



Eco-Management of Church Facilities

- I. FIRST THINGS FIRST: A SCRIPTURAL BASIS FOR ECO-MANAGEMENT** 1
- II. COMPREHENSIVE PLANNING**..... 2
- III. SPECIFIC AREAS OF RESOURCE MANAGEMENT**..... 3
 - III.A. Grounds – Landscaping – Composting** 3
 - A.1. Designing A Garden 3
 - A.2. Composting and Lawn Care..... 3
 - A.3. Watering 4
 - A.4. Controlling Pests, Planting Trees, and Creating Community Gardens..... 4
 - A.5. Parking Lots..... 5
 - III.B. Energy Conservation** 5
 - B.1. Heating and Cooling 5
 - B.2. Appliances 6

- III.B. Energy Conservation** (continued)
 - B.3. Lighting 6
- III.C. Water Conservation**..... 6
- III.D. Building Management** 7
 - D.1. Waste Management..... 8
 - D.2. Dining Room – Fellowship Hall – Kitchen 9
 - D.3. Space Utilization 9
- III.E. Programs**..... 9
 - E.1. Transportation 9
 - E.2. Education Programs 10
- IV. RESOURCES**..... 11
- V. AFTERWORD** 11

See also the companion guide:
Church Facilities Resources: For Healthy, Energy-Efficient, Eco-Friendly Churches available on the web at www.earthcareonline.org.

“For every house is built by someone, but God is the builder of everything.” (Hebrews 3:4, NIV)

I. FIRST THINGS FIRST: A SCRIPTURAL BASIS FOR ECO-MANAGEMENT

Managing the Church’s facilities-buildings, grounds, and mobile transportation-from an ecological standpoint is grounded in God’s covenant with the whole world:

“ ‘ 9 I now establish my covenant with you and with your descendants after you 10 and with every living creature that was with you- the birds, the livestock and all the wild animals, all those that came out of the ark with you-every living creature on earth....’ 12 And God said, ‘This is the sign of the covenant I am making between me and you and every living creature with you, a covenant for all generations to come: 13 I have set my rainbow in the clouds, and it will be the sign of the covenant between me and the earth....’ 16 Whenever the rainbow appears in the clouds, I will see it and remember the everlasting covenant between God and all living creatures of every kind on the earth.’ ” (Genesis 9)

God keeps watch over the earth-all creation-and “all living creatures of every kind on the earth” because of this covenant of protection, surviving, and thriving. This watch is extended to the results of human creativity provided it resonates with the will of God. Our managing the facilities and grounds of the church in an environmentally responsible and friendly fashion is a part of the covenant between God and us humans. God is clear about how important the creation and all the earth’s creatures are to Him. We are called to be equally clear about our commitment and covenant with the earth as central to our commitment and covenant with God.

“Unless the LORD builds the house, its builders labor in vain.
 Unless the LORD guards the city, the guards keeps watch in vain.”
 (Psalm 127:1)

- For more Bible verses related to creation care, see EarthCare's guide *What Does the Bible Say about Caring for Creation? – A Sampler of Bible Texts* earthcareonline.org.

II. COMPREHENSIVE PLANNING

Before enumerating specific actions to take, a congregation's first step toward eco-facilities management is to develop a long-range, comprehensive plan. To understand the foundation of such plan and to identify its components, the following steps are suggested:

- 1) Designate a staff person and select a committed group of lay people to form an oversight committee.**
The committee becomes responsible for guiding the development of the management plan, for instituting and monitoring practices, and for being alert over time to better and improved approaches, means, and technologies of eco-management.
- 2) Lay the Scriptural and theological basis for congregational actions.**
This can provide an exciting study with the entire church, though the Eco-Management Oversight Committee may want to lead it.
- 3) Get an overview of what is possible, what assistance is available, and the items to be considered.**
The Energy Star for Congregations Program of the US Environmental Protection Agency (EPA) includes on-site consultation with the congregation. To make arrangements, contact the national EPA office in Washington, DC to obtain the contact person in your region who will arrange for a visit to the church. When a representative comes, be sure to ask about terms, technologies, and scientific findings that are a puzzle to the congregation.
- 4) Do an energy audit.**
The utility companies that provide the church with electricity and gas will do a free energy audit of the entire facility to alert the church to ways to save money, conserve energy, and protect the environment. An energy audit will identify areas of heat loss, furnace inefficiency, and other problems that waste energy, generate it poorly, and waste money. Cost analyses help with understanding what types of usage drive system costs and, therefore, where savings can be initiated. Be sure to include patterns of usage by season and class (such as program) of service.
- 5) Be prepared for higher up-front costs as the details of eco-efficient management emerge.**
Those conducting the audits with the church can indicate the pay-off period of those higher costs before the congregation begins saving money while protecting the environment. Switching over to efficient equipment and methodologies is an integral part of ecological, integrated resource management.
- 6) Develop an all-inclusive framework of the entire property.**
A landscape architect can assist the congregation in doing this. Look inclusively at the "facility" as the management integration of both buildings and grounds. Utilize a landscape architect who envisions a property as a whole rather than one who merely views landscaping as an appendage to buildings.
- 7) Create an education plan to inform, educate, and train all users of the buildings and grounds of the church in eco-management.**
Such a plan can call for special events and training sessions as well as integrate the concerns into the regular curriculum. Education is critical to the success of any conservation program.
- 8) Redo job descriptions and position titles to reflect responsibilities emerging from the eco-management study and on-going program.**

Revising job titles and descriptions makes the new staff duties official and creates greater awareness of expectations. Periodic performance reviews should include environmental concerns as a major part of the evaluation. Think creatively about how to develop accountability mechanisms and incentives (including salary considerations) for environmentally responsible performance. The custodian's title might become "Steward of Physical Plant and Creation."

→ For planning resources, see EarthCare's guide *Church Facilities Resources* earthcareonline.org.

III. SPECIFIC AREAS OF RESOURCE MANAGEMENT

A. Grounds - Landscaping - Composting

A.1. Designing A Garden

- **Create a church garden.**
Use birdbaths, bird feeders, trees, vegetation, ponds, fountains, and small waterfalls.
- **Design porous paths that wind through the garden.**
One can choose from a number of possibilities: stepping stones, wood chips, gravel, pebbles, porous concrete, and spaced bricks or concrete blocks, or "recrete" or lumber (natural or recycled plastic). Some churches combine this with memorializing people by placing their names on the path or on a sign next to the path.
- **Use symbols of the Christian faith in the garden.**
Include images and symbols of the Christian faith in strategic spots to remind people of the centrality of the faith in our eco-stewardship. If they include water features, recycle the water.
- **Consider xeriscaping wherever possible to conserve water.**
An efficient approach to landscaping, xeriscaping minimizes water usage. Xeriscaping may be accomplished through planning and designing, limited used of turf (lawn) areas, ecologically aware irrigation, soil improvement, mulching, using low-water-demand plants, proper maintenance, and careful monitoring.

A.2. Composting and Lawn Care

- **Compost leaves, grass clippings, trimmings and food wastes.**
Choose from a number of possible composting bins or even experiment with several different approaches, as a way of educating the congregation and deciding which is best for the church. Use the compost in the garden areas of the grounds. Mulching in planting beds lessens evaporation, retains moisture, and reduces weed growth.
 - **Aerate the lawn.**
Punch holes in the lawn about six inches apart so water will reach the roots rather than run off the surface.
 - **Reduce turf areas.**
Replace areas of the church's lawn with native or drought tolerant plants. For remaining areas, mow the lawn to two inches or more and leave the clippings, which provide nutrients and help retain moisture.
- For resources about composting and natural lawn care, see EarthCare's guide *Church Facilities Resources* earthcareonline.org.

A.3. Watering

- **Monitor the sprinkling system carefully.**
Limit areas demanding large amounts of water on a regular basis, and conserve water wherever possible. Water early in the morning or late in the evening. Doing this, when temperatures are cooler, minimizes evaporation and allows for deeper penetration of the water.
- **Raise the blades on your lawn mower to a total height of 2 to 3 inches.**
This elevated height helps soil retain moisture limiting the need to irrigate and also slows down the velocity of sheet flow during rain events.
- **Investigate using drip irrigation.**
Whenever possible use irrigation throughout garden and shrubbery areas.
- **Water the lawn in several short sessions, if runoff occurs.**
Rather than watering in one long session, water in several short sessions. This method will allow the water to be better absorbed. Study the topological structure of the lawn where runoff occurs to see how it can be changed (such as creating tiers) to prevent the runoff or how choosing a particular turf or other plantings can eliminate runoff.
- **Install soil moisture sensors.**
Use soil moisture sensors to override irrigation systems and stop watering when it is raining or the soil is still above a certain level of moisture.
- **Use gray water.**
Gray water, which is wastewater generated from washing dishes or laundry, may be used for non-potable uses such as plants. Also, explore possibilities of using the black water from fish tanks. Besides saving water, it's a good fertilizer.
- **Harvest rainwater.**
Rainwater may be collected through the creation of a cistern, swales, berms, and basins. Assess the topography of the property for the proper design of harvesting structures. Cisterns may be placed anywhere, including the roof.

A.4. Controlling Pests, Planting Trees, and Creating Community Gardens

- **Explore ways to have natural pest control, both inside and outside.**
 - **Commemorative events with a garden or tree plantings.**
Plant a tree or a small garden area to commemorate special occasions such as a birth, a baptism, a new member, a milestone anniversary or event, or a memorial (person or event). This could be designated a prayer garden.
 - **Use a live Christmas tree.**
Use a live Christmas trees for the church's celebration of the birth of Christ. Plant it afterwards on the church grounds.
 - **Start a community vegetable, herb, and/or flower garden.**
Plant a community garden if enough space is available on the church property. If not, consider doing this elsewhere in the community.
- For integrative pest management resources, see EarthCare's guide *Church Facilities Resources* earthcareonline.org.

A.5. Parking Lots

- **Limit-if possible, eliminate-impervious surfaces, such as traditional concrete.**
Use porous surfaces for the parking lot and include “nature spaces” throughout the parking area.
 - **Be creative with “recovered materials” (such as “recrete” mentioned earlier) when doing landscaping.**
 - **Utilize the most energy-efficient lighting for all outdoor illumination, including the parking area.**
 - **Patrol the entire property systematically.**
Keep it beautiful and neat as a living testimony to the goodness of God’s creation.
- For information about solutions to heat problems caused by parking lots and roofs, see the U.S. Environmental Protection Agency’s *Heat Island Effect* pages epa.gov/heatisland/ and the website *Cool Communities* (Atlanta, GA) coolcommunities.org.

B. Energy Conservation

See also “[Comprehensive Planning](#)” section above concerning an energy audit.

B.1. Heating and Cooling

- **Well-insulate the building.**
In all portions of the building, use insulation with an R-factor of at least 19. Include attic, walls, and floors.
- **Install various devices for conserving energy.**
Use energy-saving devices such as a heat pump, a swamp cooler, or geo-thermal configuration.
- **Study the ventilation flow.**
If necessary, redirect it, especially in relation to the roof/attic lines.
- **Adjust the room temperature according to the time of day.**
Make sure the HVAC system has an automatic thermostat to adjust heating and cooling according to day and time.
- **Extend overhanging eaves of the church’s roofline.**
- **Plant deciduous trees outside windows.**
Deciduous trees will shade windows from direct rays of summer sunlight (especially in the afternoon). Because they lose their leaves in the winter, deciduous trees will allow the windows to act as passive solar devices in the wintertime.
- **Use alternative forms of energy wherever possible.**
Consider solar, both passive and active forms.
- **Consider installing solar voltaic panels to generate electricity.**
Place solar-absorbing panels on the roof(s) for hot water and reduction of heat build-up within the building.
- **Hold more services and other activities outside.**
- **Participate in the “Green Energy” program of your local power company.**
- **Wrap hot water heaters and pipes with insulating material.**

→ For resources about roofing, parking lots, and planting trees, see EarthCare’s guide *Church Facilities Resources* earthcareonline.org.

B.2. Appliances

- **Use energy-efficient appliances.**

Replace old appliances with the most energy efficient ones. Be sure they include an energy saver switch or its equivalent. Such replacements pay for themselves in a short period of time.

→ To identify energy-efficient appliances, see the U.S. Environmental Protection Agency’s Energy Star website: energystar.gov.

B.3. Lighting

- **Place outdoor lights on timers or motion sensors.**

Put these on as many lights as possible except where it is imperative to have light on throughout the night.

- **Use outdoor light fixtures that direct light only to where it is needed.**

For recommendations for outdoor fixtures, visit darksky.org.

- **Turn lights off when the space is not in use.**

Consider using automatic motion-sensitive switches, especially in bathrooms and kitchens.

- **Convert lighting fixtures, including lamps, to fluorescent .**

Use florescent light bulbs instead of incandescent bulbs wherever possible. (However, see discussion under “Dining Room - Fellowship Hall – Kitchen.”)

→ For lighting recommendations, see EarthCare’s guide *Church Facilities Resources* earthcareonline.org.

C. Water Conservation

See also the “Grounds – Landscaping – Composting” section for some key suggestions.

- **Contact the water company for information.**

Contact the local water company to see which of its programs could assist in determining how on-site water is being used and how water can be conserved at the church.

- **Train all staff in water conservation principles.**

Make this same training available to the membership of the church. Create the desire to conserve water. Everyone needs to understand and accept the fact that water conservation is necessary and be fully committed to its support.

- **Have the water meter checked.**

Sometimes, the meter is damaged or has deteriorated with age, thus producing inaccurate readings. This can skew the calibrations and, thus, affect the usage audit and monthly billing.

- **Conduct a water pipe audit.**

Do an audit on all water piping, valves (including faucets), junctions, and receptacles. Do the same for all wastewater conduits. Check for both seepage and leaks. While checking for water loss, check also for high lead content in piping and the presence of other toxins. Often, a water company will also lend water meters free of charge or do the audit for the church.

- **Learn to read the water meter.**

One way leaks can be detected is by having a periodic shutdown of all water-using facilities and

reading the water meter at intervals of the shutdown. If any movement of the meter dials occurs, water is leaking.

- **Determine where water is used.**
Before implementing any kind of conservation program, know where water is being used and how much water is being used for each location and type of usage.
- **Set conservation goals based upon the audit and training.**
Be bold in setting them. Allow these goals to serve as progress reference points. They will illustrate the effectiveness of the water conservation program.
- **Consider solar, both passive and active forms.**
- **Install low-flow devices.**
- **Use toilet tank displacement devices or install vacuum flush toilets.**
If the church already has these types of toilets, make sure they are adjusted to use the minimum amount of water required per flush.
- **Equip all showering facilities with low-flow showerheads.**
Showerheads with on-off valves provide the opportunity to conserve more water than those without valves.
- **Equip all sinks with water saving faucets.**
Replace present fixtures with light-sensitive fixtures that activate and deactivate in reference to bodily motion. Combine this shift with the installation of low-flow devices. Examine all possibilities and select the ones that do the best combination of water conservation devices.
- **Explore installing composting toilets that use little or no water.**
The composting process uses heat and fresh air technology to turn human waste into a light, dry, odorless humus. These can be individual units or a central system, which connect individual toilets to a common tank.

D. Building Management

Environmental ethics calls for the treatment of natural resources not merely as commodities and tools but as parts of the ecological whole, regardless of whether they are found in their natural state or in the form of a product to be used. The Church, in operating an office or managing the kitchen and fellowship hall or developing and directing program, is called to do this with as little negative environmental impact as possible. Such an approach only begins with water and energy conservation and the integration of buildings and grounds for eco-management.

Many other key areas should also be considered. Most environmental decisions are complicated. Many factors need to be considered. For instance, in the debate over whether to use plastic or paper products, one could argue that paper consumes trees, reduces forest biodiversity, produces pollutants during the manufacturing process, and supports economically companies that have policies that are not environmentally sound. Plastic, such as styrofoam, though, consumes petroleum, increases the risk of oil spills, further locks the world into dependency upon oil, creates pollution in its manufacturing process, and supports economically companies that have policies that are not environmentally sound. Washable and reusable products also are manufactured, consume energy and water in the recurring washing and sterilization process, and take up more time for those cleaning up after an event. Both paper and plastic increase solid waste while reusable products eliminate solid waste. Companies that are sensitive to environmental considerations regularly go through this type of analysis. The church should do the same.

- For office management resources, see EarthCare's guide *Church Facilities Resources* earthcareonline.org.

D.1. Waste Management

- **Have as a hallmark of operation “Reduce, Reuse, Recycle.”**
 - **Analyze all operations to see which items can be either eliminated or reduced.**
If the item itself cannot be done away with, see what other things associated with the product can be reduced, particularly in packaging and other waste by-products associated with the item in question.
 - **Develop a system for reusing paper products, particularly office paper or education posters.**
 - **Study the full life cycle of products.**
Include in your study the effect on the environment at each stage of that life cycle before making a decision concerning which product is better or which material is preferable.
 - **Place all scrap foodstuffs (both in preparation and after a meal) in the compost pile.**
Those who do not want to take their leftovers home after a covered-dish supper can clean their dishes into a scrap bucket specially marked for composting. Protect compost piles that include all foodstuffs from large animals such as dogs.
 - **Purchase products that are not only recycled but also recyclable.**
 - **Create a thoroughgoing program of recycling, which involves paper products, cans, and glass.**
Each community has a different system of recycling. A part of setting up the program involves an initial investigation of the parameters possible within the community or adjacent neighborhoods. If no recycling program exists in your region, work with officials to create one.
Consider:
 - How are recycling items to be separated (such as paper and glass items)?
 - How are they to be “packaged”?
 - Will they be picked up or does the church have to transport them to a collection center or centers?
 - Will the church have to pay or will it be paid for the items?
 - **Develop a common system of recycling throughout the facility and the grounds.**
Use clearly and profusely marked containers for each of the items being collected for recycling. Have a central collection center for recyclable items being brought to the church by parishioners or the community-at-large.
 - **Produce an educational program for recycling to train all users of the facilities.**
Have the children and youth design posters, write essays, produce a drama, and make other presentations to the adults about recycling. Study the economics, environmental considerations, and long-range consequences of recycling for developing a sustainable society.
- For recycling resources, see EarthCare's recycling guides at earthcareonline.org or the website earth911.com.

D.2. Dining Room – Fellowship Hall – Kitchen

- **Use the herbs and vegetables from the church’s (or community’s) garden.**
Tying the gardening into actual food preparation can be fun and enjoyable for many age-level classes and other groups as well as provide an opportunity to talk about the advantages of a regionally-oriented economy as ecologically and economically healthy. If the community is also involved in the garden, this is a way to get them into the church in a non-threatening fashion and around an important theme.
(See also “Grounds - Landscaping - Composting “ section above).
- **Install induction burners to do the cooking.**
They are far more efficient than either gas or electric burners, especially electric ones.
- **Install a gas convection oven.**
A gas convection oven is the most efficient.
- **Consider putting the kitchen and dining hall lighting on a rheostat.**
Use halogen bulbs with the rheostat since fluorescent bulbs cannot be rheostated. This should give more light for the amount of energy being used. However, compare the costs of the two approaches (initial cost plus real time costs over an extended period) to determine which is better for the church’s program.
- **Put timers on all lighting as well as give consideration to motion-sensitive switches.**
- **Use coffee grounds for fertilizer.**
- **Use a high heat machine for washing dishes.**
Good used ones can be purchased rather inexpensively. The high heat dishwasher uses fewer chemicals, is cheaper to maintain, and reduces damage to such items as silverware. It does require, however, a three-phase power source.
- **Purchase a walk-in refrigerator as opposed to a standup type.**
Place the freezer inside the walk-in refrigerator.

D.3. Space Utilization

- **Hold meetings in rooms that require the least amount of energy to heat or cool and to light.**
- **Add a “teleworking” component to the workweek.**
Also known as “telecommuting,” this encourages staff to work at home when their on-site presence is not needed. It eliminates commuting time and expense, reduces energy use, optimizes space utilization, and, overall, promotes greater efficiencies.

E. Programs

E.1. Transportation

- **Create a separate task force to work on transportation concerns.**
- **Encourage people to carpool to worship and other meetings or to walk, bicycle, or use public transportation.**
- **Purchase transportation and cargo vehicles that use alternative forms of fuel.**
Often, incentives and grants are available to help in the purchase.
- **Work out the most efficient routes when picking up people for events.**

E.2. Education

A variety of educational and promotional programs need to be created as a part of launching the new approach to facility management. The consciousness of the staff, membership, and other users needs to be raised significantly and in sync with each other. The educational phase also needs to be an ongoing process, written into each age-level of education (including adults). Reminders should be highly visible throughout the buildings and grounds.

Every decision, every old or new act, every old or new program must have built into it an environmental consciousness which is not merely one more component, but instead, runs throughout the whole as does any other portion of our basic commitment and covenant with God.

- **Celebrate an environmental festival.**
Make it an annual event with all ages participating.
- **Conduct a tour of the facility to familiarize people with the new procedures.**
- **Write a curriculum component for all educational groups.**
- **Include environmentally-related symbolism in the sanctuary and along the walls in the hallways.**
- **Have a bulletin board dedicated to environmental issues.**
- **Bring people together in an annual Eco-Stewardship conference with invited experts to speak to the attendees.**
In long-range planning, stagger the Eco-Stewardship conference about six months apart from the Environmental Festival.
- **Place signage throughout both the building and the grounds as a tool for instruction, gentle reinforcement, and awareness.**
- **Publicize what is happening.**
Include announcements in your regular church newsletter and bulletin; in a periodic “Eco-Times” church publication; in the local newspaper, radio, and television; and in your denominational news outlets. Make it a key element within your church’s website. Talk it up in the community as a point of significant expression of faith.
- **Alert the congregation to where they can go to learn more on their own.**
- **Form special study groups or task forces around specific environmental issues, Bible study, or theological concerns.**
- **Have members and other constituents bring leftover items from home or office to be used by the church, especially in the educational section.**
- **Organize a rummage sale.**
Collect items from everywhere possible that can be reused in one fashion or another.
- For recommendations for study and worship materials and resources for event planning, see EarthCare’s guides earthcareonline.org: *Church Facilities Resources*, and additional guides covering topics of interest.

IV. RESOURCES

For additional creation care resources for churches, families, and individuals, check out the resources on EarthCare's website earthcareonline.org. Some of the resources you will find there include EarthCare's guides, a few of which are listed below.

Bible Verses on Creation Care

Creation Care Websites

Popular Books on the Environment of Interest to Christians

Church Facilities Resources: For Healthy, Energy-Efficient, Eco-Friendly Churches
(a companion to *Eco-Management of Church Facilities*)

What Does the Bible Say about Caring for Creation? – A Sampler of Bible Texts

To receive notification of new resources as they are available, sign up for EarthCare's email newsletter. Sign up from EarthCare's homepage at www.earthcareonline.org.

V. AFTERWORD

“Environmental ethics means treating natural resources not just as commodities (and largely undervalued commodities...) but as parts of the ecological whole. It means building and operating homes and businesses with as little environmental impact as possible and with minimum consumption of material and natural resources. It means accepting responsibility for the environmental impacts arising from processes and products over their entire lifecycle—from raw materials acquisition to waste management.

“A commitment to business ethics demands that ethical considerations be expanded to environmental quality. But, the environment is also a strategic issue...few have developed systematic methods for translating the rhetoric of an environmental policy into ingrained practices. A commitment to environmental practices from top management is critical and may even be a necessary prerequisite, but many companies fail to carry out environmental mandates because corporate environmental policies are too vague. Real improvements in environmental quality will emerge from the institutionalization of environmental ethics. What does this mean? Environmental policies need to be backed up by detailed, comprehensive strategies and action plans for implementing such policies. It is critical that environmental considerations be integrated into everyday business decision-making and given equal weight with other business considerations....”

—Jackie Prince and Richard A. Denison, Environmental Defense Fund, 1991

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EarthCare
Caring for God's Creation

“The earth is the LORD's, and the fulness thereof; the world, and they that dwell therein.”
(Psalm 24:1, KJV)