

Federal Programs and Incentives for Energy Savings



Cynthia Veit
EPA New England
Framingham, MA
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In the news



Environmental and Economic Benefits

- Energy Efficiency (EE)
- Renewable Energy (RE)
 - Save money
 - Reduce waste
 - Lower emissions of greenhouse gases (GHG)

Emergency Economic Stabilization Act of 2008



Credits & incentives for production and investment:

- Solar energy extended to 2016
- Geothermal energy extended through 2010
- Wind energy extended through 2009
- Biomass energy extended through 2010
- Marine energy created and valid through 2010
- Combined heat & power systems extended to 2016
- Alternative fuels extended through 2009
- Accelerated depreciation for smart meters and smart grid systems
- Removed excise tax for APUs
 - Public utilities
 - Energy or fuel producers
 - Financial investors
 - Retail gas stations
 - Residential home builders/real estate developers
 - Truck drivers/fleet owners

Grants

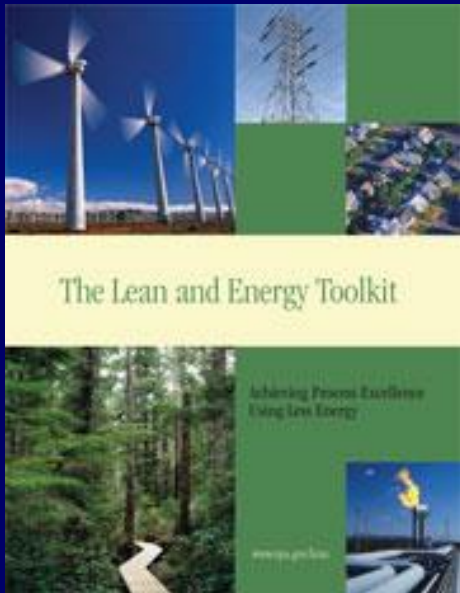
USDA Rural Energy for America Program (REAP) – (grant)

- Promotes energy efficiency/renewable energy for agricultural producers and rural small business
- Eligibility – Commercial, Schools, Local, State and Tribal Governments, Rural Electric Cooperative, Agricultural, Public Power Entities
- Maximum limit of grant equals 25% of project cost with various caps
- usda.gov/farmbill

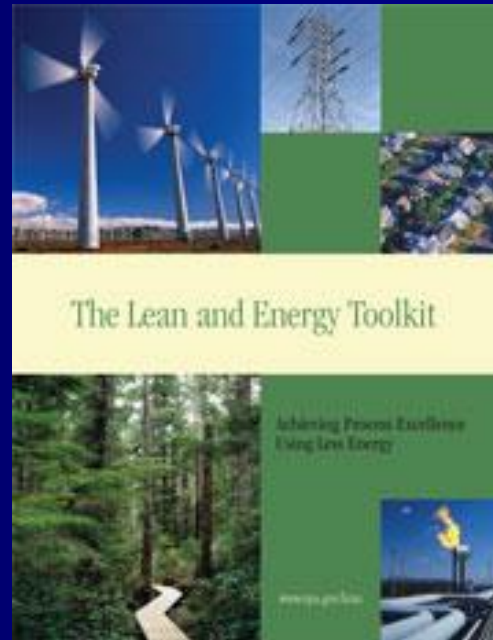
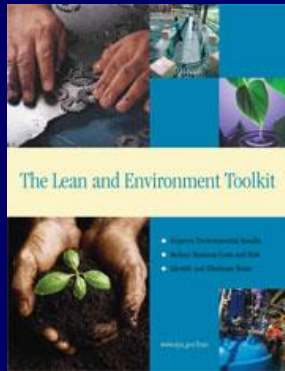
Tribal Energy Program Grant (competitive)

- Federal Grant program to promote tribal energy sufficiency
- Eligible systems include passive solar space heat, solar space & water heat, photovoltaics
- eere.energy.gov/tribalenergy

EPA-New England



Lean and Energy Toolkit



- *Modeled after Lean manufacturing methods*
- Cost Savings
- Climate Change and Environmental Risk
- Competitive Advantage

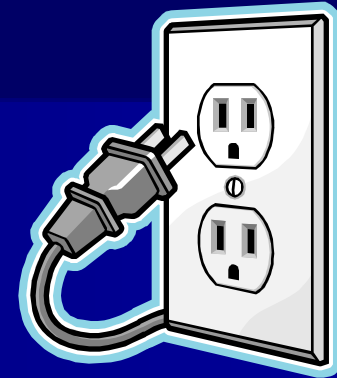
Lean and Energy

Explicit consideration of energy wastes

- Assess energy use
 - Observe how energy is used
- Reduce energy use
 - Target energy wastes
- Maximize Lean and Energy processes
 - Find windows of opportunity for energy savings, eg installing efficient equipment, switching to more environmentally-friendly fuel and changing design of products

Assess and Reduce Energy Usage

Energy Sources and End Uses
determine energy end uses



Understand the Costs of Energy Use
discover "hidden" costs (listed as overhead
not assigned to a production area)



Energy Efficiency Benefits of Lean
Implementation

develop a strategic Energy Management System



the Basics...

- Energy Assessment Strategies
 - Walk Through Processes to Observe Energy Use
 - Energy Audits and Measuring Energy Use
 - Examine Energy Use with Value Stream Mapping
 - Use Six Sigma to Find and Eliminate Energy Waste and Variation
 - Conduct Energy Kaizen Events
- Energy Reduction Tools and Strategies
 - Use Total Productive Maintenance to Reduce Equipment Energy Waste
 - Replace Over-Sized and Inefficient Equipment with Right-Sized Equipment
 - Design Plant Layout to Improve Flow and Reduce Energy Use
 - Encourage Energy Efficiency with Standard Work, Visual Controls, and Mistake Proofing
- Lean Windows of Opportunity for Energy Savings
 - Going Even Further with Clean Energy (RE)

ENERGY STAR

A Voluntary Partnership



In 2007, Americans - with the help of ENERGY STAR - saved \$16 billion, energy equivalent to 5% of U.S. electricity demand, and 40 MMT of greenhouse gas emissions.



- Environmental leadership through superior energy performance
- Guidance, tools, and resources to help organizations achieve efficiency goals

ENERGY STAR

Product Rebates

- ENERGY STAR partners occasionally sponsor special offers, such as sales tax exemptions or credits, or rebates on qualified products
- energystar.gov/index.cfm?fuseaction=rebate.rebate_locator

Buying in bulk

- Join with other businesses
- quantityquotes.net



Tax Deductions for Commercial Buildings:

- up to \$1.80 per square foot available to owners/ designers of new or existing commercial buildings that save at least 50% of the heating and cooling energy of a building that meets ASHRAE Standard 90.1-2001. Partial deductions of up to \$.60 per square foot can be taken for measures affecting any one of three building systems: the building envelope, lighting, or heating and cooling systems. These tax deductions are available for systems "placed in service" from January 1, 2006 through December 31, 2013.
- energystar.gov/index.cfm?c=products.pr_tax_credits#s8

Why?

- **Cut waste.** Buildings typically waste 30% of energy consumed. ENERGY STAR buildings perform 35% better than average
- **Save money.** New England has among the nation's highest energy costs
 - Our 1500 cities, towns spend nearly **one billion** dollars every year on energy for buildings and schools
- **Reduce emissions.** Energy used in buildings is the number one source of GHG emissions in most communities



Opportunities in Buildings

- Commercial buildings and industrial facilities generate about **50%** of U.S. carbon dioxide emissions.
- **30%** of energy consumed in commercial and industrial buildings is wasted.
- Reductions of **10%** in energy use can be possible with little or no cost.

EPA's extensive research shows...

400% variation

in energy use intensity of buildings

(Source: Commercial Buildings Energy Consumption Survey)

Variation that is not explained
by age, technology, hours, size, climate

Do You Know How Well Your Facilities Perform?

- You can't manage what you don't measure.
- Until recently, a standardized, comparable metric of whole building energy performance **did not exist!**
- EPA's **Energy Performance Rating System** was developed to meet this need.

Need for a Rating System for *Buildings*



Compare this vehicle to others in the FREE FUEL ECONOMY GUIDE available at the dealer.

CITY MPG

60

HIGHWAY MPG

51

2004 PRIUS 4-CYL. 1.8 LITER 158HP V-6 CONC. SHIFTER AUTOMATIC VARIABLE GEAR RATIO TRANSMISSION

Estimated Annual Fuel Cost: \$ 392

see www.fueleconomy.gov

Fuel Efficiency
MPG

Is 60 MPG high or low for an automobile?

Is 80 kBtu/SF/YR high or low for a building?

Statement of Energy Performance

EPA Rating

STATEMENT OF ENERGY PERFORMANCE
Margrave High School
Building ID: 107175
For 12-month Period Ending: January 31, 2004
Date SEP Generated: March 20, 2004

Margrave High School
2200 Hwy 26
Longmont CO 80501

Owner:
Cabrera Group
Contract: John Doe
101 South Fort Meade Drive
Suite 101
Arlington VA 22204
(703) 241-0000

Facility Space Use Summary

Space Type	Area(SF)	Number of Students	Number of PCs	Cooling Percent
Computer Data Center	138	NA	NA	NA
K-12 Schools	28,221	1,211	420	100

Site Energy Use Summary

Electricity (kBtu)	5,648,801	Professional Verification	John Doe
Propane (kBtu)	320,419	101 South Fort Meade Drive	Suite 101
Natural Gas (kBtu)	0	Arlington VA 22204	(703) 241-0000
Total Energy (kBtu)	5,978,220	License Number: 123456789	State: VA

Results

Energy Performance Rating¹ (1-100): 94

Energy Intensity²
Site (kBtu/SF-yr): 17
Source (kBtu/SF-yr): 49.4

Emissions

CO ₂ (1000 lbs/yr)	5,793
SO ₂ (1000 lbs/yr)	265
NO _x (1000 lbs/yr)	21

Energy Cost

Cost (\$/yr)	\$24,400
Intensity (\$/SF-yr)	\$0.72

Indoor Environment Criteria³

Interior air pollutants controlled?	Yes
Adequate ventilation provided?	Yes
Thermal conditions met?	Yes
Adequate illumination provided?	Yes

Notes:
1. According to ENERGY STAR, a building is EPA-qualified if it meets 10% of the Total Energy Use. Award of ENERGY STAR is not their full approval or seal from EPA.
2. Energy performance index (EPI) is the minimum energy index for buildings eligible for ENERGY STAR.

ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency. EPA is not responsible for the accuracy of the information provided on this statement or for the results of any use of this building. To certify that the information contained on this statement is accurate.

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How?

energystar.gov

- **Portfolio Manager (benchmarking)**

Also:

- Target Finder (design of new buildings)
- Cash Flow Opportunity Calculator
(calculate savings with different scenarios)
- Building Upgrade Manual



FACILITY SUMMARY REPORT

Sample Facility

For 12-month Period Ending: February 28, 2007
Date Generated: October 25, 2007

This document was generated using EPA's Portfolio Manager system. All information shown is based on data provided by the Portfolio Manager account holder. Depending on the use of the SEP Facility Summary, building owners or managers may want to have a professional engineer (PE) verify that the underlying data is accurate. Blank space has been left intentionally on the SEP Facility Summary for a PE stamp.

Arlington, VA 22201

Year Built:

Gross Floor Area: (ft²) 15,000

Facility Space Use Summary

Office

Space Name	Gross Floor Area (ft ²)	Operating Hours/Week	Workers on Main Shift	Number of PCs	Office Air-Conditioned	Office Heated
Sample Space Name	15,000	55	35	32		

Energy Performance Comparison

Results	Current	Baseline	Delta	Target	Industry Average	ENERGY STAR
Energy Performance Rating	73				60	75
Energy Intensity (kBtu/ft ²)						
Site	40.86				53.85	39.83
Source	136.47				179.86	133.03
Energy Cost						
\$/year	2,400.00				3,163.00	2,339.50
\$/ft ² /year	0.16				0.21	0.16
CO ₂ Emissions (tons/year)	103.00				136.75	100.40

EPA NE's Green Lab

- EPA New England's Regional Lab in Chelmsford, MA was the first EPA lab in the U.S. to earn LEED Gold certification
- Regional Lab's energy consumption has been reduced by 30% and saved over \$270,000 in 2007 alone.
- Energy saving measures:
 - **Expanding night/weekend hours**
 - **Shutting down analytical equipment and processes**
 - **Manually adjusting chiller / heat supply temperature and humidity controls**
 - **Maximizing natural lighting**
 - **Conducting daily "end of day" walk-throughs**



Buildings Savings

- Whitman-Hanson Regional High School
 - Designed to maximize energy efficiency and use renewables
 - Daylighting, energy efficient mechanical systems and appliances, a white roof predicted to save nearly \$100K per year in energy costs
 - 51 KW PV array on roof meets 5% of schools energy use
- Stamford, CT
 - Occupancy sensors, variable frequency drives and other measures at city's Government Center, reduced electric bills 24%, or \$124,000 every year

Also ENERGY STAR



**AEGON Center
Louisville, KY**



**Shriners' Hospital for
Children
Houston, TX**



**500 Boylston St.
Boston, MA**



**Hillsborough County Water
Department Administration
Building
Hillsborough County, FL**



**Westin San Francisco
Airport
Millbrae, CA**



**Twin Peaks Charter
Academy
Longmont, CO**



**Blue Earth County Courthouse
Mankato, MN**

Bonus

- **ENERGY STAR National Recognition**
 - ENERGY STAR Leaders for energy intensity reductions of 10% or more
 - ENERGY STAR Label for Buildings scoring 75 or higher

Building types eligible for energy performance rating (label):

- Offices
- Bank/Financial Institutions
- Courthouses
- K-12 Schools
- Hospitals (Acute Care and Children's)
- Hotels
- Retail Stores
- Supermarkets
- Residence Halls/Dormitories
- Warehouses (storage only, not manufacturing)
- Medical Offices
- Wastewater Facilities



SmartWay

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SmartWay

The Smart Way to Save Fuel,
Money, and the Environment

SmartWay Certified Vehicles



Shopping for SmartWay Certified Vehicles? **Look for the leaf on the EPA Green Vehicle Guide!**

- Smart Buying and Driving Tips
- Learn More about SmartWay Certified Vehicles

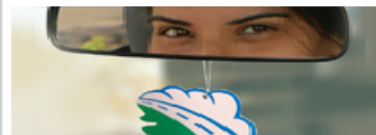
SmartWay Financing Options



Get technology and truck financing through our **Innovative Financing!**

- SmartWay Clean Diesel Finance
 - SmartWay Finance Center
- [EXIT Disclaimer](#)

New Leaf Campaign



Learn how **choosing green cars and trucks** can save and money, and help the environment!

- Watch the TV commercial
- Listen to the radio commercial
- View the print PSAs

SmartWay Transport



Ready to **join a partnership** that will save money and reduce fuel consumption?

- Join SmartWay
- Download the FLEET Models
- View the Partner List

SmartWay Tractors & Trailers



Learn about the benefits of **Certified SmartWay tractors and trailers!**

- Partner FAQs
- OEM Specifications
- Idling Reduction Strategies

News & Features

- **October 7, 2008** SmartWay announces 27 winners of the 2008 SmartWay Excellence Awards.
- **September 24, 2008:** EPA Awards \$3.4 Million in Grants for Innovative Finance Loans for Fuel-efficient Trucks and Equipment

[Read More SmartWay News](#)

Shippers and Carriers

SHIP SMARTER



An environmentally appealing way to transport goods that's also deliciously profitable.

SmartWay[™]Transport helps shippers and for-hire carriers lower greenhouse gases and other emissions, while at the same time giving the average truck a fuel savings of \$2,000 per year.

To find out more about this new partnership, call for your info kit at 1-734-214-4767 or log onto www.epa.gov/smartway.



A new voluntary program from the U.S. Environmental Protection Agency

- Owner-operators
- For-hire fleets
- Businesses that hire fleets
- Businesses with own fleet

Benefits for Carriers

- Idle reduction
- Speed control
- Driver training & incentives
- Improved aerodynamics
- Advanced tire technology
- Advanced lubricants
- Improved freight logistics
- Weight reduction
- Intermodal alternatives

Benefits for Shippers

- Ship more freight with SmartWay Carrier Partners
- Preferential docking for SmartWay Partners
- Idle reduction at docks
- Driver comfort stations
- Improved pick-up & delivery scheduling

Examples

- Manufacturer in RI – LEED certification

+ 1 pt



Waiting Room

- Green Mountain Coffee



+



Websites

- epa.gov/lean/
- energystar.gov/
- epa.gov/smartway/

mep.nist.gov/

finance.senate.gov/ (click *Legislation*)

energy.gov/taxbreaks.htm

Contacts



U.S. EPA – Region 1

Cynthia Veit

617-918-1666

veit.cynthia@epa.gov

Shubhada Kambli

617-918-1584

kambli.shubhada@epa.gov

SmartWay

Abby Swaine

617-918-1841

swaine.abby@epa.gov