

MLGW Green Initiatives 2011 Annual Report



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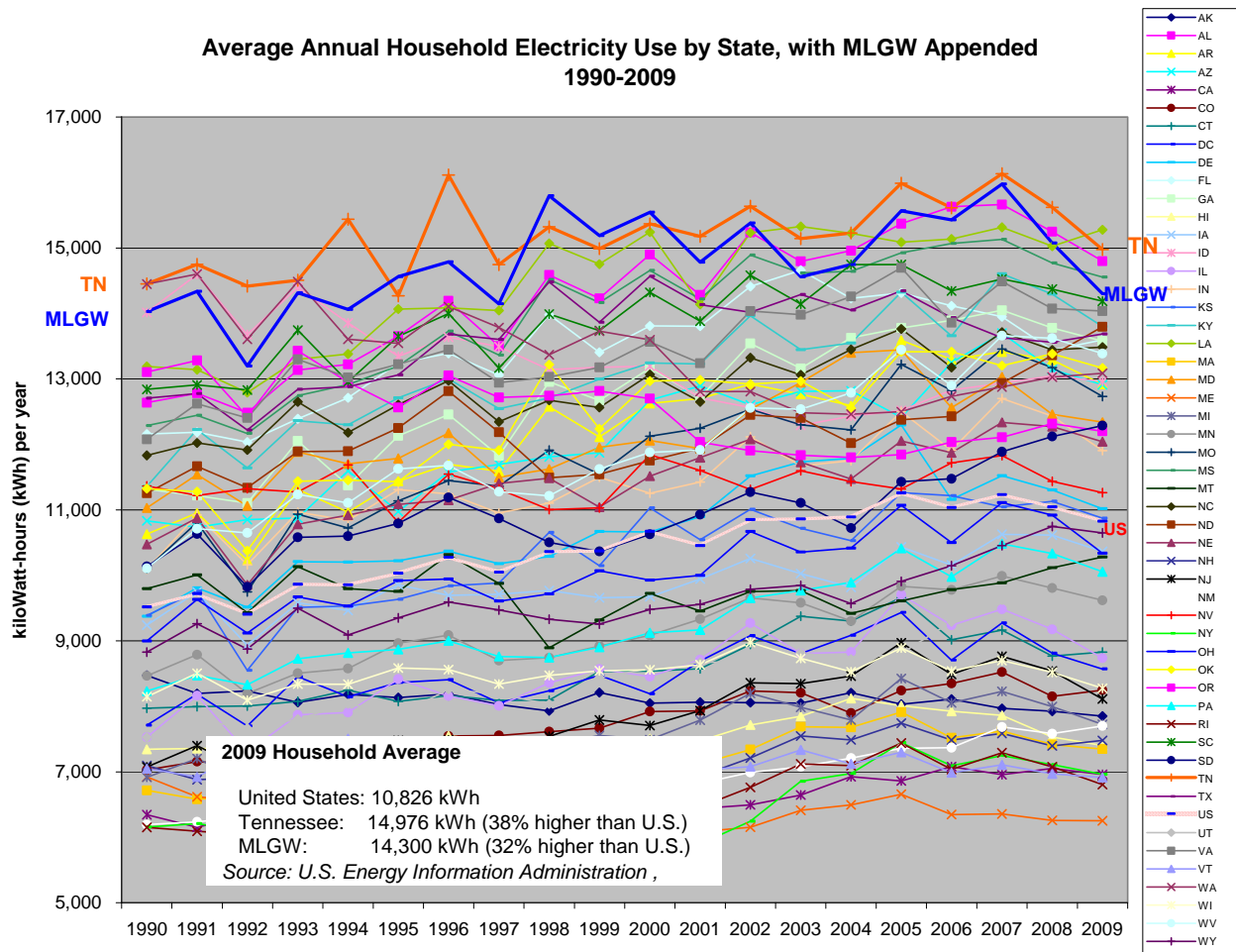
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MLGW Green Initiatives 2011 Annual Report

Introduction

MLGW's third annual report on green initiatives outlines customer programs and internal activities designed to increase energy efficiency and environmental awareness, reduce energy waste, lower peak electric demand and improve air quality through fewer power generation emissions.

One of the driving forces behind MLGW's green initiatives is the fact that households in Tennessee consistently lead the nation in terms of average annual electricity use. MLGW customers are just slightly lower than the Tennessee average (32% vs 38% above U.S. average), despite the fact that 80% of local homes use natural gas for heating and 60% use natural gas for water heating. This excessive electricity use results in higher utility bills, wasted resources and unnecessary emissions that impact regional air quality. If every household cut its electricity use by just 2.5%, it would result in more than \$10 million in utility bill savings and the creation of 152 local jobs, as that money could be spent at area restaurants, stores, entertainment venues, education, charities and more.



Green Initiatives in this report are categorized as:

- **Community:** Outreach activities that enable MLGW to promote messages, services and programs briefly to visitors at public sites and events.
- **Conservation, Energy Efficiency and Demand Response:** Programs and services that encourage changes in behavior, equipment, appliances, and building materials to reduce consumption of electricity, natural gas and water.
 - **Conservation:** Behavior or action that results in less energy being consumed, often through no-cost or low-cost methods. Examples: adjusting thermostat setting; turning off electronics after use; closing exterior doors tightly.
 - **Energy Efficiency:** Purchase decision where the new item uses less energy than the item replaced. Examples: replacing your air conditioner; buying a new refrigerator (but only if the old one is removed from the home); adding insulation.
 - **Demand Response**, also known as Load Shifting: Action that results in changing the time during which energy is consumed, often without changing the total amount of energy consumed. Examples: doing laundry on weekends instead of weekday afternoons; postponing dishwasher run time until after 8:00pm; participating in TVA demand response events triggered by periods of high electric use or high electric cost.
- **Education:** Activities that enable MLGW to educate current and future customers about the efficient use of energy and water.
- **Electric Vehicles:** Activities that promote the use of electricity as a vehicle fuel, while also enabling analysis of electric system impact among early adopters.
- **New Construction:** Activities that promote the adoption of green building practices so newly constructed homes and businesses use less energy and water, yielding a smaller environmental footprint.
- **Renewable Energy:** Electric generation from renewable resources—including solar, wind and biogas—which have little or no adverse environmental impact.
- **Self-Service:** Applications available at www.mlgw.com that enable customers to conduct business with MLGW at their convenience, 24/7.
- **MLGW Green Workplace:** Internal initiatives that help MLGW manage energy needs at its facilities, reduce waste and utilize alternative fuel vehicles to control operating costs, which helps delay the need for rate increases.

Many of these activities positively impact the local economy through increased household discretionary income, increased business profitability and increased business opportunities for companies that install energy-efficient equipment, perform building envelope upgrades and install renewable generation systems. Actions also will slow local peak electric demand, helping TVA control operating expenses and thereby controlling retail electric rates.

MLGW is delighted that this report addresses an ever-expanding scope of customer programs and initiatives as the utility, the energy industry, customers and the community increase their focus on green issues. Whether your definition of “green” is saving money, protecting the environment or improving operational performance of your home or business, MLGW has at least one program or service that can assist! **We invite you to join us, your neighbors and local businesses and organizations to “go green.”**

COMMUNITY

Community Conservation Days

During 2011, MLGW hosted monthly events at libraries, museums, colleges, community centers and MLGW Community Offices where customers were given free energy conservation kits and tips on saving energy. More than 14,000 conservation kits were distributed in 2011. Each kit contains a compact fluorescent light bulb, outlet switch covers and faucet aerator.

In 2012, the conservation days will be held in different locations around the county with a goal of reaching a greater number of customers in even more diverse locations.

MLGW at Community Events

MLGW employees staffed exhibits at more than 70 community events in 2011, providing information on energy conservation, emergency preparedness and MLGW services and programs. These events ranged from 10 days at Delta Fair to a Memphis Redbirds game where fans were given compact fluorescent light bulbs (CFL). The CFL giveaway was so popular that Entertainment and Sports Programming Network (ESPN) included it in their list of the year's best publicity events in minor league baseball.

In addition, MLGW hosted two community events, Neighborhood Leaders Conference and Business of Service Conference, geared toward educating grassroots community leaders. These events featured workshops educating attendees on topics such as: energy conservation, utility safety, emergency preparedness, CPR, community gardening, starting farmers' markets, and using MLGW self-service and electronic tools.



MLGW employee Alice Snell greets customers at a 2011 Community Conservation Day event. The lighting display helps customers visualize the energy savings from compact fluorescent bulbs, which use 75% less electricity than traditional incandescent bulbs.



A customer visits the MLGW booth to spin the thermostat wheel, winning a prize if it lands on the recommended setting (78 degrees during cooling season and 68 degrees during heating season.)

CONSERVATION, ENERGY EFFICIENCY AND DEMAND RESPONSE

Energy Right Solutions for Business

Energy Right Solutions for Business (ERSB) debuted in April 2011, replacing the Commercial Efficiency Advice and Incentive program. ERSB provides standard rebates and custom incentives to qualified MLGW customers billed under General Power Rate schedules, as well as any customer billed under Manufacturing Service Rate schedules with an effective contract

demand of 5,000 kW or less. These incentives can help shorten project payback periods, while also delivering monthly utility bill savings and postponing the need for TVA to build new generation plants. Standard rebates are available for qualified interior lighting, HVAC, food service equipment and motor projects, while custom incentives are available for more comprehensive projects that deliver verifiable energy savings. Incentives are restricted to energy efficiency projects at existing facilities; new construction does not qualify.

In 2011, businesses and organizations submitted more than 80 project applications. Volume was heaviest in fourth quarter, after TVA doubled the effective incentive levels. Since improvements cannot begin until after TVA has approved a project, there is a natural lag in the implementation timeline, so many of these projects are being completed and receiving their incentives in 2012. Estimated incentive amounts, based on proposed projects thus far, range from under \$100 to over \$100,000—indicating that customers (and their contractors) realize the value of rebates, regardless of the amount.

For details, visit www.mlgw.com/businessenergyincentives. Customers also are encouraged to pursue other incentives, including: Federal tax incentives available for qualified facility improvements placed into service by 12/31/2013 and low-interest energy efficiency loans offered through a partnership with Pathway Lending, TVA, State of Tennessee and others.

Customers looking for a contractor can reference TVA's Trade Alley Network to find contractors familiar with the program. A database is accessible at <http://energyrightpartners.com/tradeally/jsp/Home.jsp?BrandKey=MEMPHIS>

Energy Right Solutions for Industry

Industrial customers with electric demand above 5,000 kW are eligible for similar incentives through TVA's Energy Right Solutions for Industry program.

EnerNOC Commercial Demand Response Program

Another offering to assist TVA in achieving its 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 kilowatt (kW) of electric load they reduce during demand response events called by TVA.

Phase 2 of the program was introduced in 2010, enabling more customers to participate. As of 3/11/2012, there are 102 MLGW customers participating, with 29 MW of load reduction capacity. Incentives paid to participants in 2011 exceeded \$417,000; program-to-date incentives paid surpassed \$921,000. Since TVA demand response events coincide with MLGW system peaks in all months but winter, MLGW saved on the wholesale power bill when customers responded to a TVA event—helping control the overall cost of electricity for everyone.

Participants include MLGW, manufacturers, bottling companies, churches, shopping malls, big box retailers, municipal wastewater plants and many Memphis City School locations.

Federal Energy Efficiency and Conservation Block Grant

Work continued in 2011 toward the goals of the Energy Efficiency and Conservation Block Grants (EECBG), funded through the American Recovery and Reinvestment Act. MLGW continued to administer projects and coordinate reporting with the City.

- Energy Efficiency Improvements for Homeowners—MLGW is providing energy audits, recommendations and funds to make the appropriate mix of weatherization, heating, cooling and water heating improvements, plus post-work inspections, for approximately 750 homes located in Memphis. As of 12/31/2011 over 600 homes have been completed, using a network of approved contractors. The rest of the homes will be completed in 2012.
- Programmable Thermostat Program—The program provides installation of up to two programmable thermostats to enable residential customers to automate HVAC system operation. The new thermostats have been programmed with MLGW-approved settings and the homeowners have received operational instructions. Through 2011, MLGW assisted over 810 homeowners and will complete this program in first quarter 2012.
- Commercial Energy Audits—Working with TVA's Comprehensive Services Program, MLGW has provided energy audits, lighting recommendations, steam trap surveys and ultrasonic leak detection for compressed air systems at commercial, industrial, institutional, and government facilities located in Memphis. The service helps identify energy-saving measures, which then enables customers to prioritize and budget for improvements. Seventy-seven customers have been assisted so far; with approximately 25 remaining customers to receive technical assistance in 2012.
- Renewable Power Generation—The Public Works Division is currently constructing a methane generation facility at the Stiles Wastewater Treatment Plant. The system will produce electricity by capturing the energy content in methane, a treatment byproduct. The project will be completed in 2012.



Before-and-after photos show the addition of blown cellulose insulation in unfloored attic areas of this Memphis home. The energy efficiency improvement was funded by the Energy Efficiency and Conservation Block Grant awarded to the City of Memphis and administered by MLGW.

In-Home Energy Evaluation

This TVA 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 was temporarily reduced to \$50 in 2011. The fee is refunded if improvements exceed that amount.
- 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-by-case basis to determine rebate eligibility.)
- More than 2,100 customers have received IHEE services as of 1/31/2012. Of those, 72% have completed qualified home energy improvements, valued at approximately \$7 million in total local investment.

To schedule an appointment, customers call CSG at 1-866-441-1430. Details also are available online at www.mlgw.com and at www.energyright.com/residential

Participating contractors who work in the Memphis area can be researched through TVA's Trade Ally Network at:

<http://energyrightpartners.com/tradeally/jsp/Home.jsp?BrandKey=MEMPHIS>

On Track

MLGW continued offering assistance to customers through the On Track program. Customers on limited income who have gotten behind on their utility bills attend training on energy conservation and budgeting. The program, which has over 400 customers enrolled, allows customers to get "on track" with their utility payments. More information is available at: <http://www.mlgw.com/residential/ontrack>

Project MAX

Conceived in 1984, Project MAX is one of MLGW's longest-running energy conservation initiatives. Through Project MAX, MLGW employees and other volunteers weatherize homes and build wheelchair ramps for elderly and low-income customers.

In 2011 during Spring Kick-Off and October Energy Month, Project MAX volunteers weatherized 20 homes, which included the necessary combination of caulking windows, applying weatherstripping to exterior doors, replacing furnace filters and installing gasket covers behind electrical outlets on exterior walls, among other improvements.

In addition, Project MAX team members distributed 240 energy conservation kits while visiting with customers and giving tips on how to conserve energy in their homes.

While not conservation related, volunteers also constructed nine wheelchair ramps in 2011.

Rental Housing Energy Efficiency Ordinance

The City of Memphis ordinance allows MLGW to inspect identified high-usage rental properties for a number of energy-related issues. These energy wasters 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:

- MLGW staff has performed initial and post-work inspections on over 550 properties since 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://www.mlgw.com/residential/importantnumbers>

Smart Grid Demonstration

Work accelerated on the residential Smart Grid Demonstration, a three-year project that utilizes a combination of technology and information to:

- Empower customers to control utility use
- Improve system reliability and operability
- Provide improved safety and security
- Enhance environmental sustainability

MLGW completed the last of nearly 1,000 smart meter installations in first quarter 2011.

Through the cellular modems, MLGW collected nightly meter readings, which were imported into CIS along with 15-minute interval data. After several months of parallel operation, MLGW stopped manually reading the meters and began using the automated readings for billing. (The same billing exceptions processes are used to monitor for unusual values.)

In Summer 2011, MLGW agreed to participate in a national field trial of a new smart meter communications modem.

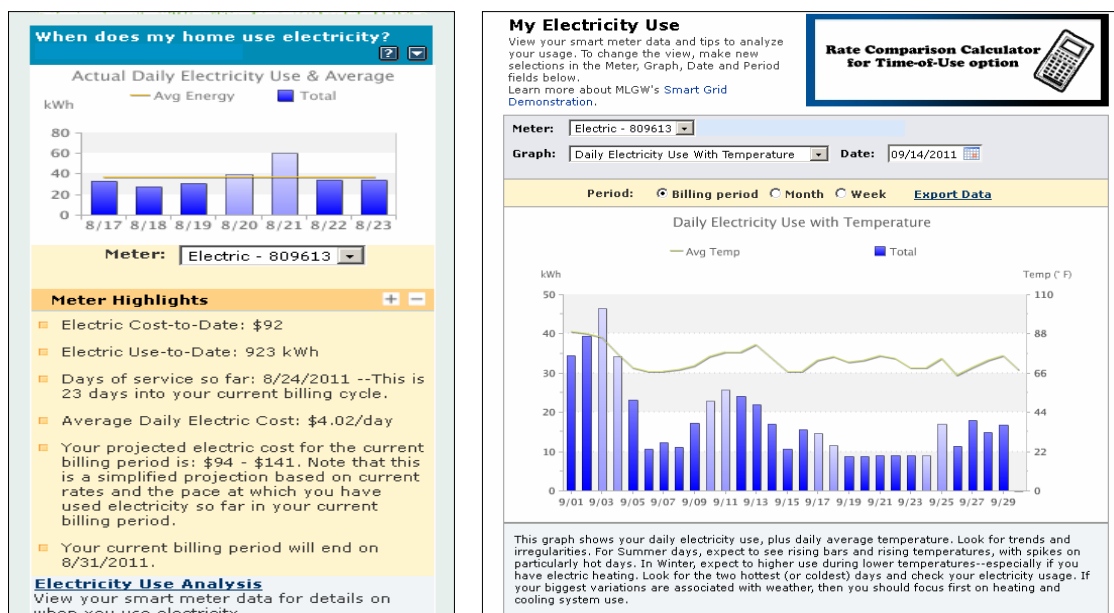
MLGW received 220 additional smart meters, at no cost. Meters were delivered in mid-January 2012 for installation to the homes of volunteers.

The meter data is accessible to customers via login at My Account through a variety of graphs and Meter Highlights available only to customers with electric smart meters. In addition, MLGW began



One of the electric smart meters installed at nearly 1,000 homes. Note that smart meters are digital meters with extra features: internal programming to time-stamp use in 15-minute intervals and a cellular modem to communicate with MLGW. Smart meters should not be confused with digital meters, which only have the digital screen. Digital meters are replacing the traditional dial-style meters, which are no longer manufactured.

distributing 500 In Home Displays in 2011. The In Home Displays have proven to be a challenging technology, with customers experiencing a range of issues but MLGW and the vendor are committed to achieving operational stability for the energy awareness devices. MLGW is using these tools to encourage customers to partake of energy conservation and demand response/load shifting benefits by learning more about their homes' electricity use.



Smart meter web tools debuted in 2011, enabling Smart Grid Demonstration participants to better understand when their homes use electricity. The Meter Highlights (left) provide a daily update on usage and projections. The graphs offer insight based on temperature and other factors. Note how this customer's September consumption generally rose with higher temperatures—a universal driver of electricity use for air conditioning

About 12% of Smart Grid Demonstration participants enrolled in MLGW's optional Time-of-Use rate pilot, where electricity costs not only vary seasonally (as they do for all customers) but also by blocks of time. The one-year pilot began 10/1/2011 and will conclude 9/30/2012. TOU participants are billed for electricity during the calendar month, while natural gas and water consumption remained on existing billing cycles, which also derive the billing date.

Period	Time-of-Use Rate Pilot Days and Hours	Price per kWh, before FCA
Summer On-Peak	June 1-Sept 30, weekdays, noon-8pm	\$0.13164
Summer Off-Peak	June 1-Sept 30, weekends and all other hours	\$0.04490
Winter On-Peak	Dec 1-March 31, weekdays, 4-10am	\$0.07626
Winter Off-Peak	Dec 1- March 31, weekends and all other hours	\$0.04490
Transition	Oct 1-Nov 30 and April 1-May 30, all hours	\$0.04490

Smart Grid Demonstration participants receive regular updates via email and/or printed materials. In addition, TOU participants receive information to help them minimize electricity use during higher-cost, on-peak periods.

New features to be completed in 2012 included: full automation of outage notification from meter into MLGW's outage management system (CARES) and sending monthly energy conservation messages through the In Home Displays.

Learn more about the Smart Grid Demonstration at www.mlgw.com/smartgrid The research portion of the demonstration will conclude in 2012, followed by analysis of impact and benefits.

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 then 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 for each group and interval meters were installed to provide TVA with time-based consumption data.

In Fall 2011, MLGW concluded the program by completing the remaining measures for each research group so all participants ultimately received weatherization improvements and up to two high-efficiency window-unit air conditioners. There are no plans to expand this pilot.

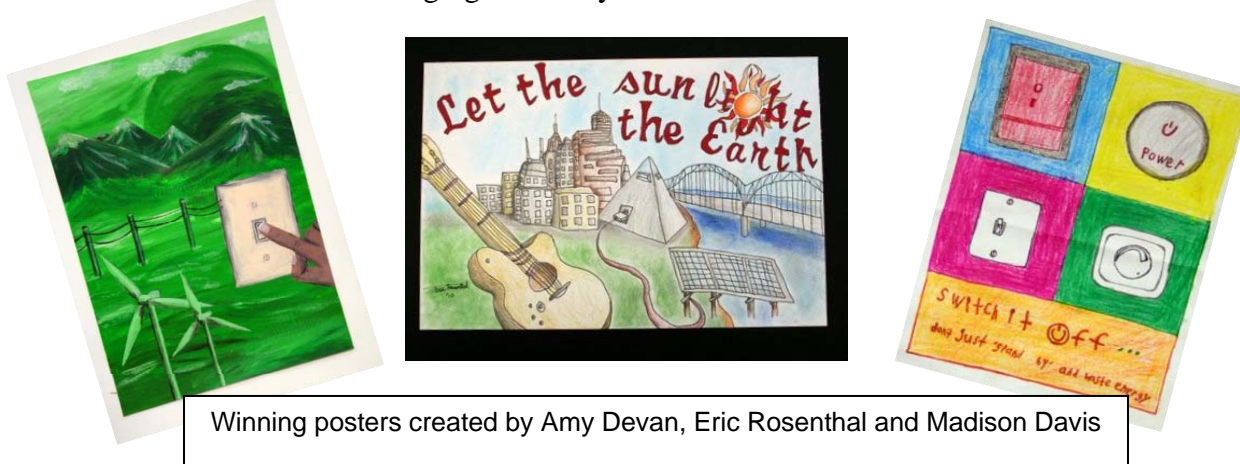
EDUCATION

Energy IQ Traveling Lab

MLGW continued its relationship with the Children's Museum of Memphis through the Energy IQ Traveling Lab targeting children in grades 2-5. The Energy IQ Traveling Lab includes a curriculum guide and one week's activities related to saving energy. The free lab is available for loan to teachers in the Memphis City Schools, Shelby County Schools and any other school located in Shelby County. Details at <http://cmom.com/?q=learninglabs>

Energy Month Awareness Poster Contest

In 2011, MLGW sponsored the third annual Energy Awareness Month Poster Contest. The theme of the contest was "Saving Energy." School-age residents of Shelby County—including public, private, parochial, charter and home schools—were eligible to submit original entries. MLGW received 87 entries ranging from crayon abstracts to detailed works of art.



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.

MLGW conducted 61 workshops in 2011, with a total of 1,115 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.
- Find the list of scheduled events for 2012 here: <http://www.mlgw.com/residential/energysmartmemphis>



Instructor Charles Echols discusses the benefits of proper weatherstripping around exterior doors during an EnergySmart Memphis workshop. The class uses props and hands-on training to encourage participants to make energy-saving changes at home to save money.

Green Campus Network

The University of Memphis was among six higher learning institutions selected by TVA to participate The Green Campus Network (GCN) pilot, a classroom-to-workplace program that involves students, faculty, administrators and campus support staff in cutting energy use on college campuses, incorporating energy efficiency into curricula, encouraging students to pursue careers in sustainability after graduation and generally increasing awareness of energy efficiency. Green Campus Network is administered by the Alliance to Save Energy during the 2011-2012 academic year. In addition to the University of Memphis, participating campuses are: Calhoun Community College, Decatur, AL; University of Alabama in Huntsville, Huntsville, AL; University of Mississippi, Oxford, MS; University of the South, Sewanee, TN; and Western Kentucky University, Bowling Green, KY.

TVA funding covers program implementation and wages for paid student interns, who develop and execute on-campus energy efficiency projects and campaigns, with support and guidance from the Alliance. Each campus team of four interns works closely with a “lead stakeholder”—a member of the college staff or faculty—and with a “stakeholder committee” comprised of

individuals such as campus energy managers, members of campus sustainability committees and housing, facilities and dining operations staff, as well as with students, professors and other academic officials. This collaboration helps identify projects and areas where energy-efficiency education can be incorporated into college curricula across different subject areas and majors.

Green Schools Program

Several Memphis City and Shelby County schools participated in the Alliance to Save Energy's (ASE) Green Schools Program to empower students to make a difference in the way their schools use energy. According to ASE, energy costs are an enormous expense for U.S. schools – approximately \$6 billion each year. In many schools, energy costs are second only to personnel costs, exceeding the cost of textbooks and supplies.

Green Schools students are educated about energy and the importance of energy efficiency, as well as trained to use a diagnostic toolkit that assesses the energy usage in their school. The school building becomes a learning lab for students to apply science, math and even language arts to solve a global problem. Through basic changes in operations, maintenance and individual behavior, schools participating in the Green Schools Program have achieved varying reductions. In addition, the Green Schools Program encourages and equips students to promote the lessons of energy efficiency in their homes and communities.

Through this initiative, local participating schools have saved more than 1 million kilowatt-hours of electricity and more than \$100,000 in utility costs!

Locally, all participating schools created student Green Teams that meet regularly. Students were involved in the building audits to identify energy efficiency opportunities and then created campaigns and materials to communicate energy efficiency measures to students, facility and staff. Some schools also extended their awareness efforts into the surrounding communities.

The Green Schools Program started in 1996 and currently is active in California, New York, New Jersey, Pennsylvania, Tennessee, Kentucky, Alabama, Mississippi, Florida and Washington, D.C.

Green Schools Program August 2009-July 2011 Results

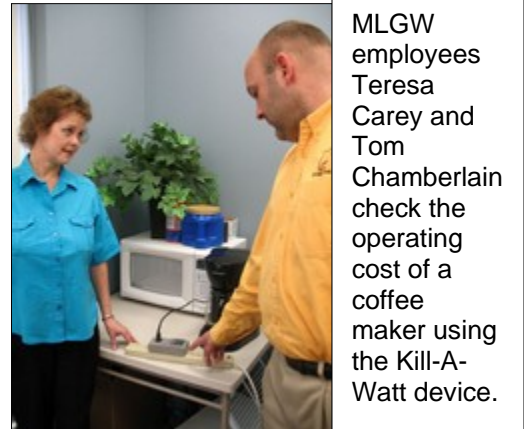
Memphis City Schools	Shelby County Schools
Alcy Elementary	Bon Lin Elementary
Brewster Elementary	Collierville High
Carnes Elementary	Millington High
Douglass High	Riverdale Elementary
Consumption Savings: 638,361 kWh	Consumption Savings: 411,172 kWh
Dollar Savings: \$60,350	Dollar Savings: \$43,465

Here's How Videos

MLGW has produced a series of “Here’s How” videos that show customers how to implement energy-saving improvements in their homes. The videos, which are available in English and Spanish, can be viewed at www.mlgw.com and at MLGW’s YouTube channel, www.youtube.com/mlgwwaystosave

Kill-a-Watt Checkout Program

MLGW partnered with the Memphis Public Library system to lend Kill-A-Watt electricity measurement devices. Any resident with a valid library card can check out one of these devices for a three-week period—just like a book. Borrowers then go home and measure the energy use of their appliances. By learning more about individual appliance electricity requirements, customers will be able to prioritize their conservation efforts to focus on the largest users first.



MLGW employees Teresa Carey and Tom Chamberlain check the operating cost of a coffee maker using the Kill-A-Watt device.

MLGW Water Pumping Station Tours

MLGW continues to host school groups at the Sheahan Pumping Station to demonstrate how water goes from the sky to faucet and encourage protection of this valuable natural resource. About 40 groups toured the facility in 2011.

ELECTRIC VEHICLES

As part of its commitment to green and renewable energy initiatives, MLGW endorses Electric Vehicle (EV) and Electric Vehicle Supply Equipment (EVSE) initiatives. Multiple projects associated with MLGW’s Plug-In Readiness strategy were launched in 2011, supporting use of electricity as a transportation fuel. These activities set a foundation for continued success in infrastructure development and technology transfer to MLGW and the communities we serve.

The EV Project

MLGW, TVA, City of Memphis and Shelby County lobbied heavily for Memphis to be included in the Department of Energy’s ECOTality EV Project, which agreed and launched its local initiative in February 2011. Benefits include free charging stations for residential and commercial buyers of Nissan LEAF electric vehicles; 40-60 public-access charging stations for business, organizations and municipal host locations, and analysis of charging habits to help utilities determine the impact of EVs on the nation’s electric grid. For details, visit: <http://mlgw.com/evproject>



MLGW employee Rick Bowker (left) discusses electric vehicles with a student, while Mike Hamrick (background) encourages attendees to complete surveys in exchange for a free energy kit during the University of Memphis’ Tiger Blue Goes Green event.

MLGW plans to support all customers by providing cost-effective options for EVSE installations and maintenance. Four residential Nissan LEAF owners are among the Smart Grid Demonstration participants, enabling MLGW and these customers to study EV charging habits to explore Time-of-Use rate opportunities for lower-cost recharging.

In addition to charging stations for its EV fleet vehicles, MLGW selected locations for 2012 installation of public-access charging stations for use by customers, employees and travelers looking to “charge-up” when driving through Memphis.

Distribution Impact Analysis

MLGW began working with TVA and the Electric Power Research Institute (EPRI) to study how EVs would affect the power distribution network in Shelby County and TVA’s service area. MLGW reviewed projected EV adoption information to identify two circuits to analyze the anticipated consumption effects from EVs. Data modeling results are to be transferred to MLGW with project completion scheduled for Summer 2012.

Non-Road EVs

TVA and EPRI partnered with MLGW to perform a market assessment of non-road electric technologies in our service territory. These technologies include forklifts, airport tugs, standby refrigeration units and truck-stop service electrification. Additionally, models will be developed to help evaluate the environmental and economic impacts of non-road electrification.

TVA Smart Station at Shelby Farms Park

MLGW worked with TVA and EPRI to identify a high-exposure location for West Tennessee’s first SMART Station, an electric vehicle charging station with solar power generation capabilities. Shelby Farms Park agreed to locate the SMART station near their Visitor’s Center off Walnut Grove Road. The station, to be built in 2012, will include 10 EV charging spaces and 20 kW of solar generation. Additionally, Shelby Farms will become a Generation Partners participant, selling the station’s solar power at a premium to generate revenue while also buying an equal quantity through Green Power Switch so users can recharge with green power.

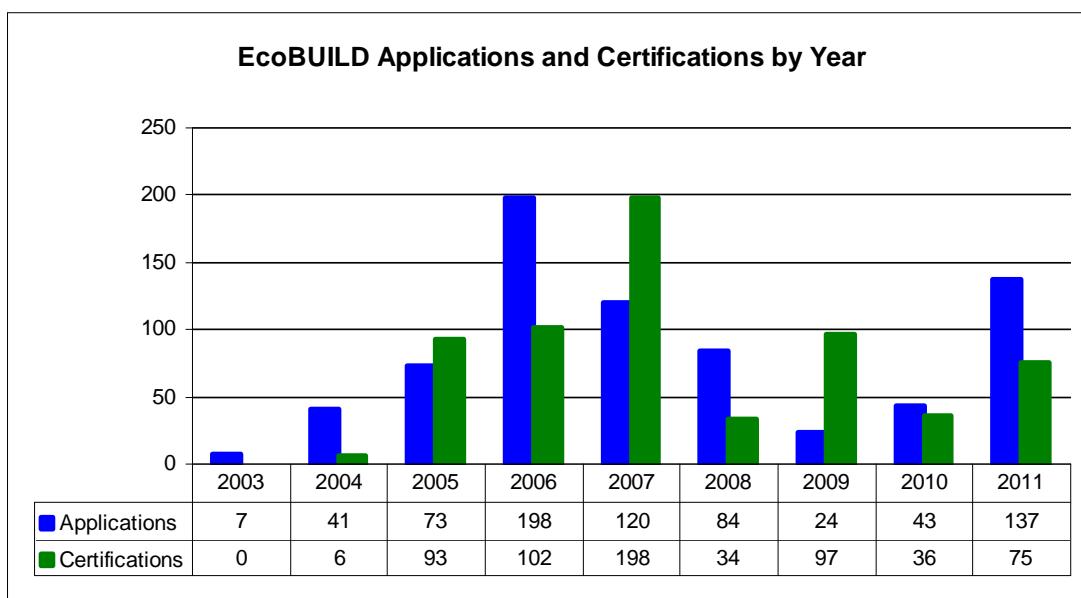
Plug-In-Memphis Website

MLGW’s Plug-In Memphis webpage provides updated information to help build a market for electric vehicles. The webpage, <http://www.mlgw.com/about/pluginmemphis>, includes links to industry and community resources, including <http://www.pluginmemphis.org>.

NEW CONSTRUCTION

EcoBUILD Green Building Program

Despite the faltering local housing industry, EcoBUILD attained a 19% share of new housing permits in 2011, nearly double the previously high 10% share in 2008. Much of this growth was driven by federally-funded or grant-funded projects, including MHA’s Legends Park West and McKinley Park redevelopments, as well as Habitat for Humanity’s Trinity Park subdivision.



As of 12/31/2011, EcoBUILD has certified 641 homes, representing 817,002 square feet of energy-efficient new housing. It is estimated¹ that residents of these EcoBUILD homes, on an annual basis, collectively:

- Reduced natural gas use by 326,800 hundred cubic feet (Ccf)
- Reduced electricity use by 2,859,507 kilowatt-hours (kWh), which is equivalent to the annual electricity use of 190 average households in Shelby County
- Saved \$252,612 in electricity costs
- Saved \$290,090 in natural gas costs
- Avoided 3.7 tons of nitrogen oxides (NO_x) emissions
- Avoided 8.0 tons of sulfur dioxide (SO₂) emissions
- Avoided 2,346 tons of carbon dioxide (CO₂) emissions



MLGW / USGBC Leadership in Energy and Environmental Design (LEED)

To date, three local commercial building projects have received awards funded by a \$75,000 grant from MLGW to the Memphis Chapter for the U.S. Green Building Council (USGBC). In 2011, the newly completed Court Annex 2 facility received \$15,000 for construction of the five-story, mixed-use building, which achieved LEED gold-level certification. The building filled the void in Court Square Center created by the 2006 fire that leveled the existing structure. In addition to many energy, water and environmental measures, the project was able to divert 99% of the demolition rubble and construction remnants from landfills. Details about the project were published in The Commercial Appeal,

<http://www.commercialappeal.com/news/2010/dec/07/greenest/>

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 2011. Estimates assume all 641 EcoBUILD-certified homes were occupied January-December 2011.

The one-time grant from MLGW to USGBC-MEM provides incentive money to reward commercial new construction projects that meet LEED certification, with additional points in energy and water categories. Since most new construction projects can take years to complete and then certify through LEED, USGBC-MEM expects to see a steady increase in applications as several construction projects are completed.

Sustainable Shelby

With the Spring 2011 opening of the Memphis and Shelby County Office of Sustainability, several new community collaborations began.

- MLGW met regularly with Sustainable Shelby staff to discuss available programs, new ideas and ways to improve community awareness and participation.
- MLGW EcoBUILD staff participated in the agency's Green Building Codes Committee to explore potential upgrades to residential and commercial new construction codes to drive the adoption of more sustainable building practices. The committee is comprised of area architects, engineers, builders, an MLGW representative and government officials. The group will submit its recommendations in Spring 2012.
- MLGW participated in business forums to address sustainability needs and obstacles.
- MLGW teamed with Sustainable Shelby to participate in a multi-city SunShot Initiative grant application coordinated by UT's Tennessee Solar Institute. The application was one of 22 selected by the Department of Energy to receive funding for a study of the non-hardware costs and requirements of solar installations to help transform the market.

Details at:

http://solar.tennessee.edu/images/docs/press_releases/tsi_doe_award_120511.pdf

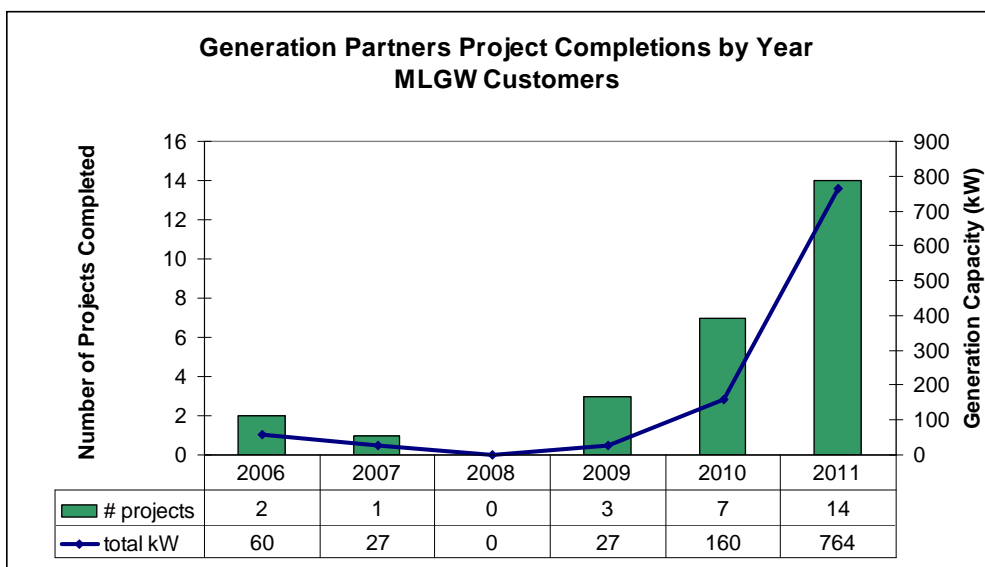
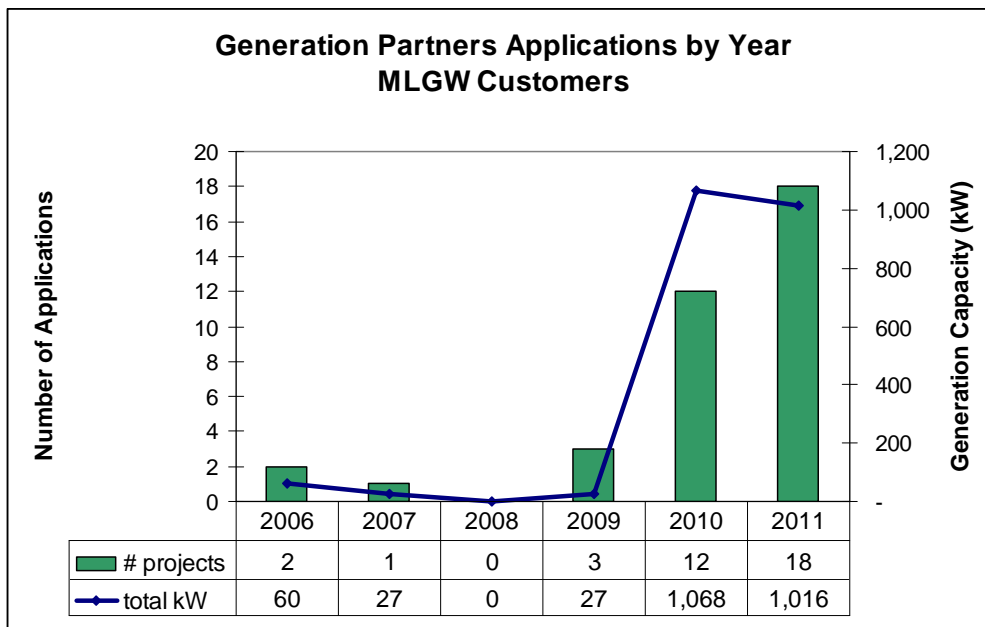
RENEWABLE ENERGY

Generation Partners

Renewable generation was a hot topic in 2011—with a 50% increase in applications and a 100% increase in project completions. Activity was attributed to ongoing interest in TVA's Generation Partners program, availability of a second round of grant funding from the Tennessee Solar Institute and continued Federal tax credits equal to 30% of project cost.

Through Generation Partners, customers sell 100% of their renewable power to TVA, with generation credits applied to their monthly MLGW bill. The current incentive for solar generation is a premium of \$0.12 above 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. (The premium is \$0.03 per kWh for other approved renewable resources.) Information, applications and other Generation Partners details are available at www.mlgw.com/greenpower, toward the bottom of the webpage.

Fourteen new solar projects were completed in 2011, adding 764 kW of solar, while another nine projects—representing 2,246 kW—were approved but remain in various levels of planning or construction. When completed, Shelby County will have a combined 3,406 kW of solar generation capacity, creating enough renewable power to meet the annual electric needs of approximately 330 average households served by MLGW. This is significant growth since 2006 when the first two solar installations were completed, totaling 60 kW of generation capacity.



Renewable Standard Offer

In September 2011, TVA reduced the maximum system size eligible under Generation Partners, from 200 kW to 50 kW.

Projects above 50 kW are eligible for the Renewable Standard Offer, which allows customers—as well as third-party generators/developers—to install and sell their generation to TVA under long-term contracts at set prices. For this program, the customer submits their application to and gets approval from TVA, with MLGW involved only in the interconnection. TVA reads the generation meter remotely and pays the incentive directly to the generator.

Two Renewable Standard Offer projects were completed in Shelby County in 2011, representing 260 kW of additional solar generation. Several projects are in the application and construction stages. Information is available at <http://tva.com/renewablestandardoffer/>

Green Power Switch

MLGW participated in two TVA marketing initiatives to spur Green Power Switch participation in 2011. A Spring direct mail campaign targeting households and small businesses recruited 203 new participants. In November, MLGW hosted a Forum co-sponsored by TVA and the Tennessee Renewable Energy and Economic Development Council (TREEDC). More than 90 people attended to learn about Green Power Switch, Generation Partners, renewables as driver of economic development, green fleet management practices, alternative fuels and related topics.

These activities helped spur a 27% increase in the number of local Green Power Switch participants, ending the year with 1,179 MLGW customers voluntarily paying extra to fund renewable generation. These customers sponsored 3,814 blocks of green power, which equals 6,865,200 kWh—enough to meet the annual electricity needs of 458 average Shelby County households. The environmental impact of this renewable generation commitment is equivalent to: recycling 29,219,094 aluminum cans, or planting 1,907 acres of trees, or recycling 1,684 tons of newspaper, or removing 636 cars from the roads for a full year.

In scientific terms, MLGW's Green Power Switch customers were responsible for avoided generation emissions equal to: 5,136 tons of carbon dioxide (CO₂), 34 tons of nitrogen oxides (NO_x) and 13 tons of sulfur dioxide (SO₂) in 2011.

The following businesses participate in Green Power Switch and are recognized on MLGW's and TVA's website for their commitment to renewable power:

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



Green Power Switch information is available at: <http://www.mlgw.com/greenpower> TVA has a great calculator that illustrates Green Power Switch purchases as a percentage of your household electricity use, as well as showing the environmental impact of your support. Check it out at: <http://www.tva.com/greenpowerswitch/calculator/>

SELF-SERVICE

MLGW iPhone Application

MLGW began offering customers a free iPhone application for download in April 2011. The app allows MLGW customers to access a variety of utility-related information, including basic energy tips, outage status and a new mobile-friendly outage map. The app is available for free download in the Apple iTunes app store at www.apple.com or through iPhone, iPod or iPad devices. One of the app's most useful features is the ability for customers to check the status of an outage at their address. Other features include bill due date and amount, payment arrangements, important phone numbers and payment locations.

My Account

More than 60,800 new UserIDs were created for My Account access in 2011, bringing the total to 279,355—an increase of 28%. (MLGW estimates that approximately 30% of UserIDs represent inactive utility accounts.)

More than 1.5 million residential My Account sessions and 46,000 non-residential sessions took place in 2011, up 15% from last year. On average, 5,000 new users registered monthly, while return users visited at an average rate of 59,000 per month. More than 7.8 million My Account webpages were viewed by customers last year, providing insight into changes in consumption, costs and environmental impact.

TVA continued its free energy kit promotion for residential My Accounts users who completed the Home Profile and My Appliances question sets, which 3,184 customers took advantage of last year (compared to 9,565 in 2010). Nearly 10% of MLGW's residential customer base has received an energy kit through this channel over the last four years.



Customers without Internet access can obtain a printed version of the do-it-yourself energy audit questionnaire at MLGW Community Offices and either complete it while waiting for assistance or fill out the form at home. Upon return of a completed form, TVA's vendor prepares a customized energy report and sends a free TVA energy kit.

Paperless eBilling Option

Enrollment in MLGW's optional eBilling program continued a downward trend, falling 4% in 2010 to end at 32,683 accounts. The trend is attributed to a 2009 customer service enhancement that removed the eBilling requirement for customers making electronic payments.

Customers who enroll in eBilling forego printed bills, which reduces MLGW's paper and postage costs while also saving customers time, increasing convenience and reducing solid waste. Based on estimated billing costs of \$5.40 per account per year, eBilling participants

helped MLGW save a projected \$176,488 in 2011, eliminating 1.2 million sheets of paper and 784,000 envelopes used for bill production.

Trade Ally Network

Customers can search for contractors associated with TVA's residential and commercial programs through the TVA Trade Ally Network website. Trade allies can apply online and MLGW customers can search for local and regional resources at:

<http://energyrightpartners.com/tradeally/jsp/Home.jsp?BrandKey=MEMPHIS>

MLGW GREEN WORKPLACE

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.

Although the purchase of bio-diesel-fueled vehicles can account for 50% of these mandates, MLGW has discontinued the use of bio-diesel fuels. The additional cost and storage tank issues made bio-diesel financially impractical for MLGW's fleet.

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.

Currently the MLGW fleet includes 31 bi-fuel compressed natural gas (CNG) vehicles, 198 E-85 (Ethanol) vehicles, 27 hybrid electric vehicles and 4 fully electric sedans. In the 2012 budget, MLGW plans to purchase a plug-in hybrid electric vehicle (PHEV) bucket truck and 20 additional CNG vehicles. Also during 2012, MLGW will convert three gasoline vehicles to CNG for a total of 54 CNG vehicles.

Due to the fact CNG vehicles provide a low-cost, clean-burning alternative fuel, automotive manufacturers and aftermarket suppliers are once again producing CNG vehicles and retrofit kits. In 2012, MLGW will start the process to build an additional compressed natural gas fueling station and convert its existing compressed natural gas fueling station to allow for public access.

As a participant in the federally- and privately-funded EV Project with ECotality, MLGW will install four electric vehicle charging stations for its business operations and nine public-access charging stations on MLGW property.

Energy Management within MLGW

Energy management and resource conservation opportunities within MLGW abound. By focusing on internal operations, the company is implementing projects that control 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. The Building Construction & Maintenance and Facilities Engineering areas work together to implement the company's Energy Management strategies.

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. In 2011, approximately \$52,815 of savings was identified in anomalies in energy consumption data.

Master Planning

The Facilities Master Plan is developed on an annual basis to provide a budget roadmap of capital improvements to MLGW's facilities. Based on a 10-year horizon, the plan details existing facilities, new facility developments and equipment upgrade installations for more than 1.9 million square feet of MLGW building space. The plan also provides profile and characteristic data for each facility, including age, type of structure, equipment and systems.

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. The Millington Community Office location is planned for the next energy audit. MLGW submitted 13 lighting retrofit and HVAC projects through TVA's Energy Right Business Solutions Program. These projects have potential savings of \$14,000.

Demand Response

The Administration and Netters facilities are enrolled in the TVA-EnerNOC Demand Response program. A total of 774 kW was shed in 2011 during TVA-called demand response events. This participation generated revenue of nearly \$2,000, and energy demand savings of approximately \$8,557.

Three additional facilities (Electric & Systems Operations, MLGW University and North Service Center Building #8) are expected to enroll in the program in 2012.

Energy Efficiency Equipment Upgrades and Operations

Just like each of our customers, MLGW has facilities to operate and utility bills to pay. Numerous energy efficiency improvements to lighting and HVAC systems were completed in 2011, with anticipated annual savings of \$40,000 through lower energy consumption.

In 2011, the following lighting efficiency projects were completed:

- Allen Water Pumping Station Main Building: T-8 lamp replacement with added motion detecting sensors—Savings: \$2,301 per year
- Allen Water Pumping Station's Filter Room: T-8 lamp replacement with added motion detecting sensors—Savings: \$1,166 per year
- Allen Water Pumping Station's Upper Level: Replaced inefficient 189 W incandescent lamps with energy efficient 23 W fluorescent lamps and motion detecting sensors—Savings: \$5,797 per year
- Allen Water Pumping Station's Pump Room: Replaced inefficient 327 W incandescent lamps with energy efficient 105 W fluorescent lamps and motion detecting sensors—Savings: \$5,797 per year

- Central Shops Body Shop: Replaced inefficient 2-lamp slim line fixtures with energy efficient T-5 fixtures—Savings: \$3,889 per year
- Central Shops Machine Shop: Replaced inefficient 2-tube 90 W fluorescent fixtures with energy efficient T-5 fixtures—Savings: \$241 per year
- Central Shops Sheet Metal Shop: Replaced inefficient 100 W Metal Halide fixtures with energy efficient T-5 fixtures—Savings: \$701 per year
- Netters Business Operations Center, Lobbies: Installed wireless occupancy and day light harvesting sensors to control the recessed lamps. Savings: \$4,495 and 166,956 lbs CO₂e per year.

In 2011, the following HVAC efficiency projects were completed:

- Electric and Systems Operations: Replaced the old Liebert air conditioning units which serve SCADA and the computer room. Replaced all of the variable air volume (VAV) boxes in the facility for more efficient operation. Potential Savings—15% reduction in energy usage due to better air distribution and more efficient equipment, saving approximately \$10,200 per year.
- Hickory Hill Service Center : Replaced all old exhaust fans and ventilators with more efficient direct-drive motors and thermostat-controlled operation. Potential Savings—5% reduction in energy usage and a significant reduction in maintenance cost, approximately \$3,100 per year.
- North Service Center, Building #8 : Replaced inefficient exhaust fans. Potential Savings—5% reduction in energy usage due to more efficient fan motors, approximately \$2,000 per year.

MLGW regularly publishes case studies about internal energy management efforts in **Energy Edge**, the monthly electronic newsletter emailed to subscribing businesses and organizations. (See www.mlgw.com/energyedge) Through these examples, MLGW shares information on energy-efficient technology and savings, while also highlighting efforts to reduce MLGW's operating costs, which help keep utility rates low.

Building Automation and Insight:

- **Building Automation:** Insight into how facilities use energy can help identify efficiency opportunities. At MLGW, control systems have been installed to automate heating, ventilation and air conditioning (HVAC) systems in order to identify and resolve operations issues and reduce energy usage. Building automated systems (BAS) are installed at the following buildings: Administration Building Garage, Netters Business Operations Center, North Service Center, Building #8, Electric & Systems Operations, MLGW University, Water Laboratory, North Community Office (air handlers). In 2011, budget requests were made to expand the BAS equipment in the Administration Building and Beale Street Landing Garage.
- **Insight:** An agreement with EnerNOC, Inc. was initiated to utilize their EfficiencySmart Insight services at MLGW's top energy spend facilities—the Administration Building and Netters Business Operations Center. The Insight Service will review the energy profiles of facilities and make operational recommendations for reducing energy.
- **Insight and Smart Metering:** Facilities Engineering utilizes MLGW's Meter Intelligence web service to analyze load data and make operational decisions at various MLGW facilities. As of 2011, eight employee-occupied facilities subscribe to the service

to identify energy use anomalies and opportunities for improved operations. Other locations will be added in 2012.

Energy Star Partner

MLGW is an Energy Star (ES) Partner that provides resources to employees and customers about energy-efficient products and resources 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

Resource and energy conservation are achieved by managing materials more efficiently. MLGW makes internal efforts to wisely use its resources through sustainable principles and employee awareness. The Building Services & Grounds and Facilities Engineering areas work together to implement MLGW's internal initiatives, including:

Recycling

- **Paper** is recycled by International Paper. Recycling containers are located at all facilities. In 2011, MLGW's employees recycled 173,426 pounds of paper.
- **Plastic and Aluminum Beverage** containers are recycled by International Paper. Recycling bins are located in most facilities. In 2011, placements were expanded to seven additional facilities. The reporting process was improved by capturing the amount of recycled material as line items on the vendor's Supplier Report. As a result of the program expansion and improved reporting, 550 pounds of beverage containers were recycled by MLGW's employees.
- **Cell Phone and Rechargeable Battery Recycling**—40 pounds were recycled in 2011. Recycling receptacles are available at Administration, Netters and Electric & Systems Operations buildings. The Rechargeable Battery Coalition recycles these items at no charge.
- **Printer Ink and Toner Cartridge Recycling**—569 cartridges were recycled in 2011. Employees can recycle cartridges at most facilities. OfficeMax pickups and recycles the cartridges at no additional charge.

Recycling paper and beverage containers at MLGW produced an avoided 249.7 metric tons of CO₂e. This is equivalent to the green house gas emitted by 49 passenger vehicles, or the amount of carbon sequestered by 6,403 tree seedlings grown for 10 years.

Green & Sustainable Grounds

Erosion Control: MLGW maintains its properties' grounds through care and sustainable practices. Erosion control prevents the development of ruts and washed-out areas on the grounds that are typically caused by precipitation, wind or vehicles. Eroded areas are refilled with reused soil, and silt fences are installed on banks or berms before trees are planted. These preventive measures insure that company's properties are well maintained.

Trade-a-Tree Program: When trees/shrubs are deemed hazardous to MLGW's overhead power lines, they are removed. Dead or diseased trees are also removed from MLGW's properties. Through the program, the plant material is replaced with low-height varieties such as Bradford

Pear or Crepe Myrtle trees, Foster Holly Photina, Weeping Privet or Japanese Maple shrubs. In 2011, 21 trees/shrubs were replaced by the program.

Water Conservation: Vegetation is watered on MLGW's grounds during the early morning hours by irrigation systems. This practice saves water. Moisture sensors are being evaluated for installation on the company's irrigations systems in order to further reduce water usage. Drought-tolerant flowers are planted on the grounds which do not have irrigation systems installed.

Sustainable Products: MLGW uses recycled paper products to clean and stock its restroom and kitchen areas. Environment-friendly products are also used to remove ice from hardscape areas (such as walkways and driveways) that are located on the company's grounds.

Employee Awareness

Holiday Reminders: Resource conservation reminders are emailed to employees before company-recognized holidays. The notices request employees to turn off unnecessary equipment before leaving for each planned holiday. Through each employee's individually small efforts, MLGW can achieve considerable energy savings.

MLG Wise Newsletter: The year 2011 kicked off the publication of the company's *MLG Wise Newsletter* which updates employees on the energy efficient upgrades and wise use initiatives implemented in MLGW's facilities. The newsletter is published quarterly, and is accessed on the iHub and via corporate email.

Campaigns: In 2011, employees received resource conservation education through the following campaign initiatives: Earth Day (April), Energy Awareness Month (October), and America Recycles Day (November).