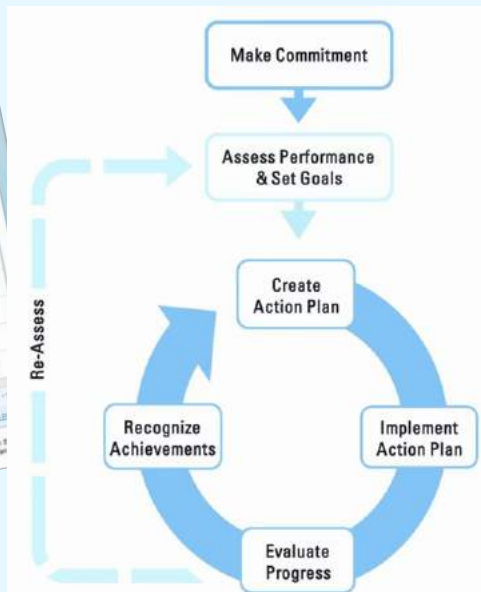


ENERGY STAR Sure Energy Savers No Cost & Low Cost





ENERGY STAR supports your facility management mission



Facility and financial stewardship



Laudato Si', Human Health and Caring for creation



- EPA shares the faith community's concern for **human life, health and the ecosystems that support us**
- **ENERGY STAR provides:**
 - Accurate quantification of energy and greenhouse gas emissions baseline and performance tracking
 - Optional: water and solid waste
 - Objective technical support and training
 - National recognition for achievement



Why Facility Efficiency is Key to Your Stewardship Goals

- ✓ Active, verifiable implementation of Laudato Si' guidance
- ✓ Save money that can be redirected to the mission and priorities
- ✓ Build support and understanding of facility management mission
- ✓ Extends the useful lifespan of your facilities, systems and equipment
- ✓ Supports the credibility of capital campaigns by demonstrating that stewardship of funds is "practiced as well as preached"
- ✓ Increases the asset value of the owned facilities
 - ✓ Improves credit-worthiness for financing new construction or remodeling
- ✓ Improves the overall comfort and appearance of your worship space
- ✓ Can engage the time and talents of congregation members, especially youth groups
- ✓ Serves as a stewardship model for congregation members' homes and businesses
- ✓ Conserves natural resources for future generations
- ✓ Reduces related pollution and climate change emissions

What can YOU do?

- Become an ENERGY STAR Partner: www.energystar.gov/join
- Download the *Action Workbook for Congregations* at www.energystar.gov/congregations

Existing buildings | Commercial new construction | Industrial energy management | Small business | **Congregations**

IN THIS SECTION

Improve the Energy and Water Performance of your Congregation

Track your Energy and Water Use

Learn from others' Successes

External Faith-Based Environmental Stewardship Organizations

ENERGY STAR for Congregations



Did you know that most congregations can cut energy costs by up to 30% by investing strategically in efficient equipment, facility upgrades and maintenance? Congregations decide to focus on energy efficiency for a variety of reasons, including lowering utility bills, reducing energy consumption, and reducing pollution that is harmful to human health and the environment. Virtually all faith traditions teach stewardship of the earth and of its life-supporting natural resources.

RESOURCES FOR CONGREGATIONS

Use these resources as planning guides for implementing cost-effective energy improvement projects for your house of worship.

- [The ENERGY STAR Action Workbook for Congregations](#)
- [Workbook Summary](#)
- [Workbook Appendices](#)
- [Click here for more Tools and Resources](#)

Discover the new and improved Portfolio Manager today.

SIGN UP

Action Workbook for Congregations

A **step-by-step guide** to help congregations manage utility costs, supplemented by a large appendices with worksheets, checklists and other technical information and resources.

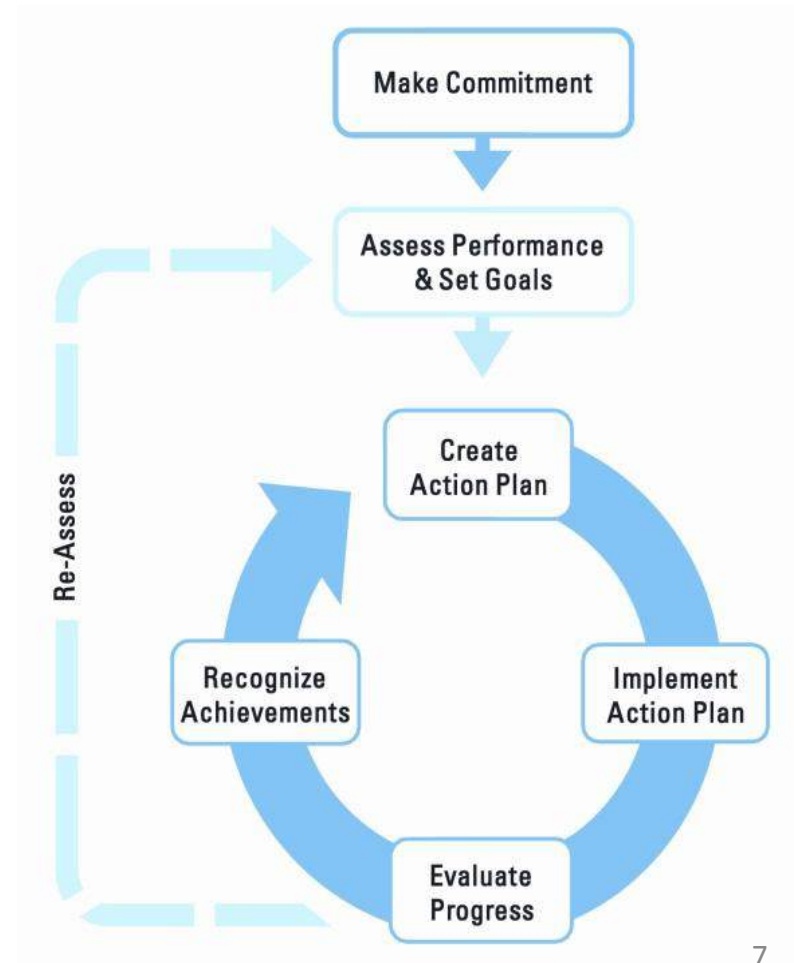
7 Steps to Energy Management

- Step 1: Make a Commitment to Savings
- Step 2: Assess Performance
- Step 3: Set Goals
- Step 4: Create an Action Plan
- Step 5: Implement the Action Plan
- Step 6: Evaluate Progress
- Step 7: Recognize Achievements



Guidelines for Energy Management

- A proven path to stronger stewardship
- Best practices of ENERGY STAR partners
- Adapt the Guidelines to your approach to energy performance





Step 1: Make a Commitment to Saving Energy

- Become an ENERGY STAR partner by joining at www.energystar.gov/JoinBuildings
- Gain the support of your clergy, staff, and governing board.
- Motivate your congregation.
- Create a stewardship team.



Step 2: Assess Performance: Benchmarking

- A benchmark is a baseline of your current energy and water use
 - See how your 1 – 100 score compares nationally
 - Your team can plan, manage, and track improvement projects toward success.
 - *“You can’t manage what you don’t measure.”*
- Portfolio Manager tool is America’s leading platform for benchmarking energy, water use and GHG emissions for commercial buildings
- Learn more at www.energystar.gov/benchmark
- Live and recorded training webinars, short videos, fact sheets, FAQs, glossary and “send us your question” at www.energystar.gov/buildings/training

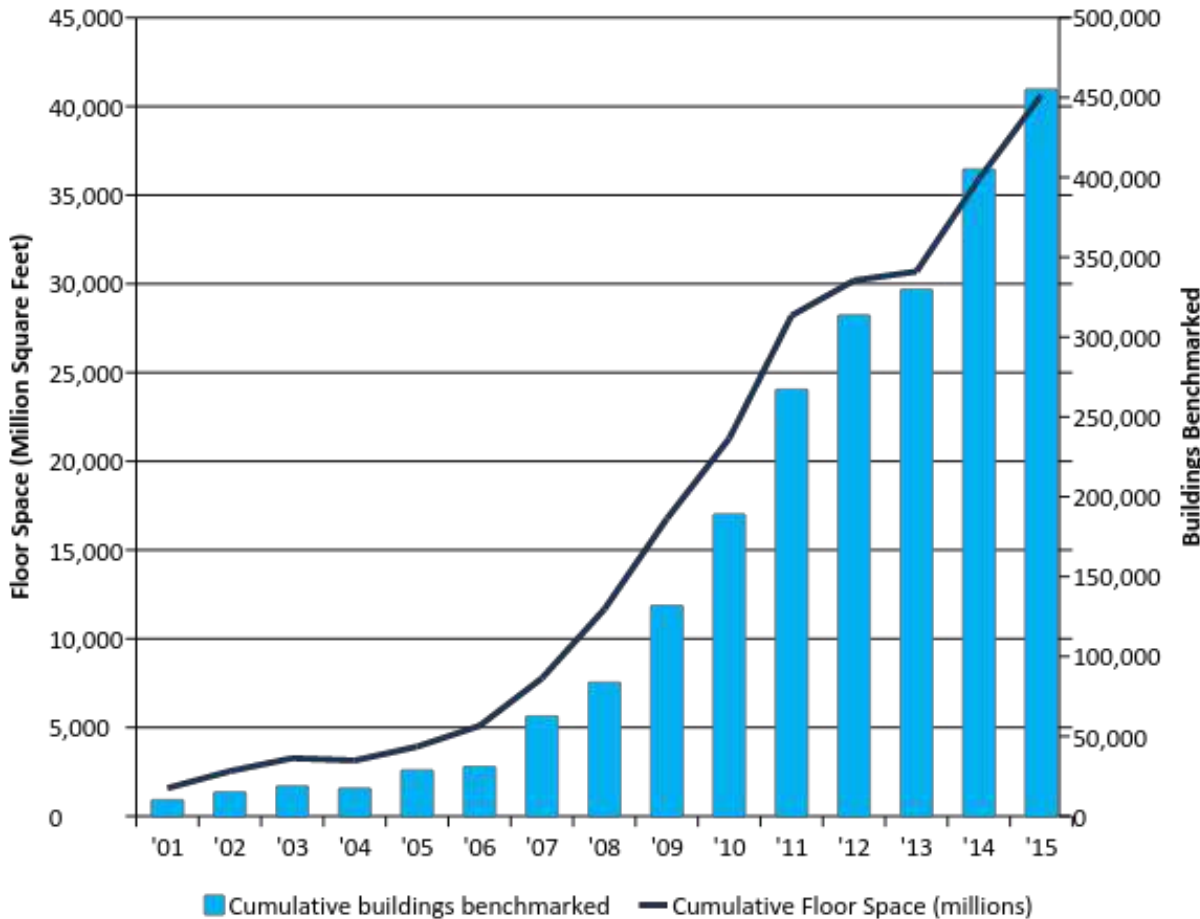


What is Portfolio Manager?

- **Portfolio Manager will help you:**
 - Assess your property's energy and water consumption
 - Track changes in energy, water, greenhouse gas emissions, and cost over time
 - Track green power purchase
 - Share/report data with others
 - Create custom reports
 - Apply for ENERGY STAR certification
- **Metric Calculator – Provides key performance metrics to integrate into a strategic management plan**
 - Energy consumption (source, site, weather-normalized)
 - Water consumption (indoor, outdoor)
 - Greenhouse gas emissions (indirect, direct, total, avoided)
 - ENERGY STAR 1-to-100 score (available for many building types)



ENERGY STAR is the national standard



More than 450,000 facilities benchmarked in Portfolio Manager.

That's **40%** of U.S. commercial building space

Starting Out in Portfolio Manager

FIND THE FACT SHEETS:

- Data Collection Worksheet
- QuickStart
- Utility Data
- Standard Reports
- Custom Reports
- Share Data
- Campus benchmarking
- How to Apply for Certification
- Statement of Energy Performance
- And more...

www.energystar.gov/buildings/tools-and-resources

The screenshot shows the ENERGY STAR Portfolio Manager website. At the top left is the ENERGY STAR logo and the text "ENERGY STAR® PortfolioManager™". At the top right are links for "Help | Login" and "Language: English | Français". Below the logo is a navigation bar with tabs for "MyPortfolio", "Sharing", "Planning", "Reporting", and "Recognition". The main content area is titled "Portfolio Manager Help" and contains several links with icons: "Learn More about Portfolio Manager" (document icon), "Take or View a Training" (computer monitor icon), "Search the Knowledge Base" (lightbulb icon), "Ask a Question" (question mark icon), "Check the Glossary" (magnifying glass icon), and "Web Service Documentation" (envelope icon). Below these links is a social media section with icons for Facebook, Twitter, and YouTube, and text: "Don't forget, we're out there with you! Network with us and other folks who are using Portfolio Manager." At the bottom of the page are "Follow Us" social media icons and a footer with links for "Contact Us", "Privacy Policy", "Browser Requirements", and "ENERGY STAR Buildings & Plants Website". On the right side, there is a "Technical References" section with links for "Source Energy", "Greenhouse Gas Emissions", "ENERGY STAR Scale", "National Median Values", "Accounting for Climate & Weather", and "Thermal Conversion Factors".

ENERGY STAR®
PortfolioManager®



Step 3: Set Goals

- Based on benchmarking scoring and reports, you can better evaluate your priorities and set goals
- Consider:
 - Project scope (one portion of the property or the property as a whole)
 - Timeline (short- and long- term)
 - Linking to organization-wide strategic goals
- Next, prioritize goals to identify the most feasible to accomplish in your ideal timeframe and budget
- Portfolio Manager's goal setting feature can help you track goals on specific energy and cost reductions
- Standard and custom reports can help you educate decision makers and congregation members



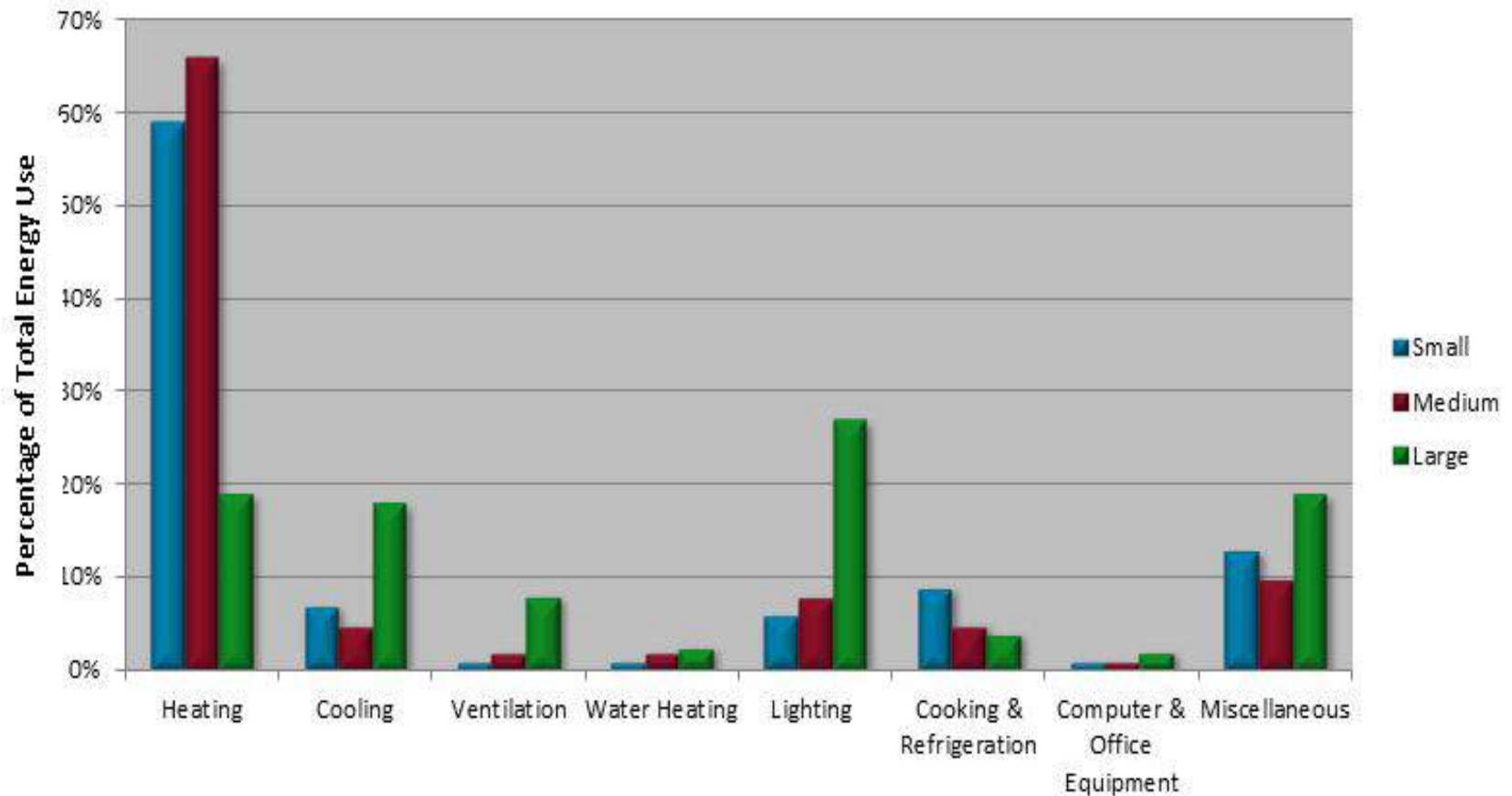
Step 4: Create an Action Plan

- Walk through your building to identify areas for action
- Ask if your utility will join you and identify current applicable rebates
- Before paying for an audit, use no-cost/low-cost ENERGY STAR ***Sure Energy Savers*** to set the stage for improvements:
 - 1) Lighting
 - 2) HVAC
 - 3) Windows and Walls (Building Envelope)
 - 4) Office Equipment
 - 5) Kitchen and Food Service Equipment
 - 6) Water.
- Consider an energy audit
- Find funds for your project(s)



Energy End Use Varies

Energy Use Requirements by House of Worship Size



LIGHTING - WHAT CAN I DO?

- Illuminate spaces only to the light levels required to suit the task.
 - Glare from too much light causes eyestrain, reduces quality and increases costs without benefit
 - See *IESNA Lighting Handbook, Tenth Edition*
 - Delamp to recommended levels
 - See *Appendix B.1.1. How's the Lighting? Conduct an Ass*
- Two basic ways to achieve savings:
 - Installing more efficient equipment.
 - Optimize the way you operate the lights.
 - This means turning lights off when unneeded
 - Walk the property when lights should be off, and note findings
 - Watch for “day-burners” – nighttime lighting on during the day due to failed or dirty light sensor





LIGHTING - WHAT CAN I DO?

- Replace all incandescents with ENERGY STAR qualified LEDs
 - Start with the lights most often in use
 - LEDs cost about 75% less to operate
 - LEDs last 6 times longer
 - LEDs generate about 75% less heat
- Until the past few months LEDs initial cost more than CFLs
- New ENERGY STAR LED specs exceed what CFLs can achieve
 - Major manufacturers ending CFL development
 - Better dimming and better color quality
 - No mercury concerns
 - Variety of shapes/ sizes for recessed cans, track lighting, table lamps, etc
- Many utilities have rebates. retailers have promotions

LIGHTING - WHAT CAN I DO?

- Install LED exit signs
 - Current fixture may accept simple screw-in lighting element
 - New fixture offers 90% savings over incandescent unit
 - Dramatic maintenance savings
 - Improved safety and code compliance reliability
- See *Appendix B.1.2. LED Exit Signs*
- For parking lot lighting, see <http://energy.gov/eere/femp/promising-technology-parking-lot-light-emitting-diodes-controls> and <http://energy.gov/eere/buildings/articles/leds-and-specification->





LIGHTING - WHAT CAN I DO?

- Install occupancy/vacancy sensors
 - Wall mounted sensors in high-use areas automatically turn lighting off when people are not present
 - Occupancy sensors turn off after pre-set amount of time, and turn on when people return
 - Vacancy sensors turn off, but must be manually turned on and generally save more because occupancy sensors will turn on even when daylight may be sufficient
- *See Appendix B.1.3. Occupancy/Vacancy Sensors*
- Install daylight responsive lighting controls on exterior lighting and inside within 15 feet of a window to benefit from free available daylight
- *See Appendix B.1.4.: Daylight Dimmers/Photo Cells*



LIGHTING - WHAT CAN I DO?

- Upgrade T12 (1.5" diameter) fluorescent tubes/magnetic ballasts to T8 (1" diameter) or T5 (<1" diameter) tubes with solid state ballasts
 - T12's (1945-WW II vintage technology) are no longer manufactured
 - T8/T5 provide same illumination at less cost
 - Consider tubular LEDs (TLEDs)
- For LED tube retrofit information:
 - See <http://lightingfacts.com/About/Consumers>
 - See U.S. Navy guidance at <http://gonneville.com/wp-content/uploads/2015/05/TLEDS.pdf>
 - See Underwriters Laboratories **safety alert** for TLED retrofit kits at <http://www.ul.com/newsroom/publicnotices/safety-alert-for-tubular-fluorescent-to-led-luminaire-retrofit-kits/>



HVAC - WHAT CAN I DO?

- Keep doors closed when running HVAC to maintain heated/cooled air
- “Tune-up” both pre-heating and pre-cooling seasons as part of an annual maintenance contract
 - Check the accuracy of thermostats annually (maintenance contract)
 - Units can become dirty or damaged and provide false readings
- Change the filters
- Clean heating and cooling coils
- Keep clutter away from fan coils, baseboards, supply/return vents for air circulation
- Try to schedule special events and cleaning on days just before or after major services for benefit of *consecutive* days temperature stability
- Use fans when a room/area is occupied
 - Comfort is a function of air movement, as well as temperature and humidity



HVAC - WHAT CAN I DO?

- Install a programmable thermostat(s) to optimize operation based on regular, scheduled use
 - Occupants can learn how to temporarily override for long or unscheduled meetings
- This smart thermostat can be programmed to pre-cool or pre-heat spaces for comfort when people enter
 - Unit can be carefully set to turn off the HVAC a little before a space use ends for additional savings
- *See Appendix B.2. Heating, Ventilation and Air Conditioning*



HVAC - WHAT CAN I DO?

- Regular maintenance can extend the useful life of your HVAC system
- Start planning, researching replacement 1 – 2 years before you anticipate replacement
- Have a plan for unexpected equipment failure on the coldest/hottest Sunday or the year—or just before Christmas or Easter !!!
- Don't forget to check on utility rebates
- Cold weather thermostat setback guidelines for pipe organs:
 - The Associated Pipe Organ Builders of America says, "...that temperatures as low as 45 degrees Fahrenheit will not cause damage to the organ; so normal setback ranges of about 55 degrees Fahrenheit to 60 degrees Fahrenheit should not be an issue."



Building Envelope - WHAT CAN I DO?

- Plug the air leaks with caulking, weather-stripping, spray foam
- Survey ceiling/attic interface, around windows and doors, basements, crawl spaces, exhaust vents – any penetration in the envelope
- Doors and windows are “major holes in your building” to be maintained and managed to minimize conditioned air loss
- See Appendix B.3.5.: Check Doors
- “Last resort” – changing out windows is costly, but sometimes necessary
 - Consider reglazing, caulking, weather-stripping and other repair
- Summer shading east and west windows; winter solar gain on southside
 - If conditions allow, consider trees/vines, solar film, insulating curtains



- See Appendix B.3.4.: Check Windows and Shading

ENERGY STAR® Certified in Highlighted Regions

ENERGY STAR

World's Best Window Co.
Millennium 2000®
Vinyl-Clad Wood Frame
Double Glazing - Argon Fill - Low E
Product Type: Vertical Slider
(per NFRC 100-97)

ENERGY PERFORMANCE RATINGS	
U-Factor (U.S./I-P)	Solar Heat Gain Coefficient
0.30	0.30
ADDITIONAL PERFORMANCE RATINGS	
Visible Transmittance	Air Leakage (U.S./I-P)
0.51	0.2

Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. Consult manufacturer's literature for other product performance information. www.nfrc.org



Building Envelope - WHAT CAN I DO?

- Check the roof, being sure to record:
 - Any water intrusion and/or roof age and warranty
 - Roof condition (including signs of leaks, membrane holes, and damaged insulation)
 - roof construction/ insulation thickness and check attic bypasses
- Check the insulation:
 - In an unfinished attic, use loose-fill, sprayed foam, or foamed -in-place insulation
 - In unfinished attic walls and ceilings, use batt or roll insulation
- If you research and consider retrofitting the existing roof with a “green” roof or a “cool” roof make sure to have a structural engineer evaluate the weight a new is going to add

Building Envelope - WHAT CAN I DO?

- Lighter paints reflect, rather than absorb, more sunlight, so the wall surface maintains a cooler temperature and this reduces heat transfer through the walls into the building. During the cooling season, cool paints can decrease the cooling load of the building.
 - Light-colored walls, particularly on the east, west, and south sides of a building, can save energy in hotter climate zones.
 - Cool paints with a solar reflectance of 0.495 have been shown to reduce cooling energy consumption by 4% -13%.





Office Equipment - WHAT CAN I DO?

- Always buy ENERGY STAR certified products for your property when new equipment is needed
- Set computer power settings to “sleep” and save energy when not in use
- Replace old cathode ray (CRT) computer monitors
- Use “Smart Power Strips”
- Control amplifiers, receivers, and other audio units
- Develop an education and/or training program to encourage energy conservation
- See the wide range of ENERGY STAR certified equipment and products at www.energystar.gov/products





Kitchen/Food Service Equipment - WHAT CAN I DO?

- Always buy ENERGY STAR certified products for your property when new equipment is needed
 - See EPA's Responsible Appliance Disposal Program at www.epa.gov/rad
- Check current refrigerators—older models can cost twice as much to run
 - *See Appendix B.5.1. Commercial Food Service Guidance*
 - *See Appendix B.5.2. Refrigerators*
- Position refrigerators and freezers away from heat sources
- Service “walk-in” refrigerators annually
- Use multiple refrigerators only when necessary
- Check water coolers—a non-ENERGY STAR cooler can use more energy than a residential refrigerator
- If buying a new vending machine, buy an ENERGY STAR model

Water – Hot and Cold - WHAT CAN I DO?

- Conduct a water assessment to identify major uses and fix any leaks, especially hot water
- Benchmark water use in Portfolio Manager
- See the EPA Water Sense program for indoor and exterior water efficiency at <http://www.epa.gov/watersense/commercial>
 - Faucets, showerheads, toilets and urinal are labeled by WaterSense
- If buying a new water heater, purchase ENERGY STAR certified and check for rebates
 - Typically, set temperature 110 – 120 degrees or per local code to prevent scalds and save



Water – Hot and Cold - WHAT CAN I DO?

- Optimize water use in heating and cooling systems
 - Evaluate cooling towers, chillers, boilers for efficiency
 - Try to recirculate/reuse water
- Practice water-efficient landscaping
 - Plant native landscaping
 - Reduce turf grass to save water, mowing
 - If irrigating, check the systems for leaks
 - Trees, shrubs and other shading plants can cool the “micro-climate” around buildings several degrees





Step 5: Implement the Action Plan

- **Create a Communication Plan** to keep everyone updated on your achievements and project status
- **Manage the Project—Implement the Upgrades**
 - Designate a “clerk of the works” to keep track:
 - Who is responsible for implementing each project upgrade?
 - Where/how many places) are there project upgrades underway?
 - What were pre-project energy/water baseline, projected and actual savings?
 - What the projects’ budgets and how they are being spent?
 - When the project upgrades completion schedules?



Step 6: Evaluate Progress

- **Manage Maintenance and Track Progress**
 - Managing your property's maintenance is an important part of making sure that the project upgrades made continue to benefit the property for their entire useful life
- **Measure and Verify Savings**
 - Portfolio Manager can run different savings data based on the project information entered, such as the amount of energy and water saved, reduced carbon dioxide emissions, dollars saved, and others.



Step 7: Recognize Achievements

- Recognize the hard work and dedication of your team to achieve savings
- Make sure you publically recognize team members, workers, other collaborators, and supporters, including your local utility and contractors
 - Think about sharing your story with local media, ministerial alliance and community
 - Your example can shine a light on Laudato Si'
 - You can multiply your stewardship achievements by inspiring others to emulate your team's efforts.

Receive the recognition you have earned

- Apply for the ENERGY STAR for Existing Buildings:
- If your congregation scores a 75 or above (1 – 100) in Portfolio Manager, you are eligible
 - Let US know; we will help with pro bono verification and application
- New Construction Designed to Earn the ENERGY STAR
- Participate in ENERGY STAR Challenges and Competitions





Resources for more information

join ENERGY STAR at no cost or obligation at www.energystar.gov/JoinBuildings

Send us your questions via energystar.gov/BuildingsHelp

Portfolio Manager fact sheets, recorded and live training at www.energystar.gov/Buildings/Training

Action Workbook and more resources at www.energystar.gov/Congregations