Local Emergency Planning Committee

November 7, 2008





Local Emergency Planning Committee (LEPC)

Power Outages: Preparedness and Response

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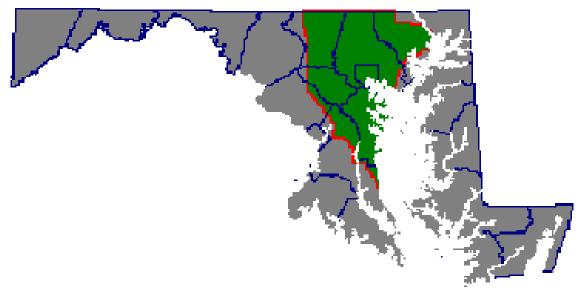
Baltimore Gas and Electric Company

Power Outages: Preparedness and Response

Agenda

- Storm Preparedness Philosophy Overview
- Storm Preparations and Types Of Storms
- Working with the EOC's and handling 911 Electric Calls
- BGE Trouble Call Process
- Damage Assessment and Public Safety
- Information and Programs for the Public

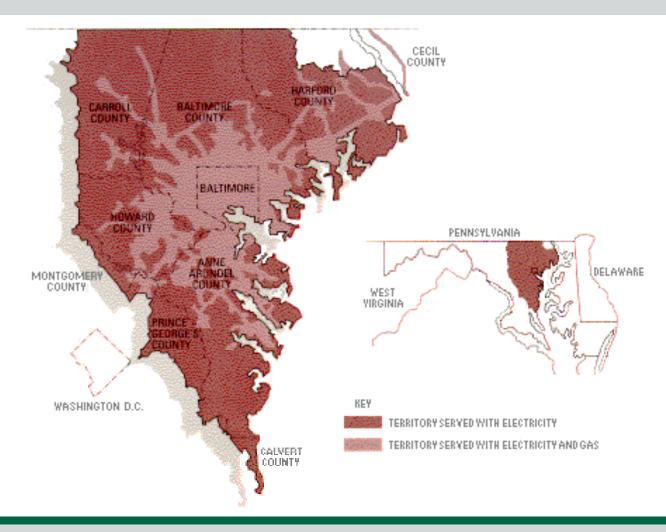
BGE Background



Nation's Oldest Gas Utility (1816)
One of the Earliest Electric Utilities
600,000 Gas Customers
1.2 Million Electric Customers

2,300 Square Miles of Service Territory1,300 Circuit Miles of Transmission Lines23,600 Circuit Miles of OH andUnderground Distribution Lines

BGE Service Territory



Storm Preparedness Philosophy - Overview

- In many aspects, 1999 was a pivotal year for storm and emergency planning at BGE
- While Y2K contingency planning was up and running, the 1999 Ice Storm and Hurricane Floyd struck
- While there were no major problems that occurred as a result of Y2K, there were many potential problems uncovered during the extensive risked based, critical process evaluation.
- Any process or facility deemed critical to operations was identified and a contingency plan was developed
- The Y2K Team continued their important work and became the Corporate Business Continuity Team.
- When 911 occurred, our Business Continuity Team had been in place for more than a year and was addressing many of the issues raised

Storm Preparedness Philosophy - Overview

- The 1999 Ice Storm and Hurricane Floyd also helped change the way BGE thought about storm response of severe events
- For more than six months following Floyd numerous BGE teams worked to identify areas of weakness in BGE's response and make recommendations for improvement
- In 2000, the Restoration Services Organization was founded. This organization was tasked with the responsibility of Emergency and Storm Preparedness.
- In the spring of 2000, the first version of the Electric Delivery Emergency Response Plan was released.
- While Restoration Services was responsible for all processes related to the safe and reliable operation of the electric system, the Business Continuity Team assures that Restoration Services has faculty and infrastructure redundancy

Storm Preparedness Philosophy - Overview

- Following Hurricane Isabel, formal Process Improvement Teams were set up that involved more than 100 employees. These employees helped identify the areas that could be improved and helped us reengineer our storm processes and procedures.
- The EDERP and the Storm Playbook continues to be a "living" document. Following all major events and drills, critiques are held and lessons learned are documented and incorporated into the plans.
- While the focus following Hurricane Floyd had been on developing new processes that allowed us to mobilize and support large numbers of external help, because of the significant number of wires down during Hurricane Isabel, much of the focus of the Process Improvement Teams was on Public Safety.

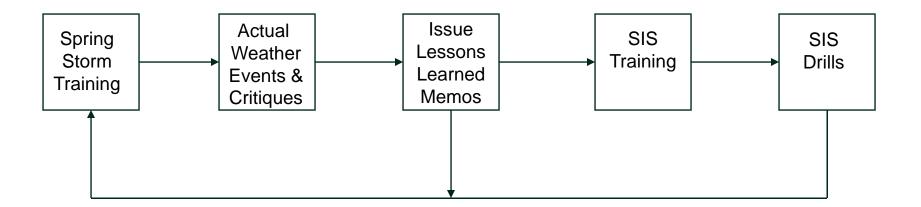
Storm Preparations and Types Of Storms

Storm Preparation

- BGE is committed to storm and emergency preparedness
- There is an internal organization dedicated to Storm and Emergency preparedness
- It is a year round commitment
- We involve a nationally recognized Emergency Preparedness
 Consultant to assist us in developing drills and to provide feedback
- Everyone in BGE has a role and responsibilities in that plan
- Basic philosophy is that we have a documented plan, we train on that plan and we practice and drill on that plan
- Under the principles of continuous improvement, critiques are held after large events and drills and feedback is used to improve the processes and update training and procedures.

Annual Storm Preparation Timeline

Annual Storm Preparedness Cycle consists of multiple training sessions, table top and comprehensive drills and critiques and feedback processes to facilitate continuous improvement



Types of Storms

Adverse Weather

- A weather related event causing less than 12,000 customers outages
- Normally associated with strong winds, heavy rain or extended heat/cold waves
- Customers typically restored in less than 1 day
- Typically 10 to 20 per year
- Will typically be handled by Control Room

Minor Storms

- A weather related event causing 12,000 or more customers outages
- Normally associated with isolated gusty thunderstorms or very strong winds.
- Customers typically restored in 1-2 days
- Typically 12 to 18 per year
- May require mobilization of Storm Center

Types of Storms

Major Storms

- A weather related event causing 100,000 or more customers outages
- Normally associated with system wide severe thunderstorms, isolated tornadoes and extended high wind conditions
- Extensive damage to distribution system
- Customers typically restored in 2-3 days
- Typically 1 to 2 per year

Severe-Impact Storms

- A weather related event causing 200,000 or more customer outages within BGE's territory or 25% within a region
- Severe damage to distribution system
- Requires need for significant mutual assistance
- Requires significant logistical support

Storms statistics since 2003

Year	2003	2004	2005	2006	2007	2008
Type of Events						
Adverse weather	8	21	10	5	19	14
Minor Storm	16	12	11	17	18	18
Major Storm	2	0	1	3	2	1
SIS	Isabel	0	0	0	0	0

Working with the EOC's and handling 911 Electric Calls

County Emergency Operation Centers

- BGE maintains strong working relationships with all County and the Cities in it's Service Territory.
- This includes:
 - Office of Emergency Management
 - DPW
 - public schools
 - police & fire
- Each agency has direct contacts at BGE
- Public Affairs manages relationships with elected officials and provides information as it becomes available
- BGE will assign staff to Emergency Operations Center during significant events, i.e., Floyd, Isabel, Major Storms

MEMA – Emergency Operation Centers

- BGE conducts annual meeting with emergency management partners from all jurisdictions
 - discuss status of BGE operations and emergency planning
 - provide opportunity for all jurisdictions to share information
- BGE will staff the MEMA Headquarters for large events
- BGE currently provides outage information to MEMA for display on EMMA
- Discussions underway to provide outage information by zip code for display on EMMA
- Local EOC's will be able to view outage information on EMMA to better plan for shelters, cooling centers, etc.

County 911 Center has direct line to BGE Customer Call Center

Work with the County and City EOC's to calibrate the priority system

Calls are programmed to move to top of queue

BGE Customer Care Representative will conference 911 caller and BGE dispatch supervisor

ETA is given to 911 caller based on 911 priority level and available resources

911 Electric Calls to BGE Customer Call Center (CCC)

Priority 1 - Life Threatening Situation

Examples of Priority 1 calls include:

- Confirmed BGE wires down on car with occupants trapped
- Sparking BGE wires on building with occupants trapped
- Electric service outage with a life threatening medical situation where evacuation is not possible
- Fire emergencies or hostage situations

These jobs receive immediate response and are assigned the highest priority.

Typical annual volumes are 300-400 (911-1's) per year with the following goals:

- Typical Dispatch time 5 minutes or less
- Typical On-site time 32 minutes or less

911 Electric Calls to BGE Customer Call Center (CCC)

Priority 2 - Emergency but Not Life Threatening

Examples of Priority 2 calls include:

Any other situation not included as a Priority 1 such as BGE equipment (poles, conductors, transformers) on fire, Wire Down that is causing Road to be Closed/Blocked, Police/Fire Standing By, Wire Sparking, etc.

Priority 3 - Non-emergency Situation

Examples of Priority 3 jobs include:

 Any other situation not included as Priority 2 such as equipment or wire down situations where the equipment/wires have not been verified to be BGE equipment/wires

- Typically, about once every 2 years, we experience a large scale event that may or may not involve outages.
- These are not "typical storm" situations.
- They are usually associated with some sort of weather, equipment related problem or outside infrastructure failure.
- Some examples:
 - Baltimore City Train Tunnel Situation August 2001
 - Harford County Galloping Conductor Situation January 2004
 - Baltimore City MTA Feeder Outages July 2005
 - Marriott Hill Substation Fire April 2006
 - Several sinkhole situations in the past affecting gas and electric equipment

Storm Monitoring and Restoration Timeline

Storm Monitoring and Restoration Timeline Before the Event

Monitor weather and assess potential impact on system

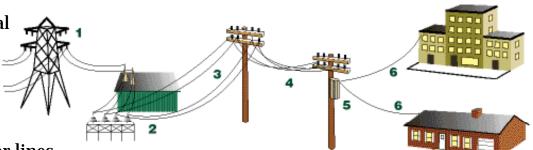
- System Operations is always monitoring the weather
 - BGE subscribes to several weather services and is alerted whenever a weather system poses a potential threat to the BGE electric system
 - Depending on the time of year and the type of system, increased monitoring may begin days or just hours ahead of the event
- Once a determination is made that a true threat exists
 - System Operations determines the level of threat potential
 - If the confidence level is high that a storm declaration is imminent:
 - Increased staffing of the control room and service centers might be requested
 - Pre-mobilization of Patrollers and other storm center personnel might be requested
 - Mutual Assistance conference calls with BGE's mutual assistance partners might be conducted to determine availability of resources and the potential needs.

Storm Monitoring and Restoration Timeline **During the Event**

- BGE continues to monitor the weather and assess potential impact on system
- Once number of OMS jobs exceeds number that can be managed in a timely manner by the control room, the storm center is mobilized
 - Work is prioritized as follows:
 - 911 Priority 1 and Public Safety issues are the highest priority
 - Critical customers such as hospitals, 911 Centers, Pumping Stations, etc. are next
 - Outage jobs are prioritized by their size (largest to smallest number of customers out)
 - As the storm continues, balance the size of the jobs with the outage durations
 - Goal is to provided a geographically balanced restoration effort.

BGE Operations Restoration Priorities

- Outages involving public safety and Critical Customers receive first priority.
- Main power lines and equipment that will restore the largest number of customers out will be restored next.
- Finally individual transformers and smaller lines to individual homes and businesses are restored to customers who have been out the longest.



Diagram

1. Transmission Lines

Bring bulk power from power plants Connect to several substations 10.000+ customers affected

2. Substations

Distribute power to several circuits 6,000+ customers affected

3. Distribution Lines

Form power networks connecting communities and industries

1,500+ customers affected

4. Overhead Lines

Serve smaller customer groups or neighborhoods 50+ customers affected

5. Transformers

Reduce level to usable voltage for your home or business

1 - 8 customers affected

6. Line to Your Home or Business

Storm Monitoring and Restoration Timeline **During the Event**

Mutual Assistance conference calls will continue as needed

- Whenever it is estimated that an event could last more than 24 hours,
 Mutual Assistance will be considered
- The availability of the outside assistance and the travel times must be evaluated with consideration to the estimated storm completion
 - If requested, additional staffing will be mobilized to serve as crew guides and to work in Regional Command Centers and Staging Areas
 - The Logistics organization will ensure the set-up of the Regional Command Centers and Staging Areas
 - Work will be pre-packaged and sent out to the Staging Areas to be assigned to crew guides
- Storm Leadership will evaluate system conditions and resources available and determine system and regional Estimated Times of Restoration

Storm Monitoring and Restoration Timeline Weather Event Has Cleared the System

After the event has cleared the area, Leadership will continue to:

- Monitor the system restoration progress:
 - Ensure all public safety issues are addressed in a timely manner
 - Provide updates to the ETR's as they become available
 - Ensure a balanced restoration throughout the service territory
 - Ensure that the restoration priorities continue to be followed
 - Monitor resources and adjust as needed

At end of the storm:

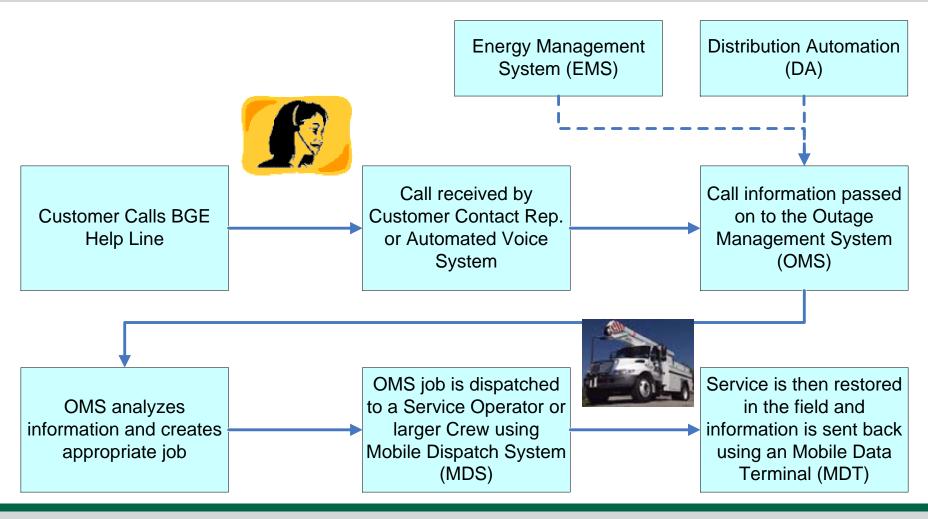
- Close down the storm and de-mobilize personnel
- Develop a plan to make permanent all temporary repairs

BGE Trouble Call Process

BGE Trouble Call Process

- BGE staffs Customer Call Centers 24/7 and has a state of the art IVR system to take customer calls for outages, reports of wires down, etc.
- Every customer is coded into Customer Information System (CIS).
- For most outages or system damage issues, BGE relies on the customer's call as the input into the Outage Management System. BGE dependent upon customer calls to obtain intelligence on outages
- BGE uses state-of-the-art OMS. OMS matches customer call data to distribution mapping and analyzes probable cause of trouble
- For some large equipment, such as substation breakers, BGE has remote sensing (SCADA) equipment to monitor and operate the system
- BGE directs all "trouble" and switching activities from a centralized Control Room that is staffed 24/7, 365 days a year.

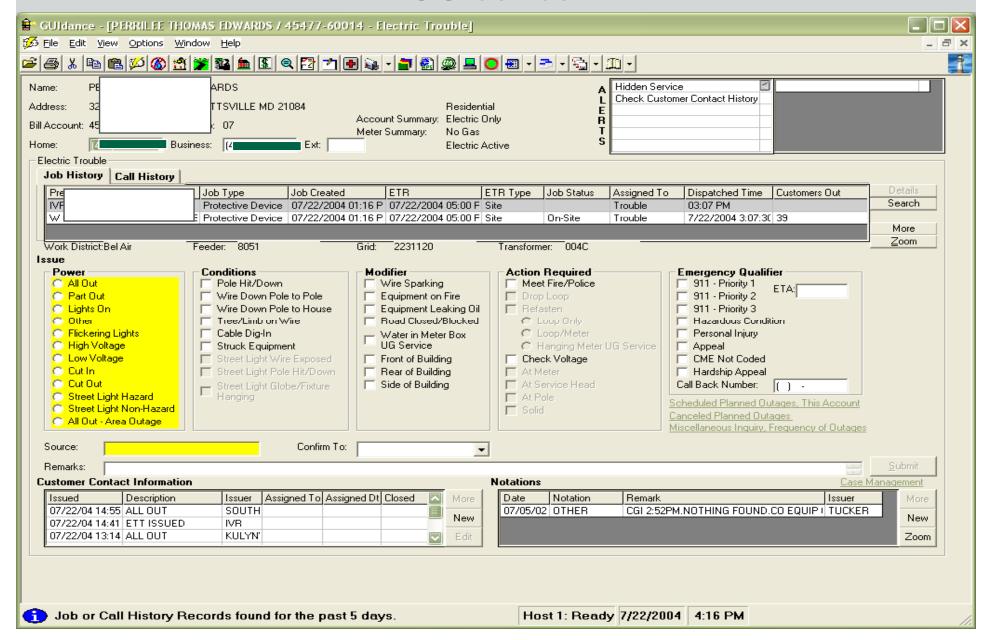
Distribution Operations - Outage Call Process



BGE_®

30

GUIdance



Managing and Prioritizing Work in OMS

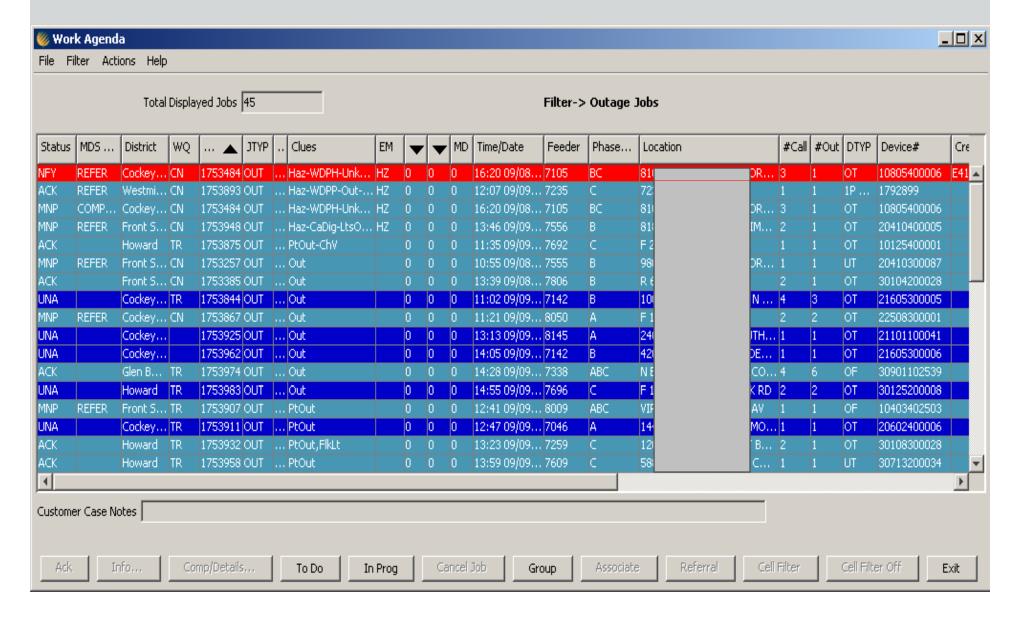
Analyzing a Job

- Customer Clues are utilized to help determine a priority of the OMS created job. Each event has -
 - Power Clue all/part out, flickering, Street Light
 - Conditions pole hit, wire down, tree on wire, S/L pole down
 - Modifier wire sparking, leaking oil, water in meter
 - Action Required meet Fire/Police, check meter
 - Emergency code 911, Hazard, Shock case, medical
- Priority of OMS jobs are based on job status, customer clues (including 911 centers), type of job, type of customers impacted, number of customers impacted, duration of outage
- OMS automatically sorts jobs on Work Agenda based on predetermined priority of clues

Prioritizing Events & Identifying Critical Customers

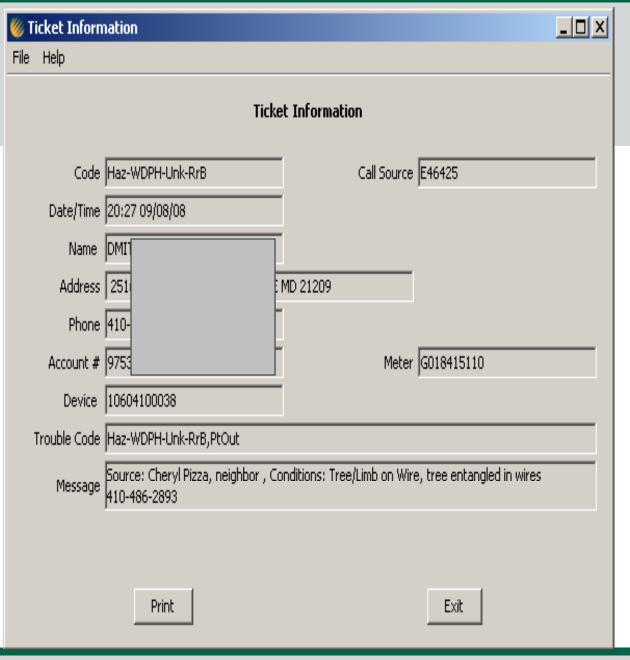
- In addition to call clues, there are Customer codes to identify Critical, Business Significant, and Medical customers
- When Critical and Business Significant Customers are affected by service interruptions, reports, emails and pages can be generated to interested parties
- Representatives proactively contact these customers to discuss the outage and related concerns
- Infoview reports are available to summarize outage information to Critical and Business Significant Customers (Hospitals, Pumping Stations, Schools, etc.)

OMS – Work Agenda

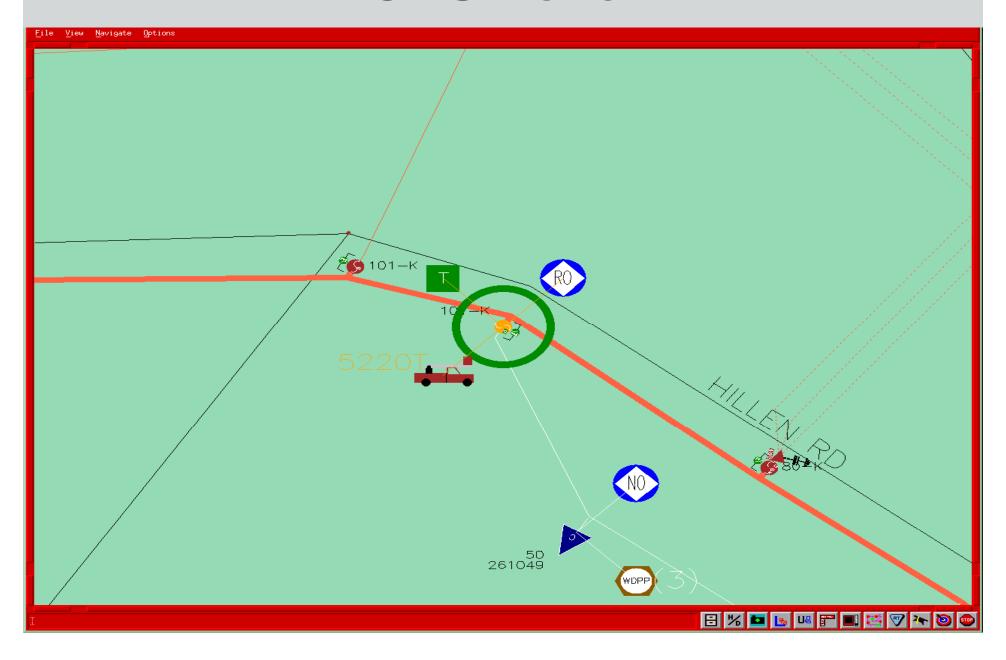


Event - Call Information

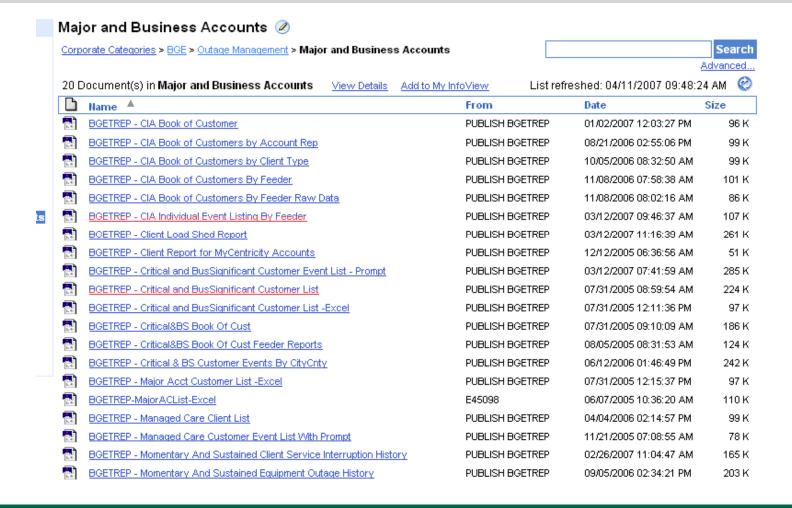
Can drill down on each call specifics



OMS Viewer



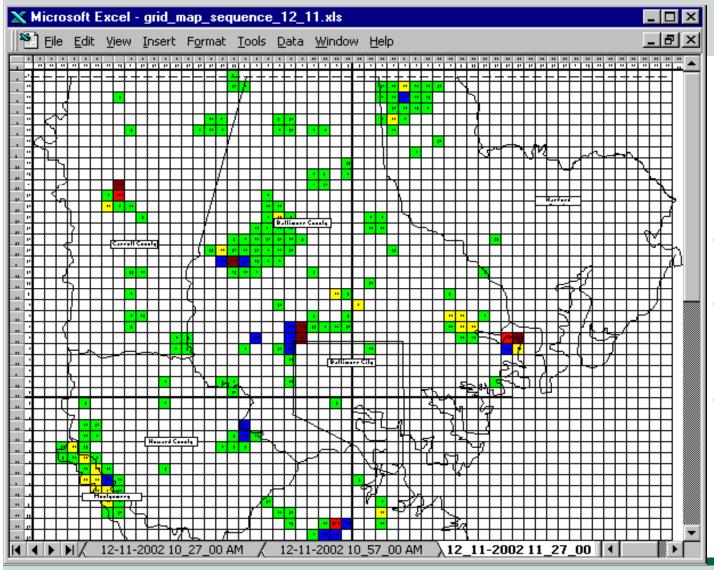
Tracking Critical Customers

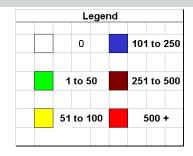


Tracking Public Safety Issues

23 [Document(s) in Damage Assessment <u>View Details</u> <u>Add to My InfoView</u>	List re	freshed: 04/11/2007 09:48:	24 AM 🔣
	Name A	From	Date	Size
-	BGETREP - Active Job Details for Patrol Q	PUBLISH BGETREP	07/31/2005 12:37:33 PM	126 K
1.4	BGETREP - Active Job Details for TrblQ Loop and WDPH	PUBLISH BGETREP	07/31/2005 12:40:55 PM	140 K
1.0	BGETREP - Active Job Details for TrblQ Loop and WDPH Sorted by NLC	PUBLISH BGETREP	07/31/2005 12:28:18 PM	131 K
1. 0	BGETREP - Active Job Details for WDPH Jobs	PUBLISH BGETREP	02/13/2006 10:32:43 AM	197 K
1.4	BGETREP - Active NON Outage Wire Down Events	PUBLISH BGETREP	07/31/2005 12:39:08 PM	63 K
1.0	BGETREP - Damage Assessment	PUBLISH BGETREP	04/21/2006 10:03:17 AM	284 K
1.4	BGETREP - Job Details by Feeder	PUBLISH BGETREP	02/13/2006 07:11:53 AM	102 K
	BGETREP - OMS Damage Assessment	PUBLISH BGETREP	10/03/2005 07:10:37 AM	144 K
1.0	BGETREP - OUT Job Details for TrblQ Loop and WDPH Sorted by NLC	PUBLISH BGETREP	02/13/2006 12:22:32 PM	162 K
1.4	BGETREP - Public Safety Jobs By Feeder	PUBLISH BGETREP	07/31/2005 12:31:32 PM	72 K
1.4	BGETREP - SIS Damage Assessment Summary	PUBLISH BGETREP	11/21/2005 06:47:24 AM	116 K
1.4	BGETREP - SIS Feeder Workload Details Worksheet	PUBLISH BGETREP	11/21/2005 06:54:14 AM	163 K
1.4	BGETREP - SIS WDPP Damage Assessment Worksheet	PUBLISH BGETREP	02/14/2007 01:00:50 PM	138 K
1.4	BGETREP - Trouble Tickets By Feeder	PUBLISH BGETREP	06/29/2006 02:47:09 PM	128 K
	BGETREP - WDPH Job Summary	PUBLISH BGETREP	09/07/2005 03:16:58 PM	102 K
1.0	BGETREP - WDPP Event Details by Feeder	PUBLISH BGETREP	01/19/2006 02:52:37 PM	78 K
1.4	BGETREP - WDPP Event Details by WrkDist	PUBLISH BGETREP	02/13/2006 12:10:44 PM	119 K
1.4	BGETREP - WDPP Event Details by WrkDist new	PUBLISH BGETREP	07/31/2005 12:33:09 PM	98 K
1.4	BGETREP - WDPP Event Details by WrkDist since a certain time	PUBLISH BGETREP	07/31/2005 12:35:37 PM	111 K
1.0	BGETREP - WDPP Event Details by WrkDist with OP Comment	PUBLISH BGETREP	07/31/2005 12:35:08 PM	107 K
1.4	BGETREP - WDPP Event Details in PSP or Blank work queue	PUBLISH BGETREP	07/31/2005 12:39:02 PM	71 K
1.4	BGETREP - WDPP Job Summary	PUBLISH BGETREP	09/30/2005 02:07:02 PM	156 K
1. 0	BGETREP - WDPP (Only) Event Details by WrkDist	PUBLISH BGETREP	02/13/2006 12:17:09 PM	120 K

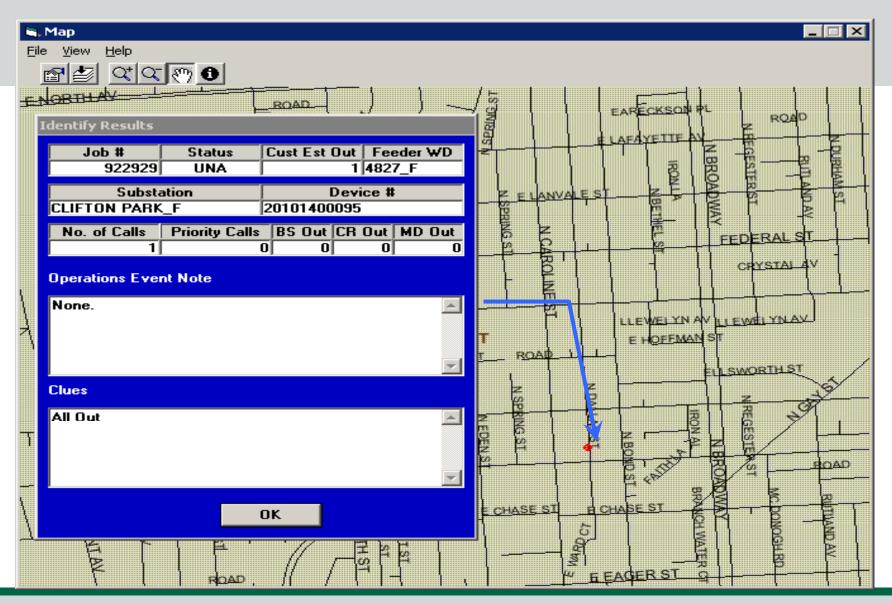
Powernet Reports





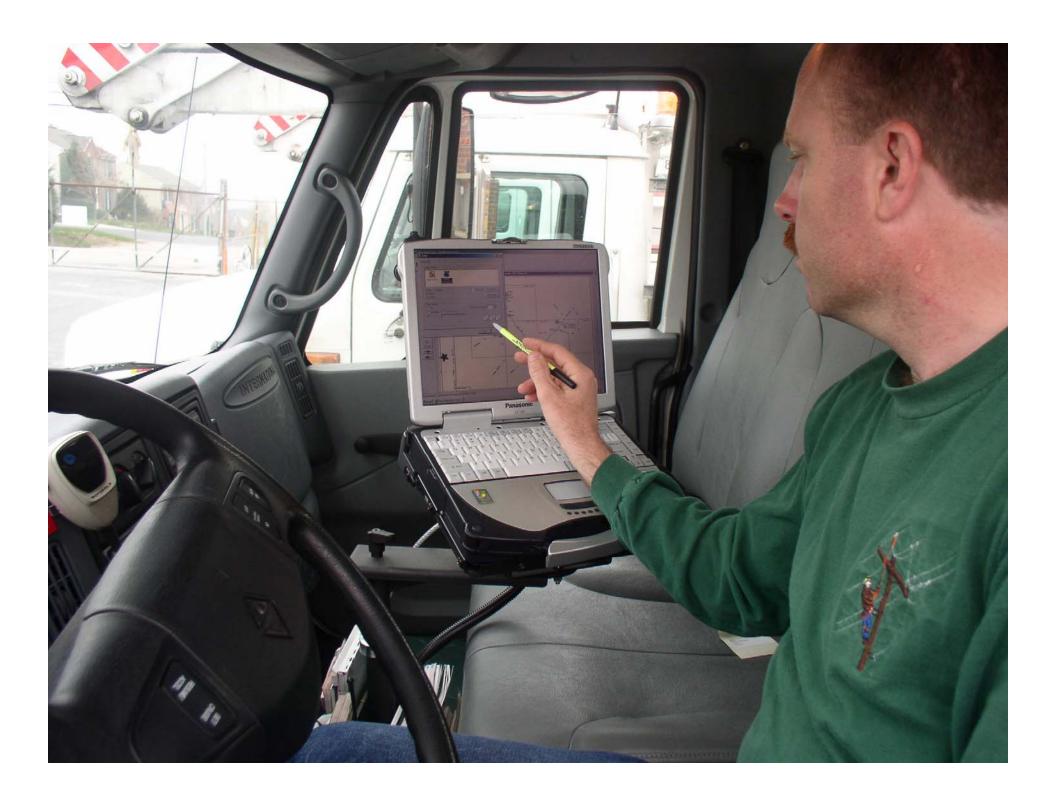
- Assure balance restoration
- Assure appropriate distribution of resources
- Effectively locate RCC's & Staging Areas

Executive Dashboard

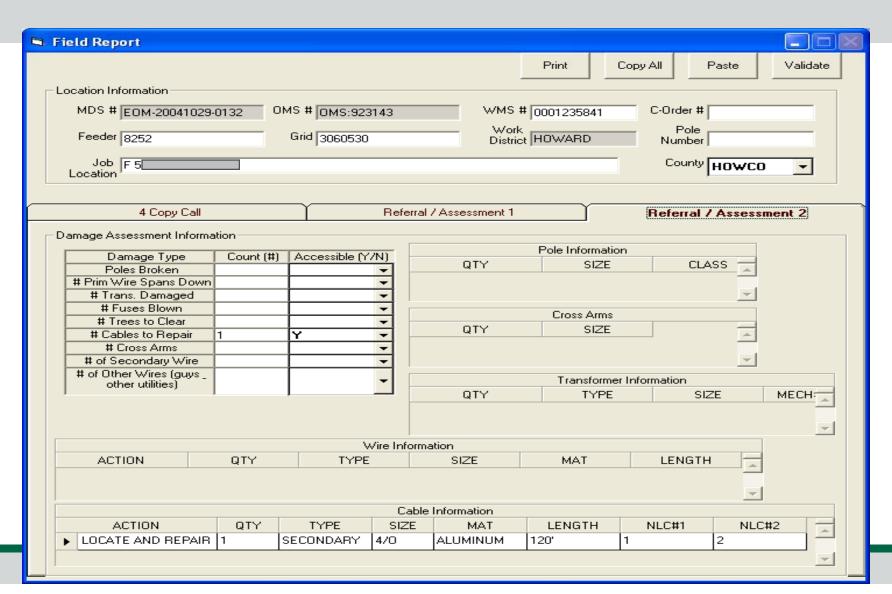


Mobile Dispatch System (MDS)

- In 2004, a new Mobile Dispatch System as well as a digital map product (Atlas) went live linking the restoration technologies with the truck on the street
- MDS and OMS are "tightly integrated" via a custom interface
- When a job is acknowledged it is passed from OMS to MDS
- The use of the MDS to provide an instantaneous line of communication from the field crews to our Customer Information System is a cornerstone of our Storm and Emergency response procedures.
- Because of this, information can be made available to customers as soon as it is entered into computers in the vehicles.
- In addition to all of our Overhead vehicles, there are 20 vehicles with MDT's dedicated for patrollers during storm operations and 20 portable seat mounted units to be used for addition patrollers or crew guides.



Field Reports – MDS Damage Assessment



Damage Assessment and Public Safety

Damage Assessment and Public Safety

BGE has followed a 3-pronged approach following Severe Impact Weather Events

- Public Safety
 - Send field resources to protect the public from downed electric wires / poles
- Damage Assessment
 - Send field resources to survey damage and report findings back to Storm Management, in order to determine resource requirements and system level ETRs
- Restoration
 - Use BGE crews, external construction crews, crew guides, etc. to restore electric service

Damage Assessment and Public Safety

- Public Safety is always priority #1
- BGE personnel must stand-by <u>ALL wire down</u> <u>situations that are not grounded</u> until the situation is either made safe by a Cut & Clear crew or Construction crews arrive
- During Hurricane Isabel there were 16,000+ calls reporting wires down resulting in over 6,000 jobs with wire down clues

Information and Programs for the Public

Information and Programs for the Public

- BGE's website contains information about:
 - Storm preparedness and safety
 - Programs such as the Special Needs Program
 - Generator Safety
 - Information about power outages
 - Natural Gas Safety
- BGE has published and teamed with others to publish safety documents such as the Red Cross's Disaster Preparedness booklet and several billing inserts.

BGE.COM Storm Safety



- In an accessible location, have working flashlights, a battery-operated radio equipped with extra batteries, a supply of non-perishable foods (cereal, canned fruits, canned meats, and drinking
 - Ensure that all family members know about your emergency storm safety plan and the location of emergency supplies.
 - Include in the emergency plan provisions for family members with special medical needs, especially those on life support equipment and vital medications.
 - Secure loose objects outside your home that may become flying objects during high winds.
 - Have fire safety equipment such as a fire extinguisher and baking soda available.
 - If you lose power, keep refrigerator and freezer doors closed.

water), utensils, manual can opener, and first-aid kit.



you and your family safe:

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Business Customers

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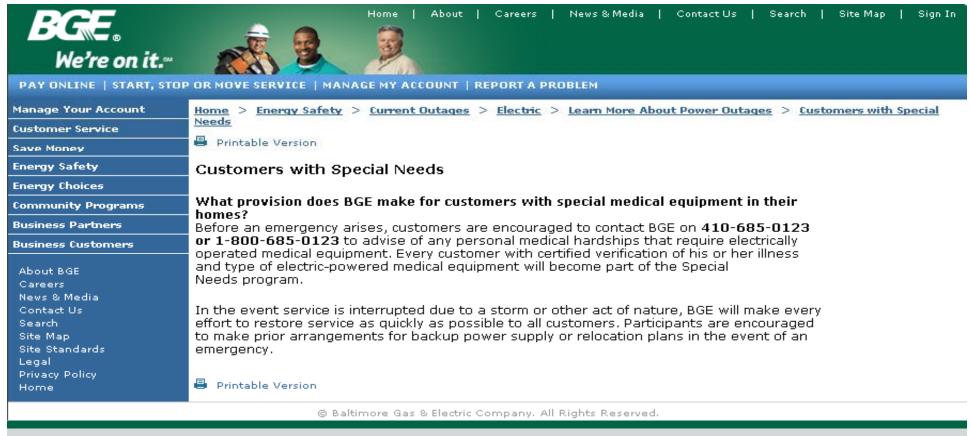
Careers

Call Weatherline at 410-662-9225 for up-tothe minute weather forecasts. Always put safety first - call BGE immediately at 410-685-0123 or 800-685-0123 to report downed or sparking power lines or unsafe electrical equipment.

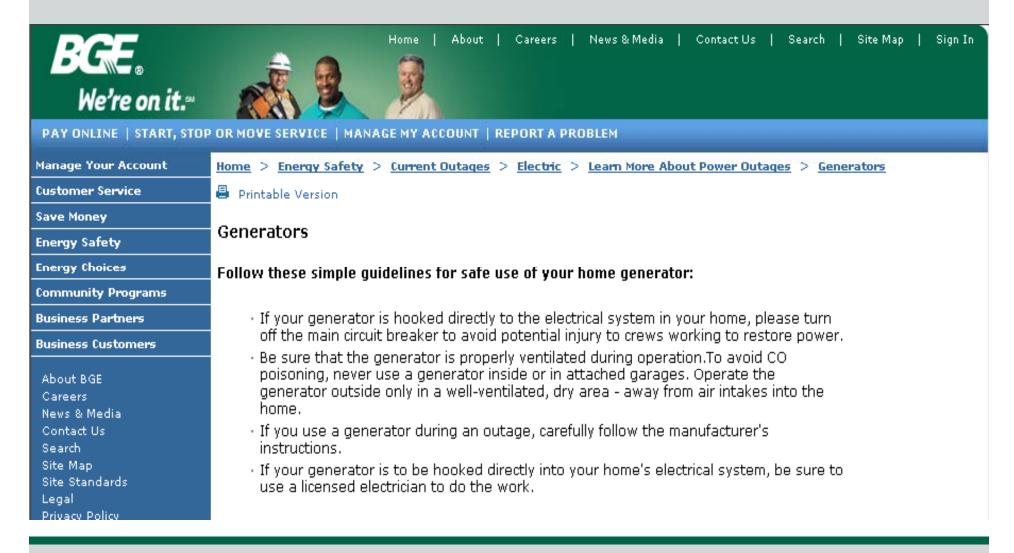
Stay away from fallen or low-hanging wires or anything they contact. Be especially cautious near metal fences.

BGE.COM Special Needs Customers

- Disaster Preparedness for Special Needs Customers Booklet is available
- Information about the Special Needs Program is available on BGE.com



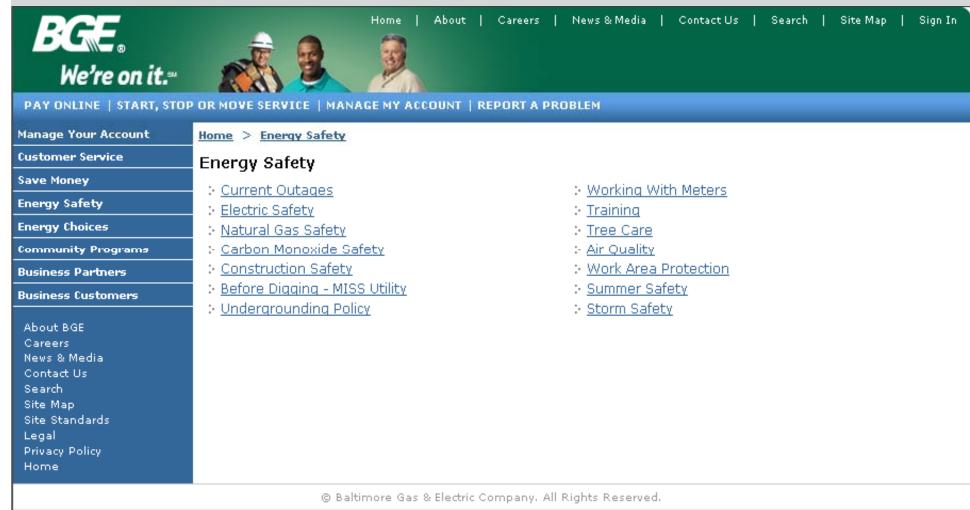
BGE.COM Generator Safety



BGE.COM What To Do When The Power Goes Out



BGE.COM Energy Safety



BGE.COM Active Outages and Restoration Progress

Power Out or Downed Wire?

Call 1-877-778-2222 - Don't assume BGE knows

When reporting a power outage, your call goes directly to our trouble processing center for response. The system works by matching your phone number to your account, so it's important that we have your current phone number on file. If you move or change phone numbers, you can use our online account management service to update your phone number. You can also call BGE at 410-685-0123 to update your phone number. Please have your account number available when you call. Media should contact the media hotline for more information.



County	Total Customers	Customers Out
Anne Arundel	231,476	14
Baltimore	366,789	17
Baltimore City	278,336	97
Calvert	7,779	О
Carroll	57,087	3
Harford	98,954	0
Howard	115,062	91
Montgomery	13,599	О
Prince George's	79,327	1
Total	1,248,409	223

Updated: 09/08/2008 04:42 PM

Customers Affected

1 - 15
 251 - 1,000
 16 - 30
 1,001 - 2,500
 31 - 50
 2,500 - 10,000
 51 - 250

Click on the map to zoom in

Emergency Numbers

Power outages only

1-877-778-2222

All others (including gas emergencies)

1-800-685-0123

BGE.COM Interactive – If Available