

Energy Audit

No one was more excited about the prospects than Ken Wheeler, who remembers the day he attended a meeting that started the energy-audit process for four area churches.

"I sat there and shook," said Wheeler, chairman of the Board of Trustees at Roberts Park United Methodist Church, "because I didn't have four or five other trustees to listen to what he had to say."

The "he" was Andy Rudin, an energy management consultant from Philadelphia's Interfaith Coalition on Energy. Rudin was in Indianapolis to brief officials from the four churches that had decided to take part in an energy audit funded by grants from the Indianapolis Center for Congregations.

The three other churches that followed through with the program were Downey Avenue Christian Church, Unitarian Universalist Church of Indianapolis and Third Christian Church.

Wheeler came away from the meeting with high hopes – and over a year and a half later those hopes have proven to be justified.

"This process saved us a lot of money," said Wheeler, whose church is a historic 1876 structure that is a landmark of downtown Indianapolis. "Our old building requires constant attention," Wheeler said, but quickly added that any church would benefit from the type of information gained from the program, "Energy Conservation in Houses of Worship."

While Wheeler remains the most enthusiastic cheerleader for the project, and Roberts Park perhaps the most significant beneficiary of the program, the other three churches give positive reviews of the energy audit.

"It has paid off for us," said John Garnier, property manager at Downey Avenue Christian Church, talking about the \$1,100 the church put up for the matching funds awarded through the Indianapolis Center



Roberts Park Methodist Church

Congregational Stories is a series of reports on a variety of issues facing congregations. Many of these stories are about Indianapolis area congregations who have found resources through the Indianapolis Center for Congregation's "Resource Grants Program" (formerly "Small Grants Program"). It is our hope that these stories will be helpful in generating thought about and possible resources for other congregations who may be facing the same or similar issues.

for Congregations Small Grants Program. That program is designed to provide financial support to congregations seeking to use the best resources to address their practical challenges and opportunities.

While the experience at each church was as different as the church buildings and congregations themselves, common themes emerged from the audit process:

- Thermostats can indeed be turned down when buildings aren't in use.
- State-of-the-art lighting can save money.
- Church buildings need more oversight than a traditional "janitor" can provide.
- Heating and air-conditioning companies don't always do what they say they're doing.

The latter point raised many an eyebrow at Roberts Park, where the church had used two boilers for years. At least church leaders thought they were using two boilers. Wheeler said it didn't take long for Rudin to spot a fundamental problem. He pointed out that each boiler carried the heat outward in a three-inch pipe; the two pipes

then merged into another three-inch pipe. Rudin asked, “Do you see anything wrong?”

It doesn’t take a degree in physics to answer that question, as Wheeler and his fellow trustees learned that the faulty hardware meant that the two boilers had been doing the work of one. Actually, one boiler would have produced more heat than the faulty two-boiler setup.

“And the boilers were just seven or eight years old,” Wheeler said, noting that the faulty piping system was reworked. “It’s unbelievable the success we have had.”



Third Christian Church

Wheeler is irritated, however, when he thinks of the \$17,000 the church spent over the past few years with an engineering firm that “put band-aids on things.” Even worse, he said, is that the company did not do some of the things they claimed to have done, even changing furnace filters.

Rudin’s visit resulted in another startling discovery – a 42-inch fan system that has inexplicably been disconnected for as long as 20 years. It has, of course, been reactivated to the benefit of the church.

Rudin spotted another problem, a gas furnace that had been placed in the boiler room to keep pipes from freezing. The furnace was needed, the church had been told, because city ordinances prevented consultants from sealing off the cold air that was seeping into the boiler room.

Not so, Rudin discovered. The system has since been re-engineered, the gas furnace removed – and another financial burden has disappeared.

A furnace was also the focus of Rudin’s visit to Third Christian Church, but to a different result.

“We have an aging facility with a lot of boiler problems,” said the Rev. William Briley, senior minister at the church built

in 1963 on the city’s northeast side. Frequent repairs to the boiler were what prompted Briley to look into the energy audit program.

Despite the fact that the boiler had been welded twice, Rudin said he thought the church could avoid buying a new furnace – but the floor went out when the work was attempted. On Rudin’s recommendation, the church ended up with a new furnace and baker, at a cost of \$25,000

“We knew it was a calculated guess,” Briley said of the failed strategy. “I was impressed with Andy. I felt he gave us a lot of insight.”

Rudin was also hesitant to tell the folks at Downey Avenue Christian Church to buy new equipment, but Garnier said they couldn’t get the old burner to function correctly.

“So we went with a new burner which should save us 30 to 40 percent,” he said. “It was expensive, but I think it is going to pay for itself. It gets the boiler pressure up to pressure in 10 minutes.”

When Rudin arrived on the scene, Garnier was already frustrated with local contractors. He said the church was paying a maintenance fee, but getting little if any work for that money. “I started looking at the bills,” he said, the closer scrutiny having prompted him to change companies twice since the energy audit began. His troubles didn’t end with Rudin’s recommendations, however. The first contractor Rudin recommended (on the basis of that firm’s work with other Indianapolis area churches) didn’t pan out for the Downey Avenue church.

Garnier, a member of the church in addition to being on the payroll as property manager, said his job is “to get the best bang for the buck” when it comes to taking care of the three buildings, the oldest of which dates to 1952.

“The air volume and BTU usage in the Education Wing was our biggest problem,” he said. With usage low in the summer, he is looking for options, including more sophisticated thermostats “and constant vigil.”

That is also the theme at the Unitarian Universalist Church, where Ray Wilson and Enrique Alvarez spearheaded the energy effort that was as much about conservation as it was about cost-savings.

“Our congregation has a very strong sense of environmental stewardship,” said Wilson, a past president of the congregation that is located on four acres near Butler

University on the former site of the Orchard School. The campus consists of four buildings that are served by seven different heating and air conditioning systems. Unlike the other churches, the Unitarian Universalist Church did not enter the program with an overriding furnace problem. "Managing them is the difficult part," said Wilson, "because we don't have a custodian. We try to use timed thermostats, but they get messed up."

As part of the energy audit, Rudin sent each participating church a temperature recorder, to be placed in an out-of-the-way location to chart temperatures. Monthly energy bills were also studied. The result, Wilson said, was an interesting report that served as a starting point for change.

"What this report gave me the freedom to do is turn the thermostats down more than I used to," said Wilson, himself an engineer. Where before the buildings went to 55 degrees when they aren't in use, Wilson now sets the thermostats to 50 – without any harm to the organ or piano.

"That's the secret to running church buildings," he said, referring to minimizing the heating or A/C when the building is not in use.

"I had hesitated to do that in the past, because I was concerned that people would complain," he said. "Andy convinced me that the savings are worth the potential trouble." Rudin also told Wilson to put timers on switches in rooms with exhaust fans, such as restrooms.

Wilson's ability to implement all facets of the recommendations was limited by several factors, including that the congregation had not decided whether to replace or renovate one of its four buildings, the "cottage," which provides space for the minister's office and for adult religious education. Another building is used by a Head Start program, which controls (and pays for) utilities.

"We have not made the progress we should have," Wilson said, noting that the church has replaced some light bulbs with models recommended by Rudin, and has tried without much success to install timers in some locations. One simple, but effective trick: putting low-level LED bulbs in the exit lights, which are on 24 hours a day.

At Roberts Park, meanwhile, Rudin's recommendations about lighting have resulted in a sweeping change. Through a five-month project, all lighting in the historic downtown church has been retrofitted. Richard Smith, the church's business manager, said the lighting improvements enabled the addition of lighting in areas of the building that desperately needed a brighter ambiance.

"It definitely gave us the inspiration to get some of these things taken care of," Smith said.

At Third Christian Church, work is continuing on upgrading both the lighting and the fixtures. Rev. Briley said one report indicated the cost to upgrade the entire system at \$9,000. The church has spent about two-thirds that amount to date. "Lighting is not our top priority," Rev. Briley said, "except in the children's wing. We have to set our priorities, because it is expensive."



Unitarian Universalist Church of Indianapolis

For a struggling congregation that is working hard to lure in new members and bond with its neighborhood, Briley sees a second benefit. "The new lighting has been noticed by our members. It adds a sense of newness," he said, noting that the switch to white light, as opposed to yellow, "gives it a fresher feeling."

Rev. Briley said the congregation is working to improve the church's visibility in the neighborhood, an effort that includes removing unsightly shrubs. "We decided that if we were to have a future, we had to help people find us. But once they're in the building, our goal is to not turn people off."

Lighting changes have also had an effect at Downey Avenue Christian Church, where Garnier has implemented many of Rudin's recommendations on lights as well as hardware, plus more effective timers.

"I'm not an electrician, but it wasn't hard to do," he said, noting that electricity costs are down as much as 30 percent from the year before. More challenges remain, however, as Garnier turns his attention to the basement, "where we need to bring that lighting up to par" for the rooms used as Sunday School classrooms and for meetings of Alcoholics Anonymous.

While the congregation has been largely supportive of the efforts, Garnier said one plan to soften the lighting in the sanctuary has been reversed. "We are very pleased with what has happened," he said, although adding, "that the congregation notices clean floors and shiny mirrors more."



Downey Avenue Christian Church

work,” he suggested. “Call supply houses to get their opinion on contractors. And try to learn as much as possible about your system as you can beforehand,” he added. “Otherwise, you are at their mercy.”

Ollie Reynolds, property manager at Third Christian Church, said congregations would benefit from Rudin’s expertise, but he concurred that at least some of the work can be done in-house. He said church leaders can study their own utility bills and do some common-sense things such as turning off lights and sealing windows. “I don’t need Andy to tell me those things,” he said; adding that then, if you’re not successful in reducing energy costs, call Rudin.

Wilson, meanwhile, said that while all churches should consider the energy audit process, only churches with a true commitment to spend the money and follow through on recommendations should launch the program. Churches without such commitment are not going to recoup their investment in the form of lower energy costs.

“If I were board chairman, I’d say, ‘Who is going to be the champion of this project? Who will make sure we do something with this information?’” Wilson suggested before going one step further with a recommendation that the Center sponsor meetings of participating churches two or three times a year to add some accountability to the process.

“You wouldn’t want to have to go to the meeting and say, ‘Well, we haven’t done anything about this at all,’” Wilson said, adding that the churches could share success stories and learn from each other. Such a process would also create a “critical mass” of endorsement to take back to your

And while all of Rudin’s original recommendations haven’t proved workable, Garnier remains supportive. “It would be nice to have him, or someone like him, in Indianapolis,” Garnier said, adding that congregations need help figuring out what contractors are reliable. On that subject, the twice-burned Garnier has some recommendations of his own. “Do some Better Business Bureau

congregation. “When the benefits come clear, others might want to join in.”

The benefits often don’t come clear, at least not immediately. Officials at the four churches that took part in “Energy Conservation in Houses of Worship” can’t yet put dollar amounts on those benefits for a variety of reasons, including the fact that such factors as “degree days” and varying building usage must be considered in any valid comparison. Call it the “apples to apples” effect. Nevertheless, church leaders do indeed see benefits.

At Third Christian Church – where the congregation has been wrestling with the issue of maintaining a very large building with a smaller congregation that never blossomed after the church’s move in 1963 out of downtown – the energy audit helped focus the issue of survival itself.

The energy audit, Rev. Briley said, “is one of the early tools that got us jump-started, that let us know there are people out there to give us help. We really are grateful to the Center for making available people to help us.”

At Roberts Park, Wheeler remains equally enthusiastic. “Andy Rudin is unbiased, knowledgeable and pleasant,” Wheeler said. “He knows so much about steam and water systems – and he can communicate effectively with common people in ways they can understand.

Calling the energy audit “the greatest thing that’s happened to Roberts Park in a long time,” Wheeler repeated his endorsement for any church. “It’s not just for older churches,” he said. “It’s like buying a computer – tomorrow it’s outdated. Even a church built four or five years ago could learn a lot.”

Questions for Reflection

- What questions does this article prompt for you?
- What does energy conservation have to do with the mission and/or ministry of your congregation?
- What is your sense of how well your congregation conserves energy?
- What percentage of your congregation's budget is spent on utilities?
- How are energy efficiency issues addressed in your congregation?
- Who are the people with whom energy efficiency issues should/could be discussed?
- What energy efficiency strategies has your congregation implemented in the past year?

The Indianapolis Center for Congregations is happy to meet with you about any issues the questions above (or others) raise about improving energy efficiency in your congregations.

Learn More

Resources for Energy Conservation from the Congregational Resource Guide

The mission of the Indianapolis Center for Congregations is to assist Greater Indianapolis area congregations in finding and using the very best resources available to address the practical challenges they face. This resource list was developed to supplement a workshop, *Energy Conservation in Houses of Worship*, sponsored by the Center and led by Andrew Rudin and Inspired Partnerships, a Chicago-based not-for-profit organization that assists congregations in the care and maintenance of their older buildings.

Inspired Partnerships recommends the following resources.



Cruz, Michael, and Neal A Vogel. *Systems in Houses of Worship*. Information Series #64. Washington, D.C.: National Trust for Historic Preservation and Inspired Partnerships, 1992. This 25-page booklet explains the nature

of various types of heating and electrical systems and describes how to make a number of specific repairs. Contains a section on contracting for repairs, as well as maintenance schedules for various HVAC systems. (To obtain copies, contact Inspired Partnerships at 312.294.0077, Email: info@inspiredpartnerships.org)



Holohan, Dan. *The Lost Art of Steam Heating*. Bethpage, NY: Dan Holohan Associates, Inc., 1992. This 296-page book is the finest book available on steam heating. It is highly entertaining too. It covers everything from the basics

of steam heating to more complex issues that assist in the diagnosis of steam heating problems. (To obtain copies, contact Dan Holohan Associates, Inc., 63 North Oakdale Ave, Bethpage, NY 11714; Phone: 800.853.8882, Fax: 516.579.3046, Email: mailroom@heatinghelp.com, Website: www.heatinghelp.com)

Rudin, Andrew. *Energy in Houses of Worship*. Information Series # 60. Washington, D.C.: Inspired Partnerships and National Trust for Historic



Preservation, 1992. This 17-page booklet presents a twelve-step program for reducing energy costs in houses of worship. Discussion is illustrated with examples from successful energy cost reduction programs in Chicago, Philadelphia, Buffalo, and Arizona. (To obtain

copies, contact Inspired Partnerships: 312.294.0077, Email: info@inspiredpartnerships.org)

These resources, and more, are also listed on the Congregational Resource Guide at www.congregationalresources.org, a joint project of the Alban Institute and the Indianapolis Center for Congregations, funded by Lilly Endowment Inc. Look at the section *Building Issues: Energy Efficiency* or *Building Issues: Building Maintenance* or do a keyword search. All of these resources are available for borrowing from the Congregational Resource Center at Christian Theological Seminary, a joint project of the Indianapolis Center for Congregations and Christian Theological Seminary made possible by a grant from Lilly Endowment Inc.

Our Mission

The mission of the Indianapolis Center for Congregations is to assist Greater Indianapolis area congregations in finding and using the very best resources to address the practical challenges they face. The Center also provides educational events and workshops, all focused on important practical issues confronting congregations.

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