

HNR 360

**Building with a Conscience:
The Synergies of Historic Preservation
and
Sustainable Design**

**Oral Histories
and
Resources Use Audit Recommendations
for
Grace Episcopal Church**

May 2006

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We are pleased to have participated in Chancellor Nancy Cantor's *Imagining the Connective Corridor* community engagement initiative.

Respectfully submitted,

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**Building with a Conscience:
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Spring 2006

This honors course began with a two-day, pre-semester seminar introducing historic preservation, sustainable design, and the non-profit organization with which we worked during the semester. Seminar participants visited sites developed with the intent to preserve the natural and built environments and met with professionals involved in these efforts. During the semester, we explored the values underlying historic preservation and sustainable design, identifying ways in which these objectives reinforce and support each other, and examined illustrations of “building with a conscience.”

Our partner non-profit agency was Grace Episcopal Church. Located in the university neighborhood, the church was founded in 1871 and has been listed in the National Register of Historic Places since 1973. Grace is a diverse, socially active community struggling to survive, in part due to the burdens imposed by its building. The class worked with Grace members to research and organize its archives, which are housed in the Special Collections Resource Center of the Syracuse University Library and include correspondence related to the civil rights movement. Historical materials at the Onondaga Historical Society were consulted, as well, and oral histories were conducted. Additionally, with the assistance of Syracuse University’s Industrial Assessment Center, the class conducted a resources use audit of the Grace facility; the resulting recommendations are projected to save more than 32 percent of annual costs. The class presented its research to the Grace congregation on April 23, 2006.

The course was team-taught by Gary M. Radke, professor of art and architectural history in the College of Arts and Sciences, and Elet Callahan, professor of law and public policy in the Whitman School of Management.

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Oral History Assignment

Due Thursday, March 9

Activity: Conduct a personal interview with a current member of Grace Church who was active at Grace and/or St. Philip's in the 1950s and 1960s and create a written record of that conversation

Purpose: To learn about personal experiences of integration and civil rights in the period in which Grace Church merged with St. Philip's and to provide the congregation with a record of those experiences as it prepares to celebrate the fiftieth anniversary of the merging of the two congregations.

Method:

Step One: On February 9, you will be assigned a person to interview. Contact your interviewee as soon as possible and arrange to meet for an hour at a mutually convenient time and place, preferably his/her residence.

Step Two: Conduct the interview. Ask the person to tell you when s/he became involved with either or both of the churches and what s/he remembers of the 1950s and 1960s. Take detailed notes of what s/he says. If you wish and if your interviewee agrees, you may record the interview. Also ask whether the person has any pertinent materials (photographs, written materials, etc) that you might consult. At the end of the interview make an agreement with the person about what you are going to write, making it clear that this document will be shared with the rest of the congregation. You might write a synopsis of the entire conversation or focus on one or several specific stories or events. In either case, you are to give the interviewee's perspective on the event(s), not your own. Before you leave, make another appointment with the interviewee so that you can have him or her review and critique your first draft.

Step Three: Write a four to five-page, double-spaced, typed essay according to the criteria you have agreed upon with your interviewee. Send or deliver a copy to your interviewee.

Step Four: Meet a second time with your interviewee and ask for corrections and/or suggestions for improvement.

Step Five: Revise the paper according to their comments and submit it no later than 5 p.m. on Thursday, March 9 via the digital drop box.

Debriefing and analyzing: After your have had your interview, post a brief (250 word) report and analysis on the discussion board "oral histories" forum. With whom did you meet? When? What struck you about your conversation and experience?

An Oral History Given By Greta Jones¹

Prepared by Jackie Cho

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Building with a Conscience: The Synergies of Historic Preservation and Sustainable Design

Syracuse University

Spring 2006

Greta Jones wore a black turtleneck underneath a light blue sweater and black sweatpants with turquoise socks and brown loafers. She had put on her glasses to show a map of University Hill's proposed commercial urban renewal site in the sixties and she shared one of her most prominent memories during that time period. The neighborhood, the Fifteenth Ward, was being torn down.

“That’s where ninety percent of blacks lived and you were confined (there) whether you wanted to or not. You could go down Townsend Street and go under the underpass where there were railroad tracks and you’d be in another world. You come up Irving and Crouse – that was another world because blacks didn’t live up there. Urban renewal kind of opened up some of that...The demographics changed with the highway and the building of Upstate (Medical Center).”

Although Jones did not live in the Fifteenth Ward, the building of Upstate Medical Center eventually forced Jones and her family to move out of their rented home. “They tore the whole neighborhood down,” she said.

While pointing out the location of Saint Philip’s, she explained why she chose to attend Grace Episcopal Church.

“At the time, my husband and I had four children and we hadn’t belonged to any particular church. So we decided we needed to go to a church somewhere and at one point we were going to go to Saint Philip’s but then it closed,” Jones said.

After Saint Philip’s closed, Jones said her family had two options: they could either go to Park Central Presbyterian or Grace Episcopal Church. When asked what the motivating factor was for her choosing Grace, she said Father Walter Welsh played a significant role. She had met Father Welsh when she was a student at Syracuse University. Jones had been involved with the chapel board, a board made up of students responsible for planning social activities, and Father Welsh had been the Episcopal chaplain at the time. Jones also took a group work course in which she was required to conduct field work. Her professor assigned her to Grace Church and its “release time education program,” in which students were released from school to attend religious programs. Grace Church had second grade students from Washington Irving School come once a week for two or three hours. Jones’ field work provided her with the opportunity to become better acquainted with Father Welsh.

“It was interesting because he was constantly in trouble with the people who coordinated the Protestant religious education. He didn’t have the kids sitting down in rows and telling them

¹ Copyright 2006 by Jacqueline Cho

Bible stories. We had crafts and juice and cookies. We did religious stories and what not, too, but it was too free flowing for the people that ran the religious education,” Jones said.

Jones chuckled as she remembered different memories of Father Welsh. “He was an activist, very progressive, and he was a hugger.” Father Welsh fought for housing so that urban renewal did not usurp all of it. He came up with what Jones described as a radical idea of moving the altar to the center of the church. “It was Father Welsh’s idea of people to see each other so you’re not sitting, looking at the back of somebody’s head all the time. He was trying to build relationships.” Father Welsh would also hug parishioners instead of shaking their hands during “The Peace.”

When asked about the bomb scare in 1963, not long after Jones and her family had started to attend Grace, Jones paused before answering.

“I was sitting out in the hallway there, in the parish hall. The Sunday school was held during the service in the second office upstairs. The teacher came down and said they were having a fire drill and she asked if I would help get the kids out and I said, ‘Sure.’ I hadn’t gone into the service. We got down by Madison School in the next block...all these people started pulling up and the news filtered back to us that there had been a bomb scare. All the kids had gotten out, and Father Welsh was going to continue with the service. Parents were made aware that the children were all safe.” She added, “It was scary to think what might have happened. You kind of have to go on faith that all would be well. I figured if Father Welsh had the faith to see his sermon through, I would too.”

In response to a comment Father Welsh made in regard to the multi-racial problem in the church,² Jones said that Welsh probably spoke out so that the church would not end up having two separate entities within it. Although parishioners from Saint Philip’s were involved in church social activities, Jones said that individual relations were missing. “Father Welsh was trying to work out ways to encourage social interaction within the church.” When asked if Jones witnessed the multi-racial problem or any social tension, she shook her head and honestly said, “I don’t know. I don’t know if there was. It wasn’t very overt. If there was, it was very subtle and people kind of eased out. I’m sure people left when Saint Philip’s was invited but I really don’t know. But I think there may have been some families that moved, and gradually some moved certainly after the bomb scare.”

But Jones paused and stared directly ahead of her as she folded her hands and placed them below her chin. She wore a pensive frown and said that to her the church was friendly, “but I would have to say maybe not because my oldest daughter didn’t think so. My oldest daughter was pretty sensitive. She grew up in the seventies when there was a lot of dissension in the schools, and she learned how to balance – how she speaks for example. If she was with black kids, she spoke one way. If she was in a mixed group, she spoke regular, the way she would ordinarily speak. She was comfortable at Grace and she was friends with kids at Grace her age, but they had no relationship outside of church. There were just no friendships outside.

² In the Pastor’s Report (Jan. 7, 1963), Reverend Walsh spoke out on racial segregation within the church. He said, “We should make an effort to prevent social groupings. We, as vestrymen, have a special responsibility on Sunday mornings to make sure that we introduce ourselves to those people whom we do not know.”

She went to birthday parties but the kids would never come here or spend the night, although she was in Girl Scouts with them. People physically together didn't necessarily mean they were spiritually or emotionally together. But of course then you have the option of just leaving if you feel as though you're not comfortable in a situation. I stayed. I don't know if I would be any more comfortable in any place else. Maybe if we'd gone to Park Central I would have adjusted there, too. Or maybe both of us [Jones and her husband] have always been in white situations. I think it's a matter of finding a niche for yourself."

Jones pointed out that Grace Church was ahead of its time with its social activism, its interest in what was going on in the community, and then trying to make a difference. "I know Grace was probably one of the supporters when the school district was sued to integrate. Members of Grace and Father Welsh, in particular, were involved with Urban League when it was set up. Grace Church has been active in all kinds of things: the Civil Rights movement, the push for jobs..."

At the end of our two hour conversation, Jones leaned back in her sofa and seemed to reflect what we had discussed. She folded her hands together and quietly said, "It's been an interesting journey being in Grace Church" and chuckled to herself.



(Photo of Greta Jones. Taken at the Whitman School of Management café.)

An Oral History Given by Connie Cutler³
Prepared by Maya Donelson
HNR 360
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Syracuse University
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Connie Cutler came to Syracuse in 1939, yet it took her 13 years to join Grace Episcopal Church. One reason why it took her so long dealt with nothing more than a bit of healthy sibling rivalry. Her sister had joined Grace a while back and Connie did not want to infringe on the locale her sister had developed. It was not until she married Bill Cutler in 1952 that she became an active member of the Grace Church community. Connie and Bill had three children: Billy in 1953, Johnny in 1954, and a daughter, Connie Marie, in 1957. After Billy and Johnny were born the family moved to Schenectady where her husband was involved in opening an office for Syracuse Supply Company. After only two years of involvement at Grace, Connie remembers coming back to Syracuse two or three times a month to be with the people she had met at Grace. “The church became my life, and it still is today,” she proclaimed.

In 1957, during the time Connie and her family were predominantly located in Schenectady, a small African American parish about five blocks away from Grace, St. Philip’s Church, closed. Members of the church were encouraged to affiliate with other nearby Episcopal Churches, Grace being one of them. Connie believes that St. Philip’s closed due to two reasons, the first being the trend in America to end segregation and the second due to the financial hardships experienced by St. Philip’s during that time. Before St. Philip’s closed and many members joined Grace, the Grace congregation was almost all white and part of the middle class. Although lacking racial diversity, Connie made reference to a Case Study Report of Grace Church written in *The Episcopalian* in May of 1970, *When Blacks Join Whites*, in which it states that many of the members of Grace were attracted to the church because of Rev. Walter N. Welsh. Rev. Welsh was strongly influenced by the social gospel movement, a Protestant Christian intellectual movement of the late 19th and early 20th centuries. This movement applies Christian principles to existing social problems, and so he encouraged parishioners to become involved with community issues, particularly involving the subject of race. This report states that members of Grace took the closure of St. Philip’s as an opportunity for integration, instead of waiting for St. Philip’s parishioners to find Grace. Grace community members actively recruited St. Philip’s parishioners to some degree, by inviting St. Philip’s parishioners to a dinner held in the parish hall. Grace church extended an invitation to St. Philip’s members and thought they would be pleased by the invitation, yet only three families actually attended the dinner. Integration was slow at first, but as knowledge of the Rector’s reputation as a believer in racial justice grew, more and more African American families became involved with Grace.

Connie Cutler, and her new family of five, returned to Syracuse in 1959 and speaks only of the warm greeting the whole family received from the new Grace members from St. Philip’s. They welcomed Connie and her family, and Connie welcomed them. Connie exclaims, “We loved each other since that day. The church has been my second home for years.” She recognizes the differences that exist in a multiracial congregation and says, “We are different, but it is so

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healthy, and I wouldn't have it any other way." Connie looks back with geniality at some of the good times after St. Philip's members joined Grace. She happily remembers the first interracial marriage at Grace between Dr. Charles Willie, a professor at Syracuse University, and Mary Sue Conklin, who led the choir. Connie also speaks highly of the couple's fellowship, which she and her husband were a part of. The Couple's fellowship was an active group that had several cabarets and other fundraisers. Connie remembers these times with warmth and compassion.

Connie Cutler also speaks less easily about some of the harder times including, acts of protest, the loss of members, threats, and vandalism. She describes The Rev. Walter Welsh as a dynamic fighter who kept the church together during these difficult times. Connie emphasized the fact that he was truly for the African American people and did everything he could to make them feel welcome at Grace. She remembers a time when Rev. Welsh strolled right past her in order to welcome an African American parishioner, which attributes to the attitude of Rev. Welsh during this time.

An act of protest which occurred one day after church on Genesee St, involved the neighborhood children throwing rocks and bricks at police officers. Police brutality and racism downtown was becoming apparent and tensions were increasing. Rev. Welsh attempted to make peace between the police officers and the neighborhood children, by standing in the middle of Genesee St. between the cops and the children. A corresponding event which took place at Grace causing a member to leave the church, involves a sermon made by Rev. Welsh to the congregation regarding police brutality against African Americans downtown. This sermon caused policeman Charlie Dawson to leave the congregation and never return. Rev. Welsh knew that social change could not be attained without sacrifice.

Connie talked a lot about certain events which caused families to leave the church during this time. Another event that caused a number of families to leave the church was at about the same time as the death of Martin Luther King when James Farmer, the first National Director of the Congress of Racial Equality, CORE, came to speak at Grace about racial segregation. The Vestry was not informed of his visit and the Warden reprimanded Rev. Welsh because of this. However, Connie believes that members of the Vestry reprimanded Rev. Welsh not only because they were ill informed, but also because there were underlying feelings within the Vestry that opposed the extent of civil rights activism within the church. Although Connie can not remember the specifics of this highly controversial speech, she clearly remembers that it caused eight white families to leave the church.

The 1950s and 60s was also a time of social brutality, including a bomb scare that took place at Grace and a night of vandalism to church property. Connie talks about the bomb scare with a sense of underlying pride in a very matter of fact way. Her description of what happened on this day is as follows. Ted Stone answered a phone call in which the person on the other end said the church was going to be bombed at some point during the service. He then delivered a note to Rev. Walter Welsh during the middle of his sermon and Rev. Walter Welsh announced to the congregation that the church had received a bomb threat and that anyone wishing to leave could do so, but he had a sermon to preach and would not give in to the threat. All the children from Sunday school took part in a fire drill and were evacuated from the building, and all but two of the remaining congregation stayed in their seats.

Grace Church was also vandalized during this time. Christian symbols at Grace were desecrated and some destroyed. The large wooden altar was split and torn down, the brass cross on the Memorial Altar was used as a club to gouge the walls and smash two stained glass windows, and the congregation did not have the means to pay for the repairs. "It was terribly heartbreaking," exclaimed Connie. The large wooden altar was split and torn down, the brass cross on the Memorial Altar was used as a club to gouge the walls and smash two stained glass windows, and the congregation did not have the means to pay for the repairs.

Through the hard times and the good times, Connie attributes a lot of the African American progress that took place during the 1950's, 60's, and 70's to Rev. Welsh. It was an exciting time in both the church's history and the civil rights movement. He fueled activism within the church and fought for peace within the community. Connie believes that Rev. Welsh was one of the best things that ever happened to Syracuse, Grace, and to herself and just as Rev. Welsh left his mark on Connie, Connie continues to leave her own mark. Just this past week Connie received an email from her Grandson that read, "Your way of looking at the world has definitely left a strong imprint on my view of the world. You have influenced me in so many ways and I just want to say thanks for opening my eyes to be able to see the goodness in people the same way you do."

An Oral History Given by Peggy Wood⁴
Prepared by Laura McClain
HNR 360

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Background

Mrs. Peggy Wood has always had a passion for serving the community through social work. She attended the Atlanta School of Social Work where she met her husband, Frank T. Wood. While they practiced different denominations of religion, both Mr. and Mrs. Wood were committed to their churches. Above all, though, the Woods were devoted to solving tough and sometimes controversial problems that affected the communities within which they lived and worked. During the course of their marriage, various social work positions caused the Woods to move from Atlanta, Georgia, to Lima, Ohio to Poughkeepsie, New York. Finally, the position of Director of Syracuse's Dunbar Community Center was presented to Mr. Wood, bringing the Wood family to Syracuse, New York. Throughout all of their relocations, the Woods never let a specific denomination of Christianity determine their church membership. Rather, the congregation's activity within its respective community determined the Woods' church membership.

Mrs. Wood's Contribution to the Syracuse Community

Shortly after moving to Syracuse, Mrs. Wood became Director of the Syracuse Salvation Army's social work program. Her work with the Salvation Army found Mrs. Wood running a racially integrated camp for children mainly from low-income backgrounds. While her husband had identified some of the social challenges facing the community through his work at Dunbar, this camp was Mrs. Wood's first direct exposure to the raw issues facing financially unstable families in Syracuse. Throughout their time in Syracuse, the Woods' prominent but different positions in the community allowed them not only to identify problems in the community but also to synergize and solve them.

During her time at the Salvation Army, Mrs. Wood began to formulate questions about the Syracuse community such as: Why were blacks banished and crammed into a single housing unit in the 15th ward?" "Why was the University turning a deaf ear to the social problems that surrounded it?" and "Why were Syracuse University students doing community work as a part of their doctoral and masters studies but not personally participating in community activities?"

As a part of her work with the Salvation Army, Mrs. Wood also went on to work with the homeless population in conjunction with the area police force. However, it was while she was enrolled in additional classes at Syracuse University, when her profession took an interesting turn. Mrs. Wood was approached by Dr. Howard Gundy of the University's School of Social Work. He believed that her community involvement and compassion would make her an ideal

⁴ Copyright 2006 by Laura McClain

candidate for the position of Director of the Syracuse Health Department's Social Work Department. Mrs. Wood accepted the position, began to assess the community's social status and determine the most outstanding needs for service in Syracuse. Immediately, through her work with the health department, she recognized teenage pregnancy as a growing issue in the area. Many area adolescents who struggled with the burden of pregnancy were also bound by a financial burden—some were even on welfare-- which made it difficult for them to obtain the health care necessary for a healthy pregnancy. As a result, Mrs. Wood collaborated with University Hospital and area school superintendents to found an adolescent teen pregnancy program, which was eventually located at a school around the corner from St. Philip's Episcopal Church.

Encounters with St. Philip's Church

This adolescent pregnancy awareness program was not only geographically close to St. Philip's Church, but the church developed a genuine interest in the program. While many individuals and organizations in the Syracuse community ignored this growing issue, St. Philip's, along with Grace Church ministers and members of the congregation were some of the first to recognize teen pregnancy as an outstanding and urgent problem in the community. As a result, the two churches collaborated along with the Syracuse Health Department to involve the proper resources to aid adolescents challenged with pregnancy. Because Mrs. Wood's position at the health department entailed working with the residents in the geographic area where St. Philip's was located, this position and her leadership in the teen pregnancy program facilitated her first interaction with St. Philip's Church.

Coincidentally, Mr. Frank Wood was active at St. Philip's, increased Mrs. Woods' interest as well as her work and interaction with the church. Mr. Wood worked to solve the St. Philip's problems in the 1950's, especially the financial stability of the parish. While Mrs. Woods' was attending Danforth Congregational Church at the time, she still remembers her husband's account of the 1957 closing of St. Philip's. As she recalls it, the close was related to the aforementioned financial instability, but also to the indirect impact of urban renewal in Syracuse. First, the church had limited financial resources to address the building maintenance costs and overall maintenance such as paying a minister. Overall, the parishioners of St. Philip's did not have the money to allow St. Philip's to stand alone and function successfully. Second, the geographic location of the church was directly related to the close of St. Philip's Church. According to Mrs. Wood, St. Philip's was located in an area where many buildings were to be torn down completely as a result of urban renewal efforts. While St. Philip's may not have been torn down, its geographic location would be significantly affected by the physical overhaul of the area.

When St. Philip's eventually closed in 1957, Mr. Wood became a member of Grace Church. While some members chose not to become members of Grace, Mr. Wood was enthusiastic to move to Grace. Like St. Philip's, Grace was traditionally active in the community and many of those St. Philip's members who chose not to join Grace remained very active in the Syracuse community. Mr. Wood saw the move to Grace as an opportunity to merge with another socially active church and make a great impact in Syracuse by joining forces to solve community-wide problems. As Mrs. Wood mentioned, she and her husband worked together to

solve social problems. Consequently, her collaboration with her husband led to her involvement with the Grace community, beginning around 1960.

Encounters with Grace Church

Before she became heavily involved in activity at Grace, Mrs. Wood already had a fond first impression of the church based upon her work with Grace and the health department's teen pregnancy program. "Grace has always been active in whatever is going on in the community in a positive way," she said. She also remembers the time of adjustment that followed the integration of St. Philip's members into Grace's congregation. According to Mrs. Wood, many families left Grace at the time that St. Philip's members began to join the congregation. However, she does remember that the high concentration of Syracuse University faculty and their tendency to move based on their profession was the cause of many of these departures. Mrs. Wood also remembers that the geographic location of Grace [between the city and the university community] placed it in the midst of the "good and bad" that was going on during the pivotal time period of the late 1950s and 1960s.

In addition, her husband was very close with Reverend Walter Welsh. Together, they engaged in the fight for community-wide social equality and acceptance of the integrated community that defined Grace Church. Much of Mr. Wood's activity at this time was documented on cassette tape that Mrs. Wood has retained as a testament to the permanence of both Mr. Wood and Grace's community involvement. Regardless of the challenges that this newly integrated Grace faced during the late 50s and early 60s, Mrs. Wood insists that she used Grace's resources and tradition of social activism to solve the consequent and relevant problems that involved both her and Mr. Wood in their social professions at that time.

All in all, the Woods' passion for social development and community service was an invaluable contribution to Grace's legacy of community activism and social progress. While Mrs. Wood was involved and invested in Grace long before she officially joined the church, she finally became an official member of the church in the 1980s, after her congregational church, Danforth Church was sold to the city of Syracuse. Today, Mrs. Wood remains an active and prominent member of Grace Church. Her notable and lasting contributions to both the church and the community as a whole should be celebrated.

An Oral History Given by Hester Osgood⁵
Prepared by Elizabeth Stuff
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Hester sits now, a woman of 79 recalling her past for a girl she has never met before. What stories should be left, what might the future generations find important or interesting? Beyond this, what should they know about the history of their church? And what of the people of the church? What they went through and what they did for the current generations? All these things must be conveyed to this stranger in order to preserve the memories which even now she must make more of an effort to recall than ever before.

In 1957 she met her husband, Charles Osgood M.D., at an Episcopalian conference in Geneva New York. Four years later she herself was a member of Grace church having married him and moved from her childhood home in Manhattan. Theirs was a whirl-wind romance; they had their first date on January 3, 1959. They were engaged by April and married on the Fourth of July. She moved to Syracuse after their honeymoon, and moved comfortably and easily into a life that included Grace Church. Together with four children from Charles's first marriage, she added three of their own. They raised the seven children in the church, contributing in a big way to the high turnouts for the Sunday school and other children's programs.

The following stories will be in the order Hester Osgood recounted them on the evening of February 22, 2006. They follow her train of thought. They were edited by her in the following week and appear here with her approval. Though not all of the events recounted here fit into the timeframe studied in our coursework, they are important in understanding the strength and forward-thinking nature of the church as a whole.

In the 1970s a group from Grace church headed to the Finger Lakes conference for Episcopal churches. The bishop at the time, Bishop Peabody, was waiting up late for his wife's arrival on the first night of the conference and Hester was by his side, as Charles was an early sleeper. The reason the Bishop's wife was so late to the conference is as follows: Mrs. Peabody was delegated to the International Council of Churches in Florida. Being a welcoming woman, she invited an African Bishop out to dinner, in order to properly welcome him to our country. Arriving early at the posh restaurant where they were to eat, she informed the maitre'd that she was expecting a guest, so could he please seat her with a clear view of the door. All hell broke loose upon the guest bishop's arrival, however, due mainly to the fact that he was 'as black as the ace of spades.' The staff of the restaurant was in an uproar! They searched the restaurant for the manager, and upon finding that he had gone home, called him from his house to come in and deal with the 'situation.' Mrs. Peabody was a very strong woman; she would not yield, saying that they would not leave until they had been served. It took six local police officers to physically lift Mrs. Peabody and the visiting Bishop *in their chairs* into the paddy wagon. As any good citizen knows, you get one phone call when you are arrested, so Mary Peabody called her son, Endicott Peabody, who happened to be the governor of Massachusetts. He made a call to the

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governor of Florida and had his mother and her guest released from jail. The governor of Florida himself got her out of jail and put her on a plane to Rochester. Hester herself stayed up until two or three in the morning to welcome Mary Peabody to the Finger Lakes conference.

In the mid 1960s the Grace Cabaret was at the height of its popularity. A man named Bill Davidson from the old Ziegfeld Follies led the group, and various parishioners contributed their time and talents. One man owned a rug manufacturing business in the area and donated a large amount of butcher paper to the cause. Mrs. Osgood had her assistants cover the stage with it and proceeded to paint three-dimensional 'sets' with scenes such as Louisiana's Bourbon Street. They rented small round tables with matching chairs and set the hall up to look more like a café. The concessions included hot dogs, hamburgers, popcorn, coffee, tea and other things that would match the 'theme' of that particular performance. Lines of people would stretch out the door and down the street! At one point the cabaret had become so popular that it was covered by the local news channels and their performance televised on the late evening news.

There was one 'crisis' with the combining of the St. Phillip's congregation into Grace's existing parishioners. Fr. Walsh invited the whole parish to a vestry meeting that Sunday afternoon. He informed them that Bishop Walter M. Higley was closing St. Phillip's all black Episcopal Church due to highway constructions of routes 81 and 690, at Townsend and Fayette Streets, in downtown Syracuse. The parishioners of St. Phillips church were welcomed to Grace church. In a few years most had made the transition.

The treasurer, clerk, Sr. (or Jr.) warden and four other members of the vestry were lost. They said that the church should not be used for anything but services and that it was inappropriate for it to be used for things such as the daycare program in the parish hall. So Hester did a bit of research and made a list of about ten different purposes that churches had to be used for over the years, either through necessity or by choice. From ancient times to the Middle Ages and beyond. For instance, historically churches and cathedrals have offered asylum to refugees, and during World War One, the churches in many areas worldwide were used as morgues. The general idea was that by reading this listing at the parish meeting in the church hall, she would be able to open the eyes of many parishioners to the fact that Grace was initiating an era of new positive uses for the church and its buildings.

In 1974, Betty Bone Scheiss was one of the first eleven women ordained in the Episcopalian church. Mrs. Osgood drove down with some other parishioners to the ordination. There were police with attack dogs surrounding those going in from the stodgy old clergy and their supporters who were protesting outside during the service. After their return, she got a call from Betty Bone Scheiss who said that CBS had called, and that they wanted to do a special on Grace Church (This was July 12 or 13, 1974). Hester went over and opened up the church to show reporters and camera men where they could set up to welcome back Rev. Scheiss. It was to be the lead story. The next morning, President Nixon resigned office so that took over as lead story and CBS never came to cover all that was going on at Grace. The story about Mrs. Scheiss, and CBS's almost coming was run in the local papers but it never really went further than that.

Mrs. Osgood's husband, Charles Osgood M.D., was an instrumental member of the church. During one of their highest membership times he headed the group that refurbished the

basement. This dedicated group of church parishioners built the basement out of cinderblocks. They installed classrooms, where a volleyball net and bowling alley had been. In the late 1950s teachers began teaching Sunday school there, and by the early 1960's the classrooms were in full use. Around the same time, another group of ambitious volunteers set to re-painting all the rooms of the parish hall. Some of these volunteers had come to Grace for their entire lives and are still in attendance today, although more than a few are no longer with us.

In the 1970s a pediatric clinic was established in the church for those who could not afford to get the proper health care for their little ones. A female doctor from Fayetteville would come two times every week and service these families where the food pantry is now. At the same time there was an English dentist who would come most every day to look at the children's teeth. Although she was trained, and had practiced the dental arts, in England, she was not licensed in the United States because the American dental association would not recognize her training.

From 1949 to 1977 Father Welsh was the Rector and active member of the church. His wife was very active as well, doing many things for the church, including sewing all the curtains hanging in the parish hall today. Though the reverend, now 93 years of age, still has an interest in the church, he now maintains it from North Carolina with the occasional visit. Mrs. Welsh left us a few years ago, and is now buried in the Welsh Memorial Garden at Grace.

In the late sixties and early seventies the Episcopal Society for Cultural and Racial Unity became a part of Grace. Mrs. Osgood was part of the Civil Rights movement from the beginning. They participated in many activities that were, and are, considered quite revolutionary. They tied themselves to bulldozers and other things of that nature in order to save a parishioner's home from 'urban renewal' efforts. One of the sons of the woman who owned that home grew up to be quite the activist. Dr. Osgood helped to get him a full scholarship to Harvard. When the young man, Byron Rushing, decided in his third year there to become more active in the civil rights movement, it was a call to James Farmer that made him stay in Syracuse. When Byron told Mr. Farmer where he was from, the great activist told him, "Stay in Syracuse. There is more civil unrest there than in the entire state of Mississippi." Byron is now quite well known in the national Episcopal Church; and he did go back to Harvard to finish his schooling. He has done a lot for the church as a whole in the racial and cultural unity area. Dr. and Mrs. Osgood were his staunch supporters from the beginning, and she continues to be. (Byron is now a Massachusetts State Senator representing inner city Boston)

Around the same time there was a family in the church that consisted of two sisters who were raising their children together. One of the sisters collapsed one day and died, very suddenly and completely unexpectedly. This left one woman (Hattie) to raise 13- 15 children on her own. Child Protective Services came and tried to take the children away from her, informing her that she would never be able to raise them all on her own and that they would all be placed into foster care. Hattie said, "Yes I can!", and raised hell in Child Protective Services, informing them that the children would not be separated. She raised all of them by herself, and they all grew up to be law-abiding citizens. Hattie still attends church each Sunday, and most of her children live in the Syracuse area.

These stories are just the tip of the iceberg as far as Mrs. Osgood's involvement in the church and the activities of the church itself. Hester Osgood has led a very active and eventful life, and has no plans to slow down at any point in the near future. She attends the weekly church supper and stays at the church while her grandson, William, attends the youth group. Quite often these few hours allow her time to reflect on the past and what she will do in the future.

“Grace was the first Episcopal Church nationwide (east of the Mississippi river) to integrate. We agree strongly with what God would have us do”

-Hester Osgood

An Oral History Given by William Moore⁶

Prepared by Christine Ritson

HNR 360

Building with a Conscience: The Synergies of Historic Preservation and Sustainable Design

Syracuse University

Spring 2006

“I think that’s what a church should be – part of a community,” claims Mr. William Moore, more commonly known as Bill. He is a man who understands, values, and appreciates a place of worship. Throughout Bill’s life, he faced depression, segregation, and financial burdens, but he always managed to maintain his religious devotion.

Bill refers to himself as a “Depression Child,” a term clearly offering a light heart to the financial burdens spread across the country during the time period after the Great Depression. He was brought up by his mother and grandmother, as his father had left the family when he was only four years old. Conditions were never perfect, but each member of the family shared one common interest: St. Philip’s Episcopal Church. During his childhood, St. Philip’s Church was under the leadership of Reverend Lee and was known for its contributions to the congregation. Blankets, food, and clothing were almost always offered to the needy at church doors. According to Bill, his family, along with the majority of the congregation, was on welfare at the time that numbers in attendance continually rose at church. Bill mentioned on numerous occasions that while times may have been hard, each member always shared what they could with the church. He became an altar boy and sang in the choir. His mother was a social worker, holding the main position for the sewing group run by the Works Progress Administration (WPA). He claims that she could have made no more than seventy cents an hour.

If there is one outstanding characteristic of Bill’s telling of his childhood, it is his complete and unfailing affection for his family. He describes his grandmother as a lady with class. “She was just wonderful,” he says. His grandmother helped to show the closeness of the congregation by always having family Bibles on display in the church hall, providing a sense of connection between all. Later in the church’s history, these Bibles were lost, and Bill willingly would offer his teeth to get a hold of one once again.

The most dynamic time period of Bill’s life may not have been when the merger of St. Philip’s Church and Grace Church occurred, but this time period certainly presented a huge change for himself and others of the congregation. While always sharing affection for Grace Church, due to the labor and time of Rev. Coddington, Bill was not bothered extensively by his (and his family’s) forced move to Grace. He claims that the Episcopal Church did not offer the option to go elsewhere, but says that he did not mind the situation presented to him. Reverend Welsh, the rector of Grace Church, helped make this move run smoothly. “He personally greeted each family as they came to Grace,” reports Bill, “helping everyone to feel accepted.” The congregation of St. Philip’s, mainly from the 15th ward of Syracuse, more commonly known as Jew Town, was already racially integrated and did not see moving to Grace an issue. Besides, he claims, “We all knew we were going to a prosperous place with University connections.” Bill also emphasized the amazing welcoming nature of Grace’s parishioners.

⁶ Copyright 2006 by Christine Ritson

“Though from all economical and racial levels, the members made ‘them’ feel welcome.” He also mentioned a special “Feast of Lights” that was held each year at Grace that the congregation of St. Philip’s Church always attended, easing the move in yet another way.

Bill also called attention to the extensive amount of children’s programs that were soon taking place at Grace after the merger. St. Philip’s Church was known for having camping trips, study programs, and daycare all of which soon began to infiltrate into Grace’s congregation. Also, St. Philip’s Church had a group of women known as the Lady’s Friendly who helped with church affairs, set up balls, and acted as social workers. According to Bill, this is the one group that transferred steadily into Grace without having to alter its attendance or uses. The ease of passing on these traditions certainly helped the transition to Grace for many members of St. Philip’s Church.

The initial move to Grace seemed favorable, but Bill also discussed a few underlying issues. “Dating back to slavery,” he said, “black’s services are more emotional with music and dancing.” This type of service was something that Grace did not have. Bill explained that it took awhile to get used to the new ways of worship. He also mentioned that he had to stop being an altar server and singing in the choir because he did not feel the emotion behind the actions.

Getting used to the center altar was also something that took awhile to become accustomed with. Unlike the new arrangement at Grace, St. Philips was very traditional in its architectural elements. It had a central nave, altar at the transept with a railing for communion, and a large balcony overlooking the congregation. Bill claims that the purpose of this balcony was different than traditionally known. He says, “In the past, the balcony was created to separate the blacks from the laymen,” but at St. Philips Church, the balcony had become home to the overflow of the congregation. Even today, Bill states that he would be more comfortable with an atmosphere filled with music and dancing, as well as, traditional architectural elements, both of which Grace does not offer.

As for the reasons why St. Philip’s Church was shut down in 1957, Bill offered his first instinct: “financial problems!” After a reminder of the themes of urban renewal and desegregation, he quietly offered up, “Yes, those certainly must have had something to do with it. Yes, quite a bit to do with desegregation, but it [the desegregation] didn’t work too well.” He proceeded to comment about the segregation and urban renewal issues at hand. When Highway 81 was put in, his community was split in half. He said that financial burdens were ridiculously high, and no one was offered a place to live. While Pioneer Apartments offered some 800 units, only fifty or so were held for blacks, and were often priced out of range. He stated, “‘They’ didn’t want us,” but Grace was the one place with “open arms” offering a different type of home, “a spiritual home.”

Though things were not always perfect at Grace and getting used to a new place seemed to have taken awhile, today Bill feels that Grace is finally taking a jump in the right direction. “Reverend Jennifer,” he claims, “is bringing the church up to the 21st century. She is very wonderful!” He goes on to explain how is finally beginning to feel comfortable with the sermons and overall atmosphere. He expresses his pride in Grace, as it a church that has always stood in the face of opposition with open doors and open hearts.

An Oral History Given by Hollis Liddiard⁷

Prepared by Liam Schaefer

HNR 360

Building with a Conscience: The Synergies of Historic Preservation and Sustainable Design
Syracuse University
Spring 2006

Grace Episcopal Church has long been the spiritual and social center of its surrounding community. During the second half of the twentieth century it was a progressive leader and an example of the good that can be done through Christian love. Few individuals have been fortunate enough to call Grace their home as long as Hollis Liddiard. Hollis was baptized at Grace, worked and volunteered throughout her adulthood at the church, and now, as she enters her nineties, is still an active member.

Hollis Liddiard was baptized at Grace Church in 1916 by Rev. Coddington, the rector of Grace and founder of St. Philip's Episcopal Church. Her family had actually come to be members of Grace Church in 1882. Rev. Coddington married her parents in 1913 and came out of retirement to marry Hollis and her husband, Walter, in 1940. However, Hollis did not attend Grace until 1942 when her husband worked with the Red Cross during World War II. At the time, the rector of Grace Church was Rev. James Rockwell. In 1943, Hollis took a job as the Episcopal Counselor for Syracuse University. Her job was to bring students to Grace and she worked closely with the Episcopal student group, the Canterbury Club. Hollis also worked as a part-time secretary at the Church until 1946 when Walter came back from overseas. The University was expanding and taking over the apartments in which the Liddiards lived; therefore, they moved out to LaFayette. Hollis's husband was not much of a church-goer and she did not drive because they only had one car, so she did not get to see much of the Church. Hollis stayed at home with her young children until her son was in kindergarten. By this time the Liddiards had bought a second car and she went back to work for Social Services in downtown Syracuse.

Hollis remembers many of the activities of the Church during this period such as the big Sunday school and youth group, the women's auxiliary and the altar guild. The Canterbury Club would hold Sunday night suppers for college students, which were very popular owing to the fact that the University did not provide dinner on Sundays. She thinks about how the programs the Church runs have changed over the years. When she was younger Sunday school was all about "church stuff." Now they have cooking classes and book clubs to keep people interested. Hollis remembers how Grace used to be nestled into a neighborhood, but now the people have moved away and the houses have been torn down. "This is why the Church has developed such fun and interesting programs," she says. "It is difficult for an inner city church to survive unless they have something special."

Several of Hollis's memories are from a time of social change, not just for the Church, but for all American culture. She begins by describing Rev. Walter Welsh, who was rector of Grace Church for probably thirty years. Rev. Welsh was a "very progressive leader. He wanted everything to be equal." During his time as rector, St. Philip's, a little church with a predominantly black congregation, was closed. Hollis thinks that the church was closed because

⁷ Copyright 2006 by William Schaefer

it was such a segregated arrangement. Rev. Welsh invited the communicants of St. Philip's to Grace Church. She feels it must have been difficult for the people of St. Philip's because of the geographic difference they now faced attending a new church. The sudden change in racial dynamic for both groups had different effects on different people. Some of the original Grace congregation adjusted easily; others left the church because of integration. For the most part, Hollis says, the church, true to its name, adjusted with Grace.

The new members of Grace Church from St. Philip's resulted in integration not only in services, but Sunday school, youth group, and other activities. Hollis points out that some of the adults from St. Philip's were hesitant to join in the activities other than attending church. Hollis's children grew up in LaFayette where there were no African Americans, and they were not very aware of the alleged differences between races. Her children therefore were very accepting of the change because they did not know any reason why the black children should be any different than other children. For a long time race had made no difference to Hollis. At the time of the integration she was volunteering in the nursery. Hollis cannot remember if there were black babies along with white babies, because to her, they were all just babies.

Hollis can remember one time, when she was just out of college and working for social services, when the subject of race was pushed within her family. She and Walter were playing golf with a black friend of her husband's. Hollis remembers her mother making a comment about whether or not they should play golf with a black person. Her mother did not know any African Americans. To her, they dressed poor, and so she saw a class distinction. There are black professionals of all income ranges, now, Hollis says, so you can no longer generalize like her mother did. It makes her sad that there are still white people who still think African Americans are so different. Hollis likes to think people are more open today, but she says that could just be her group of friends.

One of the most frightening memories Hollis has of her times at Grace Church was when there was a bomb threat during a mass after members of St. Philip's had joined Grace. She and her daughter, Eleanor, were singing in the choir that day. During mass someone came in and told Rev. Welsh about the threat. Rev. Welsh stood at the pulpit and told the congregation about the bomb. He stated that those who wished to leave could, but he was going to stay and "Trust in God." A young pregnant girl got up and left, but practically everyone else stayed for the service. Hollis said you would wait and think to yourself, "Okay, so far, so good," then wait a little more and repeat. The service ended, there was no explosion, and everyone left much to their relief. Hollis says it really was a test of people's faith as they sat through service that day.

During the sixties Rev. Welsh, always eager for progress, moved the altar to the center of the nave. This shook up a lot of the traditionalists in the Church. Some people left. Hollis remembers how her teenage kids could not cope with the change. They stopped attending, because they felt like they were going to church in a gymnasium. Hollis liked it. "You could come in now," she said, "and you are looking at people, not backs of heads."

Hollis says Grace Church is an older congregation these days without many children, though there are quite a few teenagers. The African American members now feel at home, and it is their church just as much as anyone else's. Grace Church's current rector is both female and

African American, evidence of the church's progressive nature. Hollis describes Reverend Jennifer as being very enthusiastic and intelligent, as well as extremely personable.

Hollis lives with her daughter, Eleanor, out in LaFayette. Though she is "retired" from any leadership duties at Grace, Hollis still regularly attends church functions. Looking back on her times at Grace, the experiences she has had, and the friendships she has made, she smiles.

HNR 360
Building with a Conscience:
The Synergies of Historic Preservation and Sustainable Design

Resources Use Audit Assignment

Group reports and Recommendations Analyses due Thursday, April 6

Activity:

Gathering and analyzing data about energy and resource use at Grace Church.

Purpose:

To understand and apply practices that increase organizational energy and resource efficiency at Grace Church, to provide a basis for energy- and cost-savings recommendations.

Method:

As general background, read materials distributed on March 7. Mike Matzura, of S.U.'s Industrial Assessment Center, will make a presentation and conduct an energy audit walk-through at Grace Church during class on March 21. After the walk-through, the class will be divided into two teams. Each team will be given five energy or resource usage tasks. Further written material will be provided, and Mike will conduct separate briefings for each team. Data will then be gathered.

During the period March 21-April 5, groups will undertake recommendations analyses for each task. A recommendation analysis consists of the following sections: current practice; recommended action, anticipated savings, and implementation cost. Several illustrations will be provided in the materials distributed on March 21. During this time frame, each student will be expected to make at least two short contributions (no more than 250 words) per week to our on-line class journal, describing your activity and reflecting upon it. You will also respond to at least one other posting each week.

On Thursday, April 6, each group will give a thirty-minute presentation summarizing the results of its research and presenting its recommendations, and will submit a recommendation analysis for each task.

Assessment Recommendation # 1

Install Energy Efficient Exit Sign Bulbs

Assessment Recommendation Summary

Annual Resource Savings	Total Annual Savings	Capital Cost	Simple Payback
1471.68 kWh	\$283.85	\$131.70	0.46 years

Current Practice

It was observed during the site visit that the church has 6 exit signs. Currently all 6 exit signs contain two incandescent bulbs with a wattage rating of 15 watts and 120 volts each.⁸

Recommended Action

It is recommended that light emitting diode (LED) exit sign bulbs be installed in the already existing exit signs of the church. It is recommended that Grace purchase LED exit retrofit bulbs because most exit sign light bulbs can be changed out with LED exit retrofits. LED exit retrofits are available from most major national lighting and building equipment vendors. One such vendor Grace could look into is an online vendor called “Buylighting.com.” “Buylighting.com” sells an LED Exit Retrofit Kit that includes two different sets of base adapters and two LED red exit bulbs. The kit should work in any existing exit sign. Grace could save a lot of energy taking old incandescent exit bulbs running 30-40 watts down to 1 watt.

Anticipated Savings for Incandescent Bulbs

The current total energy usage (*TEU*) due to the use of incandescent bulbs in the exit signs can be determined by the following equation:

$$TEU = N \times n \times W \times CkW,W \times H$$

Where,

<i>N</i> = Number of exit sign fixtures	<i>fixtures</i>
<i>n</i> = Number of bulbs per exit sign fixture	<i>bulbs/fixture</i>
<i>W</i> = Wattage rating of each bulb	<i>W/bulb</i>
<i>CkW,W</i> = Conversion factor	0.001 kW/W
<i>H</i> = Annual Hours of Operation ⁹	8,760 h

$$TEU = N \times n \times W \times CkW,W \times H$$

$$TEU = 6 \text{ fixtures} \times 2 \text{ bulbs/fixture} \times 15 \text{ W/bulb} \times 0.001 \text{ kW/W} \times 8760 \text{ h}$$

$$TEU = \underline{0.18 \text{ kW}} \times 8760 \text{ h}$$

$$TEU = \underline{1576.8 \text{ kWh}}$$

Therefore, the exit signs currently use 0.18 kW/month and 1576.8 kWh/year.

⁸None of the exit signs are lit and this fails to accommodate the National Fire Protection Association’s (NFPA) exit sign illumination requirements, which states that “every required exit sign must be suitably illuminated by a reliable light source and be visible in both normal and emergency lighting modes.” (Source:<http://www.labsafety.com/refinfo/ezfacts/ezf265.htm>)

⁹Estimated annual hours of operation based on 24 hours per day, 365 days per year of operation.

Anticipated Savings for LED Bulbs

The total energy usage (*TEU*) of LED bulbs in the exit signs can be determined by the following equation:

$$TEU = N \times n \times W \times CkW, W \times H$$

Where,

<i>N</i> = Number of exit sign fixtures	<i>fixtures</i>
<i>n</i> = Number of bulbs per exit sign fixture	<i>bulbs/fixture</i>
<i>W</i> = Wattage rating of each bulb	<i>W/bulb</i>
<i>CkW, W</i> = Conversion factor	0.001 kW/W
<i>H</i> = Annual Hours of Operation ¹⁰	8,760 <i>h</i>

$$TEU = N \times n \times W \times CkW, W \times H$$

$$TEU = 6 \text{ fixtures} \times 2 \text{ bulbs/fixture} \times 1 \text{ W/bulb} \times 0.001 \text{ kW/W} \times 8760 \text{ h}$$

$$TEU = 0.012 \text{ kW} \times 8760 \text{ h}$$

$$TEU = \underline{105.12 \text{ kWh}}$$

Therefore, the exit signs consisting of two 1 Watt LED bulbs would use 0.012 kW/month and 105.12 kWh/year.

Annual Energy Savings

$$AESI = (1576.8 \text{ kWh} - 105.12 \text{ kWh}) \times 0.157 \text{ \$/kWh}^{11}$$

$$AESI = 1471.68 \text{ kWh} \times 0.157 \text{ \$/kWh}$$

$$AESI = \$231.05376$$

Capital Savings

On average, LED bulbs last approximately 110 times longer than incandescent bulbs.¹² Thus, in the time it takes for one LED bulb to burn out, theoretically 110 incandescent bulbs will be replaced. Annualizing this statement shows that about 4.4 incandescent bulbs will be replaced every year per fixture. Estimating the cost of an incandescent bulb as \$1.00,¹³ the annual total capital savings¹⁴ (*TCSI*) for replacing the incandescent bulbs can be determined by the following equation:

$$TCSI = (12 \text{ Inc} \times 4.4 \times 1.00 \text{ \$/Inc})$$

$$TCSI = \$52.80 \text{ per year}$$

Total Annual Savings

The estimated total annual savings (*TAS*) that will result from installing energy efficient LED exit bulbs is determined by summing both the annual energy savings (*AESI*) and the annual total capital savings (*TCSI*).

$$TAS = AESI + TCSI$$

$$TAS = \$231.05376 + \$52.80$$

$$TAS = \$283.85376 \approx \$283.85$$

¹⁰Estimated annual hours of operation based on 24 hours per day, 365 days per year of operation.

¹¹ The parish hall electricity rate (0.157 \$/kWh) is used because most of the exit signs are located in the parish hall.

¹²Assuming that the life expectancy of an incandescent bulb is 2,000 hours, per recommendation of Industrial Assessment Center, L.C. Smith College of Engineering, Syracuse University.

¹³ It is important to note that the \$1.00 cost of the incandescent bulb is simply an estimate. On <http://www.bulbsusa.com>, one incandescent bulb with a wattage rating of 15 watts and 120 volts is \$1.39. Of course, packs of incandescent bulbs are sold as well and they are cheaper. For example, the price for 25-75 incandescent bulbs (on the aforementioned site) is \$1.29. The price for 76+ bulbs is \$0.99.

¹⁴It was recommended that the calculation for labor cost be omitted in this analysis because the required labor in replacing the bulbs is minimal.

Implementation Costs

Assuming unit cost (from <http://buylighting.com>)

Description	Unit Cost	Quantity	Total
LED Exit Retrofit Kit	21.95 \$/each ¹⁵	6	\$131.70
		Total	\$131.70

Therefore, the simple payback period is determined as follows:

$$\text{Simple Payback} = \frac{\$131.70}{\$283.85 \text{ per year}}$$

$$\text{Simple Payback} = 0.46397 \text{ years} \approx 0.46 \text{ years} \rightarrow 0.46 \text{ years} \times 360 \text{ days/year} \approx 167 \text{ days}$$

¹⁵ The \$21.95 does not include additional shipping and handling fees.

Assessment Recommendation #2 Install More Energy Efficient Lighting

Assessment Recommendation Summary

Annual Resource Savings	Total Annual Savings	Capital Cost	Simple Payback
6323.95 kWh saved	\$992.86	\$149.25	.15 years

Current Practice

From our observations, as well as conversations with those in the parish, it was shown that the church has begun to take steps in energy efficient lighting by replacing a few bulbs with fluorescent ones. Our main concern was with the inefficient light bulbs used in the majority of the lighting fixtures. Our figures are based on our observations, as well as conservative estimates taking these observations into account.

Recommended Action

It is recommended that the church install more efficient lighting in all areas not already lit with such. Not only will these lights save money, but they will help conserve energy as well.

Anticipated Savings

The annual energy savings by installing more efficient lighting can be found by the following:

$$AES1 = N \times (Wc - Wp) \times Ckw, w \times HRS$$

AES= estimated annual energy savings
 N= number of fixtures
 WC= current wattage of each fixture
 WP= proposed wattage of each fixture
 CkW, W= conversion factor
 HRS= current annual hours of operation

<i>Children's Area</i>	16 x (75 - 12) x .001 x 5200	}	75 watt fixtures ¹⁶
<i>Downstairs Bathroom</i>	5,241.60 kWh saved		
<i>Side Room</i>	5,241.60 kWh x .157 (cost per kilowatt hour)		
<i>Parish Hallway</i>	\$822.931 saved per year		

	3x (150-12) x .001 x 250	}	150 watt fixtures
	103.5 kWh saved		
	103.5x .157= \$16.2495 saved per year		

** The lights in the actual parish hall will remain the same, as they have already been replaced with fluorescent bulbs**

<i>Kitchen</i>	4x (100-12) x .001x 416	}	100 watt fixtures
	146.432 kWh saved		
	146.432x .157= \$22.9898 saved per year		

The ceiling tubes will remain the same, as they have already been replaced with fluorescent bulbs

¹⁶ Please see appendix for complete layout of electrical usage in each area

Sanctuary 42x (75-12) x .001x 208
 550.368 kWh saved
 550.368x .157= \$86.4078 saved per year } 75 watt fixtures
 other lights will be left due to odd sizes and/or fixtures

Upstairs w/
 all offices 4x (75-12) x .001x416
 104.832 kWh saved
 104.832x .157= \$16.4586 saved per year } Incandescent Bulbs

 4x (75-12) x .001x 416
 104.832 kW saved
 104.832x .157= \$16.4586 saved per year } Incandescent Candles

Downstairs w/
 all classrooms
 and hallway 2x (75-12) x .001x416
 52.416 kWh saved
 52.416x .157= \$8.22931 saved per year } 75 watt fixtures

 1x (60-12) x .001x 416
 19.968 kWh saved
 19.968x .157= \$3.13498 saved per year } 60 watt fixture

The total annual estimated savings are: \$992.86

Implementation Cost

This recommendation requires the purchase and installation of 75 new bulbs. The total cost and implementation are provided:

Description	Unit Cost	Quantity	Cost
12 watt fluorescent bulbs	\$1.99 ea.	75	\$149.25
		Total	\$149.25

Therefore, the simple payback is:

$$\text{Simple Payback} = \left(\frac{149.25}{992.86} \right)$$

Simple Payback \approx .1503 years

Assessment Recommendation #3 Install Motion Sensors

Assessment Recommendation Summary

Annual Resource Savings	Total Annual Savings	Capital Cost	Simple Payback
294.53 kWh	\$46.59	\$323.10	6.9 years

Current Practice

From our observations, as well as conversations with those in the parish, it was shown that the church has begun to take steps in energy efficiency; however, some lights are still left on when no one is present.

Recommended Action

It is recommended that the church install motion sensors in each major large area on the church to reduce the amount of time the lights are on. It has been determined that entire church, including the hall, would require six motion sensors.

Anticipated Savings

The annual energy savings by installing motion sensors can be found by the following:

$$AES2 = N \times Wp \times Ckw, w \times (Hc - Hp)$$

- N= number of fixtures
- WP= proposed wattage of each fixture
- CkW, W= conversion factor
- HC= current annual hours of operation
- HP= proposed annual hours of operation

<i>Children's Area</i>	16x12x.001x (5200-3900)	} 75 watt fixtures ¹⁷
<i>Downstairs Bathroom</i>	249.6 kWh saved	
<i>Side Room</i>	249.6x.157= 39.1872 saved per year	
<i>Parish Hallway</i>		
	3x12x.001x (250-187.5)	} 150 watt fixtures
	2.25 kWh saved	
	2.25x.157= \$.35325 saved per year	
<i>Kitchen</i>	4x12.001x (416-312)	} 100 watt fixtures
	1.992 kWh saved	
	1.993 x .157= \$.783744 saved per year	
<i>Sanctuary</i>	42x12x.001x (208-156)	} 75 watt fixtures
	26.208 kWh saved	
	26.208x.157 =\$.41146 saved per year	

¹⁷ Please see appendix for complete layout of electrical usage in each area

<i>Upstairs w/ all office</i>	4x12x.001x (416-312)	}	<i>Incandescent Bulbs</i>
	4.992 kWh saved		
	4.992x .157= \$.783744 saved per year		
	4x12x.001x (416-312)	}	<i>Incandescent Candles</i>
	4.992 kWh saved		
	4.992x .157= \$.783744 saved per year		
<i>Downstairs w/ all classrooms and hallways</i>	2x12x.001x (416-312)	}	<i>75 watt fixtures</i>
	2.496 kWh saved		
	2.496x.157= \$.391872 saved per year		
	1x12x.001x (416-312)	}	<i>60 watt fixtures</i>
	1.248 kWh saved		
	1.248x.157= \$.195936 saved per year		

The total annual estimated savings are: \$46.5942

Implementation Cost

It is estimated that the facility's needs could be met with six occupancy sensors.

Description	Unit Cost	Quantity	Cost
Infrared Occupancy Sensor	\$53.85 ¹⁸	6	\$323.10
		Total	\$323.10

Therefore, the simple payback is as determined as follows:

$$\text{Simple Payback} = \left(\frac{323.10}{46.5942} \right)$$

$$\text{Simple Payback} \approx 6.93 \text{ years}$$

¹⁸ Obtained from *RAB Manufacturers*. For further information, please visit <http://www.elights.com/ceiling-sensors.html>

Assessment Recommendation #4 Install Energy Efficient Refrigerators

Assessment Recommendation Summary

Number of Refrigerators Replaced	Annual Resource Savings	Total Annual Savings	Capital Cost	Simple Payback
1 Residential Refrigerator	Electricity: 4,605 kWh	\$722.98	\$549.00	.76 years
1 Residential Freezer	Electricity: 4,605 kWh	\$722.98	\$647.00	.89 years
1 Residential Refrigerator, 1 Residential Freezer, 1 Commercial Refrigerator	Electricity: 11,659.15 kWh	\$1,830.48	\$7,067.83	3.9 years
1 Residential Refrigerator, 1 Commercial Refrigerator	Electricity: 7,054.15 kWh	\$1,107.50	\$6,420.83	5.8 years
1 Residential Freezer, 1 Commercial Refrigerator	Electricity: 7,054.15 kWh	\$1,107.50	\$6,518.83	5.9 years
1 Commercial Refrigerator	Electricity: 2,449.15 kWh	\$384.51	\$5,871.83	15.3 years

Current Practice

Currently Grace Church operates 3 refrigerators on site. One commercial Traulsen model G20010 refrigerator is on site. It measures 46 cubic feet and operates using 115 volts and 8.5 amperes, using 8562.9 kWh of electricity per year. This commercial refrigerator uses R22 refrigerant.¹⁹ Two residential refrigerator/freezer appliances also operate at Grace. The first is a Frigidaire refrigerator, model D13F. The second is a Frigidaire Frost-Free Freezer model, FFU1464DW2. Each of these residential appliances requires 115 volts and 5 amperes to operate, measures 23.6 cubic feet and utilizes 5,037 kWh of electricity annually.

Recommended Action

It is recommended that Energy Star certified appliances be purchased to replace the existing refrigerators, when replacement is needed. Energy Star appliances meet strict energy efficiency guidelines set by the Environmental Protection Agency and U.S. Department of Energy. These guidelines not only produce savings for the environment but also reduce the cost of operating the product or appliance throughout the course of its lifetime. Figure 1.2 provides the details of the suggested replacement Energy Star appliances for Grace church.²⁰

Figure 1.1, above, illustrates the savings associated with replacing some or all of the refrigerators at Grace Church. Energy Star appliances create energy savings in all cases of replacement of existing appliances. However, replacement of the church's residential refrigerators creates the most rapid payback.

¹⁹ This commercial refrigerator uses R-22 refrigerant. The use of R-22 refrigerant, which is contained in the existing Traulsen commercial refrigerator, is being phased out of use in the U.S. beginning in 2010 and its use will stop entirely by 2020. This refrigerant contains chlorofluorocarbons (CFCs) which are extremely harmful to the Earth's ozone layer and may be released if the appliance is not disposed of properly. The residential refrigerator and freezer both contain 134A refrigerant, which also contains ozone-damaging CFCs. Upon replacement of the refrigerators, it is important to dispose of these appliances properly in order to prevent environmental hazards.

²⁰ Energy Star appliances also utilize environmentally friendly refrigerants containing ozone-safe hydrofluorocarbons (HFCs), rather than Grace's current refrigerators and freezer, which contain ozone-damaging refrigerants.

Figure 1.2 Recommended Energy Star Replacement Refrigerators

Refrigerator	Model Number	Size	Cost	Source
Traulsen Commercial	G22000	46 cubic ft	\$5,871.83	Instawares Restaurant Supply Company www.instawares.com
Frigidaire Residential Refrigerator	FRT21H8CS*2	20.6 cubic ft	\$549.00	Pricestore.com
Frigidaire Residential Frostfree Freezer	LFFH2067DW*	20.3 cubic ft	\$647.00	Lowes.com

Anticipated Savings

The current total energy usage (TEU) due to the use of existing refrigerators on the site can be determined by the following equation:

$$TEU_1 = N \times V \times A \times C_{kW,W} \times H$$

Where,

- N = Number of refrigerators/freezers *fixtures*
- V = Voltage use of each fixture $\frac{\text{volts}}{\text{fixture}}$
- A = Ampere use of each fixture $\frac{\text{amperes}}{\text{fixture}}$
- $C_{kW,W}$ = Conversion factor $.001 \frac{kW}{W}$
- H = Annual hours of operation $8,760 h$

Examining the residential refrigerator,

$$TEU_{Residential Refrigerator} = 1 \text{ fixture} \times 115 \frac{\text{volts}}{\text{fixture}} \times 5 \frac{\text{amperes}}{\text{fixture}} \times .001 \frac{kW}{W} \times 8,760h$$

$$TEU_{Residential Refrigerator} = 1.15kW \times 8,760h$$

$$TEU_{Residential Refrigerator} = 5,037kWh$$

The Frigidaire model FRT21H8CS*2 Energy Star refrigerator can replace the existing residential refrigerator using 432 kWh/yr/fixture (www.energystar.gov). Given an average electricity cost of \$.157 kWh/year, the estimated annual energy savings from replacement of both residential refrigerators ($AES_{Residential Refrigerator}$) is given by the following equation.

$$AES_{Residential Refrigerator} = (5,037kWh - 432kWh) \times .157 \frac{\$}{kWh}$$

$$AES_{Residential Refrigerator} = \$722.98$$

The residential freezer analysis can be done in the same manner. Examining the residential freezer,

$$TEU_{Residential Freezer} = 1 \text{ fixture} \times 115 \frac{\text{volts}}{\text{fixture}} \times 5 \frac{\text{amperes}}{\text{fixture}} \times .001 \frac{kW}{W} \times 8,760h$$

$$TEU_{ResidentialFreezer} = 1.15kW \times 8,760h$$

$$TEU_{ResidentialFreezer} = 5,037kWh$$

The Energy Star certified Frigidaire Frostfree freezer, model LFFH2067DW*, can replace the existing residential freezer using 432 kWh/yr/fixture (www.energystar.gov). Given an average electricity cost of \$.157 kWh/year, the estimated annual energy savings from replacement of the residential freezer ($AES_{ResidentialFreezer}$) is given by the following equation.

$$AES_{ResidentialFreezer} = (5,037kWh - 432kWh) \times .157 \frac{\$}{kWh}$$

$$AES_{ResidentialFreezer} = \$722.98$$

The commercial refrigerator analysis can be done in the same manner. Examining the commercial refrigerator,

$$TEU_{commercial} = 1 \text{ fixture} \times 115 \frac{\text{volts}}{\text{fixture}} \times 8.5 \frac{\text{amperes}}{\text{fixture}} \times .001 \frac{kW}{W} \times 8,760h$$

$$TEU_{commercial} = .9775kW \times 8,760h$$

$$TEU_{residential} = 8,562.9kWh$$

The Traulsen model G22000 Energy Star commercial refrigerator can replace the existing commercial refrigerator using 16.75 kWh/day, and therefore, 6113.75 kWh/year (www.energystar.gov). Given an average electricity cost of \$.157 kWh/year, the estimated annual energy savings from replacement of the commercial refrigerator ($AES_{commercial}$) is given by the following equation.

$$AES_{commercial} = (8,562kWh - 6113.75kWh) \times .157 \frac{\$}{kWh}$$

$$AES_{commercial} = \$384.37$$

Implementation Cost

Given the cost of replacement refrigerators in Figure 1.2, the simple payback period is as follows.

Replacement of Residential Refrigerator:

$$\text{SimplePayback} = \frac{(\$549 \times 1 \text{ fixture})}{\$722.98}$$

$$\text{SimplePayback} \approx .76 \text{ years}$$

Replacement of Residential Freezer:

$$\text{SimplePayback} = \frac{(\$647 \times 1 \text{ fixture})}{\$722.98}$$

$$\text{SimplePayback} \approx .89 \text{ years}$$

Replacement of Commercial Refrigerator:

$$\text{SimplePayback} = \frac{(\$5,871.83 \times 1 \text{ fixture})}{\$384.37}$$

$$\text{SimplePayback} \approx 15.3 \text{ years}$$

Replacement of Residential Refrigerator, Residential Freezer and Commercial Refrigerator:

$$\text{SimplePayback} = \frac{[(\$5,871.83 \times 1 \text{ fixture}) + (\$549 \times 1 \text{ fixture}) + (\$647 \times 1 \text{ fixture})]}{(\$384.37 + \$722.98 + \$722.98)}$$

$$\text{SimplePayback} \approx 3.9 \text{ years}$$

Assessment Recommendation #5

Insulate Header and Return Pipe of Parish House Boiler

Annual Resource Savings	Total Annual Savings	Capital Costs	Simple Payback
30.32 MMBtu	\$344.74	Approx. \$50	.145 years

Current Practice

It was observed during the site visit that the main header and return pipe of the parish house boiler are not insulated. We measured that the header of the boiler measured approximately 100 inches in length and 4 inches in diameter, whereas the return pipe measured approximately 285 inches in length and 2.5 inches in diameter. Both of these pipes appear to be significant sources of heat loss because as we measured, the surface temperature of each pipe was often over 200 degrees Fahrenheit, as opposed to the ambient air of the room which was measured at 65 degrees Fahrenheit. Using a boiler steam gauge, it was determined that while firing the boiler operates with a steam pressure of 5 psi.

Recommended Action

It is recommended that high efficiency insulation be installed for both the header and return pipe of the boiler to reduce heat loss. These uninsulated steam distribution pipes are a constant source of wasted energy. It is recommended by the Industrial Energy Extension Service of Georgia Tech that any surface over 120 degrees Fahrenheit be insulated in order to minimize this energy loss.

Because of the diameter of both pipes, it is recommended that the church install wrap-around fiberglass type insulation for the reasons of practicality in price and efficiency in halting heat loss. This installation is often used in home repairs and do-it-yourself projects, therefore, it is noted that it would not be necessary to hire a professional to oversee this installation as it is likely that a staff member or volunteer parishioner could complete this task. As such, labor costs will be excluded in the price estimates and calculations.

As applying this energy saving recommendation will not be difficult in either installation or cost, and the payback is very quick, it is recommended that the church insulate both the header and the return pipe as soon as possible.

Anticipated Savings

Two separate calculations must be done to estimate the annual energy savings (*AES*) of insulating the header and return pipe of the parish house boiler: one for the header of the boiler, and one for the return pipe. This is because the diameters of the two pipes are different. For both, we use a chart approved by the U.S. Department of Energy that details the heat loss per 100 feet of uninsulated steam line (*MMBtu/yr*) given the steam pressure and distribution line diameter. First, to calculate the heat loss for the header, for a boiler that fires at a steam pressure of 5 psi and has a pipe line diameter of 4 inches, the interpolated value of *AES* is 138.34 *MMBtu/yr*. To calculate the heat loss of the return pipe, we look at the values for a boiler that fires at a steam pressure of 5 psi and has a pipe line diameter of 2.5 inches. The interpolated value of *AES* is 93.3 *MMBtu/yr*.

The annual energy savings for the uninsulated pipes is determined as follows:

$$AES = AES \text{ header} + AES \text{ return pipe}$$

$$AES \text{ header} = E * HL \text{ header} * L \text{ header} * CL$$

$$AES \text{ return pipe} = E * HL \text{ return pipe} * L \text{ return pipe} * CL$$

Where,

E	=	Estimated insulation efficiency	=	90%	=	.9
HL header	=	Heat Loss for header	=	138.34/yr		
L header	=	Length of header	=	100 inches		
CL	=	Conversion factor	=	1/1200inches		
HL return pipe	=	Heat Loss for return pipe	=	93.3/yr		
L return pipe	=	Length of return pipe	=	285 inches		

Substituting,

AES header	=	.9 * 138.34MMBtu/yr * 100in. * 1/1200in.
AES header	=	10.38 MMBtu/yr
AES return pipe	=	.9 * 93.3 MMBtu/yr * 285in. * 1/1200in.
AES return pipe	=	19.94 MMBtu/yr
AES	=	10.38 +19.94 = 30.32 MMBtu/yr

Therefore, given the cost of 11.37 \$/MMBtu the estimated total annual savings (TAS) are as follows:

$$\begin{aligned} \text{TAS} &= 30.32 \text{ MMBtu/yr} * \$11.37/\text{MMBtu} \\ \text{TAS} &= \$344.74 \end{aligned}$$

Implementation Cost

The following describes the implementation costs associated with this recommendation. The cost of the high efficiency wrap-around fiberglass insulation is estimated from the costs found on www.homedepot.com, www.acehardware.com, and www.lowes.com. The church will most likely need two packages of this insulation in order to properly cover the length of both pipes.

Description	Unit Cost	Quantity	Cost
Insulation	\$25	2	\$50
		Total:	\$50

Therefore, the simple payback period is as follows:

$$\begin{aligned} \text{Simple Payback} &= \frac{\$50}{\$344.72} \\ \text{Simple Payback} &= .145 \text{ years} \sim 1.75 \text{ months} \end{aligned}$$

Assessment Recommendation #6 Replace Steam Traps in Parish House Boiler

Assessment Recommendation Summary

Annual Resource Savings	Total Annual Savings	Capital Cost	Other Cost	Simple Payback
23.5008 MMBtu	\$267.204096	\$400	\$500	3.368 years

Current Practices

At Grace Church there is currently no steam trap maintenance program. Boilers evaporate water into steam, which passes through a system of radiators to heat a space. When the steam is condensed back to water, it returns to the boiler to be reheated. Steam traps stop excess steam that has not yet condensed from passing back to boiler and keep the steam within the radiator system until it is condensed. This reduces the amount of steam necessary for the boiler to produce. The two steam traps are in need of being replaced. Visible steam is being released from the system into the atmosphere.²¹

Recommended Action

The two steam traps on the parish hall boiler are failed in the open position which means it allows steam to blow by the system and release into the atmosphere. This problem may not have been noticed because heat is still being produced. Replacing the two steam traps will make the boiler system operate more efficiently and save the church money.

Anticipated Savings

The annual energy savings (AES) is estimated using a chart published by the U.S. Department of Energy. The interpolated steam loss (lbs/hr) for a damaged trap with an orifice diameter 3/16 in. and an average pressure of 5 psi is 10.24 lbs/hr. The annual steam savings for all damaged traps is determined as follows:

$$\text{AES} = \frac{N * \text{SL} * \text{OH} * \text{CMMBtu}}{\text{Clb}}$$

Where,

N	=	Number of damaged steam traps	=	2
SL	=	Steam Lost through damaged trap	=	10.24 lbs/hr
OH	=	Operating Hours ²²	=	2,500 hrs/yr
Clb	=	Conversion Factor	=	1,000 lb/Klb
CMMBtu	=	Conversion Factor	=	0.459 MMBtu/Klb

Substituting,

$$\text{AES} = \frac{2 * (10.24 \text{ lbs/hr}) * (2,500 \text{ hrs/yr}) * (0.459 \text{ MMBtu/Klb})}{1,000 \text{ lb/Klb}}$$

$$\text{AES} = 23.5008 \text{ MMBtu/yr}$$

Therefore, given the cost of 11.37 \$/MMBtu the estimated total annual savings (TAS) are as follows:

$$\text{TAS} = 23.5008 \text{ MMBtu/yr} * 11.37 \text{ \$/Klb}$$

$$\text{TAS} = \$267.204096$$

²¹ Concern should be raised for the amount of steam that is released into the basement. The excessive warm moisture in the boiler room could result in the growth of mold that is damaging to the health of the people in the parish hall.

²² Estimated based on hours the parish hall is occupied and a gas energy use pattern provided by National Grid

Implementation Cost

The following table describes the implementation costs associated with this recommendation. The cost of the replacement steam trap is estimated from the costs of steam traps on www.statesupply.com. The labor cost is an estimate provided by a local plumbing and heating company.

Description	Unit Cost	Quantity	Cost
Steam Traps	\$200	2	\$400
Labor	\$500	N/A	\$500
		Total	\$900

Therefore, the simple payback period is as follows:

$$\text{Simple Payback} = \frac{\$900}{\$267.204096 \text{ per year}}$$

$$\text{Simple Payback} = 3.368 \text{ years}$$

Assessment Recommendation #7 Install Energy-Efficient Dishwasher

Assessment Recommendation Summary

Annual Resource Savings	Total Annual Savings	Capital Cost	Simple Payback
2,600 place settings of disposable dishware	\$1,950	\$2,825	1.5 years

Current Practice

The kitchen currently has a broken dishwasher and therefore, disposable products are used each week for dinner, as well as, Sunday coffee hour. From observations and conversations with parish members, it has been estimated that the kitchen staff uses approximately fifty place settings each week.

Recommended Action

Due to the cost of running the old dishwasher²³, as well as, its energy usage, it is recommended to purchase a new, low temperature, energy-efficient dishwasher for all uses in the kitchen. Though the simple payback shows a break-even point that is earlier than that of the new dishwasher, the yearly cost of the old dishwasher is \$182 more than the cost of running the new dishwasher.

Anticipated Savings

The annual cost savings from the installation of a new energy-efficient dishwasher can be found by the following:

$$TAS = CDP - CTR$$

TAS₁ = total annual savings for new dishwasher

TAS₂ = total annual savings for old dishwasher

CDP = annual cost of disposable products

CTR = annual cost to run

$$TAS_1 = \$1976 - \$26 = \$1950$$

$$TAS_2 = \$1976 - \$208 = \$1768$$

Implementation Costs and Simple Payback:

This recommendation requires the purchase and installation of a new, energy-efficient dishwasher. The total cost and implementation are provided:

Description	Unit Cost	Quantity	Cost
Jet Tech Low Temperature, Energy-Efficient Dishwasher	\$2825 ²⁴	1	\$2825
		Total	\$2825

²³ This situation only applies if the dishwasher is able to be repaired, as Hobart Manufacturers was unable to provide a thorough analysis without coming to the site and charging for their visit

²⁴ Obtained from *GalaSource* For further information, please visit http://www.galasource.com/prodDetail.cfm/63040,Low-Temp_Undercounter_Dishwasher,MX2

Therefore, the simple payback is:

$$\text{Simple Payback}_1 = \left(\frac{2825}{1950} \right)$$

$$\text{Simple Payback} \approx 1.45 \text{ years}$$

$$\text{Simple Payback}_2 = \left(\frac{437}{1768} \right)$$

$$\text{Simple Payback} \approx .25 \text{ years}$$

Assessment Recommendation #8 Install Ceiling Fans in Sanctuary

Assessment Recommendation Summary

Annual Resource Savings	Total Annual Savings	Capital Cost	Simple Payback
.6929 MMBtu	- \$572.72	\$1,200	N/A

Current Practice

The sanctuary consists of approximately 2546 square feet. Temperature measurements were taken when the heat was set to 46 degrees Fahrenheit and found to be 60 degrees Fahrenheit at the ceiling and 48 degrees Fahrenheit at the floor level.

Recommended Action

As ceiling fans would consume more energy than they would save, it is not recommended that the church install ceiling fans.

Anticipated Savings

The annual energy savings from a reduction in stratification can be found by the following:

$$TAS = \left[\frac{UC * Ac * \left(\frac{DHce - DHcp}{CF} \right)}{EFF} \right] (CS)$$

TAS= Annual cost savings

UC= Heat Transfer coefficient of the ceiling

AC= Area of the ceiling

DHCE= Existing heating degree hours for the ceiling

DHCP=Proposed heating degree hours for the ceiling

CF= Conversion factor

EFF= Efficiency of the heating system

CS= Cost per MMBtu

$$TAS = \left[\frac{.09 * 2546 * \left(\frac{4032 - 1008}{1,000,000} \right)}{.85} \right] (*\$11.37)$$

TAS= \$7.87849/ year

The fans themselves would take energy to operate. The number of fans required would be:

$$N = \frac{V * Ac}{Vf}$$

N= Number of fans

V= Volumetric flow rate required

VF= Volumetric flow rate generated by a fan

$$N = \frac{95 * 2546}{46,000} \quad N = 5.25 \quad \text{Number of fans needed} = 6$$

The energy consumption of the fans would be:

$$EC = N * D * HRS * CS$$

EC= Energy cost of the fans

N= Total number of fans

D= Energy demand per fan

HRS= Hours in the heating season

CS= Cost per kWh

$$EC = 6 * .160 * 4032 * .15$$

$$EC = \$580.608$$

The net energy savings, NET, would be:

$$NES = \$7.89 - \$580.61$$

$$NES = -572.72$$

Implementation Costs and Simple Payback:

If the ceiling fans were purchased and installed there would be initial cost and installation fees.

Description	Unit Cost	Quantity	Cost
Ceiling Fans	\$200 ea. ²⁵	6	\$1200
		Total	\$1200

Due to the negative energy savings and initial cost of the ceiling fans, a simple payback is not an option.

²⁵ Obtained from *TPI Corporation*. For further information, please visit <http://www.tpicorp.com/01-MenuSystem-CatalogPages/06-IndustrialFans/Specialty-CeilingFans/ProdDisplayPage.htm>

Appendix

The following is table presenting current electrical usage broken down per area:

Location	Fixture or Bulb Type	Number of Fixtures/Bulbs	Number of Watts per Fixture or Bulb	Number of Volts	Estimated Number of Hrs per Week/per Year ²⁶
Parish Hallway/Rest Room	Incandescent Bulb	14	75	120	10/5200 hrs
	Incandescent Bulb	3	150	120	10/5200 hrs
	Incandescent Candle	4	40	120	5/250 hrs
	Fluorescent Bulb	1	11	120	5/250 hrs
	Water Fountain	1	n/a	115	576/29952 hrs
	Space Heater	1	1500	n/a	n/a
			Total: 3171		
Parish Hall	Incandescent Candle	20	60	120	8/416 hrs
	Fluorescent Bulb	12	11	120	8/416 hrs
	Incandescent Pendant Bulb	2	75	120	8/416 hrs
			Total: 1482		
Kitchen	Incandescent Ceiling Tube	6	40	120	8/416 hrs
	Incandescent Bulb	4	100	120	8/416 hrs
	Refrigerator #1	1	n/a	100-110	576/29952 hrs
	Refrigerator #2	1	n/a	115-127	576/29952 hrs
	Refrigerator #3	1	n/a	n/a	576/29952 hrs
	Broken Dishwasher	1	5000	230	
			Total: 5640 +		
Sanctuary	Incandescent Bulb	30	75	120	4/208 hrs
	Incandescent Bulb	1	40	120	4/208 hrs
	Incandescent Bulb	1	20	120	4/208 hrs
	Incandescent Flood Bulb	12	75	120	4/208 hrs
	Standard Microphone	2	20	n/a	4/208 hrs
	Electronic Organ	1	n/a	n/a	4/208 hrs
			Total: 3250 +		
Upstairs Offices	Incandescent Ceiling Tube	4	40	120	8/416 hrs
	Incandescent Bulb	4	75	120	8/416 hrs
	Incandescent Candle	4	60	120	8/416 hrs
	Computer	1	100	n/a	n/a
	Printer	1	50	n/a	n/a
	CD Player	1	13	120	n/a
			Total: 863		
Downstairs w/Classrooms	Incandescent Table Lamp	1	60	120	4/208 hrs
	Incandescent Ceiling Fixture	2	75	120	4/208 hrs
	Overhead Fluorescent	34	60	120	4/208 hrs
			Total: 2250		

²⁶ Obtained from our current observations as well as conversations with those in the parish

Assessment Recommendations Summary Ranking by Simple Payback

Assessment Recommendation	Capital Cost	Simple Payback (years)	Resources Cost Savings per year
Insulate boiler header & pipes	\$50.00	.15	\$344.74
Install energy efficient lighting	\$149.25	.15	\$992.86
Install energy efficient exit sign bulbs	\$131.70	.46	\$283.85
Replace residential refrigerator	\$549	.76	\$722.98
Replace residential freezer	\$647	.89	\$722.98
Replace dishwasher	\$2,825	1.5	\$1,950
Replace steam traps	\$900	3.4	\$267.20
Install motion sensors	\$323.10	6.9	\$46.59
Replace commercial refrigerator	\$5,871.83	15.3	\$384.51
Install ceiling fans in sanctuary	\$1,200	n/a	n/a
TOTAL Annual Resources Cost Savings			\$5,715.71

Assessment Recommendations Summary Ranking by Capital Cost

Assessment Recommendation	<u>Capital Cost</u>	Simple Payback (years)	Resources Cost Savings per year
Insulate boiler header & pipes	\$50.00	.15	\$344.74
Install energy efficient exit sign bulbs	\$131.70	.46	\$283.85
Install energy efficient lighting	\$149.25	.15	\$992.86
Install motion sensors	\$323.10	6.9	\$46.59
Replace residential refrigerator	\$549	.76	\$722.98
Replace residential freezer	\$647	.89	\$722.98
Replace steam traps	\$900	3.4	\$267.20
Install ceiling fans in sanctuary	\$1,200	n/a	n/a
Replace dishwasher	\$2,825	1.5	\$1,950
Replace commercial refrigerator	\$5,871.83	15.3	\$384.51
TOTAL Annual Resources Cost Savings			\$5,715.71

Resources Use Audit Summary

Annual cost: electricity and gas	\$15,650
Annual cost: disposable dishes and utensils	\$1,980
Total annual resources costs	\$17,630
Projected annual savings	\$5,715.71
Projected savings as % of annual costs	32.42%
Annual costs less projected savings	\$11,914.29