



# Bowie Electric Reliability Action Plan (BERAP) PSC Final Update



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*Core Values*

- Safety • Excellence & Accountability • Teamwork • Integrity
- Customer Commitment • Community & Environmental Responsibility

## Presentation Purpose

- To provide a Final Report of BGE's Bowie Electric Reliability Action Plan (BERAP) to the Commission.
  - Drivers for the project
  - Describe the project and scope of work completed
  - Stakeholder coordination
  - Project Success
  - Going Forward

## Project Drivers

- Pre-2008, Bowie as a community had electric reliability which was below the BGE system average. BGE serves a tightly grouped area in Bowie of approximately 24,000 customers with 21 distribution feeders.
- Traditional system-wide reliability improvement programs had not provided sustained improvement due to the specific issues associated with Bowie.
  - Aging Urban Forest / Fast growing White Pine Trees
  - Rear Lot Line combined with lower pole construction
  - Fences / Sheds

# Project Drivers

- Historical reliability data indicated the need to improve
- In 2006 and 2007 significant weather events impacted Bowie reliability, raising customer frustration and exacerbating customer concerns
  - 2/11/06 Snow Storm - 8,200 customer interruptions
  - 9/1/06 Tropical Storm Ernesto -17,100 customer interruptions
  - 2/14/07 Ice Storm - 28,200 customer interruptions
  - 4/15/07 Major Wind Storm - 3,000 customer interruptions

# BERAP Beginnings

- A number of meetings and discussions were held with members of Maryland and Bowie government in 2007
- Discussions led to BGE taking urgent action to improve Bowie reliability
- BGE created three internal Bowie Electric Reliability Action Plan Teams
  - Executive Steering Team – Provide senior vice-president level guidance, support and alignment
  - Bowie Communications Team – Focus on improving Bowie area communications
  - Bowie Reliability Improvement Team – Focus on improving Bowie reliability from an infrastructure perspective
- In May 2007, the Bowie City Council established the Bowie Citizens Task Force
  - Included seven Bowie members appointed by the city council, five BGE representatives, and a third party facilitator
  - Focus on infrastructure and communications
  - Enabled BGE understanding of customer points of view, customer understanding of utility operations and capabilities, and ownership of solutions and actions
  - Originally conducted routine (bi-weekly) meetings

## The Goal of BERAP

To bring total electric system reliability (21 feeders) in the Bowie area in line with the reliable service experienced by the typical BGE customer.

# Bowie Reliability Improvement Team

- Analyzed all-weather reliability data for all 21 feeders serving Bowie from June 2005 – May 2007
- Extensive field checks were performed to develop detailed engineering solutions using a variety of tools
  - Tree Trimming
    - Mains – Corridor standard
    - Taps – Enhanced standard
    - Secondary – Enhanced Secondary Trimming
  - Undergrounding selected mains and taps (re-routing)
  - Reconductoring, removal of unused phases, open cable construction, tree wire
  - Renewal of selected equipment (poles, CSP transformers, etc.) and leveraged use of existing distribution automation equipment
- A three year BERAP project was developed to implement these solutions

# **Bowie Electric Reliability Action Plan (BERAP)**

## **Project Highlights**

- Project completed in two years, one year ahead of schedule.
  - March 2008 – December 2009
  - Exception of tree work on selected properties
- Over \$36M was expended to improve electric reliability in Bowie
- Over 522,000 man hours worked by contractors and BGE personnel
- Upgraded infrastructure on 11 feeders
  - Overhead and underground crews worked over 160,000 hours to
    - Replace or install approximately 920 poles
    - Directionally bore approximately 72,000 ft of cable in duct
    - Perform work on approximately 8,000 customer yards

# Bowie Electric Reliability Action Plan (BERAP)

## Project Highlights

- Performed aggressive vegetation management on all 21 Bowie feeders
- Trimmed and removed trees along approximately 164 miles of overhead conductors
  - Trimming per corridor, enhanced, and secondary standards
  - Significant steps taken to enable above work
  - BGE encountered 415 Variances out of approximately 5,800 properties impacted
    - ~7 % which is typical of system wide trimming
  - The Variance resolution process currently contains 118 locations which are in various stages of being addressed
  - Property owner contact is pending for 31 locations which also are in various stages of being addressed
    - Foreclosures, out of country, no contacts, etc.

Variance – Situation where BGE is unable to get Tree information form signed by customer consenting to the necessary tree work as outlined by the BERAP trimming specifications

# Project Enablers & Stakeholder Coordination

## Tree Reimbursement Program & Wood Removal

- Wood removal
  - BGE agreed to remove significant amounts of wood generated by the project
  - Costs to remove wood were exacerbated by location of trees and the emerald ash borer quarantine which necessitated additional steps and costs to be incurred
- Tree reimbursement program
  - Trees removed that were greater than 8 inches in Diameter at Breast Height (DBH) and in maintained lawn area were eligible for reimbursement
  - Offered 9,151 tree reimbursements as of 8/4/2010
    - Over 3,000 tree replacements have been reimbursed by BGE
    - Approximately 33% of eligible trees replaced
    - Deadline for submittals extended by BGE on three different occasions:
      - 3/31/2009, 5/31/2009, and 5/31/2010

# Project Enablers & Stakeholder Coordination

## Right Tree Right Place

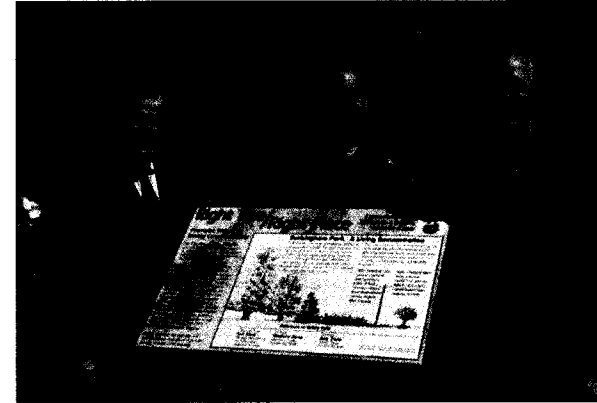
- Deployment of Right Tree Right Place in various city locations
  - Must be 3 phase in public ROW
  - Entity that has jurisdiction must enter maintenance agreement with BGE
  - Evergreens (2 for 1) ; Deciduous (1 for 1)
  - 426 trees planted in Bowie as part of program to date
    - Buckingham Park Plantings - 175
    - Grady's Walk along Route 197 - 139
    - Bowie Country Club along Route 197 - 72
    - Church Road - 23
    - Storm Water Management Pond - 10
    - Pumping Station - 7



BGE Supervisor of Forestry awards Right Tree Right Place Partnership to Bowie Mayor



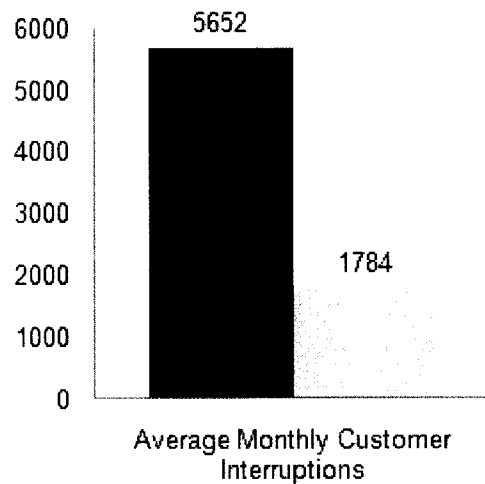
Council Woman Polangin, Mayor Robinson of Bowie, Delegate Levi and others planting at Buckingham Park



Mayor Robinson and BGE Officials with Right Tree Right Place plaque at park entrance.

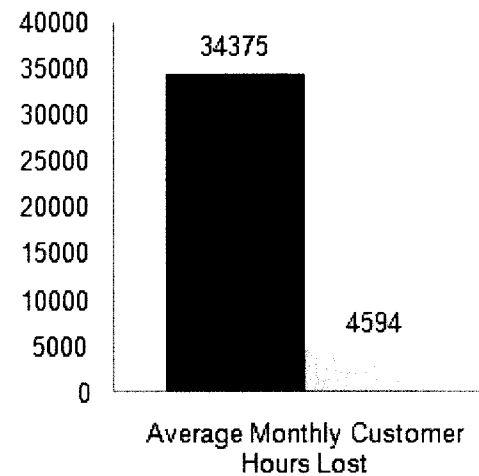
# Project Success

## Improvements in Customer Interruptions (CI) and Customer Hours Lost (CHL)



■ Before BERAP    ■ After BERAP

Approximately 70% reduction



■ Before BERAP    ■ After BERAP

Over 85% reduction

*Note: Before data is from 1/1/2005. After data starts with 12/29/2009 and is through 6/30/10.*

# Project Success

## Reliability Improvement

### Bowie (21 Feeders) All Weather

YEAR	SAIFI (Interruptions)	SAIDI (Hours)
2005	2.26	7.48
2006	4.19	24.89
2007	3.48	24.83
2008	2.04	6.40
2009	1.35	2.53
2010 (6/30)	0.27	1.09

### BGE System All Weather

YEAR	SAIFI (Interruptions)	SAIDI (Hours)
2005	1.56	4.02
2006	1.93	8.00
2007	1.64	5.87
2008	1.83	6.43
2009	1.29	3.61
2010 (6/30)	0.69	2.61

*Note: 2010 data includes planned outages.*



## Moving Forward

- Complete remaining vegetation work
- Monitor electric reliability
- Provide outage information during storms
- Address customer concerns on case by case basis
- Conduct periodic inspections and continue to perform periodic maintenance to ensure reliability
- Remain engaged with City on reliability and customer service issues

# Reliability Update

## Improvements in Customer Interruptions (CI) and Customer Hours Lost (CHL)

Feeder	Vegetation Work Completed	Construction Work Completed	Average Monthly CI Before	Average Monthly CI After	Percent Improvement in CI	Average Monthly CHL Before	Average Monthly CHL After	Percent Improvement in CHL
7417	7/5/2008	6/6/2008	650	141	78%	2275	138	94%
7445	6/7/2008	10/27/2008	365	45	88%	2939	36	99%
7441	9/26/2008	N/A	307	107	65%	1571	104	93%
7442	10/2/2008	N/A	156	176	-13%	232	387	-67%
8465	12/15/2008	N/A	76	23	69%	142	62	56%
7419	5/31/2008	3/30/2009	168	2	99%	558	8	99%
8463	4/18/2008	N/A	139	203	-46%	500	622	-24%
7440	1/16/2009	8/31/2009	566	22	96%	2714	47	98%
7436	8/6/2009	N/A	97	226	-132%	585	916	-56%
7434	10/15/2008	8/31/2009	442	4	99%	3772	9	100%
7447	5/13/2009	N/A	82	73	12%	5529	50	99%
8413	6/28/2008	7/30/2009	194	208	-7%	590	413	30%
8414	10/24/2008	4/30/2009	203	65	68%	1130	386	66%
8462	3/20/2009	7/30/2009	360	17	95%	3261	55	98%
7422	11/28/2008	10/23/2009	277	35	87%	648	210	68%
7420	3/30/2009	11/6/2009	581	12	98%	2746	44	98%
7444	11/3/2009	N/A	237	182	23%	659	305	54%
7418	6/8/2009	12/4/2009	238	4	98%	1402	10	99%
7421	11/30/2009	N/A	303	78	74%	1467	294	80%
7437	12/29/2009	N/A	67	25	63%	322	233	28%
7438	12/28/2009	N/A	142	138	3%	1331	264	80%
<b>Total</b>			<b>5652</b>	<b>1784</b>	<b>68%</b>	<b>34375</b>	<b>4594</b>	<b>87%</b>

Note: Before data is from 01/01/2005. After data starts 12/29/09 and is through 06/30/10.