Storm Season 2004-2005
7 Storms / 15 Months

### 2004 Season

<table>
<thead>
<tr>
<th>Event</th>
<th>Affected Customers</th>
<th>Days to Restore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charley</td>
<td>874,000</td>
<td>13%</td>
</tr>
<tr>
<td>Frances</td>
<td>2,786,300</td>
<td>12</td>
</tr>
<tr>
<td>Jeanne</td>
<td>1,737,400</td>
<td>8</td>
</tr>
<tr>
<td>Dennis</td>
<td>508,800</td>
<td>3</td>
</tr>
<tr>
<td>Katrina</td>
<td>1,453,000</td>
<td>8</td>
</tr>
<tr>
<td>Rita</td>
<td>140,000</td>
<td>2</td>
</tr>
<tr>
<td>Wilma</td>
<td>3,241,437</td>
<td>18</td>
</tr>
</tbody>
</table>

### 2005 Season

- [Hurricane force winds]
- [Tropical storm force winds]
Florida Power & Light

2004 - 2005 Record Breaking Storm Seasons

• 2004 was unprecedented
  – 3 back-to-back storms within 36 days
  – Nearly 47,000 workers from 39 states and Canada
  – 75% restored by third day after each storm

• 2005 is most active and destructive season on record
  – 4 hurricanes affected customers
  – Prepared for 7
  – Nearly 45,500 workers from 36 states and Canada
  – 130 days of storm restoration

• Wilma alone had the largest impact to our infrastructure
  – Largest amount of resources ever acquired
  – Quickest deployment of resources to the field after a major hurricane
2005 Storm Season - Distribution and Transmission Equipment Repaired

• Distribution
  – 12,632 poles (FPL & non-FPL)
  – 930 miles of OH conductor
  – 570 miles of OH service conductor
  – 1.1 million OH splices
  – 30 miles of UG cable
  – 100 miles of UG service cable

• Transmission / Substation
  – 100 structures
  – 7 miles of conductor
  – 1 substation transformers
  – 7 regulators
  – 16 breakers
2005 Storm Season Assessment
Forensic Team

- Samples taken to determine and analyze cause of failures on equipment during hurricanes
  - 2,571 observations
  - Observations focused on pole location to capture causes
2005 Storm Season Assessment

KEMA

- Retained independent outside consultant (KEMA):
  - Examine performance of FPL facilities
  - Understand whether transmission and distribution structures performed appropriately
    - Distribution Performance
    - Distribution Standards
    - Quality Processes
    - Pole Maintenance
    - Transmission Performance
    - Substation Performance
    - Weather Assessment
    - Industry Benchmark
2005 Storm Season Assessment

KEMA Findings

• FPL meets or exceeds all required standards

• All quality systems are good

• Performance during Wilma was as expected

• Damage during Wilma was consistent with past hurricanes
Five-Point Storm Secure Plan
A Hardening Roadmap

• Significant changes are required in the design, construction and operational of electric systems
  – Evidence of more active multi decade hurricane cycle
  – More heavily and densely populated areas
  – Customer expectations changed

• Development of the Storm Secure Plan for the future

Hardening “Roadmap”

5-10 Years

Now
Five-Point Storm Secure Plan

Strengthening the Grid

- Complete Post-Hurricane and Targeted Facility Upgrades
- Step-up Pole Inspections
- Harden the Electrical Network
- Invest in Underground Conversions
- Increase Line Clearing
Five-Point Storm Secure Plan

Distribution – Harden the Electrical System

- Adopt the NESC extreme wind velocity zone criteria as the new standard
- System upgrades of facilities through system expansion, relocations and major maintenance/rebuild projects
- Targeted, long term retrofit of existing facilities, that serve critical infrastructure facilities and major thoroughfares

NESC Extreme Wind Map
Vegetation Management

• Accelerate Vegetation Management
  • Complete 75% before height of storm season

• Evaluate alternative trim cycles
  • Davies consulting retained to determine most cost effective trim cycle

• Promote Right Tree Right Place
2006 CIF Hardening Projects

- **Facilities having a direct effect on public health, safety, welfare and security**

- **Two South Florida ports**
  - Port Everglades
  - Port of Palm Beach

- **Several South Florida hospitals**
  - Jackson / UM Hospital Complex
  - Mt Sinai / Miami Heart
  - Saint Mary’s Medical Center

FPL supplies Port Everglades with electricity to distribute the petroleum that supplies nearly one-fifth of Florida’s energy requirements.
How You Can Help

• **Overhead Hardening**
  • Need better materials and / or work methods

• **Effects of Wind**
  • Need better wind data at a granular level
  • Sustained winds vs. choppy winds
  • Testing and wind simulations

• **Storm Surge**
  • Need better materials and / or work methods
  • Network operations
Questions ?