Energy and Water Efficiency Checklist for Worship Facilities

ENERGY STAR for Commercial Buildings

Grab a clipboard and take this checklist along as you discover opportunities to increase energy and water efficiency at your worship facility. Note that due to the many operating characteristics of worship facilities, some sections may not apply to your property.

For this checklist, focus on uncovering opportunities to save. When you find something, make notes about location, tools, materials, expertise, needed, or further research required.

1 Facility Management and Benchmarking

- ❑ Managing costs starts with knowing your baseline use. Start by printing a Data Collection Worksheet. This Worksheet will list all you need to benchmark your property in the free, online ENERGY STAR Portfolio Manager® tool for energy use, water use, and recycling/materials management.
  - ❑ There are data collection worksheets for many property types. Depending on the operations of your property (and whether you have a single building or many on your property), you may choose to include some or all of the following: worship facility, social meeting hall, residence hall/dormitory, and k-12 school.
- ❑ With the data collection worksheet in hand, collect property use data and utility bills in preparation to set up a Portfolio Manager account.
- ❑ Create an account.
- ❑ Learn more and find all Portfolio Manager training and tech support.
- ❑ After you enter energy data, a 1 - 100 ENERGY STAR® score will compare your property to other U.S. Worship Facilities. A 75 or higher score is eligible for ENERGY STAR certification.
  - ❑ You will also see your EUI or Energy Use Intensity which is approximately energy use/sq.ft. The national Worship Facilities median is 58.4 for Source EUI and 30.5 Site EUI. Many congregations can do better than the national median EUI.

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- ❑ Educate and encourage staff and congregants to report leaks, turn off lights not in use, recycle, and support your environmental stewardship efforts. Showcase your commitment to energy and water efficiency throughout your communications.
- ❑ Adopt a purchasing/procurement policy that specifies the EPA's ENERGY STAR, WaterSense® and Safer Choice® labeled products when applicable.
- ❑ Learn how reducing, reusing, and recycling can help your congregation and the environment by saving money, energy, and natural resources.

Lighting

- ❑ Evaluate the opportunity to upgrade to more energy-efficient lighting options.
  - ❑ Update lighting from incandescent or halogen bulbs to high-lumen LED equipment.
  - ❑ Replace T12 fluorescents and obsolete magnetic ballasts, ideally with tubular LEDs (TLEDs). Retain existing T8s or T5s with electronic ballasts through their useful life.
- ❑ During daytime and evening hours, identify where lights have been left on in unoccupied spaces (including offices, restrooms, storage, hallways, etc.).
- ❑ During the day, look for "day-burners" – that is, exterior and parking lot lighting that is on and should only be on at night, and which has a failed or dirty light sensor.
- ❑ If upgrading your exterior lighting, consider shielded fixtures to direct the light where needed and reduce light pollution.
- ❑ Identify and assess opportunities to use automated lighting controls:
  - ❑ Occupancy/motion sensors for low-traffic areas.
  - ❑ Timers or daylight sensors to turn off exterior and parking lot lights during the day.

TIP:

Consider an "all utility audit" to look for billing errors and proper rate classification for electricity, natural gas, heating oil, water/sewer, and telecommunications. The auditing firm is paid a pre-agreed percentage only after your refund is complete. If there is no refund due, you have confirmed you are not overpaying.

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- ❑ Dimming controls in locations where natural lighting (e.g., near windows, skylights, light tubes) can temporarily supplement or replace fixture lighting.

- ❑ Confirm that lighting controls are installed to "see" what they must and are operating as intended.
- ❑ Assess cleanliness of lamps/fixtures (dust, bugs, any debris) and the need to institute a regular cleaning plan for maximum light output.
- ❑ Identify where adding reflectors can amplify existing lighting.
- ❑ Consider purchasing an inexpensive light meter (under $30) to assess whether any areas are over-lit, compared to requirements or design levels.
- ❑ Review ENERGY STAR product information, calculators and find lighting, fans, and more lighting facts.

TIP:

Use your Zip Code in the rebate finders for ENERGY STAR® and WaterSense® labeled products to check on utility or retail vendor cash rebates before you buy any products. Note that utilities may have pre-purchase application requirements.

Building Envelope

- ❑ Inspect doors and windows to identify gaps or cracks that can be weather-stripped, caulked, or filled with foam insulation. This includes doors, windows, HVAC system joints, vents, and ducts. The idea is to be sure any indoor/outdoor air- exchange is not accidental but is deliberate ventilation. Consider using a "smoke pencil" from the hardware store to detect leaks.
- ❑ If in the market for new windows, consider high-efficiency options that may cost more up front but offer reasonable pay-back.
- ❑ Try to keep closed doors to the outside and to any unheated or uncooled areas.
- ❑ Consider installing solar film, awnings, vegetation, or insulated curtains for south and west windows to block summer heat gain. Ensure solar gain in the winter through south-facing windows.
- ❑ Consider strategic landscaping to save on water bills and cooling in the summer and heating in the winter.
- ❑ Inspect attic insulation levels and address any inadequacies. Add insulation as necessary if remodeling.
- ❑ Check on the roof, note and take photographs of and address any damage, including cracked shingles or other surface aging. In the

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attic, look for signs of leaks, membrane cracks/holes, or damaged insulation.

- ❑ Consider that white, reflective paint can significantly reduce heat gain and extend the life of some roofing.
- ❑ Take advantage of opportunities to use "residential" products and view savings resources.

Heating, Ventilation and Air Conditioning (HVAC)

- ❑ See ENERGY STAR HVAC products and resources.
- ❑ Ensure HVAC system components are being maintained regularly by qualified staff or under an annual maintenance contract to "tune-up" HVAC systems both pre-heating and pre-cooling seasons.
- ❑ Also remember to:
  - ❑ Regularly replace HVAC filters as needed during the heating and cooling seasons.
  - ❑ Ensure free airflow to and from supply/return registers (clear furniture, books, papers, or other materials).
  - ❑ Keep electronics and heat sources away from thermostats.
  - ❑ Use window shades/curtains to block excess heat and educate staff about when to use them.
- ❑ Ceiling and personal fans can help with energy savings by making spaces feel cooler during summer months. A smart thermostat can be programmed to pre-cool or pre-heat spaces for comfort an hour prior to occupation. Avoid heating/cooling unoccupied spaces.
- ❑ Identify and discontinue the use of personal heaters in spaces that already have HVAC equipment. The use of personal heaters may indicate broader issues that should be addressed at the system level.
- ❑ Depending on outside temperature, set programming to turn off the HVAC 15-30 minutes before space use ends.
- ❑ Use "smart thermostats" and a temperature setback policy for heating/ cooling when the building is unoccupied (including any special considerations for summer/winter months).

TIP:

Download the ENERGY STAR Action Workbook for Congregations for more strategies, action items, and ideas.

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- ❑ Have a plan for HVAC failures. Right size new systems by having contractors quote equipment based on high efficiency levels and reduced demand. Do not buy a larger system than you need.
- ❑ Where electricity is the fuel of choice, consider heat pumps or solar for water heating. Heat pumps cost much less to operate than electric resistance heating and even some gas heating units. Where gas is used for water heating, look for a minimum 90% boiler annual fuel use efficiency (AFUE).
- ❑ Maintain boilers regularly, checking for combustion efficiency and sediment.
- ❑ Boilers are a common heating system in many congregations and if you use a boiler, consider the following to increase efficiency:
  - ❑ Ensure your boiler has an inspection and full cleaning prior to the heating season. A professional service provider can run an efficiency test to determine how well the unit is functioning. These tests should also include testing water quality, fuel efficiency, and pressure.
  - ❑ Check all vents and flues for blockages and clear; check pipes to ensure no deterioration or leaks. Keep the boiler room as clean as possible.
  - ❑ Ensure water pressure is consistent by monitoring the pressure gauge. Watch for any water leaking or dripping.
  - ❑ Depending on how consistently your boiler is in use, conduct regular blowdown maintenance by draining water to remove accumulated sludge and impurities that cause corrosion and scaling. This may occur daily or weekly; talk with your service provider for timing recommendations.
  - ❑ If your boiler is reaching the end of life, consider replacing it with a heat pump; heat pumps can significantly reduce overall fuel consumption.

TIP:

Consider "load shedding" to avoid demand charges during your utility system's "peak demand" time of day. This means understanding your utility's time of day rates and avoiding the use of as much of your equipment as possible during this time. Ask your utility about programs and financial incentives for customers to avoid contributing to peak demand.

Equipment/Plug Load

- ❑ For office equipment that needs replacing, consider ENERGY STAR certified options using the online savings calculators and available rebates.

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- ❑ Turn off equipment left on overnight unnecessarily (including equipment left in sleep/idle or screen saver mode).
- ❑ Ensure that power management settings are activated on common area equipment such as TV monitors, printers, and copiers.
- ❑ Use advanced power strips for easy power disconnect.
- ❑ Train staff to unplug rechargeable devices once charged.

6 Kitchen and Food Service Areas

- ❑ When purchasing new kitchen equipment, review ENERGY STAR models, calculate savings and find rebates in advance. All food service equipment is available on the ENERGY STAR website.
- ❑ Avoid placing heating equipment near cooling equipment.
- ❑ Verify oven thermostat accuracy and recalibrate if necessary.
- ❑ Establish operating procedures for cooking/baking equipment (for instance, preheating only when necessary, turning down/off equipment when not in use).
- ❑ Ensure that unused appliances are unplugged or on a power strip that is shut off.
- ❑ Identify major water uses. Find and fix any leaks— especially of hot water.
- ❑ Set water temperature 110 – 120 degrees or per local code to prevent scalding and save energy and money.
- ❑ Determine if low-flow pre-rinse spray valves can be installed.
- ❑ See the EPA's WaterSense® program for water saving labeled products and rebates, for indoor/outdoor water efficiency tips, and best practices.
- ❑ Assess plans for regularly cleaning refrigeration coils.
- ❑ Identify worn and/or leaky door seals/gaskets on refrigerators and freezers. To test, close a door on a piece of paper; if easily pulled out, replace the gasket.
- ❑ Many congregations have residential type refrigerators, which should be replaced if more than 10 years old. Commercial

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refrigerators/freezers are much larger and typically silver/stainless steel.

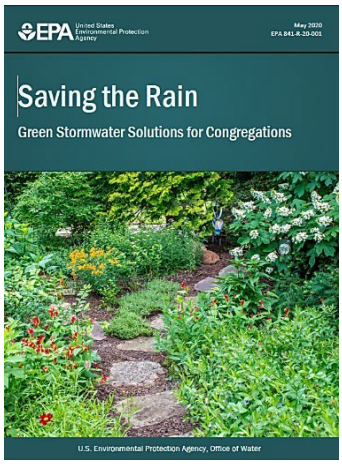
- ❑ Dispose of old refrigerators properly. See the EPA's Responsible Appliance Disposal Program.

7 Water: Interior Hot and Cold

- ❑ Survey water use to identify major uses; find and fix any leaks—especially hot water leaks.
- ❑ Typically, set temperature 110 – 120 degrees or per local code to prevent scalds and to save energy and money.
- ❑ Consider "tankless" heaters (on-demand) for low-use areas or if you have buildings with individual water heaters.
- ❑ Insulate 7-year or older water heaters and the first 3' of heated water "out" pipe.
- ❑ Check out ENERGY STAR water heating product information and calculators; find local retailers and rebates.
- ❑ See the EPA's WaterSense® program for water saving labeled products and rebates, for indoor water efficiency tips, and best practices.

8 Water: Exterior Savings

- ❑ See the EPA's WaterSense® program for water saving labeled products and rebates, for indoor water efficiency tips, and best practices.
- ❑ Survey water use to identify major uses; find and fix any leaks—especially with irrigation.
- ❑ Water-efficient irrigation products and practices—such as native plantings, water budgeting, seasonal scheduling, or WaterSense labeled weather-based irrigation controllers—could cut the amount of water lost outside by as much as 50 percent.
- ❑ Consider xeriscaping, or dry, gardens that use rocks and succulents to reduce or eliminate the need for irrigation.
- ❑ Read and download the EPA's Saving the Rain: Green Stormwater Solutions for Congregations guide which has information on water run off reduction opportunities for many facility types.



9 Waste Reduction and Recycling

- ❑ Reducing waste can save money, highlight your environmental commitment to your congregants, and reduce your environmental impact. Here are some ways to reduce waste:
- ❑ Donations: For those items you find yourself disposing of in the trash, try to find alternate methods to divert those materials out of landfill through implementing a donation system or bringing giveaways (books, clothes, shoes, household items) to shelters, university campus and public libraries.
    - ❑ Recycling: ask your local waste hauler if they provide recycling pick up services; if not, find a local drop-off center.
    - ❑ Place recycling stations where items can be sorted to avoid contamination in your recycling bins. Contamination includes, but is not limited to, food scraps, oil stains, liquids, film plastics, straws, plastic cutlery, napkins, receipts, yard waste, etc.
- ❑ Consider setting up a composting program for food waste.
- ❑ See the EPA's resources on reducing food waste.

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