the job creation generated by green jobs is expected to be in the construction industry. Construction jobs cannot be outsourced, typically pay decently, and frequently provide favorable job ladders for those in low-paying entry-level positions.<sup>40</sup> Cities across the country are passing ordinances to mandate that new construction meet green building standards. As green building technology becomes increasingly popular, traditional contractors will transition into green building and construction practices.<sup>41</sup>

Constructing green buildings will also require all the traditional construction trades: electricians, heating and air conditioning installers, carpenters, construction equipment operators, roofers and insulators, industrial truck drivers, construction managers and building inspectors. However, when applied to a green building project, all of these highly traditional jobs become green occupations by definition. Furthermore, green construction generates demand for energy-efficient products, such as windows and insulation, adding to the number of green jobs produced at that end of the cycle. Therefore, by encouraging or mandating that buildings meet green building guidelines (such as LEED or Built Green), local governments can help turn many traditional jobs into green jobs.

The construction of green or high-tech infrastructure is also considered a green job. Governments may also wish to investigate opportunities to partner with public and private agencies to maintain open space and urban forests and to develop green streets and transit systems, low impact development storm water systems, smart grid electricity systems and high-speed internet connectivity.

**Best Practices:**

**Novato, CA – All New Construction is Green:** The Novato City Council in Marin County unanimously passed





a commercial green building ordinance that will take effect in April of 2009 and ensure that all new buildings constructed after that date in the City must meet green building guidelines (as defined by the city).<sup>42</sup> Residential buildings are already covered by a prior ordinance that requires new residential construction to meet a minimum of 50 Green Building Points (according to the City's own green building calculator). A minimum of 10 points must be reached in each category (Resources, Energy, Indoor Air Quality/Health) in the design and construction. Major renovations must meet a minimum of 30 Green Building Points with a minimum of five points in each category. This ordinance ensures that practically all forthcoming construction projects in the city will be green. As a result, by definition, the jobs generated through new residential and commercial building construction projects in the city will be green jobs.

**City of Seattle, WA – Green Buildings for Government:** The City of Seattle is ensuring the development of green construction jobs in the City by becoming one of the largest single owners of LEED facilities in the world. Currently, the City of Seattle has 38 projects (either planned, under construction or completed) that are expected to receive LEED certification. Adopted in February 2000, Seattle's Sustainable Building Policy required that new City-funded projects and renovations with over 5,000 square feet of occupied space would achieve a Silver rating using the U.S. Green Building Council's (USGBC) LEED Green Building Rating System.<sup>TM</sup> This policy has created an opportunity to change the local building industry and encourage the adoption of green building throughout the City's commercial sector.<sup>43</sup>

**Miami-Dade County, FL – Smart Grid Development:** This spring, the utility Florida Power & Light (FPL) and Miami-Dade County announced a \$200-million Smart Grid Initiative called "Energy Smart Miami" to install smart meters in one million homes and buildings in the county.<sup>44</sup> The initiative, funded in-part by the federal stimulus package, will generate near-term demand for green jobs to support its implementation and support job growth with key partners including GE, Cisco and Silver Spring Networks. This project will expand the local green jobs workforce by deploying more than one million advanced wireless smart meters to every home and most businesses in Miami-Dade County. This will give consumers more information and control over their electricity usage while also providing FPL with information that will enhance system efficiency and reliability. Smart meter technologies and demand response programs enable "time of use" (TOU) pricing, a system where consumers pay lower prices for electrical power during off-peak periods. In a yearlong study by the U.S. Department of Energy, smart grid customers reduced peak consumption by up to 15 percent, and overall consumption by up to 10 percent.<sup>45</sup> Jeff Immelt, GE chairman & CEO, emphasized that the Smart meters project will accelerate renewable energy adoption, drive efficiency, and thereby create green jobs.<sup>46</sup>

**Washington D.C. – Low Impact Development and Urban Revitalization:** The Washington D.C.-based non-profit Greenworks runs a group of nonprofit businesses to train and employ local youth by providing job training in the urban forestry, nursery, and landscaping industries. The organization has partnered with the District of Columbia Department of the Environment to provide a pilot subsidy to develop green roofs throughout the City. Greenworks also has developed programs to initiate community greening projects and offer low impact development installation services such as rain gardens and natural drainage systems for local businesses.<sup>47</sup>

## Transportation Policy and Infrastructure

Automobile transportation is a major consumer of fossil fuels and nationally responsible for an estimated 23 percent of energy-related greenhouse gas emissions, with the fastest-rising carbon emissions of any economic sector.<sup>48</sup> A modal shift away from single occupancy vehicles and toward rail and other public transport can generate considerable net employment gains, while reducing energy use, GHG emissions and improving air quality.

According to the U.S. 2005 Census, only 4.7 percent of Americans use public transportation to commute to work.<sup>49</sup> As of 2007, automobile travel accounted for 99 percent of transportation spending.<sup>50</sup> A strategic investment policy to build and rebuild rail networks, integrating high-speed inter-city lines with regional and local lines would offer a substantial expansion in green jobs. Investment in public transit and alternative transportation infrastructure—including light rail tracks, bus lanes, transit stations, and bike paths, among others—creates construction and maintenance jobs. The Washington-based group Environment America claims that new spending on mass transit and high-speed rail projects can sustain 388,120 jobs.<sup>51</sup> The Surface Transportation Policy Project also points to a recent study by Cambridge Systemat-

The Washington-based group Environment America claims that new spending on mass transit and high-speed rail projects can sustain 388,120 jobs<sup>51</sup>. The Surface Transportation Policy Project also points to a recent study by Cambridge Systematics that 314 jobs and a \$30 million gain in sales for businesses are created for each \$10 million invested in transit capital funding, and over 570 jobs are created for each \$10 million in the short run.<sup>52</sup>

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Local governments can encourage green job creation in this sector by both creating policies to encourage and facilitate the use of existing public transit systems and make alternative transportation choices as well as expanding these systems. Governments can consider incentives that encourage mass transit use, such as park and rides, ride free zones, and altering parking rates. In addition, policies to plan and build bicycle and pedestrian infrastructure programs can also encourage alternative modes of travel.

#### **Best Practices:**

**Portland, OR - TriMet Transit System:** The Portland Metro area's system-wide examination of a regional high capacity transit system was completed in 1982 and resulted in nearly 90 miles of light rail transit, commuter rail and streetcar being built and/or planned for construction by 2016. Today, ridership of the existing regional high capacity transit system has exceeded expectations: trips on transit in the Portland region replace more than 205,000 car trips daily; high capacity transit carries approximately a quarter of afternoon rush-hour commuters; and trips on transit in the Portland region eliminate more than four tons of smog producing pollutants and more than 540 tons of greenhouse gas emissions daily. This transit system has also helped to leverage more than \$6 billion of development near centers, corridors and station areas. Furthermore, the regional transit system has been shown to create jobs through construction and long-term development, including more than 50 new businesses that opened along the most recent line, Interstate MAX, since construction.<sup>53</sup>

**Snohomish County, WA – Biodiesel Production:** The County is planning to produce enough biodiesel to eventually fuel its entire fleet of vehicles. The government is currently developing a system to use canola grown by local farmers and process it in machinery powered by methane gas captured from an old landfill. This production is intended to create jobs in the region and create a stable, reliable source of energy.<sup>54</sup>

### **Waste Management Policy and Incentives**

Recycling is an important component to reducing energy usage and pollution. The re-use, repair and redistribution of collected materials can also generate tens of thousands of high quality jobs with diverse skills requirements and earning potentials.<sup>55</sup> Furthermore, this industry is closely associated with and strongly influenced by municipal policies and operations.

Policies that keep resource recovery local will not only avoid the ethical dilemmas of shipping waste overseas and to other state, but will also generate added value to the local economy. The Materials for the Future Foundation notes that recycling industries help address urban unemployment because businesses that use recycled materials have an incentive to locate in urban areas near both their material supply and labor supply.<sup>56</sup> Reuse and recycling operations are typically labor-intensive and are an excellent source of entry level positions. Recycling creates more jobs than conventional waste disposal methods. A local economy based upon materials reuse can also promote the creation of a wide variety of occupations, including engineers, chemists, material specialists, construction workers, and operators.<sup>57</sup>

As cities and states pass policies to reduce waste going to landfills and incinerators, green jobs are increasing exponentially. Throughout the United States over 56,000 recycling facilities, both private and public, are creating more than 1.1 million jobs.<sup>58</sup> Recycling is now a major industrial sector of the US economy, comparable to automobile manufacturing and mining industries and surpassing waste management.

#### **Best Practices**

**Oakland/Berkeley, CA – Recycling:** California's 1989 Integrated Waste Management Act required cities to divert 50 percent of their solid waste from landfills by 2000 and generated enormous activity in the recovered materials sector. Millions of dollars were invested in the businesses needed to collect and process millions of tons of recovered materials. Existing businesses expanded, new businesses were formed, and out-of-state business relocated to California in response to the market demand for their services.

The state-created Recycling Market Development Zone (RMDZ) provides incentives to businesses located within the zone that manufacture products using materials from the waste stream. Local government incentives for these zones may include relaxed building codes and zoning laws, streamlined local permit processes, and reduced taxes and licensing. Local incentives vary from jurisdiction to jurisdiction. In addition to loans, California's Integrated Waste Management Board offers free product marketing through the RecycleStore. The zones cover roughly 71,790 square miles



of California from the Oregon border to San Diego.<sup>59</sup> Since starting in 1993, the Oakland/Berkeley Zone generated \$8.2 million in investment for recycling, creating 155 new jobs and diverting 100,000 tons of new material from landfills.<sup>60</sup>

**Chattanooga, TN – Community Development Recycling Center:** In 1988 the Orange Grove Center, which offers educational programs to developmentally disabled citizens, worked with City to develop a community recycling program. Since establishment, the Center has expanded numerous times to include a series of convenience centers for recycling collection. Today, the Recycling Center accepts recyclables picked up from Chattanooga’s curbside program, area convenience centers, businesses and schools in the tri-state area. The Recycling Center processes more than 1.5 million pounds of materials monthly in order to keep as much waste from local landfills as possible.<sup>61</sup> Over 100 developmentally disabled citizens and academically at-risk high school students are employed at the Recycling Center, which is working to equip its employees with the vocational skills needed to seek future employment in the community. In 2007 the program’s success resulted in 12 additional jobs being created and increased the diversion rate of 43.2 percent for curbside pick-up from the landfill to the recycling center.<sup>62</sup>

**Buffalo, NY – Construction Debris Recycling:** Buffalo ReUse is a not-for-profit organization established in 2006 in response to the City’s approval of “deconstruction” as an alternative to the demolition of abandoned housing stock. There are an estimated 23,000 vacant structures in Buffalo. Though the City once housed a half million people, it now holds just over half that number of residents. In partnership with the City, Buffalo ReUse has deconstructed at least 12 structures, salvaged more than 25 additional abandoned structures, and initiated part-time sales of used materials. The group employs nine full time staff and three part time staff, which includes a full-time deconstruction crew. The program hopes to provide a model for other cities grappling with similar issues.<sup>63</sup>

## Resources and Funding Opportunities

Resources are available at all levels of government to support the creation of local green jobs initiatives. This section highlights the state, federal and non-profit resources that are available to local governments who want to research green jobs best practices more in-depth, find out about workforce training opportunities as well as grant and funding opportunities.

### Federal and State Resources and Funding

There are myriad federal financial incentives that promote renewable energy and energy efficiency. The recent passage of the 2009 American Recovery and Reinvestment Act (ARRA) provided significant new resources for green enterprises and green jobs.

- **User’s Guide to the ARRA** is a publication of Green For All and PolicyLink to assist local and state advocates, nonprofit organizations, public agencies, and policymakers in how to best translate recovery dollars into funding for green jobs. ([www.cepr.net/index.php/publications/reports/bringing-home-the-green-recovery:-a-user-s-guide-to-the-2009-american-recovery-and-reinvestment-act/](http://www.cepr.net/index.php/publications/reports/bringing-home-the-green-recovery:-a-user-s-guide-to-the-2009-american-recovery-and-reinvestment-act/))
- **Government grant and loan opportunities** available through the ARRA are available at: [www.recovery.gov/?q=content/opportunities](http://www.recovery.gov/?q=content/opportunities)
- **The Database of State Incentives for Renewable Energy (DSIRE)** [www.dsire.org](http://www.dsire.org) ([www.dsireusa.org/library/includes/genericfederal.cfm?currentpageid=1&search=federal&state=US&RE=1&EE=1](http://www.dsireusa.org/library/includes/genericfederal.cfm?currentpageid=1&search=federal&state=US&RE=1&EE=1)) provides a fast and convenient method for accessing information about renewable energy and energy efficiency incentives and regulatory policies administered by federal and state agencies, utilities, and local organizations. State by state, this website focuses on renewable energy and energy efficiency incentives designed primarily for residents, businesses, and other end-users rather than funding opportunities for research and development.
- **Americangreenjobs.net.** This is a portal for reporting on government, business, academic, and nonprofit projects to identify and develop of green jobs and the preparation and training of workers needed to support them. Supported by EPA and the Department of Labor, this web site will serve as the central hub for information dissemination and collaboration among individuals and organizations interested in all aspects of green job development and support.

As cities and states pass policies to reduce waste going to landfills and incinerators, green jobs are increasing exponentially. Throughout the United States over 56,000 recycling facilities, both private and public, are creating more than 1.1 million jobs<sup>58</sup> Recycling is now a major industrial sector of the US economy, comparable to automobile manufacturing and mining industries and surpassing waste management.

## Nonprofit Organizations Supporting Green Jobs Development

- ICLEI-Local Governments for Sustainability USA – [www.icleiusa.org](http://www.icleiusa.org)
  - Energy Office Initiative: Through a variety of offerings ICLEI will be offering information on how to design and develop a self-financing energy office and complementary energy programs.
  - Clean Energy Toolkit: This resource provides guidance on how municipalities can finance, purchase, install, and promote clean energy.
  - Stimulus funding updates and how to's: ICLEI's website resources can help you prepare your funding applications and strategies, implement eligible programs, and report your progress, especially in regards to the Energy Efficiency and Conservation Block Grant (EECBG) Program. [www.icleiusa.org/stimulusfunding](http://www.icleiusa.org/stimulusfunding)
- Apollo Alliance – [www.apolloalliance.org](http://www.apolloalliance.org)
- The Blue Green Alliance – [www.bluegreenalliance.org](http://www.bluegreenalliance.org)
- Green for All – [www.greenforall.org](http://www.greenforall.org)
- Green Jobs for America - <http://www.sierraclub.org/greenjobs/>

## Green Jobs Reports and Articles

### Reports

#### **Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World**

**Citation:** Michael Renner, Sean Sweeney, Jill Kubit “Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World,” commissioned and funded by the United Nations Environment Programme (UNEP), produced by the Worldwatch Institute, with technical assistance from the Cornell University Global Labour Institute. September 2008. (Accessed May 1st, 2009)

**Link:** [www.unep.org/labour\\_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf](http://www.unep.org/labour_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf)

**Intended Audience:** International

**Summary:** Defines Green Job and discusses examples of green policies and business practices, opportunities thereof, and potential for innovation. The report also investigates the employment impacts of various potential green industries such as the alternative energy industry, transportation, extractive basic industries, food and agriculture, and forestry.

#### **Bringing Home the Green Recovery: A User's Guide to the 2009 American Recovery and Reinvestment Act**

**Citation:** Radhika Fox, Jason Walsh and Shawn Fremstad. 2009. Bringing Home the Green Recovery: A User's Guide to the 2009 American Recovery and Reinvestment Act. Green For All and PolicyLink.

**Link:** [www.cepr.net/index.php/publications/reports/bringing-home-the-green-recovery:-a-user-s-guide-to-the-2009-american-recovery-and-reinvestment-act/](http://www.cepr.net/index.php/publications/reports/bringing-home-the-green-recovery:-a-user-s-guide-to-the-2009-american-recovery-and-reinvestment-act/)

**Intended Audience:** local and state leaders

**Summary:** summarizes what local and state leaders focused on inclusive green job creation should know about the Recovery Act.

#### **Worldwatch Report 177 – Green Jobs: Working for People and the Environment**

**Authors:** Michael Renner, Sean Sweeney, and Jill Kubit.

**Link:** [www.worldwatch.org/node/5927](http://www.worldwatch.org/node/5927)

**Intended Audience:** International Policy Advocates and the public at large

**Summary:** Status report of five potential green economic sectors with a global perspective.

#### **Current and Potential Green Jobs in the U.S. Economy**

**Citation:** Current and Potential Green Jobs in the U.S. Economy, prepared by Global Insight for the United States Conference of Mayors, October 2008

**Link:** [www.usmayors.org/pressreleases/uploads/GreenJobsReport.pdf](http://www.usmayors.org/pressreleases/uploads/GreenJobsReport.pdf)

**Intended Audience:** Local Government Leaders, both elected and staff

**Summary:** This report presents research on current Green Jobs and related trends, including a current count of Green Jobs in the U.S. economy, their distribution across metropolitan areas, and sectors of potential future Green Job growth, as well as forecasts of potential Green Job growth under various scenarios.

USA

## **Job Opportunities for the Green Economy: a state-by-state picture of occupations that gain from green investments**

**Citation:** Robert Pollin & Jeannette Wicks-Lim. Job Opportunities for the Green Economy: a state-by-state picture of occupations that gain from green investments. Political Economy Research Institute University of Massachusetts, Amherst. June 2008

**Link:** [www.bluegreenalliance.org/atf/cf/%7B3637E5F0-D0EA-46E7-BB32-74D973EFF334%7D/NRDC\\_report\\_May28.pdf](http://www.bluegreenalliance.org/atf/cf/%7B3637E5F0-D0EA-46E7-BB32-74D973EFF334%7D/NRDC_report_May28.pdf)

**Intended Audience:** Local Government Leaders, both elected and staff

**Summary:** This report provides a snapshot of some of the key industries and occupations that will experience increasing growth through green investments

## **High Road or low Road: Job Quality in the New Green Economy**

**Citation:** A report by Good Jobs First - Lead author: Philip Mattera - Contributors: Alec Dubro, Yomas Gradel and Rachel Yompsom; Kate Gordon and Elena Foshay of the Apollo Alliance. February 03, 2009

**Link:** [www.goodjobsfirst.org/pdf/gjfgreenjobsrpt.pdf](http://www.goodjobsfirst.org/pdf/gjfgreenjobsrpt.pdf)

**Intended Audience:** Local Government Leaders, both elected and staff, policy advocates

**Summary:** This report discusses the significant opportunities and challenges to achieving the dream of good green jobs. The report notes that existing workplaces in several environment-friendly sectors of the economy shows a wide variation in labor conditions. Through multiple case studies, the authors argue for more focus on the quality of green jobs that are being created.

## **Web Publications**

### **Environmental Defense Fund: Less Carbon More, Jobs - Case Studies Page**

**Link:** [www.edf.org/page.cfm?tagID=35947](http://www.edf.org/page.cfm?tagID=35947)

**Intended Audience:** Public at large

**Summary:** Links to 15 in-depth case studies and profiles of companies engaged in green businesses such as solar power, advanced batteries and energy storage components and wind turbines.

### **Manufacturing Climate Solutions**

**Link:** [www.cggc.duke.edu/environment/climatesolutions/](http://www.cggc.duke.edu/environment/climatesolutions/)

**Intended Audience:** Public at large and technically-oriented audiences

**Summary:** Manufacturing Climate Solutions presents new research linking U.S. jobs with selected low-carbon technologies that can help combat global warming. In the series, we ask, "In a new global economy increasingly affected by the threat of climate change, what are the U.S. job opportunities in technologies that can reduce carbon emissions?"

### **Where are the Green Jobs?**

**Link:** [solveclimate.com/blog/20090407/where-are-green-jobs](http://solveclimate.com/blog/20090407/where-are-green-jobs)

**Intended Audience:** Public at large and policy advocates

**Summary:** A map of green employers around the country.

USA

## Endnotes

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