

Green Initiatives and Community Engagement 2021 Annual Report



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MLGW is Committed to Preserving the Environment and to Helping its Communities

Despite the continued impacts of the pandemic and COVID-19 challenges in 2021, Memphis Light, Gas and Water Division's green initiatives and customer outreach remained strong. In addition to several food distribution events to aid Shelby County residents, MLGW increased access to utility assistance resources. MLGW employees are still very dedicated to our main purpose, serving our community in Memphis and Shelby County.

Our primary activities continue to be focused on providing affordable and reliable utility services to our customers, but MLGW supplies substantially more value than these services alone. Through the generosity of our employees, and the consistent efforts of the Division, MLGW seeks to enhance the lives of those in our service area and to help secure a bright future for generations of Shelby Countians to come. This annual overview highlights our most prominent efforts and illustrates the significance of organizations making responsible citizenship an active priority. We constantly strive to further our positive influence and to continue our role as a community leader.

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Efficiency and Conservation for Homes

Saving energy and improving your home's energy efficiency can have a positive effect for your wallet and the community. MLGW provides valuable resources for residential customers to monitor and reduce their energy usage. It's a vital part of our mission to do what is best for those we serve. Not only does efficiency and conservation save money for the individual customer, it also helps to keep rates low and contributes to everyone's effort to reduce greenhouse gas emissions, benefiting us all.

Energy Doctor & Rental Ordinance

Whether you own your home or rent one, MLGW can help. We offer free energy audits for both homeowners and renters. Homeowners can go to <u>mlgw.com/</u> <u>energydoctor</u> or call (901) 322-7676. Renters can go to <u>mlgw.com/residential/rental</u> <u>ordinance</u> or call (901) 322-5757.

The Memphis City Council adopted the rental housing energy efficiency ordinance in 2009. It allows MLGW to inspect rental properties that have been identified for excessive energy usage. MLGW Residential Service Technicians look for a number of



energy-wasting issues such as holes in exterior walls and roofs, leaks, insulation levels and non-functional heating or cooling units.

We ensure that minimum energy-efficiency standards are met by the landlord. If necessary, MLGW can take the landlord to Environmental Court if issues are not addressed. Since its inception, all landlords have complied without having to take any to court. In 2021, Residential Energy Services completed 622 energy audits, virtually and in-person.

To speak with someone customers can call (901) 528-4188.

Share the Pennies Home Weatherization Program

Share the Pennies is a weatherization and energy-efficiency program funded by participating MLGW customers whose utility bills are rounded up to the next whole dollar amount. The difference is donated to the program to fund weatherization grants for homeowners with limited incomes. The weatherization grants cover energy-efficiency repairs such as attic insulation, window replacement, gas and water leaks, HVAC and water heater replacements and more.

In 2021, the program received \$1,478,787 in donations; 123 homes were completed. Since the program's funding inception, over 600 homes have been completed.

To qualify for a Share the Pennies weatherization grant, applicants must own and live in the home to be repaired, meet income guidelines (based on 200 percent of the federal poverty guideline) and fulfill other eligibility requirements. For a full list of eligibility requirements and all types of program repairs, please visit *mifa.org/sharethepennies*.

TVA Energy Monster's Eye Spy Energy virtual workshops for kids

MLGW customers participated in TVA's Energy Monsters virtual workshops, designed to educate and entertain kids

ages 5-12 (and their parents). As students returned to classrooms in 2021, TVA transitioned from offering online workshops for remote-learning students to online workshops offered through the classroom.

Either way, kids who influence current household energy use and will grow to become future energy decision makers were introduced to a colorful cast of monster friends talking about where energy comes from and how we use energy in our everyday lives, plus sharing fun and easy ways to save energy and money at home!



Learn more and download kid-friendly materials at *energyright.com/residential/energy-monsters/*

TVA EnergyRight Residential Energy Services

TVA partners with MLGW and the other 152 local power companies across the Tennessee Valley to offer a suite of EnergyRight Residential Energy Services. EnergyRight Residential Energy Services include:

- Home Energy Evaluations, offered virtually and in-person, as pandemic restrictions lifted
- DIY Home Energy Assessments
- Quality Contractor Network
- Inspections for home energy upgrades
- Financing options
- Energy education workshops for adults and kids
- EnergyRight Marketplace

In 2021, TVA introduced the EnergyRight Marketplace, a web tool that helps residents compare and shop for energy-efficient appliances and products, featuring the Enervee Score to rank efficiency. The marketplace includes more than 30 categories—from refrigerators and electric ranges to washers, dryers, televisions, electric vehicle chargers and more. Search, find and compare options based on efficiency, retailer prices (updated daily) and other factors, then click on a

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retailer for availability and purchase options. Access EnergyRight resources at *energyright.com/residential/*.

For the eighth straight year, MLGW was among the Top Performers in several EnergyRight categories – driven by local customer participation in these joint offerings. For TVA's fiscal year 2021 (October 2020-September 2021), MLGW was recognized for energy savings in these categories:

- Home Energy Evaluations (320,019 kWh, 3rd among 153 local power companies)
- DIY Home Energy Assessment, including Energy Profile in MLGW's My Account website (570,865 kWh savings, 1st)
- Home Energy Workshops (1,798 kWh, 4th)
- Top LPC Performer for Total Program Energy (5,502,644 kWh, 5.2% of FY Program Total, 5th)

To read about all the innovative options that MLGW's EnergyRight partnership delivered, visit: energyright.com.



Community Conservation Days

Our Residential Services Department usually hosts several conservation education events each year throughout Memphis and Shelby County. Our staff travels to all our MLGW community offices, libraries, museums, colleges, and community centers to distribute energy-efficiency kits as well as offer tips on how to save energy. In 2021, the Dr. Martin Luther King Jr. Day of Service event was held virtually due to COVID-19 protocols; energy conservation was the central topic of discussion.

EnergySmart Memphis

MLGW, in partnership with TVA, provides free, 90-minute EnergySmart Memphis workshops. Trainers discuss common household energy problems, lead hands-on demonstration of weatherization measures, and review basic strategies in managing energy costs. In previous years, attendees received energy kits with compact fluorescent bulbs, a caulk gun, caulking, plastic window covering, gasket insulator and other energy-saving items. The kit is valued at \$100. In 2021, due to COVID-19 protocols, MLGW held a virtual EnergySmart Memphis Workshop Lunch and Learn that focused on energy conservation.

A total of 100 energy kits were delivered to the homes of customers who participated in the virtual Community Conservation Days and EnergySmart Memphis workshops.

My Account – Residential

Traffic was high for MLGW's popular My Account website in 2021, enabling customers to handle a variety of tasks anytime of day or night through self-service features.

- Bills and Payments–View bills, make electronic payments, enroll in AutoPay and update payment methods.
- Explore Usage–Analyze why your bill changes from month to month, view 24 months of usage and cost information (which is great for tracking the impact of



conservation and energy efficiency upgrades), access smart meter data showing when your home uses utilities, complete your Energy Profile and more.

- Accounts-Manage your utility account(s) and enroll in paperless eBilling and text alerts.
- **Payment Arrangements**-Request payment arrangement to extend bill due date.
- My Electric Outage–Report outage and obtain updates during restoration process
- Share the Pennies–Manage your participation in this program, which is described on page 2.
- My Application for On Track–Start a new application for the debt management program, which is described on page 22.
- Plus 1–Donate a dollar or more to the Plus 1 utility bill payment assistance program managed through MIFA.

Your MLGW bill provides one source of information about your home's utility use, but My Account provides all the details! Click the Explore Usage link to access the Explore Usage Dashboard, which features key summaries and links to even more information, including:

- Bill Highlights, showing factors that caused the current bill to change from the prior bill. The related Bill Analysis link enables you to compare any two bills over the last 24 months.
- **Bill History** enables you to view (and download) your utility consumption and cost information for the past 24 months.
- The "When does my home use energy and water?" graph enables you to see daily consumption of electricity, natural gas and water for the past week, plus the weekly average. Click the My Meter Data link to dig into your home's interval data, that timestamped information on when your home uses electricity (presented in 30-minute increments), gas and water (both presented in hourly increments).





What Does Your Smart Meter Data Mean?

Smart meters provide two types of usage data: daily billing readings and interval data. Think of the billing read as an odometer reading on your car. If you were taking a trip, you might record the start and stop odometer readings to determine the total miles driven. That's essentially what MLGW does when it calculates your utility usage: We subtract the last billing cycle's reading from the current billing cycle's reading.

Interval data, in comparison, is timestamped data that shows the pace at which utilities were used throughout the day. Think of it as your car's fuel economy. A car's fuel usage varies based on speed, road conditions and other factors. MLGW uses the daily billing reads for billing. We show the interval data in My Account to help you understand when your home used electricity, gas and water so you can link your household activities to utility use and costs. For more information, visit *mlgw.com/smartgrid*.

Efficiency and Conservation for Business

While some businesses and organizations may employ a full-time energy manager, most look to MLGW (or hire consultants) for information on conservation, energy efficiency and sustainability measures that can help their operations succeed. MLGW and its program partners offer a variety of options to assist commercial and industrial customers.

TVA EnergyRight for Business/Industry

Businesses and organizations can obtain technical guidance and educational tools, search the Preferred Partners Network of contractors, and find more resources through EnergyRight, a joint program offered by TVA and the region's 153 local power companies, including MLGW.

M EnergyRight

TVA introduced new financial incentives for qualified energy efficiency improvements and electrification projects in 2021. Eligible technologies included indoor food crop agriculture, ultraviolet germicidal irradiation (UVGI), forklifts, HVAC and indoor LED lighting. Learn more at *energyright.com*.

For TVA's fiscal year ending September 30, 2021, participating MLGW customers achieved the following electricity savings, continuing MLGW's ranking among top utilities.

- EnergyRight for Business/Smart Energy Technologies (2,460,870 kWh, 4th)
- EnergyRight for Industry/Smart Energy Technologies (3,028,985 kWh, 2nd)

To read about all the innovative options that MLGW's EnergyRight partnership delivered, visit: *energyright.com*.

My Account – Business

Businesses and organizations can register and access My Account at <u>mlgw.com</u> to view information about their MLGW bills, report outages, manage Share the Pennies and Plus-1 enrollment, and pay bills electronically from a bank account. Under the Explore Usage link, customers can access up to 24 months of billing history, including consumption and costs, which can be viewed, graphed and downloaded. In addition, small to mid-size businesses have access to bill analysis tools

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to identify factors that caused bills to change via the Explore Usage link.

Downloading utility cost and usage data eliminates the need to enter data manually and cuts the clutter of paper bills. Businesses and organizations are encouraged to create access for multiple employees – facility management and accounting, for example – for greatest benefit. Register for My Account and login at <u>mlgw.com</u>. Customers can enroll in MLGW's paperless option, eBilling, to reduce paper files and MLGW billing expenses. Login to My Account and click the Accounts link to enroll.

Business Energy Advisor



MLGW's Business Energy Advisor web portal provides information on new and expanding technologies, plus energy-saving tips and O&M information on 30 facility types, calculators and other features to assist business users seeking unbiased sources when exploring facility improvements. Accessible through computer, tablet and smartphone,

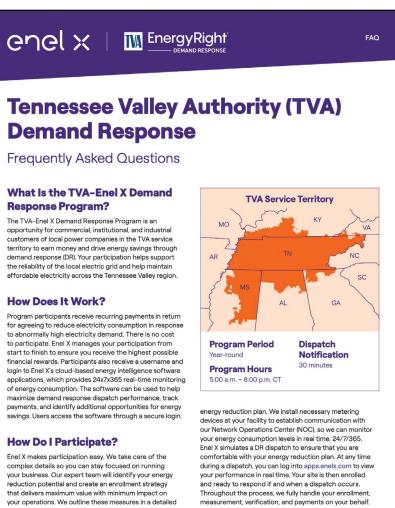
> you can keep Business Energy Advisor in your pocket for quick answers during meetings as well as in-depth research when you are considering energy upgrades or changes to O&M processes. Check it out at *mlgw.bizenergyadvisor.com/.*

TVA Demand Response with Enel X

Each month, MLGW achieves an electric system peak based on simultaneous electricity use among our more than 440,000 customers. These system peaks can add hundreds of thousands of dollars in demand charges to MLGW's wholesale electricity costs, which are then passed to customers through the electric rates, even if the peak lasts just a few minutes. Likewise, TVA sets a peak based on the collective electricity use of all the region's energy users. These maximum levels are important because TVA must supply enough electricity to meet the system peak, no matter how high it is or how briefly it lasts. TVA can meet that peak by:

- Operating reserve power plants, which typically are more expensive, natural gas generation sites,
- Buying supplemental electricity at market prices,
- Building new power plants, which require land and capital investment, or
- Requesting load reductions through TVA's Demand Response program with Enel X.

TVA's Demand Response Program pays businesses and organizations based on their willingness to reduce electric use during requested periods. Each participant receives a free demand response audit to find potential actions, communications to provide real-time electric load details and online access for tracking electric load.



enelx.com/northamerica | energyright.com/business-industry/demand-response

Participants are paid quarterly based on their agreed-to capacity, whether or not an event is called. In addition, they

receive performance payments for each kilowatt of electric load they reduce during demand response events called by TVA. Participating customers include waste treatment plants, schools, retailers, manufacturers, office buildings and other facility types that are capable of reducing their electric demand significantly with a 30-minute notice. Learn more at <u>mlgw.com/</u> <u>TVADemand</u>.



You Can Help Reduce the Peak at Home or Work

MLGW's electric system reaches its peak in the mid-afternoon to early evening hours, 365 days a year, while TVA's system has two distinct peaks, which vary by season. In winter, electricity demand on the TVA system peaks between 4 a.m. and 10 a.m., due to the high percentage of electric heating in middle/east Tennessee and the rest of the Valley. In summer, it peaks between 1 p.m. and 7 p.m., based on air conditioning use and more closely matches the local MLGW system peak.

All customers can help reduce the system peak through three types of activities: conservation, energy efficiency and load shifting.

Conservation means eliminating energy waste during peak hours through simple steps, such as turning off computers and office lights before leaving work and adjusting residential thermostats to the most efficient settings when you are away. Each kilowatt-hour (kWh) of electricity you eliminate saves on your MLGW bill and helps reduce the community's total system peak, which helps reduce TVA's peak. Every kWh counts, which means every customer

system peak, which helps reduce TVA's peak. Every kWh counts, which means every customer can help reduce the peak!

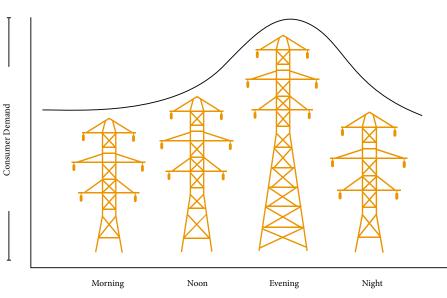
ENERGY STAR

Energy efficiency means reducing electricity use through the purchase of more efficient devices, equipment and materials to replace older, less efficient ones. Examples include replacing

incandescent or fluorescent bulbs with LEDs, replacing an old water heater or HVAC system, installing attic insulation and weatherstripping around doors and windows, and – on the water side – buying a high-efficiency clothes washer or low-flow showerhead. EPA EnergyStar- and Water Sense-certified products have been designed and tested to ensure they use significantly less energy and water than uncertified products so look for these logos when shopping for new appliances and equipment.

Load shifting means delaying the time at which you perform energy-intensive activities until after peak hours have passed. Examples include waiting until after 7 p.m. to run the clothes dryer on summer weeknights, and using the delay

setting on your dishwasher instead of starting the appliance immediately after dinner. The same activities are performed with the same outcomes – dry clothes and clean dishes—but during hours when TVA's electricity generation costs are lower. Additionally, waiting until later in the day to perform activities that generate waste heat and raise indoor humidity – such as cooking, clothes drying and dishwashing – lowers the need for air conditioning use to offset that heat and humidity. For more ideas, visit <u>mlgw.com/peakalerts</u>.



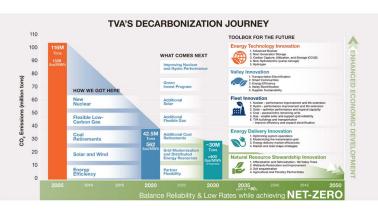
MLGW's electric system reaches its peak in the mid-afternoon and early evening hours, all year-round.

Sustainability, Carbon Reduction and Renewable Energy

Residents, businesses, organizations and governments continue to evaluate how their energy use impacts our community and our world. MLGW offers resources and programs to help customers lower their carbon footprints, through onsite and offsite options.

Carbon Reduction

As more companies, organizations and governments create sustainability goals and ponder ways to reduce their impact on the environment, calculating Scope 2 carbon emissions based on electricity use is often an easy first step. TVA and MLGW have provided unique carbon emission rates for large commercial and industrial customers on time-based rates for the last six years, expanding to a universal carbon emission value for businesses on the more common General Power Rate in 2017.



As MLGW's power supplier, TVA's actions to reduce carbon emissions benefit us all individually and as a community. A few quick facts:

- TVA generated 56 percent of its electricity in 2021 from carbon-free sources.
- TVA has reduced carbon dioxide (CO₂) emissions by more than 63 percent, compared to a 2005 baseline. Future CO₂ reduction targets include 70 percent by 2030, 80 percent by 2035 and an aspirational goal of 100 percent reduction by 2050 with supporting technology advancements.
- TVA is a leader in carbon reductions. TVA's 2021 system carbon emission rate of 637.67 CO₂ lbs/MWh is 24 percent below the EPA eGRID regional average of 834.18 CO₂ lbs/MWh and 22 percent below the EPA e-GRID national average of 818.29 lbs/MWh. If your organization is tracking carbon reduction, you will benefit from using the TVA/MLGW-specific carbon data in your calculations. Learn more at <u>mlgw.com/</u> <u>community/carbonallocation</u>.
- As TVA decreases the use of coal and natural gas for power generation, all customers automatically benefit from cleaner power. For more details, click the hyperlinks for <u>TVA's Carbon</u> <u>Report</u> and <u>FY2021 Sustainability Report</u>.

Renewable Energy

The year 2021 brought new options for households, businesses and organizations seeking greater access to clean energy—as well as a dramatic increase in applications for distributed generation at customer sites.

These local businesses and organizations support Green Switch:

- ANF Architects
- archimania
- Cooper Young Community Association
- Ensafe Inc.
- GG Lutherie
- Haizlip Firm
- Kele Inc.
- Memphis Light, Gas and Water
- New Tech Packaging
- River Inn at Harbor Town Landing
- Shelby Farms Park Conservancy
- T.O. Fuller and Shelby Forest state parks
- Superior Carriers
- The Daily News
- Village at Cypresswood

TVA Green Switch

MLGW customers interested in supporting renewable generation without making the long-term investment to install onsite generation at their homes and businesses have a fast, easy solution with the Green Switch program (known as Green Power Switch from 2000 to 2020).

Whether you rent, have a shady lot, or simply don't wish to spend the money (or take out a large loan), Green Switch is a great alternative to onsite generation! Each \$2 block of Green Switch purchased per month enables the participating customer to rightfully claim that 200 kWh of their monthly electricity consumption for their home or business came from clean green power. Green Switch is an added cost on your MLGW bill and does not replace your electric usage charges. Customers can buy as many blocks as desired, modifying participation at any time as there are no contracts to sign. The program is Green-e Energy certified through the Center for Resource Solutions and TVA retires the RECs on behalf of collective program participants.

Just over 1,000 local households and businesses participated in Green Switch in 2021, buying nearly 7.16 million kWh of renewable energy generated in the Tennessee Valley, including renewable generation from more than 100 solar arrays in Shelby County.

Use the Green Power Purchase Calculator to see the impact that your participation will have by visiting <u>tva.com/energy/</u> <u>valley-renewable-energy/green-switch</u>. Ready to sign up? Use MLGW's secure webform at <u>service.mlgw.org/greenswitch</u>.

TVA Green Flex

A growing number of businesses and organizations have set sustainability or carbon goals that often can be met through the purchase of Renewable Energy Certificates (RECs). Since wind generation is less expensive than solar, TVA's Green Flex is a more economical option than Green Switch when businesses need vast amounts of green energy.

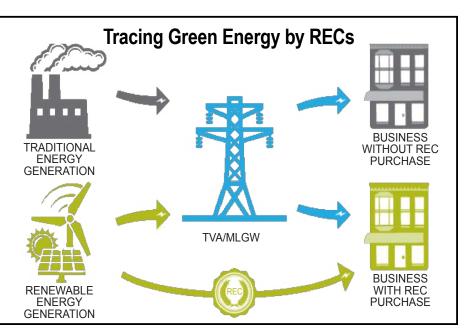
To participate, a business or organization must consume at least 2,000,000 kWh (2,000 MWh) of electricity annually – at one site or combined from multiple sites in Shelby County. Green Flex has a 2,000 REC minimum purchase level. The price currently is \$2.50 per REC, invoiced as an annual purchase separate from the MLGW bill. For each REC purchased, the company can immediately claim that 1 MWh of their electricity use is supplied by renewable energy. The program is Green-e Energy certified through the Center for Resource Solutions and retires the RECs in the name of each individual participant.

In 2021, two MLGW business customers purchased enough Green Flex RECs to rightfully claim that 100% of the electricity used at all their local facilities was supplied by renewable energy. Businesses and organizations interested in Green

Flex should email *greenpowerswitch@mlgw.org*. (Note: The program is fully subscribed for 2022 and has a waiting list. MLGW has encouraged TVA to secure additional RECs for this popular program.)

C&I Community Solar RECs

MLGW and TVA continued their local community solar pilot in 2021, selling 100 percent of the RECs from generation at TVA's Allen Solar Farm to two participating commercial customers. The 997 kW solar array produces a small but important amount of renewable energy right here in Shelby County.



What is a REC?

Most large-scale renewable generation occurs in a remote location, with the green energy mixing into the utility's overall power supply. If the renewable energy remains a part of the overall power supply, then all customers benefit from its environmental benefits. If the renewable attributes are unbundled from the kilowatt-hours of electricity, then a Renewable Energy Certificate (REC) can be sold to a business or organization wanting to obtain renewable energy. Each REC represents 1 MWh (or 1,000 kWh) of renewable generation attributes. When RECs are sold separately, the buyer claims the RECs by stating that an equal portion of their electricity comes from renewable sources.

Many companies and organizations purchase RECs to meet their sustainability goals. Green Flex is one way that MLGW customers can purchase large quantities of RECs. Green Switch is a much smaller program, where each "block" represents 200 kWh or 20 percent of a REC, most suitable for residential and small- to mid-size commercial customers since the purchase is made monthly.

Distributed Generation

Distributed generation refers to decentralized power generation sites, which typically use renewable resources such as the sun, wind or biomass to generate electricity. In Shelby County, all grid-connected distributed generation is photovoltaics (abbreviated as PV, but simply known as solar). Customer interest in solar generation soared in 2021, resulting in 117 new applications for interconnection. Customers were spurred by installer marketing campaigns, declining prices for solar equipment, a 26 percent federal tax credit and the desire to add battery storage to supply solar power at night or during power outages. In fact, more than two-thirds of applications submitted in 2021 included battery storage, a massive leap from the first solar + storage project installed just two years prior.

MLGW Offers these Distributed Generation Interconnection Options:

• TVA's Green Power Providers program closed to new applicants in December 2019, but the remaining 107 participants continue to generate solar electricity for sale to TVA in exchange for generation credits on their MLGW bills during their 20-year agreement terms. If a customer moves under this buy-all program, TVA allows them to transfer the remainder of their participation agreement term to the new MLGW customer. Contact MLGW for information if you are buying or selling a home with a solar array interconnected under the Green Power Providers program so we can assist with paperwork.

- Self-Generation enables MLGW customers to generate power for use at their homes or businesses. When the home or business needs more electricity than the solar array is generating in real-time, MLGW electricity is provided. When the home or business needs less electricity than the solar array is generating in real-time, excess generation occurs. This excess flows to the MLGW grid without financial benefit, so it's vital to size the generation capacity carefully. Customers submitted 25 Self-Generation applications in 2021. Total operating generation capacity as of December 31, 2021 was 2,366.44 kW, among 29 residential and 12 commercial sites.
- TVA's Dispersed Power Production (DPP) program allows customers to install onsite renewable generation and sell 100 percent of their output to TVA at variable short-term avoided costs under a five-year contract. Once the customer has an executed DPP contract, MLGW reports future excess generation to TVA on a calendar-month basis and TVA makes a direct deposit into the customer's bank account. As of December 31, 2021, four MLGW commercial customers totaling 325 kW of generation capacity had transitioned to the Dispersed Power Production program after their other TVA program contract terms ended. This transition enables customers to claim the renewable attributes associated with their solar generation going forward but doesn't require customers to change their existing interconnection points so no new electrical work is involved.

• Self-Generation with Dispersed Power Production is a combination of the two options above, enabling customers to use their solar generation onsite and sell any instantaneous excess to TVA. This option was the most popular in 2021, with 92 applications submitted. Total operating generation capacity as of December 31, 2021 was 801.72 kW, among 72 residential and 4 commercial sites.

For information about renewable distributed generation options, visit <u>mlgw.com/greenpower</u> or email <u>greenpowerswitch@mlgw.org</u>.

Although the number of customers choosing to install solar generation at their homes and businesses has grown in the

last two years, those smallscale systems represent a minor portion of renewable generation in Shelby County. The two largest local installations-68,500 kW and 2,000 kW, respectively-represent 89 percent of all solar generation capacity in Shelby County as larger systems (which need much more space to install) can take advantage of economies of scale that smaller individual solar arrays cannot.

as of December 31, 2021							
Interconnection Option	Number of Completed Projects	Installed Generation Capacity, in kW DC	Percentage of Total Installed Generation Capacity				
Green Power Providers (closed)	107	3879.72	4.90%				
Renewable Standard Offer (closed)	2	347	0.44%				
Self-Generation	41	2366.44	2.99%				
Dispersed Power Production	4	325	0.41%				
Self-Generation with Dispersed Power Production	76	801.72	1.01%				
TVA-Owned Solar Arrays	2	1,023	1.30%				
TVA Power Purchase Agreement (PPA)	2	70,500	89.0%				
TOTAL	234	79,242.88	100.0%				

Installed Generation Capacity in Shelby County as of December 31, 2021

Wondering if solar is right for you?

1. First, start with efficiency! Make energy efficiency improvements so your home or business requires less electricity overall, which means you then can save money by installing a smaller solar array.

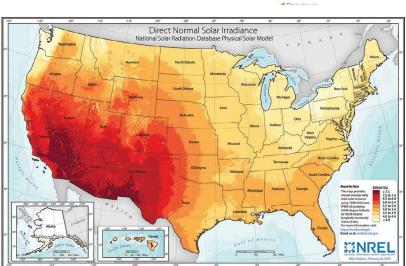
2. Consider why you are interested in solar. Economics, environmental benefits and resiliency are all strong motivations to consider as MLGW's low electric rates make solar difficult to justify based on potential savings alone.

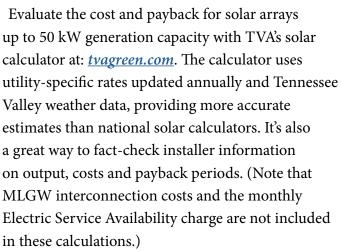
3. Find the right installer for your needs. Look for credentials from the North American Board of Certified Energy Practitioners (NABCEP), the industry gold standard for solar installers. Check multiple references, especially among clients who had systems installed more than a year ago, rather than people who had systems installed recently and haven't seen much generation impact yet. Negotiate the best price. Be wary of installers who begin construction before MLGW has approved your application, which MLGW does not recommend. If you are financing your system, read the fine print—some loans require you to start making payments before the solar array has passed its MLGW acceptance test to begin operating.

4. Evaluate system size (also called generation capacity). Available roof space (or land) and budget are the primary factors in determining system size – but be careful not to over-build as excess generation sold to TVA is valued far below the retail electric rate, which means you would have a longer payback period. Economically, the ideal system will provide most of your daytime electricity needs in spring and fall with minimal export to the grid. Adding battery storage will help you extend the hours in which your solar array supplies electricity to your home but that also increases your project cost.

Use the My Meter Data feature under Explore Usage in My Account to see your home's electricity usage in 30-minute increments over the last 24 months. As the graphs at right show, the same house will have very different daily usage patterns, which are affected by weather, equipment/appliance operation and other factors. If your solar array was sized to attempt to reduce the majority of your daytime electricity needs in August (when air conditioning use is high) it would yield significant amounts of excess generation most of the year.

5. Calculate your simple payback to estimate the number of years it will take to recover your solar project expense through utility bills savings and any earnings from selling excess generation. Do the math yourself rather than relying on the sales pitch. Due to MLGW's low electric rates and this area's average to slightly below average amount of solar irradiance (sunshine, see map below), payback likely will take 20-30 years (or longer), even with federal tax incentives. If cost is your main motivator, make sure your net average monthly electricity savings are greater than your loan payment, if you plan to finance the system.







Real-life examples

A few customers who shared details about their 2020-2021 project costs illustrate the widely varying impacts that solar can have, based on your home's ability to consume solar power in real-time (including to charge batteries for discharge in the evening).

- Customer spent an average of \$146 per month on electricity, bought 11.06 kW solar array plus battery for approximately \$53,000, expecting to eliminate their MLGW electricity costs. Average MLGW electricity charges are now \$64 per month, selling monthly average 433 kWh excess to TVA.
- Customer spent an average \$81 per month on electricity, bought 4.02 kW solar array plus battery for approximately \$30,000, expecting to reduce electricity costs, lower carbon footprint and have backup power. Average electricity charges are now \$41 per month, selling monthly average 60 kWh excess to TVA.
- Customer spent an average \$86 per month on electricity, bought 8.04 kW solar array plus battery for approximately \$40,000 in cash, expecting to reduce electricity costs, lower carbon footprint and have backup power. Average electricity charges are now \$36 per month, selling monthly average 169 kWh excess to TVA.
- Customer spent an average \$127 per month on electricity, bought 9.9 kW solar array plus battery for approximately \$48,000, expecting to benefit from backup power, reduce electricity costs and lower carbon footprint. Moved six months after installation was completed.
- Customer spent an average \$114 per month on electricity, bought 5.25 kW solar array plus battery for approximately \$48,000, expecting to reduce electricity costs, lower carbon footprint and have backup power. System under construction, so no insight yet on realized electricity savings but has a 25-year loan with \$170 monthly payments.



To learn more about solar generation technology, costs, output and how to find a quality installer, <u>watch MLGW's June</u> <u>2021 Zoom session</u> featuring speakers from MLGW, TVA and the Tennessee Solar Energy Industries Association (TenneSEIA).



Tips for Selecting a Solar Installer

RESEARCH

- Contact MLGW to understand your solar interconnection options
- Get quotes from several installers
- Carefully read the terms of the proposal to understand what is included
- Calculate your return on investment (total project cost/net annual MLGW savings)
- Solar is a big investment so take your time; don't fall for high-pressure sales tactics

EXPERIENCE

- Ask installer for references to contact
- Look at customer reviews

LICENSES

• Verify the installer has up-to-date business license and insurance

EXPERTISE

 Confirm the installer has a Solar PV Installation Professional or Board Certification from the North American Board of Certified Energy Practitioners, which is the gold standard for the industry

Responsible Energy in New Construction

A great way to be energy smart is to plan for efficiency and sustainability in building construction from the onset. Whether building a new home or constructing a large industrial facility, customers and contractors can have a positive impact on the environment while saving themselves money in the long run.

EcoBUILD

EcoBUILD is a voluntary green-building program that includes a set of construction standards that exceed the 2015 International Energy Conservation Code and common building practices.

Benefits to EcoBUILD homeowners:

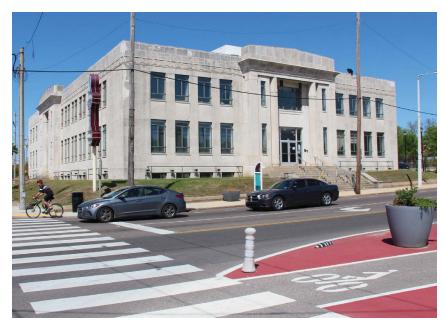
- Energy savings of approximately 30 percent when compared to standard construction practices
- More comfortable indoor temperatures with fewer thermostat adjustments
- Better indoor air quality with fewer allergens from building materials used
- Potentially higher resale value in the future
- Personal satisfaction by going green

Visit *mlgw.com/ecobuild*, or to apply for EcoBUILD certification, call (901) 528-4188.

LEED Incentive

Since 2009, the U.S. Green Building Council's Tennessee Chapter has honored businesses with a grant funded by MLGW. A companion to MLGW's successful residential green building program, EcoBUILD, the grant encourages companies to use more energy-efficient and environmentally responsible construction practices. To apply for these funds, qualified project teams must submit an application – including the project's final LEED scorecard, detailed review and an educational document highlighting the project's sustainability attributes – to the USGBC Tennessee Chapter. Learn more at *usgbc.org*.

The Universal Life Insurance Building/Self Tucker



EC BUILD

Architects office was recognized in 2021 for redeveloping the long-vacant, historically recognized Universal Life Insurance Building. The project team aspired to make the renovation a healthy, responsible and environmentally sensitive project, incorporating efficient systems to reduce energy use by more than 27 percent and water use by 35 percent, as well as including recycled products and waste reduction practices. The project earned LEED Gold and a \$5,000 award. Read more about this and previous local green building projects at <u>mlgw.com/leedincentive</u>.

Electric Vehicles

More consumers are making the transition from gasoline- and diesel-powered engines to battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEVs), while many businesses are implementing plans to electrify their fleets as well.

The number of BEVs and PHEVs—collectively known as EVs—registered in Shelby County is still very small but growing. As of December 31, 2021, there were 1,820 EVs registered locally and 16,902 in Tennessee (more than triple the state number in 2017). Each EV purchase moves the market one step closer to the Drive Electric Tennessee (DET) goal of 200,000 light-duty EVs on Tennessee roads by 2028.

While MLGW will supply the electricity needed for EV charging in Shelby County, we have taken additional roles to support DET's goal, which is significant



Total Electric Vehicles (BEV and PHEV) Registered in Shelby County at End of Quarter

and will be met through ongoing activities in these major categories:

Awareness

- MLGW served on DET's Awareness working group, helping devise strategies and events to increase EV knowledge among consumers.
- MLGW hosted a comprehensive webinar, *Plugging into Electric Vehicles*, in August 2021, gathering experts to address EV technology, reduced emissions, lower maintenance costs, availability, charging infrastructure and **more**, **plus lots of Q&A**. Play the 90-minute recording to learn more about EVs before your next vehicle purchase.
- TVA launched an energetic, informative video series, *In Charge: Life with an Electric Vehicle*, showing ordinary citizens learning about the benefits of EVs as the host drives a different electric vehicle each episode. (Spoiler alert, look for Memphis in Season 2.)
- Design for the Drive Electric license plate was completed in 2021 with lots of public input. To authorize a new specialty license plate in Tennessee, several criteria must be met including applications from at least 1,000 vehicle owners and that goal was exceeded. As part of the DET awareness initiative, first-year specialty plate upcharge fees were waived for the first 1,000 applicants.

Charging infrastructure

• The Tennessee Department of Environment and Conservation (TDEC) and TVA partnered in February 2021



to announce the Fast Charge Tennessee Network, designating grant funding to spur the installation of approximately 50 additional fast charging locations, which would triple the existing network. The goal is to partially fund the installation of public-access DC Fast Charging locations with a minimum of two chargers per site at least every 50 miles along interstates and major highways. TDEC and TVA worked with local power companies, including MLGW, to develop a set of technical requirements for eligible sites, defined as "gaps" within the Corridor Completeness Map. Notices of Intent were submitted in October 2021, with selected utilities (including MLGW) encouraged to move forward with full applications in 2022.

- MLGW worked with commercial customers planning to convert light-duty fleets to EVs, providing information on available grants and insights on electric services needed to meet this type of added electric load at each site. If your organization is considering EV adoption, contact MLGW early in your planning process, to ensure sufficient time to request and complete any electric service upgrades that may be needed to accommodate large-scale EV charging.
- MLGW served on DET's Infrastructure working group.

Vehicle availability

- Auto manufacturers large and small announced development of new EV models in 2021, expanding options for sedans, sports cars, crossovers and other body styles.
- Tennessee is home to four EV manufacturers and more than 900 suppliers, making it the #1 state in the Southeast for EV production.
 - Nissan has produced the LEAF in Smyrna since 2013.

– Volkswagen will begin production on the ID.4 in Chattanooga, beginning in 2022.

- Cadillac will make the Lyriq in Spring Hill, starting in March 2022.

– Ford and SK Innovations announced plans in September 2021 for BlueOval City, a new \$5.6 million electric vehicle and battery plant being constructed in Stanton (approximately 20 miles east of Shelby County), where the F-150 Lightning truck will be manufactured, starting in 2025.

 According to TDEC and TVA, electric vehicle and battery manufacturing accounted for \$13.8 billion in investment and more than 10,500 new jobs in the region over the last 10 years.
 Learn more about EVs by visiting <u>mlgw.com/ev</u>, <u>energyright.com/ev</u> and <u>driveelectrictn.org</u>.

Wondering if there's enough electricity to supply EVs?

For every 100,000 EVs driven in Tennessee, charging needs will represent just 1 percent of TVA's current generation capacity.



Wondering where and how much it costs to charge an EV?

Public-access Level 2 and DC Fast Chargers provide a convenient opportunity for EV charging while you are out, but most personal vehicle charging occurs at home. A 240-volt Level 2 charger installed at your home can charge your EV in 4-6 hours, while plugging into a standard 120-volt electric outlet in a garage or carport can recharge your battery in 8-12 hours.

Compared to fee-based public charging options, charging at home costs less as well. Using MLGW's 2021 average residential electric rate of \$0.0941 per kWh (tier 2, plus FCA), it cost just \$3.76 to recharge a 40-kWh battery (149 miles for a Nissan LEAF) or \$7.57 for an 80.5-kWh battery (353 miles for a Tesla Model 3 Long Range).

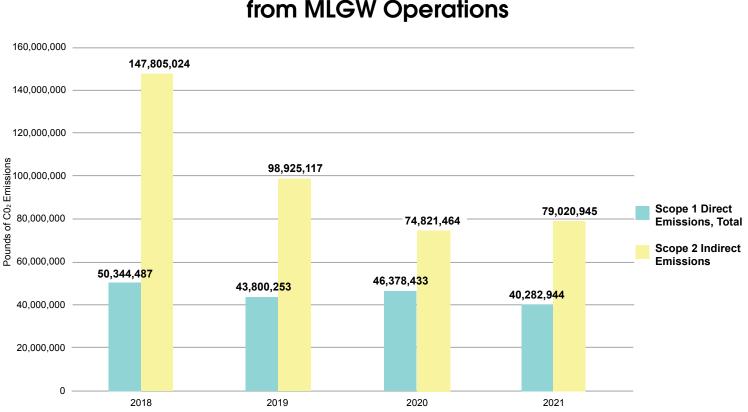
Internal MLGW Efforts

MLGW is both a utility supplier and a utility customer, as we operate more than one million square feet of building space across Shelby County. Like our customers, MLGW focuses on our facilities' energy and water use, looking for ways to save money by reducing consumption, which also lowers our carbon footprint.

In 2021, MLGW began a new initiative to calculate our carbon footprint using Scope 1 and Scope 2 protocols from CDP (formerly the Climate Disclosure Project). Like many local businesses, organizations and governments, our first step was pulling data. Scope 1 emissions, which are direct, required gathering natural gas consumption data for our buildings, plus gasoline and diesel consumption for our fleet. Scope 2 emissions, which are indirect, required pulling electricity consumption data for our buildings. Emissions factors were obtained from the U.S. Energy Information Administration (Scope 1) and TVA (Scope 2). We selected 2018 as the baseline year for comparison, although we may change to an earlier year to show greater historical context as we expand our research.

The graph below shows a reduction in Scope 1 CO_2 emissions, dropping 20 percent between 2018 and 2021–mostly due to lower purchases of gasoline and diesel for our fleet vehicles. MLGW's Scope 2 CO_2 emissions dropped significantly, falling 46.5 percent between 2018 and 2021. During that time, MLGW's buildings achieved a 30.9 percent reduction in electricity use while TVA's carbon emission rate decreased 22.7 percent.

Our carbon footprint calculations are part of a much larger initiative that is just beginning development–a long-term strategy and goals that focus on energy efficiency, demand response and renewable energy, plus electric transportation and other alternative fuels, for MLGW operations and for our customers as a whole.



Scope 1 and Scope 2 Carbon Dioxide Emissions from MLGW Operations

Diversity in Business

MLGW recognizes the power of diversity and the vast resource a diverse pool of suppliers and contractors offers to businesses. MLGW's diversity efforts focus on offering opportunities to do business with MLGW for many demographics such as minorities, small businesses and women-owned businesses that have traditionally been underrepresented in business.

Supplier Diversity

MLGW's Supplier Diversity program demonstrates MLGW's intentional focus on creating opportunities for demographics that have been traditionally underrepresented in business. Its mission is to foster economic parity within the Memphis and Shelby County community. This program gives practical opportunities to certified businesses as a partner in the buyer-seller relationship with MLGW. MLGW bases its diversity spending on independent certification that businesses are at least 51 percent owned, controlled, operated and managed by a person or persons who represent one of the three business classifications outlined in the program definition



of minority-owned, women-owned or locally owned small businesses.

In 2021, MLGW reported a total of \$150 million in year-end spending with roughly \$54.2 million (36 percent) going to minority, women and locally-owned small businesses. Broken down, MLGW spent:



\$17.6 million - or 12 percent for minority-owned business enterprises
\$7.3 million - or 5 percent for women-owned business enterprises
\$29.3 million - or 20 percent for locally-owned business enterprises

"Expanding Opportunities" Procurement Fair

When MLGW hosts its Procurement Fair, we give guidance to business owners who may be unfamiliar with our bidding process. We invite representatives of local small businesses and minority-owned and women-owned enterprises to attend and learn how to do business with us. The business owners meet one-on-one with our project managers and purchasing professionals. The Procurement Fair allows small business owners to understand the Division's utility needs and compete for a part of what we buy during the year. An additional feature of the procurement fair is the "Budget Seminar" where staff share possible capital projects from the MLGW budget, as well as answer questions from business owners and workshop participants.

Sheltered Market

We want to help local small businesses grow. That is why eight years ago, in 2014, we rolled out the Sheltered Market program. The race- and gender-neutral program "shelters" any purchase under \$100,000 by offering three or more certified local small businesses



the chance to bid on our products or services. In 2021, our Sheltered Market program accounted for over \$17 million (11 percent of our total procurement spend) with local small businesses. Programs such as our Sheltered Market are essential in promoting a healthy local economy.



Corporate and Social Responsibility

By working together, MLGW employees eagerly contribute back to the communities we serve. Their devotion shows by the number of hours we log after work and on weekends as well as the money we raise for a variety of local organizations.

Key Focus Areas

In 2021, in alignment with the MLGW Way Forward, we set out to accomplish several objectives including reshaping the customer experience by building on technology integration and elevating our image and public perception.

Reshaping The Customer Experience

We created a portal for customers to apply for the On Track program within My Account. On Track is a payment program provided by MLGW that gives energy and financial information to customers in need of help so they can stay "On Track" with their bills. We hosted 10 virtual On Track orientations and received 510 applications. Of which, 223 applications were approved. Learn more at *mlgw.com/residential/ontrack*.

We also developed a portal for customers to offer utility donations for Gift of Comfort. Gift of Comfort gives individuals, businesses and organizations the chance to make a payment towards a customer's utility bill as a gift. All they need is the customer's first initial, last name and the street number of their address. As a result of the portal, Gift of Comfort donations increased in 2021 compared to 2020.

In reshaping the customer experience, we also hosted the first Utility Assistance One Stop, producing instructional video for attendees and assisting approximately 300 customers by providing \$195,000 in utility assistance and



12,000 lbs. of food.

We also facilitated a direct mailing to 16,000 customers who received Shelby County Community Service Agency assistance in prior years but had not applied in fiscal 2021. We partnered with the Shelby County Community Service

Agency to hand distribute 4,000 utility assistance and On Track applications at MLGW Community Offices.

To expand our reach, we created the Utility Assistance Roundtable to collaborate on promotion of resources and address system challenges.









Shelby County COVID-19 Mortgage & Utility Assistance Program



Human Services



Elevating Image and Public Perception

MLGW employees are extremely active in their communities. In 2021, more initiatives were undertaken to increase the level of volunteerism among employees. A MLGW volunteer survey was designed and administered to employees. Several "Lunch & Learn" sessions were held to discuss volunteerism. New Hire Training integrated a volunteerism component into its curriculum. To honor volunteers, we created the MLGW Volunteers in Power Awards. More than 300 employees were active in volunteering in 2021.







United Way

The 21-22 MLGW United Way committee, led by Chantal Lairy and Taurus Bradford, presented a check to Dr. Kenneth Robinson and Albert Edwards of the United Way of the Mid-South for \$661,829.63 during the March 2 MLGW Board of Commissioners meeting.

In 2021, MLGW coordinated three mobile food pantries, participated in "Paint the Town Red" on Earth Day/ National Volunteer Week,



hosted a MLK Service project in the Douglass community, hosted a Power of Warmth event as well as coordinated company participation in 19 community events, including a number of diverse events like Amigos Foundation Cinco de Mayo Festival, Africa in April Cultural Awareness Festival Inc. and Memphis Japan Festival at Memphis Botanic Garden. MLGW received the Volunteer Memphis Corporate Leader Award.

MLGW committed to reaching out and engaging community stakeholders in order to receive feedback and increase awareness with regards to MLGW operations, programs and services. MLGW hosted four meetings of the MLGW Community Advisory Council, four meetings of the MLGW Neighborhood Advisory Council and four MLGW Em-POWERING Sustainable Neighborhood webinars.

Enhancing Our Public Image/Preparing and Equipping our Workforce

- Hosted MLGW Art Contest and received 105 entries
 - K-2nd Grade Category -12 entries
 - 3rd-5th Grade Category -18 entries
 - 6th-8th Grade Category -62 entries
 - 9th-12th Grade Category-13 entries
- Completed design of MLGW Power Bytes characters
- Coordinated 14 school speaker requests
- Produced three school-related education videos



