



Issue Focus:
Energy Efficiency
Winter 2015

Making Old Buildings Energy Efficient

By **Bob Reynolds**, Property Director at YMCA Camp Kern

Camps are not created, they evolve. Our camp offers contemporary year round programming to a wide range of guests in a facility that was begun as a boy's summer camp in 1910. The challenge of maintaining old buildings is constant and nowhere more apparent than in our endeavor to increase energy efficiency. Here are some of our more recent efforts:



- Over the past year we have been changing out our old T12 fluorescent fixtures with more efficient T8s. A standard 4 lamp fixture, has a standard 40 watt T12 lamp on a standard magnetic ballast and uses 98 watts of energy. The T8 lamps and new electronic ballast uses 59 watts of energy – that's a 35% reduction in energy usage!
- We have changed most of our inefficient, hotel style heating and cooling units with new Amana DigiSmart PTAC units. Our Heat pump and cooling models use the new "green" R-410A refrigerant. In addition our units have a 10.0 Energy Efficiency Ratio and DigiSmart Controls with these new units we are saving up to 40% on energy consumption. These units have a compressor to run at variable speeds to match the demand, providing precise temperature control. Most of the time the unit runs at a low economy speed to maintain the temperature and humidity levels. With this variable speed compressor units can reach SEER levels as high as 20 for real energy efficiency.
- In addition to the lights and heating units we have been renovating our cabins and installing new metal roofs with a reflective insulating vapor barrier to reflect the hot summer heat and hold in the cool air during summer and the warm air in during winter,
- We have also begun replacing our old entry doors with new energy efficient steel insulated doors. We are also replacing our old inefficient windows with JELD-WEN double pane vinyl windows.
- Another aspect of increase efficiency is educating guests and staff about energy use. Asking chaperones to check window latches before turning on the heat, orienting staff on how the new thermostat controls work, and letting campers know their role in conservation are all ways we are making improvements.

This is just a small list of the things we are doing here at Camp Kern. Like most non-profit camps, we do not have the money to completely replace or remodel everything we want to. But we are committed to making incremental improvements at every opportunity.

Save the Date

More information about each opportunity at www.eeco-online.org

OEef Grant

Letter of Intent due Jan 8, 2016
 Grant Due Jan 15, 2016
www.epa.state.oh.us/oeef/

Grant Writing Workshops

March 24, 9 a.m. - 3:30 p.m.,
 Lake County General Health District, Painesville, Ohio
April 6, 9 a.m. - 3:30 p.m., Crosby Township, Harrison, Ohio.
 See www.epa.state.oh.us/oeef/

Winter Snow Conference

Creative Ways to Teach STEM!
February 5 & 6, 2016
 Camp Nuhop, 1077 Hanover Twp. Rd. 2916, Perrysville, OH 44864
 Details will be posted at www.eeco-online.org

49th Annual EECO Conference

March 31- April 3, 2016
 Mohican State Park Lodge
 Details will be posted at www.eeco-online.org

Ohio Natural History Conference

Feb 27, 2016
 Ohio History Center in Columbus.

Wildlife Diversity Conference

April 12, 2016
 Ohio State University

Energy Efficiency Program could reduce CO2 emissions by millions of pounds per year

by Kristen Peterka, Ohio Energy Project



Teachers and students are taking their science lessons outside of the classroom and bringing energy efficiency into the home. Through Ohio Energy Project's e3 Smart (Energy Efficiency Education) program, over 600 Ohio teachers receive hands-on training and curriculum focused on energy sources, efficiency and conservation. Teachers return to the classroom to educate and empower their students to be more efficient. Meredith Reece, a teacher at South-Western City Schools, finds that "Students get very excited about the conservation of energy. They become problem solvers and really want to make a difference."

which would reduce CO2 emissions by 9 million pounds compared to the same number of incandescent bulbs. Students also took home over 25,000 LED lightbulbs to save more energy and reduce greenhouse gas emissions. These students see the real-world application of their classroom learning through both the energy and money savings in their homes.

Through the core philosophy of Kids Teaching Kids, Ohio Energy Project (OEP) also provides specialized leadership programs for students. Middle and high school students are trained as energy leaders at Youth Energy Summits throughout the state and facilitate energy workshops to younger students promoting conservation and efficiency.



In the 2014-2015 school year, students participating in the program took home 127,000 CFL light bulbs,



Teachers are also energized with in-depth training opportunities. OEP takes teachers behind the scenes at power plants, energy research facilities, recycling centers and renewable and alternative energy sites. They learn directly from energy industry professionals so that they can enhance their classroom instruction with in-depth knowledge and genuine experiences.

OEP's energy education programs are providing teachers and students with the tools and knowledge to make smart energy decisions now and in the future. To learn more about OEP's programs please visit www.ohioenergy.org.

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Winter Snow Conference Creative Ways to Teach STEM!

February 5 & 6, 2016

Camp Nuhop, 1077 Hanover Twp. Rd. 2916, Perrysville, OH 44864

Save the date for the conference and even sign up as a presenter. Presentation topics can be diverse and may or may not relate to winter, but should relate to one of the following: STEM, Arts, Environmental Literacy, 21st Century Skills or Careers and the Environment. We encourage possible session topics that include ways of getting students reconnected to nature, interested in Environmental Careers as well as using the outdoors as a teaching tool. The presenter form is located on the EECO website www.eeco-online.org Please fill out the presenter form completely and return By **November 30, 2015** to: Brenda Metcalf preferably by email at brendasmetcalf@aol.com

School Environmental Health Program

by the Ohio Department of Health

Are you interested in creating a healthy environment for your staff and students? Are you not exactly sure what that means or how to achieve this? The School Environmental Health (SEH) Program at the Ohio Department of Health (ODH) works to improve the environmental health of Ohio's schools through non-regulatory means. What follows is a quick highlight of three new resources available, free of cost, to help you begin to answer these questions.

A statewide School Environmental Health Advisory Panel was formed in January, 2014 as a result of a grant from the U. S. Environmental Protection Agency. Representatives from educational and public health organizations, facilitated by the ODH, developed new SEH guidelines titled, *Creating Healthy School Environments Step by Step, Voluntary Guidelines for Ohio Schools*. The guidelines offer a user-friendly, step by step format for evaluating, improving and sustaining school environmental health. The steps toward a healthier school include:

1. Gaining approval from the proper authorities for beginning an SEH improvement program
2. Assessing the current condition of your building and grounds
3. Setting priorities for addressing problem areas
4. Developing an action plan to address these problems
5. Training and communicating with staff, students, and the larger community about your efforts
6. Achieving recognition

We would like to highlight this last step. There are three levels of implementation possible so that the level of effort may be tailored depending upon the level of school environmental health a school might wish to achieve or has resources to achieve. Schools that implement the guidelines at one of these levels will be eligible to apply for public recognition from the Ohio Department of Health.

In addition to the guidelines, a new series of SEH webinars was launched in April, 2015. The first four webinars which are available for viewing on the ODH website are *A Clinical Perspective of School Environmental Health*, *Lead Hazards in Schools*, *Mold Hazards in Schools and Healthy Indoor Athletic Facilities*, and *Radon Hazards in Schools and Radon Testing*. New webinars will be available on a monthly basis and will also be archived at this site. Upcoming SEH relevant topics will include, *Integrated Pest Management*, *Sanitization*, *Infectious Disease Control and Hand Washing*, *Ohio EPA's Diesel Bus Retrofit Program*, *Using Animals in the Classroom and Wild Animal Use Regulations*, *Chemical Management and Lab Safety*, and *Green Cleaning*. These webinars are approved for one hour Continuing Education Credits for Registered Sanitarians.

The third resource developed to help schools achieve healthy environments is a communications network called OSHEN (Ohio Schools' Healthy Environments Network). This network consists of Ohio schools, major educational organizations, and other interested stakeholders throughout the state. The purpose of the network is to provide links to SEH training and resources and to provide collaborative sharing between SEH stakeholders. Upcoming webinars will be announced through this network.

The guidelines, webinar series and OSHEN registration can all be accessed at the SEH website: <http://bit.ly/OhSEHWeb>. For more information, or to request hard copies of the guidelines, send an email to SEH@ODH.Ohio.gov. When requesting guidelines, please include your name, number of guidelines required, and the address to which you would like them to be sent. You may also reach us at this address if you have something you would like to share through OSHEN. <http://www.odh.ohio.gov/odhprograms/eh/schooleh/sehmain.aspx>

49th Annual EECO Conference

March 31- April 3, 2016
Mohican State Park Lodge

The Environmental Education Council of Ohio is seeking proposals for presentations for the 2016 EECO Annual Conference to be held at Mohican State Lodge and Conference Center, April 1st-3rd, 2016. The theme for the conference is "Exploring the World with Environmental Education".

If you have any questions contact Joanne Mudra, 419-892-3521 or jcmudra@gmail.com or Marty McTigue, 614-208-7430 or mhmctigue@columbus.rr.com

Ohio Environmental Education Fund



The Ohio Environmental Education Fund grant program is administered by Ohio EPA and awards general grants of up to \$50,000 and mini-grants between \$500 and \$5,000. The grants are funded by half of the civil penalties OEPA collects for air and water pollution control violations. Eligible recipients include environmental groups, public and private schools, colleges, local governments, among others.

The requests for OEEF general grant and mini grant proposals are now open in the eBusiness Center. The Letter of Intent to Apply must be submitted prior to submitting a grant.

For more information, please contact the Ohio EPA Office of Environmental Education
Phone: 614-644-2873 Email: oeef@epa.ohio.gov Web: www.epa.ohio.gov/oeef

Grant Writing Workshops

The Ohio EPA, Office of Environmental Education holds grant writing workshops around the state throughout the year.

- March 24, 9 a.m. - 3:30 p.m., Lake County General Health District, Painesville, Ohio
- April 6, 9 a.m. - 3:30 p.m., Crosby Township, Harrison, Ohio.

Please visit the website to view the most up to date list of upcoming workshops www.epa.ohio.gov/oeef



Awarded Mini Grants September 2015

In the fall 2015 application cycle, Ohio EPA awarded grants for the following ten new mini grants, for a total of \$39,314.

Alliance for Leadership and Interconnection (ALI), Green STEM Programs, \$4,621

Butler, Clermont, Hamilton & Warren Counties, Audience: Pre-Kindergarten – University (grades K-12)

Contact: Calvin Williams, cwilliams43@gmail.com, 513-541-4607.

Equipment, science kits, software and promotional materials will support Green STEM Fairs for six Southwest Ohio school districts, and STEM Eco-Mentoring Programs for 2,500 students in Cincinnati Public Schools. Through Green STEM Fairs, adult mentors engage small groups of students with introductions to green technologies and green careers related to energy conservation. In weekly STEM Eco-Mentoring after-school programs for grades 4-6, adult mentors such as LEED architects and engineers provide hands-on, in depth training in green technologies and green careers, and assist students with presentations for a culminating community event. Students study utility bills to measure energy use by their school building; use Watt meters to measure how much energy an appliance uses and calculate the cost to operate it; check for energy “vampire” electronic devices that are constantly using energy in stand-by mode; measure light in foot candles within buildings; use air monitoring equipment to detect pollutants; and assemble and compare the efficiency of toy fuel cell and solar cars.

Benjamin Logan School District – Benjamin Logan High School, The Riparian Zone and its Role in the Preservation of the Mad River as Important Trout Habitat, \$4,949

Champaign and Logan Counties, Audience: Pre-Kindergarten – University (grades 4-12)

Contact: Spencer E. Reams, reamess@benjaminlogan.org, 937-935-2358.

Sampling equipment will help 400 students understand the role of the riparian zone in maintaining trout habitat in the Mad River. Students will test soil to understand how nitrates and phosphorus migrate through the riparian zone to the River and conduct laboratory experiments to analyze the impact of nitrogen, phosphorus and potassium loading on dissolved oxygen levels. They will also conduct field and laboratory studies on the effect of shading on water temperature and continue to hatch brown trout eggs and raise and release the fry as part of the ongoing Trout in the Classroom program. The results of the project will be shared with the public and local media through a community night. Land owners will be targeted as an audience for the community night presentations. Ohio EPA will provide an in-service training for teachers county-wide in Project WET and the Healthy Water, Healthy People curricula.

Cardington-Lincoln local Schools – Cardington Jr. High, Quality Water for Quality Life, \$4,926

Morrow County, Audience: Pre-Kindergarten – University (grades 3-8)

Contact: Beau Michael Wolford, beau.wolford@cardingtonschools.org, 419-864-0609.

Provides equipment to help 150 students learn about water quality in Morrow County by studying the micro- and macroinvertebrate life in local streams. Students will keep journals and logs documenting specific types and numbers of organisms discovered, dissolved oxygen levels, pH levels, and other important variables that determine water quality. The project will incorporate activities from Project WET, Healthy Water, Healthy People, Project WILD Aquatic, and the University of Wisconsin’s Exploring Streams curriculum, and culminate in a stream and river clean up to improve the water quality in our community. The students’ research findings will be published in the school newsletter and their data shared with students in New Mexico through the RiverXchange www.riverxchange.com project.

Cleveland Metroparks, Food Forest at Rocky River Nature Center, \$5,000

Cuyahoga County, Audience: General Public

Contact: Valerie Fetzer, vfj@clevelandmetroparks.com, 440-734-6660.

Cleveland Metroparks plans to create a Food Forest at Rocky River Nature Center using Permaculture techniques. This forest will include trees and understory plants that produce nuts and fruits for consumption by humans and wildlife, as well as those that attract pollinators and provide habitat for local species. It will serve as the backdrop for school programs and a series of 11 adult education programs on backyard conservation, including topics such as native gardening, edible gardening, sustainable food systems, local habitat conservation, soil and rainwater retention, and permaculture. Over 176,000 people visited the nature center at Rocky River in 2014, which made it the most visited center in all the Cleveland parks.

Fairfield Soil and Water Conservation District, Interactive Education Experience, \$1,500

Fairfield County, Audience: General Public

Contact: Tommy Springer, tspringer@fairfieldswcd.org, 740-653-8154.

The Interactive Education Experience will include purchasing Audience Response System equipment that Fairfield SWCD staff can use to educate several thousand primary and secondary students on environmental issues such as soil health, water quality, stormwater pollution prevention, environmental health and knowledge of threatened and endangered species. This will be used to supplement teacher-led lessons aligning with Ohio's New Learning Standards. Several hundred farmers, landowners, MS4 community members and wildlife-interested audiences will also be reached through various field clinics and public programs presented annually on ways to reduce stormwater pollution, soil runoff, and nutrient loading, and ways to promote general pond and environmental health. This equipment is a wireless response system that promotes lively interaction during the presentation by giving the audience the ability to answer questions and submit answers electronically via hand-held devices. It can also be used for pre- and post-testing and store a summary of results, to improve the assessment of what is being learned in these programs.

Miamisburg – Bishop Leibold School, Waste Not, Want Not, \$1,000

Montgomery County, Audience: Pre-Kindergarten – University (grades 4-8)

Contact: Linda L. Hillinan, llhallinan@bishopleiboldschool.com, 937-434-9343.

Students will design, build, and maintain a compost system using school cafeteria waste. They will also create and conduct multiple “design of experiments” to find out the most efficient composting method with the use of technology to better understand the conservation of mass and energy of the biomass that they are creating. Lastly, they will educate their parents at an open house in the spring with a short presentation and a pamphlet designed by the students, as well as educate our other sister school on the benefits of composting. The end product will be used by the Mission of Mary farm cooperative, which supplies fresh organic vegetables to the underserved Dayton community. Approximately, 335 students and parents from two campuses and the community will benefit from this project.

Ohio River Basin Consortium for Research and Education, “Environmental Workshop for Citizen Scientists: Water Status of Ohio River,” \$5,000

Statewide, Audience: General Public

Contact: Tiao J. Chang, chang@ohio.edu, 740-593-1462.

The proposed Environmental Workshop for Citizen Scientists at Youngstown State University will select twenty citizen scientists to participate in an educational workshop that will include the activities of Water Quality App developed by Northern Kentucky University; the Virtual Boat for Environmental Education in Ohio (VBEE-Ohio) developed by Ohio University's civil engineering program with a previous OEEF grant. These Apps are designed to enable citizen scientists and schools that cannot travel to sample the Ohio River to conduct virtual sampling along with school groups while they are physically on the River sampling dissolved oxygen, E. coli, pH, total phosphate, nitrate, turbidity and total suspended solids. The workshop is being held in conjunction with and ORBCRE's 2016 scientific symposium at Youngstown State University.

Put-in-Bay Township Park District, Lake Erie Island Water Trails, \$4,918

Erie and Ottawa Counties, Audience: General Public

Contact: Lisa Brohl, lakbrohl@gmail.com, 419-366-2087.

The National Park Service has been working with multiple partners to develop a Lake Erie Islands Water Trails Guide, a defined paddling route with public access sites, safety and natural/cultural history information. Grant funds will support publication of the guide and interpretive signs at each access point, providing information on cultural and natural history, critical habitat resources, invasive species, harmful algal blooms and human impacts on water quality. The Guide will encourage recreational users of the Lake Erie Islands to do it safely, reduce conflicts with private property owners, protect vulnerable natural resources and encourage stewardship.

Awarded Mini Grants September 2015 **Continued from pages 4-5**

Wayne Township, Warren County, Name that Stream, \$2,500

Warren County, Audience: General Public

Contact: Amy Cameron, amy.cameron@co.warren.oh.us, 513-695-3086.

The project seeks to promote watershed awareness among 8,500 residents and commuters by placing 43 identification signs at locations where roads cross tributaries of the Little Miami River. To encourage stewardship and connection with the local watershed, mailings to Township residents will include backyard conservation tips for keeping waterways clean, including best management practices addressing fertilizer use, pet waste and vegetative stream buffers. The project will also include guidance on how residents can get an un-named tributary a name through the U.S. Geological Survey.

Wayne Trace Local Schools, Grover Hill Elementary, Water and Soil Quality Education, \$4,900

Paulding County, Pre-Kindergarten – University (grades 4-6)

Contact: Wendy L. Baker, bakerw@wt.k12.oh.us, 419-587-3162.

Teachers will work with students in grades 4-6 to collect samples and analyze turbidity, temperature and nutrient loads and headwater macroinvertebrates from Town Creek in the Little Auglaize watershed. Their research will parallel and support an ongoing study by the Defiance Soil and Water Conservation District of nonpoint source nutrient pollution in the larger Maumee watershed contributing to algal blooms in Lake Erie. Grant funds will support installation of a floating aluminum dock and gangplank that will allow students to safely collect samples from deeper water at midstream rather than on a steep streambank, for a more accurate reading of nutrient and sediment conditions. Prior to installation, students will work with the County Engineer to conduct an engineering design project listing materials and methods, building models and testing outcomes to prevent erosion of the creek bank while allowing stable construction of the dock structure. In this career exploration unit, students will see how engineers study stream erosion, ditch construction and slope for public works projects that take into account floodplains, soil quality and heavy traffic.

Project Dragonfly

Now accepting applications for 2016

Miami University's Project Dragonfly is accepting applications for 2016 programs and courses.

Earth Expeditions graduate courses that offer extraordinary experiences in 15 countries throughout the world. New in 2016 are courses in Galápagos and Paraguay.

http://EarthExpeditions.MiamiOH.edu/15-16_news

Global Field Program (GFP): Earth Expeditions can build toward the Global Field Program (GFP), a master's degree that combines summer field courses worldwide with web learning communities so that students can complete the GFP master's part-time from anywhere in the United States or abroad.

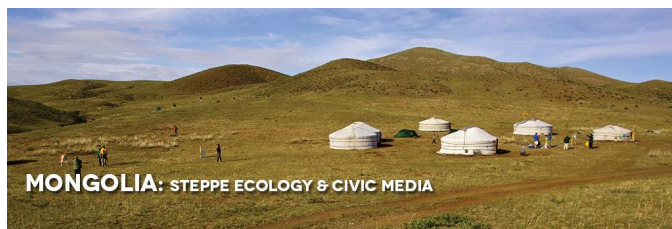
http://GFP.MiamiOH.edu/15-16_news

Advanced Inquiry Program (AIP): Project Dragonfly also offers graduate courses and the Advanced Inquiry Program (AIP) master's degree co-delivered by premier learning institutions in Cincinnati, Chicago, Cleveland, Denver, New York, Phoenix, San Diego and Seattle. The AIP master's takes place on-site and near AIP Master Institutions and through web-based learning communities. http://AIP.MiamiOH.edu/15-16_news

Graduate tuition for all programs is greatly reduced because of support from Miami University.

Apply by Jan. 28 for global grad courses.

To learn more about our programs or to discuss potential collaborations, contact Program Associate Mary Jo Larhmann at 513-529-8573, or email lahrmamj@miamioh.edu.



Supported by the Sun: Solar Energy at the Cincinnati Zoo & Botanical Garden

By Fia Cifuentes, Cincinnati Zoo and Botanical Garden

When you hear, “Greenest Zoo in America”, does Ohio come to mind? Or do you immediately think of the progressive, and highly sustainable Oregon, Washington, or California? Believe it or not, the greenest Zoo in America is right here in Ohio – Cincinnati, Ohio. The second oldest Zoo in the country has been deemed the greenest due to its highly aggressive, take no excuse way of approaching sustainability – and natural resource conservation. From saving 1 billion gallons of water over 8 years, to constructing some of the greenest buildings in our industry, no stone has gone unturned to make sure we are doing our part to walk the walk.

Energy conservation is no exception. Despite adding 25% more building square footage since 2006, the Zoo’s energy usage has decreased by 10%. We’ve replaced all of our lighting with LED fixtures, we have automated many of our systems, and we have worked more cooperatively with our front line staff to ensure equipment is operated efficiently. We’ve also looked to the sun to support our energy needs. From manatee filtration systems to 2 million Christmas lights, there is no lack for the need for energy to make our little zoo run. What better way to align with our mission of conservation than to invest in renewable energy. Taking a cue from the natural world, whether it is an alligator sunning on a rock, or a sunflower pointed toward the sun, we know how powerful and sustaining the sun’s energy can be.

The Cincinnati Zoo currently showcases 4 different solar arrays, ranging from a modest 10 kw array to the largest in our industry, a 1.56 mw canopy. Combined, these arrays provide a solid chunk of the zoo’s total energy needs on an average basis. Days when it is sunny and cool, we are completely off the grid. Proof that even in Ohio, where weather can be pretty cloudy and energy is cheap, solar makes sense. Let’s take a closer look at each array:

Harold C. Schott Education Center

- 19.3 kilowatt solar array
- Installed by Dovetail Solar and Wind in 2006
- Provides energy for the 31,000-square-foot education building – about 5%
- Generates 15000 kwh/year
- Non-polluting, renewable energy system will avoid approx. 68,000 pounds of global warming CO₂ from being produced annually by a traditional fossil fuel electric power plant

Go Green Garden Exhibit

- 10 kilowatt solar array
- Installed by Dovetail Solar and Wind in 2009
- Provides 15% of the energy needed for Membership and Ticketing
- Generates roughly 8000 kwh/year

Vine Street Parking Lot, 1.56mw

- 1.56 megawatt solar canopy
- Installed by Melink Corporation in 2011
- Largest, urban, publicly accessible, educational array in the nation
- Provides 20% of the Zoo’s energy needs
- Allows the Zoo to reduce 1,775 tons of CO₂ emissions annually by replacing coal fired power with clean solar energy

African Painted Dog Exhibit

- 30.6 kilowatt solar array
- Installed by Melink Corporation in 2014
- The first year energy production is expected to be around 34,000 kWh



Not only are we investing in renewable energy ourselves, but we support our partner organizations for providing opportunities for our region to invest in solar as well. The Greater Cincinnati Energy Alliance recently launched Solarize Cincinnati, a program that allows solar pv systems to be much more accessible for homeowners.

The way we build, manage, and operate our businesses, homes, and schools contribute to 85% of our carbon footprint. Something we can all do is make better decisions every day to conserve our natural resources, and reduce that carbon footprint. While not everyone can invest in solar energy, we can do what we can to reduce our energy consumption. Turning off lights, using energy efficient appliances, unplugging electronics, taking shorter showers, spending more time outside rather than with computer or tv screens, all contribute to smart energy use decisions.

For more information on the Zoo’s green initiatives, please contact sophia.cifuentes@cincinnati-zoo.org.

Energy Stewardship in the Faith Based Community

The mission of Ohio Interfaith Power and Light (OhIPL) is to empower a religious response to climate change and to promote energy conservation, energy efficiency, and renewable energy. OhIPL welcomes membership from churches, synagogues, temples, mosques, and other faith communities. Its Energy Stewards program connects the faith community with available technical and financial resources to implement energy improvements. Director Sara Ward invites all persons of faith “to be a part of a faithful response to the devastating effects of climate change. This is an opportunity to put faith into action and unite in our stewardship of God’s creation.”



In 2012, OhIPL received an Outstanding Project Award from the Ohio Environmental Education Fund for their “Energy Education and Audits for Ohio Congregations” project that provided technical assistance to 190 faith communities and their members in 5000 households to implement energy conservation and efficiency measures. Here are some inspiring examples.



First Unitarian Church of Cleveland has been recognized as a Certified Cool Congregation by national Interfaith Power and Light, for meeting a target of 42% greenhouse gas reductions. A large canopy over First Unitarian’s parking lot provides shade over 38 spaces, an EV charging station, and 80% of the congregation’s power from a solar array through a power purchase agreement with Solar Action. The church agreed to purchase power from the array for ten years, at a penny per kilowatt/hour less than what they previously paid their local utility. Solar Action, LLC which financed the equipment, hopes to recoup the investment by trading the project’s renewable energy credits, a commodity that can be sold to utilities as a way of meeting Ohio’s Advanced Energy Portfolio Standard. Solar Action also qualified for federal Investment Tax Credits which the church as a non-profit would not otherwise get. At the end of ten years, Solar Action can sell or give (as a charitable donation) the solar car port to the church. At present, the system is generating 80% of the congregation’s power needs and preventing 77 tons of CO₂ per year.



First Presbyterian Church of Athens placed first in the House of Worship category in US EPA’s 2013 ENERGY STAR National Building Competition: Battle of the Buildings. The competition featured buildings from across the country working to improve energy efficiency, lower utility costs, and protect health and the environment. The Church reduced its

energy use by 20% and prevented 9.2 metric tons of greenhouse gas emissions over the course of a year. Their ENERGY STAR score increased from 39 to 55 through a variety of strategies, including replacing an inefficient gas boiler, upgrading thermostats, replacing incandescent lighting throughout the building and replacing a 40-gallon gas water heater with an on demand gas water heater. “The EPA’s ENERGY STAR National Building Competition helped us save energy, cut our utility bills, and protect the climate,” says Keith Morrow, Chair, Property Committee, of First Presbyterian Church. “The Energy Efficiency Programs of Columbia Gas and AEP-Ohio along with the efforts of the Earth Justice Committee and the commitment of the whole church were instrumental in helping First Presbyterian Church achieve these results,” says Craig Foster, Technical Consultant with Ohio Interfaith Power and Light.



Sylvania United Church of Christ took advantage of an Ohio Department of Development Office of Energy Efficiency grant to replace a 25-year old gravel roof with a raised seam metal roof with a 6.4kW rooftop system of thin-film solar panels. The 3.5/12 pitch (16° slope) of the south-facing roof proved ideal for photovoltaic (PV) electricity production. In the first 48 months, the array generated 32,000 kW-hour of electricity, reducing about 55,000 pounds of CO₂ emissions, the most important greenhouse gas; 520 pounds of SO₂ emissions that cause acid rain; 130 pounds of NO_x emissions that cause smog, 900 mg of mercury emissions from coalburning, and prevented several pounds of fine particulates that aggravate asthma and other respiratory conditions. The church uses most of the PV electricity but any excess feeds out into the Toledo Edison distribution line and the church is credited for the full retail cost (net metering). Real-time data from the array is posted at <http://solar.physics.utoledo.edu/?m=ucc>. The church challenged its members to replace incandescent light bulbs with compact fluorescents and LEDs, and is currently working to replace major windows with energy efficient, low emissivity, argon-filled windows.

Environmental Resources

Environmental Literacy in the United States

The National Environmental Education Foundation has published *Environmental Literacy in the United States - An Agenda for Leadership in the 21st Century*. The report offers examples of how people can understand their relationship to the environment; learn how to be environmentally responsible; and become inspired and motivated to act on this knowledge.

<http://neefusa.org/environmental-literacy.htm>

State of the Climate 2014

The American Meteorological Society has released the *State of the Climate in 2014* report. The report provides a detailed update on global climate indicators, notable weather events, and other data collected by environmental monitoring stations and instruments located on land, water, ice, and in space. Read the highlights or download the full report.

<https://www.climate.gov/news-features/understanding-climate/2014-state-climate-highlights>

NOAA's Experimental Harmful Algal Bloom in Lake Erie Bulletin

http://www2.nccos.noaa.gov/coast/lakeerie/bulletin/bulletin_current.pdf

NOAA's Great Lakes Environmental Research Laboratory

http://www.glerl.noaa.gov/res/HABs_and_Hypoxia/

What EECO Region are you in? And, who is your local contact?



EECO Regional Directors

Region 1 - Central Ohio

Linda Pettit, Franklin SWCD
T:614-486-9613
linda-pettit@franklinswcd.org

Region 2 - NW Ohio

Jennifer Elsworth, Metro Parks of the Toledo Area
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jennifer.elsworth@metroparkstoledo.com

Region 3 - NW Central Ohio

Dawn Wingate, Golden Bridge Academy
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Region 4 - SW Central Ohio

Donna Lewis, Clark County Park District
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dlewis@clarkcountyparkdistrict.org

Region 5 - SW Ohio

Errin Howard, Riverworks Discovery
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errin@riverworksdiscovery.org

Region 5 - SW Ohio

Sue Magness, City of Cincinnati OES
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Sue.magness@cincinnati-oh.gov

Region 6 - N Central Ohio

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Region 6 - N Central Ohio

Janet Ellsworth, retired, Mansfield City Schools
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Region 7 - S Central Ohio

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Region 8 - NE Ohio

Dawn Wrench, Earth Day Coalition
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dwrench@earthdaycoalition.org

Region 9 - NE Central Ohio

Jamie Greiner, University of Mt. Union
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greineja@mountunion.edu

Region 10 - E Central Ohio

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