

MEMPHIS LIGHT, GAS AND WATER

Weathering Nature's Fury

A guide to
natural disaster
preparedness



www.mlgw.com
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Printed on recycled paper.



Table of Contents

Prepare for the inevitable

Planning prepares for successful response.....	1
Understanding the power restoration process.....	3
Emergency survival kit.....	5
Utility safety guidelines following a natural disaster.....	6
Electric safety	6
Natural gas safety	7
Drinking water safety.....	8
Portable generator safety.....	10
Frequently asked questions	12
Communicating with MLGW following a disaster.....	16

MLGW Quick View Contact List

Outage Hotline	544-6500
24-Hour Emergency line.....	528-4465
Customer Care Center.....	544-MLGW (6549)
Start, Stop, Transfer Service.....	820-7878
Claims	528-4621
MLGW website	www.mlgw.com

Disaster recovery resources

Memphis Fire Department

To report a fire, emergency..... 911 or 458-3311
or request ambulance service

Memphis Police Department

Non-emergency calls.....545-2677
Emergency calls 911 |

Mid-South Chapter of the American Red Cross

 726-1690 |

This organization provides individual and family disaster relief,
emergency food, shelter, clothing, bedding and other items as needed.

Shelby County Emergency Management Agency.....

 515-2525 |

Central United States Earthquake Consortium.....

 544-3570 |

Planning prepares for successful response

On July 22, 2003,
the Memphis area
suffered one of the
most devastating
natural disasters in
the city's history.
On that ill-fated
day, 100 m.p.h.
hurricane-force winds
whipped through
the Memphis area
leaving widespread
destruction including



uprooted trees, mangled poles, damaged utility equipment and snapped power lines—not to mention millions of dollars in other property damage and significant loss to the area's economy because of lost work and business closures. With 339,000 customers (82 percent of MLGW's entire customer base) experiencing power loss, MLGW began the enormous task of restoring electricity to virtually every area of the city.

Thanks to 65 years of experience and lessons learned from the ice storm of 1994, MLGW had a disaster response plan in place that enabled us to mobilize and dispatch crews immediately in a massive 13-day restoration effort. As expected of any well-conceived plan, our advance preparation helped us to work safer, smarter and more efficiently. Requests for outside resources began immediately. We experienced no fatalities (contrary to the statistical odds of personnel working under such hazardous conditions) and we eclipsed the restoration efforts of the 1994 ice storm which involved fewer outages, less damage, yet a considerably longer restoration time. In the end, a storm assessment committee, composed of 18 community and business leaders and eight MLGW employees, concluded that MLGW did an exceptional job in emergency planning and implementation in this restoration effort. Likewise, the group also suggested tactics to improve future efforts.

Emergency preparedness can certainly influence the success in overcoming a disaster. Proper emergency planning can mean the difference between life and death and can significantly improve your comfort and ability to cope in a distressed situation. Unfortunately, the

2003 windstorm caught many residents unprepared and clamoring for hard-to-find emergency supplies in stores whose stocks had been depleted. In the absence of electricity and other normal conveniences, local citizens suddenly gained a greater appreciation for items such as batteries, flashlights, candles, coolers, generators and bottled water—basic necessities that could have been collected as part of an emergency preparedness kit, but often were not. Furthermore, hardships were often magnified because residents lacked knowledge of basic survival measures and guidelines. MLGW received hundreds of e-mail messages and phone calls from customers inquiring about things such as food storage guidelines and drinking water safety and treatment.



In light of these findings and at the urging of the community leaders from the Storm Assessment Committee, we have compiled a booklet of information that we think is most critical to the safety, comfort and convenience of our customers in surviving another natural disaster. We live in a region that is prone to earthquakes, tornadoes, ice storms and severe thunderstorms, so it is vital that we plan for the inevitable. We hope that this booklet will help better prepare you for such episodes



and inspire you to develop your own disaster preparedness and response plan for the protection of you and your loved ones.

Understanding the power restoration process

The time required to restore your power depends on many variables including the cause of the outage, the number of components damaged, whether or not tree trimming is required to get to the point of repair, and the number of customers impacted. But rest assured that we will do our best to provide you with the most accurate information available, using all of the resources at our disposal to restore your power as quickly as possible.

Power restoration is not a simple undertaking; it involves an impressive coordination effort of utility crews who perform complicated tasks, often under harsh and dangerous conditions. Electricity must undergo a complex chain of events as it makes its way to your home. With more than 422,000 customers, 4,312 miles of overhead wire and an additional 423 miles of transmission lines, there is a rhyme and reason for the order in which we restore electric service. The four basic steps to power restoration listed below, along with the accompanying illustration, will help you gain a better understanding of the process, as we work to restore power as quickly and safely as possible.

Four steps to power restoration

While our first concern is to ensure public safety by immediately addressing dangerous situations such as downed lines, the following four steps outline the general steps in the restoration process.

Step 1: Before MLGW can supply electricity to its customers, it must be able to receive it from its supplier. Thus, our first order of business is to repair any damage to transmission lines and towers. These lines carry electricity from our producer, Tennessee Valley Authority (TVA), to our substations. (See #1 in illustration on page 4).

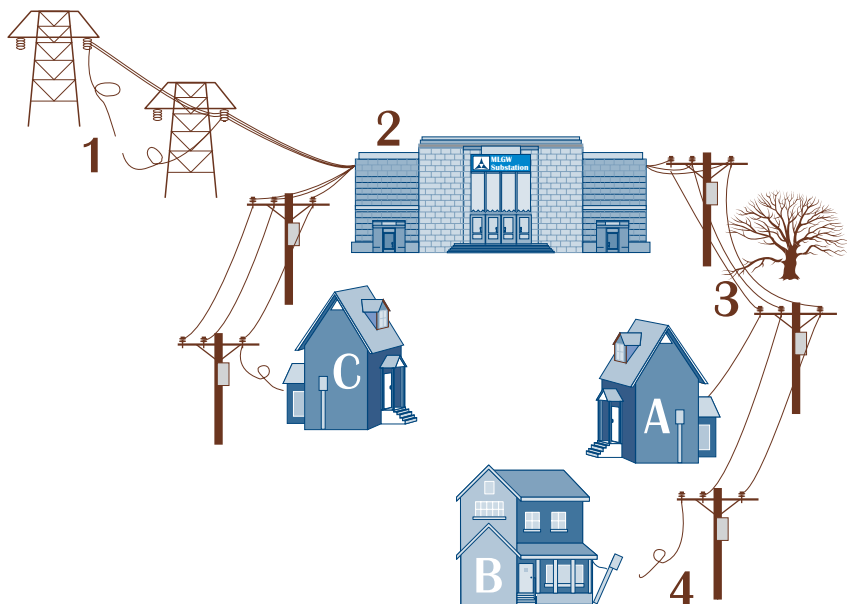
Step 2: We repair any damage to our substations to bring circuits online and focus our attention on restoring power to water pumping stations, hospitals and other priorities critical to public health and safety. MLGW has nearly 62 electric substations that supply power to both overhead and underground electric distribution lines. At this stage of the restoration process, our crews may be working in remote areas that aren't visible to

the general public. Even if you don't see our crews immediately, please be assured that we are working diligently to restore your power.

Step 3: Beginning with areas with the greatest concentration of outages, our crews focus on repairing primary and secondary distribution lines, which run through the streets and neighborhoods leading to your home. If there are trees lying on these wires, our contracted tree trimming crews must first clear the debris. In this scenario, once the distribution line is repaired and reenergized, house A will automatically have power again, but house B will not because the individual service line leading into the house is damaged, and the meter center has been pulled away from the house. House C, located on the opposite side of the street, remains without power because it is on a different distribution line, which has yet to be repaired. This explains why your neighbors across the street or down the street may have power, but you may not.

Step 4: Repairs are made to individual service lines, such as the one shown for house B (provided the meter center is not damaged or has been repaired).

As you can see from the illustration, the order in which repairs are made follows the line of progression electricity takes as it comes from TVA to MLGW and finally, to you. It would be futile to reverse the process and fix an individual service line first because there would still be no power if damages exist at the beginning of the line.

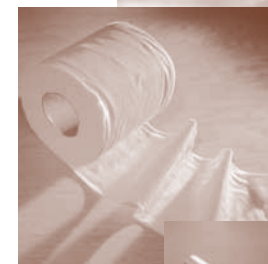


Emergency Survival Kit

As many Memphians have learned through devastating events such as the 1994 ice storm and the 2003 summer windstorm, it's best to have basic necessities on hand because, when a crisis hits, shortages of common goods occur quickly. Gathering and storing a few necessities can help you endure a natural catastrophe more comfortably and can possibly even save your life. Create an emergency survival kit consisting of, but not necessarily limited to, the following items. Check your kit periodically and replace items that have expired.

Must haves

- Bottled water
- Canned and packaged foods that don't require heating
- Powdered milk
- Prescription medicines
- Tissue
- Battery-operated flashlight, radio and alarm clock
- Replacement batteries
- Baby goods (formula, baby food, diapers, wipes, etc.)
- Manual can opener
- Eating/drinking utensils
- First-aid kit
- Crescent wrench to turn off gas if needed
- Personal hygiene products
- Household bleach
- Non-electric telephone (one that plugs into the phone line, but does not require electricity)



Optional, but helpful items

- Firewood
- Portable generator
- Propane stove and tank
- Matches
- Fire extinguisher
- Dry blankets and change of clothes
- Digital quick-response thermometer (to check temperature of perishable foods)

Utility safety guidelines following a natural disaster

General safety measures

When a natural disaster occurs, it is possible for components of your utility services to be damaged, resulting in a safety hazard. Immediately following a catastrophe, visually inspect your gas, water, electrical lines, and appliances for damage and do not touch an appliance that is broken. **Know where and how to shut off electricity, gas and water main switches and valves. Also, do not turn on the gas or electricity again until MLGW has first checked your home.** To further ensure your safety in such an emergency, please familiarize yourself with specific safety precautions for each of the three services as shown below.

Electric safety

When contained and properly used, electricity is a vital component of our daily lives. However, it can be extremely dangerous when we come in contact with unharnessed energy resulting from downed, “live” power lines. Knowing how to react can save your life. Here’s what to do if you ever encounter an electric hazard:



- **Do not touch or come close to downed power lines.** Although they may appear harmless, they could be energized, and therefore, deadly. Play it safe by keeping people and animals away from downed lines and call MLGW immediately at 528-4465.
- **If a power line falls on your car, do not get out.** Use your cell phone to call MLGW immediately or get the attention of someone who can call for you. Stay inside the car until professionals have moved the power line. If you must exit the car due to fire or some other emergency, check for wires on the ground and then jump clear. Make sure you do not touch the car and the ground at the same time. Doing so would make your body a pathway for electricity to travel to the ground, resulting in serious injury or death.

- **Never use water to extinguish an electrical fire.** Since water is a conductor, pouring water on a burning electric circuit could actually cause the electric current to flow to you. Type C fire extinguishers should be used to put out electrical fires.

Natural gas safety

A natural disaster can damage or break pipes, mains and appliances, causing potentially deadly gas leaks. Therefore, you should exercise caution when using natural gas in such situations. If you smell a strong gas odor in your home, please take the following actions

- Do not smoke, use candles, matches or other open flames, and don’t operate any electrical equipment, including light switches. The slightest spark could cause an explosion.
- Open the windows, evacuate the building and shut off your gas meter.
- Do not use the telephone inside your house. Instead, use your cell phone outside or a neighbor’s phone and call MLGW at 528-4465 to report the gas leak.
- Do not turn on the gas again or re-enter your home until MLGW has deemed it safe to do so.



**Open
Gas
Meter**



Closed Gas Meter

Carbon Monoxide Alert

Natural gas is a safe and reliable source of energy for your home when it is used correctly. However, a deadly gas called carbon monoxide can be produced when natural gas is not burned properly due to poor ventilation or dirty or malfunctioning appliances, such as stoves, space heaters and hot water heaters. For these reasons, it is important to inspect your appliances for any disaster-related damage before operating and place

generators outside (not in your garage) for proper ventilation before turning them on.

Signs of possible carbon monoxide emission

- Yellow flame: Natural gas should always burn blue.
- Floating or wavering flame: Flames should be steady and not move, float or roll around the burner.
- Soot or overheating: Appliances should not have soot above the burner. If your gas burners show any of these characteristics, call MLGW at 528-4465.



Symptoms of carbon monoxide poisoning

- Headache • Nausea • Fatigue
- Vomiting • Dizziness • Inability to think clearly

If you suspect carbon monoxide poisoning, leave your home and inhale fresh air immediately and seek prompt medical attention.

Tips to prevent carbon monoxide poisoning

- Appliances should be properly vented. Natural gas needs oxygen to burn safely and efficiently; without it, carbon monoxide is produced. Gas appliances should be vented outside your home.
- Keep chimneys and flues clear of all debris.
- Use gas space heaters according to manufacturers' instructions and provide proper ventilation.
- Have gas appliances inspected annually by a licensed professional.
- Never use generators indoors or in enclosed areas such as garages.

Drinking water safety

Water is crucial to life; thus it is vitally important that we have access to safe water in the event of a catastrophe. To ensure your water's safety, follow these suggestions:

- Make sure sewage lines are intact before using sanitary facilities.
- If you hear reports of broken water or sewage lines, you should shut off your incoming water valve to prevent contaminated water from entering your home.

- Know where to obtain safe water. Here are some good suggestions:

- Make advance preparations by storing several gallons of drinking water in a cool, dark location such as a closet. Each family member (including pets) requires two quarts of water per day.

Replace water every six months to maintain freshness. If stored water tastes flat, pour it back and forth between two containers a few times to aerate.

- Use melted ice.
- Drain water from the water heater tank, but use caution to avoid burns. First, be sure the electricity or gas is off, and open the drain at the bottom of the tank. Start the water flowing by turning on the faucet in your house that is located at the highest elevation. A small amount of water will trickle out. Then obtain water from the lowest faucet in the house.
- Retrieve water from the toilet tank (not the bowl) provided that cleaning agents are not used in the tank.
- In the absence of these household resources, you can always use rainwater or water from

bodies of water such as streams, rivers, lakes and ponds. However, to ensure against illness-causing contaminants, you should treat this water before consumption. The three most common methods for household water treatment, shown below, will kill most microbes.

Boiling - Boiling is the safest method for treating water. Water should be boiled for three to five minutes, and then cooled to a drinkable temperature. Boiled water will taste better if you introduce oxygen back into it by pouring back and forth between two clean containers.



Disinfection - Chlorine bleach is an excellent agent for purification when boiling is not possible. Add 16 drops of bleach per gallon of water. Stir and let stand for 30 minutes. If the water does not have a slight bleach odor, repeat the dosage and let stand another 15 minutes. Use only household liquid bleach that contains 5.25 percent hypochlorite and is no more than six months old. Do not use bleaches that are scented, color safe or contain added cleaners.

Distillation - Distillation involves boiling the water and then collecting the vapor that condenses back to water. The condensed vapor will not include salt and other impurities. To distill, fill a pot halfway with water. Tie a cup to the handle on the pot's lid so that the cup will hang right side up when the lid is upside down. Boil the water for 20 minutes. The water that drips from the lid into the cup is distilled.

In addition to these treatment methods, you may also use purification tablets available at many drugstores or add tincture of iodine to the water, following the same disinfection process as if you were using chlorine bleach.

Portable generator safety

Portable generators can be very useful in preventing refrigerated food spoilage or in keeping your heating or air conditioning units operable during a power outage. However, injuries and even deaths can occur from improper use of generators. To ensure your safety while operating such devices, MLGW recommends that you read the manufacturer's manual accompanying your generator and follow these safety guidelines.

- Never use a generator indoors or in an enclosed area such as a garage. Generators emit toxic carbon monoxide from the engine exhaust.
- A generator should only be operated in a well-ventilated and dry area, away from air intakes to the home. It should be protected from direct exposure to rain and snow, preferably under a canopy, open shed or carport.
- Do not attempt to restore power to your entire house by plugging the generator into a wall outlet. **The electricity produced by a generator cannot only ruin your home's wiring and start a fire, it can also feed back into the utility system and energize a line thought to be without power possibly killing utility workers trying to restore power.** It can also cause damage to the generator when electric service is restored.

- Plug individual appliances into the generator using heavy duty, outdoor rated, UL-listed cords with a wire gauge adequate for the appliance load. Never run generator cords under rugs or carpets where heat might build up or damage to a cord could go unnoticed. Follow the manufacturer's instructions to properly operate and ground the generator.
- Handle fuel carefully. Turn the generator off prior to refueling. Gasoline, kerosene and other flammable liquids should be stored outside of living areas in properly labeled safety containers. Make sure you have an adequate supply of fuel.
- Turn off or disconnect all appliances prior to operating a portable generator. Once the generator is running, appliances powered by the generator can be turned on one at a time.
- When power is restored, unplug all appliances and lights connected to the generator.
- Periodically run the generator to assure it will start and run properly.
- Decide which appliances you want to connect to the generator and simply add up the wattage of each load. At least a 2,500-watt generator is recommended for home standby (Example: if you want to run your refrigerator). At least a 5,000-watt generator is recommended for home-emergency use.

For the safety of customers and MLGW employees, as well as for the protection of customers' homes and property, all generators must be disconnected before power can be restored to a specific area. MLGW employees will attempt to notify customers using generators prior to work beginning in their area. However, if contact cannot be made, MLGW will disconnect generators so that the restoration process can continue.



Frequently asked questions

Q. How does MLGW determine whose power is restored first?

A. MLGW restores power in a very systematic manner, and its first priorities include restoring power to transmission lines and towers that deliver the electricity from TVA to MLGW.

We repair any damage to our substations to bring circuits online and focus our attention on restoring power to hospitals, wastewater treatment plants, water pumping stations, fire and police facilities,



and utility work centers. Work then moves on to our transmission and distribution system, which provides power to individual customers with priority given to nursing homes and critical care facilities; customer necessities such as major grocery stores, pharmacies and gas stations; large employers; and large concentrations of outages. Please refer to page 3 for more details about the restoration process.

Q. Who do I call about fallen trees at my house?

A. Call MLGW only if the tree is affecting a power line according to the following:

- Call 544-MLGW (6549) if tree limbs have fallen on a power line that is still intact.
- Call MLGW's emergency number at 528-4465 if a tree or limbs have fallen on the power line exposing a live wire. If a downed tree is on your property, but not affecting a power line, contact a professional tree-trimming and removal service.

Q. What is a “weatherhead” or “meter center,” and what should I do if the one to my home is damaged?

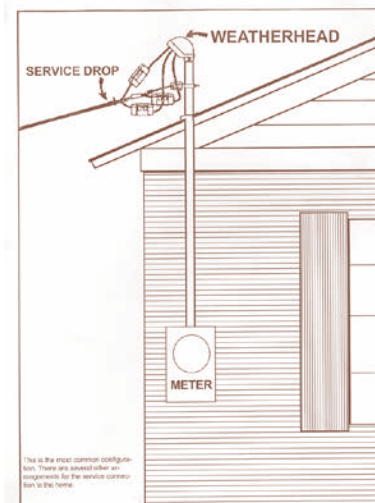
A. The weatherhead is usually located above the roofline or attached to the gable or side of the house where the customer's wiring connects to MLGW's overhead electric lines.

The weatherhead is the transitional point from the customer's service equipment to MLGW's service equipment. Typically a customer's service equipment includes the device that supports MLGW's wires to the house or building (eye bolt, dead end hook, mast clamp or rack), the weatherhead and the pipe or cable the weatherhead attaches to, the wiring in the pipe or cable and the device MLGW's meter plugs into, called the “meter socket.” This entire system is called the “meter center.” Tree limbs falling on service lines often bend or break the meter centers, detaching them from the customer's house or building.

In homes that have underground electric service, the underground electric wires are connected to either a ground-mounted meter pedestal or pipe-fed service to a meter socket. Damage to these type meter centers would result from trees or limbs striking the actual meter pedestal or meter socket, or disconnecting it from the underground electric service wires.

Regardless of your meter center type, all of the meter center components mentioned above are part of the homeowner's property and therefore, are not maintained by MLGW. **If they are damaged, you must have them repaired by a licensed electrician and inspected by Code Enforcement before MLGW**

can restore your power. MLGW will provide the licensed electrician a meter socket replacement if that part of the meter center is damaged and needs replacing. If the ground-mounted meter pedestal is damaged, MLGW will assist the licensed electrician in repairing or replacing it in conjunction with the customer's other repairs.



Q. Will MLGW pay me for food spoiled or electric equipment damaged as a result of a natural disaster?

A. No. As a self-insured, governmental entity, MLGW operates under the provisions of the Tennessee Governmental Tort Liability Act. The Act has strict guidelines on the types of claims that can and cannot be paid. Under the provisions of the Act, MLGW is not responsible for damages resulting from a storm or other unforeseen or uncontrollable failure of

utility equipment. In addition, proof that damage was caused by human error on the part of MLGW must be established in order for a claim to be considered. If this is the case, contact our Claims department at 528-4621. Otherwise, please consult the holder of your homeowner's insurance policy for information regarding coverage on damage to electric equipment, household appliances, food spoilage, etc., as coverage could be different depending on your individual policy.

Q. In previous storms, I've seen MLGW trucks in my neighborhood, yet my power was sometimes not restored until days later. Why is this?

A. More than likely, you saw an employee whose job is to assess damage to the area and determine the types of equipment and manpower needed to make repairs and restore power. Only after this assessment has been made can a crew be dispatched to the site. Crews are scheduled according to workload, priorities and other such factors to ensure that we are using our manpower and resources as efficiently as possible.

We have a very systematic process for restoring power as quickly and as safely as possible, and we focus on restoring circuits serving a large number of customers and critical care facilities first. As work to restore circuits is completed and attention turns to pockets of outages, the process becomes much more tedious and time consuming, resulting in a prolonged restoration time.



Q. Will I be charged for days that I do not have power?

A. No. Your MLGW charges are based on usage, not a daily rate. Like the odometer on your car, your utility meters register activity only when you use your services. Therefore, when your power is out, your electric meter does not record usage and you are not charged. If conditions make it necessary for your bill to be estimated, then the appropriate correction will be made reflecting your actual consumption when we are able to resume reading your meter. (Note: Estimations are calculated based on usage history for comparable months' service.)

Q. Should I unplug my appliances before my power is restored?

A. It is rare for appliances to be damaged when power is restored. More often, the appliance and/or wiring servicing the appliance may have been damaged during the incident, which caused the initial outage, such as lightning. In a case like this, the damage then becomes evident when power is restored. However, customers who are concerned about potential damage could certainly exercise an extra measure of caution by unplugging major appliances or sensitive equipment such as home computers or electronics. Customers may also want to purchase surge protectors for these appliances.

Q. How long will the food in my refrigerator or freezer be safe to eat following an electric outage?

A. First of all, the less cold air you allow to escape from your refrigerator or freezer, the longer your food will maintain a safe temperature. So avoid opening these appliances if at all possible. According to the American Red Cross, perishable foods should not be held above 40 degrees for more than two hours. Use a digital quick response thermometer to check the internal temperature of refrigerated food. If your refrigerator is out for more than two to four hours, it is best to err on the side of safety and discard the perishable items. If unopened, a freezer that is half full will hold for up to 24 hours and a full freezer for 48 hours. If the freezer food has ice crystals and is not above 40 degrees, you can refreeze. If the freezer food has thawed, many items that have been held above 40 degrees for more than two hours should be discarded, including meats, poultry, casseroles, fish, shellfish, eggs, and most dairy items. For more information regarding food safety guidelines, please call the Memphis and Shelby County Health Department at 544-7600 or obtain information from the American Red Cross by calling 726-1690 or by visiting their website at www.redcross.org.

Communicating with MLGW following a disaster



When a natural disaster strikes causing a widespread power outage that affects homes and businesses on multiple circuits, the situation is considered a crisis or emergency. In such cases, you can help us expedite the restoration process by following the guidelines listed below. Because of the high volume of telephone calls we receive during such a crisis, we ask that, unless you are in an emergency situation, you refrain from calling the Customer Care Center, as it is important that our phone lines remain available for the safety and welfare of those in true emergencies.

Step 1: If you have a downed wire, gas leak or broken water main, call the 24-hour Emergency number immediately at **528-4465**. Please do not call this number to report power outages as this line is reserved only for assisting customers in true emergency situations.

Step 2: Call the Outage Reporting Hotline at **544-6500** to register your outage via our automated system. Once you have completed this procedure, it is not necessary to report your outage again, and doing so could delay the restoration process. However, as the restoration effort progresses, you can call this number to receive general updates regarding the restoration of services at your address.

Step 3: If you have access to the Internet, check the status of the restoration process by using our online tools. Visit our website at **www.mlgw.com** to view maps of the areas in which we're concentrating our restoration efforts every day, as well as news releases containing pertinent information.

Step 4: Call MLGW's Customer Care Center at **544-MLGW (6549)** as a last resort and only if your situation necessitates speaking directly with a service advisor. Please limit the number of calls placed to our Customer Care Center during the initial stages

of a crisis. Repetitive calls not only tie up telephone lines, but they add to the already massive workload and hinder our overall restoration efforts.

Step 5: Stay informed by tuning into media updates via a battery-operated radio or TV and through the daily newspaper. MLGW provides the news media with restoration updates for our customers several times daily. Customers can also interact with MLGW through Twitter at www.twitter.com/mlgw and the 'Bird on a Wire' blog at www.mlgw.blogspot.com or get current utility-related information on Facebook and YouTube. MLGW now has an iPhone app that can be downloaded free, and provides MLGW customers access to outage status and a new mobile friendly outage map.

What MLGW needs to know when you call

- Is there any damage to your electric meter center (weatherhead)? If so, it must be repaired by a private electrician before MLGW can restore your power.
- Is your house the only one on the street that's without power? If not, which of your neighbors are also out? Are they all on one side of the street or is the entire street or neighborhood out?
- Is a power line down? If so, does the line lead from pole to pole or pole to house?
- Has a tree limb fallen on the line? If so, our tree trimmers must clear the line before any other repairs can be made. Never attempt to trim limbs that are near a power line.
- Did you hear a loud noise or explosion before the outage?

By following these tips and instructions, you will be better prepared to safely survive a disaster and help MLGW restore your service as quickly as possible.