

In their comments, the carriers and their industry associations generally oppose additional mandates as a means of promoting network reliability. Financial considerations, stemming from New York's competitive telecommunications market and associated tight profit margins, are most frequently cited as the reason. Less clear from the comments, however, are whether New York's telecommunications infrastructure can reasonably be expected to remain state-of-the-art into the foreseeable future and how that is to be accomplished. The City submits that a collaborative inquiry focused on identifying the steps that will be necessary to attaining this goal should soon be initiated by the Commission.

The White Paper was clearly intended to commence a substantive dialog toward this end by setting forth thoughtful and sometimes provocative findings and tentative conclusions.³ Unfortunately, as described below, these substantive findings and tentative conclusions are frequently met by the carriers with sweeping opposition to what is apparently viewed as unwarranted government meddling. The tone of the comments continually smacks of: "this is our business, these are our investment decisions, leave us alone." In reality, however, nothing could be of greater concern to a broader array of

³ The City also commends the White Paper from an analytical standpoint. Thus, in the City's view, the White Paper logically approaches network reliability with primary reference to *network survivability* and *network diversity*. Survivability, according to the White Paper, asks whether the network design provides a reasonable level of assurance that "it will continue to operate during a natural or man-made event affecting some portion of the network." (White Paper at 26.) Survivability is said to focus principally on individual and composite segments of the network as defined by the range of conditions over which a segment would continue to operate during a particular event. As an example, one measure of the survivability of a network switch might be the period of time it would continue to operate, without commercial power, through a standby generator or battery reserve power. Diversity, by contrast, is described as "a means of providing a degree of network reliability by providing redundant elements within the network." (Id.) As an example, one important means of achieving network reliability is by implementing redundant network elements in geographically diverse manner. Another, more costly, means is through full duplication.

stakeholders, ultimately rising to nothing less than a national security priority, than the state of telephone network reliability in New York.

There are notable exceptions. In particular, AT&T is to be commended for acknowledging the importance of “foster[ing] a dialogue among all stakeholders to ensure a common understanding of existing reliability, and believ[ing] that this dialogue should prove valuable in developing realistic expectations regarding future network reliability in New York.”⁴ Similarly, MCI expresses a willingness to work “with the Commission to improve and maintain the telecommunications network’s reliability.”⁵ Accordingly, MCI suggests that the Commission “convene technical workshops with the impacted carriers so that their technical input can be received and considered, and so that implementation costs can be properly identified and evaluated.”⁶

Nonetheless, the City believes that the Commission’s next steps must go well beyond a dialogue and must be broadly inclusive of all stakeholders. Specifically, such an effort must be concentrated on developing a set of well-defined network reliability-related goals and associated pathways and timelines for their implementation. In this regard, the City recommends that the Commission consider sponsoring a body similar to the Mayor’s Task Force on Telecommunications Network Reliability, which was established in 1990

⁴ AT&T Comments at 4.

⁵ MCI Comments at 1.

⁶ Id. at 4. At least with respect to distributed switching networks, and particularly an “automatic rerouting product,” Time Warner Telecom similarly recommends that the Commission “initiate an industry-wide collaborative to overcome the various hurdles to implementation of a mutual system of rerouting or redirecting switched voice or data calls in the event of a catastrophic network failure. Industry collaboration may provide new insights and alternative ways to remove the barriers that are blocking provisioning this type of service.” TWTC Comments at 3.

to examine telecommunications network reliability in the City.⁷ As the Commission is no doubt aware, this public-private task force brought together high-level representatives from the communications industry, private industry, civic groups, state and municipal government and others “to make the network as disaster-proof as is possible.” The Task Force, which after a year’s work released a report⁸ in collaboration Ernst & Young, was comprised of three working groups⁹ and four subgroups.¹⁰

Among the reports specific many “actions and recommendations,” more than 13 years ago, were: (i) establishment of a mutual aid and restoration protocol for carriers to support each other in an emergency; (ii) assessment by carriers of vulnerabilities at their central offices (recognized in the report as representing “major single point[s] of failure that can cripple portions of the public switched network”¹¹); (iii) development of local loop redundancy and service assurance capabilities in conjunction with the ongoing development of Signaling System 7; (iv) achievement, in cooperation with the real estate industry, of diverse transmission paths and building access for multiple providers in large

⁷ The Task Force arose, in part, as a response to the findings of a study by the New York City Partnership and Chamber of Commerce, which concluded:

- If New York City’s telecommunications network should cease to function for any length of time, the impact would be catastrophic.
- Unless the New York City telecommunications infrastructure stays at the cutting edge of the rapid changes in technology, the city and New York State will be placed at a severe disadvantage in competing for business and jobs.
- If they are to meet these threats, both the city and state must take aggressive action to ensure that New York’s telecommunications network remains disaster-free and state-of-the-art.

“The \$1 Trillion Gamble; Telecommunication’s and New York’s Economic Future,” A report by the New York City Partnership in collaboration with Booz Allen & Hamilton (June 1990).

⁸ “Continuous Communications: Enhancing Network Reliability Through Cooperation,” A report by The Mayor’s Task Force on Telecommunications and Network Reliability in collaboration with Ernst & Young (Nov. 1991).

⁹ Data Collection and Analysis; Network Services and Capabilities; and Policy and Legal.

¹⁰ Network Architecture; Real Estate; Interim Solutions; and Mutual Aid and Restoration.

¹¹ Id. at iii.

office buildings; and (v) compilation of a “Guide to Contingency Services” to address a need in the business community for additional information regarding telecommunications outages.

In the City’s view, the White Paper, and comments and reply comments received by the Commission in response to it, could well provide the framework for establishing areas of consideration as well as appropriate committees and subcommittees for a newly convened task force.

The following reply comments by the City focus on those areas that are areas of most vital concern to the City: Increasing redundancy by encouraging more distributed networks; eliminating individual points of failure by encouraging the survivability, or “hardening,” of critical network facilities; enabling informed purchasing decisions and swifter outage response by encouraging modernized record-keeping; and, finally, ensuring the continuation of the City’s Mutual Aid and Restoration Consortium as an indispensable “first-responder” tool.

I. DISTRIBUTED NETWORKS

The White Paper suggests several measures that could be pursued to make local telecommunications networks more diverse. The City believes that two tentative conclusions in particular should be given priority consideration by the Commission as this proceeding moves ahead. First, the City strongly supports the White Paper’s tentative conclusion that “[l]ocal carriers should consider migrating toward a more distributed

switching network rather than a concentration of more customers on fewer, larger switches.”¹² Second, the City agrees that “[l]ocal carriers should identify and eliminate (where reasonable) single points of potential failure in the network and especially in critical services provided to consumers so as to improve network reliability.”¹³

The City is most seriously concerned about the region’s dependence on relatively few collocation facilities to serve a massive amount of critical voice and data traffic. As a consequence of the partial destruction of Verizon’s 140 West Street central office on September 11, 2001, New York area communications were extensively compromised.¹⁴ The West Street facility, which housed Verizon’s switching equipment as well as that of other collocated carriers, served Lower Manhattan, the Downtown banking and financial services industry and essential municipal, State and Federal agencies. As described in the White Paper, it took 24 days for 50% of the 200,000 lines and 4.4 million data circuits to be restored; and 49 days for 95% restoration using temporary facilities.¹⁵ (Other customers, primarily residential and small business, did not have their telephone service restored for several months.) Nonetheless, Downtown businesses, including the financial

¹² White Paper at 7.

¹³ Id. at 29. The City also supports with the White Papers tentative conclusion that “To maintain diversity on all critical links of the Signal System 7 (SS7) network, carriers should ensure that their SS7 vendors connect to SS7 switching nodes and databases in a geographically diverse manner.” Id at 32. The SS7 failures cited in the White Paper are of significant concern to the City. In its comments, MCI similarly “agrees that route diversity for SS7 signaling for voice traffic is critical, and [supports] this tentative conclusion with respect to voice traffic with no reservations.” MCI Comments at 5.

¹⁴ Indeed, a more extensive paralysis was avoided only by chance and due to the extraordinary efforts of certain Verizon employees and other communications workers.

¹⁵ White Paper at 28.

services industry, continue today to be served predominantly by Verizon's West Street (and Broad Street) central offices.¹⁶

Industries critical to the New York economy will be better able to operate primary and secondary business facilities that meet both customer and regulatory reliability demands only if the concentration of telecommunications assets in central business districts is addressed. Consequently, the City believes that priority consideration must be given to establishing more distributed points-of-presence and collocation facilities to serve these business centers. This concern is supported by the comments of the New York Clearing House Association, which, in likewise supporting the White Paper's tentative conclusion that carriers should consider increasing the geographic diversity of their facilities, cites the recommendation of a Federal interagency group that financial service companies give paramount consideration to the geographic diversity of available network facilities in making their secondary-site location decisions.

Specifically, in September 2002, the Board of Governors of the Federal Reserve System, the Office of the Comptroller of the Currency and the Securities and Exchange Commission released a "Draft Interagency White Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System."¹⁷ The Draft Interagency White Paper invited comments on potentially requiring "some minimum distance from primary sites be specified for back-up facilities for core clearing and settlement organizations and firms

¹⁶ The City is also concerned about the concentration of assets at 60 Hudson Street, one of the nation's most populated collocation sites where dozens of domestic and international carriers interconnect.

¹⁷ 67 FR 56835, September 5, 2002 (*"Draft Interagency White Paper"*).

that play significant roles in critical markets (e.g., 200-300 miles between primary and back-up sites).”¹⁸ Such a requirement – with its stark implications for New York’s economy, employment and tax base – was presented as a possible mechanism for strengthening the resilience of the financial system in the event of a wide-scale, regional disruption.”¹⁹ Ultimately, New York City and several other commenters successfully opposed the establishment of a minimum distance requirement between primary and back-up facilities. However, most commenters did “support the concept of establishing back-up sites for operations and data centers that do not rely on the same infrastructure and other risk elements as primary sites.”²⁰ Accordingly, the Final Interagency Paper called for maintenance of sufficiently “geographically dispersed resources to meet recovery and resumption objectives.”²¹ In particular, it found:

Recovery of clearing and settlement activities within target times during a wide-scale disruption generally requires an appropriate level of geographic diversity between primary and back-up sites for back-office operations

¹⁸ Id. at 13.

¹⁹ A "wide scale, regional disruption" was defined in the Draft Interagency White Paper as “one that causes a severe disruption of transportation, telecommunications, power, or other critical infrastructure components across a metropolitan or other geographic area and its adjacent communities that are economically integrated with it; or that results in a wide-scale evacuation or inaccessibility of the population within normal commuting range of the disruption's origin.”

²⁰ Final “Interagency Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System” at 3 (“*Final Interagency Paper*”). Indeed, the City’s argument against a minimum distance requirement relied in large measure on current and anticipated redundancy options in New York’s telecommunications infrastructure. In particular, the City argued that “New York City’s telecommunications network can fully accomplish, for any of the key financial firms that are the subject of the [Draft Interagency White Paper], the telecommunications objectives set forth in the [Draft Interagency White Paper].” The City further stated that “it would be impossible to find an out-of-region facility served with a comparable wealth of redundant and resilient network elements, including multiple conduits and central offices.” While acknowledging that “the events of September 11th revealed flaws in redundancy and back-up functions,” the City vowed that “significant progress to overcome those flaws has already been made and they will ultimately be eliminated with better planning and more extensive use of existing and new infrastructure.” See New York City Comments on Draft Interagency White Paper at 7-8.

²¹ Final Interagency Paper at 9.

and data centers. The agencies do not believe it is necessary or appropriate to prescribe specific mileage requirements for geographically dispersed back-up sites . . . *Back-up sites should not rely on the same infrastructure components* (e.g., transportation, telecommunications, water supply, and electric power) used by the primary site.²²

In the City’s view, New York could find itself at a tremendous competitive disadvantage unless a mechanism is established and aggressively pursued to implement more diverse networks. However, the remarkably mixed assessments by the carriers themselves on the White Paper’s tentative conclusions that consideration be given to such an initiative illustrates a clear lack of consensus on whether and how to address this fundamental concern. It is indeed illustrative of the absence of a “meeting of the minds” on many of the White Paper’s tentative conclusions regarding other network reliability-related concerns. In the City’s view, this absence of current consensus demonstrates the need to pursue collaborative “next steps,” as outlined above.

Carrier Comments on Diversity

- Verizon rejects the White Paper’s findings that “[e]conomics appears to have lead to a concentration of traffic, circuits, and key physical facilities”²³ and that “the extraordinarily crowded and dense urban environment of Manhattan caused a concentration of traffic and circuits in a limited number of buildings”²⁴ (thereby making the communications impacts of September 11 so substantial). Rather, Verizon asserts, without elaborating, that central office concentration has

²² Id. (Emphasis added.)

²³ Verizon Comments at 7, *citing* White Paper at 6.

²⁴ Id. at 7-8, *citing* White Paper at 28-29.

occurred for reasons besides economics, including “population density, business locations, engineering considerations and universal service.”²⁵ With respect to the concentration of traffic and circuits in Manhattan in particular, Verizon claims that “when designing a telecommunications network in Manhattan, there is no way to avoid ‘the extraordinarily crowded and dense urban environment,’ and given the magnitude of the [September 11, 2001] disaster, the impacts were unavoidably “substantial.”²⁶ Verizon argues that it “can not be expected to totally redesign its entire Network overnight; incremental change will happen where prudent.”²⁷ Accordingly, Verizon concludes, “consideration of migrating to more distributed networks should be left to carriers and their customers, who are in the best position to determine whether and if such measures are desirable.”²⁸

- While AT&T also “submits that carriers should not be required to build more distribution switching facilities in the current operating environment,”²⁹ its argument against such a requirement is based on the existence of unspecified “other proven successful network survivability processes”³⁰ and the fact that “service providers would be rendered unable to recoup the expense associated with such discretionary build outs.”³¹ In particular, AT&T claims, also without elaborating, that its “Disaster Recovery program obviates the need for the

²⁵ Id. at 7.

²⁶ Id. at 8.

²⁷ Id. at 7.

²⁸ Id.

²⁹ AT&T Comments at 12-13.

³⁰ Id. at 13.

³¹ Id.

Commission to mandate further decentralized switching network distribution.”³²

Therefore, AT&T claims that “[s]uch a requirement would not only be unnecessary, but would also impose onerous financial burdens on AT&T.”³³

- MCI, by contrast, “agrees with the Commission that a move towards less concentration in the network would be beneficial.”³⁴ At the same time, it urges the Commission not to “micromanage” this process.³⁵ At a minimum, MCI requests that prior to imposing any new regulations the Commission convene technical working sessions to determine “just how much concentration is too much, or how much diversification is enough.”³⁶ Along with other carriers, MCI concludes that the Commission “should regulate very lightly in this area, if at all.”³⁷ It believes that the bulk of the solution must arise from “financial incentives to develop robust and reliable networks.”
- Time Warner Telecom similarly recognizes that the White Paper’s concerns are “vitally important given New York’s high concentration of financial and banking concerns that rely necessarily on elaborate telecommunications systems.”³⁸ It asserts that “New York should once again lead the nation in the development of an appropriate carrier-to-carrier mechanism, thus ensuring that alternate switching

³² Id. at 12.

³³ Id.

³⁴ MCI Comments at 4.

³⁵ Id.

³⁶ Id.

³⁷ Id.

³⁸ TWTC Comments at 3.

is available should a central office go down.”³⁹ Also without elaborating, TWTC therefore recommends that the Commission facilitate the industry-wide “implementation of a mutual system of rerouting or redirecting switched voice or data calls in the event of a catastrophic network failure.”⁴⁰

- While, on the one hand, the United States Telecom Association claims that it “understands” the White Paper’s “concerns that the concentration of assets may implicate the security and reliability of the telecommunications infrastructure,” it also argues against requiring carriers “to reduce the concentration of key facilities.”⁴¹ In the USTA’s view, the solution lies in developing a so-called federal “threat warning system”; making threat information available to carriers; requiring carriers to participate in the federal “GETS” program; and instituting national security background checks for personnel with access to critical facilities. USTA does not agree with the NYPSC’s statement that ‘economic considerations have lead to a concentration of assets.’⁴²
- Frontier takes essentially the reverse view. Claiming that “[e]conomics *have* forced the industry over the last decade to move [to a more concentrated switching network],” Frontier states that “does *not* believe that this consolidation has reduced network reliability.”⁴³ In any event, to the extent a problem does

³⁹ Id.

⁴⁰ Id.

⁴¹ USTA Comments at 3.

⁴² Id at 3-4.

⁴³ Frontier Comments at 5 (emphasis added).

exist, Frontier argues that network decentralization would be best accomplished by permitting industry to evolve toward Internet Protocol switching.⁴⁴

As suggested above, taken individually and, particularly, as a whole, the carriers' comments are ambiguous about the extent to which, if at all, network concentration has compromised reliability. Moreover, the comments do not provide clear insight into the root causes of, or potential solutions to, what the City believes (based its own experience and extensive discussions with the carriers and their customers) is truly an urgent problem. Certainly, for example, the stakes are far too high for the City to agree that extraordinarily high network concentration is "unavoidable," or to accept as an article of faith that a solution will necessarily be sorted out through "market forces."⁴⁵

Improved network diversity would undoubtedly be in the public's best interest. Businesses from large to small would benefit not only in their everyday operations, but in their development and competitive participation in local, national and international markets. The long-run effect on the economic development and vitality of New York could likewise be substantial. However, as with various other network reliability-related

⁴⁴ Id.

⁴⁵ Thus, given the City's duty to the public, it can not comfortably accept, without scrutiny, Allegiance Telecom's claim that "any carrier's failure to maintain a diverse and reliable network would be economic suicide and additional regulation is not necessary to encourage such network design. With a choice of providers available, no customer will stay with a carrier whose service is unreliable or who does not promptly restore service in the event of an unforeseen outage caused by nature, human error, terrorist attack or any other intentional or unintentional interference with the public switched telephone network. This fact of life is all the incentive that carriers need to provide their customers adequate and reliable telephone service. The Commission should not be in the business of dictating to carriers how their networks should be designed and engineered." Allegiance Comments at 3.

proposals, the carriers appear to be reluctant to embrace initiatives that could well impose significant new short-run costs on them without any certainty as to comparably significant new revenue streams. The City understands this concern. However, the City submits that such concerns ought to be one element of a comprehensive determination of the tasks that must be accomplished *along with* a calculation of the associated costs. Then the question of a fair method of funding the required short-term investment can be attacked. Certainly, the City does not, for example, rule out incentives, public-private financing mechanisms and/or homeland security-related funding sources.

II. SURVIVABILITY

While clearly an oversimplification, there is some conceptual value to considering the communications outages related to the September 11 attacks as primarily resulting from inadequate network *diversity* and those related to the blackout as primarily resulting from inadequate *survivability*. Specifically, a task force report⁴⁶ to Mayor Michael Bloomberg on the blackout found that while backup power generating equipment operated appropriately in most Verizon central offices, three COs experienced outages of various duration due to failures of generating equipment. The failure of these COs, which serve the midtown Manhattan and downtown Brooklyn areas, resulted in “the loss of Emergency Medical Service and Fire Department (Brooklyn only) dispatch capabilities, and intermittent radio communications disruptions to Police and Fire Departments and

⁴⁶ See “Enhancing New York City’s Emergency Preparedness: A report to Michael R. Bloomberg” by the New York City Emergency Response Task Force (October 28, 2003) at 11.

Emergency Medical Service dispatch (due to failed T-1 circuits).⁴⁷ Also as a result of these CO outages, there was a widespread reduction in cellular capacity and a loss of wireline telephone service.⁴⁸ These telephone outages affected the Office of Emergency Management's Emergency Operations Center, and at police precincts, firehouses and hospitals in the areas served by the CO's.⁴⁹ And, obviously, the affected public could not use their phones to reach 911.

The City does not here raise these central office outages to single-out Verizon. (It should in fairness be stated that following the blackout Verizon was highly responsive to the City's inquiries into the outages and how the power backup issues are being addressed prospectively.) Indeed, the task-force report notes dozens of ways in which the City itself, telecommunications consumers and others might improve their own preparedness for emergencies that compromise telecommunications.⁵⁰ Rather, the City raises the blackout-related CO outages because maintenance of adequate backup power is but one noteworthy example of the ways in which the public must be assured that reasonable steps are being implemented to promote the survivability of essential network facilities. Accordingly, the City urges the Commission to sponsor a process aimed at identifying and mandating reasonable steps toward this goal.

⁴⁷ Id.

⁴⁸ Id.

⁴⁹ Id.

⁵⁰ For example, the report found that "[t]he duration of the power outage exceeded the battery life/duration of remote telecommunications electronics."

These electronics include premise based fiber access nodes primarily used in corporate environments, as well as onsite telecommunications equipment such as PBX's and IVR's. These failures resulted in isolated voice and data communication outages throughout the five boroughs, including an inability to dial 911 from these locations. At the homeowner level, a reliance on cordless telephones also resulted in many homeowners being unable to access any telephone services (including 911) due to power requirements of cordless phones.

Id. at 12-13.

The City views the White Paper’s tentative conclusion that “[t]he Commission could require local exchange carriers to routinely demonstrate compliance with the FCC’s Network Reliability and Interoperability Council’s recommendations”⁵¹ as a compelling *starting point* for considering which survivability-related measures should be undertaken by the carriers. NRIC has of course promulgated scores of recommendations related to network survivability. Nonetheless, the White Paper’s findings and tentative conclusions on mandating compliance with NRIC were met with the most uniform resistance by carriers. The gist of this opposition was that the NRIC recommendations are meant to be internal benchmarks rather than mandates; are not in all cases practical to implement given the particularities of different carriers, technologies and service areas; and are prohibitively expensive to undertake in their totality.⁵² In addition, some carriers asserted that mandating NRIC compliance would effectively chill the process by which the recommendations are developed by carriers themselves in the first place.⁵³

The City recognizes that for a variety of reasons mandating compliance with each and every NRIC recommendation of all carriers may not be practical. However, several carriers appear to go much further in their comments by suggesting that it would be

⁵¹ White Paper at 8.

⁵² Verizon, for example, asserts that “NRIC recommendations are just that, recommendations, not mandates . . . There is no vehicle identified by either the NRIC or the Commission to care for cost recovery of investment in implementing these recommendations. Cost recovery would be the responsibility of the Commission if adherence was required . . . Verizon evaluates each and every NRIC recommendation and determines which ones make sense for Verizon from a technological, economical, and feasibility perspective, and then implements those that make sense.” See Verizon Comments at 20-21.

⁵³ “In addition,” according to Verizon, “mandatory compliance to NRIC recommendations would have a chilling effect on the carriers’ willingness to participate in the development of future recommendations.” Id.

unreasonable to mandate *any* reliability-related standards at all.⁵⁴ The City's position is that the public interest necessitates increased accountability by the carriers. Accordingly, the City believes that the challenge for the Commission is to engage the stakeholders in a process aimed at identifying those standards that should appropriately and fairly be required. In some cases, these standards may mirror NRIC's recommendations. In other cases, as suggested in the White Paper,⁵⁵ they may need to be more (or less) aggressive than NRIC's recommendations.

In any event, the City views as entirely reasonable the White Paper's positing of NRIC best practices, which, after all, were developed by the carriers themselves, as an appropriate starting point for this investigation. In addition, the City believes that regardless of whether or not carriers are required to *comply* with particular NRIC best practices, they should periodically be obligated to *disclose* to the Commission which recommendations they are in fact following. Moreover, where certain best practices are not being followed by particular carriers, the reasons for noncompliance should perhaps be provided in a footnote. Public Service Commission Staff should, in turn, routinely compile and report on the status of voluntary compliance. Again, increased accountability to the public is the goal.

III. RECORD KEEPING AND SHARING INFORMATION

⁵⁴ Qwest, for example, argues that “[t]he concepts of survivability, however, are generally unreasonable to mandate due to the potential high implementation costs, as well as the alternative measures taken to mitigate associated risks.” Qwest Comments at 8.

⁵⁵ See White Paper at 8: “We believe that in some instances the Commission may wish to consider steps that actually exceed NRIC recommendations; for example, increased geographic diversity of cable entrance facilities may be appropriate for critical central offices.”

The City strongly agrees with the White Paper’s finding that the “[c]ustomers have a key responsibility to assure the reliability of their customer-specific diversity arrangements in partnership with the carriers providing the facilities that underly their redundant services.”⁵⁶ Clearly, however, customers must be provided with accurate, complete and up-to-date carrier information to make appropriate purchasing decisions for network diversity. Moreover, once a customer has made such a purchase, there would certainly appear to be an ongoing duty on the part of the carrier to ensure that relevant knowledge about the network path and, particularly, any modifications to that path, are communicated to the customer.

The City also agrees with a related White Paper finding that “[q]uick identification of major customers out-of-service appears to be a problem, despite the requirement that all local exchange carriers report such information during a major outage.”⁵⁷ As first-responders, the City and other local government are most immediately in need of information on outages affecting, for example, hospitals, schools and other critical facilities. However, it has also been the City’s experience – in the aftermath of the September 11 attacks, the blackout and the East 58th Street cable cut that is referenced in the White Paper – that information on outages affecting such facilities is not necessarily available on a reasonably timely basis.

For these reasons, the City supports the following tentative conclusions of the White Paper as to record keeping:

⁵⁶ White Paper at 41.

⁵⁷ Id. at 33 and 34.

- Local carriers should mechanize outside plant records and implement supporting databases to provide real time information on the physical location of outside plant facilities so as to ensure the existence of geographic diversity for the individual carrier and other users of that carrier's facilities (e.g., other carriers and end users).⁵⁸
- Carriers should consider improving network monitoring and/or record keeping systems to lessen the potential for loss of customer specific diversity arrangements.⁵⁹
- Improved information as to the physical path of facilities serving the customer will also facilitate emergency preparedness and speed recovery efforts during a major outage.⁶⁰

Many firms that legitimately believed they had purchased particular levels of redundancy suffered unanticipated outages as consequence of the September 11th attack (and, to a lesser extent, during the blackout). This has been conveyed by many of the largest banking and financial concerns directly to the City,⁶¹ to the Lower Manhattan Telecommunications Users' Working Group and to the Commission itself. In its comments on the White Paper, the New York Clearinghouse indeed states that "too often . . . facilities that the carriers thought to be geographically diverse are not."⁶² Nonetheless, Verizon rejects the White Paper's finding that "specific diversity arrangements did not perform as expected during outages, and also that such customer arrangements have been lost due to network changes."⁶³ Verizon essentially invites the

⁵⁸ Id. at 29, 41 and 57.

⁵⁹ Id. at 41.

⁶⁰ Id at 29 and 57.

⁶¹ It has been raised in discussions with the City and was a major area of focus by industry representatives at an August 6, 2002, City-sponsored symposium on "Building a 21ST Century Telecommunications Infrastructure in Lower Manhattan."

⁶² New York Clearing House Comments at 9.

⁶³ According to Verizon, "Staff does not identify any specific customers, nor does Staff explain what "diversity" the customers allegedly purchased, nor how that diversity allegedly failed to meet the customers' expectations."

Public Service Commission staff to investigate these claims.⁶⁴ The City agrees that staff should do so.

Verizon further contends that “there is no point in providing ‘changes in network topology’ to the customer.”⁶⁵ In Verizon’s view, “the customer need not know of the changes provided diversity is maintained.”⁶⁶ Thus, according to Verizon:

Actual changes to the network are dynamic, multi-faceted activities that may affect actual levels of diversity in both directions, both enhancing and sometimes diminishing previous levels of diversity (usually temporarily). There is no known way of efficiently tracking and compiling all changes across the state so that they can be regularly reported to the Commission, and no demonstrated need. Spending the time and money to report “changes in network topology” will in no way “lessen the potential for loss of customer-specific diversity arrangements.” If anything, the time spent on reporting such changes will take away from Verizon’s resources, which would be better spent addressing any loss of diversity that might result from such changes.⁶⁷

This approach, however, seems to ignore the fact that customers frequently purchase redundancy from a second carrier based on the “current” routing information provided to them by their primary carrier. If the primary carrier’s routing is changed without the customer’s knowledge, then the customer’s back-up arrangement could be undermined. Sharing information on network changes with the customer would no doubt help to resolve some of the customers’ concerns about guaranteeing the integrity of their critical back-up services. Ideally, in fact, carriers would maintain “paired” service records, i.e., pairing the customers primary and secondary routing circuits in order that prior to making

⁶⁴ “Nor,” according to Verizon, “does Staff indicate that it investigated the customers’ claims for accuracy. “

⁶⁵ Verizon Comments at 13.

⁶⁶ Id.

⁶⁷ Id.

any change to either of the circuits, the carriers would be able to verify that the change does not affect the diverse capabilities of the paired circuits.

In response to the White Paper's recommendation that carriers mechanize plant records and implement real time databases on the location of their plant facilities, Verizon claims that mechanization is unnecessary inasmuch as the company already "knows where its facilities are – it works on them every day." Verizon dismisses, without further elaboration, the White Paper's finding that mechanization would "facilitate restoration efforts during a major service outage by allowing quicker identification and prioritization of customers, buildings, cables and services affected by an outage." Ultimately, Verizon's argument is based on the cost of what it views as "a huge, labor intensive, costly undertaking [that] would likely take many years . . . [and] cost Verizon and its ratepayers a fortune to implement."⁶⁸

MCI similarly raises the potential for "significant development costs," related to initial compliance and maintenance, depending on the specifics of any particular record mechanization requirement.⁶⁹ MCI is also concerned that, "if the long-term intent of this tentative conclusion is that carriers should be sharing this information – either with each other or with the Commission – a substantial amount of effort would have to be undertaken to develop safeguards for the information."⁷⁰ While AT&T states that it is "in

⁶⁸ Sidestepping altogether the question of whether mechanization would be valuable in restoring outages, the USTA disagrees with the White Paper's tentative conclusion on the basis that "LECs already provide exceptional redundancy to protect their customers. To ask LECs to mechanize outside plant records and implement supporting databases without compelling evidence of the need for such measures would place an unwarranted financial burden upon LECs at a time when the telephone industry is still under severe financial constraint."

⁶⁹ MCI Comments at 7.

⁷⁰ Id. at 6-7.

the process of converting its locally stored paper and electronic fiber optic plant facilities records into a GIS-based record keeper,”⁷¹ it also believes that these records must be used at a company-level, rather than industry-level, for the purposes of “recognizing diversity,” “protecting reliability” and fostering a “speedier restoration process.”⁷²

With respect to mechanizing plant records, the City regrets that this has not already been accomplished and is dismayed by the carriers’ resistance to future implementation. The New York Clearing House, one of the City’s largest telecommunications consumers, relates its own problems in determining “whether facilities are in fact diverse and whether new construction is needed to achieve diversity.”⁷³ It directly links this problem to the fact that that “carriers’ information regarding the location and routing of their own facilities is often outdated, incomplete, and/or inaccurate.”⁷⁴ “In most cases,” the Clearing House continues, “information is maintained only in hard copy, not in an electromagnetic medium.”⁷⁵ Finally, the Clearing House observes that “circuits may be moved after their initial installation, but their new locations may not be reflected in the carriers’ records.”⁷⁶

Despite some carrier suggestions to the contrary, the City believes that the concerns of New York’s banking and finance industries are legitimate. While there certainly should be a rigorous collaborative proceeding initiated by the Commission to determine what

⁷¹ AT&T Comments at 13-14.

⁷² Id. at 14-15.

⁷³ New York Clearing House at 9.

⁷⁴ Id.

⁷⁵ Id.

⁷⁶ Id.

constitutes mechanized recordkeeping, how it is to be safeguarded and, perhaps, how it can be funded, these admittedly difficult questions must not be used as an excuse for not tackling a problem of such great potential consequence to the New York economy (and one which will only become greater as the carriers reduce their workforces and become ever more reliant on automation). Moreover, in addition to enabling customers to make timely and accurate telecommunications infrastructure decisions, mechanized records could assist government emergency preparedness. Although, here too, the carriers raise legitimate business and security-related concerns about consolidating such data in centralized GIS databases, the potential benefits are significant enough to similarly warrant further investigation into how these concerns should be addressed.

IV. MARC

The White Paper tentatively concludes that “[m]unicipalities other than New York City may want to consider the development of Mutual Aid and Restoration programs similar to New York City’s program.”⁷⁷ In response, Verizon asserts the following:

Staff overrates the importance and success of MARC. For example, the original MARC had very little to do with the success of the 9/11 recovery efforts. No other carrier assisted Verizon’s recovery efforts. MARC had expired three years earlier and was not relied on by Verizon to assist it in the recovery. It is better to let carriers work together as the situation demands.⁷⁸

Verizon’s comments in this regard are misleading. In fact, MARC was used as the primary vehicle for establishing critical telecommunications links in City government

⁷⁷White Paper at 54.

⁷⁸Verizon Comments at 23.

facilities almost immediately after the September 11 attacks, when damage to Verizon's central office at 140 West Street brought down much of the downtown Civic Center's communications infrastructure. Specifically, as a consequence of damage to the West Street CO, Scores of buildings, including Police headquarters, City Hall, the Municipal Building and several other essential City government sites in lower Manhattan lost their telecommunications links. While MARC was not used to *restore* Verizon service to many of these facilities (because Verizon service was simply not available), MARC was absolutely the means by which arrangements were made for *alternative* voice and data services to these facilities from other carriers.

Similarly, during the blackout, MARC conference calls (and accompanying "off-line" discussions) fostered a variety of critical restoration activities. Particularly in the initial hours of the power outage, the diesel fuel needs of carriers were identified and addressed through MARC "brokered" exchanges of fuel. In addition, the diesel *transport* and *building access* needs to carrier facilities were identified through MARC channels and then communicated to and addressed by appropriate City personnel. Other mutual aid arrangements were made through MARC, for example, the sharing of generators, T-1 lines and other network facilities. And, as with the September 11 crisis, MARC proved to be the only forum for consistent communications among all of the affected carriers for the duration of the blackout. In its comments, AT&T agrees that these MARC calls "proved informative as service providers willingly shared information and assisted each other."⁷⁹

⁷⁹ AT&T Comments at 21-22.

In the City's view, it is revealing that no carrier other than Verizon suggests that MARC-like communications should be conducted by the carriers themselves "as the situation demands." In fact, one of MCI's "essential" concerns is that active participation and information sharing from the ILEC be an ongoing component of MARC.⁸⁰ The City submits that, absent MARC, such active participation and information sharing would be considerably diminished or simply would not take place at all. Ultimately, MCI finds that, "as the New York City MARC has demonstrated, a municipal consortium can provide a critical means for carriers and government to interact to address network events as they happen."⁸¹ In fact, no carrier other than Verizon opposes New York City MARC.⁸²

Paradoxically, New York City MARC could find itself somewhat a victim of its own success. That is, while the City supports other municipalities considering development of a MARC-like program where the need and necessary infrastructure (i.e., multiple facilities-based carriers) exists, the City is also concerned about carriers hedging their support for New York City MARC based on stated concerns about its proliferation to other localities. These concerns have been expressed to the City, to PSC staff and in

⁸⁰ MCI Comments at 8.

⁸¹ Id. at 7.

⁸² It is confusing whether or not the USTA supports or opposes MARC and/or proposed MARC II. On the one hand, the USTA states that it "believes that the MARC agreement adequately addresses both crisis provisioning and restoration." At the same time, it expresses apparent concern that proposed "MARC II allows an affected carrier or the Commissioner of the New York City Department of Information Technology and Telecommunications (NYC DITT), or any New York City official designated by the Commissioner of the NYC DITT to declare a telecommunications crisis." In fact, only the Mayor or his or her designee would have the authority to declare a Telecommunications Crisis upon finding a serious risk to human life or health, to property or the environment, or to the functioning of society or the economy. Moreover, although the USTA is concerned that MARC priorities could conflict with Federal TSP priorities, restoration or provisioning under proposed MARC II is voluntary, and explicitly secondary to any TSP obligations by the carrier.

comments on the White Paper. Thus, based primarily on limited resource availability, AT&T “opposes the proliferation of individual mutual aid and restoration programs in different locations throughout the state.”⁸³ MCI likewise cautions that “depending on the magnitude of the network event, it may simply not be practical to staff multiple MARCs, if they are developed.”⁸⁴ However, it should be noted that both carriers indicate their support for, and intention to continue participating in, New York City MARC. This is greatly appreciated by the City. Ultimately, the City strongly urges the Commission not to allow stated concerns about the proliferation of MARC elsewhere to threaten its continued existence in the City of New York.

CONCLUSION

The industry appears reluctant to support many network reliability measures that would clearly be in the public interest because they could result in sizeable new short-run costs without any certainty as comparably large new revenue streams for any particular provider. Nonetheless, the public safety and economic development-related benefits of certain of the White Paper’s proposals and of other network reliability improvements would be significant. The best way to deal with the carriers’ concerns is to analyze in detail the tasks to be accomplished and their potential costs – and, only then, to determine a fair method of funding the required short-term investment in a manner that does not compromise the industry’s financial imperatives. Accordingly, the City urges the Commission to convene a public-private task force charged with developing a

⁸³ AT&T Comments at 22.

⁸⁴ MCI Comments at 8.

comprehensive set of well-defined network reliability-related goals and associated pathways and timelines for their implementation.

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