

Be a Leader –  
Change Our Environment for the Better



### U.S. EPA's ENERGY STAR®

The U.S. Environmental Protection Agency (EPA) can help you with buildings and plants to:

- Reduce energy waste
- Reduce GHG emissions
- Protect the environment

---

---

---

---

---

---

---

---

### What is ENERGY STAR?



- A government-backed, voluntary program that helps businesses and individuals protect the environment through superior energy performance by providing energy-efficient solutions for homes, businesses, and institutions.
- The national symbol for environmental protection through energy efficiency, recognized by more than 65% of all U.S. households.

---

---

---

---

---

---

---

---

### ENERGY STAR Accomplishments



- More than **250 school districts** have joined as ENERGY STAR partners.
- **29 school districts** have been recognized as ENERGY STAR Leaders for portfolio-wide improvement.
- More than **13,000 school facilities** (22% of the market) have been rated using EPA's energy performance rating system and more than **700 have earned the ENERGY STAR.**

---

---

---

---


---

---

---

---

## Examples of Success



- **Colorado Springs School District 11** has implemented an energy management program that has resulted in an estimated annual energy savings of more than \$928,000 and significant IAQ improvements.
- **Davenport Community School District** has saved more than \$1.2 million in energy costs since 2003-2004 despite a 50 percent increase in natural gas prices.
- **Seaford School District** has earned the ENERGY STAR for all of its schools and reduced CO<sub>2</sub> emissions by 54,000 lbs per year all while maintaining indoor environmental quality.

---

---

---

---

---

---

---

---

## ENERGY STAR Offerings



ENERGY STAR offers organizations

- Technical support
- Financing advice
- Web resources and tools
  - Guidelines for Energy Management
  - Portfolio Manager
  - Target Finder
  - ENERGY STAR Purchasing Tools
- Training
- Achievement awards and other recognition

---

---

---

---


---

---


---

---

## Superior Energy Management Approach



Based on the successful practices of ENERGY STAR partners, EPA has identified the key components for a successful energy management program.




---

---

---


---

---

---

---

---



**Maximizing Indoor Environmental Quality with ENERGY STAR**

---

---

---


---

---

---

---

---



**Indoor Air Quality and Energy Efficiency**

**Savings of 40- 45%** possible with energy saving actions compatible with IAQ.

*Energy Cost and IAQ Performance of Ventilation Systems and Controls*

<http://www.epa.gov/iaq/largebldgs/index.html>

---

---

---


---

---

---

---

---



**ASHRAE 90.1 & ENERGY STAR**

<b>ASHRAE 90.1</b>	<b>ENERGY STAR</b>
<ul style="list-style-type: none"> <li>• Does not measure whole building energy use</li> <li>• Focuses on improving the efficiency of individual components of a building</li> <li>• Excludes "unregulated loads" from regulation, and therefore from energy estimates of the building</li> </ul>	<ul style="list-style-type: none"> <li>• Measures whole building energy use compared to similar buildings in the U.S.</li> <li>• Focuses on whole building energy performance</li> <li>• Includes unregulated loads in rating calculation</li> </ul>

---

---

---

---


---

---

---

---

## Overview: Key Factors



<u>Energy Efficiency</u>	<u>IEQ</u>
<ul style="list-style-type: none"> <li>• Outdoor Climate →</li> <li>• Building envelope →</li> <li>• HVAC →               <ul style="list-style-type: none"> <li>- Outdoor Air (OA) ventilation requirements</li> <li>- T-RH setpoints</li> <li>- Equipment sizing</li> <li>- Equipment efficiencies</li> <li>- Equipment, energy performance and operating controls</li> </ul> </li> <li>• Lighting loads →</li> <li>• Other loads →</li> </ul>	<ul style="list-style-type: none"> <li>• Outdoor climate and pollution</li> <li>• Building envelope</li> <li>• HVAC               <ul style="list-style-type: none"> <li>- OA ventilation rate needs</li> <li>- Occupant needs for T-RH</li> <li>- Sufficient equipment capacity</li> <li>- Reliable functional performance</li> </ul> </li> <li>• Lighting quality</li> <li>• Indoor pollution source loads</li> </ul>

---

---

---

---

---

---


---

---

---

---

## Actions Compatible with IEQ



- Install Efficient fans, motors, drives: **OK**
- Install Efficient chillers/boilers: **OK**
- Reduce lighting/office equipment use at night: **OK**
- Energy recovery: **Good**
- Conduct Preventive Maintenance: **Good**
- Commissioning controls & equipment: **Good**

**OK** = Reduces energy with no impact on IEQ or where IEQ can easily be protected  
**Good** = Reduces energy and could improve IEQ

---

---

---

---

---

---


---

---

---

---

## Actions Compatible With IEQ With Cautions



- **Install an Air-side economizer: Good**
  - Watch Relative Humidity (RH) and polluted outdoor air
- **Tighten the Building shell: OK**
  - Watch infiltration rate and adjust OA supply accordingly-all HVAC systems
- **Reduce internal loads: OK**
  - Avoid non ENERGY STAR qualified upgrades to protect against inadequate lighting quality
  - Recalibrate OA control under VAV systems
- **Equipment Downsizing: OK**
  - Watch peak load -- use with Energy Recovery

---

---

---

---

---


---

---

---

---

---

  
ENERGY STAR

## ENERGY STAR Tools and Resources for K-12 School Districts

---

---

---


---

---


---

---

---

  
ENERGY STAR

## Need for a Rating System for Buildings




**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**



---

---

---


---

---

---

---

---

  
ENERGY STAR

## Target Finder

### Energy Performance Rating for Building Designs

- Based on actual "whole - building" energy performance data
  - DOE-CBECS
- Normalizes for factors that affect energy use intensity
  - Climate/weather
  - Size
  - Occupancy

---

---

---


---

---

---

---

---

**Target Finder - Benefits** 

Set “realistic” energy performance goals and receive a rating for the intended energy use in design projects

- Determine rating, percent energy reduction, percent CO<sub>2</sub> reduction corresponding to estimated energy use
- Obtain EPA recognition – rating ≥ 75
- Target Finder serves as metric for AIA 2010, Architecture 2030, U.S. Green Building Council

---

---

---


---

---

---

---

---

**Portfolio Manager** 

**Energy Performance Rating for Existing Buildings**

**With Portfolio Manager, You can:**

- Manage Energy and Water Consumption for All Buildings
- Rate Your Energy Performance
- Set Investment Priorities
- Verify and Track

---

---

---


---

---

---

---

---

**Data Needed for Portfolio Manager** 

- **Building Identifiers**  
Name, street address, zip code for weather normalization
- **Energy Use**  
Building specific invoice information from all purchased energy  
At least 11 consecutive months for each source
- **Space Type Data**  
Square footage, hours of operation, number of students, # of PC's

---

---

---

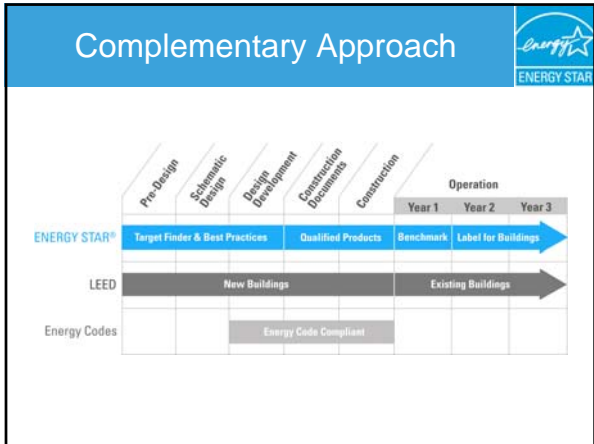
---

---

---

---

---




---

---

---

---

---

---

---

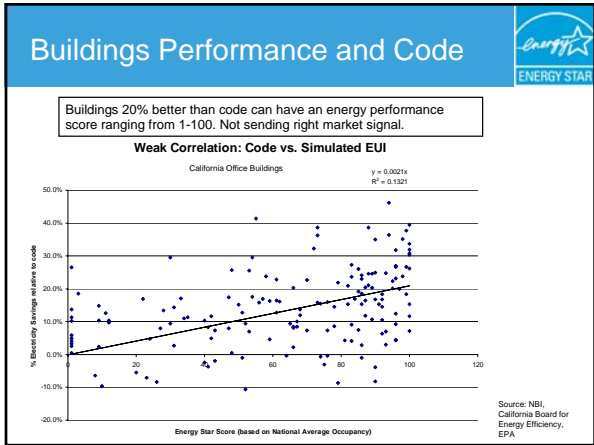
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

---

---

## ENERGY STAR Qualified Product Categories

- Lighting
- Appliances
- Consumer Electronics
- Office Equipment
- Food Service Equipment
- Heating & Cooling
- Windows & Roofing
- Transformers
- Traffic Lights

**More than 50 qualified product categories**

---

---

---

---

---

---

---

---

---

---

---

---

## Benefits of Purchasing ENERGY STAR Qualified Products



- Equivalent or better quality
- Consume less energy
- Lower utility bills
- Publicly demonstrate commitment to environment

Seaford School District saved more than \$30,000 in life cycle costs by purchasing ENERGY STAR qualified exit signs.

[www.energystar.gov/purchasing](http://www.energystar.gov/purchasing)

---

---

---

---

---

---

---

---

## Quantity Quotes



- **Save time.** Suppliers come to you.
- **Save money.** Suppliers compete against one another for your business.
- **Get the right product.** Customized forms for your purchase request.
- **Keep your contact information private.** Communicate anonymously with suppliers.



[www.energystar.gov/QuantityQuotes](http://www.energystar.gov/QuantityQuotes)

---

---

---

---

---

---

---

---

## Recognition Opportunities for Improving Energy Performance with ENERGY STAR



---

---

---

---

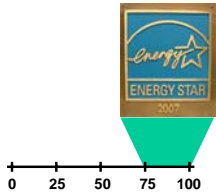
---

---

---

---

## Apply for the ENERGY STAR Label



Buildings in the top 25% nationwide are eligible to earn for the ENERGY STAR, provided they meet or exceed industry standards for comfort levels.

---

---

---

---

---

---

---

---

## Apply for the ENERGY STAR Label



- Facilities that achieve a rating of 75 or higher and are professionally verified to meet current indoor environment standards are eligible to apply for the ENERGY STAR.
- PE Verification of Indoor Environmental Quality
  - Thermal Comfort: ANSI/ASHRAE Standard 55-2004
  - IAQ Analysis: ASHRAE 62.1 2004
  - Lighting Levels: IESNA, Lighting Handbook: Reference & Application, 9th Edition

---

---

---

---

---

---

---

---

## Recognition Opportunities for K-12 Schools



### Estimate Energy Use at Design

- Target Finder
- Designed to Earn the ENERGY STAR



### Verify energy use in operation

- Portfolio Manager
- ENERGY STAR for buildings
- ENERGY STAR Leaders for Portfolio-Wide Improvements of 10%, 20%, 30%, or more



---

---

---

---

---

---

---

---

## ENERGY STAR Partner of the Year



### ENERGY STAR Annual Awards Ceremony

Organizations are recognized for outstanding performance in reducing energy consumption.

#### 2007 Partners of the Year:

Davenport Community School District, IA

Seaford School District, DE

San Diego Unified School District, CA



---

---

---

---

---

---

---

---

## Contact Information



[www.energystar.gov](http://www.energystar.gov)

[buildings@energystar.gov](mailto:buildings@energystar.gov)

Katy Hatcher, National Manager, Public Sector, US EPA  
[hatcher.caterina@epa.gov](mailto:hatcher.caterina@epa.gov)  
(202) 343-9676

The Cadmus Group, Inc. (EPA contractor)

Rob Van Der Like  
[rvanderlike@cadmusgroup.com](mailto:rvanderlike@cadmusgroup.com)  
(352) 694-2478

Kudret Utebay  
[kutebay@cadmusgroup.com](mailto:kutebay@cadmusgroup.com)  
703-247-6138

---

---

---

---

---

---

---

---