

MLGW
Green Initiatives
2009 Annual Report



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Introduction

This document provides a summary of 2009 “green initiatives”—those customer programs and internal activities designed to increase energy efficiency and environmental awareness, reduce energy waste and improve air quality through lower power generation emissions. It can be argued that most of the actions performed by MLGW employees have green benefits, so this report may expand to cover other programs and services in the future.

Many of these activities will boost the local economy through increased household discretionary income, increased business profitability and increased business opportunities for companies in energy improvement fields. Actions also will slow local peak electric demand, helping TVA control operating expenses and thereby controlling electric rates.

It is a positive sign that this report covers perhaps the broadest scope of customer programs and initiatives at any time in MLGW’s 70-year history. With energy prices rising long-term and world focus on green issues, MLGW demonstrates the importance of energy efficiency through its commitment to developing and offering customer solutions, while also implementing improvements at its own facilities to reduce operating costs.

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CUSTOMER PROGRAMS

MLGW / U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Incentive

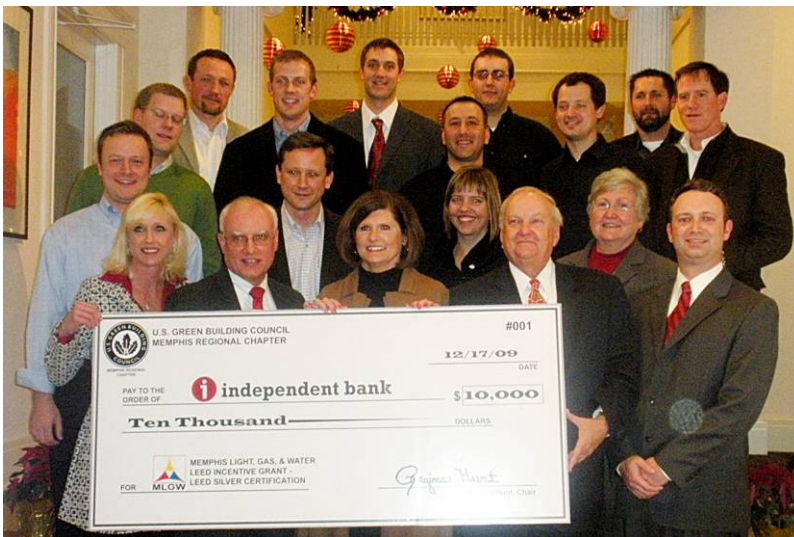
In December 2008, MLGW presented a \$75,000 grant to the Memphis chapter of the U.S. Green Building Council (USGBC-MEM) to create awareness and encourage energy efficiency in new commercial construction in Shelby County. The grant provides incentive money to commercial new construction projects that meet LEED certification, with additional points in energy and water categories.

The first new commercial building attaining LEED status in Shelby County was certified in 2009: a 2,485-square-foot branch for Independent Bank (I-Bank), located on Poplar Avenue in Germantown. The building attained LEED Silver certification and also met the award requirement for at least two LEED points in the water efficiency category and at least four additional points in energy category. I-Bank was awarded the first MLGW/USGBC LEED incentive on 12/17/2009, receiving a \$10,000 check for its efforts to ensure energy and water efficiency in the pursuit of green building. Given market activity, USGBC-MEM expects another three or four projects to meet incentive requirements in 2010.

Read local news coverage at:

http://www.commercialappeal.com/news/2010/jan/03/banking-on-energy-returns-dividends/?partner=yahoo_feeds

MLGW will continue to work with USGBC-MEM to monitor and modify the requirements as USGBC releases new versions of its LEED new construction program. MLGW will soon have a link from our website to the USGBC-MEM website for customers to easily access the information.



MLGW President Jerry Collins presents the first MLGW/USGBC LEED Incentive Award to Independent Bank President Susan Stephenson (front row, middle), surrounded by bank representatives and members of the U.S. Green Building Council-Memphis chapter grant committee. Germantown Mayor Sharon Goldsworthy (second row, right) attended and announced Germantown's plan to build a new Fire Station to LEED standards, the first new municipal building in Shelby County to pursue LEED certification.

EcoBUILD Residential Green Building Program

Despite the downturn in the residential construction industry, EcoBUILD awareness grew considerably in 2009, thanks to collaboration with the Memphis Area Home Builders Association that resulted in all eight homes in the 2009 VESTA Home Tour being certified through MLGW's EcoBUILD program, as well as the new National Association of Home Builders' Green Building Program.



More than 12,000 attendees toured homes over the three-week event in October, viewing EcoBUILD signs, collecting literature and learning about the importance of energy efficiency. MLGW provided Guided Green Tours on Thursdays and Fridays to give people a behind-the-walls perspective of each home's unique energy efficiency and environmental features. An MLGW-produced DVD with energy efficiency tips was played in several homes throughout the event.

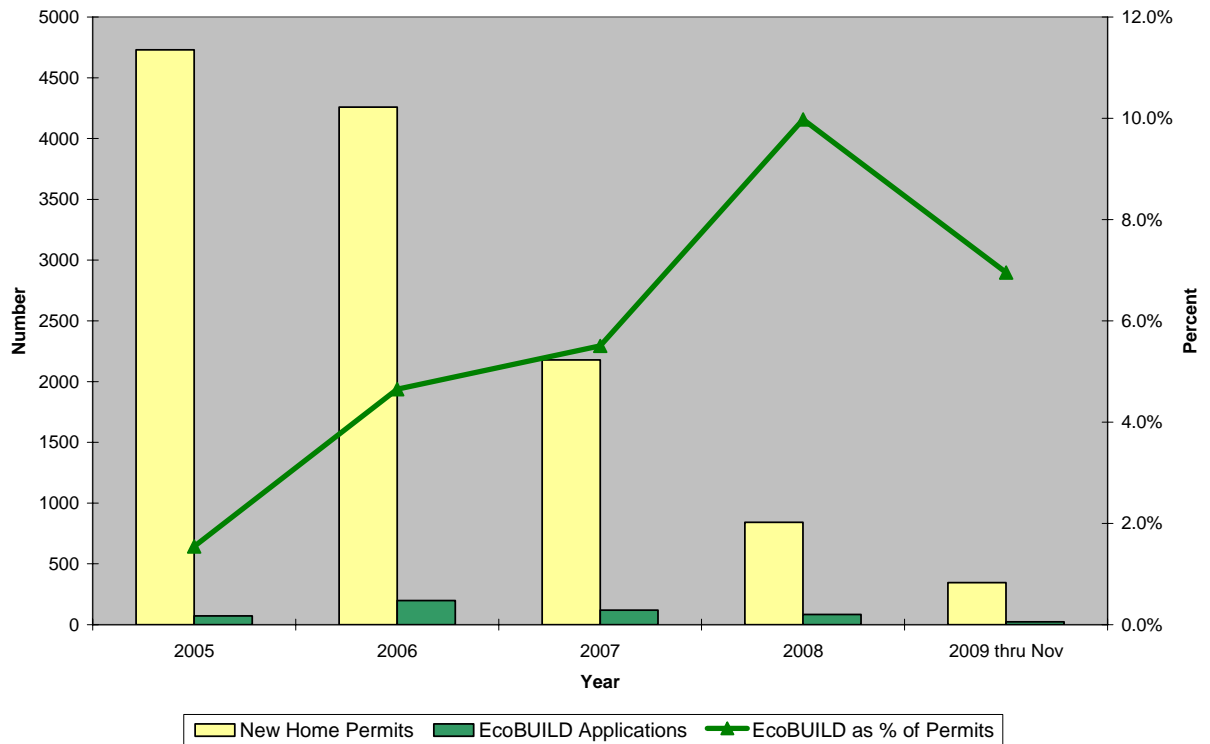


These two VESTA 2009 homes, built by Jon Ruch Builders (left) and Regency Homes (right) not only met EcoBUILD and NAHB program requirements, but also attained NABH's Silver rating for added green features.

Tracking EcoBUILD's growth can be challenging, since not every project is completed the same year the application is submitted. Therefore, MLGW tracks two values: applications as percentage of new home permits and number of homes certified.

Through November, there were 345 single-family building permits issued in Shelby County, with 24 of those participating in EcoBUILD. This represented 7% of total single-family construction activity, compared to a program high of 10% in 2008.

EcoBUILD as Percentage of New Home Permits



EcoBUILD certified 96 homes in 2009, its third-highest volume, compared to 34 homes in 2008. Several large-scale projects are planned for 2010 and beyond, including Habitat for Humanity’s 39-lot Trinity Park subdivision and two MHA developments, Legends Park (phase 2) and McKinley Park

As of 12/31/2009, EcoBUILD has certified 529 homes, representing 705,346 square feet of energy-efficient new housing. In 2009, it is estimated¹ that residents of these EcoBUILD homes collectively:

- Reduced natural gas use by 282,134 hundred cubic feet (Ccf)
- Reduce electricity use by 2,468,711 kilowatt-hours (kWh)
- Saved \$203,132 in electricity costs
- Saved \$265,097 in natural gas costs
- Avoided 3.3 tons of nitrogen oxides (NOx) emissions
- Avoided 8.9 tons of sulfur dioxide (SO₂) emissions
- Avoided 1,983 tons of carbon dioxide (CO₂) emissions

¹ Actual household impact varies by square footage, family size, appliance and equipment inventory, and operating habits. Calculations based on 2006 study results of actual energy consumption versus modeled energy use for a similar-size structure built to local practices, expressed in annual energy use per square foot. Study identified annual electricity savings of 3.5 kWh per square foot and natural gas savings of 0.4 Ccf per square foot. Dollar savings calculations include average Fuel Cost Adjustment and Purchased Gas Adjustment for 2009. Values assume all 529 EcoBUILD-certified homes were occupied January-December 2009.

Green Power Switch

The economy impacted business participation in TVA's voluntary Green Power Switch (GPS) program in 2009, with the exit of 12 business locations, including our largest local sponsor, The University of Memphis. Currently, these businesses participate in GPS and are recognized on MLGW's and TVA's website for their commitment to renewable power:



- Askew Nixon Ferguson Architects
- Center City Commission
- First Tennessee Bank
- GG Lutherie
- Haizlip Firm
- Jabberblabber Inc.
- Medtronic Sofamor Danek (2 locations)
- Memphis Light, Gas and Water
- Mid-South Casters and Equipment
- Midtown Yoga
- New Tech Packaging
- Rhodes College
- River Inn at Harbor Town Landing
- State of Tennessee Department of Environment & Conservation (T.O. Fuller and Shelby Forest parks)
- The Daily News
- Westmoreland Cabinetry

On the residential side, however, the program retained its volume with new enrollees replacing departing participants equally.

As of 12/31/2009, GPS participation includes 907 households and 18 business locations. Collectively, these customers have sponsored 3,446 blocks of green power, representing renewable generation of 6.2 million kWh (or 6,202 MWh) annually—enough to meet the annual electricity needs of 388 homes served by MLGW.

In consumer-friendly terms, this is equivalent to: recycling 26.4 million aluminum cans, or planting 1,723 acres of trees, or recycling 1,521 tons of newspaper, or removing 574 cars from the roads for a full year.

In scientific terms, MLGW's GPS customers were responsible for avoided generation emissions equal to: 4,640 tons of carbon dioxide (CO₂), 31 tons of nitrogen oxides (NO_x) and 12 tons of sulfur dioxide (SO₂) in 2009.

Green Power Switch statistics are updated monthly at:

<http://www.mlgw.com/frameset.php?head=res&content=greenpower>

Generation Partners

Two households and one business installed on-site solar generation and enrolled in TVA's Generation Partners program in 2009, bringing total participants to six. These customers sell their output to TVA, with generation credits applied to their monthly MLGW bill. The current incentive is a premium of \$0.12 atop the residential rate or commercial GSA-1, plus Fuel Cost Adjustment. That represents approximately \$0.20 per kWh generated, but will fluctuate with rates and FCA over the 10-year agreement term.

- TERRA, the University of Memphis demonstration home and now the Monte Phillips residence (2.1 kW)
- Sparco.com (21 kW)
- Gib and Nancy Wilson residence (4 kW)
- Carnes Elementary School (27 kW)
- Memphis Botanic Garden (10 kW)
- Sharp Manufacturing Company (50 kW)

Collectively, these customers are generating enough renewable power to supply the annual electric needs of 10 average households served by MLGW.

Program activity for 2010 includes an upcoming expansion of Sharp's solar arrays, plus several other solar projects. These projects are driven by the 30% Federal tax credit for solar installations, as well as a desire to increase the use of renewable sources for power generation.

Information, applications and other Generation Partners details are available under the Green Power Switch program webpage, <http://mlgw.com/frameset.php?head=res&content=greenpower>

My Account

Customer adoption of My Account continued to grow in 2009, with a total of 134,887 users as of 12/30/09, representing about one-third of MLGW's customer base. A fourth quarter 2009 ESource survey, "Utility E-Business Metrics," indicates the average adoption rate to access registered accounts online is 21%, placing MLGW customer participation well above average.

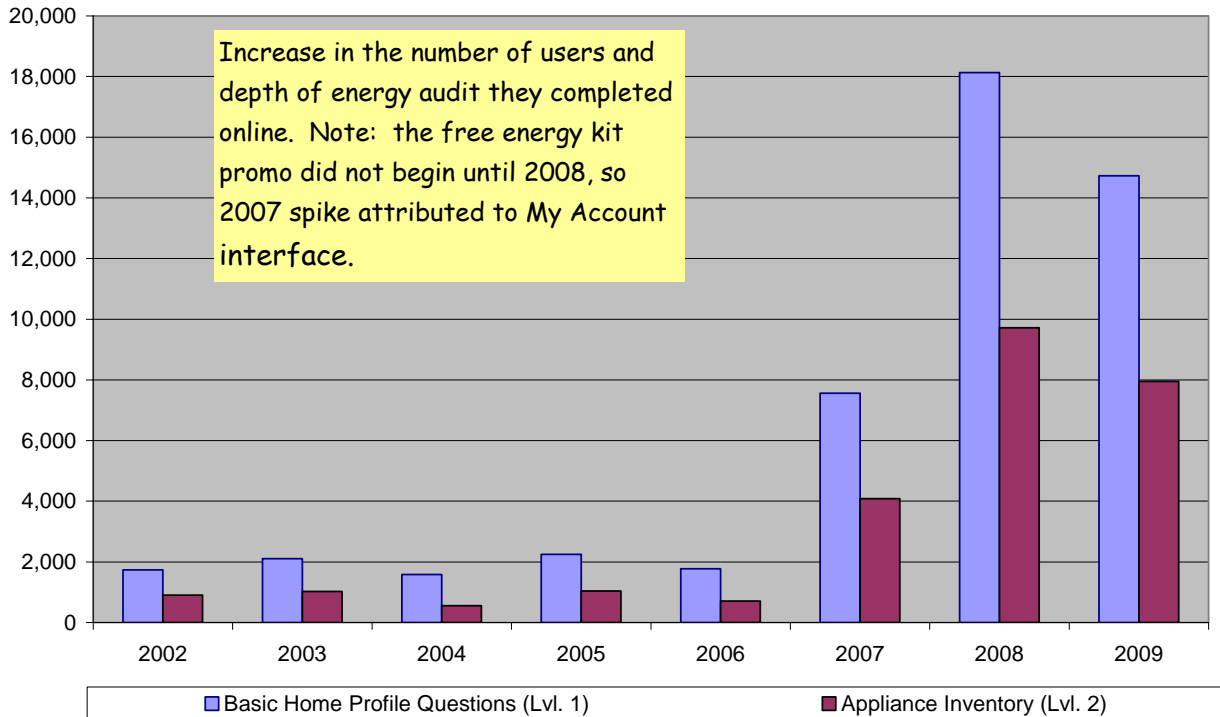
More than 926,000 web sessions took place in 2009, up from 690,000 in 2008. On average, 5,600 new users registered monthly, while return users averaged 38,500 per month. Just a few years ago, fewer than 5,000 users visited the site *annually*—so My Account is definitely meeting customer information needs.

TVA continued its free energy kit promotion for My Accounts users who completed the Home Profile and My Appliances question sets, which more than 8,000 customers took advantage of in 2009. The promotion has been extended through 9/30/2010—so there's still time for others to qualify and receive free compact fluorescent lights, switch and outlet gaskets, thermometers and other energy-saving devices. (An unknown number of customers have qualified through TVA's



website or by completing a printed energy questionnaire.) This promotion, combined with the economy and growing interests in lowering expenses, continued to generate customer use of online energy audit tools.

Residential Users: Energy Audit Completion by Level



MLGW’s small and mid-size business customers gained access to energy and bill analysis tools in mid-December, providing bill history import for energy audits, bill change highlights and bill comparisons. These new features are expected to drive commercial customer enrollment in 2010, as experienced with residential enrollment when analytics were added in 2007. Even with just two weeks of availability in 2009, more than 700 commercial users accessed the application.

The last phase of the My Account plan will add a dashboard for Large Commercial Customers. Introduction is planned for 4/30/2010, to coincide with conversion to the new vendor for Electronic Bill Presentment and Payment functions.

eBilling Paperless Billing Option

Enrollment in MLGW’s optional eBilling program reached 39,861 accounts in 2009, representing 10% of eligible accounts, or nearly two entire billing cycles. A fourth quarter 2009 ESource survey, “Utility E-Business Metrics,” indicates the average eBilling adoption rate is 9.8%, placing MLGW customer participation slightly above average.

Customers who enroll in eBilling forego printed bills, which reduces MLGW's paper and postage costs while also saving customers time, increasing convenience and enabling no-cost electronic bill payment. Based on estimated billing costs of \$5.40 per account per year, eBilling participants helped MLGW save \$215,249 in 2009, eliminating 1.4 million sheets of paper and 956,000 envelopes used for bill production.

Commercial Efficiency Advice and Incentive Pilot

In December, MLGW was added as a pilot location for this TVA program, which is part of TVA's efforts to reduce 1,400 MW by 2012. Commercial customers (excluding manufacturers) with electric demand of 50 kW and greater, making interior lighting and/or HVAC improvements to existing facilities can participate. The program offers information, recommendations and a one-time incentive of \$200 per kW reduced for qualified projects upon completion. The level of assistance and availability of incentives varies based on customer project potential.

TVA and MLGW will host an orientation meeting for the program's Preferred Provider Network (PPN) in Memphis on 1/22/2010 for lighting and HVAC contractors, as well as architects and engineers who develop project specifications. Initially, companies can use any contractor but, once the PPN is established, customers using non-PPN members will receive a reduced incentive amount due to TVA's costs for pre-assessment and post-assessment visits.

Details will soon be available at www.mlgw.com

EnerNOC Commercial Demand Response Program

Another program to assist TVA in achieving their demand reduction goal, this program recruits and pays businesses and organizations based on their ability and willingness to reduce electric use during demand response events. Each participant received a free demand response audit to identify potential actions, communications to provide real-time electric load details and access to a website for tracking electric load. Participants are paid quarterly based on their agreed-to capacity, whether or not an event is called. They are also paid for each kW they reduce during demand response events called by TVA.

The program is fully subscribed, so no new participants are being added. Only two demand response events were called in 2009, with MLGW participants delivering 69% and 75% of their capacity goals. MLGW customer participation represents 16 MW of the program's 160 MW total.

Participants include manufacturers, bottling companies, churches, shopping malls, municipal wastewater plants and 30 Memphis City School locations. MLGW is completing review of the participation contract, with plans to enroll the Administration Building for 75 kW of reduction capacity.

Federal Energy Efficiency and Conservation Block Grants (stimulus funds)

MLGW worked with the City of Memphis to develop and submit an application for Energy Efficiency and Conservation Block Grants (EECBG) funded through the American Recovery and Reinvestment Act. Through formula distribution, the City is awarded \$6.76 million over the next three years. MLGW will utilize approximately \$5 million for the activities shown below, while Public Works will receive approximately \$1.67 million.

- Energy Efficiency Improvements for Homeowners—MLGW will provide energy audits, recommendations and funds to make the appropriate mix of weatherization, heating, cooling and water heating improvements, plus post-work inspections for approximately 720 homes located in Memphis. Details regarding qualification, selection, contractors and other aspects are being finalized, to introduce the program in first quarter 2010. Budget: \$3,713,091
- Energy Efficiency Improvements for Landlords—MLGW will provide energy audits, recommendations and 50% funds to make the appropriate mix of weatherization, heating, cooling and water heating improvements, plus post-work inspections for approximately 120 rental properties located in Memphis. Landlords must provide matching funds of at least 50%. Details regarding qualification, selection, contractors and other aspects are being finalized, to introduce the program in first quarter 2010. Budget: \$398,561
- Energy Efficiency Improvements through Housing Non-Profits—MLGW will provide energy audits, recommendations and funds to make the appropriate mix of weatherization, heating, cooling and water heating improvements, plus post-work inspections for approximately 30 Memphis homes being renovated by local housing non-profit organizations. Details regarding qualification, selection, contractors and other aspects are being finalized, to introduce the program in first quarter 2010. Budget: \$124,712
- Commercial Energy Audits—Working with TVA’s Comprehensive Services Program, MLGW will provide energy audits and related activities to assist approximately 150 commercial, industrial, institutional, and government facilities located in Memphis in identifying energy-saving measures. Once energy recommendations are provided, it is anticipated that many participants will budget for improvements and utilize other programs for additional financial incentives. Budget: \$124,000
- Renewable Power Generation—The Public Works Division will construct a methane generation facility, with capacity of 1 to 1.5 MW, at the Stiles Wastewater Treatment Plant. The system will produce electricity by capturing the energy content in methane, a treatment byproduct. Budget: \$231,048

In-Home Energy Evaluation Pilot

This TVA pilot program was introduced to MLGW’s residential customers in July 2009. The program offers a fee-based in-home energy evaluation using TVA’s third-party contractor (Conservation Services Group, CSG). The process includes recommendations for energy savings, qualified contractor list and rebates for qualified energy improvements. Completed improvements are inspected by CSG to ensure quality workmanship.

- Rebates of 50% of implementation costs, up to \$500 maximum, are provided via check from CSG within 30 days of post-work inspection.
- The \$150 evaluation fee also is refunded if improvements exceed that amount.
- In most cases improvements will qualify for Federal Energy Tax Credits of 30% in addition to TVA rebates.
- As an incentive to act, improvements must be made within 90 days of the evaluation to receive TVA rebates. (Lagging improvements are evaluated on a special case basis to determine rebate eligibility.)
- 250 customers have received IHEE service as of 11/30/2009
 - For the 90-day improvement period ending 9/30/09, 84 customers received evaluations and 51% made energy improvements representing \$80,000 in investment
 - For the 90-day period ending 12/31/09, more than 166 customers received evaluations, but data is not yet available on what improvement actions were taken.

To schedule an appointment, customers call CSG at 1-866-441-1430. Details also are available online at: http://www.mlgw.com/SubView.php?key=misc_inhomeprogram&x=4

Window-Unit Air Conditioner Replacement Pilot

In 2008, MLGW developed a \$45 million proposal for TVA to fund the replacement of older window-unit air conditioners with Energy Star models, as a means to cut local peak electric demand by 52 MW annually. TVA committed to a pilot project to measure actual impact.

MLGW recruited 130 owner-occupied, single-story homes with low-income residents. Each household was placed into one of four research groups: control group (no changes), window unit AC replacement only, weatherization only and both window unit AC replacement and weatherization. In 2009, measures were completed and interval meters were installed to provide TVA with time-based consumption data.

Electric consumption is being monitored for 12 months to measure differences between 2009 and the previous four years' average usage. TVA will use the data to determine whether to fund a full-scale program to replace approximately 90,000 window unit air conditioners in 60,000 low-income households. At the conclusion of the pilot, all 130 homes will receive weatherization measures and up to two high-efficiency window unit air conditioners for participating in the program.

Rental Ordinance

The new ordinance allows MLGW to inspect identified high-usage rental properties for a number of energy-related issues. These items that may include: holes in exterior walls and roof, non-working heating/cooling units, water leaks, lack of insulation and missing window panes. MLGW becomes an advocate for the tenant during the process and ultimately can take the landlord to Environmental Court if energy issues are not addressed within two weeks.

Highlights from 2009 include:

- MLGW staff performed initial and post-work inspections on 306 properties in 2009
- The most common problems found, and corrected by landlords, include: insufficient attic insulation, water leaks and heating/cooling system problems
- 20% of requests are received from renters, with 80% derived from analysis of energy use data
- Customers can find information about the Rental Ordinance at: http://mlgw.com/SubView.php?key=about_allnumbers

EnergySmart Memphis workshops

Through a partnership with TVA, City of Memphis and Shelby County government, MLGW provides free, detailed training on residential energy efficiency improvements during two-hour EnergySmart Memphis workshops. EnergySmart Memphis trainers discuss common household energy problems, demonstrate weatherization and other energy efficiency measures and discuss basic strategies to control energy costs. Each workshop attendee receives a free EnergySmart Memphis kit (valued at \$45.00), containing compact fluorescent bulbs, caulk and caulk gun, plastic window covering, gasket insulators and other products. By supplying basic home weatherization and efficiency products, MLGW ensures that customers can take initial steps immediately.

In 2009, 128 workshops were held, with a total of 4,440 attendees.

EnergySmart Memphis workshop requirements:

- Groups of at least 20, but no more than 45 attendees
- Sessions are available from 10:00am through 6:00pm, weekdays. Some Saturday sessions are also available.
- To schedule an EnergySmart Memphis workshop, contact Jackie Royston, 528-4188 or jroyston@mlgw.org, preferably three to four weeks ahead of your preferred date.

Community Conservation Days

During 2009, MLGW hosted monthly events at Community Offices and Exxon Stations, where customers were given free energy conservation kits and tips on saving energy. The program's main event at the Orpheum drew over 1,200 customers. More than 16,000 conservation kits were distributed in 2009. Each kit contains a fluorescent light bulb, outlet switch cover and faucet aerator. Budget: \$35,000



An EnergySmart Memphis representative shows workshop attendees two ways to properly seal ductwork: mastic compound (shown painted around the left duct) and special UL-rate foil tape that contains a rubber backing. Duct leakage of 30% or more is common in most area homes, wasting energy, increasing utility bills and causing comfort problems.

In 2010, the conservation days will be held in different locations around the county to reach a greater number of customers. 2010 events are tentatively planned for 1/20, 2/10, 3/3, 4/7, 5/5, 6/9, 7/7, 8/4, 9/8, 10/6, 11/3 and 12/8.

Smallest User Neighborhood Challenge

MLGW collaborated with the Cooper-Young and Evergreen neighborhoods to submit an application for the Strengthening Neighborhoods Grant, sponsored by United Way, University of Memphis and the Community Foundation of Greater Memphis. The Smallest User Challenge, which will focus on energy reductions among households in the two neighborhoods, was among five local applications to receive grant funding. The winner is the community that makes the most utility reduction compared to 2008 (baseline). U of M journalism department will conduct research and focus groups on customer behavior and attitudes. MLGW will collect and analyze energy usage for the 2010 period. WMC-TV will provide monthly coverage during the evening news to highlight steps residents can take to reduce usage and track the efforts to competing households in the two neighborhoods. Media coverage began on 12/16/2009 with a lengthy segment on the 5:00pm newscast. View the story at:

<http://www.wmctv.com/Global/story.asp?S=11688615>

SUSTAINABLE SHELBY

Many of MLGW's green initiatives support Shelby County government's Sustainable Shelby initiative. A hallmark of former Shelby County Mayor A C Wharton, Sustainable Shelby is a multi-disciplined community assessment and long-term planning effort that garnered interest and participation from citizens and organizations over a four-month period in 2008.

"Sustainability means using, developing, and protecting resources at a rate and in a manner that enables people to meet their current needs and also provides that future generations can meet their own needs. Sustainability requires simultaneously meeting environmental, economic, and community needs."

Shelby County staff then culled the resulting 52 recommendations from the subcommittees to develop strategies published in the Sustainable Shelby Implementation Plan. The plan was unveiled in September 2009 at an event that featured exhibitor tables staffed by MLGW, Shelby County government agencies and other organizations promoting green concepts. The plan is available at <http://www.sustainableselby.com/>

Based on MLGW's role and commitment during development, the Division will provide information on existing and new green programs for Sustainable Shelby staff to disseminate to residents, businesses and organizations.

The Sustainable Shelby Implementation Plan includes three strategies that specify MLGW involvement:

Consumption Strategy 3.1.1 "Residents must know the cost of their home energy consumption and options for reducing it. New partnerships are needed - including local government, Tennessee Valley Authority, Memphis Light Gas & Water Division, the Memphis Chapter of American Institute of Architects, and the U.S. Green Building Council - to provide

free on-site home energy audits for residents of Shelby County. The audits should identify deficiencies and provide homeowners with cost-effective energy improvement recommendations. Priority consideration for participation in the program should be given to low and moderate income residents. The free home energy audits should be a part of a larger public awareness campaign coordinated by the Office of Sustainability that is focused on teaching the importance of home energy conservation.”

Status: MLGW currently offers free do-it-yourself energy audits through the MLGW website and in printed format available by request, as well as free on-site audits through The Energy Doctor. In addition, audits are a key component of the various Energy Efficiency and Conservation Block Grant (EECBG) programs funded by the Department of Energy.

For customers wanting more comprehensive energy audits and incentives for improvements, TVA and MLGW introduced the In-Home Energy Evaluation program. Customers also have the option of hiring independent Home Energy Rating System (HERS) Raters to performance test their homes and receive a HERS Score. (It is anticipated that HERS Scores will eventually be required by the State of Tennessee as part of a residential real estate transfer, based on recommendations from Governor Bredesen’s Energy Policy Task Force. A similar requirement recently implemented in Austin, Texas, has drawn national attention as municipalities contemplate such ordinances.)

See details in the Customer Programs section of this report.

Consumption Strategy 3.1.2 “Renters deserve opportunities and choices for sustainable housing. The City of Memphis code of ordinance should be amended to set minimum standards for energy efficiency for all rental property by June 1, 2009.”

Status: MLGW devised and successfully lobbied for a new City of Memphis ordinance on rental property, which was adopted in 2009. See details about the ordinance and its impact in the Customer Programs section of this report.

Protecting Natural Resources Strategy 3.2.2 “People need to know what their carbon footprints are if they are to reduce them. By January 1, 2011 Memphis Light, Gas, and Water Division should revise its billing statements to show each customer how much carbon dioxide is released as a result of their individual energy use. The billing statements should also include monthly tips for reducing household carbon footprint.”

Status: The detail of this strategy is surprising, as there have been no discussions with MLGW about adding carbon footprint information to the utility bill. This would entail new software and changes to a complex billing system, with limited impact on customer awareness and action.

MLGW currently provides carbon footprint information for residential customers as part of its My Account website, through its Meter Intelligence program for subscribing large commercial and industrial customers, when customers enroll or inquire about Green Power Switch participation, and by promoting various Department of Energy websites that feature carbon footprint calculators. The

DOE calculators use data on TVA's generation mix to calculate the carbon footprint based on electricity consumption entered by the user. This, of course, is only one component of a carbon footprint, as personal transportation, point-of-origin for goods and services purchased, and other factors have equally large impacts. As such, it would be misleading to provide a carbon footprint based solely on electricity consumption.

MLGW added an Energy Tip of the Month on page two of residential utility bills in June 2008, in addition to content in the bill insert, *Customer Connections*. As space permits, these tips remind customers to visit the website for more comprehensive tips and information. Non-residential customers have access to volumes of energy tips specific to their facility type and industry through MLGW's website.

Shelby County is using a portion of their allotted Energy Efficiency and Conservation Block Grant funding from the Department of Energy to assist with staffing the Office of Sustainability. Once the office is fully operational, the Sustainable Shelby website is expected to evolve quickly. Citizens and interested people can submit inquiries via: info@sustainableshelby.com

INTERNAL INITIATIVES

Alternative Fuel Vehicles in MLGW's Fleet

MLGW falls under the Federal Energy Policy Act (EPACT), which requires an alternative fuel provider to have 90% of their annual light-duty vehicle acquisitions represent alternative fuel vehicles (AFV). (Light-duty vehicles are classified as 8,500 lb gross vehicle weight rating or less.) The purchase of biodiesel can account for 50% of these mandates. Under EPACT, hybrid electric vehicles do not qualify as an AFV at this time. So, although the hybrids are not an AFV under EPACT, they are "green" and considered to be AFVs for this report.

In the 2010 budget, MLGW plans to purchase 16 hybrid electric vehicles and 53 E-85 pickups. This will account for 90% of our total light-duty vehicles being purchased in 2010, with AFVs accounting for 50% of the total 2010 vehicles purchases.

After the 2010 purchases, the fleet will have 34 compressed natural gas (CNG) vehicles, 90 E-85 vehicles, and 27 hybrid electric vehicles. These will account for only 13% of total vehicles in the fleet, but would account for 39% of our total light-duty vehicles, which is what EPACT targets. We should also have the ethanol fueling infrastructure in place in 2010.

In addition to the AFVs, we have 271 vehicles and equipment running on B-20, a blend of 20% bio-diesel and 80% petroleum diesel.

While MLGW previously operated approximately 100 CNG vehicles, due to the high cost of conversions and the fact that vehicle manufacturers no longer focus on this vehicle type, MLGW has not pursued that option recently, but will continue to evaluate it as the AFV market advances.

ENERGY MANAGEMENT WITHIN MLGW

Energy management and resource conservation opportunities within MLGW abound. By focusing on internal operations, MLGW is implementing projects that control our operating costs, thereby helping to delay or minimize the need for utility rate increases. In addition, energy management enables MLGW to “lead by example,” showing customers that everyone has the potential to reduce energy waste.

Tracking

Electric, gas and water consumption, demand and cost data are tracked from the baseline year 2004 through the current year in order to identify impact of facility upgrades, trends in usage, operations adjustments and account anomalies. To date, approximately \$35,000 of savings have been identified by identifying anomalies in consumption at the Administration Building (\$27,069), MLGW University (\$7,636) and Choctaw (\$264).

Master Planning

The Facilities Master Plan is developed on an annual basis in order to provide a budget roadmap of capital improvements to MLGW facilities. Based on a 10-year horizon, the plan details existing, new facility developments and equipment upgrade installations in MLGW’s 1.9 million-plus square feet of buildings. The plan also provides profile and characteristic data for each facility, including age, occupancy, structure and equipment).

Energy Audits

As part of the MLGW’s internal energy management initiative, Division facilities are reviewed and energy audits performed based on budget and cost-saving potential.

- Downtown Community Office/Beale Street Landing planned for next energy audit
- Reviewing enrollment of qualified facilities in the TVA Commercial Energy Efficiency Advice and Incentive Program

Demand Response

The Administration building will be enrolled for participation in the current TVA-EnerNOC demand response program. Approximately 75 kW will be shed during a TVA-called critical event, generating revenue potential of \$2,400 per year. Additional facilities will be evaluated for future enrollment as TVA expands the program.

Energy Efficiency Equipment Upgrades and Operations

- HVAC automated building control design projects are planned in 2010 for the Downtown Community Office/Beale Street Landing and Electric & Systems Operations buildings. Construction would begin in 2011. HVAC controls have reduced the number of man-hours required for maintenance as a result of remote indoor air quality (IAQ) diagnostic capabilities
- Installations of lighting occupancy sensors are planned for the following locations: Electric Operations Storeroom, Mallory Pumping Station (other installations at pumping stations are

planned in subsequent years) and MLGW University. They represent potential annual savings of approximately \$2,887.

- Major capital improvements for equipment upgrades and/or operations of HVAC, lighting, controls and scheduling systems started in 2004. Average annual savings for these projects include:
 - Administration Building: \$ 111,946.42
 - Beale Street Landing: \$ 68,900.03
 - Electric & Systems Operations: \$ 18,199.18
 - Hickory Hill Service Center: \$ 2,274.51
 - North Service Center Building 8: \$2, 875.16 (this amount is an increase in electric cost over a 5-year period. Equipment upgrades and operations have helped to minimize the energy consumption in a building over 40 years old.)
 - MLGW University: \$ 15,920.23
 - Lamar Community Office: \$ 1,639.24
 - Millington Community Office: \$ 1,144.80
 - Whitehaven Community Office: \$ 258.13
 - Water Lab: \$ 2,224.80

Additional equipment upgrades are planned for other facilities.

LEED Certification and Retro-commissioning Review

As building operations and equipment change over time, the systems lose their original optimum settings. Retro-commissioning is the examination of current building operations and equipment settings to identify efficiency improvements. MLGW University is among facilities where retro-commissioning is planned, with an eye on LEED certification.

As MLGW constructs new buildings, including the future Water Laboratory and Transformer/Paint Shop, project team members will evaluate the benefits of LEED certification not only for operational savings but also to serve as an example in the community.

Reductions through Equipment Upgrades

Various opportunities exist to reduce energy use and generate cost savings through equipment upgrades. In 2009, two examples included:

- Scheduling for night setback when the building is unoccupied has produced an electric demand reduction of 18 kW at the Netters Building, based on a one-month implementation, with savings of approximately \$1,932. Additional facilities will be reviewed night setback implementation as automated controls are installed.
- Monitoring carbon monoxide levels to automate exhaust fan operation in the Administration Building's underground parking garage, rather than running exhaust fans continuously. This reduced equipment operation approximately 90% and saves more than \$1,000 per month in electricity costs.

Energy Star Partner

MLGW is an Energy Star (ES) Partner that provides resources to employees and customers about energy-efficient products via www.mlgw.com . In addition, MLGW collects and enters facility energy use information into the ES Portfolio Manager to assist with tracking data and to obtain benchmark performance ratings.

RESOURCE CONSERVATION WITHIN MLGW

Recycling

MLGW's Building Services and Grounds department implements our internal recycling initiatives, including:

- **Cell Phone and Rechargeable Battery Recycling**– 117 recycled to date. Currently, recycling receptacles are available at Administration and Netters buildings.
- **Plastic and Aluminum Beverage Recycling** containers are currently available at the Administration Building. Weyerhaeuser/IP picks up and recycles the containers. (Approximately 78 lbs recycled to date)
- **Printer Ink and Toner Cartridge Recycling** is available at most facilities. Staples/CE pickups and recycles the cartridges at no charge. (825 recycled as of the 3rd Quarter, 2009)
- **Paper** is recycled by Weyerhaeuser/IP. Recycling containers are located at all facilities.

Green Printing/Green Software

Technology and behavioral changes are underway to reduce the number of pages of printed information produced by employees. Software has been purchased and Information Services is reviewing potential departments for deployment, scheduled for fourth quarter 2010.

Approximately 800 personal computers will be included, for a potential savings of \$60,234.

Alternative Energy R&D

Support EPRI research and development for a plug-in hybrid electric vehicle (PHEV) bucket truck for use by utilities. Phase 2 on schedule to add full PHEV functionality to include mechanical junction box modifications and power steering to the Ford F550 Medium Duty truck

Employee Reminders

Periodic reminders are sent to employees via email and WWTYK television messaging about wisely using resources in MLGW facilities.