



URA

URBAN REDEVELOPMENT
AUTHORITY OF PITTSBURGH

GREEN DEVELOPMENT
RESOURCES FOR
RESIDENTIAL
DEVELOPMENT



Welcome

The Urban Redevelopment Authority of Pittsburgh (URA) is the City of Pittsburgh's economic development agency, committed to creating jobs, expanding the City's tax base, and improving the vitality of businesses and neighborhoods.

We have committed ourselves to foster, encourage, and support sustainable development and green building practices to the maximum extent practical and possible in the City of Pittsburgh. To that end, the URA has adopted a Sustainability and Green Design Policy which includes all aspects of our activities – from day-to-day operations to the creation of large-scale mixed-use developments.

The benefits of green buildings are both broad and specific. For businesses, green buildings can offer economic advantages including lower operating costs, increased productivity, reduced absenteeism, and higher rental and retail sales rates. Green residential developments provide occupants with lower monthly utility bills as well as increased comfort and indoor air quality.

Pittsburgh is recognized as a leader in the construction of green buildings and we believe that the maintenance of this position is advantageous.

On the following pages you will find a compilation of Green Development incentives and resources available to you for completing your project within the City of Pittsburgh. We have tried our best to capture all that is available to you.

Please contact us if we can assist you in moving your project forward.

Sincerely,

A handwritten signature in black ink, appearing to read 'Robert Rubinstein', with a stylized, flowing script.

Robert Rubinstein
Acting Executive Director



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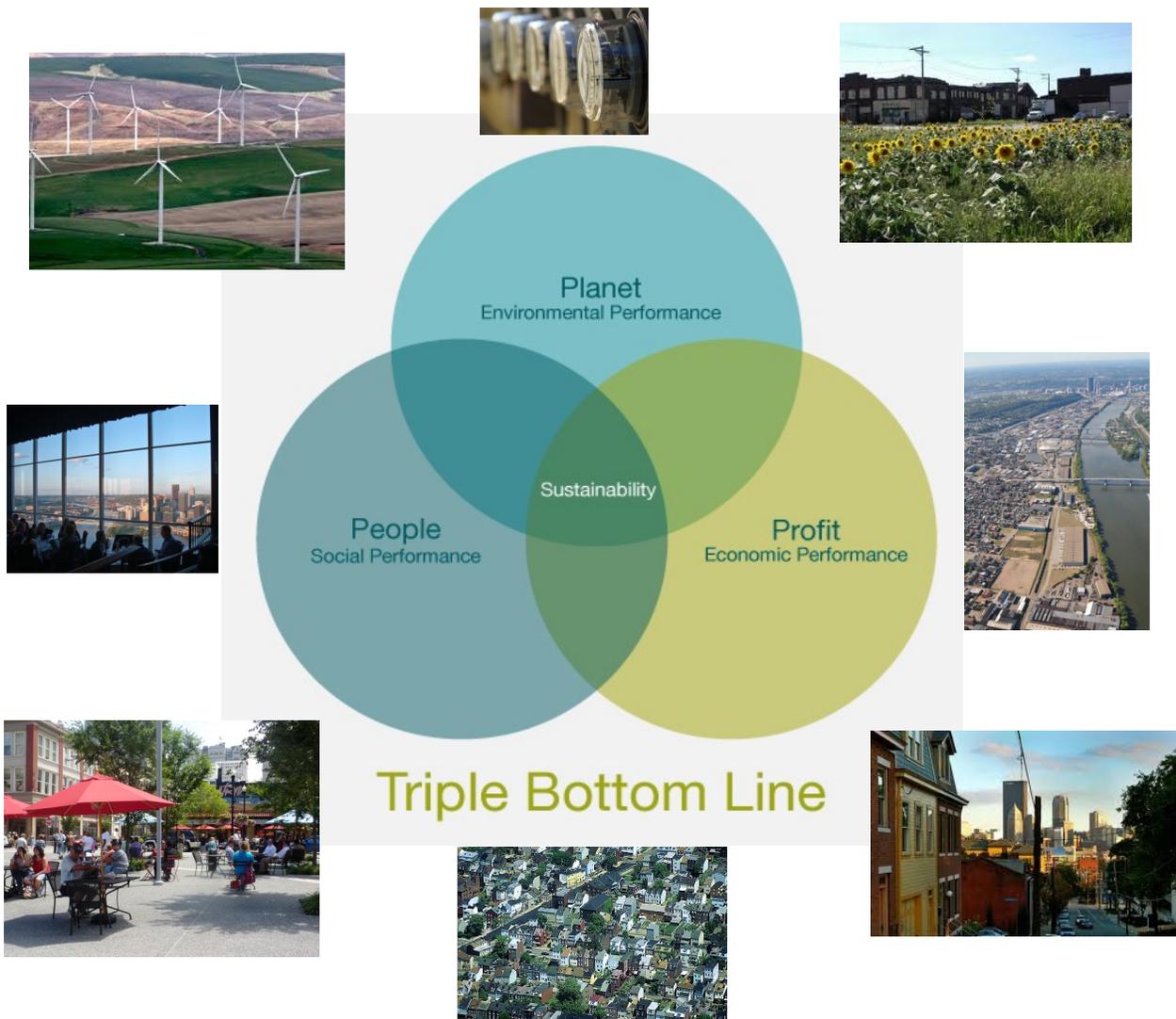
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What is Sustainable Development?

According to the World Business Council on Sustainable Development¹, “**Sustainable development** involves the simultaneous pursuit of economic prosperity, environmental quality and social equity. Companies aiming for sustainability need to perform not against a single, financial bottom line but against the triple bottom line.”

Sustainable urban development is the integration of the environment, economy, and social equity into urban development projects. Finding this balance is essential in developing projects that will be environmentally and socially responsible as well as cost effective. All three of these areas work together to form synergies which support each others' goals. For instance, a healthy and non-polluted environment allows for livability. When people live in a healthy environment they contribute to economic growth. In Green Buildings, an example of the synergies between the 3 E's is the use of Daylighting in a building. Daylighting creates happier and more productive employees and building occupants. The building uses less energy for lighting and cooling which is good for the planet and also saves money.

For more information, please visit: <http://www.wbcds.org>



The Business Case for Sustainable Development

Businesses can benefit by investing in green building through energy savings, increased business, higher property values and rental rates, greater worker productivity, and government incentives. Green buildings address the Triple Bottom Line, balancing social and environmental needs and concerns with your financial bottom line.

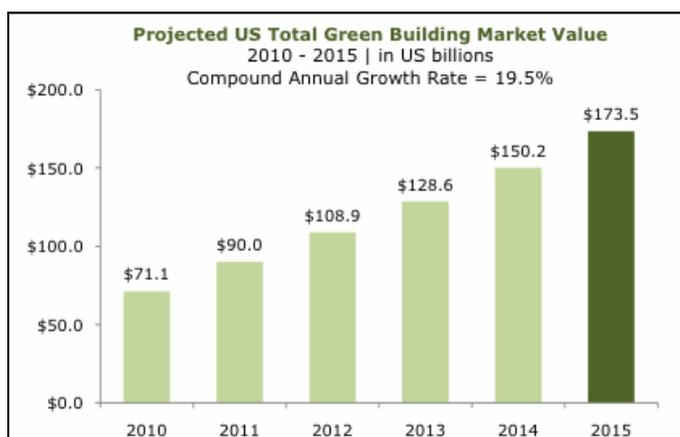
Increased Property Values

Green buildings sell for an average of \$173 more per square foot and command higher occupancy and rental rates compared to conventional buildings (7). LEED rated buildings are seeing an increase in direct rental rates of \$11.33 per square foot when compared to non-LEED certified buildings. This is because people are valuing the health and environmental benefits that come with green buildings. Cost savings from increased



energy and water efficiency and lower maintenance costs are being recognized as consumers are demanding and preferring high performance green buildings.

The recognition of the importance of green buildings is creating momentum in the Green Building Market. By 2015, the Total Green Building Market Value for the United States is projected to be at \$173.5 billion (16).



Source: CoStar Group

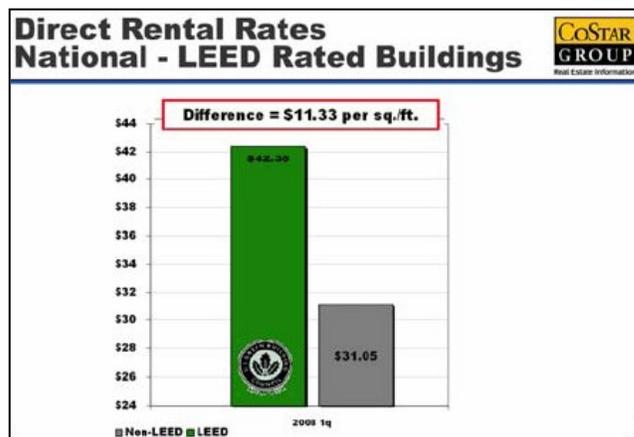
Increased Business

Many businesses have had an increase in sales after incorporating sustainable principles into their businesses. The comfort provided by green buildings



Consol Energy Center

as well as their positive marketing exposure attribute to improved business in retail locations. The use of skylighting and daylighting in a building's design increases sales as shown in a study of chain retail stores in California. Two thirds of the stores had skylighting where as the other third did not. It was proven that the stores with skylighting had between 31 and 49% higher sales as compared to the ones that didn't. In addition to higher sales, the skylit stores also saw benefits of a higher rate of customer loyalty, more relaxed customers, better visibility, more attractive products, and higher employee morale. Adding skylight feature to a building also cuts down electricity bills through the use of daylighting (34).



Source: CoStar Group

The Business Case for Sustainable Development



Greater Worker Productivity

Green buildings have shown to have a positive impact on employee health and have increased worker productivity because of better indoor air quality and improved thermal and lighting comfort (1). Many businesses have seen cost savings due to a reduction in absenteeism and increased productivity because of improved indoor environmental air quality (33).

Government Incentives

With the government acknowledging the growing problem of climate change as well as the benefits of green buildings, there is a growing list of incentives being offered to build green. Some of these include expedited permitting processes, density bonuses, and awards. Monetary incentives can include grants, rebates, property tax abatements, and tax credits. The City of Pittsburgh's LEED Density Bonus² allows an additional 20% in floor area ratio and height for buildings that achieve LEED for New Construction or LEED for Core and Shell certification.

CASE STUDY

RIVERSIDE MEWS



Riverside Mews is a Southside development made up of 48 market-rate townhomes, including Pittsburgh's first net-zero energy home. The Net-Zero home generates as much power as it uses on an annual basis through an 8,000-kilowatt photovoltaic roof mounted array. The

townhome's energy use is minimized through extremely high insulation levels, geothermal heat pumps, LED lighting, and other energy-saving measures including ENERGY STAR-rated products. The average unit achieved a Home Energy Rating System (HERS) score of 54 (46% better than code), with the net-zero unit achieving a score of -4. All units in the development are designed and built to be energy efficient. This project is a perfect example of how sustainability and eco-friendly strategies can be achievable in everyday homes (39).

For more information about this project, please visit: <http://www.sotahomeliving.com/riverside-mews/>

Costs of Building Green

The World Business Council for Sustainable Development found that the costs of building green are often perceived as much higher than non-LEED certified buildings (12). In fact, many studies have shown no difference in costs of LEED certified green buildings and non-LEED buildings. Even while construction costs continue to rise, "Many project teams are building green buildings with little or no added cost, and with budgets well within the cost range of non-green buildings with similar programs" (20). This study also found that many project teams view sustainable design as an added and separate feature which leads to the notion that green design is something that gets added to a project – therefore they must add cost. However, when teams view sustainability as a fundamental part of their project and incorporate it into the design phase, they can actually save money. Using an integrative design approach, which involves developers, architects, engineers, clients, and other team members in the pre-design phase, will ensure sustainability is a goal from the very beginning of the project leading to the most cost effective sustainable design.



Green Buildings

WHAT ARE GREEN BUILDINGS?



The Gardens at Market Square

Green buildings incorporate sustainability goals into all phases of the design and construction process as well as over the life of the building. Green Buildings address the 3 E's of sustainable development to achieve high performance, cost-efficient buildings with low impacts on the environment and human health.

Social Equity

Green buildings are designed to have exceptional indoor air quality and thermal comfort. They also maximize greenspace, access to public transportation, and enhance community connectivity.

Environment

Green buildings are one solution to addressing climate change and environmental destruction. These buildings are designed to reduce energy, materials, and resources on a life-cycle basis. Leadership in Energy and Environmental Design (LEED) identifies the categories of focus for green buildings to be Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, and Indoor Environmental Quality.

LEED® for New Construction	
Total Possible Points**	110*
Sustainable Sites	26
Water Efficiency	10
Energy & Atmosphere	35
Materials & Resources	14
Indoor Environmental Quality	15
* Out of a possible 100 points + 10 bonus points	
** Certified 40+ points, Silver 50+ points, Gold 60+ points, Platinum 80+ points	
Innovation in Design	6
Regional Priority	4

Source: USGBC

Economy

Green Buildings address the high costs of inefficiency by building durable, low maintenance, high efficiency buildings that are great for business. Green building strategies also support local economies by utilizing local materials and businesses.

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED)

Leadership in Energy and Environmental Design (LEED)⁴ is an internationally recognized green building certification system providing third party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.



Source: USGBC

Developed by the U.S. Green Building Council (USGBC)⁵, LEED provides building owners and operators a concise framework for identifying and implementing practical and measurable green design, construction, operations and maintenance solutions.

Energy Efficiency

According to the U.S. Green Building Council, buildings account for 72% of electricity consumption in the US and lighting and space heating account for 58% of total energy use in a building. Through the use of daylighting, energy efficient lighting, windows, and HVAC systems, high performance buildings have an average payback period of 6 years on energy savings alone (19).



Source: USGBC

Strategies

There are many ways to increase the energy efficiency of your business or buildings. Many of these are relatively low-cost and pay for themselves quickly in reduced utility costs. Energy efficiency strategies can also make buildings more comfortable and pleasant for building occupants making employees more productive and increasing the real estate value of the property. Some of the major areas to look for energy savings are in building envelope improvements, lighting, heating and cooling, refrigeration, and hot water heating.

Building envelope improvements like insulation and air-sealing generally provide the biggest “bang for the buck” returning significant savings at relatively low cost. Lighting upgrades, especially in offices and other buildings with large lighting requirements, also have very reasonable payback periods. It is important to consider lifecycle costs when replacing equipment or making upgrades in existing buildings or designing new buildings. Often though, first costs for more efficient equipment or measures can be greater, but over the life of the equipment or measure significant savings can be realized.

Reduced Energy Use in Green Buildings as Compared with Conventional Buildings

	Certified	Silver	Gold	Average
Energy Efficiency (above standard code)	18%	30%	37%	28%
On-Site Renewable Energy	0%	0%	4%	2%
Green Power	10%	0%	7%	6%
Total	28%	30%	48%	36%

Source: USGBC, Capital E Analysis

Passive Energy Strategies

Daylighting and natural ventilation are strategies that will reduce energy costs as well as provide benefits to building occupants. Daylighting (using as much natural light as possible through building orientation and glazing location) has been shown to increase worker productivity and to increase retail sales (11, 33, 34). Natural ventilation uses orientation and natural convection to provide fresh air to building occupants without the need for energy consuming fans to provide fresh air.

CASE STUDY

DINWIDDIE STREET HOUSING

Dinwiddie Street Housing units are built to meet ENERGY STAR standards, incorporating high efficiency and alternative energy strategies, which results in substantial savings for tenants. Systems such as independent geothermal heat pumps – which are 45 percent more efficient than standard HVAC systems – and solar panels, help tenants save upwards of \$900 per year on their utility bills, while reducing the development’s carbon footprint. Units in Phase I & II averaged 25% more efficient than code. Consistent with the units in the first two phases, the units in Phase III will be offered to households at or below 60 percent of the area median income (13).



For more information about this project, please visit:

http://www.trekdevelopment.com/communityshower.aspx?project=Dinwiddie_Housing

Water Efficiency

Buildings account for 12% of total water use in the United States. Potable water use can be greatly decreased simply by using efficient fixtures, reusing wastewater, and the use of native landscaping. Reducing potable water consumption also saves energy and money. Indoor water use, irrigation, and process water can all be reduced by implementing simple efficiency strategies.

Indoor Water Use

Strategies to reduce indoor water use include using efficient plumbing fixtures (low-flow toilets, faucets, showerheads) and waterless urinals. Capturing greywater and rainwater for use in toilets and urinals can greatly reduce potable water usage. Installing sub-meters is also very important to track water consumption and monitor leakage.

Fixture	Gallons per Flush
Conventional water closet	1.6
Low-flow water closet	1.1
Ultra-low-flow water closet	0.8
Composting toilet	0
Conventional urinal	1
Waterless urinal	0

Source: Watersense

Outdoor Water Use

To reduce potable water use in landscapes, use native plants that require little maintenance and irrigation. If irrigation is necessary choose a high efficiency system such as surface drip, underground, or bubbler systems that deliver water where it is needed and only waters when needed (by using moisture sensors). Also consider using rainwater captured in rainbarrels or cisterns for irrigation. This water is not only less energy intensive and costly but it is also better for the plants because it doesn't contain chlorine and other ingredients not conducive to plant growth.



Process Water

To reduce the amount of water needed for building systems, use efficient equipment and appliances. Non-potable water can also be used in these systems (captured rainwater and municipal reclaimed water). Installing sub-meters is important to track the consumption and monitor for leakage.

CASE STUDY

EAST LIBERTY PLACE NORTH

East Liberty Place North (ELPN) is a mixed-use apartment and commercial/retail building complex located in the revitalizing East Liberty business quarter, and was certified LEED Gold for Homes by the USGBC in 2011. The building is the first multi-family LEED building project in Pittsburgh to achieve this certification, and features high efficiency, ENERGY STAR-rated HVAC units. Individual units are sub-metered for water for the building manager to better identify high water users and work with residents to reduce usage. Indigenous and drought resistant plants have been chosen to reduce the amount of water needed for exterior landscaping. Water-efficient toilets, faucets and showerheads in each unit also keep water consumption at a low rate (32).

For more information about this project,



Sustainable Site Selection and Design

Benefits of Brownfield Redevelopment

Many older industrial cities have vacant and abandoned industrial land which, when left to sit idle, can act as a drag on the local economy. These sites are often heavily polluted with chemicals and other waste products from the industrial processes that occurred on them. The transformation of abandoned industrial land into environmentally healthy and productive new developments can have positive impacts on the local environment and the local economy.



Washington's Landing

One of the benefits of recycling brownfield sites into productive use is the removal or containment of the contaminants on the site. Brownfield development also offers an alternative to development of previously undeveloped "greenfield" sites and allows these sites to be preserved as open space. In Pittsburgh many previous industrial sites were located adjacent to the rivers so that materials could be easily transported to and from these sites. Redevelopment of these sites has allowed residents to gain access to our riverfronts for recreation as well as for housing and commercial uses. Residential and commercial development adjacent to the rivers has some of the highest property values of any real estate in the city (5).



Southside Works

The URA has acted as a catalyst for many brownfield redevelopment projects⁹ in Pittsburgh including Summerset at Frick Park, Pittsburgh Technology Center, Bakery Square, Washington's Landing (above), and Southside Works (left).

CASE STUDY | SUMERSET AT FRICK PARK



Density will be the norm for future communities, as will proximity to nature. A stream and wetland area (opposite page) abuts the Summerset at Frick Park site. The Army Corps of Engineers restored the stream, which had been devastated by industrial growth.

Summerset at Frick Park¹⁰ is a great example of how redeveloping a brownfield site can increase property values of nearby neighborhoods. The development site was a former 238 acre slag dump containing toxic heavy metals. This site has been restored and transformed into a new urbanist housing community bringing in millions of dollars in tax revenue for the city. Adjacent neighborhoods also saw an increase in sales prices from 44% to 132% from 2000 to 2007 while the city's increase was only 18% (36, 37).

For more information about this project, please visit: <http://summersetatfrickpark.com>

Sustainable Site Selection and Design

Transportation

Choosing a site with transit in mind is important for sustainable development. Transit oriented development, walkable communities, and mixed-use development are essential to creating and maintaining a thriving community. In addition to public transit, providing bicycle parking and changing facilities can be an easy way to reduce parking costs, increase business, and promote a healthy and sustainable lifestyle to employees and customers.

Providing incentives for building users to use alternative transportation can save money and improve business. Vehicle parking is an enormous expense when comparing that cost to providing bicycle parking. The average cost to build a parking space is \$15,000, while bicycle parking can cost just a few hundred dollars per space (4). In addition, business owners who provide bicycle parking have seen increases in business because cyclists are more inclined to stop if they can quickly and safely park. Businesses that provide bicycle parking are also have a positive public image in the bicycling community which can increase their business.



A Transit-Based Community Plan for Homewood & Point Breeze North

April 2012
Homewood & Point Breeze North Communities • Pittsburgh Urban Redevelopment Authority

Bicycle Parking Ordinance

The City of Pittsburgh recently approved a Bicycle Parking Ordinance¹¹ which requires large scale new development and change of use development to provide bicycle parking depending on the size and use of the building. The ordinance allows developers to reduce their minimum off-street parking requirement by providing bicycle parking on a 1 to 1 basis for up to 30% of total parking required (3, 28).



Bike racks at US Steel Tower

CASE STUDY

CENTURY BUILDING



A Bicycle Commuter Center and secure bike storage at the Century Building in downtown Pittsburgh encourages alternative methods of transportation for occupants and visitors as well as other Pittsburgh citizens. The center is the first of its kind in Pittsburgh. It serves as a successful example of a project that has inspired other local developers to integrate bike-friendly facilities into their designs. In addition to the bike center, the dense urban setting of Pittsburgh's downtown allows

tenants in the Century Building to be car-free, and close to an abundance of amenities. Mass transportation is widely available with all major bus lines nearby and a Zip-Car ride share program next door, allowing for another mode of commuting that has a lower impact on the city's carbon footprint (17).



For more information about this project, please visit: <http://www.centuryon7th.com/>

Sustainable Site Selection and Design

Stormwater Management

Pittsburgh's outdated combined sewer system releases raw sewage and toxins into our rivers during times of wet weather. Reducing the quantity and improving the quality of stormwater runoff is essential to cleaning up our waterways and attracting new residents and business to our area. There are many methods that can be combined to manage the amount of water released from your site during wet weather.



Four Mile Run Bioswale in Greenfield



A rain garden

Low Impact Development

Instead of using costly hard infrastructure such as curbs, gutters, and pipes, Low Impact Development (LID) strategies focus on using natural filtration systems for drainage and rainwater reuse. Examples of these strategies include pervious pavement, rain gardens, bioswales, pocket wetlands, green roofs, and rainwater harvesting (18).

CASE STUDY | OAK HILL HOUSING

The Oak Hill Housing Development¹³ in the Oakland neighborhood of Pittsburgh has had an exceptional impact on decreasing stormwater runoff through the use of low impact development (LID)



strategies. The project consists of 12 acres containing a 61 unit high rise, 25 townhouses, a community center and town center park. Pervious concrete pavement was used in all parking lots and under the pavement is a 12" deep open graded aggregate for water storage where it is directed into bio-retention cells. The site uses 10 bio-retention cells for additional infiltration and those are made of a compost-constructed soil mix. The Dept. of Environmental Protection's stormwater infiltration requirement for this project was 7009 cubic feet. This project greatly exceeded those requirements by infiltrating 29,446 cubic feet using these methods.

For more information about this project, please visit:
<http://www.oakhillapts.com/>

The City of Pittsburgh recognizes LID and green infrastructure as important cost effective solutions to our stormwater issues. Pittsburgh's Stormwater Ordinance¹⁴ requires publicly funded development and redevelopment (over \$1 million) to incorporate Green Infrastructure and LID practices to reduce stormwater quantity and improve environmental quality (29).



Green Wall at PNC

In the EPA report "Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices", it was found that using natural infrastructure (bioswales, rain gardens, etc.) can be less expensive to install and maintain compared with conventional infrastructure. The capital cost differences between the case studies were between 15% to 80%. Depending on your project, using these strategies can greatly reduce infrastructure costs. In addition, using natural strategies can increase property values through improved aesthetics and open space (30).

Neighborhood Development

Sustainable development extends beyond individual buildings to include entire neighborhoods. Choosing a site location that is within walking distance to public amenities and basic needs is important to creating a strong and connected community. Choosing a location close to public transit, on a previously developed site, and in a dense area helps to reduce sprawl and lower transportation costs. Mixed use development has the benefit of creating jobs within the community which supports the local economy and allows people to get to their jobs and local businesses by foot (or pedal) instead of having to get in a car.



Downtown Pittsburgh



Regent Square

On the equity side sustainable neighborhoods should serve a variety of different income levels with both market rate and affordable housing options and employment opportunities for a wide range of skill sets. This variety makes for a more vibrant and economically and socially sustainable community.

LEED for Neighborhood Development

The USGBC has created a rating system for sustainable neighborhood development. A LEED for Neighborhood Development (ND)¹⁵ certified project includes developments that constitute whole neighborhoods, portions of neighborhoods, or multiple neighborhoods. These projects are mixed-use and/or compliment existing neighborhoods. LEED-ND projects have exemplary performance in smart location and neighborhood pattern and design while also practicing environmental preservation (22).



Homes on N. Euclid in East Liberty

CASE STUDY | MELLON ORCHARD



Mellon's Orchard South¹⁶ is part of the LEED-ND pilot program and will include 79-85 housing units, including a mix of for-sale, detached, single-family homes as well as town homes. A unique element of the plan calls for the new homes to be heated and cooled by a geothermal heat pump loop placed underneath the park, resulting in dramatically reduced heating and cooling bills for residents and increasing the efficiency of the units by 40%. This project is also aiming for zero stormwater runoff by using Low Impact Development (LID) strategies. The revitalization of a community park as well as changes in street and traffic infrastructure will create a more walkable, connected, and transit oriented community (23).

For more information about this project, please visit:
<http://www.eastliberty.org/>

Social Equity

As one of the three pillars of sustainability, social equity, broadly defined, is making sure that all members of the community have equal access to all the things that humans need to live healthy, productive lives. These include such things as access to safe, healthy, and affordable housing, employment opportunities, open space and recreational opportunities, and quality education. When combined with the other two pillars of sustainability, environment and economy, this includes such things as energy efficient and healthy affordable housing, green jobs, access to affordable public transit, and equal employment opportunities for minority and women. Increasing social equity in communities helps to make them more diverse, vibrant, and stable and translates into increased real estate values and business activity.



Homewood TOD Proposed Development Plan

Enterprise Green Communities

Enterprise Green Communities¹⁷ is the first national green building program developed for affordable housing. This program offers grants, loans, tax credit equity, training, and technical assistance for developers and builders as well as a certification program for green affordable housing. Developers who wish to take advantage of this program must meet the criteria of the certification program which include such things as location and neighborhood fabric, water conservation, energy efficiency, and healthy living environment (2).

CASE STUDY

SOUTH HILLS RETIREMENT RESIDENCE

The South Hills Retirement Residence¹⁸ provides senior housing for mixed incomes and 80% of the units are for seniors who have an income below 60% of the median income of the area. This project transformed the abandoned South Hills High School into a retirement residence that has earned LEED Gold certification. The senior residence houses a cogeneration plant with a heat exchanger that produces 65 kW of electric power and uses waste heat to heat the building, resulting in significant energy savings. In addition, a 26 kW photovoltaic array on the roof produces a significant amount of clean renewable energy for the building. There is also a greenhouse and gardens available for resident use (35).

For more information about this project, please visit:
<http://southhillshighschool.net/>



GREEN STANDARDS

ENERGY STAR

ENERGY STAR¹⁹ is a joint program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE), helping us all save money and protect the environment through energy efficient products and practices. An ENERGY STAR qualified facility meets strict energy performance standards set by EPA and uses less energy, is less expensive to operate and causes fewer greenhouse gas emissions than its peers.

For more information, please visit:
<http://www.energystar.gov>



GREEN GLOBES

Green Globes²¹ is a green management tool that includes an assessment protocol and a rating system and guide for integrating environmentally friendly design into both new and existing commercial buildings.

For more information, please visit:
<http://www.thegbi.org/commercial/>



WATERSENSE

WaterSense²⁰, a partnership program by the U.S. Environmental Protection Agency, seeks to protect the future of our nation's water supply by offering people a simple way to use less water with water-efficient products. The program seeks to help consumers make smart water choices that save money and maintain high environmental standards without compromising performance. Products and services that have earned the WaterSense label have been certified to be at least 20 percent more efficient without sacrificing performance.

For more information, please visit:
<http://www.epa.gov/WaterSense>



LIGHTING FACTS

Lighting Facts²² is a label provided by the U.S. Dept. of Energy which provides third party testing and verification of LED fixtures.

For more information, please visit:
<http://www.lightingfacts.com>



Lighting Facts Per Bulb	
Brightness	510 lumens
Estimated Yearly Energy Cost	\$7.83
<small>Based on 3 hrs/day, 11¢/kWh Cost depends on rates and use</small>	
Life	1.8 years
<small>Based on 3 hrs/day</small>	
Light Appearance	Warm ————— Cool
	2650 K
Energy Used	65 watts
Contains Mercury	
<small>For more on clean up and safe disposal, visit epa.gov/cfl.</small>	

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED)

LEED is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: site selection, water efficiency, energy savings, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

Developed by the U.S. Green Building Council (USGBC)²³, LEED provides building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.



For more information, please visit: www.usgbc.org/

LOCAL INITIATIVES

The Pittsburgh Climate Initiative

The City of Pittsburgh has a goal of reducing greenhouse gas emissions 20 percent below 2003 levels by 2023 (27). To achieve these goals, they are calling on communities, businesses, higher education, and government to work together to reduce carbon emissions. A coalition representing these sectors created the first Pittsburgh Climate Action Plan in 2008 which identified key recommendations for each of these sectors to help meet these carbon reduction goals, including encouraging ridesharing, telecommuting, and sustainable transportation options; engaging the public through education campaigns, and creating neighborhood climate champions. The URA is a supporter of the Pittsburgh Climate Initiative²³ and is working to help reduce carbon emissions through a variety of programs and policies including a small business energy efficiency grant and loan program and a grant and loan program for energy efficiency improvements for low income homeowners.



Source: The Pittsburgh Climate Initiative

This guide is one of the many resources available to help businesses support the goals of the PCI. It provides information on the fundamentals of sustainable development and how these benefit business, the community, and the environment.

To learn more about the Pittsburgh Climate Initiative, please visit <http://pittsburghclimate.org/>

The Breathe Project

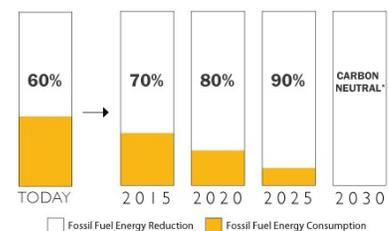
The Breathe Project²⁴ is a regional coalition of individuals, corporations, environmental groups, academic institutions, governmental entities and nonprofit organizations committed to working in collaboration to significantly improve air quality in the Pittsburgh region.



To learn more about the Breathe Project, please visit: <http://breatheproject.org>

The Pittsburgh 2030 District

The Pittsburgh 2030 District²⁶ is a zone of high performance buildings in Downtown Pittsburgh designated to meet the energy, water, and transportation emissions targets called for by the national Architecture 2030 Challenge. District-wide goals include 50% reductions below national baselines in energy, water, and transportation emissions by the year 2030, along with carbon neutral new construction by the year 2030.



The 2030 Challenge
Source: ©2010 2030, Inc. / Architecture 2030. All Rights Reserved.
*Using no fossil fuel (discussing energy to operate)

Convened and facilitated by Green Building Alliance, the Pittsburgh 2030 District is currently focused on Downtown Pittsburgh, with 65 properties totaling over 23 million square feet already committed to achieving District goals. Establishing a 2030 District is the city's most recent effort in its transition from an industrial past to a sustainable, low-carbon metropolis.

To learn more about the Pittsburgh 2030 District, please visit: www.2030district.org/pittsburgh

LOCAL RESOURCES

BIKE PITTSBURGH BIKE RACKS

Hundreds of these unique public art bike racks have been installed around Pittsburgh. Each rack holds two bicycles – one on each side – and is made of solid galvanized steel that is securely bolted into the pavement. These bike racks were designed and fabricated right here in the ‘Burgh.



For more information, click [here](#) or see #27 in index of links.

TREEVITALIZE

Working in partnership with community groups, nonprofits and municipal agencies, TreeVitalize has planted 15,000 trees since 2008 to improve the environmental quality of the region. Under the management of the Western Pennsylvania Conservancy, the partnership is three-fourths of the way toward its goal of planting 20,000 trees by the end of 2013. Contact TreeVitalize to see if trees are available for your project.



For more information, click [here](#) or see #28 in index of links.

BICYCLE PARKING OVERVIEW

Pittsburgh City Planning provides information on permits and fees for bicycle racks as well as recommendations for indoor and outdoor racks based on your site needs and requirements.

For more information, click [here](#) or see #29 in index of links.



STORMWORKS

Part of the Nine Mile Run Watershed Association, StormWorks provides stormwater management services including rain gardens, rain barrels, and tree plantings in the Pittsburgh region.

For more information, click [here](#) or see #30 in index of links.



GREEN BUILDING ALLIANCE

Green Building Alliance is a nonprofit organization devoted to helping Western Pennsylvania find smart solutions for the built environment. They believe that green building just makes sense, and strive to integrate environmentally responsible, high performance green building practices into the design, construction and operation of buildings in western Pennsylvania.



For more information, click [here](#) or see #31 in index of links.

CONSERVATION CONSULTANTS INC.

Conservation Consultants Inc. (CCI) is a nonprofit group that conducts energy audits for thousands of low-income residents of Pittsburgh. Their trained experts check and measure energy use, pointing out ways to improve comfort while reducing utility costs. CCI also helps “Green Up” new construction with practical energy-saving information and connections to experienced contractors.

For more information, click [here](#) or see #32 in index of links.



LOCAL REQUIREMENTS

CITY OF PITTSBURGH, SUSTAINABLE DEVELOPMENT FOR PUBLICLY FINANCED BUILDINGS

Pittsburgh's zoning code requires new construction or major renovation projects receiving over \$1 million in public financing or at least 10,000 square feet to achieve LEED Silver Certification.

For more information, click [here](#) or see #33 in index of links.

CITY OF PITTSBURGH, STORMWATER ORDINANCE

Pittsburgh's zoning code requires development and redevelopment projects receiving more than \$1 million in public funds to apply green infrastructure and Low Impact Development (LID) practices to manage stormwater.

For more information, click [here](#) or see #34 in index of links.

CITY OF PITTSBURGH, BICYCLE PARKING ORDINANCE

Pittsburgh's zoning code requires large scale new development and change of use development to provide bicycle parking based on the size and use of the building. It also provides an incentive for developers to reduce their minimum off-street parking requirement by providing bicycle parking on a 1 to 1 basis up to 30% of total parking required.

For more information, click [here](#) or see #35 in index of links.



Phipps Conservatory



Bicycle Parking at Whole Foods



Green Roof at David Lawrence Convention Center

FUNDING & INCENTIVES

LOCAL

CITY OF PITTSBURGH, LEED DENSITY BONUS

Pittsburgh's zoning code ordinance entitled "Sustainable Development Bonuses" permits an additional 20% in floor area ratio and height for buildings that achieve LEED New Construction or LEED Core and Shell certification.

For more information, click [here](#) and search "Sustainable Development Bonuses" or see #36 in index of links.



Downtown Pittsburgh

DUQUESNE LIGHT WATT CHOICES PROGRAM



Duquesne Light's Watt Choices program helps customers conserve energy and reduce demand while lowering their electricity costs. Watt Choices invites residential, commercial and industrial customers to take advantage of a wide range of energy efficiency, conservation and demand-response incentives and rebates. By participating in these programs, customers are not only learning ways to conserve energy, they also are reducing their overall impact on the environment through reduced power plant emissions and load reduction.

For more information, click [here](#) or see #37 in index of links.



Blackbird Artist Studio Lofts

URBAN REDEVELOPMENT AUTHORITY OF PITTSBURGH LEED INTEREST RATE REDUCTIONS

The URA offers lower interest rates on several of its loan funds for projects that achieve LEED certification. The interest rate reduction increases with the level of certification achieved and ranges from 1% to 2.5% below standard program rates.

For more information, click [here](#) or see #39 in index of links.

THE UPSTAIRS FUND

The Pittsburgh Downtown Partnership's Upstairs Fund offers subordinated gap financing to developers or owners who convert upper floors of downtown buildings to residential uses and seek LEED certification. Financing is available for up to 50% of the total project cost, not to exceed \$500,000 or \$75,000 per unit.

For more information, click [here](#) or see #38 in index of links.



Lawrenceville

FUNDING & INCENTIVES

STATE

DATABASE OF STATE INCENTIVES FOR RENEWABLE ENERGY (DSIRE) WEBSITE

DSIRE is a comprehensive source of information on state, local, utility, and federal incentives and policies that promote renewable energy and energy efficiency. Established in 1995 and funded by the U.S. Department of Energy, DSIRE is an ongoing project of the N.C. Solar Center and the Interstate Renewable Energy Council.

For more information, click [here](#) or see #40 in index of links.



DCED/DEP - ALTERNATIVE AND CLEAN ENERGY PROGRAM

The Pennsylvania Department of Community and Economic Development (DCED) and Department of Environmental Protection (DEP) offer support for alternative energy and clean energy projects in the form of loans, grants and loan guarantees through the Alternative and Clean Energy State Grant Program. Loans of up to \$5 million or 50% of the total project cost are offered with an amortization of 25 years and a 10-year term. Grants of up to \$2 million (not to exceed 50% of the total project cost) are available. Eligible activities for each type of project are described briefly below (see program rules for more detailed descriptions).

For more information, click [here](#) or see #41 in index of links.

Clean Energy Projects (As defined by DCED/DEP Alternative and Clean Energy Program)

- Installation of equipment to facilitate or improve energy conservation or energy efficiency (including but not limited to heating, lighting and cooling equipment); Equipment must be Energy Star rated if applicable
- Installation of an alternative energy system which produces energy from sources defined under the state Alternative Energy Portfolio Standard (AEPS), including wind, geothermal, biomass, waste energy, hydroelectric, fuel cells, biologically derived methane gas, fuel cells and biomass; but *not including solar energy (See DCED Solar Energy Program)*
- Replacement or enhancement of an existing energy system that utilizes nonrenewable energy with an energy system that utilizes alternative energy (as described above)
- Modification of the contract terms of an energy service project by a political subdivision pursuant to a new energy savings contract (ESCO) with a qualified provider under the Guaranteed Energy Savings Act (GESA) of 1996



FUNDING & INCENTIVES

STATE

DCED/DEP Alternative Energy Production Projects (Construction or Development)

- An alternative energy project which produces energy from sources defined under the state Alternative Energy Portfolio Standard (AEPS), including wind, geothermal, biomass, waste energy, hydroelectric, fuel cells, biologically derived methane gas, fuel cells and biomass; but *not including solar energy* (See DCED Solar Energy Program).
- A facility that manufactures or produces alternative fuels
- A facility that manufactures or produces products, including component parts that provide alternative energy (as defined above), improve energy efficiency or conserve energy
- An alternative energy or alternative fuel R&D facility
- A project for the development or enhancement of rail transportation systems that deliver alternative fuels or high efficiency locomotives



Co-generation plant at South Hills Retirement Residence



Squirrel Hill



Bedford Hill/HOPE VI development in the Hill District



Source: One Block Off the Grid

DCED - HIGH PERFORMANCE BUILDING INCENTIVES PROGRAM

The High Performance Building Incentives Program provides grants and loans for the construction or renovation of high performance buildings. Both residential and commercial projects are eligible, with grants available up to \$500,000 or 10% of the total project cost. Loans of up to \$2 million for small businesses (less than 100 employees) and up to \$100,000 for residential projects are also available. Amortizations can be structured to a maximum of 25 years and a 10-year loan term. The current interest rate is 4%. All projects must achieve LEED Gold certification and include specific credits. Program funds can be used for any costs associated with the construction or renovation of a high performance building, excluding financing fees and interest.

For more information, click [here](#) or see #42 in index of links.

FUNDING & INCENTIVES

STATE

DCED - SOLAR ENERGY PROGRAM

The Solar Energy Program offers support for solar technologies in the form of loans, grants and loan guarantees. Eligible facilities are defined as: those that generate, distribute or store solar energy; manufacturing or assembly facilities for solar panels or other solar equipment; and solar technology R&D facilities. This definition includes both solar photovoltaic (PV) and solar thermal systems. All systems must have a lifetime of at least four years. Funds may be used for the following project costs:

- Acquisition of land and buildings, rights-of-way and easements necessary for project construction
- Clearing and preparation of land to build an eligible project
- Construction or renovation of a building to manufacture solar components and systems
- Equipment purchases for the manufacture of solar systems
- Purchase, installation and construction of facilities to produce, distribute and store solar energy, or produce hot water using solar energy
- Project planning and feasibility studies
- Permit fees
- Administrative costs associated with an eligible project, not to exceed 3% of funding



Passive Solar House in Heidelberg

For more information, click [here](#) or see #43 in index of links.

DCED - RENEWABLE ENERGY PROGRAM, GEOTHERMAL & WIND PROJECTS



Federal Hill Housing on the Northside

The Renewable Energy Program offers support for wind and geothermal technologies in the form of loans, grants and loan guarantees. The amount of the matching investment must be at least \$1 for every \$1 of program funds, with grants not exceeding \$1 million. Up to \$5 million can be secured as a loan. The definition of geothermal includes, but is not limited to, closed-loop geothermal heat pump systems that use the ground, groundwater or an underground mine as an energy source. Wind technologies include energy production facilities and manufacturing facilities for wind turbines and other system components. Funds may be used for the following project costs:

- Acquisition of land and buildings, rights-of-way and easements necessary for project construction
- Clearing and preparation of land to build an eligible project
- Construction or renovation of a building to manufacture wind or geothermal components and systems
- Equipment purchases for the manufacture of wind or geothermal systems
- Purchase, installation and construction of facilities to produce and distribute geothermal or wind energy
- Project planning and feasibility studies
- Permit fees
- Administrative costs associated with an eligible project, not to exceed 3% of funding

For more information, click [here](#) or see #44 in index of links.

FUNDING & INCENTIVES

STATE

PENNSYLVANIA ENERGY DEVELOPMENT AUTHORITY (PEDA) GRANTS

Note: The most recent solicitation (April 2011) for grant proposals under this program has now closed. The program typically re-opens with a new solicitation in March or April of each year. The summary below describes the 2010 program requirements.



Vertical Axis Wind Turbine at Phipps Conservatory

The Pennsylvania Energy Development Authority (PEDA) issues periodic funding solicitations to provide support for innovative, advanced energy projects, and for businesses interested in locating or expanding their alternative-energy manufacturing or production operations in Pennsylvania. PEDA's April 2010 solicitation offers \$21 million in total funding to support in-state projects, manufacturing or research involving the following types of fuels, technologies or measures: clean, alternative fuels for transportation; solar energy; wind; low-impact hydropower; geothermal; biologically derived methane gas, including landfill gas; biomass; fuel cells; coal-mine methane; waste coal; integrated gasification combined cycle; and demand management measures, including recycled energy and energy recovery, energy efficiency and load management. Applicants are generally expected to provide some level of documented cost share or matching funds.

Special eligibility limitations apply specifically to solar energy projects. Residential solar projects are not eligible for funding under any circumstances and small commercial projects must be larger than 200 kW in order to qualify for funding. Solar projects not eligible for PEDA grants may instead apply for funding through the new Pennsylvania Sunshine Solar Program.



Homes on Mellon Street in East Liberty

The maximum individual award under the April 2010 solicitation is \$1.5 million and proposals must be received by May 29, 2010.

For more information, click [here](#) or see #45 in index of links.



Biophilic Sunroom on the Southside

FUNDING & INCENTIVES

STATE

PENNSYLVANIA ENERGY HARVEST GRANT PROGRAM

Note: The most recent application period has now closed. A new Request For Proposals (RFP) is usually issued during the spring of each year and interested parties may sign up to be notified of the reactivation on the program website.

The Pennsylvania Energy Harvest Grant program provides grants for proposals that simultaneously reduce or supplement the use of conventional energy sources and lead to improvements in water or air quality. Grants can be made to non-profits, county and municipal governments, school districts, and colleges and universities.

For more information, click [here](#) or see #46 in index of links.



Homes in Mt. Washington

PENNSYLVANIA SUNSHINE SOLAR PROGRAM

Contractors: The PA Sunshine Program is, as of August 19, 2011 in the "Waiting List" phase of the program. PA Sunshine rebate reservations will continue to be received. However, a PA Sunshine rebate is not guaranteed. Applications will be received but only assigned if money becomes available through attrition. While in the "Waiting List" phase, applications will be received, reviewed and deemed complete. The installer will have to complete the job within one year without a guarantee of receiving a PA Sunshine grant. Guidelines for applying to the waiting list can be found in Section VIII of the Pa. Sunshine Guidelines for Residential & Small Business solar Program found at the next link.



Through the Pennsylvania Sunshine Solar program, grants are provided to homeowners and small businesses for the reimbursement of costs associated with the purchase and installation of solar PV and solar thermal projects. All residential applicants must be Pennsylvania residents, own the home upon which the system is installed, and use it as a primary residence. Small business applicants must be for-profit entities located within the state of Pennsylvania with no more than 100 full-time employees. This definition includes producers of an agricultural commodity. Low-income residents (60% or less of median state income) are eligible for higher incentives than other applicants.

The list below describes incentive levels and other program rules as they stood at the date of program opening:

- **Residential PV:** \$2.25/W for systems of 1-10 kilowatts (kW); Systems larger than 10 kW are eligible, but incentives are limited to first 10 kW
- **Small Business PV:** \$2.25/W for systems of 3-10 kW, \$2/W for next 90 kW, and \$1.75/W for next 100 kW; Systems larger than 200 kW are eligible, but incentives are limited to first 200 kW
- **Solar Thermal:** 25% of installed system cost, with maximums of \$2,000 for residences and \$20,000 for small businesses
- **Low-Income (PV and Solar Thermal):** 35% of installed costs (the maximum rebate authorized by the enabling legislation)

For more information about this program, click [here](#) or see #47 in index of links.



FUNDING & INCENTIVES

STATE

ALTERNATIVE ENERGY PRODUCTION TAX CREDIT

Note: The tax credit application window for projects completed during 2011 has now expired.

The Alternative Energy Production Tax Credit is a tax credit of 15% on investments in alternative energy production projects located within the Commonwealth of Pennsylvania with an expected useful life of four years or longer. The term "alternative energy production project" is broadly defined to include a wide variety of technologies, including facilities that produce energy from wind, solar, biomass, geothermal, waste coal, waste energy, and alternative fuels as defined under the Alternative Energy Portfolio Standard (AEPS). Also eligible are facilities that manufacture alternative energy and energy efficiency products and components; facilities that perform alternative energy research and development; and projects for the development or enhancement of rail transportation systems that deliver alternative fuels or use high efficiency locomotives. Eligible taxpayers are those who pay personal income taxes, corporate income taxes, or the capital-stock and foreign franchise tax (referenced in the legislation as Articles III, IV, and VI of the Pennsylvania Tax Reform Code of 1971). Any taxpayer that "develops or constructs" an eligible project may apply for the tax credit.



Otto Milk Loft Apartments

Applications for the tax credit must be submitted to the Department of Environmental Protection (DEP) by September 15 of each year for project investments made during the previous calendar year. For 2009 applications, investments must have been made between July 9, 2009 (the effective date of the legislation) and December 31, 2010 in order to qualify for a tax credit.

The tax credit is available for all development, equipment and construction costs paid for qualifying alternative energy projects, but may not exceed \$1 million per taxpayer per year. Taxpayers must deduct the amount of any federal, state and local government grant or subsidy when determining their cost basis. Taxpayers that are unable to use whole amount of the credit during the year in which it is first approved may carry forward the remaining balance for up to five years following the first year of eligibility. Credits may not be carried back or used to generate a tax refund. For individuals it is important to note that the tax credit *may not* be applied to a joint tax return.

The law also defines the total amount of tax credits that may be approved each year as follows:

- FY 2009 through FY 2012: \$5 million
- FY 2013: \$8 million
- FY 2014 through FY 2015: \$10 million
- FY 2016: \$2 million



Homes in Shadyside

If approved applications exceed these limits in a given year, each taxpayer's credit will be pro-rated so that the total value of approved credits complies with these restrictions. No credits may be approved after December 31, 2016.

For more information, click [here](#) or see #48 in index of links.

FUNDING & INCENTIVES

FEDERAL

ENERGY - EFFICIENT MORTGAGES

Homeowners can take advantage of Energy Efficient Mortgages (EEM) to finance a variety of energy efficiency measures, including renewable energy technologies, in a new or existing home. The U.S. federal government supports these loans by insuring them through Federal Housing Authority (FHA) or Veterans Affairs (VA) programs. This allows borrowers who might otherwise be denied loans to pursue energy efficiency improvements, and it secures lenders against loan default.

Federal Housing Administration (FHA) Energy Efficient Mortgages

The FHA allows lenders to add up to 100% of energy efficiency improvements to an existing mortgage loan with certain restrictions. See www.fha.com/lending_limits.cfm for more details. The maximum amount of the portion of an energy efficient mortgage allowed for energy improvements is now the lesser of 5% of:

- The value of the property;
- 115% of the median area price of a single-family dwelling; or
- 150% of the Freddie Mac conforming loan limit.

Loan amounts may not exceed the projected savings of the energy efficiency improvements.

Department of Veterans Affairs (VA) Energy Efficient Mortgages



Energy Efficient Home in Carnegie, PA

The VA insures EEMs to be used in conjunction with VA loans either for the purchase of existing homes or for refinancing loans secured by the dwelling. Homebuyers may borrow up to \$3,000 if only documentation of improvement costs or contractor bids is submitted, or up to \$6,000 if the projected energy savings are greater than the increase in mortgage payments. Loans may exceed this amount at the discretion of the VA.

Conventional EEMs

Conventional mortgages are not backed by a federal agency. Private lenders sell loans to Fannie Mae and Freddie Mac, which in turn allow homebuyers to borrow up to 15% of an existing home's appraised value for improvements documented by a Home Energy Rating (HER).

Fannie Mae also lends up to 5% for Energy Star new homes. Fannie Mae EEMs are available to single-family, owner-occupied units, and Fannie Mae provides EEMs to those whose income might otherwise disqualify them from receiving the loans by allowing approved lenders to adjust borrowers' debt-to-income ratio by 2%. The value of the improvements is immediately added to the total appraised value of the home.

For more information, click [here](#) or see #49 in index of links.



Solar Panels at Riverside Mews



PRIVATE FUNDING

GRANT AND LOAN PROGRAMS

ENTERPRISE GREEN COMMUNITIES

Enterprise Green Communities provides funds and expertise to enable developers to build and rehabilitate homes that are healthier, more energy efficient and better for the environment -- without compromising affordability. Green Communities also assists state and local governments to ensure their housing and economic development policies are smart and sustainable.



Hazelwood Homes

For more information, click [here](#) or see #50 in index of links.



Heinz Lofts

GREEN BUILDING FUND

The Green Building Fund was created by Bridgeway Capital to assist building owners and developers with the implementation of green building practices. It offers short term (typically five-year) loans with interest rates ranging from 5% to 8% for qualified developers to integrate green design into either new construction or rehabilitation projects. LEED certification is required.

For more information, click [here](#) or see #51 in index of links.

THE REINVESTMENT FUND (TRF) CAPITAL SUSTAINABLE ENERGY FINANCING

The Reinvestment Fund (TRF) provides favorable financing for new energy efficient residential and commercial construction, energy efficient renovations of existing residential properties, renewable energy projects, and energy-efficient retrofits and equipment upgrades to businesses in the Mid-Atlantic region.

The following are some examples of those who have been eligible for sustainable energy financing through TRF:

- Renewable energy projects such as wind farms and solar PV installations
- Distributed generation projects such as combined heat and power projects (co-generation), fuel cell installations and clean, efficient uninterruptible power systems
- New construction of residential properties or non-profit owned facilities that are built to an Energy Star or LEED standard
- Energy efficiency retrofits for residential properties or commercial and nonprofit owned facilities that achieve at least a 25% reduction in energy consumption
- Energy efficient production equipment for manufacturers that achieve at least a 25% reduction in energy consumption

Financing Products:

- Construction financing
- Term loans
- Lease and energy performance financing
- Pre-development loans

For more information, click [here](#) or see #52 in index of links.



Crawford Square Housing in the Hill District

PRIVATE FUNDING

OTHER FUNDING RESOURCES

ALTERNATIVE ENERGY CREDITS

On November 30, 2004, Governor Edward Rendell signed Act 213 into law. Known as Pennsylvania's Alternative Energy Portfolio Standards (AEPS) Program, Act 213 requires that electric distribution companies and electric generation suppliers include a specific percentage of electricity from alternative resources in the generation that they sell to Pennsylvania customers. The level of alternative energy required gradually increases according to a 15 year schedule found in Act 213. While Act 213 does not mandate exactly which resources must be utilized and in what quantities, certain minimum thresholds must be met for the use of Tier I, Tier II, and solar photovoltaic resources.

The types of alternative energy sources that qualify under Act 213 are:

Tier 1 - Energy derived from:

- Solar photovoltaic energy
- Solar thermal
- Wind power
- Low-impact hydropower
- Geothermal energy
- Biologically derived methane gas (including landfill gas)
- Fuel cells
- Biomass energy
- Coal mine methane
- Black Liquor (PA only)
- Large-scale hydropower (certain restrictions apply)

Tier 2 - Energy derived from:

- Waste coal
- Distributed generation systems
- Demand-side management
- Large-scale hydropower
- Municipal solid waste
- Generation of electricity utilizing by-products of the pulping process and wood
- Integrated combined coal gasification technology

Electric Distribution Companies and Electric Generation Suppliers can comply with Act 213 by *purchasing Alternative Energy Credits (AECs) from qualified alternative energy resource facilities*. Each AEC is issued for each megawatt hour (equal to 1000 kilowatt-hours) of generation from a qualified alternative energy system.

For more information, click [here](#) or see #53 in index of links.



PRIVATE FUNDING

OTHER FUNDING RESOURCES

POWER PURCHASE AGREEMENTS

A Solar Power Purchase Agreement (SPPA) is a financial arrangement in which a third-party developer owns, operates and maintains the photovoltaic (PV) system, and a host customer agrees to site the system on its roof or elsewhere on its property and purchases the system's electric output from the solar services provider for a predetermined period. This financial arrangement allows the host customer to receive stable, and sometimes lower cost, electricity while the solar services provider or another party acquires valuable financial benefits such as tax credits and income generated from the sale of electricity to the host customer.



125kW Solar Array at Phipps Conservatory



Eco-remodel of a home in Pittsburgh

With this business model, the host customer buys the services produced by the PV system rather than the PV system itself. This framework is referred to as the “solar services” model, and the developers who offer SPPAs are known as solar services providers. SPPA arrangements enable the host customer to avoid many of the traditional barriers to adoption for organizations looking to install solar systems: high up-front capital costs, system performance risk, and complex design and permitting processes. In addition, SPPA arrangements can be cash flow positive for the host customer from the day the system is commissioned.

For more information, click [here](#) or see #54 in index of links.

RENEWABLE ENERGY CREDITS

A renewable energy credit (REC) represents the property rights to the environmental, social and other nonpower qualities of renewable electricity generation. A REC, and its associated attributes and benefits, can be sold separately from the underlying physical electricity associated with a renewable-based generation source.

RECs provide buyers flexibility:

- In procuring green power across a diverse geographical area
- In applying the renewable attributes to the electricity use at a facility of choice

This flexibility allows organizations to support renewable energy development and protect the environment when green power products are not locally available.

For more information, click [here](#) or see #55 in index of links.



Edgewater at Oakmont

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