

Small Businesses Save Big:

A Borrower's Guide To Increase the Bottom Line Using Energy Efficiency

Why Improve the Energy Efficiency of My Building?

Dollars saved through energy efficiency can directly impact your bottom line. Whether you are planning for a major renovation or upgrading individual pieces of building equipment, these improvements can help reduce operating costs, save on utility bills, and boost profits.

To help small businesses understand energy efficiency solutions for their buildings, the U.S. Small Business Administration (SBA), the U.S. Department of Energy (DOE), and DOE's National Renewable Energy Laboratory have collaborated to provide small businesses with easy-to-use information to help make better decisions around energy efficiency—ultimately improving a business' bottom line.

There are many benefits related to investing in energy efficiency, including “nonenergy” benefits. For example, upgrades that improve the amount of daylight in a space and increase the quality of lighting, can help increase productivity and improve customer experience. Likewise, improvements to your heating, ventilation, and air conditioning (HVAC) system can improve air quality, occupant comfort, and well-being. These extra benefits can be hard to quantify and are often omitted from financial analyses,

but should be considered in the business case because they can support your business' mission (DOE 2014a).

Investments in energy efficiency can also increase rental income and the future value of real estate assets—another way to boost your business case and return on investment (WGBC 2012). Likewise, investing in energy efficiency and sustainability can support the marketability of the products or services that your business offers by enhancing brand image and securing market share among the growing number of environmentally concerned consumers (SBA 2014).

How Can I Start?

There are many ways to improve the performance of your building, and each building offers unique opportunities.

To ensure that you are getting the maximum bang for your buck, consult a qualified contractor or energy auditor to reveal the most cost-effective energy efficiency solutions that can lower your utility bill.

In the meantime, consider the low- or no-cost energy efficiency measures (EEMs) on page 2 that are common solutions in small buildings.



Energy efficiency can save money, enhance customer experience, and boost profits for your small business. *Photo from iStockPhoto, 36109992*

Strategies for Improving Energy Efficiency in New and Existing Buildings

A number of resources are available to help you understand how to invest in energy efficiency. If you are planning to build a *new building* for your business, have the project manager, building engineer, or facilities department use the **Advanced Energy Design Guides** (<https://www.ashrae.org/freeaedg>) to identify and set energy targets, understand integrated design and cost control, and implement building commissioning. The design guides include recommendations for climate-specific

There is nothing small about the impact that small commercial buildings have on energy use in the United States. In fact, the 4.6 million small buildings across the nation consume 44% of the overall energy used in buildings, presenting an enormous opportunity to cut costs, energy use, and greenhouse gas emissions (DOE 2013). Furthermore, small buildings often house small businesses. Research indicates that the 4.6 million small commercial buildings are home to approximately 5.9 million small businesses nationwide (PGL 2013).

Investing in energy efficiency can:

- Reduce operating costs.
- Lower utility bills.
- Increase profits.
- Improve indoor environmental quality.
- Increase rental income and future value of real-estate asset.
- Increase marketability of products or services.
- Enhance brand image.

Qualification for Auditors and Contractors:

1. PE – Professional Engineer
2. CEM – Certified Energy Manager
3. BPI-BA – Building Performance Institute - Building Auditor
4. RESNET Home Partner
5. RA – Registered Architect
6. Refrigeration System Operating Engineer
7. High Pressure Boiler Operating Engineer
8. Other

Common Low- or No-Cost Energy Savings Opportunities

Envelope

- Repair broken windows and weather-strip/caulk windows and doors where drafts can be felt or there are visible signs of deterioration.
- Repair and air tighten broken and misaligned exterior doors.
- Add, repair or replace interior shading devices such as curtains and blinds.

Lighting and Plug Loads

- If lamps need to be replaced, use lower wattage versions (LEDs or fluorescents) that produce equivalent or superior light output and quality.
- Make sure lights and plug loads are turned off at night, and throughout the day when not needed.

Service Water Heating

- Repair any damaged or missing insulation on pipes and tanks.
- Repair leaky faucets.

HVAC: Heating and Cooling

- Replace manual thermostats with programmable thermostats, and turn down heating and cooling systems when the building is unoccupied.
- Apply upper and lower limits on heating and cooling temperature set points.
- Clean coils, burners, radiators, filters, and vents for major appliances or building equipment.
- Update and maintain a systems manual with operation and maintenance (O&M) requirements.
- Verify or establish a comprehensive maintenance protocol for HVAC equipment.
- Suspend ventilation during unoccupied period.

Building Operations

- Regularly check and confirm that aspects of the building are being operated as intended (window opening/closing, blinds to control solar gains, computer energy management settings) and look for possible operational improvements.

- Consolidate occupants to the extent possible, to reduce the need to condition and power underutilized space (applies mostly to office buildings).
- Recommission the building regularly (for example, balance air distribution, verify sensor operation, tune up boilers, etc.) to ensure the building equipment is operating at its maximum efficiency.

Building Controls

- If your building has a centralized building control system, use the controls to automatically adjust operating parameters (such as lighting levels, thermostat settings, ventilation rates) to achieve the intended building performance. Otherwise, use decentralized controls such as vacancy sensors for lighting, programmable thermostats for heating and cooling, and smart power strips for plug loads.

Policy

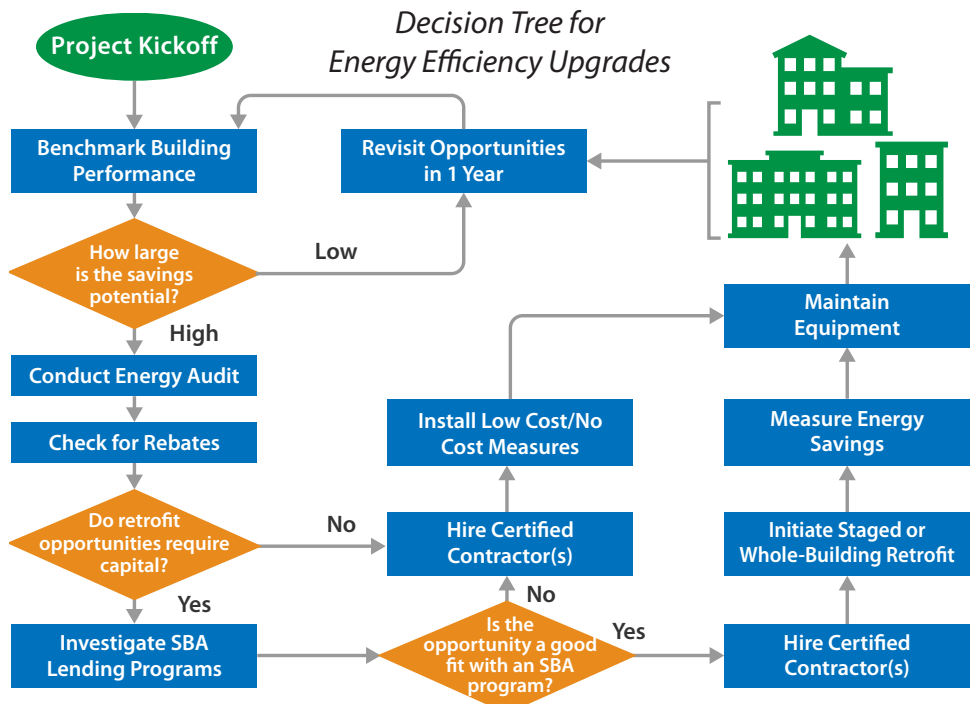
- Establish corporate policies to encourage and manage energy-efficient building operation.

energy efficiency improvements and outline processes to guide project managers through:

1. Planning
2. Setting efficiency goals
3. Energy modeling
4. Using integrated design to maximize energy efficiency
5. Selecting energy efficiency measures
6. Construction
7. Building commissioning
8. Measurement and verification (M&V) of savings
9. O&M

If you are planning to upgrade your existing building, use the **Advanced Energy Retrofit Guides** (<http://energy.gov/eere/buildings/advanced-energy-retrofit-guides>), to help plan, design, and implement energy improvement projects in your building. The guides walk project managers through:

1. Planning
2. Benchmarking
3. Energy auditing
4. Financing
5. Low cost/no cost measures
6. Staged and whole building retrofits
7. Economic analysis
8. M&V of savings
9. O&M



How Can the Small Business Administration Help Me?

SBA offers a number of resources to help businesses improve their building efficiency and green business practices. Schedule a free business development meeting with a local SBA Small Business Development Center, Women's Business Center, or SCORE Association

(Counselors to American Small Businesses). These entities can help you incorporate energy efficiency and guidance from SBA's **Green Business Guide** (<http://www.sba.gov/green-business-guide>) into your business model. They can also help navigate other SBA resources dedicated to **energy efficiency and sustainable business practices** (<http://www.sba.gov/category/navigation-structure/energy-efficiency>).

Small Business Administration

Loan Programs

SBA offers numerous loan programs that can be used to improve the energy efficiency of your building. By providing government guarantees to loans made by commercial lenders, SBA helps to enhance small businesses credit by guaranteeing 50%–85% of an eligible bank loan. Learn more about SBA loan programs in the table to the right. SBA also offers low-interest disaster loans for areas that have been damaged by a declared disaster.

Other Types of Financial Assistance

Financial assistance can also come from federal, state, or utility programs. Many utilities have incentive programs that come in the form of a reduced cost energy audit, rebates for building equipment, or special financing programs. For a full list of utility, state, and federal rebates offered for energy efficiency and renewable energy, visit the Database of State Incentives for Renewables & Efficiency website (www.dsireusa.org).

Making the Business Case

Many cash flows, both positive and negative, may be associated with your building efficiency upgrade. Positive cash flows represent net inflows of money; negative cash flows represent net outflows of money (DOE 2014a). To calculate the cost and payback of your efficiency investment, be sure to consider the cash flows listed below. Additional resources to help you with this can be found on the SBA website and in the AERGs.

Positive cash flows:

- Annual cost savings for electricity
- Annual cost savings for natural gas
- Annual cost savings for water and other resources
- Change in O&M costs (usually positive, but can be negative in some cases)
- Salvage value of existing equipment (for retrofits only)
- Financial incentives (rebates, tax credits, etc.)

Negative cash flows:

- Purchase cost of equipment
- Installation cost of the equipment and other efficiency upgrades

Loan Program	Maximum Loan Amount
7(a): SBA's most common and flexible loan program. Can be used to finance projects for purchase of equipment, machinery, furniture, fixtures, supplies, and materials. Can be used for real estate purchases, including land and buildings, and building construction and renovation.	\$5 million
SBA Express: 36-hour application review and response from SBA	\$350,000, with restrictions on some types of debt refinancing. The lenders and borrowers negotiate the interest rates and loan terms.
SBA Microloan: SBA's microloan program provides loans for small businesses to be used for working capital, inventory or supplies, furniture or fixtures, or machinery or equipment.	\$50,000 (pending lending institution, the maximum loan amount can go up to \$350,000).
CDC/504: Designed to provide financing for real estate purchases. Delivered by Certified Development Companies (CDCs) – nonprofit organizations that are set up to contribute to the economic development of their communities. Provides long-term, fixed rate financing to acquire fixed assets (such as real estate or equipment) for expansion or modernization. Can also be used to purchase land (including existing buildings), improve assets, construct, modernize, renovate, or convert facilities.	\$5–\$5.5 million, depending on whether a building owner can reduce energy use by 10% or produce 10% energy using renewable energy sources.

- Disposal cost of existing equipment (for retrofits only)
- Cost of planning and designing EEMs
- Additional M&V costs, if any
- Replacement cost at the end of useful life for EEM/package.

Additional Technical Assistance

Additional tools and resources are available to help small businesses identify and implement energy savings upgrades:

Resources for Informed Small Business Energy Efficiency Decision Making:

This document provides a thorough summary of available energy savings calculators, purchasing and procurement case studies, incentive programs, and general information and resources that can help small businesses make smart decisions around energy efficiency. For more information, visit: <http://www.anl.gov/energy-systems/downloads/sb-ee-resources>.

2030 District Small Commercial Toolkit:

The 2030 District Small Commercial Toolkit includes technical tools that enable project managers to identify, execute, and track energy savings retrofits for small commercial properties. For more information, visit: <http://www.2030districts.org/toolkits>.

ENERGY STAR® for Small Business:

Through the ENERGY STAR Small Business website, find technical resources for small businesses, ask technical questions, and visit the existing buildings section for comprehensive guidance on setting up an energy management program, benchmarking energy performance in ENERGY STAR Portfolio Manager, saving energy, and getting recognition from the U.S. Environmental Protection Agency. For more information, visit: <http://www.energystar.gov/buildings/facility-owners-and-managers/small-biz>.

America Saves!: Supported by DOE, the Preservation Green Lab of the National Trust for Historic Preservation is currently working with a team of experts to pinpoint long-term energy cost savings in existing small buildings. The America Saves! pilot will use energy and facility information to show the financial attractiveness of money- and energy-saving building improvements. Visit the link below to see if these energy efficiency services are offered in your area: <http://www.preservationnation.org/information-center/sustainable-communities/green-lab/america-saves/>.

Case Study:

Colorado Company Uses Small Business Administration Loan Program To Finance New Energy-Efficient Corporate Office

In 2013, Rocky Mountain Excavating, Inc. (RME) used the SBA CDC/504 Loan program to finance its expansion into a new energy-efficient building in Castle Rock, Colorado. RME is a service-disabled-veteran-owned small business and certified 8(a) company that provides general contracting, construction management, and design-build services throughout Colorado, New Mexico, Wyoming, and the entire Rocky Mountain region. This sustainable design project created 40 jobs and is anticipated to save RME a minimum of 10% in its energy costs for facility operations through efficient improvements such as additional insulation, energy-efficient windows, and lighting and controls strategies.

Community Economic Development Corporation was the CDC that helped RME finance this project. CDCs are nonprofit corporations, certified and regulated by the SBA, that work with participating lenders to provide financing to small businesses.

RME's 504 Loan is an SBA financing program established to target companies in their growth cycle to create jobs, expand their tax base, and improve



14 years of excavating in the Flathead Valley! RME can get the job done right, from helping you plan your property layout to the rough landscaping. *Photo by Chris Weems, RME*

American communities. 504 Loans provide long-term fixed asset financing to small businesses to purchase or improve land, buildings, and major equipment, in an effort to facilitate job creation and local economic development.



This new energy-efficient building, financed through SBA, is expected to reduce RME's energy costs by 10%. *Photo by Chris Weems, RME*

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