IPRO 328
FINAL REPORT

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Executive Summary

Many churches in the Bronzeville area are very inefficient when it comes to energy use. They are leaking lots of energy that ends up costing them money that could be spent on improving their facilities. The IPRO 328 team has helped a couple of these churches by determining ways to improve their energy efficiency and by putting together a team of volunteers to go into the church and make these improvements.

The team's mission is…

- To lend our knowledge and resources to the cause of improving energy efficiency in churches [and deserving not-for-profit organizations] of the surrounding community.
- To provide an avenue for aspiring individuals to gain valuable job skills while simultaneously finding fellowship through volunteer efforts.
- To offer tools for learning more about environmental stewardship and energy efficient solutions through an interactive website.

Purpose and Objectives

The Fall 2009 IPRO 328 team envisions the development and execution of a volunteer program, Energy Corp., which would facilitate the implementation of energy saving improvements in a deserving church within the surrounding neighborhoods of the IIT campus.

The project was started and sponsored by Vincent Cushing of Clean Urban Energy with the help of McNally Engineers. Old St. Mary's Church was the target of the last semester's work, but there has been expansion to two other churches for this semester.

Many churches throughout Chicago lack the funding necessary to perform regular maintenance and upgrades. As a result, they are often faced with high utility bills stemming from buildings inefficient energy systems. These churches and their members, generally older folks, are usually unaware of the potential savings or simply too poor, but whatever the reason, they are in need of work.

The appendix contains many existing technologies and tips for increased energy saving and improved energy efficiency that would be effective on churches in the Bronzeville community. Many things as simple as changing light bulbs from incandescent to compact fluorescents can has the ability to save a church thousands of dollars on their yearly energy bill.

To achieve this vision, the team will delve into multiple aspects of planning and communication, and aim at the following objectives:

i. Research the cost versus payback of various energy saving projects in order to generate interest of the recipients of the improvements by providing real data as to what they might expect to gain from the end product.
ii. Develop a training program on campus whereby students at IIT can learn to use equipment and analyze the data to perform an energy audit and determine which improvements would be most cost effective to implement
iii. Partner with interest groups/parties within the school and community to develop the program along parallel interest lines with the goals of IIT's Office

of Community Affairs and the WISER sustainability program as well as this district's political leaders

iv. Promote the activities to both potential volunteers and potential sites of improvement through an improved website, flyers, video, etc.

v. Select a site in the target area at which to test the program based upon results of screening of technical, financial, political, and operational characteristics of the potential sites.

vi. Perform an energy audit at the test site and lay the groundwork for a future Day of Service at which some or all of the suggested energy improvements can be executed.

vii. Finally, the main objective is to take the Energy Corp into the selected site and make the improvements that have been planned out it what we call the service day.

Organization and Approach

With the overall goals of the above section in mind, the team had three major categories of research, methods of energy efficiency, Energy Corp creation, and selection process.

Energy efficiency is a new and fast paced science and as such, much of our research was done online, from sources including the Department on Energy. In addition to our online research professionals, Vince Cushing and Nancy Hamill, offered a rough outline of problems expected to occur in an average church.

Energy Corp creation began with online research into the organization of similar programs such as Habitat for Humanity as well as other groups focused on community improvements. This research combined with our energy efficiency research provided the information to handle logistics for the Energy Corp and the methods, which the Energy Corp must be familiar with in order to best complete our mission. In the interest of sustaining the Energy Corp for future IPROs, the group met with Kent Law student Patrick Wartan to discuss the option of making the Energy Corp a not-for-profit organization.

The information gathered from the energy efficiency methods research provided the basis for an energy audit survey. These surveys were sent to churches identified in the Brozneville area. The surveys provided one facet of our selection criteria, the other was where in the community might be best to focus our efforts. To this end the group met with Director of Community Development, Lisa L. Montgomery and Director of Spiritual Life, Lynne Meyer.

Analysis and Findings

Our team produced numerous significant results this semester in our aim to establish a student run energy corp to work in Bronzeville. We communicated with numerous people in and around IIT to assist us with planning out our work. All of our research and planning resulted in two very successful service days at local churches. We had meetings with numerous people with experience in these areas to help us figure out exactly what we could do. After planning as a group, we decided to attack the 'low hanging fruit' of energy efficiency. Our theory behind this was that we wanted to provide as much energy maintenance as possible for as little cost. Therefore, major upgrades that would produce massive changes like replacing HVAC systems were essentially unfeasible. We instead chose to focus on things that volunteers could do with

little background, including changing lights and repairing windows. Projects with little necessary experience and a short pay back period were the best fit for the Energy Corp to implement.

The audit team was successful with their site selection surveys. These surveys resulted in the service day at Morningstar Baptist Church, which was easily the more successful of the two days. The response and enthusiasm generated by Morningstar provided us with a good opportunity to provide an exceptional service day. The team communicated early and often with a deacon of the church to set up multiple visits prior to the service day, as well as a mutually convenient time for the service day. Additionally, the audit team's research into methods was also most successful at the Morningstar service. Upon visiting the church for an audit before the service day, they established numerous work opportunities, including changing over 70 lights to energy efficient lamps, cleaning out their air filters, insulating heat pipes, and extensive repairs to windows on the south façade. All the work that was completed there was feasible for an untrained volunteer, and will produce significant results.

Where the audit team was more successful with the Morningstar day, the Energy Corps team had a stronger success with the first service day at Mt. Carmel Baptist Church. The team took numerous avenues for recruiting both events, including teaming up with IIT Service Learning and Greek organizations on campus. For the first service day, the team organized a successful training session before the actual service day for volunteer recruits, so they weren't completely in the dark about the work to be performed at the church. The team was able to make use of a vacant room in Farr Hall on campus, which was perfect for the work that was to be done at the churches. Volunteers were taught how to insulate piping, weather-strip a door, and the basics of caulking a gap. Five volunteers attended the training session. However, where attendance for the training session was moderate, attendance for the actual service day was very strong, bringing in close to 20 volunteers from campus. To a certain point, there were almost too many volunteers for the work that was necessary at Mt. Carmel, but the extra people were put to use, helping out the church in other ways. Volunteers were put to work doing projects that the church did not have time, or could not afford to pay someone to do such as cleaning of all the seating in the sanctuary.

The most significant thing achieved by the Energy Corps was the amount of money that will be saved by the churches due to lighting improvements. At Morningstar Baptist Church, $560 was spent on the service day which included all of the necessary materials. Improving the lighting to compact fluorescent lamps will save the church approximately 8200 W. This corresponds to approximately $1020 of savings per year on the electric bill. The Energy Corps had a similar effect on Mt. Carmel Baptist Church and will save them 3700 W. A total of $270 was spent on the project, while the lighting savings alone will be approximately $1160 per year. Exact wattage and cost savings can be found in the appendix section along with the budget.

While the project as a whole was successful for the team, this was definitely a learning experience for both sub-teams. The audit team had issues in communication with the people from Mt. Carmel, while the energy corps team had issues continuing the high volunteer level at the Morningstar service day. However, both teams treated the work as a learning experience and all our work and findings will be built upon in the future.

Conclusions and Recommendations

All in all, the team made great improvements by the last service day. Team members became much better at communicating among themselves as well as learning new energy improvement skills and leading work crews. We found that the best return on investment in terms of dollars spent versus dollars saved is secured through lighting improvements; however, the most dramatic changes in indoor comfort were sustained through adjustments to the HVAC system and weatherization. Churches can expect very significant energy savings by switching their typically numerous incandescent bulbs with compact fluorescents which reduce the power consumed by an average of 45 Watts per bulb. On the other hand, by making changes to the air flow through the redirection of vents and closing air infiltration gaps in windows and doors, discomfort zones caused by drafts within the spaces were reduced and eliminated.

IPRO 328 should continue into future semesters and it is recommended that the following avenues be taken into consideration: the prospect of becoming a not-for-profit organization through the state of Illinois independent of the university, securing funding for future service projects through outside sources such as grants and donations, and running more streamlined service projects through a more organized and prepared approach.

To expand upon these recommendations, let us first look at the prospect of becoming an independent not-for-profit organization. The state has guidelines for such a venture and this should be the first resource for information its feasibility. Paperwork must be filed with the state, insurance needs to be procured, and a board of directors or other group to oversee the organization's activities would have to be put into place, including accounting and legal counsel.

Secondly, funding from outside sources other than the IPRO budget would be the only viable way for service projects to continue. In addition, larger scale projects could be implemented given the appropriate funding source and dedication to projects of this type.

Lastly, this semester's IPRO 328 team found some difficulty in executing the service days with the results for which we had hoped. We learned to expect a response of less than 25% of those contacted among volunteers, and of those that do respond, sometimes as little as 25% will follow through and show up. Projects should be well defined and materials and tools gathered accordingly to ensure that resources are put to the best use possible.

Appendix

Team Roster				
Name	**Email**	**Phone #**	**Alt. Phone #**	**AIM**
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Budget

Morningstar Baptist

- Materials - $450
- Service Day Food - $110
    - TOTAL = $560

Mount Carmel Baptist

- Materials - $200
- Service Day Food - $70
    - TOTAL = $270

Training Session

- Materials - $20

Surveys

- Stamps - $20

GRAND TOTAL = $870

Actual Lighting Savings

LIGHTING SAVINGS

Morningstar Church

Watts	Number of Bulbs	Total Watts
75	12	900
40	4	160
60	6	360
200	3	600
25	1	25
300	1	300
120	6	720
150	22	3300
100	30	3000
26	1	26
4	2	8
Sum =	**88 bulbs**	**9399 W**
New bulbs =	88 bulbs (14W each)	1232 W
		8168 W saved

8.168 KW *1000 hrs/yr * 0.125 dollars =
$1020 saved per year

Mt. Carmel Church

Watts	Number of Bulbs	Total Watts
100	5	500
150	2	300
26	4	104
300	2	600
41	10	410
60	46	2760

Sum =	**69 bulbs**	**4674 W**
New bulbs =	69 bulbs (14W each)	966 W
		3708 W saved

3.708 KW * 2500 hrs/yr * 0.125 dollars =
$1158.75 saved per year

Research

Twelve no cost tips:

1. Turn off the lights whenever you leave a room.
2. Keep your home at 78 degrees in the summer, or at the warmest temperature that is comfortable for you.
3. When leaving home for more than 4 hours, raise the thermostat 5 to 10 degrees in summer and lower it 5 to 10 degrees in winter. Do the same at night before going to bed.
4. Close south-, east-, and west-facing curtains during the day to keep out solar heat during the summer.
5. Clean the coils at the back of your refrigerator twice a year.
6. Only heat and cool rooms you use; close vents and doors to rooms that are not being used.
7. Keep windows closed and shades down when air conditioning is on.
8. Check and clean air conditioning filters monthly and replace as needed.
9. Unplug electric chargers, televisions, and audio/video equipment when not in use (or plug them into a power strip you can turn off and on). These devices use electricity even when they are not in use.
10. Turn off your computer or put it in ”sleep” mode when it is not being used.
11. Run energy-intensive appliances such as the dishwasher and clothes washer at night. The heat produced by these appliances will not need to be offset by your air conditioner during the day. Wait until you have a full load to run the dishwasher and clothes washer, and use cold water when possible.
12. Keep lamps and televisions away from the thermostat. The heat they generate will cause your air conditioner to work harder. If you’re running an old refrigerator in your basement that isn’t being used, unplug it. Old refrigerators can use three times the electricity of modern ones.

Eight low cost tips:

1. When you’re out of your house (and at night, when you’re asleep), use a programmable thermostat to automatically raise the temperature 5 to 10 degrees in summer and lower it 5 to 10 degrees in winter.
2. Install weather stripping on all doors and windows.

3. Replace incandescent light bulbs with ENERGY STAR®-qualified compact fluorescent light bulbs (CFLs). They're relatively cheap, use about 75% less energy, and typically last ten times longer. Replacing a 60-watt incandescent bulb with a 13-watt ENERGY STAR®-qualified equivalent CFL could save you, on average, $43 over the life of the bulb.
4. Install electric timers on exterior lighting, small appliances, and room air conditioners.
5. Add dimmers or occupancy sensors to your home's lighting system.
6. If you have any exposed ductwork in your house, seal all joints with a caulk, such as mastic. If you don't, heating (and cooling) could escape before getting where it's supposed to go.
7. If you have less than 6 to 10 inches of insulation in your attic, you probably need more.
8. Consider installing low-flow showerheads and sink aerators to reduce hot water use. When buying new appliances, lights, electronics or other products, look for the ENERGY STAR® label.

Cost/Energy Savings a Year

- Air sealing and attic insulation $195 (155 therms)
- Boiler and DHW upgrade $356 (232 kWh and 266 therms)
- Eliminate electric space heaters $331 (3680 kWh)
- Efficient lighting $169 (1882 kWh)
- Replace two refrigerators $170 (1886 kWh)
- Total cost saving $1209 per year (7427 kWh and 429 therms)

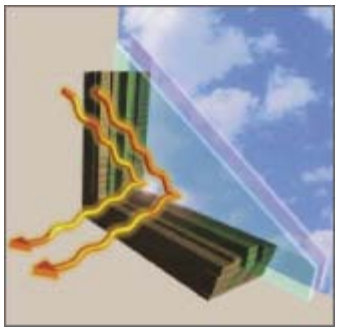
  At energy prices of $0.105/kWh

Because boilers typically have a lifetime of 25 years or more, the boiler and DWH combo units along with the removal of the electric space heaters could save an average of $687 per yr in today's money, or $17175 over a 25 yr lifetime of the boiler. If energy costs increase, the savings could increase more.

Payback estimates

- Air sealing and attic insulation, 28 yrs
- Boiler upgrade and DHW, 15.8 yrs
- Efficient lights, 0.9 yrs
- Replace refrigerators, 13 yrs
- Everything, 12.8 yrs

Windows



Double-pane windows with low-e coating on the glass reflect heat back into the room during the winter months.

- You can use a heavy-duty, clear plastic sheet on a frame or tape clear plastic film to the inside of your window frames during the cold winter months. Remember, the plastic must be sealed tightly to the frame to help reduce infiltration.
- Install tight-fitting, insulating window shades on windows that feel drafty after weatherizing.
- Close your curtains and shades at night; open them during the day.
- Keep windows on the south side of your house clean to let in the winter sun.
- Install exterior or interior storm windows; storm windows can reduce heat loss through the windows by 25% to 50%. Storm windows should have weather-stripping at all movable joints; be made of strong, durable materials; and have interlocking or overlapping joints. Low-e storm windows save even more energy.
- Repair and weatherize your current storm windows, if necessary.

Lighting

Compact Fluorescent Bulbs—A Bright Idea!
ENERGY STAR qualified lighting provides bright, warm light and uses about 75% less energy than standard lighting, produces 75% less heat, and lasts up to 10 times longer.

Making improvements to your lighting is one of the fastest ways to cut your energy bills. An average household dedicates 11% of its energy budget to lighting. Using new lighting technologies can reduce lighting energy use in your home by 50% to 75%. Advances in lighting controls offer further energy savings by reducing the amount of time lights are on but not being used.

Indoor Lighting

Use linear fluorescent tubes and energy efficient compact fluorescent light bulbs (CFLs) in fixtures throughout your home to provide high-quality and high-efficiency lighting. Fluorescent lamps are much more efficient than incandescent (standard) bulbs and last about 6 to 12 times longer.

Today's CFLs offer brightness and color rendition that is comparable to incandescent bulbs. Although linear fluorescent and CFLs cost a bit more than incandescent bulbs initially, over their lifetime they are cheaper because of how little electricity they use. CFL lighting fixtures are now available that are compatible with dimmers and operate like incandescent fixtures.

Indoor Lighting Tips

CFLs contain a very small amount of mercury sealed within the glass tubing. Many retailers are offering free recycling services for consumers at their stores.

ENERGY STAR qualified CFLs are available in sizes and shapes to fit in almost any fixture.

- Be sure to buy ENERGY STAR qualified CFLs.
    - They will save you about $30 or more in electricity costs over each bulb's lifetime.
    - Producing about 75% less heat, they are safer to operate and can cut home cooling costs.

    - Visit www.energystar.gov to find the right light bulbs for your fixtures. They are available in sizes and shapes to fit in almost any fixture.
    - They provide the greatest savings in fixtures that are on for a long time each day. The best fixtures to use qualified CFLs in are usually found in your family and living rooms, kitchen, dining room, bedrooms, and outdoors.
- Consider purchasing ENERGY STAR qualified fixtures. They are available in many styles including table, desk and floor lamps — and hard-wired options for front porches, dining rooms, bathroom vanity fixtures, and more.
- ENERGY STAR qualified fixtures distribute light more efficiently and evenly than standard fixtures and they deliver convenient features such as dimming on some indoor models.
- Controls such as timers and photo cells save electricity by turning lights off when not in use. Dimmers save electricity when used to lower light levels. Be sure to select products that are compatible with CFL bulbs; not all products work with CFLs.
- When remodeling, look for recessed downlights, or "cans", that are rated for contact with insulation (IC rated).
- Take advantage of daylight by using light-colored, loose-weave curtains on your windows to allow daylight to penetrate the room while preserving privacy. Also, decorate with lighter colors that reflect daylight.
- If you have torchiere fixtures with halogen lamps, consider replacing them with compact fluorescent torchieres. Compact fluorescent torchieres use 60% to 80% less energy and do not get as hot as halogen torchieres.

Outdoor Lighting

Many homeowners use outdoor lighting for decoration and security. When shopping for outdoor lights, you will find a variety of products, from low-voltage pathway lighting to motion-detector floodlights. Light emitting diodes, or LEDs, thrive in outdoor environments because of their durability and performance in cold weather. Look for ENERGY STAR LED products such as pathway lights, step lights, and porch lights for outdoor use.

Outdoor Lighting Tips

LED—A New Kind of Light

Light emitting diodes, or LEDs, offer better light quality than incandescent bulbs, last 25 times as long, and use even less energy than CFLs. Look for ENERGY STAR qualified LED products at home improvement centers and lighting showrooms.

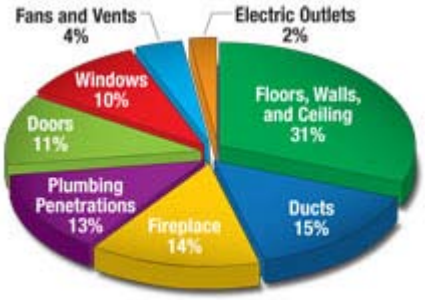
- Because outdoor lights are usually left on a long time, using CFLs in these fixtures will save a lot of energy. Most bare spiral CFLs can be used in enclosed fixtures that protect them from the weather.
- CFLs are also available as flood lights. These models have been tested to withstand the rain and snow so they can be used in exposed fixtures. Most though, cannot be used with motion detectors.

- Look for ENERGY STAR qualified fixtures that are designed for outdoor use and come with features like automatic daylight shut-off and motion sensors.

Sealing Air Leaks

Warm air leaking into your home during the summer and out of your home during the winter can waste a lot of your energy dollars. One of the quickest dollar-saving tasks you can do is caulk, seal, and weather-strip all seams, cracks, and openings to the outside. You can save on your heating and cooling bill by reducing the air leaks in your home.

Tips for Sealing Air Leaks



How Does the Air Escape?
Air infiltrates into and out of your home through every hole and crack. About one-third of this air infiltrates through openings in your ceilings, walls, and floors.

- First, test your home for air tightness. On a windy day, carefully hold a lit incense stick or a smoke pen next to your windows, doors, electrical boxes, plumbing fixtures, electrical outlets, ceiling fixtures, attic hatches, and other locations where there is a possible air path to the outside. If the smoke stream travels horizontally, you have located an air leak that may need caulking, sealing, or weather-stripping.
- Caulk and weather-strip doors and windows that leak air.
- Caulk and seal air leaks where plumbing, ducting, or electrical wiring penetrates through walls, floors, ceilings, and soffits over cabinets.
- Install foam gaskets behind outlet and switch plates on walls.
- Look for dirty spots in your insulation, which often indicate holes where air leaks into and out of your house. You can seal the holes with low-expansion spray foam made for this purpose.
- Look for dirty spots on your ceiling paint and carpet, which may indicate air leaks at interior wall/ceiling joints and wall/floor joists. These joints can be caulked.
- Install storm windows over single-pane windows or replace them with more efficient windows, such as double-pane. See Windows on page 18 for more information.

- When the fireplace is not in use, keep the flue damper tightly closed. A chimney is designed specifically for smoke to escape, so until you close it, warm air escapes—24 hours a day!
- For new construction, reduce exterior wall leaks by installing house wrap, taping the joints of exterior sheathing, and comprehensively caulking and sealing the exterior walls.
- Use foam sealant around larger gaps around windows, baseboards, and other places where warm air may be leaking out.
- Kitchen exhaust fan covers can keep air from leaking in when the exhaust fan is not in use. The covers typically attach via magnets for ease of replacement.
- Replacing existing door bottoms and thresholds with ones that have pliable sealing gaskets is a great way to eliminate conditioned air leaking out from underneath the doors.
- Fireplace flues are made from metal, and over time repeated heating and cooling can cause the metal to warp or break, creating a channel for hot or cold air loss. Inflatable chimney balloons are designed to fit beneath your fireplace flue during periods of non-use. They are made from several layers of durable plastic and can be removed easily and reused hundreds of times. Should you forget to remove the balloon before making a fire, the balloon will automatically deflate within seconds of coming into contact with heat.

- automatically deflate within seconds of coming into contact with heat.

Sources of Air Leaks in Your Home
Areas that leak air into and out of your home cost you lots of money. Check the areas listed below.

1. Dropped ceiling
2. Recessed light
3. Attic entrance
5. Water and furnace flues
6. All ducts
7. Door frames
9. Window frames
10. Electrical outlets and switches

4. Sill plates
8. Chimney flashing
11. Plumbing and utility access

Refrigerators

ENERGY STAR Refrigerators Are Cool!
Refrigerators with the freezer on the top are more efficient than those with freezers on the side.

The Energy Guide label on new refrigerators tells you how much electricity in kilowatt-hours (kWh) a particular model uses in one year. The smaller the number, the less energy the refrigerator uses and the less it will cost you to operate. In addition to the Energy Guide label, don't forget to look for the ENERGY STAR label. A new refrigerator with an ENERGY STAR label uses at least 20% less energy than required by current federal standards and 40% less energy than the conventional models sold in 2001.

Refrigerator/Freezer Energy Tips

- Look for a refrigerator with automatic moisture control. Models with this feature have been engineered to prevent moisture accumulation on the cabinet exterior without the addition of a heater. This is not the same thing as an "anti-sweat" heater. Models with an anti-sweat heater will consume 5% to 10% more energy than models without this feature.
- Don't keep your refrigerator or freezer too cold. Recommended temperatures are 37° to 40°F for the fresh food compartment of the refrigerator and 5°F for the freezer section. If you have a separate freezer for long-term storage, it should be kept at 0°F.

- To check refrigerator temperature, place an appliance thermometer in a glass of water in the center of the refrigerator. Read it after 24 hours. To check the freezer temperature, place a thermometer between frozen packages. Read it after 24 hours.
- Regularly defrost manual-defrost refrigerators and freezers; frost buildup decreases the energy efficiency of the unit. Don't allow frost to build up more than one-quarter of an inch.
- Make sure your refrigerator door seals are airtight. Test them by closing the door over a piece of paper or a dollar bill so it is half in and half out of the refrigerator. If you can pull the paper or bill out easily, the latch may need adjustment, the seal may need replacing, or you might consider buying a new unit.
- Cover liquids and wrap foods stored in the refrigerator. Uncovered foods release moisture and make the compressor work harder.

Long-Term Savings Tip

- Look for the ENERGY STAR label when buying a new refrigerator. Select a new refrigerator that is the right size for your household. Top freezer models are more energy efficient than side-by-side models. Features like icemakers and water dispensers, while convenient, will increase energy use.

Other Energy-Saving Kitchen Tips

- Be sure to place the faucet lever on the kitchen sink in the cold position when using small amounts of water; placing the lever in the hot position uses energy to heat the water even though it may never reach the faucet.
- If you need to purchase a natural gas oven or range, look for one with an automatic, electric ignition system. An electric ignition saves natural gas because a pilot light is not burning continuously.
- In natural gas appliances, look for blue flames; yellow flames indicate the gas is burning inefficiently and an adjustment may be needed. Consult the manufacturer or your local utility.
- Keep range-top burners and reflectors clean; they will reflect the heat better, and you will save energy.
- Use a covered kettle or pan to boil water; it's faster and it uses less energy.
- Match the size of the pan to the heating element.
- Use small electric pans or toaster ovens for small meals rather than your large stove or oven. A toaster oven uses a third to half as much energy as a full-sized oven.
- Use pressure cookers and microwave ovens whenever it is convenient to do so. They will save energy by significantly reducing cooking time.

Laundry

Save Energy and More with ENERGY STAR
ENERGY STAR clothes washers use 50% less energy to wash clothes than standard washing machines.

About 90% of the energy used for washing clothes in a conventional top-load washer is for heating the water. There are two ways to reduce the amount of energy used for washing clothes—use less water and use cooler water. Unless you're dealing with oily stains, the warm or cold water setting on your machine will generally do a good job of cleaning your clothes. Switching your temperature setting from hot to warm can cut a load's energy use in half.

Laundry Tips

- Wash your clothes in cold water using cold-water detergents whenever possible.
- Wash and dry full loads. If you are washing a small load, use the appropriate water-level setting.
- Dry towels and heavier cottons in a separate load from lighter-weight clothes.
- Don't over-dry your clothes. If your machine has a moisture sensor, use it.
- Clean the lint filter in the dryer after every load to improve air circulation.
- Use the cool-down cycle to allow the clothes to finish drying with the residual heat in the dryer.
- Periodically inspect your dryer vent to ensure it is not blocked. This will save energy and may prevent a fire. Manufacturers recommend using rigid venting material, not plastic vents that may collapse and cause blockages.
- Consider air-drying clothes on clothes lines or drying racks. Air-drying is recommended by clothing manufacturers for some fabrics.

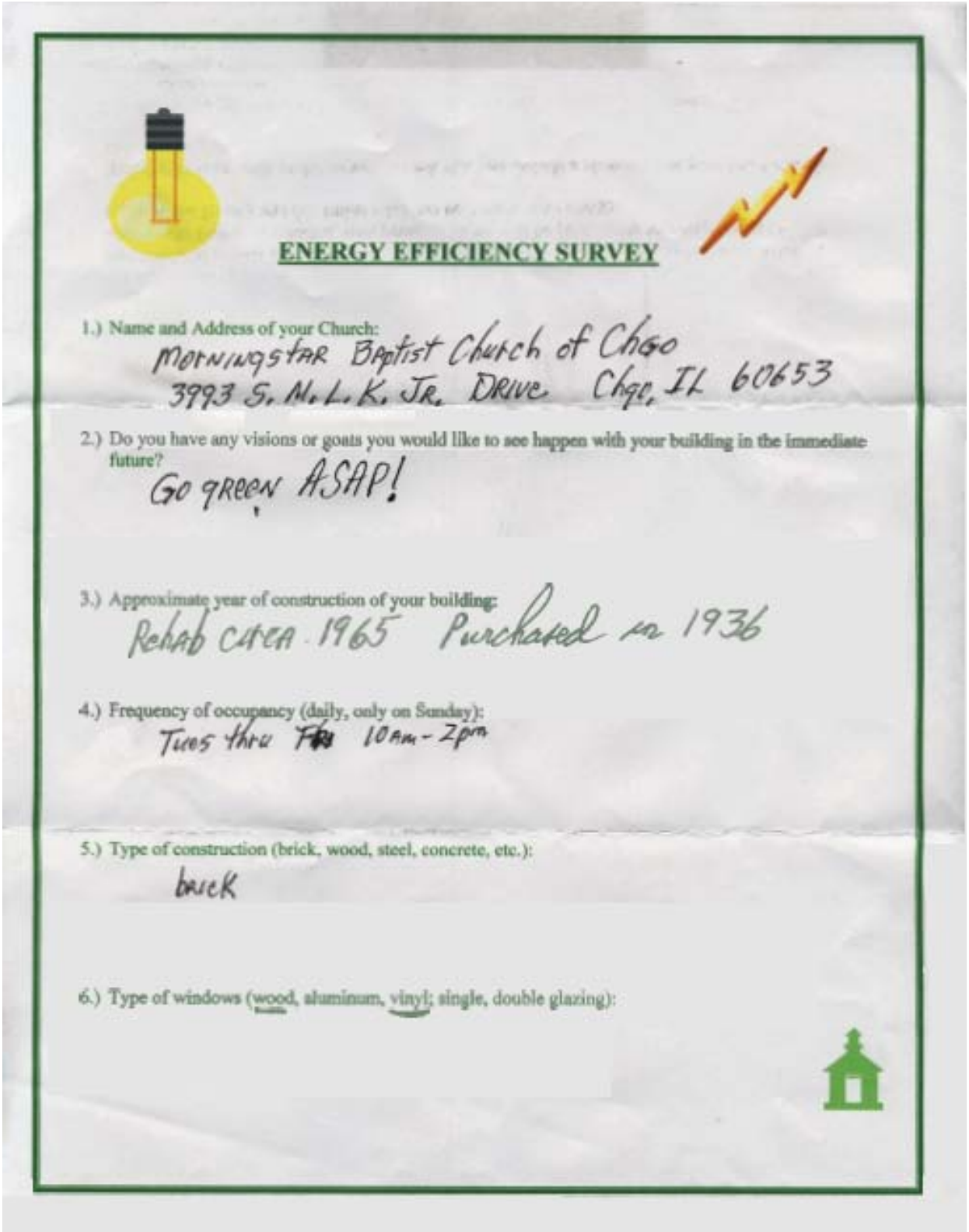
Long-Term Savings Tips

- Look for the ENERGY STAR and Energy Guide labels. ENERGY STAR clothes washers clean clothes using 50% less energy than standard washers. Most full-sized ENERGY STAR washers use 15 gallons of water per load, compared to the 32.5 gallons

used by a new standard machine. ENERGY STAR models also spin the clothes better, resulting in less drying time.

- When shopping for a new clothes dryer, look for one with a moisture sensor that automatically shuts off the machine when your clothes are dry. Not only will this save energy, it will save the wear and tear on your clothes caused by over-drying.
- ENERGY STAR does not label clothes dryers because most of them use similar amounts of energy, which means there is little difference in energy use between models.

Morningstar Baptist Returned Survey



ENERGY EFFICIENCY SURVEY

1.) Name and Address of your Church:
Morningstar Baptist Church of Chgo
3993 S. M.L.K. JR. Drive Chgo, IL 60653

2.) Do you have any visions or goals you would like to see happen with your building in the immediate future?
Go green ASAP!

3.) Approximate year of construction of your building:
Rehab CIRCA 1965 Purchased in 1936

4.) Frequency of occupancy (daily, only on Sunday):
Tues thru Fri 10Am - 2pm

5.) Type of construction (brick, wood, steel, concrete, etc.):
brick

6.) Type of windows (wood, aluminum, vinyl; single, double glazing):

7.) Air Conditioning?

Yes

8.) Type of heating system(RTU, ~~steam~~, ~~hot water~~, ~~forced air~~) and approximate age of components:

?

9.) Predominant types of lighting used (incandescent, fluorescent):

10.) Number of electrical meters:

2

11.) Has the building attempted any previous efforts at reducing its energy use?

No!

12.) Do you know of any neighboring churches and schools that have programs to improve their energy efficiency?

NO!

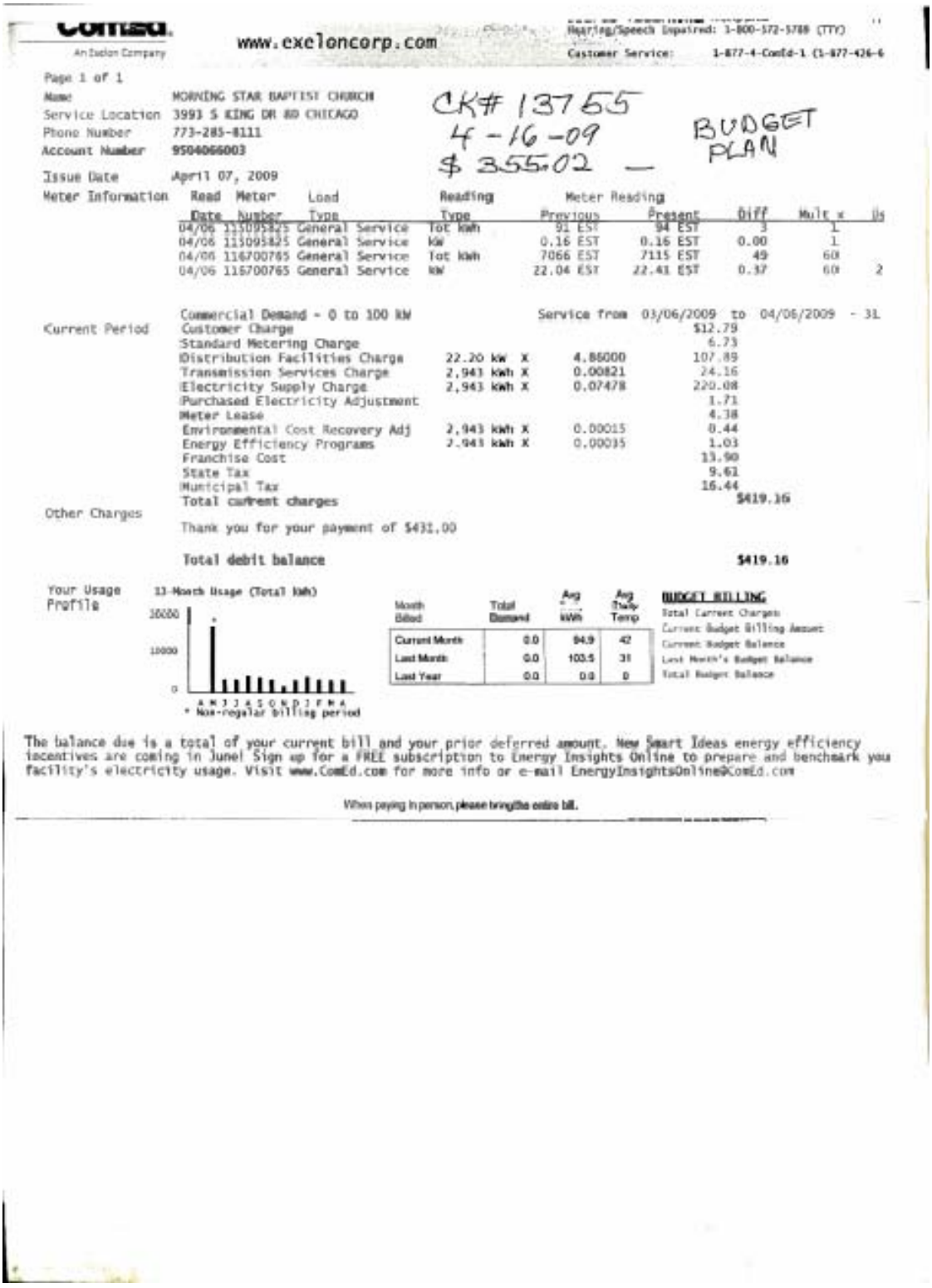
13.) What kind of community activities does your church participate in? or run at its facility?

various single-time Events, No Regular programs

14.) How willing are you to have us come in and help make your church more energy efficient?

totally if help is not cost prohibitive

Morningstar Baptist Electric Bills



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Customer Service: 1-877-4-ComEd-1 (1-877-426-6

Page 1 of 1

Name MORNING STAR BAPTIST CHURCH
Service Location 3993 S KING DR 60 CHICAGO
Phone Number 773-285-8111
Account Number 9504066003

CK# 13755
4-16-09
$ 355.02 —
BUDGET PLAN

Issue Date April 07, 2009

Meter Information

Read Date	Meter Number	Load Type	Reading Type	Meter Reading Previous	Present	Diff	Mult x	Us
04/06	115095825	General Service	Tot kWh	91 EST	94 EST	3	1	
04/06	115095825	General Service	kW	0.16 EST	0.16 EST	0.00	1	
04/06	116700765	General Service	Tot kWh	7066 EST	7115 EST	49	60	
04/06	116700765	General Service	kW	22.04 EST	22.41 EST	0.37	60	2

Current Period

Commercial Demand - 0 to 100 kW — Service from 03/06/2009 to 04/06/2009 - 31

Customer Charge			$12.79
Standard Metering Charge			6.73
Distribution Facilities Charge	22.20 kW X	4.86000	107.89
Transmission Services Charge	2,943 kWh X	0.00821	24.16
Electricity Supply Charge	2,943 kWh X	0.07478	220.08
Purchased Electricity Adjustment			1.71
Meter Lease			4.38
Environmental Cost Recovery Adj	2,943 kWh X	0.00015	0.44
Energy Efficiency Programs	2,943 kWh X	0.00035	1.03
Franchise Cost			13.90
State Tax			9.61
Municipal Tax			16.44
Total current charges			$419.16

Other Charges

Thank you for your payment of $431.00

Total debit balance **$419.16**

Your Usage Profile

13-Month Usage (Total kWh)

Month Billed	Total Demand	Avg kWh	Avg Daily Temp
Current Month	0.0	94.9	42
Last Month	0.0	103.5	31
Last Year	0.0	0.0	0

BUDGET BILLING
Total Current Charges
Current Budget Billing Amount
Current Budget Balance
Last Month's Budget Balance
Total Budget Balance

The balance due is a total of your current bill and your prior deferred amount. New Smart Ideas energy efficiency incentives are coming in June! Sign up for a FREE subscription to Energy Insights Online to prepare and benchmark your facility's electricity usage. Visit www.ComEd.com for more info or e-mail EnergyInsightsOnline@ComEd.com

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Page 1 of 1

CK# 13755
4-16-09
$ 355.02 —

BUDGET PLAN

Name MORNING STAR BAPTIST CHURCH
Service Location 3993 S KING DR 80 CHICAGO
Phone Number 773-285-8111
Account Number 9504066003

Issue Date April 07, 2009

Meter Information

Read Date	Meter Number	Load Type	Reading Type	Meter Reading Previous	Present	Diff	Mult x	Us
04/06	115095825	General Service	Tot kWh	91 EST	94 EST	3	1	
04/06	115095825	General Service	kW	0.16 EST	0.16 EST	0.00	1	
04/06	116700765	General Service	Tot kWh	7066 EST	7115 EST	49	60	
04/06	116700765	General Service	kW	22.04 EST	22.41 EST	0.37	60	2

Current Period

Commercial Demand - 0 to 100 kW — Service from 03/06/2009 to 04/06/2009 - 31

Customer Charge			$12.79
Standard Metering Charge			6.73
Distribution Facilities Charge	22.20 kW X	4.86000	107.89
Transmission Services Charge	2,943 kWh X	0.00821	24.16
Electricity Supply Charge	2,943 kWh X	0.07478	220.08
Purchased Electricity Adjustment			1.71
Meter Lease			4.38
Environmental Cost Recovery Adj	2,943 kWh X	0.00015	0.44
Energy Efficiency Programs	2,943 kWh X	0.00035	1.03
Franchise Cost			13.90
State Tax			9.61
Municipal Tax			16.44
Total current charges			**$419.16**

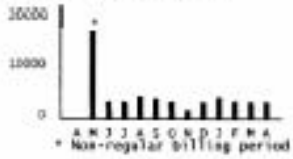
Other Charges

Thank you for your payment of $431.00

Total debit balance **$419.16**

Your Usage Profile

13-Month Usage (Total kWh)



Month Billed	Total Demand	Avg kWh	Avg Daily Temp
Current Month	0.0	94.9	42
Last Month	0.0	103.5	31
Last Year	0.0	0.0	0

BUDGET BILLING
Total Current Charges
Current Budget Billing Amount
Current Budget Balance
Last Month's Budget Balance
Total Budget Balance

The balance due is a total of your current bill and your prior deferred amount. New Smart Ideas energy efficiency incentives are coming in June! Sign up for a FREE subscription to Energy Insights Online to prepare and benchmark you facility's electricity usage. Visit www.ComEd.com for more info or e-mail EnergyInsightsOnline@ComEd.com

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CK# 13798
5-15-09
$ 460.00
BUDGET PLAN

Name MORNING STAR BAPTIST CHURCH
Service Location 3993 S KING DR BD CHICAGO
Phone Number 773-285-8111
Account Number **9504066003**

Issue Date May 06, 2009

Meter Information

Read Date	Meter Number	Load Type	Reading Type	Meter Reading Previous	Present	Diff	Mult x	Use
05/05	115095825	General Service	Tot kWh	94 EST	97 EST	3	1	
05/05	115095825	General Service	kW	0.16 EST	0.16 EST	0.00	1	0
05/05	116700765	General Service	Tot kWh	7115 EST	7159 EST	44	60	2
05/05	116700765	General Service	kW	22.41 EST	22.79 EST	0.38	60	22

Current Period — Commercial Demand - 0 to 100 kW — Service from 04/06/2009 to 05/05/2009 - 29 D

Customer Charge			$12.79
Standard Metering Charge			6.73
Distribution Facilities Charge	22.80 kW X	4.86000	110.81
Transmission Services Charge	2,643 kWh X	0.00821	21.70
Electricity Supply Charge	2,643 kWh X	0.07478	197.64
Purchased Electricity Adjustment			-2.80
Meter Lease			4.38
Environmental Cost Recovery Adj	2,643 kWh X	0.00015	0.40
Energy Efficiency Programs	2,643 kWh X	0.00033	0.93
Franchise Cost			12.85
State Tax			8.65
Municipal Tax			15.21
Total current charges			$389.29

Other Charges

Thank you for your payment of $355.02

Total debit balance **$389.29**

Your Usage Profile

13-Month Usage (Total kWh)

Month Billed	Total Demand	Avg Daily kWh	Avg Daily Temp
Current Month	0.0	91.1	
Last Month	0.0	94.9	
Last Year	0.0	104.6	

BUDGET BILLING

Total Current Charges	1
Current Budget Billing Amount	1
Current Budget Balance	1
Last Month's Budget Balance	
Total Budget Balance	1

New Smart Ideas energy efficiency incentives are coming in June! Sign up for a FREE subscription to Energy Insights Online to prepare and benchmark your facility's electricity usage. Visit www.ComEd.com for more info or e-mail EnergyInsightsOnline@ComEd.com

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Customer Service: 1-877-4-CONTACT (1-877-426-6822)

Page 1 of 1

CK# 13844
6-19-09
$ 460.00
BUDGET PLAN

Name MORNING STAR BAPTIST CHURCH
Service Location 3993 S KING DR BD CHICAGO
Phone Number 773-285-8111
Account Number 9504066003

Issue Date June 05, 2009

Meter Information

Read Date	Meter Number	Load Type	Reading Type	Meter Reading Previous	Present	Diff	Mult x	Usage
06/04	115095825	General Service	Tot kWh	97 EST	100 EST	3	1	
06/04	115095825	General Service	kW	0.16 EST	0.16 EST	0.00	1	0.0
06/04	116700765	General Service	Tot kWh	7159 EST	7205 EST	46	60	27
06/04	116700765	General Service	kW	22.79 EST	23.20 EST	0.41	60	24.6

Current Period

Commercial Demand - 0 to 100 kW — Service from 05/05/2009 to 06/04/2009 - 30 Da

Customer Charge			$12.79
Standard Metering Charge			6.73
Distribution Facilities Charge	24.60 kW X	4.86000	119.56
Transmission Services Charge	2,763 kWh X	0.00596	16.47
Electricity Supply Charge	2,763 kWh X	0.06646	183.63
Purchased Electricity Adjustment			6.88
Meter Lease			4.38
Environmental Cost Recovery Adj	2,763 kWh X	0.00015	0.41
Energy Efficiency Programs	2,763 kWh X	0.00073	2.02
Franchise Cost			13.27
State Tax			9.03
Municipal Tax			15.70
Total current charges			$390.87

Other Charges

Thank you for your payment of $460.00

Total debit balance **$390.87**

Your Usage Profile

13-Month Usage (Total kWh)

Month Billed	Total Demand	Avg Daily kWh	Avg Daily Temp
Current Month	0.0	92.1	60
Last Month	0.0	91.1	58
Last Year	0.0	94.6	58

BUDGET BILLING

Total Current Charges	$3
Current Budget Billing Amount	$4
Current Budget Balance	$-
Last Month's Budget Balance	$-
Total Budget Balance	$-1

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Customer Service: 1-877-4-ComEd-1 (1-877-426-

Page 1 of 1

CK# 13887
7-13-09
$ 469.60

BUDGET PLAN

Name: MORNING STAR BAPTIST CHURCH
Service Location: 3993 S KING DR BD CHICAGO
Phone Number: 773-285-8111
Account Number: 9504006093

Issue Date: July 07, 2009

Meter Information

Read Date	Meter Number	Load Type	Reading Type	Meter Reading Previous	Present	Diff	Mult x	Us
07/06	115095825	General Service	Tot kWh	100 EST	104 EST	4	1	
07/06	115095825	General Service	kW	0.16 EST	0.16 EST	0.00	1	
07/06	116700765	General Service	Tot kWh	7205 EST	7262 EST	57	60	
07/06	116700765	General Service	kW	23.20 EST	21.70 EST	0.50	60	3

Current Period

Commercial Demand - 0 to 100 kW — Service From 06/04/2009 to 07/06/2009 - 32

Customer Charge			$12.79
Standard Metering Charge			6.73
Distribution Facilities Charge	30.00 kw X	4.86000	145.80
Transmission Services Charge	3,424 kWh X	0.00596	20.41
Electricity Supply Charge	3,424 kWh X	0.06646	227.56
Purchased Electricity Adjustment			3.77
Meter Lease			4.38
Environmental Cost Recovery Adj	3,424 kWh X	0.00015	0.51
Energy Efficiency Programs	3,424 kWh X	0.00073	2.50
Franchise Cost			15.98
State Tax			11.14
Municipal Tax			18.43
Total current charges			$469.60

Other Charges

Thank you for your payment of $460.00

Total debit balance $469.60

Your Usage Profile

Month Billed	Total Demand	Avg Daily kWh	Avg Daily Temp
Current Month	0.0	107.0	69
Last Month	0.0	92.1	60
Last Year	0.0	111.5	72

BUDGET BILLING

Total Current Charges	1
Current Budget Billing Amount	1
Current Budget Balance	
Last Month's Budget Balance	1-
Total Budget Balance	1-

Smart Ideas New Construction Services assists designers, architects and building owners in surpassing new constructi
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Customer Service: 1-877-4-ComEd-1 (1-877-42

Ck# 13930
8-15-09
555.68

Name MORNING STAR BAPTIST CHURCH
Service Location 3993 S KING DR BD CHICAGO
Phone Number 773-285-8111
Account Number 9504066003

Issue Date August 05, 2009

Meter Information

Read Date	Meter Number	Load Type	Reading Type	Meter Reading Previous	Present	Diff	Mult x
08/05	115095825	General Service	Tot kWh	104 EST	113 ACT	9	1
08/05	115095825	General Service	kW	0.17 ACT	0.17 ACT	0.00	1
08/05	116700765	General Service	Tot kWh	7262 EST	7317 ACT	55	60
08/05	116700765	General Service	kW	21.99 ACT	22.82 ACT	0.83	60

Current Period

Commercial Demand - 0 to 100 kW — Service from 07/04/2009 to 08/05/2009 - 33 days

Customer Charge			$13.59
Standard Metering Charge			6.73
Distribution Facilities Charge	49.80 kW X	4.86000	242.03
Transmission Services Charge	3,309 kWh X	0.00596	19.72
Electricity Supply Charge	3,309 kWh X	0.06646	219.92
Purchased Electricity Adjustment			2.42
Meter Lease			3.38
Environmental Cost Recovery Adj	3,309 kWh X	0.00015	0.50
Energy Efficiency Programs	3,309 kWh X	0.00073	2.42
Franchise Cost			13.18
State Tax			10.78
Municipal Tax			17.96
Total current charges			$555.63

Other Charges

Thank you for your payment of $469.60	
Overpayment	$-9.60
Total other charges	**$-9.60**
Total debit balance	**$555.63**

How does your facility use its electricity? You can benchmark it when you sign up for a FREE subscription to Ene Insights Online. Visit www.ComEd.com for more info or e-mail EnergyInsightsOnline@ComEd.com.

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Customer Service: 1-877-4-ComEd-1 (1-877-426-

Page 1 of 2

CK# 13966
9-10-09
$354.77 – BUDGET PLAN

Name MORNING STAR BAPTIST CHURCH
Service Location 3903 S KING DR BD CHICAGO
Phone Number 773-285-8111
Account Number 9504068003

Issue Date September 03, 2009

Meter Information

Read Date	Meter Number	Load Type	Reading Type	Meter Reading Previous	Present	Diff	Mult x	Us
09/02	115095825	General Service	Tot kWh	113 ACT	122 EST	9	1	
09/02	115095825	General Service	kW	0.17 ACT	0.17 EST	0.00	1	
09/02	116700765	General Service	Tot kWh	7317 ACT	7371 EST	54	60	
09/02	116700765	General Service	kW	22.82 ACT	23.67 EST	0.85	60	!

Current Period

Commercial Demand - 0 to 100 kW — Service from 08/03/2009 to 09/02/2009 - 28

Customer Charge			$13.59
Standard Metering Charge			6.73
Distribution Facilities Charge	$1.00 kW X	4.86000	247.86
Transmission Services Charge	3,249 kWh X	0.00596	19.36
Electricity Supply Charge	3,249 kWh X	0.06646	215.93
Purchased Electricity Adjustment			16.25
Meter Lease			4.38
Environmental Cost Recovery Adj	3,249 kWh X	0.00015	0.49
Energy Efficiency Programs	3,249 kWh X	0.00073	2.37
Franchise Cost			14.97
State Tax			10.58
Municipal Tax			17.71
Total current charges			**$570.22** ✓

Other Charges

Thank you for your payment of $555.63		
Overpayment	$-105.23	
Total other charges		**$-105.23**
Total debit balance		**$570.22**

Best kept secret: Smart Ideas for Your Business e-newsletter. Your competition subscribes. Why don't you? Visit www.ComEd.com/BizIncentives

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Customer Service: 1-877-4-ComEd-1 (1-877-426-6

Name MORNING STAR BAPTIST CHURCH
Service Location 3993 S KING DR BD CHICAGO
Phone Number 773-285-8111
Account Number 9504066003

ck# 14013 BUDGET PLAN
10-13-09 $460.00

Issue Date October 05, 2009

Meter Information

Read Date	Meter Number	Load Type	Reading Type	Meter Readings Previous	Present	Diff	Mult x	Usa
10/05	115095825	General Service	Tot kWh	122 EST	122 ACT	0	1	
10/05	115095825	General Service	kW	0.17 ACT	0.18 ACT	0.01	1	0
10/05	116700765	General Service	Tot kWh	7371 EST	7426 ACT	55	60	3
10/05	116700765	General Service	kW	22.82 ACT	23.67 ACT	0.85	60	51

Current Period

Commercial Demand - 0 to 100 kW — Service from 09/02/2009 to 10/05/2009 - 33 d

Customer Charge			$13.59
Standard Metering Charge			6.73
Distribution Facilities Charge	51.01 kW X	4.86000	247.91
Transmission Services Charge	3,300 kWh X	0.00596	19.67
Electricity Supply Charge	3,300 kWh X	0.06507	214.73
Purchased Electricity Adjustment			4.26
Meter Lease			4.38
Environmental Cost Recovery Adj	3,300 kWh X	0.00015	0.50
Energy Efficiency Programs	3,300 kWh X	0.00073	2.41
Franchise Cost			15.15
State Tax			10.75
Municipal Tax			17.92
Total current charges			$558.00

Other Charges

Thank you for your payment of $354.77

Total debit balance $558.00

Your Usage Profile

13-Month Usage (Total kWh)

Month Billed	Total Demand	Avg Daily kWh	Avg Daily Temp
Current Month	0.0	100.0	64
Last Month	0.0	116.0	70
Last Year	0.0	105.6	65

BUDGET BILLING

Total Current Charges	$
Current Budget Billing Amount	$
Current Budget Balance	
Last Month's Budget Balance	
Total Budget Balance	$

Pledge to change at least 1 incandescent lightbulb at your business with a CFL. Take the pledge at www.comed.com/sites/HomeSavings/Pages/lightning pledge.aspx

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Mount Carmel Baptist Electric Bills

Non Residential Choice
Customer Data

ComEd Choice Home | Non Residential Choice - Customer Data | Request Options | Login

MOUNT CARMEL BAPTIST
Summary Data for Account Number: 8655808001

Meter Bill Group Number: 1

Capacity PLC	Start Date	End Date
14.321	6/1/2008	5/31/2009
20.115	6/1/2009	5/31/2010

Network Service PLC	Start Date	End Date
21.240	1/1/2009	12/31/2009

Minimum Stay Date
5/1/2006

Condo Exception
No

Current Supply Group	Eff Start Date
Demand	1/2/2007
Pending Supply Group	**Eff Start Date**
N/A	N/A

Rate**	End of Billing Period	In Billing Period	Total KWH Usage	On-Peak KWH Usage	Off-Peak KWH Usage	Billing Demand (KW)	Monthly Peak Demand (KW)	Current Charges
B73	9/30/2009	30	4840	0	0	40.41	40.41	$643.54
B73	8/31/2009	31	4242	0	0	32.00	32.00	$574.07
B73	7/31/2009	30	4472	0	0	31.20	31.20	$571.57
B73	7/1/2009	28	4440	0	0	40.38	40.38	$614.31
B73	6/3/2009	33	5328	0	0	40.43	40.43	$697.64
B73	5/1/2009	29	4645	0	0	30.99	30.99	$623.47
B73	4/2/2009	28	4640	0	0	19.94	19.94	$576.89
B73	3/5/2009	30	5229	0	0	17.15	17.15	$618.53
B73	2/3/2009	29	5386	0	0	18.22	18.22	$649.77
B73	1/5/2009	40	7364	0	0	35.26	35.26	$910.23
B73	11/26/2008	28	4918	0	0	24.19	24.19	$622.35
B73	10/29/2008	28	3876	0	0	19.74	19.74	$510.77
B73	10/1/2008	33	6111	0	0	22.26	22.26	$717.46
B73	8/29/2008	29	8864	0	0	27.24	27.24	$996.30
B73	7/31/2008	31	9631	0	0	55.31	55.31	$1,203.57
B73	6/30/2008	31	4246	0	0	26.31	26.31	$572.24
B73	5/30/2008	30	4175	0	0	24.54	24.54	$553.74

B73	4/30/2008	29	4663	0	0	29.22	29.22	$586.93
B73	4/1/2008	28	5617	0	0	33.00	33.00	$695.60
B73	3/4/2008	29	5897	0	0	34.95	34.95	$710.38
B73	2/4/2008	32	6065	0	0	34.98	34.98	$724.04
B73	1/3/2008	35	7817	0	0	35.88	35.88	$866.37
B73	11/29/2007	34	4993	0	0	18.42	18.42	$559.75
B73	10/26/2007	28	5653	0	0	25.79	25.79	$638.29

**** Rate Legend:** B73=Commercial Blended - 0 to 100 kW

Summary usage data is displayed at the rate level for each billing period.
Accounts may have more than one rate.

Monthly Peak Demand represents the coincidental peak demand during the billing period for all meters on an account.

N/A = PLC value and/or Supply Group data is not currently available, please use the Data Request form to obtain the current PLC values.

ComEd, as an Electric Distribution Company (EDC)member of the PJM Interconnection, LLC (PJM), is responsible for determining the Peak Load Contribution (PLC) for each load serving entity within the ComEd zone. Two unique values are created for each electric account: Capacity PLC and Network Service PLC. Retail Electric Suppliers may use these account values in determining supply and transmission resources and requirements for associated customers.

PowerPath®

Last updated: May 6, 2004
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Sixth Grace Presbyterian Return Survey

ENERGY EFFICIENCY SURVEY

1.) Name and Address of your Church:

Sixth Grace Presbyterian Church
1600 E. 35th St.
Chicago IL 60653

2.) Do you have any visions or goals you would like to see happen with your building in the immediate future?

Our front entrance door frame is deteriorating and needs to be replaced

3.) Approximate year of construction of your building:

1973

4.) Frequency of occupancy (daily, only on Sunday):

Daily

5.) Type of construction (brick, wood, steel, concrete, etc.):

brick

6.) Type of windows (wood, aluminum, vinyl; single, double glazing):

steel, single

7.) Air Conditioning?

Yes

8.) Type of heating system(RTU, steam, hot water, forced air) and approximate age of components:

Forced Air

9.) Predominant types of lighting used (incandescent, fluorescent):

fluorescent

10.) Number of electrical meters:

two

11.) Has the building attempted any previous efforts at reducing its energy use?

Yes. New Thermostats (programmable)

12.) Do you know of any neighboring churches and schools that have programs to improve their energy efficiency?

No.

13.) What kind of community activities does your church participate in? or run at its facility?

Line Dancing
Food Pantry
Mentoring programs

14.) How willing are you to have us come in and help make your church more energy efficient?

Very