

**SUMMARY OF REPORTS ON
PREPARATIONS IN
HEALTH CARE,
TRANSPORTATION AND
ENVIRONMENTAL
INFRASTRUCTURE SYSTEMS
AND
STATEMENT AND
RECOMMENDATIONS OF THE
REGIONAL Y2K TASK FORCE**

RPA

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Statement of the Regional Y2K Task Force Convened by Regional Plan Association

The New York/New Jersey/Connecticut metropolitan region is one of the world's great centers of finance, a media and telecommunications hub, and home to nearly a tenth of the U.S. population. For few other places on the planet has Y2K posed a greater challenge, and we are pleased to say few other places on the planet have risen to that challenge as effectively as we have here. Wall Street and the banks are undisputed leaders in preparedness for Y2K and our electric and telecommunications utilities started preparing for Y2K long before most of us were aware of the problem. Our state and local government agencies have been hard at work not only to assure that they are able to function without interruption through the century change but also in joining together to coordinate their contingency planning and to assure public safety.

But there is still much important work to be done, and much room for greater communication among infrastructure providers, public agencies and with the public. There are also pockets of our society that are notably under-prepared for Y2K. In particular, there are weaknesses among our small and medium businesses and in the non-profit sector. Also, little information is available about the condition of smaller localities. While it is late to begin addressing these areas, perhaps even too late in some cases to fix any problems that are identified, there is still time for education and contingency planning.

Y2K is an issue with some very unusual characteristics. Three of these are worthy of special emphasis. The first is interdependence. The Y2K challenge erases or at least blurs the boundaries between seemingly isolated systems. It is not really possible to speak of the readiness of a businesses or government agency without also addressing the readiness of its suppliers or the ability of its workforce to arrive at their posts. Second, to the degree that Y2K will cause problems, these disruptions will generally happen around the same time everywhere. People and resources that would normally be available to respond to isolated events will all be needed at the same time. Therefore, we must be sure we are making the most effective use of our time and resources. The third stems from the first two: it is simply not possible to predict exactly how Y2K will impact our economy or our quality of life. Particularly because of the embedded chip issue, uncertainty is a major element we must accept. Therefore, we must continue to do what is already being done so admirably in so many sectors of our society: find and fix what we can; prepare contingency plans; and above all, communicate and cooperate.

In that spirit, the Regional Y2K Task Force* makes and/or endorses the following recommendations on how the New York/New Jersey/Connecticut region can best use its time and resources in the remaining months of 1999. In doing so, we wish to recognize that many of them have already been put forward and are being followed by governments, businesses large and small, and civic and community groups all around the region. The Task Force applauds these efforts and presents these recommendations so that these "best practices" will be implemented as widely as possible. The Task Force would also like to emphasize that in deciding how and when to involve the community at large in Y2K planning efforts, it should be kept in mind that our society has a long record of dealing with serious challenges by pulling together and cooperating. There is no reason to anticipate that Y2K will pose an exception.

Recommendations

1. It is the responsibility of each individual to be informed of the simple steps to take to be personally prepared for Y2K. Every business owner or manager has a special responsibility to assure that his/her enterprise, no matter how small, is Y2K-ready.
2. Churches, synagogues and volunteer organizations should get their constituencies involved in preparedness and be ready to help provide services in the event of disruptions.
3. Governments, businesses, non-profits and community leaders are encouraged to make the identification and safeguarding of vulnerable populations a high priority of their Y2K-readiness efforts. Overall, the Y2K problem should be seen from a community perspective.
4. There should be an open and participatory discussion of the region's state of preparedness and an effort to enlist the community at large in preparation and contingency planning.
5. In accordance with policies already widely adopted by major public and private organizations, essential employees in areas critical to the functioning of public infrastructure systems or areas related to life safety and health should be on duty and/or available over the New Year's Day weekend and additional resources should be made available to the extent possible. Consideration should be given to curtailing programs that would further stretch limited emergency response resources.
6. As the MTA and Port Authority are already doing, public transportation arteries and systems should be given priority and reinforced through emergency traffic management processes. For example, Hudson River crossings, essential in supplying food and other resources to large populations as well as in the removal of solid waste, should receive special attention.
7. The media should provide detailed, factual coverage about the state of preparation in critical areas within the region, as well as reporting on ways that communities are coming together to plan for contingencies.
8. Public authorities and major infrastructure providers should share information on emergency planning and contingency preparations with community leaders and coordinate with them in their own contingency planning.
9. Appropriate federal, state and municipal bodies should use their regulatory authority to ensure that public and private entities whose operations could pose dangers to their employees or surrounding communities, such as businesses and industries that handle or produce hazardous materials or involve hazardous processes, are Y2K-ready.

**The recommendations do not have the unanimous support of the Task Force.*

This summary is a digest of three documents examining the Y2K-preparedness of health care, transportation and water, wastewater and solid waste systems in the New York-New Jersey-Connecticut metropolitan region. The reports were prepared for Regional Plan Association's Regional Y2K Task Force under the chairmanship of Brendan Dugan, President of European-American Bank, and Bishop Joseph Sullivan of the Diocese of Brooklyn. The research combined a review of available documents and numerous interviews with industry representatives in March-June of 1999.

Each of the reports describes the status of software remediation, testing and contingency planning in these sectors, and identifies issues that may require increased attention from industry representatives, regulators, policy-makers and citizens. The Task Force and the authors hope that this information will help the region address these issues strategically and avoid both unwarranted hysteria and imprudent complacency.

BACKGROUND

In June 1998, Regional Plan Association launched its Regional Y2K Initiative, a process of communication and analysis to help the tristate metropolitan region understand and mitigate problems associated with the potential failure of some computers and embedded chips to recognize the transition in dates from December 31, 1999 to January 1, 2000. Early in the process, RPA concluded that the major corporations doing business in the region were investing heavily in solutions to the Y2K problem. These corporations were not only preparing their own enterprises. They were also developing a thorough understanding of all the external systems with which they interact and the degree to which Y2K posed a risk to the reliability of those systems. RPA found these organizations willing to share their findings and eager for a forum to explore the status of major public and private infrastructure systems in the region more fully. Since then, RPA has held a series of workshops and strategy meetings, including an all-day "Infrastructure Forum" in February 1999.

Given the lingering concerns about the readiness of key infrastructure systems in the region and in the absence of concrete information about the state of their contingency planning, RPA formed the Regional Y2K Task Force in March 1999. A list of Task Force members, who will oversee the initiative through the rest of 1999, is at the back of this summary. The Task Force, finding that information on the Y2K-status of transportation, health care and water, wastewater and solid waste systems was less available than information on other major systems such as electricity and telecommunications, requested that RPA commission papers examining each of those areas. Health care was of particular concern because a February 1999 U.S. Senate report suggested that this area lagged the rest of the economy in preparedness for Y2K in the nation as a whole. The Task Force, which includes representatives from the health sector, determined that it would be very valuable to ascertain whether this region was typical of the rest of the nation in this critical area.

Since the Regional Y2K Initiative began, there have been a number of encouraging developments, not least of which being the formation of a regional contingency planning network which includes representatives from New York City, the states of New York, New Jersey and Connecticut, and the counties surrounding New York City. The region's four major power companies (Con Edison, KeySpan, Northeast Utilities, and PSE&G) have all been cooperative with RPA's effort and have reported highly organized, advanced efforts to be prepared for Y2K. All of these companies have announced goals of completing their Y2K readiness and testing programs by June 30, 1999. Similarly positive information was provided to RPA by the Metropolitan Transportation Authority, the New York City Department of Environmental Protection, AT&T, the New York Clearing House Association, and an array of other major firms and government agencies.

At the same time, a consistent theme of all the information we have received has been that the complex interaction of our major systems poses an unquantifiable risk. We have heard the metaphor of a single flat tire backing up traffic on a major artery for miles used as an example of how even just a few Y2K problems can have disproportionate consequences. RPA has also heard that the high level of preparedness visible in larger organizations is not mirrored in the small and medium enterprise

(SME) sector, or among smaller non-profits. This is of particular concern since the SME sector includes many businesses providing essential services (e.g., doctors' offices), and because our society's most vulnerable communities depend on non-profits for an array of vital services. RPA has also found that the level of public understanding of the Y2K problem has not been high. This is due in part to spotty media coverage and the early reluctance on the part of municipalities and others to disclose information on their risk-assessment and contingency planning activities. The findings contained in this summary and the full reports attempt to assess the magnitude of these problems in three critical sectors.

GENERAL CONCLUSIONS

Health care, transportation and environmental systems are three distinct sectors of the Tri-State Region's economic and social infrastructure. Each has a different set of services, institutional structures, technology needs and organizational cultures. Clearly the Y2K concerns and contingency plans of a hospital administrator are not those of a transit system operator or a wastewater plant manager. However, these sectors also share attributes that provide them with a similar context for issues of Y2K preparedness. Most obviously, they share a major responsibility for business and social interaction, for public health and for general well-being. This responsibility has contributed to a heightened concern over their ability to deliver uninterrupted essential services on January 1, 2000, and beyond.

Because the consequences of failure would be serious, these systems also share two important features that help to minimize the chances of widespread disruptions. Indeed, these features are a direct result of their importance to the general welfare. First, *all of these sectors are regulated to protect the public's interest*. To varying degrees, each is regulated by Federal, state and municipal statutes and monitored by oversight agencies. Second, *contingency planning and emergency response have always been intrinsic to the management of these systems*. Planning for the inevitable failure of equipment and protocols are key components in the training of health care professionals, transportation managers and environmental system engineers.

This being said, the unique challenges of the Y2K problem require special consideration. In large measure, the Task Force-commissioned evaluations of these sectors found that all three have made Y2K preparedness a priority and continue to devote considerable resources to the problem. The level of effort has not been uniform, however, and it is possible that many organizations will not be ready by year's end. This assessment is also constrained by the same uncertainties that plague any analysis of Y2K readiness. Some organizations may be exaggerating their preparedness or withholding information for fear of litigation, and there is always the possibility that even the most thorough preparations will be inadequate. Even with these caveats, widespread disruptions stemming from internal Y2K problems in these three sectors are by no means certain.

In addition to the findings for the individual systems, there are a few crosscutting observations that should be noted:

- ***In all three sectors, most large organizations have implemented extensive hardware and software remediation, testing and contingency planning efforts.*** In general, it appears likely that large hospitals, HMOs, transportation authorities and large water and wastewater systems will have completed remediation and testing on critical systems and have contingency plans in place well before the end of the year.
- ***Many small organizations—doctor's offices, community health centers, small private bus operators, small municipal water, wastewater and solid waste agencies-- may not be adequately prepared without much more intensive efforts.*** While many small and mid-sized organizations are in relatively good shape, many others were late in starting or do not have the resources or inclination to complete remediation and planning.
- ***The extent of contingency preparations for external dependencies varies considerably among different organizations.*** Organizations are generally more concerned about disruptions to power, communications, transportation and interfaces with other organizations than they are with the functioning of internal operations. While some organizations have taken an aggressive approach to prepare for an extended period of disruption, others have more limited contingency plans that assume at most short-term interruptions of critical systems.
- ***The lack of consensus surrounding the likely impact of embedded chip failures is leading to a wide range of strategies.*** Firmware microprocessors, often called embedded chips, are proving to be more technically difficult to remediate than hardware and software. Although these chips are ubiquitous in motor vehicles, medical equipment and other apparatus, the extent of Y2K problems associated with them is not clear. It may be impossible for many organizations to test for Y2K problems in the embedded chips in all of their equipment. In many cases, manufacturer certifications of compliance are not available and testing is fraught with technical difficulties. While some organizations are testing as much as possible, others are relying mainly on manufacturer certifications and on contingency plans for sporadic equipment failure.
- ***Targeted education efforts, both within these sectors and with the public at large, are critical to addressing the remaining issues.*** Several potential problems—incomplete contingency plans, supply shortages resulting from overly aggressive stockpiling, overreaction by the public to short-term service interruptions—can be ameliorated or avoided with more intensive education efforts. While industry organizations and public agencies have generally done a good job in reaching their members and client organizations, a good deal more could be done to reach beyond these constituencies. The public has not been educated sufficiently as to the risks posed by Y2K or remediation/planning efforts undertaken.

In addition to these similarities, some differences among the sectors should also be noted. Of the three, environmental infrastructure appears the least vulnerable, in part because it is the least reliant on computerized operations. Transportation may be the most interdependent sector with disruptions in one mode likely to ripple through the system. In the health sector, a high degree of industry fragmentation and a wide range of specialized equipment make it the most difficult sector to characterize with broad generalizations.

PREPARATIONS IN THE HEALTH CARE SECTOR

“Although considerable work remains to be done before the tristate area can begin to settle back and relax about its level of Y2K preparedness [in the health care sector], considerably more has already been accomplished than earlier warnings might have led us to expect.”

Alan Otten

The Health Sector and Y2K: The Status of Preparation in the New York-New Jersey-Connecticut Metropolitan Area, June 1999.

From the White House to private consultants, outside observers have been concerned that the health sector is lagging other parts of the economy in its Y2K preparations. Health experts suggest a number of reasons why this, indeed, might be the case. With thousands of physicians, hospitals, nursing homes, equipment manufacturers and others, the industry is highly fragmented. Mergers, consolidations and the expansion of managed care have increased instability in the sector and probably slowed Y2K planning. Cost controls and cutbacks in reimbursement rates may have limited the resources available for remediation, testing and contingency planning. Health officials and medical associations have often been more preoccupied with reimbursement formulas, pending legislation and other issues than with Y2K preparations.

If, indeed, these and other factors kept the health industry nationally from moving ahead, they do not appear to have prevented large portions of the New York area health industry from making progress. From interviews with more than 150 people dealing with health issues in the tristate area, the remaining problems appear more circumscribed and manageable than one might expect. The major findings of the health sector report include the following:

- ***Local industry groups and medical schools have taken an active role in focusing attention on Y2K issues and in providing education services and technical assistance.*** For example, the Greater New York Hospital Association and local medical schools have been holding seminars and briefings and distributing Y2K literature for over a year.
- ***Larger organizations tend to be farther along in their Y2K preparations than smaller ones: larger hospitals have advanced farther than smaller hospitals, larger nursing homes are readier than smaller homes, and group practices have outpaced one-doctor offices.*** Many large organizations have been active for two years or more and have devoted substantial resources to problem identification, software remediation, testing of systems and equipment, and contingency planning. This includes the New York City Health and Hospitals Corporation, the region's largest provider of services to inner city populations. Medium-sized and small organizations often started late, but most of them report that they are working hard to catch up.
- ***If any one segment of the health system is lagging, most consultants and other health industry experts agree, it is the physician's office.*** One-doctor offices and smaller group offices have often made little effort to avail themselves of Y2K assistance, and it is these offices that worry hospital administrators and health observers the most. Fortunately, the health care risks to patients in doctor's offices are far less than those in hospitals.
- ***There appears to be considerable disagreement over the need to test medical equipment that is declared Y2K compliant by the manufacturer.*** The FDA, the VA and ECRI (the major nonprofit organization that consults on medical devices) seem to advise that health care providers should carry out their own tests only when they cannot obtain information from the manufacturer or are unsatisfied with the response. However, many users and consultants, including some of the region's top institutions, express a strong belief that they cannot rely on manufacturer assurances for mission-critical equipment, and are carrying out their own tests.
- ***Aggressive stockpiling is perceived as a real threat by industry associations and suppliers.*** Some institutions have declared that they will not overstock medical supplies, but others are proceeding or planning to increase stocks as a contingency. The American Hospital

Association has appealed to its members to avoid stockpiling, lest they cause the very shortages that they are seeking to avoid.

- ***Although many health organizations are well along with contingency planning, others have not yet begun to plan or are just starting to do so.*** Common shortcomings in contingency plans include failure to plan for more than a few days of disruptions and late attention to the issues of patients who use life-sustaining equipment at home.
- ***Institutions remain extremely nervous about the potential for cash flow disruptions from Medicare, Medicaid and private insurers.*** Even though the agencies that administer and oversee public and private insurance foresee no trouble in making timely payments, many providers who depend on cash flow from these sources are not confident in these assurances.
- ***As with other industries, health officials worry most about their reliability on infrastructure systems that are outside of their control.*** Health facilities need power to keep ventilators and defibrillators working, communication systems to keep phones and pagers working, and transportation systems to transport personnel, food, supplies and emergency vehicles.

PREPARATIONS IN THE TRANSPORTATION SECTOR

“Most of the region’s major transportation system providers have made significant progress in preparing for Year 2000 by remediating software involved in ‘mission-critical’ operations... There will almost certainly be ‘glitches,’ but the region’s larger transportation providers have already addressed many of the more serious software risks.”

Jeffrey M. Zupan

Preparing for Transportation Impacts of Y2K in the New York Metropolitan Region, June 1999.

Transportation is also one of the key infrastructure systems that are always mentioned when representatives of other industries talk about their “external dependencies.” Without transportation, they cannot get their employees to their worksites, get their supplies delivered on time, or operate their own emergency vehicles.

A defining characteristic of the region’s transportation network is the interdependence of its component systems. If private automobile traffic is disrupted, transit systems would be overwhelmed with new riders, most air passengers would be unable to get to the airport, and the 60% of commuter train riders who drive to the station would have to find an alternative. A breakdown in transit service would clog the roadways as bus and train riders headed for their cars. A disruption in rail freight systems could adversely impact commuter rail operations where passenger and freight share the same tracks, and could increase the number of trucks on the road.

Given the complexity of the transportation network and the multiplicity of modes, operating organizations and suppliers, it is difficult to assess how well all the elements of the system will do in responding to the Y2K challenge. However, assessments of major transportation agencies—the Metropolitan Transportation Authority (MTA), New Jersey TRANSIT, the Port Authority of New York and New Jersey, TRANSCOM and the New York City’s Year 2000 Project Office—indicate that most of the region’s major providers have made significant progress in remediating, testing and contingency planning. Specific findings include the following:

- ***Testing and remediation is nearing completion for “mission-critical” systems in the region’s largest transit agencies.*** The MTA has completed testing on 145 of 149 critical systems. Of those tested, 131 were converted to be Y2K compliant and 14 required replacement. The MTA has also declared 410 of 426 critical devices with embedded chips to be in compliance. Of 376 critical business partners, 368 have responded and all have stated that they will be compliant by the end of the year. NJ TRANSIT projects that all mission-critical software applications will be compliant by the end of June. Testing for embedded chips is underway and statements of

compliance have been obtained from vendors. Most agencies appear to be relying on supplier declarations of compliance, rather than making independent tests of equipment.

- ***Major traffic and highway systems have largely been declared Y2K compliant.*** The City of New York's Year 2000 Office reports that the city's streetlights and traffic signals are Y2K compliant. BMW, General Motors and Ford have stated that all passenger vehicles are Y2K compliant. On the other hand information was not available from many major manufacturers. TRANSCOM, the regional coordinating agency responsible for planning for day-to-day emergencies in the highway and transit systems, has undertaken testing and planning in a manner similar to the operating agencies.
- ***As with other sectors, the efforts of many smaller operators appear to be lagging.*** Smaller municipalities that have been slower to remediate software and address embedded chip issues may experience difficulties with their traffic signal systems.
- ***Electrical power and fuel supplies are the most critical external dependencies for the transportation network.*** Most suppliers, including Con Edison, are assuring that their systems are Y2K compliant. However, operators remain concerned that undetected items related to embedded chips or supply-chain disruptions may still cause some problems.
- ***Contingency planning is well underway, but they may not adequately address all areas of concern.*** Operating agencies are obtaining emergency generators and extra fuel and are training personnel to run critical operations manually if systems fail. TRANSCOM has set up a "hot site" where they can operate independently of their major energy and telecommunications providers. In general, however, emergency supplies will not last more than a few days. In addition, "non-critical" functions have received less attention, but some of these may prove more important than originally thought.

PREPARATIONS IN ENVIRONMENTAL INFRASTRUCTURE SYSTEMS

"From the self-contained perspective of internal environmental infrastructure system operations, it is unlikely that this region will experience large or significant disruptions in the provision of drinking water, sewage collection or solid waste management from Y2K-sparked computer system disruptions."

Albert F. Appleton

*A Report on the Implications of Potential Y2K Problems
for the Operation of Environmental Infrastructure Systems, June 1999*

The region's environmental infrastructure comprises three types of systems: water supply systems that deliver drinkable water; wastewater systems that collect, treat and dispose of sewage; and solid waste systems that are responsible for garbage collection and disposal. While there are distinct differences in the operations of these systems, they also bear many similarities from the perspective of Y2K preparation. Most of these common attributes lead to the conclusion that the risk of internal Y2K problems that will significantly disrupt regional water supply, sewer service or solid waste management is relatively low. These attributes, and other findings that are common to all three systems, include the following:

- ***All three systems use complex, pre-computer era technologies that have delivered smooth and largely uninterrupted service for several generations.*** Though all three now extensively use computers and computerized microprocessors, each of these systems, if it suffered Y2K problems, could be shifted to non-computerized or manual modes of operating.
- ***All three systems are engaging in widespread planning for and remediation of Y2K problems.*** Different entities report different levels of progress, but there is a general expectation that necessary remediation will be completed by the end of 1999.
- ***The internal culture of these systems places a high emphasis on types of advance planning and emergency response needed to avoid system failures that might result in widespread***

social disruption. These environmental systems are designed to be robust. Except for small systems, they generally have significant amounts of redundancy to minimize the impact of inevitable breakdowns. Managers and personnel are trained to think in terms of contingency planning and emergency response.

- **Industry regulators, Federal and state government, parent organizations and industry associations have engaged in various, ongoing programs of Y2K awareness and technical assistance that have provided further impetus to Y2K remediation efforts.**
- **Potential disruption of electric power supply is considered to be the most serious Y2K threat by the environmental system sources consulted.** Plant, pumping and fueling operations all rely on outside power for continuous operations. Contingency plans have focused on ensuring that adequate emergency power generation capacity is available by having a sufficient number of emergency generators and an adequate supply of fuel on hand.

In addition to these common findings, several observations concerning particular systems are particularly noteworthy.

Water Supply

- **Small water supply systems serving between 25 and 1000 people are generally considered to be those most vulnerable to a disruption in water service from Y2K problems.** These systems, of which there are several hundred, lack the redundancy, storage and backup capacity of larger systems.
- **Embedded chips are proving to be more technically difficult to remediate than hardware or software, and there may be some specific equipment failures and minor disruptions of water system operations as a result.**
- **Insuring an uninterrupted supply of water treatment chemicals is an important aspect of water supply contingency planning.** Generally, the systems consulted are considering various stockpiling strategies, depending on a variety of system-specific concerns.

Wastewater Disposal and Treatment

- **The greatest concern in the wastewater system is the ability to keep pumps operational.** Sewage transmission is part gravity flow, part pumping. As long as water comes into homes and businesses, gravity and flush technology will remove wastewater. In addition, most pump facilities are mechanically, rather than computer, automated. However, they do require electric power, and contingency planning has emphasized the need for emergency generators and fuel.
- **Some equipment failures may occur as a result of problems with embedded chips, and some disruption of treatment operations could follow.** However, these disruptions may result in some individual discharges of raw sewage into receiving waters.

Solid Waste Management

- **Solid waste systems have a very small computer presence outside of administrative management functions (i.e., personnel, finance, etc.).** The most commonly reported concern was the computerized recording of load weights at transfer stations.
- **Since solid waste collection and disposal is highly dependent on trucks and other vehicles, the availability of fuel and the operation of fueling facilities are regarded as the principal Y2K vulnerabilities.** Since electrical power is needed to power fuel pumps and provide lighting and ventilation to fueling facilities, the reliability of electricity supply is also a concern.
- **Solid waste operations would also be vulnerable to any significant and persisting transportation system disruptions.**