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Testimony

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YEAR 2000 COMPUTING  
CHALLENGE

Readiness Improving Yet  
Essential Actions Remain  
to Ensure Delivery of  
Critical Services

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G A O

Accountability \* Integrity \* Reliability

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Mr. Chairman and Members of the Subcommittee:

Thank you for inviting us to participate in today's hearing on the Year 2000 problem. According to the report of the President's Commission on Critical Infrastructure Protection, the United States—with close to half of all computer capacity and 60 percent of Internet assets—is the world's most advanced and most dependent user of information technology.<sup>1</sup> Should these systems—which perform functions and services critical to our nation—suffer problems, it could create widespread disruption. Accordingly, the upcoming change of century is a sweeping and urgent challenge for public- and private-sector organizations alike.

Because of its urgent nature and the potentially devastating impact it could have on critical government operations, in February 1997 we designated the Year 2000 problem a high-risk area for the federal government.<sup>2</sup> Since that time, we have issued over 130 reports and testimony statements detailing specific findings and numerous recommendations related to the Year 2000 readiness of a wide range of federal agencies.<sup>3</sup> We have also issued guidance to help organizations successfully address the issue.<sup>4</sup>

Today, I will highlight the Year 2000 risks facing the nation, discuss the federal government's progress and challenges that remain in correcting its systems, identify state and local government Year 2000 issues, and provide an overview of available information on the readiness of key public infrastructure and economic sectors.

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<sup>1</sup>Critical Foundations: Protecting America's Infrastructures (President's Commission on Critical Infrastructure Protection, October 1997).

<sup>2</sup>High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997).

<sup>3</sup>A list of these publications is included as an attachment to this statement. These publications can be obtained through GAO's World Wide Web page at [www.gao.gov/y2kr.htm](http://www.gao.gov/y2kr.htm).

<sup>4</sup>Year 2000 Computing Crisis: An Assessment Guide (GAO/AIMD-10.1.14, issued as an exposure draft in February 1997 and in final form in September 1997), which addresses the key tasks needed to complete each phase of a Year 2000 program (awareness, assessment, renovation, validation, and implementation); Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, issued as an exposure draft in March 1998 and in final form in August 1998), which describes the tasks needed to ensure the continuity of agency operations; and Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, issued as an exposure draft in June 1998 and in final form in November 1998), which discusses the need to plan and conduct Year 2000 tests in a structured and disciplined fashion.

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## The Public Faces Risk of Year 2000 Disruptions

The public faces the risk that critical services provided by the government and the private sector could be severely disrupted by the Year 2000 computing problem. Financial transactions could be delayed, flights grounded, power lost, and national defense affected. Moreover, America's infrastructures are a complex array of public and private enterprises with many interdependencies at all levels. These many interdependencies among governments and within key economic sectors could cause a single failure to have adverse repercussions in other sectors. Key sectors that could be seriously affected if their systems are not Year 2000 compliant include information and telecommunications; banking and finance; health, safety, and emergency services; transportation; power and water; and manufacturing and small business.

The following are examples of some of the major disruptions the public and private sectors could experience if the Year 2000 problem is not corrected.

- With respect to aviation, there could be grounded or delayed flights, degraded safety, customer inconvenience, and increased airline costs.<sup>5</sup>
- Aircraft and other military equipment could be grounded because the computer systems used to schedule maintenance and track supplies may not work. Further, the Department of Defense could incur shortages of vital items needed to sustain military operations and readiness.<sup>6</sup>
- Medical devices and scientific laboratory equipment may experience problems beginning January 1, 2000, if their software applications or embedded chips use two-digit fields to represent the year.

Recognizing the seriousness of the Year 2000 problem, on February 4, 1998, the President signed an executive order that established the President's Council on Year 2000 Conversion, chaired by an Assistant to the President and consisting of one representative from each of the executive departments and from other federal agencies as may be determined by the Chair. The Chair of the Council was tasked with the following Year 2000 roles: (1) overseeing the activities of agencies, (2) acting as chief spokesperson in national and international forums, (3) providing policy

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<sup>5</sup>FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998) and Year 2000 Computing Crisis: FAA Is Making Progress But Important Challenges Remain (GAO/T-AIMD/RCED-99-118, March 15, 1999).

<sup>6</sup>Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998).

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coordination of executive branch activities with state, local, and tribal governments, and (4) promoting appropriate federal roles with respect to private-sector activities.

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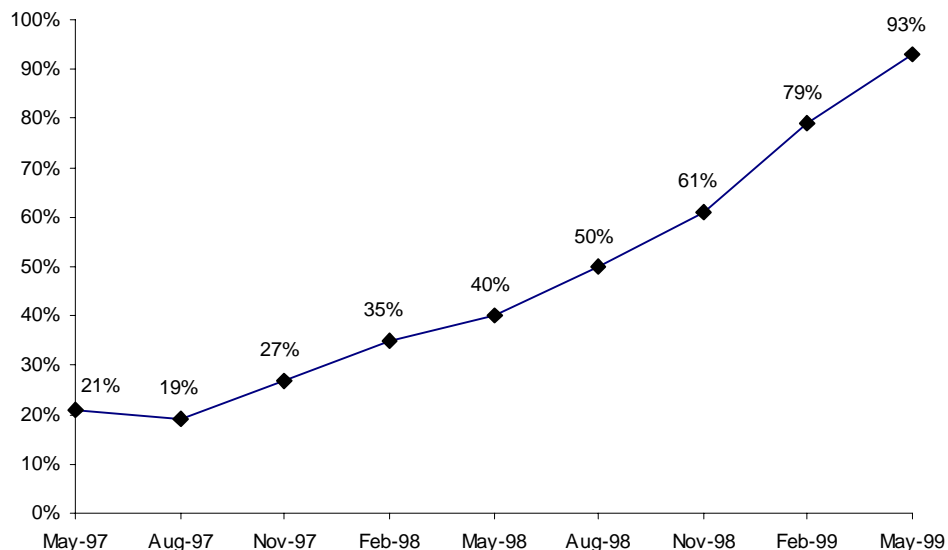
## Improvements Made But Much Work Remains

Addressing the Year 2000 problem is a tremendous challenge for the federal government. Many of the federal government's computer systems were originally designed and developed 20 to 25 years ago, are poorly documented, and use a wide variety of computer languages, many of which are obsolete. Some applications include thousands, tens of thousands, or even millions of lines of code, each of which must be examined for date-format problems.

To meet this challenge and monitor individual agency efforts, the Office of Management and Budget (OMB) directed the major departments and agencies to submit quarterly reports on their progress, beginning May 15, 1997. These reports contain information on where agencies stand with respect to the assessment, renovation, validation, and implementation of mission-critical systems, as well as other management information on items such as costs and business continuity and contingency plans.

The federal government's most recent reports show improvement in addressing the Year 2000 problem. While much work remains, the federal government has significantly increased its percentage of mission-critical systems that are reported to be Year 2000 compliant, as figure 1 illustrates. In particular, while the federal government did not meet its goal of having all mission-critical systems compliant by March 1999, as of mid-May 1999, 93 percent of these systems were reported compliant.

**Figure 1: Mission-Critical Systems Reported Year 2000 Compliant, May 1997 Through May 1999**



Source: May 1997 through May 1999 data are from the OMB quarterly reports.

While this reported progress is notable, OMB also noted that 10 agencies have mission-critical systems that were not yet compliant.<sup>7</sup> In addition, as we testified in April, some of the systems that were not yet compliant support vital government functions.<sup>8</sup> For example, some of the systems that were not compliant were among the 26 mission-critical systems that the Federal Aviation Administration (FAA) has identified as posing the greatest risk to the National Airspace System—the network of equipment, facilities, and information that supports U.S. aviation operations.

Additionally, not all systems have undergone an independent verification and validation process. For example, in April 1999 the Department of Commerce awarded a contract for independent verification and validation

<sup>7</sup>The 10 agencies were the Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Justice, Transportation, and the Treasury and the National Aeronautics and Space Administration and the U.S. Agency for International Development.

<sup>8</sup>Year 2000 Computing Challenge: Federal Government Making Progress But Critical Issues Must Still Be Addressed to Minimize Disruptions (GAO/T-AIMD-99-144, April 14, 1999).

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reviews of approximately 40 mission-critical systems that support that department's most critical business processes. These reviews are to continue through the summer of 1999. In some cases, independent verification and validation of compliant systems have found serious problems. For example, as we testified this past February,<sup>9</sup> none of 54 external mission-critical systems of the Health Care Financing Administration reported by the Department of Health and Human Services (HHS) as compliant as of December 31, 1998, was Year 2000 ready at that time, based on serious qualifications identified by the independent verification and validation contractor.

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## Reviews Show Uneven Federal Agency Progress

While the overall Year 2000 readiness of the government has improved, our reviews of federal agency Year 2000 programs have found uneven progress. Some agencies had made good progress while other agencies were significantly behind schedule but had taken actions to improve their readiness. For example:

- In October 1997, we reported that while the Social Security Administration (SSA) had made significant progress in assessing and renovating mission-critical mainframe software, certain areas of risk in its Year 2000 program remained.<sup>10</sup> Accordingly, we made several recommendations to address these risk areas, which included the Year 2000 compliance of the systems used by the 54 state Disability Determination Services<sup>11</sup> that help administer the disability programs. SSA agreed with these recommendations and, in July 1999, we reported that actions to implement these recommendations had either been taken or were underway.<sup>12</sup> For example, regarding the state Disability Determination Services systems, SSA enhanced its monitoring and oversight by establishing a full-time project team, designating project managers and coordinators, and requesting biweekly reports. While

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<sup>9</sup>Year 2000 Computing Crisis: Readiness Status of the Department of Health and Human Services (GAO/T-AIMD-99-92, February 26, 1999).

<sup>10</sup>Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997).

<sup>11</sup>These include the systems in all 50 states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

<sup>12</sup>Social Security Administration: Update on Year 2000 and Other Key Information Technology Initiatives (GAO/T-AIMD-99-259, July 29, 1999).

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actions such as these demonstrated SSA's leadership in addressing the Year 2000 problem, it still needed to complete critical tasks to ensure readiness, including (1) ensuring the compliance of all external data exchanges, (2) completing tasks outlined in its contingency plans, (3) certifying the compliance of one remaining mission-critical system, (4) completing hardware and software upgrades in the Office of Telecommunications and Systems Operations, and (5) correcting data field errors identified through its quality assurance process.

- In May 1999, we testified<sup>13</sup> that the Department of Education had made progress toward addressing the significant risks we had identified in September 1998<sup>14</sup> related to systems testing, exchanging data with internal and external partners, and developing business continuity and contingency plans. Nevertheless, work remained ongoing in these areas. For example, Education had scheduled a series of tests with its data exchange partners, such as schools, through the early part of the fall. Tests such as these are important since Education's student financial aid environment is very large and complex, including over 7,000 schools, 6,500 lenders, and 36 guaranty agencies, as well as other federal agencies; we have reported that Education has experienced serious data integrity problems in the past.<sup>15</sup> Accordingly, our May testimony stated that Education needed to continue end-to-end testing of critical business processes involving Education's internal systems and its external data exchange partners and continue its outreach activities with schools, guaranty agencies, and other participants in the student financial aid community.
- Our work has shown that the Department of Defense and the military services face significant problems.<sup>16</sup> This March we testified that despite considerable progress made in the preceding 3 months, the

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<sup>13</sup>Year 2000 Computing Challenge: Education Taking Needed Actions But Work Remains (GAO/T-AIMD-99-180, May 12, 1999).

<sup>14</sup>Year 2000 Computing Crisis: Significant Risks Remain to Department of Education's Student Financial Aid Systems (GAO/T-AIMD-98-302, September 17, 1998).

<sup>15</sup>Student Financial Aid Information: Systems Architecture Needed to Improve Programs' Efficiency (GAO/AIMD-97-122, July 29, 1997).

<sup>16</sup>Defense Computers: Year 2000 Computer Problems Put Navy Operations at Risk (GAO/AIMD-98-150, June 30, 1998); Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998); GAO/AIMD-98-72, April 30, 1998; and Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998).



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department was still well behind schedule.<sup>17</sup> We found that the Department of Defense faced two significant challenges: (1) completing remediation and testing of its mission-critical systems and (2) having a reasonable level of assurance that key processes will continue to work on a day-to-day basis and key operational missions necessary for national defense can be successfully accomplished. We concluded that such assurance could only be provided if Defense took steps to improve its visibility over the status of key business processes.

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## End-to-End Testing Must Be Completed

While it is important to achieve compliance for individual mission-critical systems, realizing such compliance alone does not ensure that business functions will continue to operate through the change of century—the ultimate goal of Year 2000 efforts. The purpose of end-to-end testing is to verify that a defined set of interrelated systems, which collectively support an organizational core business area or function, will work as intended in an operational environment. In the case of the year 2000, many systems in the end-to-end chain will have been modified or replaced. As a result, the scope and complexity of testing—and its importance—are dramatically increased, as is the difficulty of isolating, identifying, and correcting problems. Consequently, agencies must work early and continually with their data exchange partners to plan and execute effective end-to-end tests. (Our Year 2000 testing guide sets forth a structured approach to testing, including end-to-end testing.<sup>18</sup>)

In January, we testified that with the time available for end-to-end testing diminishing, OMB should consider, for the government's most critical functions, setting target dates, and having agencies report against them, for the development of end-to-end test plans, the establishment of test schedules, and the completion of the tests.<sup>19</sup> On March 31, OMB and the Chair of the President's Council on Year 2000 Conversion announced that one of the key priorities that federal agencies will be pursuing during the rest of 1999 will be cooperative end-to-end testing to demonstrate the Year 2000 readiness of federal programs with states and other partners.

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<sup>17</sup>Year 2000 Computing Crisis: Defense Has Made Progress, But Additional Management Controls Are Needed (GAO/T-AIMD-99-101, March 2, 1999).

<sup>18</sup>GAO/AIMD-10.1.21, November 1998.

<sup>19</sup>Year 2000 Computing Crisis: Readiness Improving, But Much Work Remains to Avoid Major Disruptions (GAO/T-AIMD-99-50, January 20, 1999).

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Agencies have also acted to address end-to-end testing. For example, our March FAA testimony<sup>20</sup> found that the agency had addressed our prior concerns about the lack of detail in its draft end-to-end test program plan and had developed a detailed end-to-end testing strategy and plans.<sup>21</sup> Also, in June 1999 we reported<sup>22</sup> that the Department of Defense had underway or planned hundreds of related Year 2000 end-to-end test and evaluation activities and that, thus far, it was taking steps to ensure that these related end-to-end tests were effectively coordinated. However, we concluded that the Department of Defense was far from successfully finishing its various Year 2000 end-to-end test activities and that it must complete efforts to establish end-to-end management controls, such as establishing an independent quality assurance program.

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## Business Continuity and Contingency Plans Are Needed

Business continuity and contingency plans are essential. Without such plans, when unpredicted failures occur, agencies will not have well-defined responses and may not have enough time to develop and test alternatives. Federal agencies depend on data provided by their business partners as well as on services provided by the public infrastructure (e.g., power, water, transportation, and voice and data telecommunications). One weak link anywhere in the chain of critical dependencies can cause major disruptions to business operations. Given these interdependencies, it is imperative that contingency plans be developed for all critical core business processes and supporting systems, regardless of whether these systems are owned by the agency. Accordingly, in April 1998 we recommended that the Council require agencies to develop contingency plans for all critical core business processes.<sup>23</sup>

OMB has clarified its contingency plan instructions and, along with the Chief Information Officers Council, has adopted our business continuity and contingency planning guide.<sup>24</sup> In particular, on January 26, 1999, OMB

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<sup>20</sup>GAO/T-AIMD/RCED-99-118, March 15, 1999.

<sup>21</sup>GAO/T-AIMD-98-251, August 6, 1998.

<sup>22</sup>Defense Computers: Management Controls Are Critical to Effective Year 2000 Testing (GAO/AIMD-99-172, June 30, 1999).

<sup>23</sup>Year 2000 Computing Crisis: Potential for Widespread Disruption Calls for Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998).

<sup>24</sup>GAO/AIMD-10.1.19, August 1998.

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called on federal agencies to identify and report on the high-level core business functions that are to be addressed in their business continuity and contingency plans, as well as to provide key milestones for development and testing of such plans in their February 1999 quarterly reports. In addition, on May 13 OMB required agencies to submit high-level versions of these plans by June 15. According to an OMB official, OMB has received plans from the 24 major departments and agencies. This official stated that OMB planned to review the plans, discuss them with the agencies, determine whether there were any common themes, and report on the plans' status in its next quarterly report.

To provide assurance that agencies' business continuity and contingency plans will work if needed, on January 20 we suggested that OMB may want to consider requiring agencies to test their business continuity strategy and set a target date, such as September 30, 1999, for the completion of this validation.<sup>25</sup> Our review of the 24 major departments and agencies' May 1999 quarterly reports found 14 cases in which agencies did not identify test dates for their business continuity and contingency plans or reported test dates subsequent to September 30, 1999.

On March 31, OMB and the Chair of the President's Council announced that completing and testing business continuity and contingency plans as insurance against disruptions to federal service delivery and operations from Year 2000-related failures will be one of the key priorities that federal agencies will be pursuing through the rest of 1999. Accordingly, OMB should implement our suggestion and establish a target date for the validation of agency business continuity and contingency plans.

Our reviews of specific agency business continuity and contingency plans have found that agencies are in varying stages of completion. For example:

- We testified in July 1999 that SSA was in the process of testing all of its contingency plans, with expected completion in September.<sup>26</sup> In addition, SSA planned to assist the Department of the Treasury in developing alternative disbursement processes for problematic financial institutions.

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<sup>25</sup>GAO/T-AIMD-99-50, January 20, 1999.

<sup>26</sup>GAO/T-AIMD-99-259, July 29, 1999.

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- This June, we testified that the U.S. Customs Service had implemented sound management processes for developing business continuity and contingency plans and was in the process of testing its plans.<sup>27</sup> Customs expected to complete contingency plan testing by October 1999.
  - In May 1999, we reported<sup>28</sup> that the Department of Agriculture's component agencies were actively engaged in developing business continuity and contingency plans but that much work remained to complete and test these plans. Further, its December 1999 departmentwide goal of completing business continuity and contingency plans left no room for delays or sufficient time for correcting, revising, and retesting plans, if necessary. Consequently, we recommended that the Department of Agriculture advance its time frame to no later than September 30, 1999, and develop priorities for completing and testing business continuity and contingency plans that are aligned with the department's highest priority business processes, to ensure that remaining work addresses these processes first. The Department of Agriculture's Chief Information Officer stated that the department planned to implement our recommendations.
  - This June, we reported<sup>29</sup> that the General Services Administration had completed its telecommunications business continuity and contingency plan in September 1998. However, we made several suggestions for enhancing this plan, including that the General Services Administration work with its customers to ensure that the customers' business continuity and contingency plans are fully coordinated with the General Services Administration's plan and that it consider the possibility of partial loss of service. The General Services Administration agreed to implement our suggestions.

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## OMB Action Could Help Ensure Business Continuity of High-Impact Programs

While individual agencies have been identifying and remediating mission-critical systems, the government's future actions need to be focused on its high-priority programs and ensuring the continuity of these programs, including the continuity of federal programs that are administered by states. Accordingly, governmentwide priorities need to be based on such

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<sup>27</sup>Year 2000 Computing Crisis: Customs Is Making Good Progress (GAO/T-AIMD-99-225, June 29, 1999).

<sup>28</sup>Year 2000 Computing Crisis: USDA Needs to Accelerate Time Frames for Completing Contingency Planning (GAO/AIMD-99-178, May 21, 1999).

<sup>29</sup>GSA's Effort to Develop Year 2000 Business Continuity and Contingency Plans for Telecommunications Systems (GAO/AIMD-99-201R, June 16, 1999).

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criteria as the potential for adverse health and safety effects, adverse financial effects on American citizens, detrimental effects on national security, and adverse economic consequences. In April 1998, we recommended that the President's Council on Year 2000 Conversion establish governmentwide priorities and ensure that agencies set agencywide priorities.<sup>30</sup>

On March 26, OMB implemented our recommendation by issuing a memorandum to federal agencies designating lead agencies for the government's 42 high-impact programs (e.g., food stamps, Medicare, and federal electric power generation and delivery). (OMB later added a 43rd high-impact program—the Department of Justice's National Crime Information Center.) Appendix I lists these programs and their lead agencies. For each program, the lead agency was charged with identifying to OMB the partners integral to program delivery; taking a leadership role in convening those partners; assuring that each partner has an adequate Year 2000 plan and, if not, helping each partner without one; and developing a plan to ensure that the program will operate effectively. According to OMB, such a plan might include testing data exchanges across partners, developing complementary business continuity and contingency plans, sharing key information on readiness with other partners and the public, and taking other steps necessary to ensure that the program will work. OMB directed the lead agencies to provide a schedule and milestones of key activities in their plans by April 15. OMB also asked agencies to provide monthly progress reports. As you know, we are currently reviewing agencies' progress in ensuring the readiness of their high-impact programs for this Subcommittee.

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## State and Local Governments Face Significant Year 2000 Risks

Just as the federal government faces significant Year 2000 risks, so too do state and local governments. If the Year 2000 problem is not properly addressed, for example, (1) food stamps and other types of payments may not be made or could be made for incorrect amounts, (2) date-dependent signal timing patterns could be incorrectly implemented at highway intersections, with safety severely compromised, and (3) prisoner release or parole eligibility determinations may be adversely affected. Nevertheless, available information on the Year 2000 readiness of state and local governments indicates that much work remains.

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<sup>30</sup>GAO/AIMD-98-85, April 30, 1998.

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According to information on state Year 2000 activities reported to the National Association of State Information Resource Executives as of August 3, 1999,<sup>31</sup> states<sup>32</sup> reported having thousands of mission-critical systems.<sup>33</sup> With respect to completing the implementation phase for these systems,

- 2 states<sup>34</sup> reported that they had completed between 25 and 49 percent,
- 6 states<sup>35</sup> reported completing between 50 and 74 percent,
- 38 states<sup>36</sup> reported completing between 75 and 99 percent, and
- 3 states reported completing the implementation phase for all mission-critical systems.<sup>37</sup>

All of the states responding to the National Association of State Information Resource Executives survey reported that they were actively engaged in internal and external contingency planning and that they had established target dates for the completion of these plans; 14 states (28 percent) reported the deadline as October 1999 or later.

State audit organizations have also identified significant Year 2000 concerns. In January, the National State Auditors Association reported on the results of its mid-1998 survey of Year 2000 compliance among states.<sup>38</sup> This report stated that for the 12 state audit organizations that provided Year 2000-related reports, concerns had been raised in areas such as

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<sup>31</sup>Individual states submit periodic updates to the National Association of State Information Resource Executives. For the August 3 report, over three quarters of the states submitted their data after July 1, 1999. The oldest data were provided on March 11 and the most recent data on August 2.

<sup>32</sup>In the context of the National Association of State Information Resource Executives survey, the term “states” includes the District of Columbia and Puerto Rico.

<sup>33</sup>Mission-critical systems were defined as those that a state had identified as priorities for prompt remediation.

<sup>34</sup>One state reported on its mission-critical systems and one state reported on its processes.

<sup>35</sup>Five states reported on their mission-critical systems and one reported on all systems.

<sup>36</sup>Thirty-one states reported on their mission-critical systems, 2 states reported on their applications, 1 reported on its “priority business activities,” 1 reported on its “critical compliance units,” 1 reported on all systems, 1 reported on functions, and 1 reported on projects.

<sup>37</sup>Two states did not respond to the survey and one did not respond to this question.

<sup>38</sup>Year 2000: State Compliance Efforts (National State Auditors Association, January 1999).

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planning, testing, embedded systems, business continuity and contingency planning, and the adequacy of resources to address the problem.

We identified additional products by 17 state-level audit organizations and Guam that discussed the Year 2000 problem and that had been issued since October 1, 1998. Several of these state-level audit organizations noted that progress had been made. However, the audit organizations also expressed concerns that were consistent with those reported by the National State Auditors Association. For example:

- In December 1998 the Vermont State Auditor reported<sup>39</sup> that the state Chief Information Officer did not have a comprehensive control list of the state's information technology systems. Accordingly, the audit office stated that even if all mission-critical state systems were checked, these systems could be endangered by information technology components that had not been checked or by linkages with the state's external electronic partners.
- In April, New York's Division of Management Audit and State Financial Services reported that state agencies did not adequately control the critical process of testing remediated systems.<sup>40</sup> Further, most agencies were in the early stages of addressing potential problems related to data exchanges and embedded systems and none had completed substantive work on contingency planning. The New York audit office subsequently issued 27 reports on individual mission-critical and high-priority systems that included concerns about, for example, contingency planning and testing.
- In February, the California State Auditor reported<sup>41</sup> that key agencies responsible for emergency services, corrections, and water resources, among other areas, had not fully addressed embedded technology-related threats. Regarding emergency services, the California report stated that if remediation of the embedded technology in its networks was not completed, the Office of Emergency Services might have to rely on cumbersome manual processes, significantly increasing response time to disasters.

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<sup>39</sup>Vermont State Auditor's Report on State Government's Year 2000 Preparedness (Y2K Compliance) for the Period Ending November 1, 1998 (Office of the State Auditor, December 31, 1998).

<sup>40</sup>New York's Preparation for the Year 2000: A Second Look (Office of the State Comptroller, Division of Management Audit and State Financial Services, Report 98-S-21, April 5, 1999).

<sup>41</sup>Year 2000 Computer Problem: The State's Agencies Are Progressing Toward Compliance but Key Steps Remain Incomplete (California State Auditor, February 18, 1999).

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- In March, Oregon's Audits Division reported<sup>42</sup> that 11 of the 12 state agencies reviewed did not have business continuity plans addressing potential Year 2000 problems for their core business functions.
  - In March, North Carolina's State Auditor reported<sup>43</sup> that resource restrictions had limited the state's Year 2000 Project Office's ability to verify data reported by state agencies.

It is also essential that local government systems be ready for the change of century since critical functions involving, for example, public safety and traffic management are performed at the local level. Recent reports on local governments have highlighted Year 2000 concerns. For example:

- On July 15, we reported on the reported Year 2000 status of the 21 largest U.S. cities.<sup>44</sup> On average, cities reported completing work for 45 percent of the key service areas in which they have responsibility. In addition, 2 cities reported that they had completed their Year 2000 efforts, 9 cities expected to complete their Year 2000 preparations by September 30, 1999, and the remaining 10 cities expected to complete their preparation by December 31.<sup>45</sup> In addition, 7 cities reported completing Year 2000 contingency plans, while 14 cities reported that their plans were still being developed.
- On July 9, the National League of Cities reported on its survey of 403 cities conducted in April 1999. This survey found that (1) 92 percent of cities had a citywide Year 2000 plan, (2) 74 percent had completed their assessment of critical systems, and (3) 66 percent had prepared contingency plans. (Of those that had not completed such plans, about half stated that they were planning to develop one.) In addition, 92 percent of the cities reported that they expect that all of their critical systems will be compliant by January 1, 2000; 5 percent expected to have completed between 91 and 99 percent, and 3 percent expected to have completed between 81 and 90 percent of their critical systems by January 1.

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<sup>42</sup>Department of Administrative Services Year 2000 Statewide Project Office Review (Secretary of State, Audits Division, State of Oregon Report No. 99-05, March 16, 1999).

<sup>43</sup>Department of Commerce, Information Technology Services Year 2000 Project Office (Office of the State Auditor, State of North Carolina, March 18, 1999).

<sup>44</sup>Reported Y2K Status of the 21 Largest U.S. Cities (GAO/AIMD-99-246R, July 15, 1999).

<sup>45</sup>In most cities, the majority of city services are scheduled to be completed before this completion date. For example, Los Angeles plans to have all key city systems ready by September 30, except for its wastewater treatment systems, which are expected to be completed in November.



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- On June 23, the National Association of Counties announced the results of its April survey of 500 randomly selected counties. This survey found that (1) 74 percent of respondents had a countywide plan to address Year 2000 issues, (2) 51 percent had completed system assessments, and (3) 27 percent had completed system testing. In addition, 190 counties had prepared contingency plans and 289 had not. Further, of the 114 counties reporting that they planned to develop Year 2000 contingency plans, 22 planned to develop the plan in April-June, 64 in July-September, 18 in October-December, and 10 did not yet know.

Of critical importance to the nation are services essential to the safety and well-being of individuals across the country, namely 9-1-1 systems and law enforcement. For the most part, responsibility for ensuring continuity of service for 9-1-1 calls and law enforcement resides with thousands of state and local jurisdictions. On April 29, we testified that not enough was known about the status of either 9-1-1 systems or of state and local law enforcement activities to conclude about either's ability during the transition to the year 2000 to meet the public safety and well-being needs of local communities across the nation.<sup>46</sup> While the federal government planned additional actions to determine the status of these areas, we stated that the President's Council on Year 2000 Conversion should use such information to identify specific risks and develop appropriate strategies and contingency plans to respond to those risks.

We subsequently reported<sup>47</sup> that the Federal Emergency Management Agency and the Department of Justice have worked to increase the response rate to a survey of public safety organizations. As of June 30, 1999, of the over 2,200 9-1-1 sites responding (about half of the 9-1-1 call answering sites in the United States), 37 percent reported that they were ready for the year 2000. Another 55 percent responded that they expected to be Year 2000 compliant in time for the change of century.

Recognizing the seriousness of the Year 2000 risks facing state and local governments, the President's Council has developed initiatives to address the readiness of state and local governments. For example:

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<sup>46</sup>Year 2000 Computing Challenge: Status of Emergency and State and Local Law Enforcement Systems Is Still Unknown (GAO/T-AIMD-99-163, April 29, 1999).

<sup>47</sup>Emergency and State and Local Law Enforcement Systems: Committee Questions Concerning Year 2000 Challenges (GAO/AIMD-99-247R, July 14, 1999).

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- The Council established working groups on state and local governments and tribal governments.
  - Council officials participate in monthly multistate conference calls.
  - In July 1998 and March 1999, the Council, in partnership with the National Governors' Association, convened Year 2000 summits with state and U.S. territory Year 2000 coordinators.
  - On May 24, the Council announced a nationwide campaign to promote "Y2K Community Conversations" to support and encourage efforts of government officials, business leaders, and interested citizens to share information on their progress. To support this initiative, the Council has developed and is distributing a toolkit that provides examples of which sectors should be represented at these events and issues that should be addressed.

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## State-Administered Federal Human Services Programs Are at Risk

Among the critical functions performed by states are the administration of federal human services programs. As we reported in November 1998, many systems that support state-administered federal human services programs were at risk, and much work remained to ensure that services would continue.<sup>48</sup> In February of this year, we testified that while some progress had been achieved, many states' systems were not scheduled to become compliant until the last half of 1999.<sup>49</sup> Accordingly, we concluded that given these risks, business continuity and contingency planning was even more important in ensuring continuity of program operations and benefits in the event of systems failures.

Subsequent to our November 1998 report, OMB directed federal oversight agencies to include the status of selected state human services systems in their quarterly reports. Specifically, in January 1999, OMB requested that agencies describe actions to help ensure that federally supported, state-run programs will be able to provide services and benefits. OMB further asked that agencies report the date when each state's systems will be Year 2000 compliant.

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<sup>48</sup>Year 2000 Computing Crisis: Readiness of State Automated Systems to Support Federal Welfare Programs (GAO/AIMD-99-28, November 6, 1998).

<sup>49</sup>Year 2000 Computing Crisis: Readiness of State Automated Systems That Support Federal Human Services Programs (GAO/T-AIMD-99-91, February 24, 1999).

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Table 1 summarizes the latest information on state-administered federal human services programs reported by OMB on June 15, 1999.<sup>50</sup> This information was gathered, but not verified, by the Departments of Agriculture, HHS, and Labor.<sup>51</sup> It indicates that while many states reported their programs to be compliant, a number of states did not plan to complete Year 2000 efforts until the last quarter of 1999. For example, eight states did not expect to be compliant until the last quarter of 1999 for Child Support Enforcement, five states for Unemployment Insurance, and four states for Child Nutrition. Moreover, Year 2000 readiness information was unknown in many cases. For example, according to OMB, the status of 32 states' Low Income Home Energy Assistance programs was unknown because applicable readiness information was not available.

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<sup>50</sup>For Medicaid, OMB reports on the two primary systems that states use to administer the program: (1) the Integrated Eligibility System, to determine whether an individual applying for Medicaid meets the eligibility criteria for participation, and (2) the Medicaid Management Information System, to process claims and deliver payments for services rendered. Integrated eligibility systems are also often used to determine eligibility for other public assistance programs, such as Food Stamps.

<sup>51</sup>The Department of Agriculture oversees the Child Nutrition, Food Stamp, and the Women, Infants, and Children programs. HHS oversees the Child Care, Child Support Enforcement, Child Welfare, Low Income Home Energy Assistance, Medicaid, and Temporary Assistance for Needy Families programs. The Department of Labor oversees the Unemployment Insurance program.

**Table 1: Reported State-Level Readiness for Federally Supported Programs**

Program <sup>a</sup>	Compliant <sup>b</sup>	Expected Date of 1999 Compliance					Unknown <sup>c</sup>	N/A <sup>d</sup>
		Jan.-March	April-June	July-Sept.	Oct.-Dec.			
Child Nutrition	29	0	9	10	4	2	0	
Food Stamps	25	0	12	14	3	0	0	
Women, Infants, and Children	33	0	11	7	3	0	0	
Child Care	24	5	5	8	2	6	4	
Child Support Enforcement	15	4	13	8	8	6	0	
Child Welfare	20	5	9	11	3	5	1	
Low Income Home Energy Assistance Program	10	0	3	7	1	32	1	
Medicaid – Integrated Eligibility System	20	0	15	15	4	0	0	
Medicaid – Management Information System	17	0	19	14	4	0	0	
Temporary Assistance for Needy Families	19	3	12	15	1	4	0	
Unemployment Insurance	27	0	11	10	5	0	1	

Note: This table contains readiness information from the 50 states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

<sup>a</sup>According to OMB, the information regarding Child Care, Child Support Enforcement, the Low Income Home Energy Assistance Program, Medicaid, and Temporary Assistance for Needy Families was as of January 31, 1999; and the information for Child Nutrition, Food Stamps, and Women, Infants and Children was as of March 1999. However, OMB provided a draft table to the National Association of State Information Resource Executives, which, in turn, provided the draft table to the states. The states were asked to contact HHS and Agriculture and provide corrections by June 1, 1999. For their part, HHS and Agriculture submitted updated state data to OMB in early June. The information regarding Unemployment Insurance was as of March 31, 1999.

<sup>b</sup>In many cases, the report indicated a date instead of whether the state was compliant. We assumed that states reporting completion dates in 1998 or earlier were compliant.

<sup>c</sup>Unknown indicates that according to OMB, the data reported by the states were unclear or that no information was reported by the agency.

<sup>d</sup>N/A indicates that the states or territories reported that the data requested were not applicable to them.

Source: Progress on Year 2000 Conversion: 9th Quarterly Report (OMB, issued on June 15, 1999).

Although many states have reported their state-administered programs to be compliant, additional work beyond individual system completion likely remains, such as end-to-end testing. For example, of the states that OMB reported as having compliant Medicaid management information and/or integrated eligibility systems, at least four and five states, respectively, had not completed end-to-end testing.

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In addition to obtaining state-reported readiness status information for OMB, the three federal departments are taking other actions to assess the ability of state-administered programs to continue into the next century. However, as table 2 shows, the approaches of the three departments in assessing the readiness of state-administered federal human services programs vary significantly. For example, HHS' Health Care Financing Administration (HCFA) hired a contractor to perform comprehensive on-site reviews in all states, some more than once, using a standard methodology. Agriculture's Food and Nutrition Service (FNS) approach includes such actions as having regional offices monitor state Year 2000 efforts and obtaining state certifications of compliance. The Department of Labor is relying on its regional offices to monitor state Year 2000 efforts as well as requiring states to obtain and submit independent verification and validation reports after declaring their systems compliant.

**Table 2: Number and Types of Assessments Performed**

Agency/program	Number of states assessed	Areas covered by assessments		
		Project management/ planning	Test plans/results	Business continuity and contingency plans (BCCP)
Agriculture/Child Nutrition Program	Component entity's regional offices are monitoring all states' efforts	Varies by region	Varies by region	Varies by region
Agriculture/Food Stamps	Component entity's regional offices are monitoring all states' efforts	Varies by region	Varies by region	Varies by region
Agriculture/Women, Infants, and Children	Component entity's regional offices are monitoring all states' efforts	Varies by region	Varies by region	Varies by region
HHS/Child Care	As of July 2, a contractor had conducted on-site reviews of 20 states	Yes	Yes—all visits included reviews of test plans and, where applicable, test results	Partial—on-site visits included reviews of states' BCCP processes, but not their content
HHS/Child Support Enforcement	As of July 2, a contractor had conducted on-site reviews of 20 states	Yes	Yes—all visits included reviews of test plans and, where applicable, test results	Partial—on-site visits included reviews of states' BCCP processes, but not their content
HHS/Child Welfare	As of July 2, a contractor had conducted on-site reviews of 20 states	Yes	Yes—all visits included reviews of test plans and, where applicable, test results	Partial—on-site visits included reviews of states' BCCP processes, but not their content
HHS/Low Income Housing Energy Assistance Program	As of July 2, a contractor had conducted on-site reviews of 20 states	Yes	Yes—all visits included reviews of test plans and, where applicable, test results	Partial—on-site visits included reviews of states' BCCP processes, but not their content
HHS/Medicaid	A contractor conducted on-site reviews of 50 states and the District of Columbia once, and, as of June 30, the contractor had conducted follow-up reviews of 14 states	Yes	Yes—all visits included reviews of test plans and, where applicable, test results	Partial—Initial visits included reviews of states' BCCP processes, and as of July 9, a contractor had reviewed the content of 42 states' BCCPs, either on site or at headquarters
HHS/Temporary Assistance for Needy Families	As of July 2, a contractor had conducted on-site reviews of 20 states	Yes	Yes—all visits included reviews of test plans and, where applicable, test results	Partial—on-site visits included reviews of states' BCCP processes, but not their content
Labor/Unemployment Insurance	Labor's regional offices are monitoring all states' efforts	Unknown—not specifically addressed in methodology	Unknown—not specifically addressed in methodology	Reviews ongoing

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In addition to the completed reviews, all of the departments have ongoing initiatives to ensure that state-administered human services programs will continue to function past the change of century. These initiatives are part of the departments' overall strategies to ensure the continued delivery of these high-impact programs. For example:

- In June 1999, the Department of Agriculture's FNS required its regions to provide for each program a copy of either a state letter certifying that it was Year 2000 compliant or a business continuity and contingency plan. As of June 18, 1999, FNS had received (1) 9 certifications and 7 business continuity and contingency plans for Child Nutrition, (2) 12 certifications and 16 business continuity and contingency plans for Food Stamps, and (3) 23 certifications and 23 business continuity and contingency plans for Women, Infants, and Children. In addition, to help states' Year 2000 efforts, FNS employed a contractor to conduct on-site visits to 20 states for one or more programs. As of July 9, FNS officials told us 16 states had been visited. With respect to the scope of these visits, FNS' regional offices determine for each state and program what specific areas it should encompass. These visits are principally intended to provide technical assistance to the states in areas such as Year 2000 project management, hardware and software testing, and contingency planning.
- In its initial round of on-site reviews conducted between November 1998 and April 1999, the contractor hired by HHS' HCFA (1) identified barriers to successful remediation, (2) made recommendations to address specific areas of concern, and (3) placed Medicaid integrated eligibility and management information systems into low, medium, or high risk categories. HCFA's contractor is currently conducting a second round of on-site reviews in at least 40 states—primarily those in which at least one of two systems was categorized as a high or medium risk during the initial visit. As of June 30, 14 states had been visited during this round. The focus of this second round of visits is on determining how states have resolved Year 2000 issues previously identified, as well as reviewing activities such as data exchanges and end-to-end testing. HCFA plans to conduct a third round of on-site reviews in the fall of 1999 for those states that continue to have systems categorized as high risk. Additionally, another HCFA contractor is reviewing the content of all states' business continuity and contingency plans, with some of these reviews being performed in conjunction with the second round of state visits.
- In September 1998, the Department of Labor required that all State Employment Security Agencies conduct independent verification and

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validation reviews of their Unemployment Insurance programs. The department set a target date of July 1, 1999, for states to submit independent verification and validation certifications of their Unemployment Insurance systems to Labor's regional offices. Labor required its regional offices to review independent verification and validation reports and certifications of Year 2000 compliance that State Employment Security Agencies submitted, and to ascertain whether the material met the department's requirements. If Labor's requirements were met, the regional offices were to approve the State Employment Security Agencies' certification and independent verification and validation reports and forward copies of the approved certification and report, along with regional office comments, to Labor's national office.

An example of the benefits that federal/state partnerships can provide is illustrated by the Department of Labor's unemployment services program. In September 1998, we reported that many State Employment Security Agencies were at risk of failure as early as January 1999 and urged the Department of Labor to initiate the development of realistic contingency plans to ensure continuity of core business processes in the event of Year 2000-induced failures.<sup>52</sup> In May, we testified that four state agencies' systems could have failed if systems in those states had not been programmed with an emergency patch in December 1998. This patch was developed by several of the state agencies and promoted to other state agencies by the Department of Labor.<sup>53</sup>

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## **Year 2000 Readiness Information Available in Some Sectors, But Key Information Still Missing or Incomplete**

Beyond the risks faced by federal, state, and local governments, the year 2000 also poses a serious challenge to the public infrastructure, key economic sectors, and to other countries. To address these concerns, in April 1998 we recommended that the Council use a sector-based approach and establish the effective public-private partnerships necessary to address this issue.<sup>54</sup> The Council subsequently established over 25 sector-based working groups and has been initiating outreach activities since it became operational last spring. In addition, the Chair of the Council has formed a

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<sup>52</sup>Year 2000 Computing Crisis: Progress Made at Department of Labor, But Key Systems at Risk (GAO/T-AIMD-98-303, September 17, 1998).

<sup>53</sup>Year 2000 Computing Challenge: Labor Has Progressed But Selected Systems Remain at Risk (GAO/T-AIMD-99-179, May 12, 1999).

<sup>54</sup>GAO/AIMD-98-85, April 30, 1998.



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Senior Advisors Group composed of representatives from private-sector firms across key economic sectors. Members of this group are expected to offer perspectives on crosscutting issues, information sharing, and appropriate federal responses to potential Year 2000 failures.

Our April 1998 report also recommended that the President's Council develop a comprehensive picture of the nation's Year 2000 readiness, to include identifying and assessing risks to the nation's key economic sectors—including risks posed by international links. In October 1998, the Chair directed the Council's sector working groups to begin assessing their sectors. The Chair also provided a recommended guide of core questions that the Council asked to be included in surveys by the associations performing the assessments. These questions included the percentage of work that has been completed in the assessment, renovation, validation, and implementation phases. The Chair then planned to issue quarterly public reports summarizing these assessments.

The Council's most recent report was issued on August 5, 1999.<sup>55</sup> The report stated that important national systems will make a successful transition to the year 2000 but that much work, such as contingency planning, remains to be done. In particular, the Council expressed a high degree of confidence in five major domestic areas: financial institutions, electric power, telecommunications, air travel, and the federal government. For example, the Council stated that on August 2, federal bank, thrift, and credit union regulators reported that 99 percent of federally insured financial institutions have completed testing of critical systems for Year 2000 readiness. The Council had concerns in four significant areas: local government, health care, education, and small businesses. For example, according to the Council report, many school districts could move into the new century with dysfunctional information technology systems, since only 28 percent and 30 percent of Superintendent/Local Educational Agencies and postsecondary institutions, respectively, reported that their mission-critical systems were Year 2000 compliant. Internationally, the Council stated that the Year 2000 readiness of other countries was improving but was still a concern. The Council reported that the June 1999 meeting of National Year 2000 Coordinators held at the United Nations found that the 173 countries in attendance were clearly focused on the Year

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<sup>55</sup>The Council's three reports are available on its web site, [www.y2k.gov](http://www.y2k.gov). In addition, the Council, in conjunction with the Federal Trade Commission and the General Services Administration, has established a toll-free Year 2000 information line, 1-888-USA-4Y2K. The Federal Trade Commission has also included Year 2000 information of interest to consumers on its web site, [www.consumer.gov](http://www.consumer.gov).

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2000 problem but that many countries will likely not have enough time or resources to finish before the end of 1999.

The Council's assessment reports have substantially increased the nation's understanding of the Year 2000 readiness of key industries. However, the picture remains incomplete in certain key areas because the surveys conducted to date did not have a high response rate or did not provide their response rate, the assessment was general or contained projections rather than current remediation information, or the data were old. For example, according to the Council's latest assessment report:

- Less than a quarter of the more than 16,000 Superintendents of Schools/Local Educational Agencies responded to a web-based survey of Year 2000 readiness among elementary and secondary schools. Similarly, less than a third of the more than 6,000 presidents and/or chancellors of postsecondary educational institutions responded to a web-based Year 2000 survey. Also, surveys covering areas such as small and medium-sized chemical enterprises did not provide information on either the number of surveys distributed or the number returned. Small response rates or the lack of information on response rates call into question whether the results of the survey accurately portray the readiness of the sector.
- Information in areas such as state emergency management and broadcast television and radio provided a general assessment or projected compliance levels as of a certain date, but did not contain detailed data as to the current status of the sector (e.g., the average percentage of organizations' systems that are Year 2000 compliant or the percentage of organizations that are in the assessment, renovation, or validation phases).
- In some cases, such as for grocery manufacturers, cable television, hospitals, physicians' practices, and railroads, the sector surveys had been conducted months earlier and/or current survey information was not yet available.

In addition to our work related to the federal, state, and local government's Year 2000 progress, we have also issued several products related to key economic sectors. I will now discuss the results of these reviews.

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## Energy Sector

In April, we reported that while the electric power industry had concluded that it had made substantial progress in making its systems and equipment ready to continue operations into the year 2000, significant risks remained

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since many reporting organizations did not expect to be Year 2000 ready within the June 1999 industry target date.<sup>56</sup> We, therefore, suggested that the Department of Energy (1) work with the Electric Power Working Group to ensure that remediation activities were accelerated for the utilities that expected to miss the June 1999 deadline for achieving Year 2000 readiness and (2) encourage state regulatory utility commissions to require a full public disclosure of Year 2000 readiness status of entities transmitting and distributing electric power. The Department of Energy generally agreed with our suggestions. We also suggested that the Nuclear Regulatory Commission (1) in cooperation with the Nuclear Energy Institute, work with nuclear power plant licensees to accelerate the Year 2000 remediation efforts among the nuclear power plants that expect to meet the June 1999 deadline for achieving readiness and (2) publicly disclose the Year 2000 readiness of each of the nation's operational nuclear reactors. In response, the Nuclear Regulatory Commission stated that it plans to focus its efforts on nuclear power plants that may miss the July 1, 1999, milestone and that it would release the readiness information on individual plants that same month.

Subsequent to our report, on August 3, 1999, the North American Electric Reliability Council released its fourth status report on electric power systems. According to the Council, as of June 30, 1999—the industry target date for organizations to be Year 2000 ready—251 of 268 (94 percent) of bulk electric organizations were Year 2000 ready or Year 2000 ready with limited exceptions.<sup>57</sup> In addition, this report stated that 96 percent of local distribution systems were reported as Year 2000 ready.<sup>58</sup> The North American Electric Reliability Council stated that the information it uses is principally self-reported but that 84 percent of the organizations reported that their Year 2000 programs had also been audited by internal and/or external auditors. On July 19, the Nuclear Regulatory Commission stated that 68 of 103 (66 percent) nuclear power plants reported that all of their computer systems and digital embedded components that support plant

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<sup>56</sup>Year 2000 Computing Crisis: Readiness of the Electric Power Industry (GAO/AIMD-99-114, April 6, 1999).

<sup>57</sup>The North American Electric Reliability Council reported that 64 of these organizations had exceptions but that it “believes that the work schedule provided to complete these exception items in the next few months represents a prudent use of resources and does not increase risks associated with reliable electric service into the Year 2000.”

<sup>58</sup>This was based on the percentage of the total megawatts of the systems reported as Year 2000 ready by investor-owned, public power, and cooperative organizations. The report did not identify the number of local distribution organizations that reported that they were Year 2000 ready.

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operations are Year 2000 ready. Of the 35 plants that were not Year 2000 ready, 18 had systems or components that were not ready that could affect power generation.

In May, we reported<sup>59</sup> that while the domestic oil and gas industries had reported that they had made substantial progress in making their equipment and systems ready to continue operations into the year 2000, risks remained. For example, although over half of our oil is imported, little was known about the Year 2000 readiness of foreign oil suppliers. Further, while individual domestic companies reported that they were developing Year 2000 contingency plans, there were no plans to perform a national-level risk assessment and develop contingency plans to deal with potential shortages or disruptions in the nation's overall oil and gas supplies. We suggested that the Council's oil and gas working group (1) work with industry associations to perform national-level risk assessments and develop and publish credible, national-level scenarios regarding the impact of potential Year 2000 failures and (2) develop national-level contingency plans. The working group generally agreed with these suggestions.

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## Water Sector

In April, we reported<sup>60</sup> that insufficient information was available to assess and manage Year 2000 efforts in the water sector, and little additional information was expected under the current regulatory approach. While the Council's water sector working group had undertaken an awareness campaign and had urged national water sector associations to continue to survey their memberships, survey response rates had been low. Further, Environmental Protection Agency officials stated that the agency lacked the rules and regulations necessary to require water and wastewater facilities to report on their Year 2000 status.

Our survey of state regulators found that a few states were proactively collecting Year 2000 compliance data from regulated facilities, a much larger group of states was disseminating Year 2000 information, while another group was not actively using either approach. Additionally, only a handful of state regulators believed that they were responsible for ensuring facilities' Year 2000 compliance or overseeing facilities' business continuity

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<sup>59</sup>Year 2000 Computing Crisis: Readiness of the Oil and Gas Industries (GAO/AIMD-99-162, May 19, 1999).

<sup>60</sup>Year 2000 Computing Crisis: Status of the Water Industry (GAO/AIMD-99-151, April 21, 1999).

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and contingency plans. Among our suggested actions was that the Council, the Environmental Protection Agency, and the states determine which regulatory organization should take responsibility for assessing and publicly disclosing the status and outlook of water sector facilities' Year 2000 business continuity and contingency plans. The Environmental Protection Agency generally agreed with our suggestions but one official noted that additional legislation may be needed if the agency is to take responsibility for overseeing facilities' Year 2000 business continuity and contingency plans.

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## Health Sector

The health sector includes health care providers (such as hospitals and emergency health care services), insurers (such as Medicare and Medicaid), and biomedical equipment. Last month, we reported<sup>61</sup> that HCFA had taken aggressive and comprehensive outreach efforts with regard to its over 1.1 million healthcare providers that administer services for Medicare-insured patients.<sup>62</sup> Despite these efforts, HCFA data show that provider participation in its outreach activities has been low. Further, although HCFA has tasked contractors that process Medicare claims with testing with providers using future-dated claims, such testing had been limited and the testing that had occurred had identified problems. Our July report also found that although many surveys had been completed in 1999 on the Year 2000 readiness of healthcare providers, none of the 11 surveys we reviewed provided sufficient information with which to assess the Year 2000 status of the healthcare provider community. Each of the surveys had low response rates, and several did not address critical questions about testing and contingency planning.

To reduce the risk of Year 2000-related failures in the Medicare provider community, our July report suggested, for example, that HCFA consider using additional outreach methods, such as public service announcements, and set milestones for Medicare contractors for testing with providers. We also made suggestions to the President's Council on Year 2000 Conversion's healthcare sector working group, including a suggestion to consider working with associations to publicize those providers who respond to

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<sup>61</sup>Year 2000 Computer Crisis: Status of Medicare Providers Unknown (GAO/AIMD-99-243, July 28, 1999).

<sup>62</sup>Examples of such providers are hospitals, laboratories, physicians, and skilled nursing/long-term care facilities.

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future surveys in order to increase survey response rates. The HCFA Administrator generally agreed with our suggested actions.

With respect to biomedical equipment, on June 10 we testified<sup>63</sup> that in response to our September 1998 recommendation,<sup>64</sup> HHS, in conjunction with the Department of Veterans Affairs, had established a clearinghouse on biomedical equipment. As of June 1, 1999, 4,142 biomedical equipment manufacturers had submitted data to the clearinghouse. About 61 percent of these manufacturers reported having products that do not employ dates and about 8 percent (311 manufacturers) reported having date-related problems, such as an incorrect display of date/time. According to the Food and Drug Administration, the 311 manufacturers reported 897 products with date-related problems. However, not all compliance information was available on the clearinghouse because the clearinghouse referred the user to 427 manufacturers' web sites. Accordingly, we reviewed the web sites of these manufacturers and found, as of June 1, 1999, a total of 35,446 products.<sup>65</sup> Of these products, 18,466 were reported as not employing a date, 11,211 were reported as compliant, 4,445 were shown as not compliant, and the compliance status of 1,324 was unknown.

In addition to the establishment of a clearinghouse, our September 1998 report<sup>66</sup> also recommended that HHS and the Department of Veterans Affairs take prudent steps to jointly review manufacturers' test results for critical care/life support biomedical equipment. We were especially concerned that the departments review test results for equipment previously deemed to be noncompliant but now deemed by manufacturers to be compliant, or equipment for which concerns about compliance remained. In May 1999, the Food and Drug Administration, a component agency of HHS, announced that it planned to develop a list of critical care/life support medical devices and the manufacturers of these devices, select a sample of manufacturers for review, and hire a contractor to

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<sup>63</sup>Year 2000 Computing Challenge: Concerns About Compliance Information on Biomedical Equipment (GAO/T-AIMD-99-209, June 10, 1999).

<sup>64</sup>Year 2000 Computing Crisis: Compliance Status of Many Biomedical Equipment Items Still Unknown (GAO/AIMD-98-240, September 18, 1998).

<sup>65</sup>Because of limitations in many of the manufacturers web sites, our ability to determine the total number of biomedical equipment products reported and their compliance status was impaired. Accordingly, the actual number of products reported by the manufacturers could be significantly higher than the 35,446 products that we counted.

<sup>66</sup>GAO/AIMD-98-240, September 18, 1998.

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develop a program to assess manufacturers' activities to identify and correct Year 2000 problems for these medical devices. In addition, if the results of this review indicated a need for further review of manufacturer activities, the contractor would review a portion of the remaining manufacturers not yet reviewed. Moreover, according to the Food and Drug Administration, any manufacturer whose quality assurance system appeared deficient based on the contractors review would be subject to additional reviews to determine what actions would be required to eliminate any risk posed by noncompliant devices.

In April testimony,<sup>67</sup> we also reported on the results of a Department of Veterans Affairs survey of 384 pharmaceutical firms and 459 medical-surgical firms with which it does business. Of the 52 percent of pharmaceutical firms that responded to the survey, 32 percent reported that they were compliant. Of the 54 percent of the medical-surgical firms that responded, about two-thirds reported that they were compliant.

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## Banking and Finance Sector

A large portion of the institutions that make up the banking and finance sector are overseen by one or more federal regulatory agencies. In September 1998, we testified on the efforts of five federal financial regulatory agencies<sup>68</sup> to ensure that the institutions that they oversee are ready to handle the Year 2000 problem.<sup>69</sup> We concluded that the regulators had made significant progress in assessing the readiness of member institutions and in raising awareness on important issues such as contingency planning and testing. Regulator examinations of bank, thrift, and credit union Year 2000 efforts found that the vast majority were doing a satisfactory job of addressing the problem. Nevertheless, the regulators faced the challenge of ensuring that they are ready to take swift action to address those institutions that falter in the later stages of correction and to address disruptions caused by international and public infrastructure failures.

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<sup>67</sup>Year 2000 Computing Crisis: Action Needed to Ensure Continued Delivery of Veterans Benefits and Health Care Services (GAO/T-AIMD-99-136, April 15, 1999).

<sup>68</sup>The National Credit Union Administration, the Federal Deposit Insurance Corporation, the Office of Thrift Supervision, the Federal Reserve System, and the Office of the Comptroller of the Currency.

<sup>69</sup>Year 2000 Computing Crisis: Federal Depository Institution Regulators Are Making Progress. But Challenges Remain (GAO/T-AIMD-98-305, September 17, 1998).

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In April, we reported that the Federal Reserve System—which is instrumental to our nation’s economic well-being, since it provides depository institutions and government agencies services such as processing checks and transferring funds and securities—has effective controls to help ensure that its Year 2000 progress is reported accurately and reliably.<sup>70</sup> We also found that it is effectively managing the renovation and testing of its internal systems and the development and planned testing of contingency plans for continuity of business operations. Nevertheless, the Federal Reserve System still had much to accomplish before it is fully ready for January 1, 2000, such as completing validation and implementation of all of its internal systems and completing its contingency plans.

In addition to the domestic banking and finance sector, large U.S. financial institutions have financial exposures and relationships with international financial institutions and markets that may be at risk if these international organizations are not ready for the date change occurring on January 1, 2000. In April, we reported<sup>71</sup> that foreign financial institutions had reportedly lagged behind their U.S. counterparts in preparing for the Year 2000 date change. Officials from four of the seven large foreign financial institutions we visited said they had scheduled completion of their Year 2000 preparations about 3 to 6 months after their U.S. counterparts, but they planned to complete their efforts by mid-1999 at the latest. Moreover, key international market supporters, such as those that transmit financial messages and provide clearing and settlement services, told us that their systems were ready for the date change and that they had begun testing with the financial organizations that depended on these systems. Further, we found that seven large U.S. banks and securities firms we visited were taking actions to address their international risks. In addition, U.S. banking and securities regulators were also addressing the international Year 2000 risks of the institutions that they oversee.

With respect to the insurance industry, in March, we concluded that insurance regulator presence regarding the Year 2000 area was not as

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<sup>70</sup>Year 2000 Computing Crisis: Federal Reserve Has Established Effective Year 2000 Management Controls for Internal Systems Conversion (GAO/AIMD-99-78, April 9, 1999).

<sup>71</sup>Year 2000: Financial Institution and Regulatory Efforts to Address International Risks (GAO/GGD-99-62, April 27, 1999).



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strong as that exhibited by the banking and securities industry.<sup>72</sup> State insurance regulators we contacted were late in raising industry awareness of potential Year 2000 problems, provided little guidance to regulated institutions, and failed to convey clear regulatory expectations to companies about Year 2000 preparations and milestones. Nevertheless, the insurance industry is reported by both its regulators and by other outside observers to be generally on track to being ready for 2000. However, most of these reports are based on self-reported information and, compared to other financial regulators, insurance regulators' efforts to validate this information generally began late and were more limited.

In a related report in April,<sup>73</sup> we stated that variations in oversight approaches by state insurance regulators also made it difficult to ascertain the overall status of the insurance industry's Year 2000 readiness. We reported that the magnitude of insurers' Year 2000-related liability exposures could not be estimated at that time but that costs associated with these exposures could be substantial for some property-casualty insurers, particularly those concentrated in commercial-market sectors. In addition, despite efforts to mitigate potential exposures, the Year 2000-related costs that may be incurred by insurers would remain uncertain until key legal issues and actions on pending legislation were resolved.

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## Transportation Sector

A key component to the nation's transportation sector are airports. This January we reported on our survey of 413 airports.<sup>74</sup> We found that while the nation's airports were making progress in preparing for the year 2000, such progress varied. Of the 334 airports responding to our survey, about one-third reported that they would complete their Year 2000 preparations by June 30, 1999. The other two-thirds either planned on a later date or failed to estimate any completion date, and half of these airports did not have contingency plans for any of 14 core airport functions. Although most of those not expecting to be ready by June 30 are small airports, 26 of them are among the nation's 50 largest airports.

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<sup>72</sup>Insurance Industry: Regulators Are Less Active in Encouraging and Validating Year 2000 Preparedness (GAO/T/GGD-99-56, March 11, 1999).

<sup>73</sup>Year 2000: State Insurance Regulators Face Challenges in Determining Industry Readiness (GAO/GGD-99-87, April 30, 1999).

<sup>74</sup>Year 2000 Computing Crisis: Status of Airports' Efforts to Deal With Date Change Problem (GAO/RCED/AIMD-99-57, January 29, 1999).

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## International

In addition to the risks associated with the nation's key economic sectors, one of the largest and most uncertain area of risk relates to the global nature of the problem. Table 3 summarizes the results of the Department of State's Office of the Inspector General's analysis of "Y2K Host Country Infrastructure" assessments submitted by U.S. embassies in 161 countries (98 from the developing world, 24 from former Eastern bloc countries and the New Independent States, and 39 from industrialized countries). The following table shows that about half of the countries are reported to be at medium or high risk of having Year 2000-related failures in the key areas of telecommunications, transportation, and energy. While a smaller number of countries were reported at medium or high risk in the finance and water sectors, at least one-third of the countries fell into the medium or high risk categories.

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**Table 3: Risk of Year 2000-Related Sector Failures in 161 Countries**

Risk level	Finance	Telecommunications	Transportation	Energy	Water
High	11	35	18	26	7
Medium	43	56	61	64	52
Low	107	70	82	71	102

Source: Year 2000 Computer Problem: Global Readiness and International Trade (Statement of the Department of State's Inspector General before the Senate Special Committee on the Year 2000 Technology Problem, July 22, 1999).

The Department of State Inspector General concluded that the global community is likely to experience varying degrees of Year 2000-related failures—from mere annoyances to failures in key infrastructure systems—in every sector, region, and economic level. In particular, the Inspector General testified on July 22, 1999, that

- industrialized countries were generally at low risk of having Year 2000-related infrastructure failures, although some of these countries were at risk;
- developing countries were lagging behind and were struggling to find the financial and technical resources needed to resolve their Year 2000 problems; and
- former Eastern bloc countries were late in getting started and were generally unable to provide detailed information on their Year 2000 programs.

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The impact of Year 2000-induced failures in foreign countries could adversely affect the United States, particularly as it relates to the supply chain. To address the international supply chain issue, in January 1999 we suggested<sup>75</sup> that the President's Council on Year 2000 Conversion prioritize trade and commerce activities that are critical to the nation's well-being (e.g., oil, food, pharmaceuticals) and, working with the private sector, identify options for obtaining these materials through alternative avenues in the event that Year 2000-induced failures in the other country or in the transportation sector prevent these items from reaching the United States. In commenting on this suggestion, the Chair stated that the Council had (1) worked with federal agencies to identify sectors with the greatest dependence on international trade, (2) held industry roundtable discussions with the pharmaceutical and food supply sectors, and (3) hosted bilateral and trilateral meetings with the Council's counterparts in Canada and Mexico—the United States' largest trading partners.

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In summary, while improvement has been shown, much work remains at the national, federal, state, and local levels to ensure that major service disruptions do not occur. Specifically, remediation must be completed, end-to-end testing performed, and business continuity and contingency plans developed. Similar actions remain to be completed by the nation's key sectors. Accordingly, whether the United States successfully confronts the Year 2000 challenge will largely depend on the success of federal, state, and local governments, as well as the private sector working separately and together to complete these actions. Accordingly, strong leadership and partnerships must be maintained to ensure that the needs of the public are met at the turn of the century.

Mr. Chairman, this concludes my statement. I would be happy to respond to any questions that you or other members of the Subcommittee may have at this time.

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## Contact

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<sup>75</sup>GAO/T-AIMD-99-50, January 20, 1999.

# Federal High-Impact Programs and Lead Agencies

Agency	Program
Department of Agriculture	Child Nutrition Programs
Department of Agriculture	Food Safety Inspection
Department of Agriculture	Food Stamps
Department of Agriculture	Special Supplemental Nutrition Program for Women, Infants, and Children
Department of Commerce	Patent and trademark processing
Department of Commerce	Weather Service
Department of Defense	Military Hospitals
Department of Defense	Military Retirement
Department of Education	Student Aid
Department of Energy	Federal electric power generation and delivery
Department of Health and Human Services	Child Care
Department of Health and Human Services	Child Support Enforcement
Department of Health and Human Services	Child Welfare
Department of Health and Human Services	Disease monitoring and the ability to issue warnings
Department of Health and Human Services	Indian Health Service
Department of Health and Human Services	Low Income Home Energy Assistance Program
Department of Health and Human Services	Medicaid
Department of Health and Human Services	Medicare
Department of Health and Human Services	Organ Transplants
Department of Health and Human Services	Temporary Assistance for Needy Families
Department of Housing and Urban Development	Housing loans (Government National Mortgage Association)
Department of Housing and Urban Development	Section 8 Rental Assistance
Department of Housing and Urban Development	Public Housing
Department of Housing and Urban Development	FHA Mortgage Insurance
Department of Housing and Urban Development	Community Development Block Grants
Department of the Interior	Bureau of Indian Affairs programs
Department of Justice	Federal Prisons
Department of Justice	Immigration
Department of Justice	National Crime Information Center
Department of Labor	Unemployment Insurance
Department of State	Passport Applications and Processing
Department of Transportation	Air Traffic Control System
Department of Transportation	Maritime Safety Program
Department of the Treasury	Cross-border Inspection Services
Department of Veterans Affairs	Veterans' Benefits
Department of Veterans Affairs	Veterans' Health Care

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**Appendix I  
Federal High-Impact Programs and Lead  
Agencies**

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<b>Agency</b>	<b>Program</b>
Federal Emergency Management Agency	Disaster Relief
Office of Personnel Management	Federal Employee Health Benefits
Office of Personnel Management	Federal Employee Life Insurance
Office of Personnel Management	Federal Employee Retirement Benefits
Railroad Retirement Board	Retired Rail Workers Benefits
Social Security Administration	Social Security Benefits
U.S. Postal Service	Mail Service

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