

# Pennsylvania

## Summary and Analysis

According to the PEW Center study (2009), Pennsylvania ranked third in the country in clean-energy jobs, after the more populous states of California and Texas. Governor Rendell and the legislature have mobilized a significant amount of state and federal funding to support green economy development on the supply side, and they have also established strong demand-side policies. Every clean energy sector examined by this study showed some activity, and most had large grant and loan support from the commonwealth. Any glowing assessment of Pennsylvania's aggressive promotion of its green goals must be tempered, however, by two significant obstacles particular to this case. The coal industry still holds significant political influence in the commonwealth and has used this to maneuver several rather un-clean generation options onto the portfolio standard, most notably waste coal combustion. While this compromise may have been necessary to institute any kind of renewable portfolio standard, some have criticized it as too steep a cost for the benefit. Pennsylvania also has a complicated landscape of regional and departmental divides and overlaps that makes standardized practice, evaluation, and statewide coordination difficult. Despite these areas of concern, we have found the following policies to be of exemplary impact:

- Pennsylvania's Alternative Energy Investment Fund, supplied by a statewide rate charge on electricity, has spent \$650 million in virtually every area of alternative energy production and research, and it has attracted billions in federal funds and private investment.
- The industry partnerships for job training, including green jobs training, provide a model for collaboration among training organizations, industry, and government.
- The Green Building Alliance provides a model for initiating a building materials manufacturing cluster.
- Philadelphia's award-winning Greenworks plan is currently being revised to use new green jobs data to improve its goals and strategies.
- Philadelphia also provides manuals to support building owners who are greening their buildings.
- Philadelphia has an active sustainable business association that has led green jobs efforts and also served as a founding network of the national association, the Business Alliance for Local Living Economies.

## General Background Policy

***Energy Goals.*** Pennsylvania established a two-tiered Alternative Energy Portfolio Standard in 2004 (SB 1030), which was amended and expanded in 2007 (HB 1203). The first tier includes solar thermal and photovoltaic energy, wind energy, “low-impact” hydroelectric, geothermal energy, biomass, biologically-derived and mine-captured methane, non-combusted solid waste energy, and fuel cells powered by these sources, and the second is composed of waste coal energy, fuel cells charged from any source, and emission offset credits from waste heat capture, efficiency improvements, and carbon sequestration. By 2021, 8 percent of in-state production would have to come from the first tier (with an additional requirement of 0.5 percent solar generation) and 10 percent from the second tier. A 2008 estimate from PennFuture claims that by 2013 the first tier requirement will be approximately 2,441 megawatts of electricity and jump to 4,134 megawatts by 2018, with 70 percent of this projected to be met with wind generation (PennFuture 2010b).

This legislation was originally opposed by ActionPA, Citizen Power, the Pennsylvania Environmental Network, the Sierra Club’s Pennsylvania Chapter, and many other organizations for several reasons, including its weak enforcement language, its inclusion of relatively non-clean-energy sources in the first tier, and the inclusion of waste coal, among other controversial energy sources, into the second tier. Waste coal, mineral refuse from coal mining that contains roughly 60 percent of the thermal energy value and over three times the mass of mercury, chromium, and lead than bituminous coal, is abundant in Pennsylvania, which also operates the most waste coal power plants of any state by far. Its inclusion in the AEPS is evidence of the political influence of the coal industry in Pennsylvania. Governor Rendell and PennFuture, one of the state’s largest environmental advocacy groups, have been criticized for supporting such a capitulation, even if it allowed the passage of beneficial parts of this legislation. Proposed legislation (HB 2405) would not affect the inclusion of these controversial components of the AEPS, but would raise the solar requirement to 3 percent and the overall first tier requirement to 15 percent (ActionPA 2005).

In 2008 Act 129 set a goal of reducing Pennsylvania’s total electricity consumption to 3 percent below 2009 levels by 2013 and cutting 4.5 percent from peak demand consumption within the same time parameters (Commonwealth of Pennsylvania 2010b, 2010h). The state government itself accounted for 30 percent of its electric load with renewable sources in 2008, and is aiming to reach 50 percent by mid-2010. (Commonwealth of Pennsylvania 2008a).

***Public Benefits Fund.*** In 2008 the Alternative Energy Investment Act led to the establishment of the \$650 million Alternative Energy Investment Fund, supported by a \$0.0005 per kilowatt-hour rate charge on electricity statewide. This fund targeted over \$180 million for solar energy (\$100 million for the Sunshine Solar Program and \$80 million to be distributed by the Commonwealth Financing Authority), \$190 million for non-solar alternative energy projects (\$25 million for wind and geothermal projects and \$165 million for loans and grants to small businesses and local governments), \$100 million for energy conservation for building owners, and \$50 million in tax credits to recruit investors in alternative energy projects (Commonwealth of Pennsylvania 2009a, 2010b, 2010h). The programs are jointly administered by the Department of Community and Economic Development, the Department of Environmental Protection, and

the Commonwealth Financing Authority, and many of them have grant and loan amount criteria that are based in part on job creation estimates (DSIRE 2010).

Total investment for renewable energy and energy efficiency from Alternative Energy Investment Fund and ARRA funds for 2010, 2011, and 2012 was estimated to be \$1.6 billion. However, when one includes policy-driven private sector investment and other investments in environmentally-related areas, the figure was estimated to be \$10.1 billion (Commonwealth of Pennsylvania 2010h). This figure, from the Pennsylvania Department of Labor and Industry's 2010 *Green Jobs Report*, includes funding across a variety of different green economy sectors: renewable energy, energy-efficiency, pollution prevention and cleanup, clean transportation, and resource conservation and agriculture. They find further that approximately \$4 billion of this money will be spent to meet the demands of the Alternative Energy Portfolio Standard, and a further \$2 billion to comply with Act 129's energy-efficiency requirements. This level of spending is projected to create 115,000 new green jobs in those sectors, a nearly 33 percent increase over the baseline figure of 350,000 in 2008, with roughly 48,000 of the new jobs falling into the category of energy efficiency (Commonwealth of Pennsylvania 2010h).

Following the beginning of the deregulation of electric generation in Pennsylvania in 1999, four regional sustainable energy funds were created to correspond with the service areas of PECO, PP&L, WPP, and the combined area of Penelec and Met-Ed. A subsequent arrangement created a special fund administered by the Pennsylvania Energy Development Authority to cover Duquesne Light's service area. These funds provide loans to energy efficiency and renewable-energy projects, but each of them has independent criteria for selecting projects and setting loan parameters (PennFuture 2010c).

***Green-Buildings Policy.*** In Executive Order 2004-12, Governor Ed Rendell established the goal of reducing energy consumption in state buildings by 10 percent by 2006. In 2008 an additional order (720.25) increased the reduction by an additional 10 percent (DSIRE 2010). In 2005, an amendment to HB 628 provided incentives to school districts for LEED silver certification for their buildings. In addition to funding available from the Alternative Energy Investment Fund, the commonwealth received ARRA funds of \$253 million for weatherization and \$100 million in Energy Efficiency and Conservation Block Grants for local governments. The ARRA funds will weatherize an estimated 29,700 housing units statewide by 2012, generating an estimated 940 jobs (Commonwealth of Pennsylvania 2009c, 2010h). The Keystone HELP program offers a variety of loans and rebates directly to low- and moderate-income homeowners for weatherization, targeting specific appliances or for whole-house improvements (AFC First 2009). A sum of approximately \$1.5 billion is also being used to improve water and sewer infrastructure, drawing from ARRA funds, the H2O PA program, and the Pennsylvania Infrastructure Investment Authority (Commonwealth of Pennsylvania 2010h).

***Green Jobs Training.*** The commonwealth of Pennsylvania has developed "industry partnerships" programs that have included some green jobs training. Begun in 2005, the commonwealth funded about seventy industry partnerships at a rate of about \$21 million per year. By 2010 there were programs in the energy (five), building (ten), and manufacturing (some green) in operation. The programs bring together local government workforce agencies with businesses in a leading industry in a specified region of the commonwealth. After meeting and

deliberating, plans are established for job training needs based on future trends. In 2010 the budget was cut to about \$8 million, but the programs were well-enough established that local businesses were contributing more than the state government (Herzenberg 2010). It is hard to say how effective the partnerships have been overall, because each region is independently managed. There is probably a range of success and failure, because participants have given a mix of positive and negative reviews, some praising the effectiveness and relevance of the training while others criticizing aspects of the management (Keystone Research Center and Pennsylvania Economy League State Office 2009).

The Department of Labor and Industry received \$6 million in ARRA funding in 2010 for green jobs training, and it used the award to create the Pennsylvania Center for Green Careers. This center had a goal of using this funding to issue over 1000 certifications in eighty-one target occupations, and over 300 additional workers trained in basic support skills for green enterprises. This project is also divided regionally, with six teams responsible for their own training strategies (Commonwealth of Pennsylvania 2010e, 2010h).

## **Clean-Energy Industries**

*General Background.* A 2004 study by Black & Veatch pointed out that the Union of Concerned Scientists had issued a grade of D to Pennsylvania in the category of support for renewable energy, prior to the institution of the renewable portfolio standards. That same year Governor Rendell formed the Economic Development Committee to explore green job growth, and a year later the committee announced the Keystone Principles, which guided the commonwealth's agencies toward more sustainable economic development. The treasurer's office then announced the Keystone Green Investment Strategy, which included the Keystone Green Fund. Beginning in 2006, the Fund invested approximately \$40 million in clean tech industries, including \$15 million in Pennsylvania-based companies, using the money to leverage private sector investment (Commonwealth of Pennsylvania 2006, Young 2009).

In 2004 Governor Rendell issued an executive order (2004-5) to revitalize the Pennsylvania Energy Development Authority (2010), which had been dormant since 1995. The authority funded "clean, advanced energy" projects and helped to bring clean-energy companies to the state. Between 2005 and 2009 the authority funded about \$68 million with about \$1 billion in matching funds, financing 143 projects. The funding level in 2009 was about \$10 million, with an additional \$10 million from the ARRA and matches that put the total to over \$140 million. This was claimed to result in the creation of 430 permanent green jobs. There is \$16 million available for PEDDA in 2010, and the authority is aiming to fund thirty projects, five more than the previous round (Commonwealth of Pennsylvania 2009b, 2010f). It should be noted that PEDDA's selection criteria also includes projects that are aimed at developing waste coal, coal mine methane, and landfill gas power generation, in correspondence with the alternative portfolio standard requirements (DSIRE 2010).

The 2008 Alternative Energy Investment Act also included \$40 million (over several years) for Ben Franklin Technology Partners to administer the Alternative Energy Development Program to fund clean-energy start-up companies. Ben Franklin Technology Partners is the

commonwealth's program for investment in high-technology business development. The program is based on four, independent, regional nonprofit organizations across the commonwealth that provide start-up funds, capital development assistance, and technology transfer assistance for universities.

The commonwealth also supported a small-grant program for Keystone Innovation Zones (KIZs), which facilitate technology transfer and local relationships among universities, businesses, government agencies, and entrepreneurial support services, as well as having priority for all Department of Community and Economic Development grant applications. Some of the innovation zones have attracted clean-energy developers, such as Acutec Wind and Ernst Biomass at the Northwest PA KIZ, Aset Solar and Biomass Fuel Stocks at the Greater Susquehanna KIZ, and Gamesa Wind at the Greater Johnstown KIZ (Allegheny College 2010, Greater Johnstown KIZ 2010, Greater Susquehanna KIZ 2010). The zones were established with the intent of being independent of state funding after three years; since 2007 was the last year applications were accepted, these clusters will be on their own after 2010 (Commonwealth of Pennsylvania 2010c).

The Department of Community and Economic Development was also furnished with \$100 million in tobacco settlement money to establish the Life Sciences Greenhouse Initiative, founding regional biotechnology research clusters in western, central, and eastern Pennsylvania. The greenhouses have the capacity to support bioenergy research, but as of now they are focused almost entirely on genomics and pharmaceuticals (Commonwealth of Pennsylvania 2010d).

The past two years have seen significant funding cutbacks for the Department of Community and Economic Development, and according to one source the combined budget for the Ben Franklin centers, Keystone Innovation Zones, and Life Sciences Greenhouses dropped from a previous level of roughly \$89 million per year to only \$15 million in 2010. Part of the cut in the budget can be accounted for by the scheduled phase-out of the Keystone Innovation program, but given that its award cap was set at \$250,000 per year and only twenty-nine zones were established in the history of the program, its budget represents a relatively minor component of the total spending and its contraction. There are significant concerns over a lack of state-level coordination for all of these programs, and even as they are rolled back, no strategy is in place to succeed their function in economic development or institute a comprehensive program targeted specifically at cultivating green innovation zones.

**Biofuels.** In 2008 the commonwealth approved the Biofuel Development and In-State Production Act (HB 1202), which set a renewable fuel standard for the state and established incentives for biofuel production. A subsidy of 75¢ per gallon is provided for biofuel producers with a cap of \$1.9 million per year, amounting to a rough payout of \$4.7 million per year (Commonwealth of Pennsylvania 2010a, 2010b). The same legislation set biofuel blending requirements for transportation gasoline and diesel produced in-state: diesel must be blended at B2 (2 percent) when 40 million gallons are produced in-state, B5 at the 100 million gallon mark, B10 at the 200 million gallon mark, and B20 at the 400 million gallon mark. Likewise, gasoline must also be blended at cellulosic E10 at the 350 million gallon mark.

Pennsylvania has also worked with neighboring states to develop a next generation strategy and roadmap for cellulosic ethanol (Chesapeake Bay Commission 2008), and in 2008 the commonwealth attracted the company Coskata, which opened a demonstration plant for cellulosic ethanol. Hero BX operates a \$54 million biodiesel plant in Erie that is capable of producing 45 million gallons of biodiesel per year (Hero BX 2009). As of 2010 the commonwealth was investing about \$8-13 million per year through the Alternative Fuels Investment Grant Program, Pennsylvania Energy Harvest, and other programs, although Energy Harvest grants are now handled as a sub-program of the Pennsylvania Energy Development Authority (Commonwealth of Pennsylvania 2008b, 2010h).

Although the commonwealth has both supply- and demand-side support in its policies, it lacks any more focused efforts to cultivate biofuel research or production. There is considerable potential with the Life Sciences Greenhouses and existing biotechnology industry to develop next-generation biofuels companies. However, the commonwealth does not have the focused research component at public and private universities that is found for biofuels research in California, Iowa, Minnesota, and Wisconsin.

***Smart-Grid and Building Technologies.*** Pennsylvania has made some recent strides toward implementation of smart-grid technology, but the culmination of these moves is not expected anytime soon. Act 129 mandates that electricity distributors in Pennsylvania supply all new construction projects with smart meters immediately and provide them to all of their customers by 2023. In 2009 PECO received \$200 million from the Department of Energy toward its \$650 million plan to complete full smart-meter provision for its entire service area within ten years. This covers approximately 1.6 million customers and is estimated to “bring the equivalent of about 4,300 jobs” to southeast Pennsylvania (Commonwealth of Pennsylvania 2010b, PECO 2009a, 2009b).

As of 2010, Pennsylvania had 187 LEED-certified buildings, good enough to rank fifth in the country. As with other program areas, supporting organizations for the green building industry are divided regionally between western, central, and southeastern Pennsylvania. The Pennsylvania Green Growth Partnership, supported in part by the Ben Franklin Technology Partners, links the Green Building Alliance of Western Pennsylvania with the Engineering and Design Institute of Philadelphia University. The Engineering and Design Institute offers a post-professional Master’s Degree in Sustainable Design and provides training and product design consulting to private firms (Philadelphia University 2010). The Green Building Alliance of Western Pennsylvania has offered grants to green-building manufacturers, maintains a database for analyzing sustainable and high performance buildings (DASH), and organizes professional education and networking efforts. It has also launched the Green Building Products Initiative, which has networked green building materials manufacturers in the state, assisted in certifying new products as green, and produced several reports on the industry (Green Building Alliance 2008, Fitzgerald 2010, Flora 2006). The Green Building Association of Central Pennsylvania and the Delaware Valley Green Building Council provide similar networking and educational services in their regions (Delaware Valley Green Building Council 2009, Green Building Association of Central Pennsylvania 2007).

The Green Building Alliance provides a model of what can be done to strengthen manufacturing in this industry. Few other states or cities have selected the green-building manufacturing industry for further development, with the exception of Oregon and to some degree Minnesota, as well as a program in New York City. As a result, the Green Building Alliance warrants attention. It also warrants comparison with Oregon's efforts in this area, which have linked the industry to university-based research.

**Solar.** Solar power is the only electric generation method with its own specific requirement (0.5 percent by 2021) in the Alternative Energy Portfolio Standard. The Department of Community and Economic Development accepts grant applications for solar projects with over 200 kilowatts of generation capacity, while the Commonwealth Financing Authority has an \$80 million fund tagged for solar projects. Of that figure, \$45 million has already been distributed to thirty-three projects with a total generation capacity of 29.7 megawatts. The Department of Environmental Protection received separate U.S. Department of Energy funding for its Green Energy Works! program, \$7 million of which is set aside for solar projects that have a capacity of over 500-kilowatt generation. Small-scale generation on residential or commercial property is supported by the Department of Environmental Protection's Sunshine Solar Rebate program. Out of a \$100 million fund, 1000 rebates have been given, supporting 10 megawatts of generation capacity (Commonwealth of Pennsylvania 2010g, DSIRE 2010, Philadelphia Solar Energy Association 2010).

Pennsylvania has a chapter in the Mid-Atlantic Solar Energy Industries Association, and the commonwealth has attracted major manufacturing facilities from AE Polysilicon and Heliosphera. There has been no effort, however, to organize a solar innovation cluster of any sort. The commonwealth remains an attractive potential home for either solar power manufacturing or generation, but any growth in this sector appears piecemeal and reliant primarily on demand-side policies. Again, the crucial piece that connects university-based research to technology transfer, innovation, and entrepreneurship is missing.

**Transportation and Energy Storage.** Pennsylvania has only minimal involvement in fuel-cell development and no programs supporting clean transportation. Pennsylvania State University's H2E Center claims to have over 100 researchers working on all aspects of hydrogen production and incorporation into fuel cells, and the University of Pittsburgh's Center for Energy has its own hydrogen focus. The U.S. Department of Defense operates its Fuel Cell Test and Evaluation Center in Johnstown, and fuel cell development and/or manufacture is being conducted in-state by Franklin Advanced Materials, PPL, ZeTek, and Siemens. These instances demonstrate potential, but they remain isolated. There is no active public or private organization trying to advance these sectors of the green economy in Pennsylvania.

**Wind.** The commonwealth has recruited the wind manufacturers Gamesa, GE Wind, Omniwind, and Iberdrola, and in 2008 it developed the Wind Energy Supply Chain Initiative to identify potential suppliers in the commonwealth and supply chain needs for the large manufacturers. Pennsylvania also offers a full property tax rebate for wind power systems, but the lack of a state-level guideline for assessing their value has proven problematic especially for residential-scale distributed generation (DSIRE 2010). The Regional Economic Development District Initiative in south-central Pennsylvania has also focused on wind energy and

manufacturing (Sterzinger and Svrcek 2004). Pennsylvania State University claims to have relevant expertise for wind power research and development, citing its strong program in meteorology and the ability to convert the expertise in naval technology of its Applied Research Laboratory to use in turbine design. The university was also selected to participate in the Department of Energy's Wind for Schools education outreach program (Pennsylvania State University 2010). However, these developments remain incipient, and the commonwealth has not developed an innovation cluster that connects the research capacity of the universities with the industry. Ultimately, Pennsylvania is ranked among states as fifteenth in existing wind power capacity with a maximum output of 748 megawatts, and twenty-second in potential capacity with no wind power installations currently under construction (American Wind Energy Association 2010).

## Philadelphia

*Sustainability Plans.* Philadelphia is the country's fifth largest city, but its former industrial strengths have been lost, and its principal employers are in the "eds and meds" industries of the life sciences, health care, and education. In 2009 Philadelphia Mayor Michael Nutter announced Greenworks Philadelphia, his plan to make Philadelphia the "number one green city" in the country (City of Philadelphia 2009c). The plan has 169 initiatives grouped under five goals: energy, environment, equity, economy and engagement. Some of the goals are ambitious: insulating 15 percent of the homes in the city and generating 20 percent of electricity in the city from solar, biogas, and other "alternative energy sources." Although there are many other contenders for the crown of "number one green city," the energy-efficiency measures were likely to generate jobs, at least enough for the hundreds of graduates planned for the green jobs programs. The plan shows much more attention to green jobs development, weatherization, and building efficiency programs than some of the first-generation climate action plans. The plan follows that of New York by having a goal of reducing the city government's energy consumption 30 percent by 2015, and it also has goals of reducing citywide building energy consumption by 10 percent. The Greenworks plan won the 2010 Siemens Sustainable Community Award in the large community category (Mastrull 2010).

The Greenworks plan explicitly draws its definition of a green job from the Apollo Alliance: "a well-paid, career-track opportunity that contributes directly to preserving or enhancing the environment." There were approximately 14,000 of these jobs in Philadelphia in 2006 according to the United States Conference of Mayors, and they projected that this number would swell to 114,000 by 2038. The immediate goal of the initial plan was doubling the 2006 number, and the plan specifically mentioned the need to introduce both high- and low-skill green jobs. An early 2010 progress report claimed several successes, particularly in the area of green job training, and shortly thereafter the Mayor's Office of Sustainability began working on a revision of the plan. The Philadelphia Workforce Investment Board has observed that projections about the job creation rate relative to dollars invested have often been over-optimistic, and it is currently collecting new data on green jobs using new definitions to replace the proprietary, pre-recession figures taken from the Conference of Mayors. There is also concern over the number and type of training programs and what proportion of their students are city residents, as there is currently no comprehensive data available to reference. The results of the Workforce Investment

Board's research should allow the new Greenworks goals to be developed some time in late 2010 (Hoffman 2010, Houston 2010).

***Green-Building Initiatives.*** The city's plan has a goal of retrofitting 100,000 low-income homes by 2015 (City of Philadelphia 2009a). The city has a guidebook for renovation of existing city buildings (City of Philadelphia 2004) as well as a weatherization manual for residents (Philadelphia Housing Development Corporation 2006). The Greenworks plan includes tax abatement policy, revolving loan funds, low-interest loans through the Redevelopment Authority, an expansion of the weatherization program, and participation from the city-owned gas utility. In 2009 the city's Weatherization Assistance Program received \$30 million in ARRA funding, \$16 million of which was routed to the Philadelphia Housing Development Corporation, with the remainder going to the Philadelphia Energy Coordinating Agency. In 2008 the WAP was able to weatherize 2000 homes, but with the ARRA funding the number of homes was projected to rise to 4000 in 2009. The spending cap per home was raised from \$2500 to \$6500, and eligibility by household income increased from 150 percent of the federal poverty line to 200 percent (Philadelphia Housing Development Corporation 2009). The Department of Energy's EECBG Retrofit Ramp-up program added an additional \$25 million in 2010 for residential and small business energy efficiency through a five-county region including Philadelphia and its suburbs (City of Philadelphia 2010a). The Greenworks Philadelphia plan also will build on the city's "Solar America City" status by attempting to streamline solar energy installations and establishing more solar energy on city rooftops. The Solar City Partnership, which includes several universities, industry associations, and solar energy companies, plans on achieving 2.3 megawatts of solar generation capacity in the city by 2011 and reaching 57.8 megawatts a decade after that (City of Philadelphia 2010b).

***Green Jobs Initiatives.*** In 2008 the Philadelphia the city council began the process of developing green jobs training programs, and in 2009 the John S. and James L. Knight Foundation gave \$1.1 million to the Energy Coordinating Agency of Philadelphia, which administers federally funded weatherization programs, to train lower-skilled workers for green-collar jobs. In April 2009 Mayor Nutter and the Energy Coordinating Agency welcomed the first class of twenty students to the four-week weatherization training program (City of Philadelphia 2009b). A year later the program opened its new Knight Green Jobs Training Center in an 18,000 square foot warehouse that was renovated to meet LEED Gold standards (Energy Coordinating Agency 2010). The U.S. Department of Labor's Pathways Out of Poverty program has given grants totaling over \$5.28 million to the Community College of Philadelphia, the Metropolitan Career Center, and the Green Jobs Readiness Partnership to set up additional training programs for disadvantaged and low-income workers (City of Philadelphia 2010a). The Knight Foundation also gave the Sustainable Business Network of Greater Philadelphia a \$125,000 planning grant to develop a green corps program, which is still under development (Knight Foundation 2009).

***Green Business Initiatives.*** The city has an incubator for green-tech businesses run by the Philadelphia Industrial Development Corporation in the Philadelphia Navy Yard. The nascent center includes a Keystone Innovation Zone, is the development site of the Center for Distributed Power, and has attracted Greek photovoltaic company Heliosphera to construct a photovoltaic manufacturing plant on the premises. The Heliosphera plant, when complete, will be able to manufacture 160 megawatts of solar panels per year, and it is projected to create 400 jobs in the

area (Richard 2009). The Center for Distributed Power is backed by the Ben Franklin Technology Partners of Southeastern Pennsylvania and Pennsylvania State University. Penn State is also using \$5.5 million in U.S. Department of Energy funding to establish the Mid-Atlantic Clean Energy Applications Center and the Mid-Atlantic Solar Resource and Training Center (Key 2010). The Navy Yard also requires all new buildings to be LEED registered, is home to the first LEED Platinum certified building in the category of multi-tenant office space, and is currently installing its own 1.5 megawatt solar array (Philadelphia Navy Yard 2009).

## **Civil Society Organizations and Policy**

PennFuture is one of the leading environmental advocacy organizations in the commonwealth. In addition to information dissemination and lobbying activities, the organization claims to offer \$2 million per year in free legal services for environmental causes, and their own facilities operate at carbon neutral status (PennFuture 2010a). Citizen Power, based in Pittsburgh, does similar work with a focus on energy issues (Citizen Power 2001).

The Sustainable Business Network of Greater Philadelphia is the city's chief civil society organization focused on developing the green economy. It was established in 2001 and was a founding network of the Business Alliance for Local Living Economies (BALLE). An off-shoot of the Social Venture Network, BALLE supports the independent, small business sector with the goal of building a more just and sustainable local and global economy. With respect to green jobs, the BALLE perspective shifts the economic development priorities away from recruitment and high-tech start-ups to the small business sector, including retail, services, community finance, and food and agriculture. The Sustainable Business Network of Greater Philadelphia (2009) has been very involved in the city's efforts to develop green jobs by hosting various efforts, writing reports, and meeting with city leaders. It is the original sponsor and convener of the city's Green Economy Task Force, a network of businesses and civil society organizations that works to coordinate green job development efforts and circulate information among green collar employers, employees, and program sponsors. The recent surge in public and private funding for green jobs programs in the city and resulting complexity of the situation was the chief impetus for the organization of this task force, and it has answered the call by engaging a diverse ensemble of partners and making stakeholder access a priority.

Philadelphia is home to many other standout or developing organizations that cater to the needs of industries and communities with green interests. The Delaware Valley Green Building Council is an industry partnership that provides networking, LEED training, and other educational services to professionals in and around Philadelphia, as well as collaborating with the Sustainable Business Network and the Pennsylvania Green Growth Partnership (Delaware Valley Green Building Council 2009). Grid Magazine, founded in 2009, is a free monthly publication focused on community sustainability within the city and its suburbs (Grid Magazine 2010). PlanPhilly is another journalistic enterprise operated by the University of Pennsylvania School of Design, engaged in publicizing design-related issues in Philadelphia neighborhoods, including a focus on sustainable development (PlanPhilly 2010).

## Further Reading

Pennsylvania's Department of Community and Economic Development maintains a searchable online database of community initiatives, economic incentives, and grant and loan programs, including those for green businesses ([www.newpa.com](http://www.newpa.com)). PennFuture's website offers tracking of green legislation and court cases as well as policy analysis and advocacy ([www.pennfuture.org](http://www.pennfuture.org)). The Green Building Alliance uses its website to catalogue green building projects in western Pennsylvania, lists connections to information about project funding and certification, publicizes training programs, and links to the gateways of its own Green Building Products Initiative and its directory of participating businesses ([gbapgh.org](http://gbapgh.org)). Philadelphia's Green Economy Task Force connects its stakeholders and disseminates a large amount of green job-related information online as well ([greeneconomytaskforce.com](http://greeneconomytaskforce.com)).

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