



Renewable energy is an effective strategy for businesses to cut their use of fossil fuels, reduce their carbon footprint, and, ultimately, lower their energy costs. A variety of technologies are available, most with state and federal incentives to make costs more competitive with conventional fossil energy.

But are these technologies right for *your* business? Not all solutions work in all situations: before you invest your time and money in renewable energy, invest a few moments to learn whether renewable energy technologies will work for you. Consider that:

- Most types of renewable energy require a substantial upfront **capital investment**, even with available incentives.
- **Payback times**—the amount of time it takes for your accumulated yearly energy savings to offset your initial investment—can vary from as little as 5 years to as much as 20 years or more. So think about whether your business model allows you to take a long-term view, or whether you need quick financial returns.
- There are many conventional **energy-saving strategies** that may be far less expensive and offer much faster payback, such as replacing inefficient lighting or HVAC equipment, or adding insulation. It is generally a good idea to reduce your energy consumption before investing in renewable alternatives.

Getting Started

This brochure provides an overview of renewable energy technologies. For more information, take advantage of the following **free and confidential** consulting services offered by the Pennsylvania Small Business Development Centers (SBDC):

The **Environmental Management Assistance Program (EMAP)** provides one-on-one consultation. Call (877) ASK-EMAP or visit www.askemap.org for assistance with:

- Environmental regulatory compliance questions
- Energy efficiency
- Greening your business

The **Clean Technology Resource Center (CTRC)** helps businesses develop and commercialize energy technology products, goods, services, and processes that use renewable energy sources. Call **(877) 771-CTRC** or visit www.pasbdc.org/cleantech for assistance with:

- Determining the viability of technologies
- Obtaining financing
- Introducing new technologies to market

The Pennsylvania Small Business Development Centers' Environmental Management Assistance Program is a partnership funded, in part, by the Commonwealth of Pennsylvania, Departments of Community and Economic Development and Environmental Protection, the U.S. Small Business Administration and the participating colleges and universities.

The Pennsylvania Small Business Development Centers (SBDCs) work with small firms to help them start, grow and prosper. Combining the expertise of a professional staff with the resources of the state's best colleges and universities, the SBDCs provide high quality business management consulting, information, and educational programs that build small firms' capacities to compete in domestic and international markets.

Pennsylvania SBDC (Main Office)
215-898-1219
www.pasbdc.org

Bucknell University SBDC
570-577-1249
www.bucknell.edu/sbdc

Clarion University SBDC
814-393-2060
www.clarion.edu/sbdc

Duquesne University SBDC
412-396-6233
www.duq.edu/sbdc

Gannon University SBDC
814-871-7232
www.sbdcgannon.edu

Indiana University of Pennsylvania SBDC
724-357-7915
www.eberly.iup.edu/sbdc

Kutztown University SBDC
484-646-4003
www.kutztownsbdc.org

Lehigh University SBDC
610-758-3980
www.lehigh.edu/sbdc

Lock Haven University SBDC
570-893-2589
www.lhup.edu/sbdc

Penn State SBDC
814-863-4293
www.psu.edu/sbdc

Saint Francis University SBDC
814-472-3200
www.francis.edu/sbdc

Saint Vincent College SBDC
724-537-4572
www.stvincent.edu/sbdc

Shippensburg University SBDC
717-477-1935
www.shipsbdc.org

Temple University SBDC
215-204-7282
www.sbm.temple.edu/sbdc

University of Pittsburgh SBDC
412-648-1542
www.sbdc.pitt.edu

University of Scranton SBDC
570-941-7588
<http://sbdcscranton.edu>

Wharton School SBDC
215-898-4861
<http://whartonsbdc.wharton.upenn.edu>

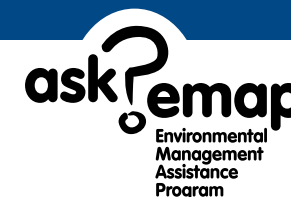
Widener University SBDC
610-619-8490
www.widenersbdc.org

Wilkes University SBDC
570-408-4340
<http://sbdc.wilkes.edu>



An accredited affiliate of the national network of Small Business Development Centers.

Disclaimer: The information in this brochure is provided as general information and is not provided nor intended to act as a substitute for legal advice or other professional services.



Renewable Energy Technologies

For Small Businesses



Small Business Development Centers
Helping businesses start, grow, and prosper.



Thinking of investing in renewable energy? Here are some basics to help you get started.



www.askemap.org
(877) ASK-EMAP



	Ground-Source Heat Pumps	Solar	Biomass/Biofuels	Wind
Description	Sometimes called “geothermal,” this technology provides cooling in the summer and heating in the winter, using the constant year-round temperature underground to achieve high efficiency. Some models can also provide hot water without using additional energy. Ground-source heat pumps require several hundred feet of vertical or horizontal underground piping, and have a very high up-front cost, though they reduce energy consumption significantly.	Two principal applications of solar energy for businesses: Photovoltaic panels (PV) convert sunlight to electricity and can offset a percentage of utility-generated electricity; solar thermal collectors use sunlight to heat water directly. Solar thermal is generally less expensive and more energy efficient than PV, though its use is more limited. There are also passive solar technologies, such as window design, shading and orientation, which may be used in new or renovated buildings.	Biomass refers to organic material, generally plant-derived waste, that can be used as an alternative energy source or to replace energy-intensive products. Common applications include compost for soil enhancement, wood pellets for heating or generating electricity, and biofuels for transportation. Biogas (methane) can be produced from animal waste. Using these materials may save energy, reduce carbon emissions, and make productive use of materials that would otherwise go to landfills.	Wind turbines for small businesses range from 40W microturbines that recharge batteries or power single lights to 100KW systems large enough to power industrial facilities. The most common use is as a distributed energy generator for businesses like ranches or other small facilities isolated from the power grid. However, wind turbines can also be used like solar PV as grid-tied systems to offset a portion of electric demand for suitable facilities.
Applications	Appropriate for stand-alone buildings with sufficient land to accommodate trenches or wells, or for larger complexes with a shared energy source.	Solar PV and thermal systems require sufficient roof space or land to accommodate panels or collectors, adequate exposure (no trees or buildings blocking the sun), and a southern or near-southern orientation. Thermal collectors may be an especially good choice for businesses such as free-standing restaurants and motels.	Biofuels may be a good choice for businesses with large fleets, or that use a high volume of fuel. (Another option is to purchase hybrid, electric, or fuel-cell vehicles.) Wood pellets and other solid fuels may be right for rural businesses with limited access to other energy sources. Compost and other organic additives can replace pollution-intensive fertilizers.	Requires strong, steady wind; also sufficient space for turbines, and local government ordinances that allow tall structures for mounting turbines. Businesses that cannot install their own turbines may be able to purchase wind-generated power. (Contact your local utility to determine if they offer this option.)
Compliance	Check local construction and electrical codes, as well as ordinances governing aesthetics, earth disturbances, and wastewater.	Check local construction and electrical codes, as well as ordinances governing aesthetics, earth disturbances (for large ground systems), and stormwater permitting.	Regulatory compliance considerations include local zoning ordinances and state and federal regulations concerning air emissions from the combustion of biomass and installation of biofuel refueling facilities.	Check local construction and electrical codes, as well as ordinances governing aesthetics, earth disturbances, stormwater permitting, and impacts on migratory birds.
Incentives	PA: Pa Department of Community and Economic Development (DCED) offers funding for alternative energy projects. Visit www.newpa.com , or see Grants & Loans at DEP’s website www.depweb.state.pa.us . Federal: Businesses may qualify for a grant OR a 10% tax credit. Visit www.dsireusa.org for a complete listing of federal (and state) funding programs	PA: Pa Sunshine Solar Program —See DEP Programs A–Z at www.depweb.state.pa.us . Funding may also be available through the Solar Energy Program at www.newpa.com . Federal: Businesses may qualify for a grant OR a 30% tax credit. Visit www.dsireusa.org for a complete listing of federal (and state) funding programs.	PA: Alternative Fuels Incentive Grant Program —See Grants & Loans at DEP’s website www.depweb.state.pa.us . Pa Biomass Trader is an online marketplace for biomass products and materials. See www.biomass trader.org/pennsylvania . Federal: Visit the U.S. Department of Energy’s Alternative Fuels & Advanced Vehicle Data Center at www.afdc.energy.gov/afdc . See Incentives and Laws for information about current federal and state incentives.	PA: Pa DCED offers funding for alternative energy projects. Visit www.newpa.com , or see Grants & Loans at DEP’s website www.depweb.state.pa.us . Federal Programs: Businesses may qualify for a grant OR a 30% tax credit. Visit www.dsireusa.org for a complete listing of federal (and state) funding programs.