REVIEW OF DUKE ENERGY CAROLINAS DECEMBER 2005 ICE STORM RECOVERY

Prepared by

THE OFFICE OF REGULATORY STAFF

ELECTRIC DEPARTMENT

January 31, 2007

REVIEW OF DUKE ENERGY CAROLINAS 2005 ICE STORM RECOVERY

TABLE OF CONTENTS

ORS Recommendations

ORS offers the following suggestions and/or recommendations to enhance Duke's storm management activities:

I. Duke should provide better coordination of city fire/police first responders with Duke's restoration team to help identify energized downed power lines ideally by assigning Duke employees to city and county first responder teams. (See Page 6 of 40)

II. Duke should direct its tree trimming efforts to critical/problematic circuits. (See Page 9 of 40)

III. Duke should ensure that the apparent declining trend of right-of-way line trimming activity since 2002 does not decrease reliability for South Carolina customers. (See Page 9 of 40)

IV. Duke should identify areas affected by local policies and initiate dialog with responsible local governmental policymakers to facilitate changes to alleviate hindrances to restoring and providing safe and reliable electric service. (See Page 9 of 40)

V. Duke should evaluate the line design (e.g., line size, span length) of critical/problematic distribution circuits as Duke replaces lines due to age or damaged facilities. (See Page 9 of 40)

VI. Duke should ensure a more balanced allocation of undergrounding distribution lines between North Carolina and South Carolina. (See Page 10 of 40)

VII. Duke should continue its current practice of installing underground service when appropriate and in response to customer requests. (See Page 11 of 40)

VIII. Duke should actively seek creative partnerships with municipalities and other entities to establish a financial support network for undergrounding projects to minimize the economic impact to customers and ratepayers. (See Page 11 of 40)

ORS Recommendations

IX. Because certain municipalities see potential benefits to be gained by increased reliability of underground service, Duke has agreed to offer an underground conversion mechanism similar to that adopted by SCE&G for municipalities in Duke's service territories. Such an approach would include the use of a matching fund for these types of projects, with appropriate regulatory treatment, for municipalities who are interested in contributing to the fund. The ORS encourages Duke to explore this approach in future franchise agreement negotiations. (See Page 11 of 40)

X. Duke should incorporate complete remote operation of system components into its distribution system. (See Page 13 of 40)

XI. Duke should develop integrated SCADA or SCADA type systems for Duke's transmission and distribution systems. (See Page 13 of 40)

XII. Duke should incorporate useful information gathering technology made available through its broadband over power lines pilot program. (See Page 14 of 40)

XIII. Duke should ensure it maintains current accurate contact information and adheres to its documented communication process to provide vital information to elected and public officials, as identified in Duke's self-evaluation of the December 2005 ice storm responses. (See Page 16 of 40)

XIV. Duke should enhance the information provided to elected and public officials by providing a direct employee contact prepared to respond to their concerns. (See Page 16 of 40)

XV. Duke should ensure its crew preparedness process allows for fluid transition between any of its storm level designations. (See Page 17 of 40)

XVI. Duke should aggressively pursue reducing the lag-time to provide county and circuit ETORs. Also, Duke should expand the automated system's outbound ETOR capabilities to work proactively for all customers. (See Page 24 of 40)

ORS Recommendations

XVII. Duke should ensure its local telecommunications provider and toll free service provider are aware and properly prepared to manage extremely high call volumes related to storm events. (See Page 25 of 40)

XVIII. Duke should reinforce the attention to Medical Alert Customers for non-Duke crews. (See Page 26 of 40)

XIX. Close oversight of non-Duke crews is critical and Duke should provide, as needed, field representatives familiar with Duke's restoration processes as well as routes, neighborhoods, and equipment locations. (See Page 27 of 40)

XX. Duke should continue to hold Storm School sessions annually prior to the winter storm season. Duke should ensure a wide cross section of emergency response representatives are invited to include but not limited to: fire, hospital, police, ambulance emergency responders, local and state officials, municipalities, electric cooperatives, regulators, state Emergency Management Division personnel, and the media. Duke should hold additional meetings upon request to address specific concerns of a city, county, etc. (See Page 28 of 40)

XXI. Duke should assist the debris management efforts of responsible cities or counties by creating a protocol to inform such organizations of needed debris removal in areas visited by Duke restoration crews. (See Page 31 of 40)

XXII. Duke should provide to ORS within 60 days of receipt of this document its current status on Duke's progress toward incorporating its Planned Actions into its storm management practices. (See Page 35 of 40)

REVIEW OF DUKE ENERGY CAROLINAS 2005 ICE STORM RECOVERY

INTRODUCTION

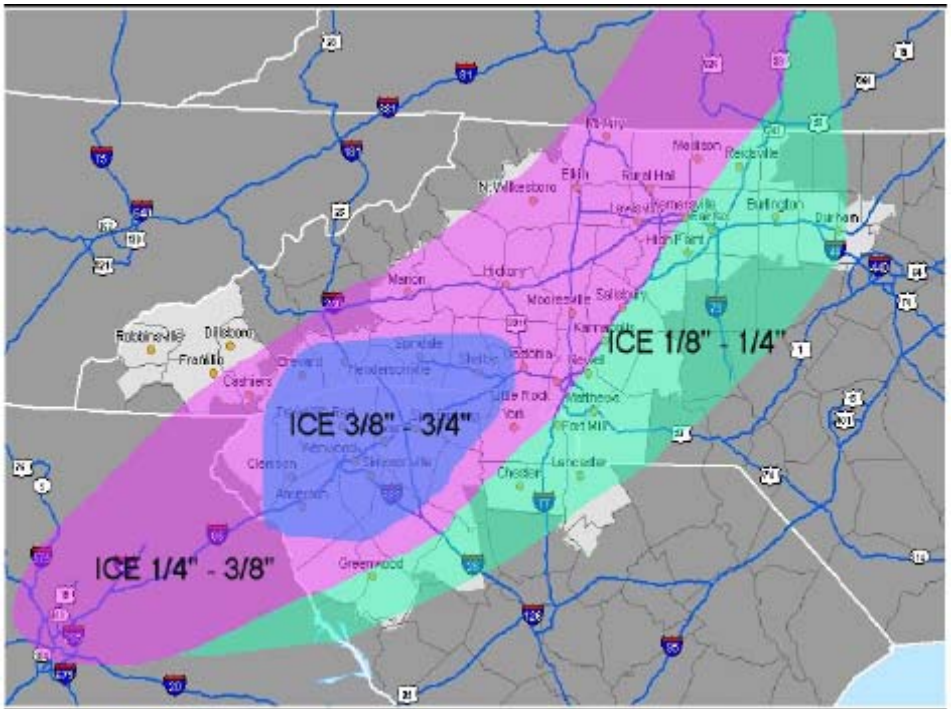
Pursuant to its statutory authority under Act 175, the South Carolina Office of Regulatory Staff ("ORS") performed a review of Duke Energy Carolinas, LLC ("Duke") recovery after the December 2005 ice storm. This review evaluates Duke's storm management programs and includes the following major components: Mitigation/Prevention, Preparedness, Response and Power Restoration, Customer Education as well as Duke's Internal Evaluation of the Storm. ORS provides comments throughout the report and makes specific recommendations at the beginning of the report.

BACKGROUND

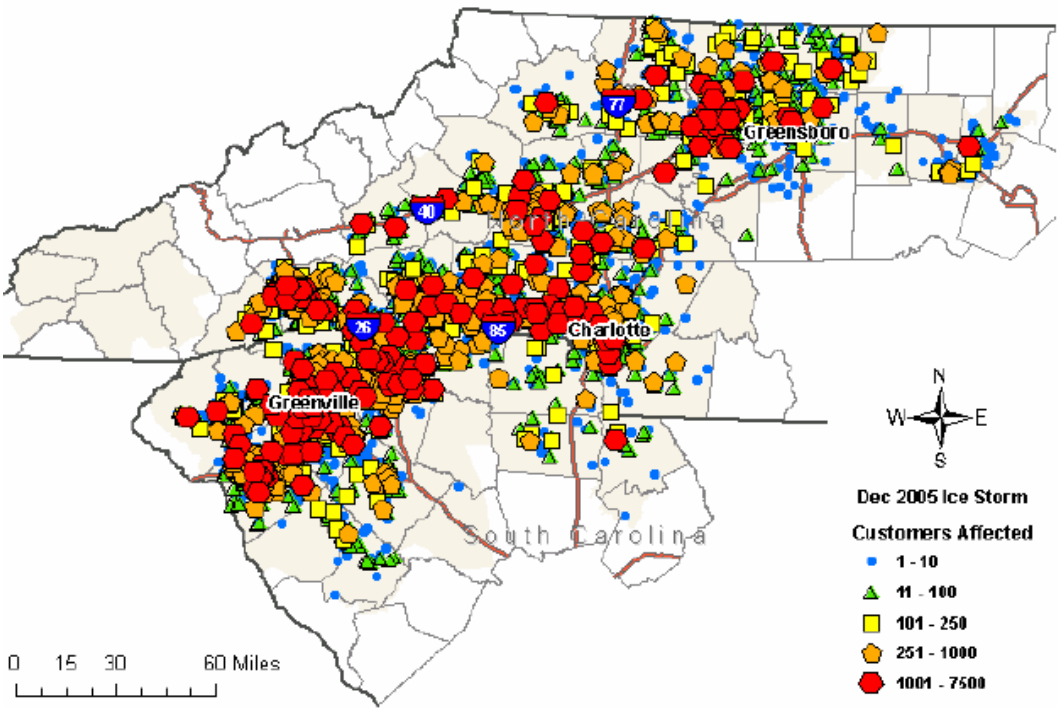
Duke is a regulated public utility engaged in the generation, transmission, distribution, and sale of electricity to retail and wholesale customers in North Carolina and South Carolina. Duke is a subsidiary of Duke Energy Corporation. Duke Energy Corporation subsidiaries offer retail electric service to 3.7 million customers in the Carolinas, Kentucky, Indiana and Ohio and retail natural gas service to 500,000 customers in Kentucky, Indiana and Ohio. Its service area covers approximately 47,000 square miles in the Midwest and Southeast. Duke Energy Corporation's fleet of power plants includes approximately 28,000 megawatts (MWs) of capacity. In North Carolina and South Carolina, its facilities serve approximately 2.2 million customers with a generating capability of approximately 19,900 MWs. Duke Energy Corporation maintains over $70 billion in assets and generates annual revenues of approximately $27 billion. Its principal executive offices are located in Charlotte, North Carolina.

On Thursday, December 15, 2005, the second worst ice storm in Duke's history moved through Duke's service area causing major power outages. The heaviest ice accumulation (3/8" to 3/4") occurred in the upstate of South Carolina (Anderson, Greenville and Spartanburg Counties) and in some regions of western North Carolina. Map 1 illustrates the impact of the ice accumulation by geographic region. A total of 943,436 Duke customers in North and South Carolina lost power; 527,029 (or 56%) of the total outages were in the upstate of South Carolina. The actual number of outages greatly exceeded Duke's forecast of approximately 250,000 anticipated outages. Map 2 shows the high concentration of outages in the upstate of South Carolina, specifically, in the Greenville and Spartanburg areas. Power was restored to 98% of affected customers by Tuesday, December 20, 2005 with all power being restored by Thursday, December 22, 2005, 7 days after the storm. Duke's total incremental costs directly attributable to the ice storm were $49.9 million. Duke has not sought rate recovery of the cost of the storm.

Map 1 - Duke Ice Accumulation by Geographic Region



Map 2 - Duke Customer Outages by Geographic Region



ORS ACTIVITIES

In response to numerous concerns expressed by Duke's upstate customers and members of the General Assembly, ORS initiated a review of Duke's response to the December 2005 ice storm. Specifically, ORS issued two Requests for Production of Records and Information. On January 11, 2006, the first Request for Production of Records and Information was issued containing 48 multi-part questions. On April 3, 2006, the second Request for Production of Records and Information was issued containing 12 follow-up questions. ORS issued similar requests to other investor-owned electric utilities in South Carolina to supplement the information provided by Duke. ORS also utilized the Barrington-Wellesley Group, Inc. ("BWG") *Independent Management Audit of Duke Power Company's Restoration and Maintenance Practices (2003)* conducted after the December 2002 ice storm. ORS referenced the BWG

findings and recommendations from the 2002 ice storm in performing its review of the 2005 ice storm.

ORS also performed numerous storm related tasks including but not limited to: meeting Duke representatives regularly to discuss storm recovery issues; reviewing approximately 360 consumer contacts ORS received due to the ice storm outage; and attending Duke Storm School in Greenville, South Carolina and Charlotte, North Carolina.

Also, on April 10 and 13, 2006, ORS attended evening hearings held by the Public Utilities Subcommittee of the Senate Judiciary Committee in Columbia and Greenville, South Carolina. The Senate Subcommittee is charged with reviewing the reliability of the state's electric transmission and distribution systems. The Senate Subcommittee members include Senator Tommy Moore (Chairman), Senator Robert Ford, Senator William C. Mescher, Senator Luke A. Rankin, and Senator Randy Scott.

Chairman Tommy Moore presided over the two public hearings seeking comments regarding reliability of the state's electric transmission and distribution systems and specifically requested comments concerning:

- Steps that utilities, legislators, and regulators can take to avoid situations like the brown-out/black-out crises recently faced by the Northeast;
- How the ever-evolving federal energy policy might impact South Carolina's transmission grid and whether consumers will be well served through these developments; and
- Whether the state's regulatory and statutory policies foster a customer service-driven electric utility industry and, if not, how those policies can be improved.

Representatives from SCE&G, Santee Cooper, Duke Energy, Progress Energy, the Electric Cooperatives of South Carolina, Piedmont Municipal Power Agency, and the South Carolina Association of Municipal Power Systems appeared and provided responses to the Senate Subcommittee's requests.

The hearings allowed the Senate Subcommittee to hear frustrations and suggestions first-hand from the customers who experienced the power outages caused by the storm. The hearings also afforded the Senate Subcommittee the opportunity to hear from several consumers that praised Duke's restoration efforts.

Also, ORS Chief of Staff, and Director of Electric and Natural Gas Regulation interviewed public officials in the upstate to gain first-hand knowledge of their concerns and suggestions for improvements as well as the concerns of their constituents. On Wednesday, May 17, 2006, these two ORS representatives met with Spartanburg Mayor William Barnett, Fire Commander Philip Caruso, and Director of Public Safety Tony Fisher. On Thursday, May 25, 2006, ORS met with Greenville Mayor Knox White, Fire Chief McDowell, Police Captain McLaughlin, and City Manager Bourey. The officials from both cities offered similar comments:

- The 2005 ice storm produced more falling trees as compared to the 2002 storm which primarily produced falling limbs.
- A long-term plan to move critical lines underground should be developed. Dedicated circuits for special needs facilities, e.g. nursing homes should be provided. Also, better field identification of special needs customers is needed.
- Annual meetings should be scheduled with local public officials and emergency first responders to discuss storm preparedness and response.

- Establish viable communication channels and accurate contacts with Duke. Also, Duke should provide education describing its emergency restoration processes to include, estimated time of restoration, utility pole replacement, restoration priorities, and field related responsibilities.
- Duke should provide better coordination of city fire/police first responders with Duke's restoration team to help identify energized downed power lines ideally by assigning Duke employees to city and county first responder teams. **(Recommendation I)**

Mitigation/Prevention

Duke's general mitigation/prevention practices are largely documented in its *Operations and Maintenance Manual (Edition 1; 1995)*. This Manual provides detailed information on the following subjects:

- Cable Failure/Reporting
- Switching/Grounding
- Meter Enclosures/House Power Panels
- Inspections
- Troubleshooting
- Right-of-Way Line Clearance

To evaluate Duke's programs designed to eliminate and or reduce the impact of outages due to storm events, ORS reviewed Duke's *Operations and Maintenance Manual* and the following Duke programs: Right-of-Way Maintenance, Utility Pole Maintenance, Underground Facilities, and Supervisory Control and Data Acquisition ("SCADA") System.

Right-of-Way Maintenance

Proper maintenance of right-of-ways is a major function performed to help protect overhead distribution lines from the impact of storm events. Duke's *Operations and Maintenance Manual* contains the procedures used for Duke's right-of-way maintenance practices for distribution

lines. Duke's practices include a notification process to inform property owners of the scheduled right-of-way maintenance activities. That is, customers are contacted approximately two days prior to the date of the scheduled work. The practices also detail proper tree trimming procedures as well as vegetation management. Duke targets the elimination of a minimum of three years growth and a minimum 30 foot width clearance for its distribution right-of-ways.

Duke also coordinates its right-of-way activities with municipal and county governments to ensure compliance with local ordinances/policies. Often such ordinances/policies require Duke to adhere to additional specifications to address tree welfare, aesthetic concerns, etc., in urban areas. These additional specifications may hinder Duke's ability to achieve preferred effectiveness of right-of-way clearings. Nevertheless, Duke as well as local officials recognize that maintaining adequate line clearance for safe and reliable electric service is paramount.

Right-of-way maintenance is subject to topography, forestation, customer density as well as aesthetic challenges. Hilly or mountainous terrain makes maintenance more difficult and expensive, as can heavily forested areas. In addition, the trimming of trees in heavily populated areas such as cities and neighborhoods creates added expenses. Duke's right-of-way maintenance expenses on a system-wide basis and for South Carolina are shown in Tables 1 and 2, respectively. These tables show Duke's expenditures on a system-wide basis and for South Carolina have generally increased from 2001 through 2005.

Table 1 - Duke System Distribution Right-of-Way Spending
($ Millions)

Year	Budget	Actual
2001	$35.4	$37.5
2002	$45.2	$39.5
2003	$40.0	$42.4
2004	$40.0	$38.0
2005	$51.7	$53.7

Table 2 - Duke SC Distribution Right-of-Way Spending
($ Millions)

Year	Budget	Actual
2001	$7.3	$9.0
2002	$12.0	$10.5
2003	$11.0	$10.1
2004	$11.3	$12.3
2005	$13.6	$14.7

Table 3 shows Duke's distribution line miles trimmed for the years 2001 through 2005. In 2002, Duke trimmed 2,093 miles in South Carolina. Since 2002, Duke has reduced the number of South Carolina line miles trimmed by 32% (or 661 miles) in 2003, 44% (or 912 miles) in 2004, and 36% (or 762 miles) in 2005. This declining trend of right-of-way line trimming activity directly conflicts with Duke's generally increasing annual right-of-way maintenance expenditures for South Carolina.

Table 3 - Duke Distribution
Right-of-Way Maintenance Expenses

Duke Line Miles Trimmed	2001	2002	2003	2004	2005
Total System Miles	47,581	51,029	51,063	51,132	51,297
Total SC Line Miles	13,602	13,607	13,599	13,633	13,649
Total NC Line Miles	33,979	37,422	37,464	37,499	37,648
System Line Miles Trimmed	6,056	6,577	6,461	4,475	5,462
% of System Line Miles Trimmed	13%	13%	13%	9%	11%
SC Line Miles Trimmed	1,998	2,093	1,432	1,181	1,331
% of SC Line Miles Trimmed	15%	15%	11%	9%	10%
NC Line Miles Trimmed	4,058	4,484	5,029	3,294	4,131
% of NC Line Miles Trimmed	12%	12%	13%	9%	11%

Recognizing that trees and limbs falling onto overhead distribution lines proved to be the primary cause of customer outages during the December 2005 ice storm, Duke should direct its tree trimming efforts to critical/problematic circuits. **(Recommendation II)** Duke should ensure that the apparent declining trend of right-of-way line trimming activity since 2002 does not decrease reliability for South Carolina customers. **(Recommendation III)** Since maintaining line clearances is recognized as paramount for providing safe and reliable electric service and local ordinances or policies may hinder these efforts, Duke should identify such areas and to what extent (e.g. additional outages, extended outages) they were affected. **(Recommendation IV)** This data and information should be shared with the local governmental entities responsible for the policies and initiate a dialog to facilitate changes necessary to alleviate or minimize the effect of the hindrances to restoring and providing safe and reliable electric service. Also, to address line durability, Duke should evaluate line design (e.g., line size, span length) of critical/problematic distribution circuits as Duke replaces such lines due to age or damaged facilities. **(Recommendation V)** It should be noted that power outages associated with Duke's bulk power transmission lines were very limited.

Utility Pole Maintenance

The regulated investor owned utilities in South Carolina report the average life of wood distribution utility poles range from 35 - 45 years. Duke maintains 528,632 wood distribution utility poles in its South Carolina service territory with an average age of 24 years. Duke inspects its distribution utility poles on a 12 year cycle. Similarly, Duke maintains 24,742 wood transmission utility poles in its South Carolina service territory with an average age of 28 years. Duke inspects its transmission poles on a 6 year cycle. In addition to this 6 year inspection cycle, Duke conducts an aerial assessment of its transmission system twice a year. Distribution and transmission poles are treated, as needed, by inserting copper-boron rods into the utility pole. Poles may be replaced depending on the results of the field observations. One thousand-

twenty, or less than 1%, of Duke's distribution poles located in South Carolina were impacted during the December 2005 ice storm. The ice storm did not impact any transmission poles located in Duke's South Carolina service territory.

Duke maintains joint use contracts with other utilities that share utility poles. In the event of an "emergency" pole replacement, Duke contacts the owner of the damaged pole to obtain an estimated time of replacement. Duke may expedite the process and replace the utility pole if Duke determines the replacement estimate will hinder Duke's power restoration goals. Also, under non-emergency conditions, Duke may expedite the replacement of damaged poles owned by other utilities where Duke identifies a potential reliability concern.

Underground Facilities

The cause of the vast majority of the outages in the 2002 and the 2005 ice storms was due to overhead distribution lines impacted by falling trees and/or limbs. Given this constant, there has been much discussion about converting overhead electric facilities to underground service. Table 4 lists Duke's overhead and underground facilities in North Carolina and South Carolina. Duke has installed a greater percentage of its lines underground in North Carolina (32%) as compared to South Carolina (26%). Duke should ensure a more balanced allocation of undergrounding distribution lines between North Carolina and South Carolina. **(Recommendation VI)**

Table 4 - Duke Overhead and Underground Facilities

Line Type	Miles (NC)	Miles (SC)
Overhead Distribution	48,492	17,580
Underground Distribution	23,156	6,320
Total =	**71,648**	**23,900**
% Underground Distribution	**32%**	**26%**
Overhead Transmission	8,266	5,074
Underground Transmission	1.24	0.37
Total =	**8,267**	**5,074**
% Underground Transmission	**0.015%**	**0.007%**
Total =	**79,915**	**28,974**

ORS finds that cost estimates associated with conversion of overhead distribution facilities to underground service on a system wide basis vary broadly. However, ORS recognizes the potential benefits gained by increased reliability of underground service. Therefore, ORS recommends that Duke continue its current practice of installing underground service when appropriate and in response to customer requests when those customers agree to absorb the additional costs of installation. **(Recommendation VII)** Additionally, Duke should actively seek creative partnerships with municipalities and other entities to establish a financial support network for undergrounding projects to minimize the economic impact to customers and ratepayers. **(Recommendation VIII)** Because certain municipalities see potential benefits to be gained by increased reliability of underground service, Duke has agreed to offer an underground conversion mechanism similar to that adopted by SCE&G for municipalities in Duke's service territories. Such an approach would include the use of a matching fund for these types of projects, with appropriate regulatory treatment, for municipalities who are interested in contributing to the fund. The ORS encourages Duke to explore this approach in future franchise agreement negotiations. **(Recommendation IX)**

Overhead to Underground Distribution Service Conversions

A. A Municipality may choose to require the Company to convert overhead distribution and service lines to underground lines for existing customers within the municipal limits. The cost of such service conversion projects shall be funded by the Company Fund and the Muni Matching Fund provided for herein. The cost of such service conversion projects shall be defined as the cost of 1) installing the new underground distribution facilities plus 2) removal of the existing overhead facilities and 3) less any salvage value.

B. Each year under such conversion program, the Company and the participating municipality shall simultaneously make matching contributions equivalent to 0.50% of the Company's gross electric revenue subject to the municipal franchise fee. These contributions shall be made to the Funds designated as the Company Fund and the Muni Matching Fund, respectively. The Company shall designate to the Company Fund its contribution simultaneously and in addition to, the Company's payment of the franchise fee. The Company Fund contributions shall remain on deposit with the Company and be paid out by the Company on a one to one basis with the Muni's Matching Fund contributions as needed to pay the costs of the conversion projects. The Company Fund shall be used exclusively for the costs of the conversion projects and receive appropriate regulatory treatment. Unexpended balances of the Company Fund not used in a given year shall remain designated to the Company Fund. The Company Fund shall not exceed the sum of the most recent five (5) year contributions or a maximum of $500,000 per year.

C. The Muni shall designate to the Muni Matching Fund its contribution simultaneously with the Company's payment of the franchise fee charges. The Muni's matching funds shall remain on deposit with the Municipality and be paid out on a one to one basis with the Company's Fund contributions as needed to pay the costs of the conversion projects. The Muni Fund shall be used exclusively for the costs of the conversion projects. Unexpended

balances of the Muni Matching Fund not used in a given year shall remain designated to the Muni Matching Fund. The Muni Matching Fund shall not exceed the sum of the most recent five (5) year contributions or a maximum of $500,000 per year.

D. The Municipality shall establish, in consultation with the Company, priorities for service conversion projects. Projects which maintain system reliability, and/or improve system safety, shall have priority over all other service conversion projects. All service conversion projects shall conform to good utility practices as to reliability and safety.

E. The Municipality shall use its best efforts to acquire all necessary right-of-ways, transformer sites, or other use and access rights for service conversion projects. Within three (3) months of completion of an overhead to underground conversion project, the Company shall remove overhead facilities and the Municipality shall require other utilities to remove their facilities from the utility poles. The Municipality shall require property owners/Company customers to connect to underground facilities.

Supervisory Control and Data Acquisition ("SCADA") System

A SCADA system provides communication and information gathering technology that can assist a utility to quickly diagnose circuit outages. SCADA also affords a utility the ability to remotely operate system components such as circuit breakers. Currently, Duke does not fully take advantage of SCADA technology in its distribution system. However, SCADA technology is fully integrated into Duke's transmission system. Duke's distribution system contains elements that mimic the traditional data acquisition capabilities of a SCADA system. Also, Duke has some, but not complete, ability to operate system components remotely.

Duke should incorporate complete remote operation of system components into its distribution system. **(Recommendation X)** Also, Duke should develop integrated SCADA or SCADA type systems for Duke's transmission and distribution systems. **(Recommendation XI)** Also, ORS

is aware of Duke's pilot program to provide broadband service over its power line. Duke should incorporate useful information gathering technology made available through this pilot program. **(Recommendation XII)**

Preparedness

To evaluate Duke's ability to prepare for severe storm events, ORS reviewed Duke's *Power Delivery Emergency Manual* ("PDEM"). Duke's preparedness programs are detailed in this Manual which includes the follow components:

- Organizational Plans
- Restoration Procedures
- Satellites and Material Drop Sites
- Staging Areas
- Conference Calls
- Emergency Operation Facilities
- Assistance From Outside Duke
- Sending Duke Assistance to Other Utilities

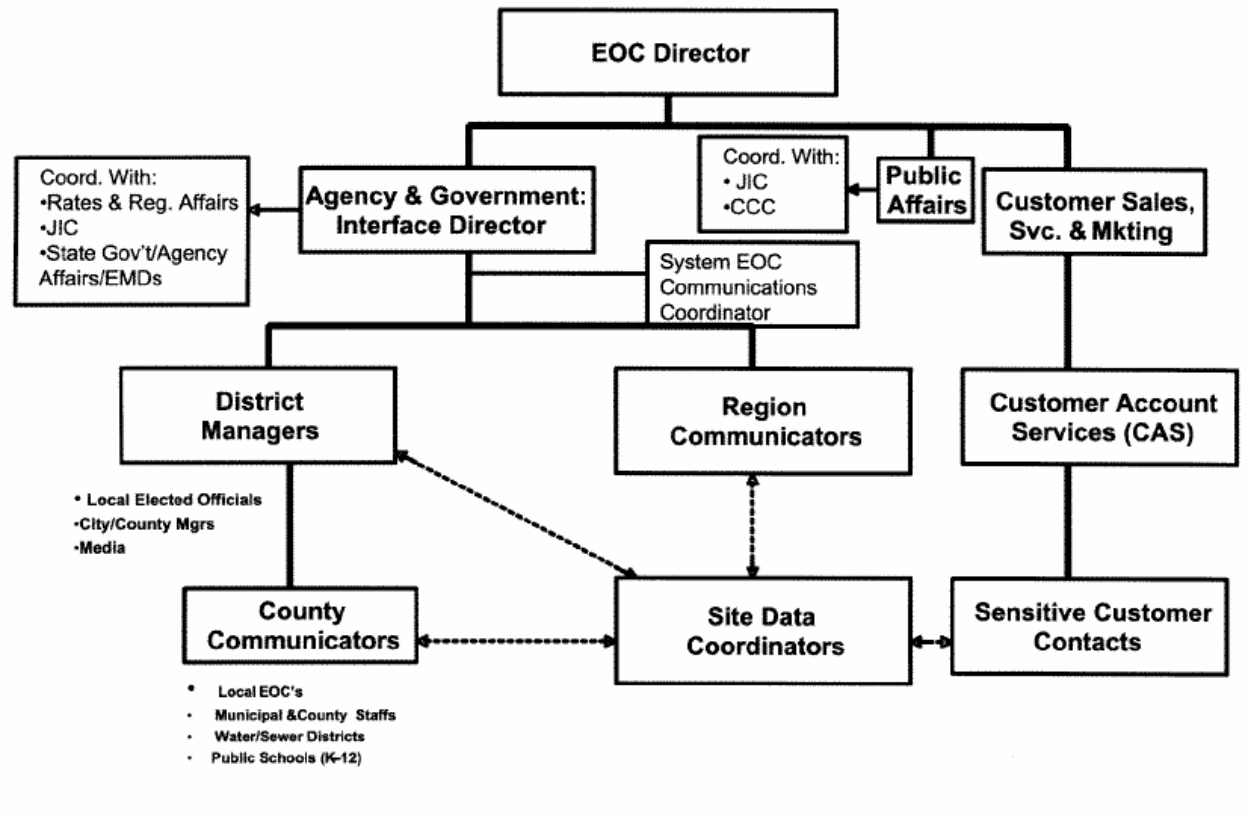
Given the post storm feedback from affected customers, ORS concentrated on the following areas of Duke's storm preparedness process: Notification of Public and Elected Officials, Call Center Readiness, and Restoration Crew Readiness.

Notification to Elected and Public Officials

In the event of severe weather, Duke implements its emergency management communications process supplemented by a public affairs information campaign. Duke maintains an emergency management communication process directed toward federal, state and local representatives as well as the general public and media are informed of Duke's activities prior, during, and after a storm event. Duke uses various methods to transfer pre-storm information such as e-mails, telephone calls, personal contacts, etc. These information contacts occur at a minimum of 2 to 4 times a day and typically include weather forecasts, potential affected areas, status of

readiness, and expected number of outages. Duke's Emergency Operations Center ("EOC") information dissemination process is chiefly coordinated by its Joint Information Center ("JIC"). The JIC consists of media personnel and utilizes various external networks to distribute information. Duke's District Managers are responsible for contacting local elected officials and city/county managers. Duke's State Governmental Affairs Directors are responsible for contacting state legislative officials and state agencies. Figure 1 illustrates Duke's emergency management communications network.

Figure 1 – Duke Emergency Communications Flow Chart



As described above, Duke has an internal and external communication process. However, ORS understands that some key local and legislative officials did not receive valuable pre-storm contact from Duke. Duke should ensure it maintains current accurate contact information for

elected officials and strictly adheres to its documented communication process to provide vital pre-storm information to elected and public (e.g., police chief, fire chief) officials, as identified in Duke's self-evaluation of the December 2005 ice storm responses. **(Recommendation XIII)** In the event of an extensive outage, Duke should enhance the information provided to elected and public officials by providing a direct employee contact prepared to respond to their concerns. **(Recommendation XIV)**

Call Center Readiness

Duke's customer service centers are staffed 24 hours a day, 7 days a week. Duke's Call Center is capable of staffing up to 737 persons to answer customer calls in response to storm outages. To supplement its usual 350 Call Center representatives, Duke first activates its Revenue Cycle Services Team which consists of 90 billing, credit and collections employees. If additional support is needed, Duke then activates its Auxiliary Agents consisting of 297 employees from various departments throughout the corporation. Duke's Call Center personnel ramping strategy allows Duke to increase its Call Center staff by over 110% to respond to customer calls during a storm event. In response to the approaching December 2005 ice storm, Duke activated its Call Center personnel ramping strategy.

Restoration Crew Readiness

Duke has a crew coordination strategy. Duke's *Power Delivery Emergency Manual* details the storm related activities of Duke and non-Duke crews. Duke uses a six tier system to define storm levels. The six levels of storm severity help Duke prepare and respond to weather related outages. Level 1 is the least severe and would typically only affect a single local area. Levels 2-5 are used if multiple areas are predicted to be hit simultaneously. Level 6 is the highest level and would be used for planning for a catastrophic storm that would affect a major portion of Duke's customers and system. As the December 2005 ice storm approached the Carolinas,

Duke initially forecasted approximately 250,000 outages. This preliminary outage forecast coincides with a storm level 4 designation. However, as the ice storm moved closer to the Carolinas, Duke revised its forecast, and subsequently, restoration crews were ultimately activated based on a storm level 6 designation.

Also, Duke utilizes a Storm Preparation Template ("Template") which coincides with the above defined storm levels. The Template documents specific preparation activities that should be performed by Duke based on the designated storm level. Duke is a member of the Southeastern Electric Exchange ("SEE"), a southeastern United States electric utility organization. The SEE operates under a mutual assistance agreement between utilities which affords its 18 member contingent vast immediate restoration resources in the event of severe weather outages. Prior to the storm event, Duke conducts conference calls with non-Duke crews to include SEE utilities, other utilities, and non-utility crews (i.e., contractors) to secure resources based on Duke's preliminary estimate of outages. This support network of utilities and contractors is common among the industry. However, widespread severe weather events such as the December 2005 ice storm often impact neighboring utilities and may consequently limit their availability and/or mobility. Fortunately, Duke's recent merger with Cinergy affords Duke potential access to an additional 1,000 restoration personnel. These additional "in-house" resources should greatly improve Duke's ability to respond to storm outages and reduce its dependence on outside support. However, given the inherent complexity to forecast actual storm outages, Duke should ensure its crew preparedness process enables it to transition fluidly between any of its storm level designations. **(Recommendation XV)**

Response and Power Restoration

During the December 2005 ice storm, approximately 6,500 Duke and non-Duke workers responded to restore customers' service. Approximately 3,350 workers from 30 utilities and contractor companies arrived from 16 different states to support Duke's restoration efforts.

To evaluate Duke's ability to respond to storms and restore power to its customers, ORS reviewed the following Duke storm management activities: Public Affairs Activities, Updates to Public and Elected Officials, Call Center Performance, and Restoration Crew Coordination.

Public Affairs Activities

ORS reviewed Duke's public affairs activities and Duke's ability to provide updates to public and elected officials. As mentioned in the Preparedness Section above, in the event of severe weather, Duke implements its emergency management communications process supplemented by a public affairs information campaign. On December 14, 2005, the day before the ice storm impacted North Carolina and South Carolina, Duke's Public Affairs team initiated 252 media contacts through Public Service Announcements to inform the public of the potential severity of the approaching storm. On the day of the storm, December 15, 2005, Duke activated the Joint Information Center. From December 15 - 21, Duke's Joint Information Center and Public Affairs teams initiated 5,399 media contacts. These information contacts occurred at a minimum of 2 to 4 times a day and typically included affected areas, number of outages, and estimated time of restoration. The contacts were accomplished using a variety of media tools that included: Public Affairs staffing of hard hit areas, press conferences, interviews and written storm updates. Also during this time, Duke's webpage experienced over 240,000 views. To ensure Duke reached its diverse customer base, Duke released its storm status information in English and Spanish.

Updates to Elected and Public Officials

As mentioned above in the Preparedness Section, Duke has an internal and external communication process. However, various key local and legislative officials stated that they did not receive sufficient storm updates or post-storm contact from Duke. Duke should ensure it maintains current accurate contact information for elected officials and adheres to its documented communication process to provide vital updates and post-storm information to elected and public (e.g., police chief, fire chief) officials, as identified in Duke's self-evaluation of the December 2005 ice storm. In the event of an extensive outage, Duke should provide each elected and public official a single direct employee contact prepared to respond to their concerns.

Call Center Performance

ORS' review focused on Duke's customer call telecommunication system, estimated time of restoration ("ETOR"), and telecommunications interface. Duke employs a ramping strategy capable of increasing its Call Center staff by over 110% to respond to customer calls during a storm event. During the December 2005 ice storm, Duke fully utilized its Call Center personnel ramping strategy. Duke received 1,120,986 calls during the December 2005 severe weather outage. The day after the storm, Friday December 16, 2005, Duke's Call Center showed significant ramping of staff which peaked between 1700 and 1800 hours at 681 available representatives. Table 5 shows Duke representatives scheduled to respond to customer calls on an hourly basis during the December 2005 ice storm.

Table 5 – Duke 2005 Ice Storm Scheduled Call Center Representatives

# Specialists Scheduled (by hour)	Thursday 12/15/05	Friday 12/16/05	Saturday 12/17/05	Sunday 12/18/05	Monday 12/19/05	Tuesday 12/20/05*
0000-100	11	42	63	63	13	15
100-200	11	42	41	41	13	13
200-300	11	21	21	21	13	13
300-400	11	21	21	23	13	13
400-500	11	51	51	53	18	13
500-600	12	51	51	53	60	45
600-700	37	166	226	188	174	56
700-800	153	313	443	293	215	164
800-900	231	390	486	303	319	218
900-1000	274	429	494	440	346	221
1000-1100	335	515	514	246	374	221
1100-1200	427	539	514	326	399	254
1200-1300	379	560	511	297	352	181
1300-1400	395	639	346	297	343	201
1400-1500	400	659	366	229	312	217
1500-1600	413	659	309	217	336	223
1600-1700	391	629	269	250	327	215
1700-1800	357	681	219	210	318	157
1800-1900	340	566	166	210	236	124
1900-2000	258	459	129	138	148	95
2000-2100	206	382	129	106	112	86
2100-2200	127	319	129	106	58	85
2200-2300	120	293	124	84	42	71
2300-2400	111	293	102	84	47	54

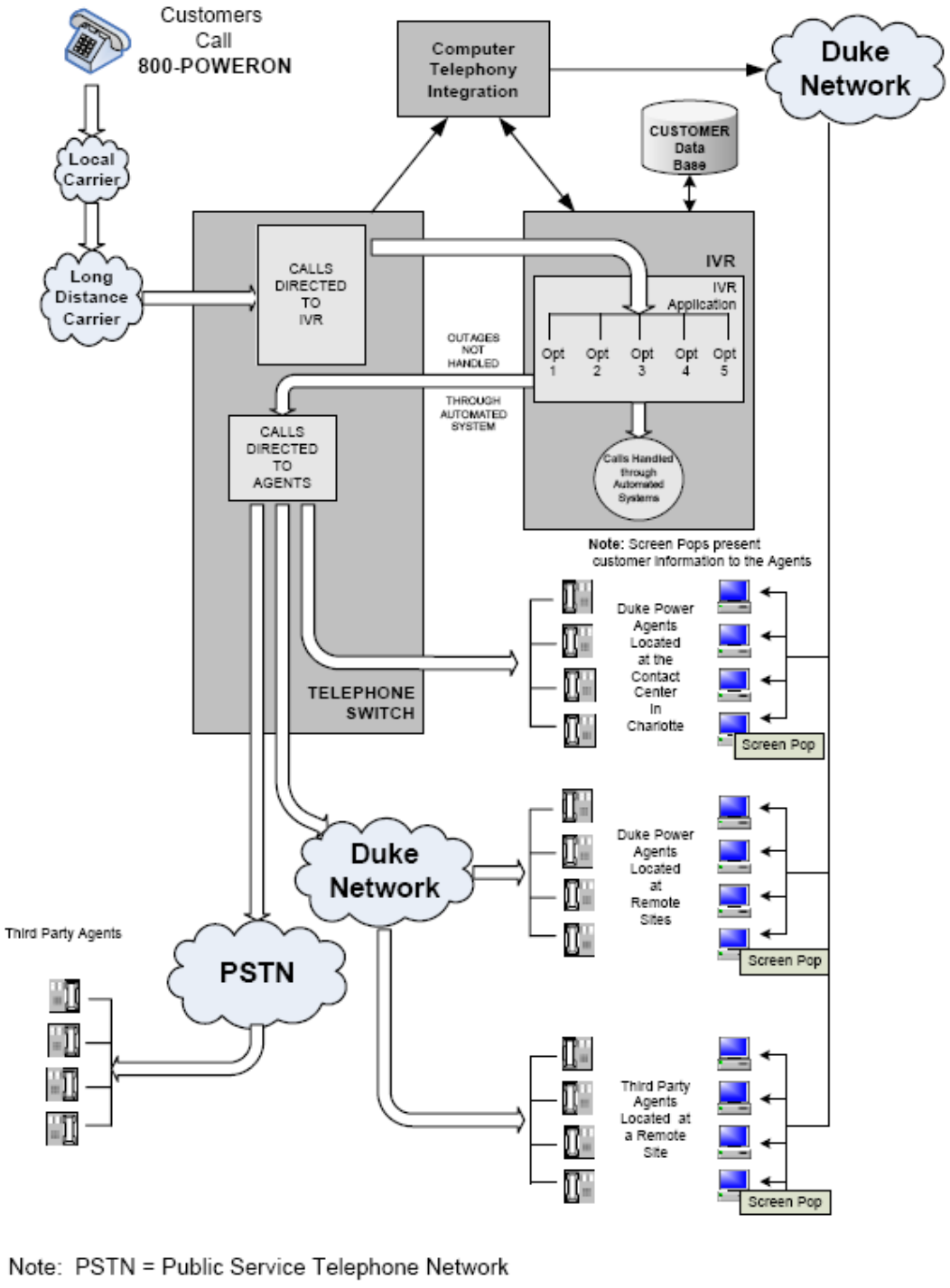
*After December 20, 2005, staffing started to ramp-down to normal schedules (levels)

Customer Call Telecommunication System

The success of Duke's management of customer calls in response to major storm events is heavily dependent on the performance of Duke's Interactive Voice Response (IVR) automated phone system. The IVR system is capable of processing 208,600 calls per hour. In the event of severe weather, the IVR system is placed into "Storm Mode." Callers using 800-POWERON are routed to Duke's dedicated storm phone lines. Similarly, Spanish speaking customers can call 1-866-4APAGON to contact Duke to report a power outage. Calls not handled through the IVR system are directed to: (1) Duke representatives at its Charlotte Contact Center, (2) Duke agents located at remote sites, (3) Duke third party agents at remote sites, or (4) Duke alternate third party agents at the Public Service Telephone Network. Figure 2 illustrates Duke's customer call routing process. If there are no customer call lines available on Duke's system, the call is routed to Duke's third party vendor, Twenty First Century Communications (TFCC). Figure 3 illustrates Duke's TFCC call routing process.

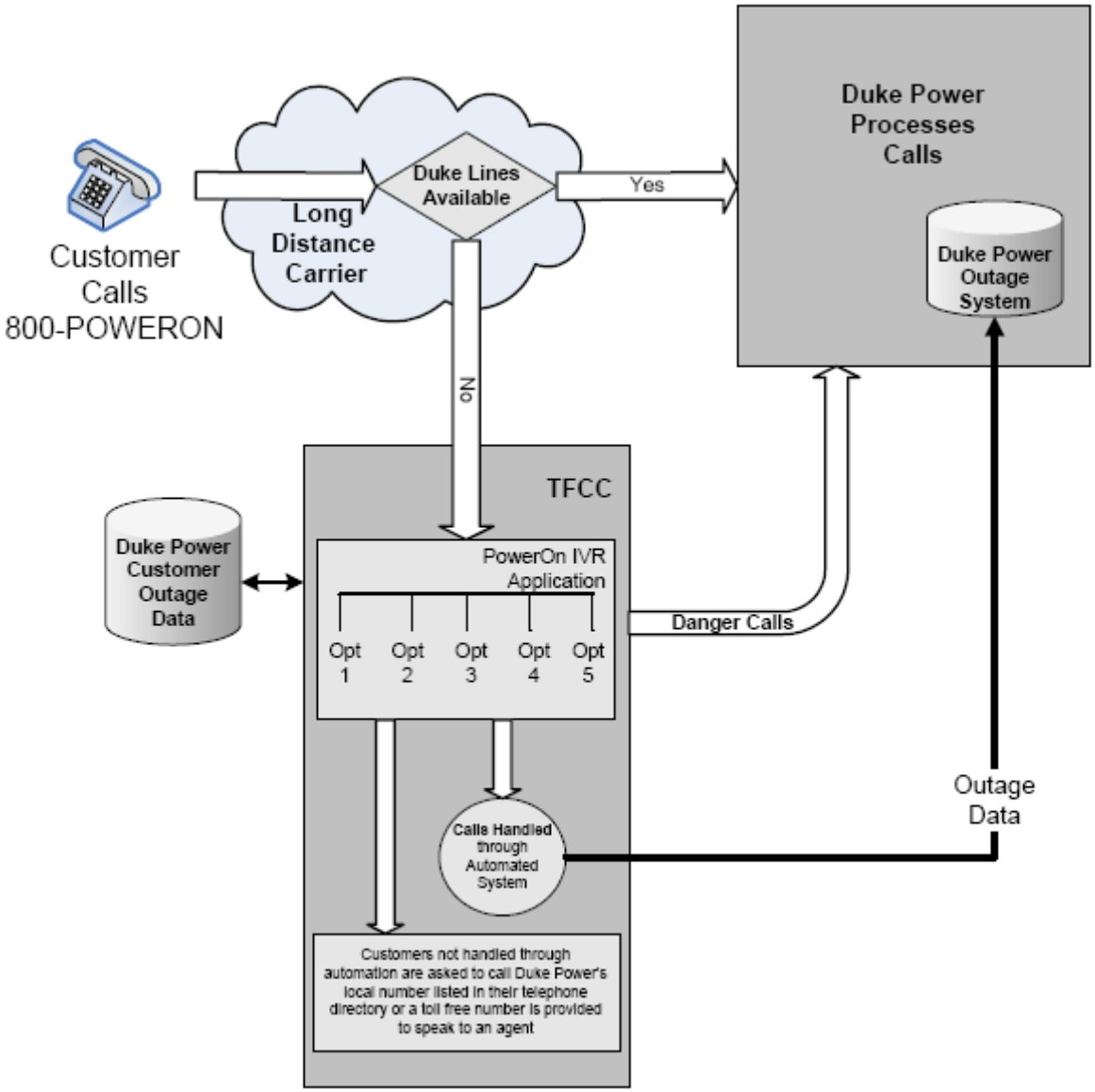
Duke's complete customer call phone system is capable of managing a maximum of 1300 calls in the system's queue. The 1300 call lines are identified as follows: 332 lines for automated outage calls (800-POWERON); 568 lines to support outage calls to agents; and 400 additional lines available for normal customer service. TFCC provides an additional 4,280 lines to handle the overflow from the 332 lines handled by 800-POWERON. Overflow call routing to TFCC appears seamless to the customer.

Figure 2 - Duke's Customer Call Routing Process



Note: PSTN = Public Service Telephone Network

Figure 3 - Duke's Overflow TFCC Customer Call Routing Process



Estimated Time of Restoration (ETOR)

Duke's *Power Delivery Emergency Manual* also provides a detailed ETOR process. ETORs are communicated to customers primarily through Duke's IVR automated phone system, but can also be provided by various Duke personnel via its many information outlets. During normal operations, customers calling to report an outage are provided an ETOR. However, in the event of a major outage, ETORs are not initially provided because of the relative difficulty to provide accurate ETORs until field damage assessments can be performed. Duke first provides ETORs on a county-wide basis within 24-48 hours of the start of the storm. Secondly, within 48-72 hours of the start of the storm, Duke provides more specific ETORs by circuit. Finally, when there are a small number of customers remaining without service, Duke can provide more specific, individual ETORs. Also, customers with special medical needs are contacted during extended outages via personal phone calls or Duke's outbound IVR automated phone system to provide ETORs.

ORS found that during an outage customers value storm related information, such as ETORs, as much as having their power restored. Duke should aggressively pursue reducing the lag-time to provide county and circuit ETORs. Also, Duke should expand the automated system's outbound ETOR capabilities to work proactively for all customers. **(Recommendations XVI)**

Telecommunications Interface

In upstate South Carolina, BellSouth is Duke's primary local telecommunications provider. Sprint is Duke's primary toll free service provider. During the December 2005 storm, local and long distance interfaces failed. According to Duke, the number of calls received was restricted due to issues on the local carrier's system. This action resulted in approximately 16,000 busy signals for Duke Customers located in the Greenville area. Also, according to Duke, there were additional issues with the toll free network parameters which limited the number of calls below

what Duke was capable of receiving causing many of Duke's customers to experience unnecessary busy signals when attempting to contact Duke to report an outage. Both interface failures were identified and corrected by the evening of December 15, 2005.

When severe weather threatens, Duke should contact its local telecommunications provider and toll free service provider to ensure such entities are aware and properly prepared to manage extremely high call volumes. **(Recommendation XVII)** This task is vital to the success of Duke's customer call process in the event of a major storm.

Restoration Crew Coordination

As mentioned in the Preparedness Section, Duke has a crew coordination strategy. Duke's *Power Delivery Emergency Manual* ("PDEM") details the storm related activities of Duke and non-Duke crews. Once the storm arrives and field assessments are made by Duke scouts, Duke's restoration crews are dispatched in accordance with the guidance outlined in the PDEM. Although many restoration tasks are performed simultaneously, Duke prioritizes its restoration activities in the following manner:

1. Public Safety Concerns (de-energize "live" downed power lines, etc.)
2. Emergency Services (hospitals, fire departments, police stations, etc.)
3. Critical Infrastructure (water and sewer facilities)
4. Main Feeders and Sub-feeders (restores greatest number of customers)
5. Lateral Tap Lines
6. Transformer Outages
7. Individual Service Lines

To ensure priority handling of Medical Alert Customers, Duke maintains a database of customer accounts with special medical needs. These "highlighted" accounts are contacted during extended outages via personal phone calls or Duke's outbound automated system to provide ETORs. Also, Duke uses identifying markings (See Figure 4) on meter boxes to allow field recognition of Medical Alert Customers.

Figure 4 – Duke Medical Alert Meter Box Decal

Duke distributes resources by region based on affected areas, damage, number of outages and available resources. Crews are provided daily safety briefings and information packages at their respective staging areas. Also, Duke utilizes computerized outage management systems to assist in resource allocation as well as to track the progress of restoration crews to ensure timely re-assignments.

The PDEM also includes detailed guidance for non-Duke crews. Non-Duke crews began arriving the day the storm hit the Carolinas, December 15, 2005. Duke issues to each off-system crew member a copy of the document "Handout for Off-system Crews." The PDEM and Handout are designed to ensure non-Duke crews understand Duke's restoration procedures and are managed effectively. Duke's field leaders are responsible for coordinating and directing all activities of non-Duke crews. Field leaders are required to maintain regular contact with non-Duke crews to monitor their restoration efforts. Also, Duke is responsible for coordinating all personal logistics for non-Duke crews such as lodging and meals.

To enhance Duke's coordination of off-system personnel, Duke should incorporate additional instructions to reinforce attention to Medical Alert Customers for non-Duke crews. **(Recommendation XVIII)** Close oversight of non-Duke crews is critical and Duke should

provide, as needed, field representatives familiar with Duke's restoration processes as well as routes, neighborhoods, and equipment locations. **(Recommendation XIX)**

Customer Education

In a continuing effort to educate customers about Duke's storm related activities, customer responsibilities and safety concerns, Duke issues press releases, public service announcements, printed pamphlets, bill inserts, and routinely updates its website. Duke periodically hosts information sessions for stakeholders, known as Storm School. Most recently, Duke partnered with the Upstate SC Chapter of the American Red Cross to help the public prepare for severe winter storms. Duke's Storm Central webpage offers severe weather information. While responding to customer concerns during the December 2005 ice storm, ORS identified a need for customer education concerning debris management.

Storm School

Duke hosts a Storm School on a periodic basis to gather fire, hospital, police, ambulance emergency responders, local and state officials, municipalities, electric cooperatives, regulators, state Emergency Management Division personnel and the media to provide an opportunity to share updates and gain insights into best practices for sharing information during severe weather events. The Storm School provides an opportunity to learn about how Duke responds to storms and to learn more about the information needs of key partners. Duke's customer relations, rates and regulatory and public affairs personnel help facilitate these informational sessions.

Duke held Storm School sessions in Charlotte, North Carolina on October 18, 2006 and Greenville, South Carolina on October 24, 2006. ORS attended both sessions. The two schools combined to serve several hundred attendees. The safety presentation by Duke's

Health and Safety staff demonstrated how to identify downed, energized power lines and the associated potential hazards. A hands-on scale model of a typical neighborhood distribution system produced "live" electric arcing circuits which may occur if field staff improperly identify energized power lines. Duke's Meteorologist explained Duke's process for predicting the severity of storms and identifying potential impact areas. Also, representatives from several Duke key departments performed a mock conference call to demonstrate the level of communication and coordination exchanged internally during major storm events. At the close of the program, Duke solicited feedback from the attendees to gain outside input on how to further improve its response to severe weather events.

Duke should continue to hold Storm School sessions annually prior to the winter storm season. Duke should ensure a wide cross section of emergency response representatives are invited to include but not limited to: fire, hospital, police, ambulance emergency responders, local and state officials, municipalities, electric cooperatives, regulators, state Emergency Management Division personnel, and the media. Duke should hold additional meetings upon request to address specific concerns of a city, county, etc. **(Recommendation XX)**

Duke Partnership with the American Red Cross

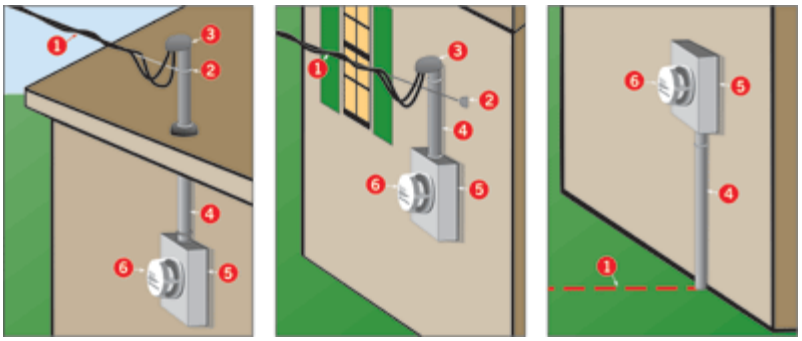
Duke and the Upstate SC Chapter of the American Red Cross are partnering to help the public prepare for severe winter events. Duke and the American Red Cross chapters in the upstate will distribute magnets and cards that have tips for preparing a family emergency kit. The magnets and cards also provide information customers need to know when talking with their electricity service provider. By completing a small amount of information on the back of the card and taking it to a participating Lowe's or the American Red Cross chapter where the card and magnet were received, the individual can receive a free, waterproof, sling backpack to store emergency supplies.

Storm Central

Duke's Storm Central webpage, www.dukepower.com/weatherwatch/stormcentral, provides answers to common questions. During the December 2005 ice storm, ORS responded to numerous complaints from Duke customers. ORS found that the majority of customer concerns centered on understanding who is responsible for damaged meters, Duke's restoration process, and why Duke "skipped" their home when restoring power in their neighborhood. ORS retrieved the following information from Duke's Storm Central webpage which directly addresses these most common concerns:

Meter Damage

Who's responsible when the service connection to your house is damaged?



For residential installations, Duke Energy installs and maintains your (1) service line, (2) attachment hardware, (3) weatherhead, (4) riser and (6) electric meter.

Installation and maintenance of the (5) meter box is the customer's responsibility. If the riser extends through the roof or eave, installation and maintenance is also the responsibility of the customer. These are generally installed and maintained by a licensed electrician.

Customers living in mobile homes are responsible for the service pole and for the service line that leads from your service pole to the meter. The customer is also responsible for their meter box, as explained above.

Please keep in mind:

- If the meter box is pulled away from your house and you have no power, the homeowner is responsible for contacting an electrician for a permanent fix. In some instances, an electrical inspection may be required before Duke Energy can reconnect your service. Your electrician should be aware and advise you accordingly.

- If the meter box is pulled away from the house and you have power, you should call an electrician to re-attach the meter box. Again, an electrical inspection may be required.

Restoration Process

Severe weather can cause extensive and widespread damage. That's why we begin preparing well in advance when severe weather threatens our area -- making sure equipment is working and supplies are stocked. Our meteorologists track the path of the storm to identify parts of our service area that may be affected. We also determine whether additional assistance is needed from contractors or from neighboring utility crews.

Duke Energy focuses on restoring power in a sequence that enables power restoration to public health and safety facilities and to the greatest number of customers as quickly as possible: 1. Public Safety Situations; 2. Transmission, Substation Equipment and Main Distribution Lines; 3. Essential Facilities; and 4. Distribution Lines.

If Your Neighbor's Power Is On But Not Yours

Sometimes, you may notice your neighbor's lights come back on while you are still without power. There may be several explanations -- not all circuits are restored at the same time, and different parts of your neighborhood may be served by different circuits. Another might be that a restored customer’s service comes directly from a primary line, which is restored first, while a customer without service may be served off a secondary line.

If your neighbors have power and you don't, please call 1-800-POWERON to report your outage. Our Spanish speaking customers should call 1-866-4APAGON (427-2466) for outage reporting assistance. There may be a problem with your individual service line or your meter.

In major storms, some of our customers are in areas that are temporarily inaccessible to our crews due to ice, fallen trees or where safety is an issue. Duke Energy, with the help of other services, works

> to clear these areas as quickly as possible so we can get to the damaged area to make repairs and restore power.
>
> Until we complete damage assessment and other tasks, it's hard for us to tell you when your service will be restored. We appreciate your understanding and cooperation as we work to restore your service as quickly and safely as possible.

Debris Management

ORS is aware of customer concerns about debris management. That is, who is responsible for the removal of storm debris? ORS found that during storm restoration activities, Duke's primary objective is to restore power to affected customers as quickly as possible, not debris removal. Power restoration crews are equipped with saws and other equipment necessary to cut limbs off of power lines so that power can be restored. However, Duke is not responsible for cleaning up trees or other damage caused by the storm. Some cities and counties in Duke's service territory remove cut vegetation with varying restrictions. In areas where cities or counties do not provide this service, the responsibility is with the property owner.

Although it is entirely appropriate for Duke to focus primarily on restoring power during storm outages, Duke should also assist the debris management efforts of responsible cities or counties by creating a protocol to inform such organizations of needed debris removal in areas visited by Duke restoration crews. **(Recommendation XXI)**

Duke's Internal Evaluation of the December 2005 Ice Storm

To gain insight into Duke's understanding of its performance during the December 2005 ice storm, ORS submitted, among others, the following Data Requests:

ORS Data Request #47:

Please provide Duke Power's post-storm de-briefing Root Cause/Self Analysis to include the performance of the Duke Power's automated telephone system and its customer call center.

Duke Power's Response:

The "Duke Power Post Storm Review" for the December 2005 ice storm follows.

> **2005 Post Storm Review**
>
> After every major event, Duke Power departments gather feedback; assess the actions taken leading up to and during the storm as well as the restoration effort that follows storm events. All this is done in an effort to continuously make improvements to Duke Power processes. Listed below are lessons learned and actions that span across department lines, where improvement can have a positive impact to future response.
>
> Storm Summary:
>
> 1) While the storm was more severe than expected, preparation was made anticipating a large ice storm including:
>
>   a) Public announcements through media
>   b) Power Delivery, Public Affairs, and Customer Service Sales & Marketing employees placed on alert and called into action
>   c) Conference calls with Southeastern Utilities and other utilities and contractor companies to request resources
>   d) Power Delivery Emergency Operation Center updates via conference calls with all regions
>   e) Customer Contact Center increased staffing levels
>
> 2) Major icing and damage occurred in the upper South Carolina area (Greenville, Spartanburg and Anderson) and some areas of western North Carolina.
>
> 3) The first outages began occurring early on Thursday, December 15, 2005, increased throughout the day, and peaked at approximately 700,000 by end of the day.
>
> 4) Power was restored to 98% of the affected customers by Tuesday, December 20, with all power restored by Thursday, December 22.

Significant Issues:

1) During the first day of the ice storm, the number of calls reaching the Customer Contact Center was restricted due to issues on BellSouth's system and Duke Power's toll-free service provider. As a result, a number of customers received busy signals. The major problem was resolved at 7:32 p.m. on December 15.

2) Duke Power's Outage Management System (Outage Link) experienced some performance challenges during the storm. While these technology issues did not slow storm response, they did have some effect on automated call processing, monitoring storm progress and providing public update information.

3) The process for contacting auxiliary call agents and other supplemental support personnel was more cumbersome than expected.

Planned Actions from the Storm Analysis:

1) Strengthen the review and response process for key external systems critical to Duke Power, i.e., telephone networks and 1-800-PowerOn line.

    a) Immediate problems have been corrected (BellSouth equipment in Greenville, SC central office upgraded 1/27/2006, BellSouth manual blocking procedures corrected, and toll-free service provider of re-classified 1-800 line to appropriate capacity level-12/15/2005)
    b) Duke's Telecommunications Team has revised the Event Management Procedures and worked with communication carriers to implement process improvements that will respond to problems more quickly. Duke Power will:
        i. Notify BellSouth and Sprint before a major outage event is expected.
        ii. Expand management presence in the Duke Network Operations Center when the Emergency Operations Facility is opened for a major event.
        iii. Immediately escalate to what service issues affecting the Customer Contact Center and other major Duke Power facilities to appropriate management personnel.
        iv. Attempt to have our BellSouth and/or Sprint service managers work in the Network Operations Center during major events, as appropriate.

In addition, Bellsouth will use their Major Event Bridge Process to resolve all critical Duke Power outages. This will make a higher level of technical expertise available more quickly.

2) Implement improvements, broader testing and redundancy of Outage Link, Duke Power's Outage Management System (OMS). Significant improvements have been made or are being made by both Duke Power and the vendor of the OMS. However, the performance issues with Outage Link emphasized the importance of strengthening the business continuity plan.

3) Enhance the auxiliary and additional support process –

   a) The current Emergency Resource Staffing process needs to be reviewed to determine how a new outbound automated dialing system used to call a large number of employees can be better utilized. It should provide managers and supervisors early notice of potential gaps and follow-up as the storm progresses.
   b) Enhance the Emergency Resource Staffing process to capture employee's emergency work experience (role and time worked) to leverage their experience. Additionally, consider establishing an automated process to check employees in and out of large locations and provide additional support resources to help process auxiliary resources.
   c) Validate and refresh storm response role training at least once a year.
   d) Include a new role as field crew leader and identify resource to assist in managing off system crews.
   e) Determine the feasibility of setting up temporary locations at existing sites to quickly mobilize employees to support the call center.

4) Streamline the automated customer out-bound call process. The process may need to be refined to improve the effectiveness of the tool which was implemented in 2005, and to identify potential scenarios for its use.

5) Enhance the process for county emergency management organizations to report outages, down power lines, etc., and relay other storm related information beyond the dedicated number these organizations currently have. Consider establishing a fax number or other communications method to provide an additional communications channel for information including activation and de-activation of shelters.

6) Clarify the statement around Estimated Time of Restoration (ETOR), *i.e*., develop better context around ETOR messages to improve understanding.

7) Streamline the various conference calls with the JIC/EOF/Region (Joint Information Center/Emergency Operation Facility) to better coordinate the process and determine if there are more effective methods or technologies to share information.

8) Strengthen the external communication process. Proactive communications were made to county emergency management organizations, local officials and some state officials, but the process needs to ensure all state officials in the impacted areas are contacted.

ORS appreciates Duke's self evaluation of its performance during the December 2005 ice storm. The above Planned Actions should enhance Duke's ability to better respond to major outages. Duke should provide to ORS within 60 days of receipt of this document a current status report of its progress toward incorporating these Planned Actions into its storm management practices. **(Recommendation XXII)**

ORS Data Request #48:

Please provide how Duke Power responded to each recommendation in the 2003 Barrington-Wellesley Group, Inc. ("BWG") report as it relates to the 2005 ice storm.

Duke Power's Response:

Duke Power performed a self-assessment following the 2002 ice storm, and prior to the release of the 2003 BWG report release, addressed a number of improvement opportunities, which were restated as recommendations in the report. In addition, Duke Power disagreed with a number of recommendations in the report. Below is a complete update as it relates to the 2005 ice storm:

BWG Recommendation	Duke Power's Response as it relates to the 2005 Ice Storm
1. Improve the systems and processes used to develop and communicate ETORs to the customers during storms and take advantage of tools and technology available to automate resource management. Duke should continue efforts already underway to correct these deficiencies.	Duke Power used its outage management system and resource tool during the 2005 ice storm to provide automated ETORs and for resource management.
2. When preparing for weather related events, enhance the method used to forecast the volume of outages and the resources needed for restoration.	New technology tools were used to estimate numbers of potential outages and resource needs based on the weather forecasts.
3. Develop a process for identifying and assigning scouts and field team leaders to specific areas and pre-stage these resources ahead of major events. Determine the number of scouts necessary to perform damage assessments by map grid or circuit for each zone for large-scale restorations.	Following the 2002 ice storm, Duke Power implemented an emergency resource staffing process to identify and train employees from across the company to serve as scouts, call agents, drivers, etc. Currently, 1,066 additional employees have completed training for these roles. Scouts remained available in their home regions until the impacted areas of the 2005 ice storm were known. Then, additional resources were dispatched to the most damaged areas to augment existing resources.

BWG Recommendation	Duke Power's Response as it relates to the 2005 Ice Storm
4. Continue to proactively reach out to counties and major municipalities to inform and educate customer regarding the Company's emergency plans and what to expect during major storms.	Duke Power continued proactive communications during the 2005 ice storm.
5. Modify lessons learned procedures and document retention policies in order to provide for more thorough investigations of storms and other emergency events and ensure the implementation of corrective actions identified.	Duke Power conducted extensive critiques and lessons learned sessions following this event to identify opportunities for improvement and best practices. (Please see response to question 47.)
6. Maintain the area-based organization that currently exists.	Duke Power's Power Delivery department continues to be regionally focused.
7. Revise employee incentive compensation measures in order to increase emphasis on system reliability.	Duke Power believes its incentive compensation measures include balanced weighting for safety, cost, reliability and customer satisfaction. Duke Power's employee incentive compensation measures are just one component of the overall compensation package for employees.
8. Develop and implement a comprehensive manpower-planning program.	Duke Power utilizes a number of tools and various data points in its manpower planning process. External information such as building permits and economic indicators are included along with historical trends in annual planning to project work volumes. Two internal work management systems are used, in concert, to manage work, track work and determine the number and types of resources needed. Each of these tools helps to determine the number of man-hours needed based on the volume of work performed. Duke Power has a base work force of company employees, which is supplemented with contractors. On an on-going basis, contractors are used to ramp-up or ramp-down the work force based on outputs of the work management systems.

BWG Recommendation	Duke Power's Response as it relates to the 2005 Ice Storm
9. Re-evaluate the South Carolina electric distribution system capital and O&M budgets and avoid any future cost control efforts until system reliability indices improve.	Investment in reliability and maintenance programs continue in order to minimize power outages and provide reliable service to customers. These programs include vegetation management, pole inspection, transformer retrofit, circuit sectionalization and microprocessor relay upgrades. Analysis of Duke Power's reliability indices continues to reflect a general long-term reliability improvement.
10. Determine the root causes of the recent decline in the electric system reliability.	Duke Power customers have not experienced a decline in reliability and continue to see consistent reliability of electric service each year. During the past ten-year period, Duke Power's interruption frequency index improved by an average of 2.3% each year.
11. Use a combination of the NESC heavy ice loading and ASCE standards as criteria for the design and construction of the electric distribution system.	Duke Power's distribution design standards are based on ice, wind and temperature standards from the National Electrical Safety Code. Duke's entire service territory is defined as a medium ice loading zone by the NESC. During 2004, Duke and several other utilities sponsored a study by the Cold Regions Research and Engineering Laboratory (CRREL), which is a part of the US Army Corps of Engineers, to conduct an ice loading study. This study was utilized to verify the new ice loading requirements in the 2007 NESC which will continue to define the Duke Power service territory as a medium ice loading area.
12. Develop and install a SCADA system to include all major distribution systems.	Duke Power has extensive data acquisition systems, including remotely read transformer bank meters, digital relays with remote communications capability, alarms on distribution breakers for outage notification, etc. which provide diagnostics and are used in lieu of a distribution SCADA system. (Please see Duke Power response to question #18.)

BWG Recommendation	Duke Power's Response as it relates to the 2005 Ice Storm
13. Increase the frequency of distribution pole inspections.	Duke Power inspects one-twelfth of the system distribution pole population annually and less than 1.19% of poles need replacement each year.
14. Reduce the cycle time of the tree trimming program to four years.	By focusing on reliability data versus a time-based cycle approach, Duke Power is able to systematically perform right of way maintenance that provides the maximum benefit in terms of reliability and efficiency. Duke Power's current vegetation management practices are reasonable, cost effective and support the provision of reliable service at reasonable rates.
15. Duke Power should conduct an internal audit of the security fences of all its substations and bring the security fences for each substation into compliance with the NESC.	Security fences around Duke Power substations comply with NESC standards that were in effect at the time of construction.
16. Duke Power should develop a plan for implementing an under frequency load shedding program.	Duke Power has a transmission level over/under frequency load shedding protection system. This system provides adequate protection in the event that the transmission and generation systems become fragmented.
17. Modify emergency planning procedures in order to implement a more effective means of estimating resource requirements (as related to customer service).	Duke Power utilizes existing customer call center staff, trained and qualified contractors and auxiliary agents and automated telephone voice response units to ensure effective management of customer calls and requests. Risk mitigation plans are in place to increase staffing early in events to allow for variations in timing and severity. Since 2002, an additional 1,900 phone lines have been added to the overflow capacity bringing the total to 4,280.

BWG Recommendation	Duke Power's Response as it relates to the 2005 Ice Storm
18. Conduct a comprehensive assessment of customer service business processes and technology infrastructure in order to identify opportunities to improve service levels while continuing to control costs.	Duke Power's customer service levels during the 2005 ice storm were excellent, with the exception of telephone carrier issues which were identified and fixed on day one of the storm.
19. Provide regular training to Duke's non-customer service employees who may be required to serve as auxiliary agents during an emergency.	In the 2005 ice storm, more than 600 auxiliary agents assisted with customer calls. Following the 2002 ice storm, Duke Power implemented an emergency resource staffing process to identify and train employees from other departments, prior to storm seasons, to assist Power Delivery and the Customer Contact Center in storm response. Currently, 1,066 employees have completed one or more training modules.
20. Determine the optimum staffing required in the customer call center to achieve an appropriate level of service to Duke's customers.	Duke Power's customer call center received 1,120,986 calls during the 2005 ice storm. Customers reporting outages through the automated system were answered in one second or less. For callers who requested or were directed to a representative, approximately 73% of these calls were answered in 30 seconds or less.