Background

- 9/11 Telecommunications Severely Disrupted
  - Infrastructure Risks Revealed
  - Tens of Thousands of jobs gone; $ Billions lost
- Network Reliability White Paper Completed in 2002
- Commission Proceeding (Case 03-C-0922) Initiated in 2003
- Blackout Report Issued in 2004
- Network Reliability Section formed in 2006
- Verizon Service Quality Proceeding 2007
Excerpts from the Findings of the National Science Foundation Study, Released June 14, 2004:

- The most obvious failure was the unexpected concentration of telecommunications services in the extensively damaged Verizon infrastructure. This caused massive outages throughout the City and surrounding region.--Executive Summary

- The loss of the Verizon central office was very much a single point of failure...in fact it continues today that--regardless of your vendor...they basically lease space or run over Verizon's network...Clearly, the same physical infrastructure does not guarantee redundancy or high levels of network availability…

- Communications networks that were thought to be separate were actually running over the same infrastructure...The protection organizations had expected from separate service providers was therefore never realized.--page 17

The Problems are Last Mile…

Network: Many Paths, Dynamic, Self-healing

Last Mile: One Path, Static, Vulnerable

Potential Points of Failure =
Overall Goals

- White Paper set Seven Goals for New York’s Telecommunications Carriers and Users:
  - Improve Compliance with FCC’s Best Practices
  - Reduce Concentration and Eliminate Single Points of Failure
  - Provide Route Diversity for Each End Office
  - Enhance Customer-specific Diversity Arrangements
  - Improve Tracking/Storing of Facility Routing
  - Encourage Participation in the Telecommunications Service Priority restoration program
  - Encourage MARC-like Agreements outside of NYC

Comments on White Paper

- **New York City:** Regulatory action to improve reliability is justified and essential; industry has not delivered and stakes are too high
- **Financial Sector:** Absent knowledge of the physical path taken by our circuits, we are unable to manage our telecommunications risk
- **Carriers:** Staff’s recommendations are unnecessary or expensive; let the market decide
GOAL ONE

Compliance with Best Practices

- Best Practices Should Not Be Mandated
- Reliability Advisory Council (RAC) Should Be Formed to Provide Forum for Reliability Issues
- Major Outages Will Require Carriers Show Staff Which “Best Practice” Applies
- Degree of Diversity in Cable Entrances to Be Examined in coordination with Office of Security

NY Telecommunications Reliability Advisory Council (NYTRAC)

- **Objective**: To provide a forum for views on telecommunications reliability
- **Goal**: To preserve and, as reasonable, enhance the reliability of the State’s telecommunications infrastructure
Cable Diversity

- How Many Telco Buildings in Manhattan are Have Dual Entrances?
- How Many Circuits at Each Entrance?
- How are the Critical Circuits Dispersed?
- Work in Coordination with the Office of Utility Security Using the Security Audit Procedures

GOAL TWO

≡ Reduce the Concentration of Network Elements

- Decentralization is an Objective, Not a Mandate
- More Attention Should Be Paid to Backup Powering
- CTRR Objective Need Not be Made More Stringent
GOAL THREE
≡ Provide Route Diversity for Each End Office

- Route Diversity, Available in Almost of all NY and Required by Best Practices, Must Be Extended
- Cellular Services Need Not Be Re-Regulated, At Least Not Now
- Adequacy of Cellular-to-PSTN Connections Will Be Studied Further and we expect cellular carriers to “voluntarily” participate

<table>
<thead>
<tr>
<th>Central Offices w/o Route Diversity</th>
<th>Estimated Cost to Make Diverse</th>
<th>Lines Served</th>
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<tbody>
<tr>
<td>Total State Circa 2005</td>
<td>345</td>
<td>$ 174 M</td>
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<tr>
<td>Critical Infrastructure-centric</td>
<td>138</td>
<td>$ 13 M</td>
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</table>
GOAL FOUR
≡ Customer-specific Diversity Arrangements

● Physical Path Information to be Required Only for Critical Circuits

Critical Facilities Arrangements

● Carriers to Introduce CFA subject to showing

● CFA Steps
  ○ Customer Identifies its own “Critical” Circuits
  ○ Registers Circuit in TSP; Federal Sponsor Required
  ○ Service to be tariffed at cost-based rates; Customer may participate
  ○ Physical Path Data shared with CFA subscriber
  ○ Notice to Customer of Changes and Rearrangements
  ○ Carrier responsible for its own Security (i.e., setting Access, Authentication, and Authorization protocols)
GOAL FIVE
≡ Tracking/Storing of Facility Routing

Mechanization of Outside Plant Records Would Undoubtedly Be Beneficial, But Should Not Be Mandated

GOAL SIX
≡ Telecommunications Service Priority

TSP tariffs re-vamped
TSP to be offered by all carriers
Collaborative was convened to ensure multi-carrier TSP “worked”
Critical Facilities Arrangement (CFA Service) will be linked to TSP to encourage subscription
GOAL SEVEN
≡ MARC-like Agreements

Zero interest. Why? Few municipalities outside of NYC have buildings served by multiple carriers

Verizon Service Quality Proceeding
Case 03-C-0971
Targeted Seven Repair Service Bureaus
Chronic SQ Issues:
- South Nassau
- South Queens
- South Westchester
- North Nassau
- North Queens
- North Westchester
- East Suffolk

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tr>
<td>Dec 2006</td>
<td>Commission Issues Order</td>
</tr>
<tr>
<td>Feb 2007</td>
<td>Verizon Files Plan</td>
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<tr>
<td>March 2006</td>
<td>Technical Conf Held</td>
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<tr>
<td>April 2006</td>
<td>Parties Respond to VZ Plan</td>
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<tr>
<td>April 2006</td>
<td>VZ Files Reply Comments</td>
</tr>
<tr>
<td>TBA</td>
<td>Staff report to Commission</td>
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</table>
The Network Reliability section evaluates telecommunications systems to ensure compliance with technical and safety standards and provides real-time, reporting regarding outages affecting the telecommunications industry in support of the state's overall emergency response effort. The Network Reliability section also conducts field investigations involving telecommunications companies' outside plant, underground facilities, and other technical issues.

Four specific missions:
- Recovery,
- Reliability,
- Resiliency,
- and Security

Recovery: Process by which the network is restored once it fails.

- **Outage Reporting**
  - 24 x 7 outage reporting for all key telecommunications providers statewide, both physical and cyber
  - Expanded this year to include all telecommunications providers and services: telephone, wireless, cable

- **Incident Response Management**
  - Example: October Buffalo Snowstorm
  - Management of SEMO staffing and support for Office
  - Maintenance of the Office's Emergency Operations Plan and emergency contact list
  - Engage in emergency response activities—state and federal

- **Other Recovery Initiatives**
  - Federal Telecommunications Service Priority program
  - Real-time Information Sharing with other jurisdictions
    - New York RCC: How might we share information with feds and other state?
Reliability – Evaluating how well the network works day-to-day.

- **Performance Monitoring**
  - Development of Network Reliability Metrics and Annual Report. (Comp 3 initiative)
- **Support for the New York Telecommunications Reliability Advisory Council (NYTRAC)**
  - 2006 NYTRAC Survey on Telecommunications Reliability and Interdependencies
- **Monitoring and Enforcement of Standards**
  - NYS Technical Standards 896
  - F.C.C. Part 76 Technical Standards
  - NYCRR 16 Rules and Regulations
- **Field Inspections**
  - Statistical Analysis of Telecommunications facilities
  - Analysis of findings and follow-up with industry

Resiliency – How well the network works under adverse or extreme conditions.

- **Infrastructure Analyses**
  - Flood plain Mapping
- **Review of Utility Root Cause Analyses for outages**
- **Active participation in telecommunications reliability activities—state and federal**
  - FCC Katrina NRPM
  - New York Regional Coordination Center
Security – Protecting the network from unauthorized activities

- Support the Department's Office of Security
- 753 Underground Facilities Protection - Call Before You Dig

Summary of Department Actions

- Low “Cost”
  - No re-regulation of Cellular
  - No mandatory compliance with Best Practices
  - No wide-scale mechanization of records
  - No mandate to de-centralize plant
  - Network Reliability Section Formed

- Balanced
  - Directed at Customer Needs via Shared Responsibility
  - Collaborative
    - NYRAC formed
    - Route Diversity where it made the most sense
  - Forward Leaning
    - CFA
    - Trust, but verify, degree of cable entrance diversity in NYC