

Energy and Water Efficiency Checklist for Worship Facilities



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Grab a clipboard and take this checklist along as you discover opportunities to increase energy and water efficiency at your congregation. Focus on uncovering opportunities to save. When you find something, make notes about location; tools, materials, or expertise needed; or further research required. Feel free to add to or modify this list to suit your own needs.

Congregation

Date

Team Lead

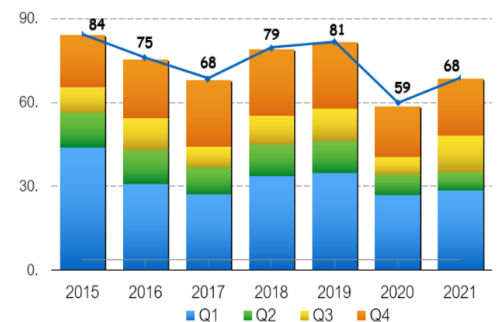


Facility Management and Benchmarking

- Managing costs starts with knowing your baseline use. Start by printing a Data Collection Worksheet at [https://portfoliomanager.energystar.gov/pm/dataCollection Worksheet](https://portfoliomanager.energystar.gov/pm/dataCollectionWorksheet). 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.
 - With the data collection worksheet in hand, collect property use data as well as utility bills in preparation to set up a Portfolio Manager account.
 - Create an account at portfoliomanager.energystar.gov/pm/signup.
 - Learn more at www.energystar.gov/benchmark and find all Portfolio Manager training and tech support at www.energystar.gov/buildings/training.
- 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.
- Adopt a purchasing/procurement policy that specifies EPA's ENERGY STAR, WaterSense® and Safer Choice® labeled products.

TIPS:

Download the ENERGY STAR Action Workbook for Congregations for more strategies, action items, and ideas at www.energystar.gov/congregations.



One congregation's Portfolio Manager quarterly report

Celebrate your success and recognize contributors. Share your successes by sending an email to info@faithforclimate.org



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Lighting

- Evaluate the opportunity to upgrade to more energy- efficient lighting options:
 - Update lighting from incandescent or halogen bulbs to high-lumen LED equipment. This will save money and improve safety and durability.
 - Replace T12 fluorescents and obsolete magnetic ballasts, ideally with tubular LEDs (TLEDs). Retain existing T8s or T5s with electronic ballasts through their useful life.
- Identify where lights have been left on in unoccupied spaces. Faith-Inspired Light Switch Covers can be ordered free from operations@ipldmv.org
- 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.
- When 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.
 - 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.
- 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 local retailers and rebates at www.energystar.gov/products and find lighting, fans, and more lighting facts at www.energystar.gov/lighting.
- Review lighting rebates [available in Virginia](#).



A surprisingly large number of incandescent and fluorescent bulbs can be replaced with energy efficient LEDs.



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Building Envelope

- ❑ Inspect doors and windows to identify gaps, cracks, or other openings that can be weather-stripped, caulked, filled with foam insulation, or otherwise closed. This includes doors, windows, HVAC system joints, vents, and ducts. Be sure any indoor/outdoor air-exchange is not accidental but is deliberate ventilation. Consider using an inexpensive infrared thermometer to identify cold/hot spots, available online or from the hardware store.
- ❑ If new windows must be purchased, consider high-efficiency windows – which will cost more and save more on energy costs.
- ❑ Try to keep doors to the outside and to any unheated or uncooled areas closed.
- ❑ Consider installation of solar film, awnings, vegetation, or insulated curtains for east and west windows to block summer heat gain and allow 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. See tips and information at <https://www.epa.gov/watersense/outdoors>.
- ❑ Inspect attic insulation levels and address any inadequacies. If a major remodel opens walls, consider adding insulation.
- ❑ Check on the roof, note and take photographs of and address any damage, including cracked shingles or other surface aging. In the attic, look for signs of leaks, membrane cracks/holes, or damaged insulation.
- ❑ Depending on “street view” aesthetics and other issues, consider white, reflective paint, vegetative planting on the roof, or solar panels, which can significantly reduce heat gain and even extend the life of some roofing.



Apply weather stripping around doors.



Patch cracks around windows.

Use your Zip Code in the rebate finders for ENERGY STAR® and WaterSense® labeled products to check on utility or retail vendor rebates before you buy any products.

<https://www.energystar.gov/rebate-finder>.



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Water: Interior Hot and Cold

- Survey water consumption to identify major uses; find and fix any leaks— especially hot water leaks.
- Set water heater temperatures at 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.
- 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 at www.energystar.gov/products/water_heaters.
- See EPA’s WaterSense® program for water saving labeled products and rebates, for indoor water efficiency tips, and best practices at www.epa.gov/watersense.



Insulate hot water pipes



Set at 110-120 degrees (manufacture default to 140 degrees)

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Water: Exterior Savings

- 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.
- Minimize use of pesticides and fertilizers to limit pollution of water run-off.
- Consider xeriscaping, or dry, gardens that use rocks and succulents to reduce or eliminate the need for irrigation.
- Read and download EPA’s Saving the Rain: Green Stormwater Solutions for Congregations at www.epa.gov/nps/saving-rain-green-stormwater-solutions-congregations. This guide has information for many different types of applications and not only for worship facilities.
- See EPA’s WaterSense program for water saving labeled products and rebates, for outdoor water efficiency tips, and best practices at www.epa.gov/watersense.



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Heating, Ventilation and Air Conditioning (HVAC)

- 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 rooms 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).
- 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.
- Plan to replace older, inefficient HVAC systems with modern, efficient, and right-sized HVAC equipment. Many older systems use CFCs and HFC refrigerants that are very damaging to the environment.
- An Energy Management System (EMS) can be programmed and potentially remotely control the HVAC and other major equipment.
- Maintain boilers regularly, checking for combustion efficiency and sediment.
- See ENERGY STAR HVAC products and resources at https://www.energystar.gov/products/heating_cooling.



Dirty air filters can seriously cut HVAC efficiency



Upgrade HVAC systems with efficient models that do not use CFCs or HFC refrigerants



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Office Equipment/Plug Load

- Identify office equipment such as computers and copiers that needs replacing soon. Start looking for ENERGY STAR certified options using the online savings calculators and available rebates at <https://www.energystar.gov/products>.
- Turn off computers and other office equipment at night rather than leaving them in sleep or idle mode.
- Ensure that power management settings are activated on common area equipment such as TV monitors, printers, and copiers.
- Use advanced power strips which allow some plugs to be always on and others that are on only when needed.



Kitchen and Food Service Areas

- Many congregations have residential type refrigerators, which should be replaced if more than 10 years old.
- Consider replacing gas stoves with electric, induction stoves.
- Identify worn and/or leaky door seals/gaskets on refrigerators and freezers.
- Check that refrigerator coils are clean and free of obstructions.
- Avoid placing heating equipment near cooling equipment.
- Determine if low-flow pre-rinse spray valves can be installed.
- When purchasing new kitchen equipment, review ENERGY STAR models, calculate savings and find rebates in advance. All food service equipment is available at https://www.energystar.gov/products/commercial_food_service_equipment.
- Review and download the ENERGY STAR materials for restaurants and industrial kitchens at https://www.energystar.gov/buildings/resources_audience/small_biz/restaurants.



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Waste Reduction and Recycling

- Reducing waste can save you money, highlights your environmental commitment to your congregants, and it reduces your environmental impact.
- Donations: For those items you find yourself disposing of in the trash, try to find alternate methods to divert those materials out of landfill, like:
 - Implementing a donation system.
 - Get clothing and shoe donation bins and place them in your parking lot.
 - Bring giveaways (books, clothes, shoes, household items) to shelters, university campuses and public libraries.
- Recycling:
 - Contact your local waste hauler to see if they provide recycling pick up services.
 - Find a local drop-off center in your area.
 - Set up 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.
- See EPA's resources on reducing food waste at <https://www.epa.gov/sustainable-management-food/tools-preventing-and-diverting-wasted-food>.
- Consider setting up a composting program for food waste. Learn more about creating a compost program at <https://www.epa.gov/sustainable-management-food/reducing-impact-wasted-food-feeding-soil-and-composting>





ENERGY EFFICIENCY CHECKLIST and Return on Investment

	ROI (years)*	Your Congregation
Track energy use (e.g., with EPA's Energy Star Portfolio Manager)	-	
Conduct building energy audit	-	
Switch interior and exterior lighting to LEDs	3.3	
Install motion (occupancy) sensors on lighting	0.7	
Repair cracks, gaps in windows and doors	1	
Install solar films, low E coating on glazing on windows	1.9	
Install insulated windows	7-10	
Install added insulation if called for by energy audit	7.8	
Insulate hot water pipes, turn down water temperature	1.7	
Replace old gas water heaters with electric, tankless, heat pumps or highly efficient gas water heaters	3.6	
Install advanced surge protectors on copiers, computers and other electrical equipment to cut power use when equipment is not needed	3.1	
Ensure HVAC system is efficient and maintained	5.7	
Upgrade, replace old HVAC systems with highly efficient HVAC, heat pumps, mini splits	4.4	
Install smart, programable thermostats	3.8	
Replace gas kitchen appliances with energy efficient and/or electric appliances	4.3	
Install solar or geothermal renewable energy	9.6	

* Lai, Yuan, et al. "Building Energy Retrofit Hurdle Rates and Risk Arbitrage in Energy Efficiency Investments." Kenan Institute of Private Enterprise Research Paper 20-07 (2020). <https://betterbuildingssolutioncenter.energy.gov/alliance/market-solutions/financial-performance/return-thresholds-retrofits>

