

October 2007

INFLUENZA PANDEMIC

Opportunities Exist to Address Critical Infrastructure Protection Challenges That Require Federal and Private Sector Coordination





Highlights of [GAO-08-36](#), a report to congressional requesters

Why GAO Did This Study

An outbreak of pandemic flu would require close cooperation between the public and private sectors to ensure the protection of our nation's critical infrastructure, such as drinking water and electricity. Because over 85 percent of the nation's critical infrastructure is owned and operated by the private sector, it is vital that both sectors effectively coordinate to successfully protect these assets. The Department of Homeland Security (DHS) is responsible for coordinating a national protection strategy and government and private sector councils have been created as a collaborating tool.

GAO was asked to assess how the federal and private sectors are working together at a national level to protect the nation's critical infrastructure in the event of a pandemic, the challenges they face, and opportunities for addressing these challenges. GAO reviewed 5 of the 17 critical infrastructure sectors. These 5 sectors are energy (electricity), food and agriculture, telecommunications, transportation (highway and motor carrier), and water.

What GAO Recommends

GAO recommends that the Secretary of Homeland Security lead efforts to encourage the councils to consider and address the range of identified challenges for a potential influenza pandemic. DHS concurred with this recommendation and generally agreed with the report.

To view the full product, including the scope and methodology, click on [GAO-08-36](#). For more information, contact Bernice Steinhardt at (202) 512-6806 or steinhardt@gao.gov.

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Opportunities Exist to Address Critical Infrastructure Protection Challenges That Require Federal and Private Sector Coordination

What GAO Found

Federal agencies and the private sector have worked together to (1) develop general pandemic preparedness guidance, such as checklists for continuity of business operations during a pandemic; (2) identify the number of critical workers essential to the critical infrastructure sectors' operations during a pandemic; and (3) conduct pandemic preparedness presentations, workshops, forums, and some exercises. In some instances, the federal and private sectors are working together through sector-specific and cross-sector councils as the primary means of coordinating government and private sector efforts at the national level to protect critical infrastructure. Federal and private sector representatives from the councils in the five sectors reviewed told GAO that they have taken some initial pandemic preparedness actions within their respective sectors. Additionally, each of the sectors is collaborating with DHS and other sector-specific agencies, such as the Environmental Protection Agency, to develop sector-specific pandemic guidance.

The federal government and the private sector face several challenges that may impede their efforts to protect the nation's critical infrastructure in the event of a pandemic. Maintaining a focus on pandemic planning efforts is difficult in the face of more immediate priorities, such as responding to outbreaks of foodborne illnesses. Private sector officials are concerned about the lack of clarity on the federal versus state roles in areas such as state border closures and pandemic vaccine distribution. They are also concerned about receiving consistent messages from various government entities providing pandemic-related information. Another challenge is identifying and developing strategies for addressing crucial cross-sector interdependencies that will be important for the continued operation of the nation's economy and society during a pandemic, such as the transportation sector to deliver critical supplies. Obtaining needed investments for training and infrastructure and potential legal and regulatory issues also present challenges.

Increased use of the critical infrastructure coordinating councils could help address issues relating to a pandemic. These councils bring together multiple sectors and levels of governments, linking activities between these entities. Despite their potential, the councils' efforts thus far have focused mostly on the development of sector-specific plans to address all hazards. With regard to a pandemic specifically, DHS has used the councils primarily to share information across sectors and government levels rather than to address many of the identified challenges. Because an outbreak could begin at any time, there may be insufficient time and resources to adequately plan and prepare their members for changes in how their sectors may operate and continue to provide essential services during a pandemic. DHS officials acknowledge that they could encourage greater federal and private sector use of the councils and that the councils could be used to initiate and facilitate pandemic preparedness initiatives. DHS, because it is responsible for coordinating national critical infrastructure protection efforts, is well positioned to lead efforts to use these councils to help address these challenges.

Contents

Letter		1
	Results in Brief	4
	Background	7
	Federal and Private Sectors Are Working Together on Initial Pandemic Preparedness Activities	12
	Federal Government and Private Sector Face Challenges in Coordinating Preparedness for an Influenza Pandemic in Critical Infrastructure Sectors	17
	Conclusions	30
	Recommendation for Executive Action	31
	Agency Comments	31
Appendix I	Objectives, Scope, and Methodology	33
Appendix II	Government Sector Council Membership by Selected Sector as of September 4, 2007	36
Appendix III	Private Sector Council Membership by Selected Sector as of September 4, 2007	38
Appendix IV	Comments from the Department of Homeland Security	42
Appendix V	GAO Contact and Staff Acknowledgments	44
Related GAO Products		45

Abbreviations

BENS	Business Executives for National Security
CDC	Centers for Disease Control and Prevention
CIPAC	Critical Infrastructure Partnership Advisory Council
DHS	Department of Homeland Security
DOE	Department of Energy
DOT	Department of Transportation
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
HHS	Department of Health and Human Services
HSC	Homeland Security Council
HSPD-7	Homeland Security Presidential Directive 7
NIAC	National Infrastructure Advisory Council
NIPP	National Infrastructure Protection Plan
PCIS	Partnership for Critical Infrastructure Security
Y2K	Year 2000 computer conversion

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United States Government Accountability Office
Washington, DC 20548

October 31, 2007

The Honorable Judd Gregg
Ranking Member
Committee on the Budget
United States Senate

The Honorable Bennie G. Thompson
Chairman
Committee on Homeland Security
House of Representatives

The government's response to recent disasters, such as Hurricanes Katrina and Rita, and past national challenges, such as the Year 2000 computer conversion (Y2K), which posed significant threats to the nation's critical infrastructure, have shown the importance of coordination and collaboration within and across both government and nongovernmental organizations to respond to catastrophic events such as an influenza pandemic. An influenza pandemic is a real and significant threat facing the United States and the world. There is widespread agreement that it is not a question of if but when such a pandemic will occur. The issues associated with the preparation for and responses to a pandemic flu are similar to those for any other type of disaster or hazard. However, a pandemic poses some unique challenges. Unlike many catastrophic events, an influenza pandemic will not damage power lines, banks, or computer networks; it will ultimately threaten all critical infrastructure by removing essential personnel from the workplace for weeks or months. In a severe pandemic, absences attributable to illness, the need to care for ill family members, and fear of infection may, according to the Centers for Disease Control and Prevention (CDC), reach 40 percent during the peak weeks of a community outbreak. Moreover, an influenza pandemic is likely to occur in several waves, each lasting months, with outbreaks occurring simultaneously across the country.

An outbreak of influenza pandemic will require close cooperation between the private and public sectors at all levels of government to ensure the protection of our nation's critical infrastructure, such as drinking water, electricity, and telecommunications. Because over 85 percent of the nation's critical infrastructure is owned and operated by the private sector, the federal government has a limited ability to directly influence appropriate preparedness and mitigation actions. Unless the private sector

takes actions to prevent, protect against, respond to, and recover from an act of terrorism or natural disaster, such as a pandemic, the country will be poorly prepared to deal with these possibilities. Therefore, it is vital that the public and private sectors form effective partnerships to successfully protect the nation's critical infrastructure. Such partnerships will be key in helping ensure the continuing delivery of critical public and private services.

A key player in these partnerships is the Department of Homeland Security (DHS). The Homeland Security Act of 2002 created DHS and gave it wide-ranging responsibilities for leading and coordinating the overall national critical infrastructure protection effort.¹ Under the Homeland Security Presidential Directive 7 (HSPD-7), the Secretary of Homeland Security, among other responsibilities, is to establish uniform policies, approaches, guidelines, and methodologies to help ensure that critical infrastructures within and across the 17 designated sectors are protected, and is to use a risk management approach to coordinate protection efforts.² The Homeland Security Act also required DHS to develop a comprehensive national plan for securing the nation's critical infrastructure. In response, DHS developed a *National Infrastructure Protection Plan* (NIPP). The NIPP describes a set of sector-specific and cross-sector coordinating councils as the primary means of bringing together the government and private sectors to protect critical infrastructure. HSPD-7 further defines critical infrastructure protection responsibilities for DHS and those federal agencies given responsibility for particular industry sectors, such as transportation, energy, and telecommunications, known as sector-specific agencies. DHS serves as the sector-specific agency for 10 of the sectors: information technology; telecommunications; transportation systems;

¹Pub. L. No. 107-296, 116 Stat. 2135 (Nov. 25, 2002).

²The 17 critical infrastructure and key resource sectors are: food and agriculture; banking and finance; chemical; commercial facilities; commercial nuclear reactors, materials and water; dams; defense industrial base; drinking water and water treatment systems; emergency services; energy; government facilities; information technology; national monuments and icons; postal and shipping; public health and healthcare; telecommunications; and transportation systems. *Critical infrastructure* are systems and assets, whether physical or virtual, so vital to the United States that their incapacity or destruction would have a debilitating impact on national security, national economic security, and national public health or safety, or any combination of those matters. *Key resources* are publicly or privately controlled resources essential to minimal operations of the economy or government, including individual targets whose destruction would not endanger vital systems but could create a local disaster or profoundly damage the nation's morale or confidence. For purposes of this report, we will use the term critical infrastructure to also include key resources.

chemical; emergency services; commercial nuclear reactors, materials and waste; postal and shipping; dams; government facilities; and commercial facilities.

In response to your interest in how the federal and private sectors are coordinating their efforts to prepare for an influenza pandemic, we assessed (1) how the federal government is working with the private sector to ensure protection of the nation's critical infrastructure in the event of an influenza pandemic, particularly in the transportation (highway and motor carrier), food and agriculture, water, energy (electricity), and telecommunications sectors, and (2) the challenges facing the federal government and private sector in coordinating protection of the nation's critical infrastructure in the event of an influenza pandemic, particularly in these same five sectors, and what the federal government could do to help to address these challenges.

To address these objectives, we reviewed and analyzed critical infrastructure protection regulations, plans, and guidance, including the NIPP; the *National Strategy for Pandemic Influenza* (the National Strategy); the *National Strategy for Pandemic Influenza Implementation Plan* (the Implementation Plan); the *Pandemic Influenza: Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources*; and the Homeland Security Council's (HSC) 6-month and 1-year summary reports on the Implementation Plan. We also interviewed officials from DHS and the Department of Health and Human Services' (HHS) CDC with responsibility for leading and coordinating the overall national critical infrastructure protection effort and for working with the private sector to prepare for a possible pandemic.

We reviewed 5 of the 17 critical infrastructure sectors in depth. (See app. II for government council membership by sector and app. III for private sector council membership by sector.) These sectors were selected because, in addition to the public health and healthcare sector,³ they would provide the services most basic to the continued operation of the economy and society during an emergency such as a pandemic. We also gathered documentation from and conducted interviews with representatives of each of the federal agencies with critical infrastructure

³GAO has engagements under way to examine the public health and healthcare aspects of preparing for and responding to a pandemic, including efforts looking at (1) global strategies to forestall pandemic influenza, (2) HHS's pandemic influenza planning efforts, and (3) medical surge capacity and capability for emergency preparedness.

protection responsibility for these 5 sectors: DHS's Transportation Security Administration (highway and motor carrier); the National Communications System (telecommunications); the Department of Agriculture and HHS's Food and Drug Administration (FDA) (food and agriculture); the Environmental Protection Agency (EPA) (water); and the Department of Energy (DOE) (electricity). In addition, we interviewed representatives from the Department of Transportation (DOT) (highway and motor carrier). We also gathered documentation from and interviewed representatives of companies and associations in each of the 5 sectors as well as representatives from business trade associations, such as the U.S. Chamber of Commerce (Chamber), the Business Executives for National Security (BENS), the Business Roundtable (Roundtable), and the Center for Health Transformation. Because the focus of our work was on the pandemic planning and coordinating efforts between the federal government and the private sector at a national level, we did not examine individual state, local, or private sector initiatives, such as private sector continuity of operations plans, unless they were connected with federal initiatives.

We conducted our work from June 2006 through September 2007 in accordance with generally accepted government auditing standards. Detailed information on our objectives, scope, and methodology is in appendix I. A list of related GAO products is included at the end of this report.

Results in Brief

The federal government and private sector are working together to protect the nation's critical infrastructure in the event of an influenza pandemic. Federal agencies—particularly DHS and CDC—and the private sector have worked together at the national level to (1) develop general pandemic preparedness guidance, such as checklists for continuity of business operations during a pandemic; (2) identify the number of critical workers essential to the critical infrastructure sectors' operations during a pandemic; and (3) conduct pandemic preparedness presentations, workshops, forums, and some exercises. In some instances the federal and private sectors are working together through a set of councils as the primary means of coordinating government and private sector efforts to protect critical infrastructure. These councils are part of DHS's framework for a coordinated national approach to address the full range of physical, cyber, and human threats and vulnerabilities, including a potential pandemic, that pose risks to the nation's critical infrastructure. Federal and private officials from the councils in the five sectors we reviewed told us that while their efforts within these councils have mostly been focused

on information sharing and developing sector-specific plans required by the NIPP to enhance protection and resiliency in an all-hazards environment, they have also taken some initial pandemic preparedness actions within their respective sectors. For example, the Communications Sector Coordinating Council has established a working group to identify and address telecommuting issues for a pandemic. In addition, the sectors are collaborating with DHS and other sector-specific agencies, such as EPA, to develop additional pandemic planning guidelines for each sector.

The federal and private sector representatives we interviewed identified several key challenges they face in working together and coordinating federal and private sector efforts to protect the nation's critical infrastructure in the event of an influenza pandemic. The following challenges extend across the critical infrastructure sectors and addressing them will require coordinated federal and private sector efforts.

- Maintaining a focus on pandemic planning efforts due to the uncertainty of when a pandemic may occur and the emergence of other more immediate sector priorities, such as responding to outbreaks of foodborne illnesses.
- Lack of clarity on the federal and state roles and responsibilities in areas such as state border closures and pandemic influenza vaccine distribution.
- Multiple and potentially confusing or conflicting messages coming from the many agencies, at all levels of government, that are responsible for providing current and ongoing pandemic communications and information.
- Identifying and developing strategies for addressing the crucial cross-sector interdependencies that will be important for the continued operation of our nation's economy and the free flow of goods and services during a pandemic, such as the electricity and telecommunications capabilities that are necessary to support all the other sectors.
- Additional investments for training and infrastructure and potential legal and regulatory issues—which the federal government and the private sector have not yet fully addressed.

While some discussion has occurred, there are opportunities to further address these issues through the increased federal and private sector use of the sector-specific and cross-sector coordinating councils. Despite the potential of these entities, the councils have mostly focused their efforts to date on the development of sector-specific plans to address all hazards

rather than on pandemic-specific activities. With regard to pandemic activities, DHS has used the councils primarily to share information across sectors and government levels, but not to address many of the challenges presented above because DHS needs to more fully involve the federal and private sectors to reach over and beyond traditional sector boundaries to help solve problems that may affect multiple as well as individual sectors. The sector-specific and cross-sector council structure would provide a useful vehicle for accomplishing such a goal. Because an outbreak could begin at any time, there may be insufficient time and resources to adequately plan and prepare their members for changes in how their sectors may operate during a pandemic unless these discussions take place now. Since DHS is responsible for coordinating national critical infrastructure protection efforts and is the lead agency for over half of the critical infrastructure sectors, it is well positioned to lead federal and private sector efforts, using these existing coordinating mechanisms, to help identify and address the challenges involved in preparing for a potential influenza pandemic.

To help the nation better protect critical infrastructure in the event of an influenza pandemic and to build on the progress made thus far, we recommend that the Secretary of Homeland Security, working with sector-specific agencies, lead efforts to encourage the government and private sector members of the councils to consider and help address the challenges that will require coordination between the federal and private sectors involved with critical infrastructure and within the various sectors in advance of, as well as during, a pandemic.

We provided a draft of this report to DHS for its review and comment. DHS provided written comments, which are reprinted in appendix IV. In commenting on the draft report, DHS generally agreed with the contents of the report and concurred with our recommendation. We also provided a draft of this report to federal and private sector representatives of the five sectors we reviewed. FDA (HHS); DOE; DOT; and representatives of the Partnership for Critical Infrastructure Security (PCIS) and the Electricity and Highway and Motor Carrier Sector Coordinating Council provided technical comments, which we incorporated as appropriate. Representatives of the Food and Agriculture Coordinating Council and TSA informed us that they had no comments on the draft report.

Background

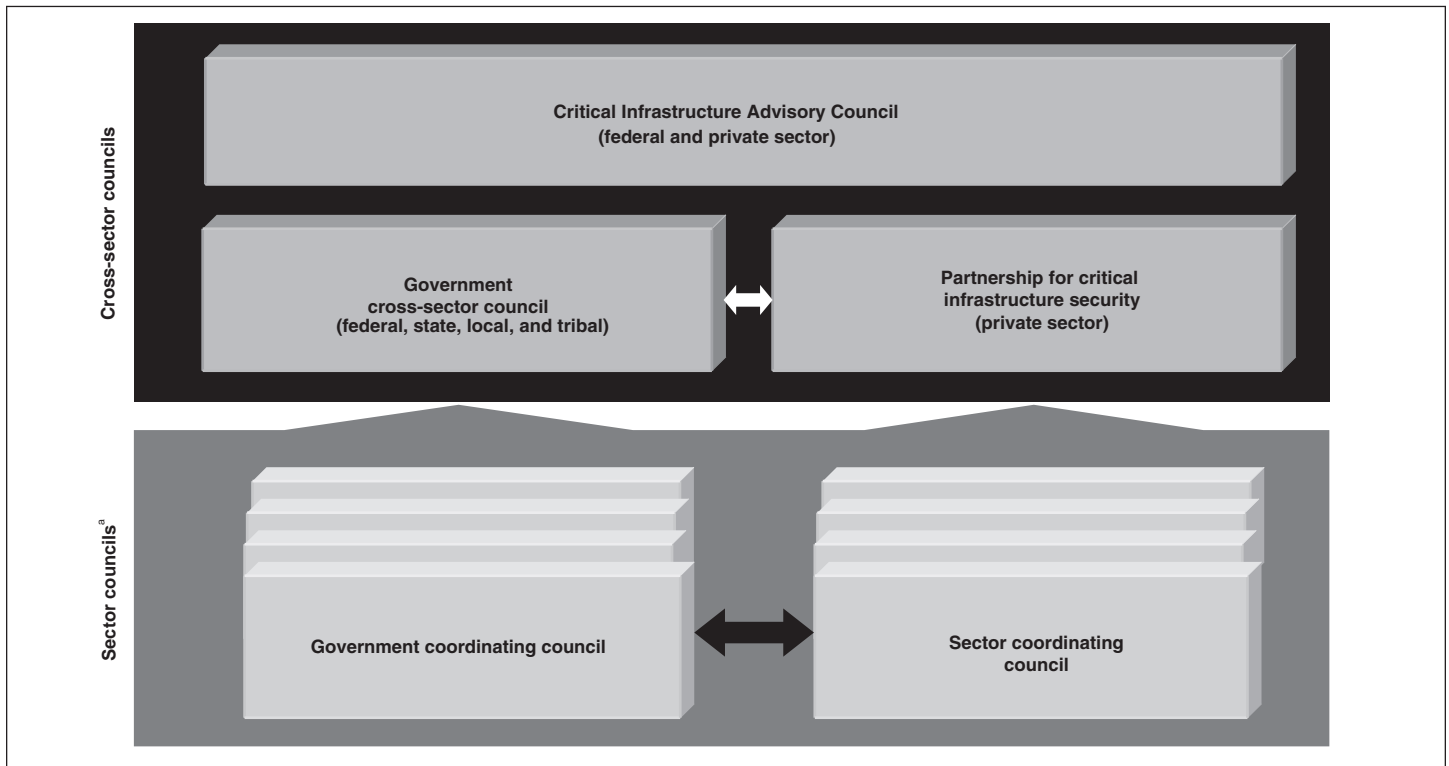
Sector-Specific Agencies Are to Coordinate Protection Efforts and Develop Plans

The protection of the nation's critical infrastructure against natural and man-made catastrophic events has been a concern of the federal government for over a decade. Several federal policies address the importance of coordination between the government and the private sector in critical infrastructure protection. HSPD-7, issued in December 2003, defined responsibilities for DHS, the sector-specific federal agencies that are responsible for overseeing the 17 specific critical infrastructure sectors, and other departments and agencies. HSPD-7 makes DHS responsible for, among other things, coordinating national critical infrastructure protection efforts and establishing uniform policies, approaches, guidelines, and methodologies for integrating federal infrastructure protection and risk management activities within and across sectors. Sector-specific agencies are responsible for infrastructure protection activities in their assigned sectors, which include coordinating and collaborating with relevant federal agencies, state and local governments, and the private sector to carry out sector protection responsibilities. DHS developed and issued its NIPP in June 2006. The NIPP—along with more detailed guidance issued by DHS—required the individual sector-specific agencies, working with relevant government and private sector representatives, to submit sector-specific plans to DHS by the end of December 2006 detailing the application of the NIPP's core elements to each of their respective sectors. These individual plans, which DHS released on May 21, 2007, are to establish the means by which the sectors will identify critical assets within the sector, assess risks of terrorist attacks or other hazards, assess and prioritize those which have national significance, and develop protective measures for the sector.

Sector-Specific and Cross-Sector Councils Govern Federal and Private Sector Critical Infrastructure Protection Efforts

The NIPP relies on a set of sector-specific and cross-sector councils as the primary means of coordinating government and private sector critical infrastructure protection efforts, as seen in figure 1.

Figure 1: Cross-Sector and Sector-Specific Councils for Critical Infrastructure Protection



Source: GAO analysis of DHS information.

^aEach of the 17 critical infrastructure sectors has a government coordinating council and a sector coordinating council.

Under this framework, each of the 17 critical infrastructure sectors has both a government council and a private sector council to address sector-specific planning and coordination. DHS provides guidance, tools, and support to enable these groups to work together to carry out their respective roles and responsibilities. The councils are to work in tandem to create the context, framework, and support for coordination and information-sharing activities required to implement and sustain that sector’s critical infrastructure protection efforts. These councils create the structure through which representative groups from all levels of government and the private sector can collaborate in planning and implementing efforts to protect critical infrastructure.

Government coordinating councils are to coordinate strategies, activities, policies, and communications across government entities within each sector. DHS chairs the government council for sectors where it is the

sector-specific agency. In the other sectors, DHS serves as co-chair with the designated sector-specific agency. Private sector councils are encouraged under the NIPP to be the principal entities for coordinating with the government on a wide range of critical infrastructure protection activities and issues. Under the NIPP, critical asset owners and operators are encouraged to be involved in the creation of private sector councils that are self-organized and self-governed, with a spokesperson designated by the sector membership.⁴ Specific membership can vary from sector to sector, but is supposed to be representative of a broad base of owners, operators, associations, and other entities—both large and small—within the sector.⁵ We reported in October 2006 on the extent to which these councils have been established, and we noted that one of the factors assisting the formation of the government and sector councils was the existence of long-standing working relationships within the sectors and with the federal agencies that regulate them. We found that the more mature councils, such as banking and finance and telecommunications, were able to focus on strategic issues, such as recovering after disasters, while the newer councils—including public health and healthcare and commercial facilities—were focusing on getting organized.⁶

The NIPP also identified cross-sector councils that are to promote coordination, communications, and the sharing of key practices across sectors. On the government side, the government cross-sector council is composed of two subcouncils: (1) the NIPP Federal Senior Leadership Council, composed of representatives of each of the sector-specific agencies, that is to enhance communication and coordination between and among these agencies and (2) the State, Local, and Tribal Government Coordinating Council—composed of state, local, and tribal homeland security advisors—that is to serve as a forum for coordination across these jurisdictions on protection guidance, strategies, and programs. On the private sector side, the PCIS, composed of one or more members and

⁴Owners and operators of these assets include private sector entities and, in some cases, state and local governments.

⁵According to DHS guidance, government agencies may suggest the inclusion of various parts of a sector but it is the responsibility of each private sector coordinating council to identify the sector's boundaries, establish the criteria for membership, seek broad participation and representation of the diversity of the sector, and establish the governance, business case, and work process of the sector's coordinating council.

⁶GAO, *Critical Infrastructure Protection: Progress Coordinating Government and Private Sector Efforts Varies by Sectors' Characteristics*, [GAO-07-39](#) (Washington, D.C.: Oct. 16, 2006).

alternates from each of the sector councils, is to, among other things, provide senior-level, cross-sector strategic coordination through partnership with DHS and the sector-specific agencies and to identify and disseminate protection best practices across the sectors. Another cross-sector council, the Critical Infrastructure Partnership Advisory Council (CIPAC), created in 2006 by DHS, provides the framework for members of the government and private sector councils to engage in intragovernmental and public-private cooperation, information sharing, and engagement across the entire range of critical infrastructure protection activities. CIPAC, which has been exempted from the requirements of the Federal Advisory Committee Act,⁷ is a nondecisional body and includes both private sector and government members drawn from both the government and private sector-specific councils. An additional council, the National Infrastructure Advisory Council (NIAC), was created by the President in 2001 to support a coordinated effort by the public and private sectors to advise the President through the Secretary of Homeland Security on issues related to security of the nation's critical infrastructure. NIAC, whose members are appointed by the President from the private sector as well as from state and local government, is also tasked with advising the federal government lead agencies that have critical infrastructure responsibilities.

National Strategy and Implementation Plan Articulate Importance of Federal Coordination with the Private Sector and Others

Government pandemic planning efforts are part of an all-hazards preparedness strategy that recognizes that emergency prevention, protection, response, and recovery can be applied to numerous disaster scenarios, both natural and man-made. However, an influenza pandemic has unique features that may require additional or different preparedness and planning processes since it would affect the workforce rather than physical assets and could come in waves, each lasting weeks or months. To address the threat of an influenza pandemic, the President's HSC issued two planning documents. The first of these, the National Strategy, was issued in November 2005 and is intended to provide a high-level overview of the approach that the federal government will take to prepare for and

⁷The Federal Advisory Committee Act (FACA) (codified at 5 U.S.C. App. 2) was enacted, in part, to control the advisory committee process and to open to public scrutiny the manner in which government agencies obtain advice from private individuals and groups. See 648 F. Supp. 1353, 1358-59 (D.D.C. 1986). Pursuant to authority conferred by the Homeland Security Act, 6 U.S.C. § 451, DHS established the CIPAC as a FACA-exempt body to support the free flow of information and the need for regular, interactive discussions concerning threats and vulnerabilities. See 71 *Fed. Reg.* 14,930 (Mar. 24, 2006).

respond to an influenza pandemic. The National Strategy recognizes that preparing for and responding to a pandemic cannot be viewed as a purely federal responsibility, stating that in addition to the federal government, states and communities, the private sector, individual citizens, and global partnerships all play a role in addressing the pandemic threat. Among other things, it calls for the federal government to provide guidance to the private sector and critical infrastructure entities in their role in a pandemic response, and considerations necessary to maintain essential services and operations. According to the National Strategy, movement of essential personnel, goods, and services and maintenance of critical infrastructure are necessary during an outbreak of influenza pandemic that could span months in any given community. It also states that the private sector and critical infrastructure entities must respond in a manner that allows them to maintain the essential elements of their operations for a prolonged period of time, in order to prevent severe disruption of life in U.S. communities. To ensure this, the National Strategy calls for (1) the development of coordination mechanisms across American industries to support activities during a pandemic; (2) guidance to activate contingency plans to ensure that personnel are protected, the delivery of goods and services is maintained, and sectors remain functional despite significant and sustained worker absenteeism; and (3) the establishment of partnerships within sectors to provide mutual support and maintenance of essential services during a pandemic.

The Implementation Plan was issued in May 2006. It is intended to support the broad framework and goals articulated in the National Strategy by outlining specific steps that federal departments and agencies should take to achieve these goals. According to the Implementation Plan, federal, state, and local governments; tribal nations; and the private sector have important and interdependent roles in preparing for, responding to, and recovering from a pandemic and ensuring that critical infrastructure is protected and sustained. The Implementation Plan includes 324 action items related to these requirements, responsibilities, and expectations. Since then, HSC has issued two progress reports on the implementation of the plan—a 6-month and a 1-year summary report.⁸

⁸Homeland Security Council, *National Strategy for Pandemic Influenza Implementation Plan Summary of Progress* (December 2006), and Homeland Security Council, *National Strategy for Pandemic Influenza: Implementation Plan One Year Summary* (July 2007).

Federal and Private Sectors Are Working Together on Initial Pandemic Preparedness Activities

To protect the nation's critical infrastructure in the event of an influenza pandemic, the federal and private sectors are working together to prepare for a pandemic. Multiple organizations, federal and private, have collaborated to develop guidance, identify critical employees, and hold workshops and training. To some extent, they have been working through sector-specific and cross-sector councils—that were created to bring together the government and private sector to coordinate and collaborate for critical infrastructure protection—for pandemic preparedness. The five critical infrastructure sectors we reviewed—transportation (highway and motor carrier), food and agriculture, water, energy (electricity), and telecommunications—have also taken initial preparedness steps within their respective sectors. In addition, they are working with DHS and the sector-specific agencies to develop sector-specific pandemic planning guidance.

Federal Government and Private Sector Have Taken Preliminary Actions to Prepare for a Pandemic

The federal government—particularly DHS and CDC—and the private sector have worked together, to some extent through the councils, to develop pandemic preparedness guidance and also to conduct presentations and workshops on pandemic preparedness. DHS, working collaboratively with partners in the public and private sectors, released a *Pandemic Influenza: Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources*. According to HSC's 1-year summary issued in July 2007, this business continuity guidance, tailored to national goals and capabilities and to the specific needs identified by the private sector, represented an important first step in working with the owners and operators of critical infrastructure to prepare for a potential severe pandemic outbreak. HSC's summary stated that the guide supports private sector planning by “complementing and enhancing, not replacing” existing continuity planning efforts and that DHS developed the guide to assist businesses, whose existing continuity plans generally did not include strategies to protect human health during emergencies, such as those caused by pandemic influenza. HSC's summary further explained that the guide was designed to enhance the existing private sector business continuity planning already in place. In addition to this guidance, the federal government has produced several tools for businesses of all types and sizes to assist them in planning for a pandemic. For example, CDC has issued planning guidance, including a “Business Pandemic Influenza Planning Checklist” and also a community strategy for pandemic

influenza mitigation.⁹ The community guide introduces the pandemic severity index that assigns response actions for a pandemic based on expected levels of severity. All of this pandemic guidance has been made available on www.pandemicflu.gov. Additional federal government pandemic planning efforts and related guidance for business continuity can be found at www.ready.gov.

According to HSC's summary and documents received from DHS, multiple workshops and forums, attended by more than 30 stakeholders with critical infrastructure entities, were held in 2006. During these events, essential functions and critical planning elements were identified and continuity of business operations during a pandemic were discussed. DHS officials told us that these information-sharing sessions were intended to provide practical action-oriented information to identify essential functions and critical planning elements and to assist businesses in protecting the health of employees and maintaining continuity of business operations during a pandemic. HSC's 1-year summary also states that the federal government has conducted a number of pandemic preparedness exercises that included financial institution officials, public health officials, and other relevant federal, state, and local officials.

A number of business trade associations are working to advance pandemic preparedness and response initiatives with the federal sector to protect the nation's critical infrastructure. For example, the Executive Director of the Chamber's Homeland Security Policy Division told us that the Chamber has hosted several regional business pandemic roundtables with DHS and CDC to discuss the role of business in pandemic planning and response. In addition, the Chamber has convened a pandemic planning work group to address pandemic policy issues and to provide private sector input into government strategies, and is planning legal- and human-capital-related pandemic seminars in conjunction with DHS. The Center for Health Transformation, which is a collaboration of public and private sector leaders, led a simulation with almost 100 leaders from the private and public sectors to work through an influenza pandemic exercise in March 2006. According to a center project director, the exercise looked at the consequences of such a disaster for the United States and the strategies that might best mitigate these impacts. According to documentation from the exercise, simulation participants concluded that

⁹Centers for Disease Control and Prevention, *Community Strategy for Pandemic Influenza Mitigation* (February 2007).

the effects would overwhelm the efforts of any one agency or sector and that the government will need to drive the national response strategy and engage all sectors early.

While not directed specifically toward a pandemic outbreak, two major business entities have taken steps to enhance public-private disaster response efforts. BENS is a nationwide, nonpartisan organization composed of senior business executives working together to help enhance the nation's security. In January 2007, a BENS-chartered task force issued recommendations on better integrating business resources and capabilities with those of the government's disaster response plans. According to the BENS task force chairperson, BENS did so primarily in response to the federal government's recognition of a pressing need for an integrated response capability in the aftermath of Hurricane Katrina. The report used lessons learned from Hurricane Katrina and other disasters to highlight its recommendations in three broad categories: (1) public-private collaboration, (2) public-private resource coordination, and (3) legal and regulatory environment. A BENS representative told us that its report and recommendations represent an action plan for public-private disaster response coordination, including a pandemic.¹⁰ Further, a representative of the Roundtable, an association of chief executive officers of leading U.S. companies, told us that the organization, frustrated with the lack of good government logistics to coordinate assistance during the Katrina disaster relief effort, is attempting to leverage existing capabilities of the private sector to create a more effective response to natural disasters, including an influenza pandemic. The Roundtable has created a task force to promote coordination of disaster response and recovery efforts, as well as long-term rebuilding initiatives, and also to provide tools and guides for businesses to develop a comprehensive disaster response program. In December 2006, members of the task force met with HSC and DHS officials, including the Secretary of Homeland Security, to discuss improving private-public collaboration to strengthen the nation's system for disaster preparedness and response. According to the Roundtable, the federal government and private sector representatives identified several areas for better collaboration, including the identification of needs for private sector resources, increased private sector representation in state emergency management operations, and collaboration on improved communication, technology, and supply chain logistics.

¹⁰Business Executives for National Security, *Getting Down to Business: An Action Plan for Public-Private Disaster Response Coordination* (January 2007).

Five Sectors Reviewed Are Working through Councils and Have Taken Some Actions to Prepare for a Pandemic

DHS officials from the agency's Office of Infrastructure Protection within the Directorate for National Protection and Programs, as well as federal and private sector representatives from the five critical infrastructure sector councils we interviewed, told us that they are using DHS's sector partnership framework, which consists of sector-specific and cross-sector councils, to coordinate critical infrastructure pandemic preparedness efforts. DHS's Director of the Infrastructure Programs Office, Partnership and Outreach Division, told us that the agency's role is to convene and facilitate interaction with the private sector through these councils.

The five sectors we reviewed have taken initial pandemic preparedness actions within their respective councils. According to HSC, movement of essential personnel, goods, and services and maintenance of critical infrastructure are necessary during an event that spans months in any given community, and critical infrastructure entities that provide essential services, such as food, water, electricity, and telecommunications, have a special responsibility to prepare and plan for continued operation during a pandemic. The National Strategy states that the private sector and critical infrastructure entities must respond in a manner that allows them to maintain the essential elements of their operations for a prolonged period of time, in order to prevent severe disruption of life in our communities. Much of the recent efforts of councils in the sectors we reviewed have focused on completing the sector-specific plans required by the NIPP, which are not pandemic specific. All of the five sector councils we reviewed reported that preparing these plans was their overriding priority and took a majority of their time but that they have also initiated pandemic planning efforts in their sectors.

In recognition of the pandemic threat, the five sectors we reviewed all were conducting activities to help them plan and prepare for a potential pandemic. For example, Communications Sector Coordinating Council members told us the council has established a working group to identify and address issues related to the resilience of the telecommunications sector during a pandemic (i.e., strengthening the telecommunications sector's ability to function in the event of a disaster or incident). According to the Chairperson of the Communications Sector Coordinating Council, the group is working with the National Communications System, the sector-specific agency for the telecommunications sector, to review the potential consequences of predicted, extraordinarily high

telecommuting levels during an influenza pandemic.¹¹ Specifically, the group is attempting to gauge telecommuting requirements in the event of a pandemic and has developed models to represent how users would behave in accessing the Internet, as well as models of how network infrastructure users would behave during a pandemic. As part of this effort, the National Communications System is working with industry and other sectors to develop a set of best practices for businesses regarding preparedness-related telework, as well as developing a list of preparedness activities, also for businesses, that may be useful to mitigate potential telecommunications challenges. Examples of such activities include staggering work schedules for optimal capacity and potentially providing temporary work centers where businesses could conduct operations during contingency situations.

The Electricity Sector Coordinating Council Chairperson said that the council began its pandemic planning effort in early November 2005. Shortly thereafter, the council formed a pandemic planning committee and proceeded to develop a two-page electricity sector influenza pandemic threat summary that introduced the threat, framed it for discussion, and provided general information, and an eight-page electricity sector pandemic planning, preparation, and response reference guide that it has distributed to its members. EPA officials said that EPA's Water Security Division gave a presentation on EPA's Pandemic Preparedness for the Water Sector at a meeting of the Water Sector Government Coordinating Council, which highlighted EPA's actions in response to the pandemic threat and also provided information on pandemic preparedness tools and guidance. According to the Water Sector Coordinating Council Chairperson, a number of individual utilities have developed their own pandemic planning and response guides. The Food and Agriculture Sector Coordinating Council developed a pandemic preparedness plan, which it distributed throughout the sector. Representatives from the Highway and Motor Carrier Sector Coordinating Council, which is part of the Transportation Sector Coordinating Council and one of the last private sector coordinating councils to form, said that they have recently formed a pandemic working group.

¹¹House of Representatives Homeland Security Committee, Subcommittee on Emergency Communications, Preparedness, and Response, Hearing on Leveraging the Private Sector to Strengthen Emergency Preparedness and Response, July 19, 2007.

As directed by the Implementation Plan, DHS, in collaboration with the appropriate representatives from the sector-specific councils, such as EPA, has taken steps to develop sector-specific pandemic planning guidelines. According to a DHS official with responsibility for overseeing this activity, DHS is collaborating with the appropriate government and private sector representatives to develop, evaluate, enhance, and support their respective sector's pandemic planning guidelines. The DHS official explained that these guidelines, developed jointly by the government and private sectors, extend beyond the general pandemic guidance already available and are intended to be a tactical checklist specific to each sector for pandemic planning purposes. For example, with the water sector-specific guidance, any waste water manager in the country would have the necessary information to make his or her own pandemic plan as comprehensive as possible. Documentation from DHS indicates that by September 2007, the agency had engaged 13 sectors in the development of the guidance and had draft guidelines in various phases of development.

Federal Government and Private Sector Face Challenges in Coordinating Preparedness for an Influenza Pandemic in Critical Infrastructure Sectors

A number of challenges face the federal and private sectors as they attempt to coordinate efforts to plan and prepare for a potential influenza pandemic in the critical infrastructure sectors. These include continuity of attention on pandemic preparedness and response, lack of clearly defined federal and state roles, need for consistent messages from the federal government and adequate information-sharing mechanisms within sectors, need to consider cross-sector interdependencies for a pandemic, needed investments in training and additional infrastructure capabilities, and potential legal and regulatory issues.

Federal and Private Sector Acknowledge Challenge of Sustaining Attention on the Pandemic Threat

According to federal and private sector representatives, sustaining preparedness and readiness efforts for an influenza pandemic is a major challenge. Federal and private sector officials with responsibility for pandemic planning and preparedness efforts in their sectors said they are challenged to continue and maintain these efforts primarily because of the uncertainty associated with a pandemic, limited financial and human resources, and the need to balance pandemic preparedness with other priorities.

The federal government has communicated the importance of remaining vigilant and sustaining pandemic preparedness. For example, the HSC 1-year summary states that although the visibility of avian influenza

pandemic preparedness has waned in the media, the threat of avian influenza and the potential for an influenza pandemic are still imminent. While acknowledging the uncertainty of a potential pandemic, the report reaffirms the inevitable occurrence of a pandemic at some point in the future and states that it is everyone's responsibility to remain vigilant and to continue to take the threat of a pandemic very seriously.

According to DHS's Director of the Infrastructure Programs Office, Infrastructure Partnerships Division, the critical infrastructure sector councils have not designated pandemic planning as a priority. The current Chairperson of the Food and Agriculture Sector Government Coordinating Council told us that pandemic preparedness has not been a major focus of the council, and that the council has been working on addressing issues related to the contamination of the food and agricultural system and supply. He further explained that the food and agriculture sector's all-hazards approach to emergency planning, which encompasses threats posed by terrorism as well as natural disasters, would ensure its ability to effectively meet the challenges posed by a potential pandemic. Similarly, representatives of the Communications Sector Government Coordinating Council cited the difficulty with funding pandemic preparedness efforts versus other, more immediate, organizational priorities, such as protecting against cyberattacks and their consequences. An electricity sector representative said that it is very difficult to maintain up-to-date plans and preparedness materials over time as people move, information becomes out of date, and circumstances change.

The Chairperson of the Food and Agriculture Sector Coordinating Council recognized that even though the public's interest in pandemic influenza may have waned, the private sector has fiduciary and ethical responsibilities that require continued maintenance of pandemic planning efforts even though pandemic influenza may not be a current priority of the public. Private sector representatives from the transportation (highway and motor carrier) sector said they do not see a sense of urgency in the federal government's interaction with businesses in their sector regarding pandemic preparedness efforts. They explained that they had met with officials from DOT 1 year earlier to discuss legal and regulatory concerns related to interstate transportation that could facilitate pandemic response activities, but that there have not been further discussions or resolution of the issues raised.

Private Sector Perceives a Lack of Clarity on Federal and State Roles and Responsibilities

According to the private sector council chairpersons and other representatives we interviewed, the roles and responsibilities of the federal and state governments are unclear on issues such as pandemic vaccine distribution and state border closures. Given the multitude of organizations within the federal, state, and local governments, and in the private sector, that are involved in planning and preparing for a potential influenza pandemic, it is important to ensure that the leadership, roles, responsibilities, and authorities are clear.

The National Strategy emphasizes the need for coordination across different government and private sector organizations. The Implementation Plan contains a number of critical infrastructure-related action items that involve coordinating roles and responsibilities for various government and private sector organizations, a number of which have been reported as completed by HSC. In its 1-year summary, HSC reported that at the beginning of a pandemic, the scarcity of vaccine will require the limited supply to be prioritized for distribution and administration and noted that the federal government has begun a process to revise previous interim guidance for federal, state, local, tribal, and territorial planning about which groups to target for earlier access to pandemic vaccines.

In August 2007, we reported that the National Strategy and the Implementation Plan do not specify how the leadership roles and responsibilities will work in addressing the unique characteristics of an influenza pandemic.¹² According to the Chairperson of the President's Council on the Year 2000 Conversion, one lesson learned in the government's response to the Y2K computer challenge was that the federal "facilitative" or "convener" role is key in supporting the necessary government and private sector coordination related to preparedness, and that clearly defining the government role in interacting with the private sector is necessary. We have previously reported that in a catastrophic disaster, the leadership roles, responsibilities, and lines of authority for the response at all levels must be clearly defined and effectively

¹²GAO, *Influenza Pandemic: Further Efforts Are Needed to Ensure Federal Leadership Roles and an Effective National Strategy*, [GAO-07-781](#) (Washington, D.C.: Aug. 14, 2007).

communicated to facilitate rapid and effective decision making, especially in preparing for and in the early hours and days after the event.¹³

The private sector council representatives from the sectors we reviewed told us that they were unclear regarding federal, state, and local coordination efforts related to vaccine distribution. An Electricity Sector Coordinating Council member described the federal-state coordination in this area as potentially “falling between the cracks.” A January 2007 report by NIAC on vaccine pandemic prioritization revealed that critical infrastructure owners and operators involved in its study were confused about the roles of the multiple federal, state, and local officials both now and in the future.¹⁴ NIAC’s report recommended that the federal government continue to work with critical infrastructure owners and operators to educate them on the framework detailing how, when, and in what capacity state, local, and private-sector response participants will engage the federal government before, during, and after a pandemic. The NIAC report also recommended that the federal government continue developing a clearly defined vaccine and antiviral medication distribution strategy. According to minutes from a NIAC meeting held in July 2007, the Assistant Secretary for Preparedness and Response at HHS stated that NIAC’s report and recommendations will help HHS guide vaccine and antiviral distribution plans for all 50 states and 5 United States territories.

Highway and Motor Carrier Sector Coordinating Council representatives expressed concerns to us that state governments, during an influenza pandemic, could potentially close their borders, which would have a great impact on the national highway system and hinder the delivery of essential goods and services. They explained that the federal government has yet to address these and related issues that may be relevant during the potential panic that may occur following an influenza pandemic outbreak.

¹³GAO, *Statement by Comptroller General David M. Walker on GAO’s Preliminary Observations Regarding Preparedness and Response to Hurricanes Katrina and Rita*, [GAO-06-365R](#) (Washington, D.C.: Feb. 1, 2006).

¹⁴National Infrastructure Advisory Council, *The Prioritization of Critical Infrastructure for a Pandemic Outbreak in the United States* (Jan. 16, 2007).

Private Sector Concerned about Receiving Consistent Messages and the Adequacy of Information-Sharing Mechanisms

According to several private sector representatives we interviewed, receiving consistent messages and having adequate information-sharing mechanisms remains a major challenge for federal and private sector coordination efforts. Effective communications between the federal and private sectors will be vital during a pandemic. It is essential for the federal government to be a trusted source of information, and communicating accurately and often will be necessary. Pandemic preparedness involves information sharing across all critical infrastructure sectors, government agencies, private businesses, and federal and state information sources. Because an influenza pandemic is expected to occur in multiple waves over a span of several months, effective communications networks must be sustained over time despite complications presented by a reduced workforce.

The Implementation Plan emphasizes the importance of and the need for timely, accurate, credible, and consistent information that is tailored to specific audiences. According to the Implementation Plan, this requires coordinated messaging by spokespersons across government at the local, state, tribal, and federal levels, and by our international partners. The Implementation Plan includes a number of action items directed toward enhancing communications, and in its 1-year summary, HSC reported that several of these actions have been completed. The summary states that over 150 information-sharing workshops were held with industry over the last year, particularly with stakeholders from critical infrastructure sectors. According to the HSC 1-year summary, these information-sharing sessions have provided practical, action-oriented information for identifying essential functions and critical planning elements and assisting businesses in protecting the health of employees and in maintaining continuity of businesses operating during a pandemic.

Despite these actions, the Food and Agriculture Sector Coordinating Council Chairperson stated that there remains a great need to establish viable communication links between the federal and private sectors to ensure that accurate and consistent messages are provided and received. He explained that because a potential pandemic will involve public health agencies as well as agencies with critical infrastructure responsibilities, information will be coming from numerous sources and coordination among those providing the information will be vital to ensure the consistency of information provided. The Chairperson of the Electricity Sector Coordinating Council told us that working toward a strong, single pandemic preparedness message across federal, state, and local levels of government was and would continue to be a top challenge and priority. We reported in our 2007 biennial high-risk update that the federal government

still faces formidable challenges in analyzing and disseminating key information among federal, state, local, and private partners in a timely, accurate, and useful manner.¹⁵

Several private sector representatives from the five sectors we reviewed also expressed concerns regarding the effectiveness of the councils as a medium for sharing information. Although the critical infrastructure coordinating councils are designed to allow members to freely share sensitive information, a member of the Electricity Sector Coordinating Council said that much of the information that the council members receive comes from DHS and not from the council. Representatives from DOT voiced a similar concern. They stated that the Highway and Motor Carrier Sector Coordinating Council's information-sharing efforts may not include all of the many small trucking companies that exist. They explained that as a result, small trucking companies may not be aware of pandemic planning and preparedness requirements, and that this could represent a major problem in the trucking industry because more than 90 percent of businesses in the industry are small-scale operators (fewer than 10 trucks). DHS's Director of the Partnership and Outreach Division, Office of Infrastructure Protection, agreed that effective communications with small trucking companies is a challenge. DHS officials in this office explained that there is a substantial role for outreach, communication, and education by state and local governments to keep smaller companies, in particular, properly informed. They further stated that many of the sector councils, to be truly representational, include trade associations consisting of smaller companies as members. According to the Highway and Motor Carrier Coordinating Council, the combined small carrier membership of just three of the council's member associations represent nearly 200,000 of the nation's smallest trucking companies. These trade associations are expected to act as channels of communication from the sector councils to smaller businesses, complementing the communication and information provided by general business and state and local government information and coordination.

¹⁵GAO, *High-Risk Series: An Update*, [GAO-07-310](#) (Washington, D.C.: January 2007).

Federal and Private Sector Consideration of Cross-Sector Interdependencies for an Influenza Pandemic Is a Continuing Challenge

Private sector and federal representatives cited consideration of cross-sector interdependencies as a key challenge for pandemic preparedness efforts. Crucial interdependencies exist among the five sectors that we reviewed. For example, because nearly every sector of the economy depends on telecommunications and electricity, how well those sectors can continue to provide services will affect every other critical sector. Lessons from Hurricane Katrina demonstrate how overwhelmed critical resources can become when agencies fail to adequately plan for requirements in goods and services, and to clearly communicate predisaster responsibilities to ensure that these goods and services are available when needed. Due to the interconnected nature of critical infrastructure sectors and the comprehensive challenge posed by an influenza pandemic, failing to address cross-sector interdependencies effectively could place all sectors of the nation's critical infrastructure at risk.

The Implementation Plan includes an action item that instructs DHS to map and model critical infrastructure interdependencies across and within sectors to share critical information with sectors and identify national challenges during a pandemic. The HSC 6-month status report showed this action item as complete and stated that DHS maintains a critical infrastructure modeling capability and that this capability drives the mapping of critical infrastructure interdependencies. The report also noted that an ongoing effort using these capabilities is examining the potential impact of a pandemic. HSC's 1-year summary explained that one large business invited more than 300 of its top suppliers to a pandemic preparedness workshop so it could pass along pandemic planning information and encourage each one of the attending companies to start to prepare. The summary also highlights a financial institution that "is assessing all of its vendors to determine whether or not they have pandemic plans that can support the organization's supply chain during a pandemic" and also notes that the Financial Services Sector Coordinating Council has established working groups and convenes regular meetings to discuss preparations and identify interdependencies in other critical sectors.

Coordinating councils in several sectors we reviewed identified cross-sector interdependencies, although not pandemic specific, in their sector-specific plans required by the NIPP. However, we recently reported that given the disparity in the plans, it is unclear the extent to which DHS will

be able to use the plans to identify security gaps and critical interdependencies across the sectors in order to plan future protective measures.¹⁶ As previously mentioned, DHS officials also held workshops with business and government continuity planners, operations center operators, and retail and distribution hub owners/operators where they discussed issues that cut across sectors, as well as supply chains. DHS officials also said that the planned sector-specific pandemic planning guides are expected to include a section on cross-sector dependencies to consider for a pandemic.

Additionally, federal and private sector representatives told us that some preliminary and limited discussions regarding interdependencies had occurred within sector-specific and cross-sector councils and some had taken place in other forums. For example, the Electricity Sector Coordinating Council Chairperson stated that he had participated in limited discussions in coordinating council meetings about the electricity sector's interdependencies with representatives from other sectors, such as water, telecommunications, and healthcare. Communications Government Coordinating Council representatives said that they had participated in several collaborative cross-sector meetings that considered interdependencies. On the other hand, Highway and Motor Carrier Sector Coordinating Council representatives told us that they had been involved in cross-sector discussions with the pharmaceutical industry and food and grocery representatives, but stated that they had initiated these talks through their own contacts and that they had not participated in significant discussions of cross-sector interdependencies through the sector-specific and cross-sector coordinating council structure.

Federal and Private Sector Identified Needed Investments in Training and Infrastructure

According to federal and private sector representatives in the five sectors that we reviewed, investment in private sector capabilities is necessary for businesses to prepare for and respond to an influenza pandemic. According to Communications Sector Coordinating Council members, the amount of resources required to address these issues and the inability of some businesses—particularly those that are smaller in size—to meet these needs present a challenge to pandemic preparedness. They explained that if the resource requirements for private sector preparedness are not clearly identified and addressed, businesses in the

¹⁶GAO, *Critical Infrastructure Protection: Sector Plans and Sector Councils Continue to Evolve*, GAO-07-706R (Washington, D.C.: July 10, 2007).

critical infrastructure sectors studied could potentially lack the staffing, skills, and other assets to effectively deal with an influenza pandemic.

Private and federal sector council representatives that we interviewed identified a number of areas where additional investment in private sector capabilities may be needed to prepare for and respond to a potential pandemic. The government has recognized the need for investment in private sector critical infrastructure preparedness efforts. HSC's 1-year summary states that "The scale and scope of a pandemic necessitate a dedicated effort and investment beyond typical business continuity planning." Representatives from the Electricity Sector Coordinating Council explained that additional investments in coal stockpiles might be needed to ensure that electricity producers have sufficient fuel if current supplies are exhausted during a pandemic. Federal and private sector representatives from both the Electricity and Food and Agriculture Sector Coordinating Councils told us that companies and agencies, anticipating significant workforce absenteeism in the event of pandemic, were cross-training employees to better ensure continuity of operations. Electricity sector representatives also described other types of investment. For example, one company established redundant physical facilities where multiple shifts of workers could continue operations at a temporary location during a pandemic.

DHS officials we spoke with from the National Communications System described challenges related to adequate investment in network infrastructure required to support the needs of the large telecommuting workforce and other demands that would occur during an influenza pandemic. The officials suggested that telecommunications companies have little incentive for investing in excess capacity for a pandemic that may not occur. They explained that small businesses that lack the resources and staff face even greater challenges, as they are more limited in their ability to allocate resources toward business continuity investments.

Federal and Private Sector Noted That Potential Legal and Regulatory Issues Should Be Considered in Advance of a Pandemic

Federal and private sector officials also identified potential legal and regulatory issues that could hinder the private sector's ability to adequately respond to a pandemic outbreak and provide essential services, and suggested that these issues should be considered in advance of a pandemic. Past lessons and current industry views indicate that if key legal and regulatory issues are not identified and addressed in advance of an emergency, businesses in critical infrastructure sectors may be unable to effectively prepare for and respond to an influenza pandemic.

Lessons learned from previous emergency response challenges involving critical infrastructure have highlighted the importance of addressing legal and regulatory challenges in advance of emergency response efforts as was done in the case of the Y2K challenge. For example, according to the Chairperson of the President's Council on the Year 2000 Conversion, an important aspect of the government's successful preparation for the Y2K computing challenge was the passage of legislation limiting the liability of companies engaged in preparedness actions.¹⁷ BENS reported in January 2007 that a key challenge in prior disasters, such as Hurricane Katrina involved "significant regulatory barriers" that hindered businesses' ability to execute their own continuity plans and assist in supporting their communities. For example, nearly all businesses included in the BENS study reported the permitting and credentialing process imposed by public authorities in the aftermath of Katrina as a major impediment to restoring business continuity. They said that resolving the restrictions on professionals licensed in one state from practicing in another and granting access into the disaster area for owners and businesses to inspect, repair, and reestablish their services were the key issues. The BENS report recommends that agencies with oversight and regulatory authority over the private sector need to clarify and promulgate procedures that allow the agencies to quickly implement discretionary authorities for the relaxation of regulations in the event of an emergency. The Implementation Plan contains an action item that directs DHS to "coordinate federal, state, local, and tribal efforts, including legislative and regulatory additions/changes and waivers, to develop and implement tailored support packages to address critical infrastructure systems and essential operational requirements at each phase of the pandemic." Although this action item is due to be completed in May 2007, the July 2007 HSC summary did not provide a summary of progress for this action item.

In March 2007, we reported that financial market participants are collecting information on the types of and circumstances under which regulatory relief may be needed during an outbreak of pandemic influenza. Although willing to consider regulatory relief, Securities and Exchange Commission staff indicated that market participants should not expect wide-scale waivers of important securities regulatory requirements. They said that although some form of regulatory relief would most likely be part

¹⁷Year 2000 Information and Readiness Disclosure Act, Pub. L. No. 105-271, 112 Stat. 2386 (Oct. 20, 1998), and Y2K Act, Pub. L. No. 106-37, 113 Stat. 185 (July 20, 1999).

of the process for enabling the financial system to keep operating during a pandemic, such relief should be one of the last stages in continuity planning and preparation, not the first.¹⁸ DHS's Director of the Partnership and Outreach Division, Office of Infrastructure Protection, told us that predisaster agreement on terms of relief was unreasonable, due to potentially diverse circumstances that could be encountered at the time of a crisis. The official suggested that companies that were interested in regulatory relief should discuss these issues directly with their specific regulatory agencies.

Sector council representatives in the transportation (highway and motor carrier), food and agriculture, electricity, and water sectors all expressed concerns related to legal and regulatory issues in their respective sectors. Transportation (highway and motor carrier) sector representatives stated that to facilitate response efforts, regulatory waivers related to hours of service, oversized weight restrictions, and types of fuel mix were issued during the Hurricane Katrina emergency. They said that they had previously met, post-Katrina, with officials from DOT to discuss how these types of regulatory relief could be applied in the future, but to date DOT had not responded regarding the issues. Although DOT officials noted that existing regulations already provide for relief during emergencies, sector council representatives said that there are issues that remain unaddressed by these regulatory relief provisions which they believe require further discussion.¹⁹ Representatives from the food and agriculture and water sectors told us that they may be unable to provide needed services during a pandemic outbreak while adhering to regulations requiring certified plant operators and food inspectors if, as estimated, up to 40 percent of their workforces are unable to work during a pandemic. For example, representatives from the Water Sector Coordinating Council told us that in the event of a pandemic there may not be enough certified equipment operators available. Similarly, the Food and Agriculture Sector Coordinating Council's Chairperson told us that the number of certified food inspectors may be limited during a pandemic.

¹⁸GAO, *Financial Market Preparedness: Significant Progress Has Been Made, but Pandemic Planning and Other Challenges Remain*, [GAO-07-399](#). Washington, D.C.: March 29, 2007.

¹⁹49 C.F.R. sections 390.23 and 390.25 provide automatic relief from certain truck safety regulations during an emergency, including hours of service for any motor carrier and driver providing emergency relief.

Sector-Specific and Cross-Sector Coordinating Councils Could Be Used More to Address These Challenges

There are opportunities to build on the actions already taken to further address the identified challenges through increased federal and private sector use of the sector-specific and cross-sector coordinating councils. DHS recognized that critical infrastructure owners and operators should be involved in the critical infrastructure decision-making processes and that a real partnership between these individuals and the federal government was needed. As a result, DHS created a framework for the federal and private sectors to interact and to establish the necessary level of public-private cooperation needed to protect the nation's critical infrastructure. Although DHS has established this structure for collaboration among the federal and private sectors involved with critical infrastructure, to date its activities have had a limited focus on pandemic preparedness.

PCIS, which is composed of private sector leaders, and CIPAC, which is composed of government and private sector leaders, provide a framework for owner and operator members of the government and private sector councils to engage in intragovernmental and public-private cooperation across the entire range of critical infrastructure protection activities. According to DHS, these councils have been used primarily to distribute information across sectors and government levels but not to address many of the identified challenges related to an influenza pandemic. We reported in October 2006 that the councils could utilize their existing relationships to help develop a strategic focus, such as planning for an influenza pandemic.²⁰ In particular, because they bring together public and private sector critical infrastructure leaders across the various sectors and levels of government, PCIS and CIPAC can aid in addressing identified federal and private sector challenges related to pandemic planning.

According to the outgoing chair of PCIS, its members are actively involved in pandemic planning within their sectors, but have only recently begun to share their pandemic planning assumptions, approaches, and issues with each other. During their April 2007 meeting, PCIS members held a roundtable discussion of the status of their pandemic planning efforts. The outgoing PCIS Chair told us that PCIS members believe that these discussions were helpful in identifying common issues and sharing effective approaches for pandemic planning, and that the PCIS membership is interested in exploring in greater detail items of cross-sector importance, in particular, influencing government policy matters

²⁰ [GAO-07-39](#).

such as social distancing strategies²¹ and antiviral availability and distribution.

CIPAC provides the framework for the public and private sectors to jointly discuss relevant critical infrastructure issues such as a potential pandemic and allows the various sector participants to reach over and beyond traditional sector boundaries. According to DHS's Director of the Infrastructure Programs Office, Partnership and Outreach Division, CIPAC's focus over the last year has been on completing and issuing the sector-specific plans required by the NIPP. Although the consequences and vulnerabilities of a pandemic may have been discussed to a limited extent at CIPAC meetings, the Director acknowledged that the sectors need to work together on interdependencies and cross-sector issues related to the pandemic threat. Our review of CIPAC meeting agendas showed that 8 of the 49 CIPAC meetings held since the spring of 2006, when CIPAC was created, included "influenza pandemic" as an agenda item, and only one agenda included a joint discussion of cross-sector interdependencies.

DHS, because it is responsible for coordinating national critical infrastructure protection efforts and is the sector-specific agency for over half of the critical infrastructure sectors, is well positioned to help ensure that federal entities take advantage of these existing coordinating mechanisms to further plan and prepare for a potential influenza pandemic. DHS could develop and specify agenda items for the government and cross-sector councils that address many of the challenges that cut across the sectors and levels of government we identified. DHS, along with other sector-specific agencies, could encourage the private sector councils to do likewise. These organizations can discuss issues, make and test realistic plans, and develop workable solutions to potential challenges before an outbreak occurs. Otherwise, there may be insufficient time and resources to adequately prepare their members for changes in how their sectors may operate during a pandemic.

DHS, sector-specific agencies, and their counterparts among the critical infrastructure sectors are responsible for convening CIPAC meetings, typically upon request from sector members, but DHS's Director of the

²¹Social distancing is focused measures to increase social distance, or to restrict activity. Depending on the situation, this may include cancellation of public events (concerts, sports events, movies, plays) and closure of recreational facilities and schools.

Infrastructure Programs Office, Partnership and Outreach Division, acknowledged that the department could encourage greater appropriate federal and sector utilization of CIPAC. According to this official, DHS has responsibility for communicating the structure, process, and purpose of CIPAC for public and private collaboration. DHS is encouraging appropriate use of CIPAC by (1) developing an internal DHS management directive that highlights the benefits of and requirements for using the current council framework, (2) highlighting relevant NIPP guidance that encourages the use of the various councils through a NIPP outreach and awareness program, and (3) creating a critical infrastructure/key resources annex to the draft revised National Response Plan, now called the National Response Framework,²² that discusses use of the councils.

Conclusions

Protecting the nation's critical infrastructure in the event of an influenza pandemic requires an increased amount of coordination, collaboration, and in some cases, partnerships, between the federal and private sectors. Private sector planning must be well coordinated across the interdependent critical infrastructures in the nation and between all appropriate public and private entities. The federal government encourages critical asset owners and operators to be involved in private sector councils that are self-organized, self-run, and self-governed. The critical infrastructure's coordinating and advisory committees, along with the National Strategy and Implementation Plan, bring together government and business owners and operators of critical infrastructure to plan and prepare for all disasters, including a potential influenza pandemic. Because a pandemic may last for weeks or months, these public and private sector relationships must be developed and sustained over extended periods of time. A pandemic will likely reduce dramatically the number of available workers in all sectors, and significantly disrupt the movement of people and goods, which will threaten essential services and operations within and across the nation's critical infrastructure. Without working effectively together, the public and private sectors risk being insufficiently prepared to sustain the operations of critical infrastructure during an outbreak of influenza pandemic.

Although the federal and private sectors have taken initial steps to prepare for a pandemic, they face several key challenges that require coordination

²²The draft National Response Framework was released for public comment on September 10, 2007.

among multiple sectors and all levels of government. Opportunities exist to help address these challenges through increased use of the critical infrastructure sector-specific and cross-sector councils. These councils and their members are important because they provide a structure and forum for the public and private sectors to collaborate on appropriate planning and preparedness activities to prepare and respond to a pandemic, particularly for those issues that require cross-sector discussions and involvement of government at all levels.

To date, these councils have been used primarily for information sharing among members, to develop the sector-specific plans for all hazards, and are developing sector-specific plans for a pandemic. However, they could be better utilized to have a more strategic focus and to initiate and facilitate pandemic preparedness activities. Now is the time, before a pandemic emerges, to leverage these coordinating mechanisms to ensure that challenges and solutions are identified and cross-sector capabilities are well understood by all. Discussing and addressing relevant pandemic concerns and challenges prior to an outbreak would allow critical infrastructure sectors and their organizations to provide training to their employees and conduct tests and exercises that could provide valuable insights into how to further improve their readiness. DHS acknowledges that it could encourage greater appropriate federal and private sector utilization of the councils to help address coordination challenges and solve common problems for pandemic and other hazards. DHS is well positioned to encourage federal and private entities to take advantage of these coordinating mechanisms to further plan and prepare for a potential influenza pandemic before an outbreak may occur.

Recommendation for Executive Action

To help the nation better protect critical infrastructure in the event of an influenza pandemic and to build on the progress made thus far, we recommend that the Secretary of Homeland Security, working with sector-specific agencies, lead efforts to encourage the government and private sector members of the councils to consider and help address the challenges that will require coordination between the federal and private sectors involved with critical infrastructure and within the various sectors in advance of, as well as during, a pandemic.

Agency Comments

We provided a draft of this report to DHS for its review and comment. DHS provided written comments, which are reprinted in appendix IV. In commenting on the draft report, DHS generally agreed with the contents of the report and concurred with our recommendation. We also provided a

draft of this report to federal and private sector representatives of the five sectors we reviewed. FDA (HHS); DOE; DOT; and representatives of PCIS and the Electricity and Highway and Motor Carrier Sector Coordinating Council provided technical comments, which we incorporated as appropriate. Representatives of the Food and Agriculture Coordinating Council and TSA informed us that they had no comments on the draft report.

We are sending copies of this report to the Secretary of Homeland Security, appropriate congressional committees, and other interested parties. We will also make copies available to others upon request. In addition, this report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staffs have any questions regarding this report, please contact me at (202) 512-6806 or steinhardt@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix V.



Bernice Steinhardt
Director, Strategic Issues

Appendix I: Objectives, Scope, and Methodology

The objectives of this engagement are to identify (1) how the federal government is working with the private sector to ensure protection of the nation's critical infrastructure in the event of an influenza pandemic, particularly in the transportation (highway and motor carrier), food and agriculture, water, energy (electricity), and telecommunications sectors, and (2) the challenges facing the federal government and private sector to coordinate protection of the nation's critical infrastructure in the event of an influenza pandemic, particularly in these same five sectors, and what the federal government could do to help to address these challenges.

To address both of our objectives, we reviewed and analyzed critical infrastructure protection regulations, plans, and guidance, including the *National Infrastructure Protection Plan*, the *National Strategy for Pandemic Influenza*, the *National Strategy for Pandemic Influenza Implementation Plan*, and the *Pandemic Influenza: Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources*. We assessed the status of the action items in the implementation plan related to critical infrastructure protection, and specifically to the challenges that were identified by the federal and private sector representatives we interviewed. In order to do this, we reviewed the Homeland Security Council's 6-month and 1-year progress reports on the implementation plan, and received updates from Department of Homeland Security (DHS) officials on the status of these action items. We also interviewed officials from DHS and the Department of Health and Human Services' Centers for Disease Control and Prevention (CDC) with responsibility for leading and coordinating the overall national critical infrastructure protection effort and for working with the private sector to prepare for a possible pandemic. Within DHS, we met with the Chief Medical Officer; the Assistant Secretary for the Private Sector Office, Office of Policy; the Director of the Infrastructure Programs Office, Partnership and Outreach Division; and the Director of the Partnership and Outreach Division, Office of Infrastructure Protection, and their staff. Within CDC, we interviewed the Director, Business Partnerships and Chief of the Private and Public Partners Branch, Division of Partnerships, and other CDC staff. We also interviewed representatives from business trade associations, such as the U.S. Chamber of Commerce, the Business Executives for National Security, the Business Roundtable, and the Center for Health Transformation.

We reviewed 5 of the 17 critical infrastructure sectors for our study. The sectors are energy (electricity), food and agriculture, telecommunications, transportation (highway and motor carrier), and water. These sectors were selected because, in addition to the public health and healthcare

sector, they will provide the services most basic to the continued operation of the economy and society during an emergency such as a pandemic. We reviewed sector-specific plans and guidance for the 5 sectors we studied in depth. We also interviewed representatives of each of the sector-specific federal agencies with critical infrastructure protection responsibility for the 5 sectors we reviewed: DHS's Transportation Security Administration (highway and motor carrier) and National Communications System Agency (telecommunications); the Department of Agriculture and the Food and Drug Administration (FDA) (food and agriculture); the Environmental Protection Agency (water); and the Department of Energy (electricity). The membership of the 5 government sector coordinating councils is provided in appendix II. In addition, we also interviewed representatives from the Department of Transportation (highway and motor carrier). We interviewed private sector representatives for each of the 5 sectors, including the chairpersons of the respective sector coordinating councils. These representatives presented their views on how their respective councils are working with the federal government to protect the nation's critical infrastructure in the event of a pandemic, the challenges they face, and opportunities for addressing those challenges; but they did not necessarily represent the views of each member of their respective councils. The membership of the 5 private sector coordinating councils is provided in appendix III.

In addition to these interviews, and to address both objectives, we reviewed charters, meeting agendas and minutes, and other planning documents and guides for the various coordinating councils. We also gathered relevant documentation from the officials and representatives we interviewed. In addition, we attended pandemic planning workshops and conferences sponsored by the U.S. Chamber of Commerce. As part of our effort to identify possible challenges in the critical infrastructure area, we reviewed the following sources:

- prior GAO work on critical infrastructure protection, Year 2000 computer conversion, emergency response, federal collaboration practices, and public and private partnerships;
- related studies and reports by other government, nonprofit, and private sector organizations; and
- business consulting, practitioner, and academic literature and studies in the areas of emergency management and governance.

The results of our review of these five sectors cannot be generalized to the other critical infrastructure sectors given the limited number of sectors we reviewed and their nonprobabilistic selection. However, our general review of related literature suggests that the other sectors face similar challenges in how the federal and private sectors are coordinating their efforts to prepare for an influenza pandemic. Because the focus of our work was on the pandemic planning and coordinating efforts between the federal government and the private sector at a national level, we did not examine individual state, local, or private sector initiatives on their own, such as private sector continuity of operations plans, except in the case where these efforts were connected with federal initiatives.

We conducted our work from June 2006 through September 2007 in accordance with generally accepted government auditing standards.

Appendix II: Government Sector Council Membership by Selected Sector as of September 4, 2007

Council and sector	Government council members
Energy	<p>U.S. Department of Energy, Chair Federal Energy Regulatory Commission National Association of Regulatory Utility Commissioners National Association of State Energy Officials U.S. Department of Agriculture U.S. Department of Defense U.S. Department of Homeland Security U.S. Department of the Interior U.S. Department of State U.S. Department of Transportation U.S. Environmental Protection Agency</p>
Food and Agriculture	<p>U.S. Department of Health and Human Services, Food and Drug Administration, Chair^a U.S. Department of Agriculture U.S. Department of Homeland Security Association of State and Territorial Health Officials Intertribal Agriculture Council National Assembly of State Animal Health Officials National Association of County and City Health Officials National Association of State Departments of Agriculture National Science Foundation U.S. Department of Commerce U.S. Department of Defense U.S. Department of Health and Human Services U.S. Department of the Interior U.S. Department of Justice U.S. Environmental Protection Agency</p>
Communications (Telecommunications)	<p>U.S. Department of Homeland Security, National Communications Center, Chair Federal Communications Commission General Services Administration National Association of Regulatory Utility Commissioners U.S. Department of Commerce U.S. Department of Defense U.S. Department of Justice</p>

**Appendix II: Government Sector Council
Membership by Selected Sector as of
September 4, 2007**

Council and sector	Government council members
Transportation	U.S. Department of Homeland Security, Transportation Security Administration, Chair U.S. Department of Defense U.S. Department of Energy U.S. Department of Transportation
Water	U.S. Environmental Protection Agency, Chair Association of State & Interstate Water Pollution Control Administrators Association of State Drinking Water Administrators U.S. Army Corps of Engineers U.S. Department of Agriculture U.S. Department of Defense U.S. Department of Health and Human Services U.S. Department of Homeland Security U.S. Department of State U.S. Department of the Interior

Sources: Government council representatives and DHS.

*FDA is the current Chair. Chair position rotates on a yearly basis among FDA, DHS, and USDA.

Appendix III: Private Sector Council Membership by Selected Sector as of September 4, 2007

Council and sector	Sector council members
Electricity (Energy)	<p>Independent Electricity System Operator, Ontario Canada, Chair</p> <p>Arizona Public Service Company</p> <p>Exelon Corporation</p> <p>National Rural Electric Cooperative Association</p> <p>New York Independent System Operator</p> <p>North American Electric Reliability Corporation,</p> <p>Reliability First Corporation</p> <p>Southern Company Services, Inc.</p>
Food and Agriculture	<p>International Dairy Foods Association, Chair</p> <p>Agricultural Retailers Association</p> <p>American Farm Bureau Federation</p> <p>CF Industries, Inc.</p> <p>CropLife America</p> <p>Food Marketing Institute</p> <p>Food Processors Association</p> <p>International Association of Refrigerated Warehouses</p> <p>International Food Service Distributors Association</p> <p>International In-flight Food Service Association</p> <p>International Warehouse Logistics Association</p> <p>McCormick & Company, Inc.</p> <p>National Association of Convenience Stores</p> <p>National Cattlemen's Beef Association</p> <p>National Corn Growers Association</p> <p>National Milk Producers Federation</p> <p>National Pork Producers Association</p> <p>National Restaurant Association</p> <p>National Retail Federation</p> <p>National Food Service Security Council</p> <p>United Fresh Fruit & Vegetable Association</p>

**Appendix III: Private Sector Council
Membership by Selected Sector as of
September 4, 2007**

Council and sector	Sector council members
Communications (Telecommunications)	Verizon, Chair Alcatel-Lucent Americom-GS Association of Public Television Stations AT&T BellSouth Corporation Boeing Cellular Telecommunications & Internet Association Cincinnati Bell Cingular Cisco Comcast Computer Sciences Corporation Hughes Network Systems Internet Security Alliance Intrado Level 3 Nortel Qwest Rural Cellular Association SAVVIS Satellite Industry Association Sprint-Nextel Telcordia Telecommunications Industry Association United Telecom Council U.S. Telecom Association U.S. Internet Service Provider Association VeriSign

**Appendix III: Private Sector Council
Membership by Selected Sector as of
September 4, 2007**

Council and sector	Sector council members
Highway and Motor Carrier (Transportation)	<p>American Trucking Associations, Chair</p> <ul style="list-style-type: none"> American Bus Association American Chemistry Council American Petroleum Institute American Road and Transportation Builders Association Border Trade Alliance Chemtron Corporation Con-Way, Inc. Detroit-Windsor Truck Ferry Institute of Makers of Explosives Intelligent Transportation Society of America Intermodal Association of North America International Bridge Tunnel and Turnpike Association Kenan Advantage Group Laidlaw Education Services Mid-States Express, Inc. National Association of Small Trucking National Association of Truck Stop Operators National Industrial Transportation League National School Transportation Association National Tank Truck Carriers, Inc. Owner-Operator Independent Drivers Association Schneider National, Inc. Taxicab, Limousine and Paratransit Association The BusBank Tri-State Motor Transit Company Truck Manufacturers Association Truck Rental and Leasing Association United Motorcoach Association

**Appendix III: Private Sector Council
Membership by Selected Sector as of
September 4, 2007**

Council and sector	Sector council members
Water	<p>Columbus Water Works, Chair</p> <p>Alexandria Sanitation Authority</p> <p>American Water</p> <p>American Water Works Association</p> <p>Association of Metropolitan Water Agencies</p> <p>AWWA Research Foundation</p> <p>Bean Blossom Patricksburg Water Corporation</p> <p>Boston Water and Sewer Commission</p> <p>Breezy Hill Water and Sewer Company</p> <p>City of Portland Bureau of Environmental Services</p> <p>Fairfax Water</p> <p>Greenville Water System</p> <p>Los Angeles Department of Water and Power</p> <p>Manchester Water Works</p> <p>Milwaukee Water Works</p> <p>National Association of Clean Water Agencies</p> <p>National Association of Water Companies, National Rural Water Association</p> <p>New York City Department of Environmental Protection</p> <p>Pima County Wastewater Management Department</p> <p>United Water</p> <p>Water Environment Federation</p> <p>Water Environment Research Foundation</p>

Sources: Sector council representatives and DHS.

Appendix IV: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528



**Homeland
Security**

October 15, 2007

Mr. Norman J. Rabkin
Director
Homeland Security and Justice
U. S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Rabkin:

The Department of Homeland Security (DHS) appreciates the opportunity to review and comment on the Government Accountability Office's (GAO) draft report GAO-08-36 entitled *Influenza Pandemic: Opportunities Exist to Address Critical Infrastructure Protection Challenges that Require Federal and Private Sector Coordination* (GAO Job Code 450489). We generally agree with the contents of the report.

We concur with the recommendation that to help the nation better protect critical infrastructure in the event of an influenza pandemic, the Secretary of Homeland Security, working with sector-specific agencies, build on the progress made thus far and use the coordinating councils as a mechanism to help ensure that critical infrastructure stakeholders are adequately prepared for a pandemic outbreak. Specifically, the Secretary should encourage the government and private sector members of the councils to consider and help address the challenges that will require coordination between the federal and private sectors involved with critical infrastructure and within the various sectors in advance of, as well as during, a pandemic.

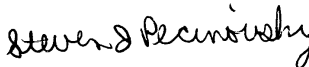
As a Government entity, DHS is unable to "ensure" private sector preparedness. We believe the appropriate language is that DHS continue to *support and facilitate* private sector preparedness. We believe that a strong architectural framework and multiple initiatives are in place and in progress to facilitate that goal. Further strengthening and utilization of the security partnership model will support the overall achievement of the Department of Homeland Security's objectives for pandemic preparedness.

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**Appendix IV: Comments from the Department
of Homeland Security**

Thank you again for the opportunity to comment on this draft report and we look forward to working with you on future strategic issues.

Sincerely,



Steven J. Pecinovsky
Director
Departmental GAO/OIG Liaison Office

Appendix V: GAO Contact and Staff Acknowledgments

GAO Contact

Bernice Steinhardt, (202) 512-6806 or steinhardtb@gao.gov

Acknowledgments

In addition to the contact named above, Sarah Veale, Assistant Director; Clifton G. Douglas, Jr.; Gwyneth Blevins; S. Mike Davis; David Dornisch; Karin Fangman; Carolyn Samuels; and members of GAO's Pandemic Working Group made key contributions to this report.

Related GAO Products

Collaboration

Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies. [GAO-06-15](#). Washington, D.C.: October 21, 2005.

Critical Infrastructure

Critical Infrastructure Protection: Sector Plans and Sector Councils Continue to Evolve. [GAO-07-706R](#). Washington, D.C.: July 10, 2007.

Critical Infrastructure Protection: Progress Coordinating Government and Private Sector Efforts Varies by Sectors Characteristics. [GAO-07-39](#). Washington, D.C.: October 16, 2006.

Emergency Response

Homeland Security: Observations on DHS and FEMA Efforts to Prepare for and Respond to Major and Catastrophic Disasters and Address Related Recommendations and Legislation. [GAO-07-1142T](#). Washington, D.C.: July 31, 2007.

Homeland Security: Observations on DHS and FEMA Efforts to Prepare for and Respond to Major and Catastrophic Disasters and Address Related Recommendations and Legislation. [GAO-07-835T](#). Washington, D.C.: May 15, 2007.

Homeland Security: Preparing for and Responding to Disasters. [GAO-07-395T](#). Washington, D.C.: March 9, 2007.

Continuity of Operations: Agencies Could Improve Planning for Telework during Disruptions. [GAO-06-740T](#). Washington, D.C.: May 11, 2006.

Hurricane Katrina: GAO's Preliminary Observations Regarding Preparedness, Response, and Recovery. [GAO-06-442T](#). Washington, D.C.: March 8, 2006.

Emergency Preparedness and Response: Some Issues and Challenges Associated with Major Emergency Incidents. [GAO-06-467T](#). Washington, D.C.: February 23, 2006.

Statement by Comptroller General David M. Walker on GAO's Preliminary Observations Regarding Preparedness and Response to Hurricanes Katrina and Rita. [GAO-06-365R](#). Washington, D.C.: February 1, 2006.

Influenza Pandemic

Influenza Pandemic: Further Efforts Are Needed to Ensure Clearer Federal Leadership Roles and an Effective National Strategy. [GAO-07-781](#). Washington, D.C.: August 14, 2007.

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Avian Influenza: USDA Has Taken Important Steps to Prepare for Outbreaks, but Better Planning Could Improve Response. [GAO-07-652](#). Washington, D.C.: June 11, 2007.

Financial Market Preparedness: Significant Progress Has Been Made, but Pandemic Planning and Other Challenges Remain. [GAO-07-399](#). Washington, D.C.: March 29, 2007.

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Y2K

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