YEAR 2000

Governor's Task Force on Year 2000 Readiness

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Governor's Task Force on Y2K Preparedness
Telecommunications Sector Status Report
July 29, 1999

Telecommunications is one of the most valuable assets in the nation and Colorado. The telephone and all its technological infrastructure allows the citizens of Colorado to communicate around the world with accurate precision and in a timely manner. Our freedom is tied to telecommunications. Over 90% of defense communications rely on the smooth function of the public telecommunications network. In addition, other items such as 911 emergency services, remote control of pipelines, transportation systems like air traffic control, the nation's financial transactions and electric power companies are dependent on telecommunications. It should also be noted, the telecommunication industry is dependent upon electric power.

Governor Bill Owens, through his executive order B 001 99, placed into motion the "Governor's Task Force on Year 2000 Readiness", and its duties were:

- To explore the year 2000 issue and how it would affect the citizens of Colorado.
    - To examine the effects telecommunications will have on government, emergency services and private enterprise, etc.
    - To look at the reliability of Colorado's information infrastructure, which provides critical services to its citizens in this ongoing era of a global "information economy".
    - To provide a forum in which representatives from the public and private sectors may share useful knowledge relating to the year 2000 problem and communicate its solution to the public.

Our telecommunication system use to mean, switched voice communications. Today the Public Switch Network (PSN) is any switching system, voice, data, or video transmission that is used to provide communication services to the public. Many layers of hardware and software enable seamless communications, allowing us to make phone calls, surf the web, and transact business.

The Year 2000 issues present a unique situation that must be taken very seriously. Utility systems are designed to withstand single, isolated failures-not multiple, simultaneous failures potentially associated with Y2K. Problems across inter-dependent utility services compound these challenges. Also utilities do not have the benefit of being able to predict the exact time and date of critical events. Complex computer systems are a part of utility service. Information received to date shows that utilities are

taking appropriate steps to address the problem, though it also demonstrates the complexity of the issues and the large magnitude of work that must still be completed.

The core telecommunications network used largely in Colorado, is the Public Switch Network (PSN). It includes many different components, any one of which can have Y2K problems. Date and time concepts are used in the Public Switched Network (PSN). However, voice and data transmission are generally not affected by Y2K, because the Public Switched Network uses a clock to synchronize elements involved in call processing and data transmission to ensure that data is stored and routed correctly. These clocks measure elapsed time and are not typically date sensitive. Some systems in the Public Switched Network use dates and time in their operation, but these determinations do not prevent call processing. For example, long distance calling requires multiple switches to record the starting and ending times of a call, including the day and the year. Another example is Toll Free Time-of-Day Routing, which directs 800, 888, and 877 call routing based on time-of-day determinations.

Dr. Judith List, Vice President of Integrated Technology Solutions at Bellcore, explained, there is little date sensitive information in the fundamental call processing or data routing capabilities of networks. But, operations, administration and maintenance functions are more likely to be date-sensitive. These systems include billing, provisioning of services, network surveillance, maintenance, and many others. The disruption of carrier's operations, administration and maintenance could cause some confusion for consumers with accurate billing and delays in the request for services. Further, the National Association of Regulatory Utility Commissions (NARUC) reported that "due to the advanced completion status and favorable industry testing results we see no indications that the Public Switched Telephone Network (PSTN) and the Public Switched Data Network (PSDN) will suffer major adverse impacts due to the year 2000."

Customer Premise Equipment (CPE) could create some concerns for reliability of a seamless network. CPE includes, Private Branch Exchange equipment (PBX), telephone equipment, cellular phones, fax machines, private data networks and Public Service Answering Points (PSAP). Large businesses typically have the expertise to address these technological problems, and simple residential phones are not expected to fail. However, many small and medium businesses and even some residential customers may not be aware that their privately owned communications equipment may fail. A study by the Gallup organization found that five million small businesses are at risk. It also found that 75% know about the problem but have failed to address the issue, while 50% had no plans to act before the turn of the century. Many of the providers who produce telecommunications equipment maintain lists that indicate Y2K compatibility. Customers must take a proactive approach by contacting their vendors by phone or Internet and obtaining the manufacture's compliance information. Fixes range from relatively simple software updates to full equipment replacement, depending on their installed equipment.

The telecommunications industry has been paying close attention to the Y2K problem. Equipment vendors and individual telecommunications carriers have devoted substantial resources to the problem. Further, the following organizations will continuing their supervision of the industry having established a unified effort to address the problems: the Federal Communications Commission (FCC), the Network Reliability and Interoperability Council (NRIC), Telco 2000 Forum, Alliance for Telecommunications Industry Solutions (ATIS), and the National Communications Systems (NCS).

The Telco 2000 Forum was one of the earliest and best organized efforts to test for interoperability in the Public Switch Network (PSN). Members include Ameritech, Bell Atlantic, Bell South Corp., Cincinnati Bell Inc., GTE Corp., and US West Inc., collectively represent over 145 million access lines, that is over 90 percent of the U.S. phone lines. The forum began testing in July 1998 and completed testing in January 1999. The forum, in the first part of March 1999, reported the completion of a series of system tests and found NO disruptions were likely to occur due to the year 2000. In nearly 2000 tests performed on a simulation of the connections among the seven companies phone networks, problems arose in only six cases. None of the problems were serious enough to prevent calls from being completed. Those six problems were rectified by upgrading software or making changes. They further tested 16 separate configurations of elements and data transactions and 40 unique network management configurations covering emergency services, basic, enhanced and intelligent services, network management systems, and data networks. They have stated that all equipment and software used in the tests were already deployed. The seven companies estimate they will spend more than $3 billion collectively to test and correct any year 2000 problems.

Interoperability tests between some local carriers, long distance and wireless companies have been completed as reported by the

Alliance for Telecommunications Industry Solutions (ATIS), which includes AT&T, Sprint, Air Touch and US West. Interoperability tests began January 4, 1999, and completed February 12, 1999. A recent ATIS press release stated that testing is complete, with NO Y2K anomalies discovered. The full report will be issued in the later part of April 1999.

Because the phone system is always in use, the simulation approach was the only viable way to test the systems. While end to end testing of each actual piece of equipment would be preferred, the thorough nature of the mulit-level simulation testing provides an acceptable substitute. Further, Gerry Roth of GTE stated "Despite the fact that this network cannot be 100 percent tested in advance of the year 2000, we believe our individual and collective actions in the year 2000 remediation and subsequent test and validation provide a basis for continued confidence the telephone and data networks will continue to operate and provide the outstanding services we have come to expect."

On Tuesday March 30, 1999, the Federal Communications Commission (FCC), in conjunction with the Network Reliability and Interoperability Council (NRIC) issued a status report. The report stated: "We are encouraged by the progress made by the large companies to prepare for the year 2000 and are cautiously optimistic about the ability of these companies to withstand even unforeseen problems with minimum disruptions to the services they provide". The report also raises concerns about smaller companies. The FCC is concerned that smaller independent companies have not developed a systematic approach to addressing Y2K, or are implementing plans with completion deadlines that are dangerously close to millennium rollover. Smaller companies do not have the resources of their larger counterparts, and they have not participated in the testing forums and federal assessment processes as have the larger companies. However, small companies will benefit from the larger company tests, since they generally use the same equipment and software. Further, small companies typically do not have the complex business and accounting systems that the larger companies have. All independent telephone companies in Colorado are jurisdictional to the PUC, and are a part of their Y2K investigation.

One of the fortunate things for Colorado is its location within the United States and the International time zones. Colorado will get its first look at the Y2K issue as the eastern United States will have up to 17 hours advanced warning. Colorado will have up to 19 hours of advanced notice while Hawaii and parts of Alaska will have almost a full day. The new day begins in the middle of the Pacific Ocean, 17 time zones earlier than the east coast. For example, on January 1, 2000, at 12:00 AM in Wellington, New Zealand, it will only be 7:00 AM on the East Coast and 5:00 AM in Colorado on December 31, 1999. This should give Colorado a good view of what may happen.

The following is a list of forums and committees at work providing information about the Y2K problem along with the continuous oversight of Federal and State regulatory agencies:

1. Telco 2000 Forum (http://telcoyear2000.org/) made up of the following companies: Bellsouth, SBC Communications Inc., US West Inc., Ameritech Corp., GTE Corp., Cincinnati Bell Inc., and Bell Atlantic Corp.

2. Alliance for Telecommunications Industry Solutions (ATIS) (http://www.atis.org)

3. Governor's Task Force on 2000 Readiness (http://www.state.co.us)

4. National Communications Systems (NCS) (http://www.ncs.gov)

5. The Federal Communications Commission (FCC) (http://www.fcc.gov/year2000/)

6. Network Reliability and Interoperability Council (NRIC) (http://www.nric.org)

7. The President's Council on Year 2000 Conversion (http://www.y2k.gov)

8. Colorado Public Utilities Commission (http://www.dora.state.co.us/puc/y2k)

9. Nat. Assoc. of Regulatory Utility Commissions (NARUC) (http://www.naruc.org/)

CONCERNS:

1. Massive use of the network by the public, to see if the system works, could affect the network and emergency services on January 1, 2000. It is anticipated, by the industry, that the number of calls will be greater than the calls placed on Mother's Day, which is the maximum use of the network.

2. Customer Premise Equipment (CPE) --- (customer owned phone systems). A Gallup study found that many small and medium businesses know about the Y2K problem but have failed to address the issue.

3. International calls and the ability to deal with other foreign companies and countries.

4. Power outage for any lengthy period of time. Battery back-up equipment cannot provide service indefinitely. The telecommunication industry is just as interdependent on the power utilities as the power utilities are on the telecommunication industry.

5. The lack of funds and expertise for rural emergency facilities to deal with the Y2K problem may exist.

6. Small and rural telecommunications company preparedness. They lack the inter-action that exists with the larger carriers through groups such as the Telco 2000 forum or ATIS.

7. Solid contingency planning.

   A. Information related to contingency planning was due on December 15, 1998. Because such planning is generally accepted as the final component of Y2K work, many utilities are still in the process of completing their contingency plans.

   B. Loss of service for 911, police and fire systems, other utility control systems, and many other critical systems could create societal and economic impacts.

8. Remediation and testing between local carriers, long distance and wireless companies.

9. Company liabilities.

CONCLUSIONS:

1. Over all, there may be a moderate risk of minor short term interruptions to the communications system of the State of Colorado, but substantial industry efforts are in progress to eliminate the risk of major failures.

2. Reports to the Colorado Public Utilities Commission (PUC) by Colorado carriers show that the industry recognized the potential of the year 2000 problems and they have focused on the Y2K issue for some time.

3. The seven major bells will be spending up to $3 billion, at the same time Colorado telecommunication companies have spent millions of dollars to solve the problem.

   A. Several layers of testing have been performed to verify the readiness of software and equipment, with more to come.

4. Some risks remain for small utilities since each individual switch cannot be tested in its specific application. However, small utilities will benefit from the larger utilities in finding Y2K problems in switch equipment and software. Further, the equipment and software is designed and tested by vendors that are well established technology companies. These companies have a

tremendous incentive to address Y2K problems correctly, as they would suffer catastrophic reputation and economic losses if corrective measures failed.

5. Back up capabilities are set forth in the Public Utilities Commission (PUC) rules which require four hour battery backup with a generator and eight hours without a generator which has proven to be very reliable during other outages. Mobile generators can be used to recharge batteries for sites without back-up generation.

6. The ability of the industry to place personnel at key locations on the eve of the Y2K event provides a significant advantage.

7. The Public Utilities Commission (PUC) staff will continue to work with selected utilities to confirm that remediation work continues within the time frames established under the utility plans and industry guidelines.

8. The Public Utilities Commission (PUC) staff will see that appropriate contingency planning measures are taken to address credible worst-case failure scenarios that could occur due to unforeseen problem or events outside the utilities' control.

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Sources:

1/ The United States Senate Special Committee on the year 2000 Technology Problem "Investigating the Impact of the Year 2000 Problem".

2/ Colorado Public Utilities Commission (PUC) comments and interim reports.

3/ Reports filed with the Colorado PUC by providers of telecommunications services.

4/ Numerous Y2K telecommunications web sites.

5/ March 30, 1999, the Federal Communications Commission (FCC), and the Network Reliability and Interoperability Council (NRIC) report.

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