Chapter 5

Current Efforts To Reduce Energy Systems Vulnerability

Since the late 1970s national emergency preparedness initiatives have focused primarily on developing programs within appropriate government agencies. The National Security Council (NSC) has played a central role in directing this effort. About 20 Federal departments/agencies are involved with emergency preparedness. The Department of Energy (DOE), through its Office of Energy Emergencies, is the lead agency for energy-related issues. Other involved agencies include the Departments of Defense, Interior, and State, the Federal Bureau of Investigation, the Federal Emergency Management Agency, and the Nuclear Regulatory Commission.

In the early 1980s, the General Accounting Office criticized Federal Government agencies for inadequate energy emergency preparedness planning and coordination. Since then, improvements have been made in developing comprehensive plans and programs, streamlining coordination, and eliminating duplication. However, because of the number of Federal agencies involved in energy emergency planning, uncertainties about authority, responsibilities, and activities are bound to exist. These same uncertainties may be magnified during a national emergency and thus hamper efforts to ensure adequate energy supplies and distribution to essential facilities.

The Federal Government has limited authority or responsibility to provide physical protection for energy systems. Individual utilities are responsible for protecting their physical plants and ensuring reliability. Utilities routinely build redundancy and plan for inevitable but occasional equipment failure but do not consider multi-site sabotage when designing the system. That is not to say that utilities are not concerned about energy systems vulnerability. The North American Electric Reliability Council (NERC) has been working quietly on vulnerability issues for several years. Recently, NERC developed recommendations and guidelines to mitigate electric power systems vulnerability. Utilities generally follow NERC guidelines on such matters. NERC often acts as a clearinghouse for the electric utility industry-developing and disseminating resource materials and information on vulnerability. It also has encouraged member utilities to establish liaisons with government agencies and other industry groups. To a large extent, NERC facilitates communication and coordination among its members-an activity that would be essential during an emergency situation.

State efforts in energy emergency preparedness peaked in the early 1980s in response to the oil disruptions of the 1970s. Funding and staffing levels have since declined. This decrease in funding and staffing could affect the States' ability to respond to an energy emergency. In addition, most of the States' plans and organizational structure were developed in response to a particular crisis-an oil supply disruption-and may not be relevant to other situations. Plans need to be revised to reflect other potential disruptions, including natural disasters and sabotage.

Furthermore, interstate and intergovernmental communication and coordination may be inadequate. According to DOE, only 9 States have developed routine communication systems with surrounding States. Based on an energy emergency simulation, a Federal interagency group concluded that existing Federal and State crisis management plans were not well-coordinated and may beat cross purposes.[1]

This chapter provides an overview of current efforts and responsibilities of various institutions, including the utility industry, Federal agencies, States, and public utility commissions. Also, the current status of the U.S. electrical equipment manufacturing industry is discussed.

CURRENT EFFORTS

Private Industry

Utilities

In the United States the physical protection of electric power facilities does not appear to be a high-priority item for utility management. Historically, deliberate attacks on electric power facilities have not resulted in power or financial losses significant enough to justify a major investment in

[1] *Report of the Interagency Group on Energy Vulnerability, November 1986-November* 1988, prepared for the Senior Interagency Group for National Security Emergency Preparedness, January 1989.

physical security. However, it is important to note that the utility industry is concerned about vulnerability and has been working quietly on security issues for some time.

Utilities recognize that communication is an important part of any security plan. Under emergency conditions, including sabotage, the ability to communicate is even more critical. Thus, utilities place a high priority on the restoration of communication networks during emergencies.

Utilities also recognize the need for improved communication with law enforcement officials and other utilities. Virtually all utilities with key facilities have established contact with the local FBI office. The FBI can assist utilities in evaluating threats, inspecting facilities, and planning emergency responses. In addition, utilities have encouraged additional information exchanges between operating personnel and security managers to ensure adequate emergency preparedness.

North American Electric Reliability Council (NERC)

NERC and its nine regional councils were established in the late 1960s to assist utilities in providing for the reliability and adequacy of electric generation, transmission, and distribution systems. Formation of the organizations was aided by Federal legislation following the Northeast blackout of 1965.

At NSC's direction, DOE requested NERC to address electric power systems vulnerability issues. In 1987, NERC established the National Electric Security Committee (NESC) to assess the degree of vulnerability of U.S. electric power systems and develop a program to mitigate vulnerability to sabotage and terrorism. The Security Committee established three working groups which dealt with physical security enhancements, operating strategies, and design and restoration improvements. In July 1988, the NESC presented its report and recommendations to the NERC Board of Trustees. The report with its recommendations was approved in October 1988. Most of the recommendations have been implemented while a few are still under review.

NERC's program includes a close-working relationship with the Federal Bureau of Investigation. Also, NERC has identilfied utilities where spare transformers are located.

A small number of agencies have been briefed on the NERC report and recommendations. These agencies include the National Security Council, the Department of Energy, the President's Science Adviser, and the Federal Emergency Management Agency.

The NESC, having completed its mission, has been disbanded and related activities assigned to NERC's Engineering and Operating Committees or to the Regional councils or the utilities.

Edison Electric Institute (EEI)

EEI has established a security committee, which consists of 70 members who are responsible for physical protection of utilities' facilities. According to EEI, more than half of the committee's members are ex-FBI agents or members of other law enforcement agencies. EEI's security committee facilitates security information exchange among its members, NERC, and government agencies.

Federal Government

National Security Council **(NSC)**

The NSC is the lead agency for national security emergency preparedness policy. In 1988, NSC defined the government's approach to emergency preparedness. It grouped government agencies by particular areas such as economics, energy, human services, law enforcement, telecommunications, and transportation. One department/agency is the lead agency within each group and is responsible for identifying responsibilities and operating procedures and coordinating activities with other groups. For example, DOE is the lead agency for the energy group. Also, NSC is the principal liaison with Congress and the Federal judiciary on national security matters.

Federal Emergency Management Agency (FEMA)

FEMA serves **as** adviser to NSC on national security emergency preparedness, which includes mobilization[2] preparedness, civil defense, technological disasters, etc. FEMA also provides guidance to other Federal agencies in developing and implementing emergency preparedness plans. More spe-

[2]Mobilization is defined as the marshalling of resources, both civil and military, to respond to and manage a national security emergency.

cifically, FEMA is responsible for developing plans for the conversion of industrial capacity and supply during a national emergency. This effort involves identifying industrial facilities that are essential to national mobilization and developing mechanisms, including standby agreements, to allocate facilities when production capacity is in short supply. During a national mobilization, FEMA would likewise be involved in coordinating and facilitating emergency supply imports. In addition, FEMA authorizes government agencies to establish National Defense Executive Reserve programs (discussed in a later section) and provides guidance in this regard.

Recently, FEMA prepared a prototype national plan for graduated mobilization response (GMR) options. This process provides a framework for mobilization planning in three incremental steps: planning and preparation, crisis management, and national emergency/war. Eight Federal departments and three agencies were considered in the process. As a result of this effort, a Defense Mobilization Order was issued in January 1990. The order defines GMR, provides policy guidance, and further establishes a system for developing and implementing mobilization actions that are responsive to a wide range of national security threats and warnings. FEMA expects that a final document, which will institutionalize the process, will be available in 1990.

Another ongoing FEMA activity is the preparation of Major Emergency Action papers. These papers are intended to provide information to decisionmakers on response options, costs and benefits, and the implementation process during a wide spectrum of emergencies.[3]

FEMA also published a Defense Mobilization Order, which provides criteria and guidance for Federal departments/agencies to develop strategies, plans, and programs for the security of essential facilities and resources. Responsibility for protecting essential facilities rests with appropriate Federal departments/agencies. FEMA monitors compliance and reports its findings to the NSC.

FEMA's disaster relief activities are the most visible. The most recent examples are FEMA's efforts to assist South Carolina, Puerto Rico, and the Virgin Islands in the wake of Hurricane Hugo and victims of the Loma Prieta earthquake.

Department of Energy (DOE)

DOE is the lead government agency for energy emergency preparedness. Its mission is to ensure that adequate energy supplies are available to support the Nation's infrastructure during a national emergency. In this regard, DOE's Office of Energy Emergencies (OEE), created in 1981 in response to Executive order 11490, is responsible for dealing with energy system vulnerability concerns.

OEE's FY89 program budget totals about $6.2 million, the bulk of which is used for staff salaries. The budget has remained essentially the same over the past 5 years. OEE consists of 71 professional and support staff.[4]

Vulnerability Program—Recently, the OEE developed a Vulnerability Program whose purpose is to reduce the risks of energy system interruption. The Program consists of four phases: Phase I included case studies to determine the nature of vulnerabilities in the electric power, petroleum, and natural gas industries. This effort included considerable input from industry, Federal, State, and local governments and is essentially completed. The results of the studies are classified. Phase II establishes an industry outreach program which provides information and solicits industry/government joint cooperation. DOE cites the NERC/DOE initiative, noted earlier, as an example of Phase II activity. According to DOE, the first phase has been completed and the second is progressing.

Phase 111 of the program includes additional case study exercises and other industry outreach efforts. DOE expects industry to respond to the concerns raised by these exercises. However, there appears to be no provision for follow-up activities under this phase. Phase IV will identify national security vulnerabilities which cannot be addressed by the respective industries. This phase may include federally funded programs to remedy energy system vulnerability concerns. Other OEE efforts have included updating the State emergency contracts directory, reviewing legislation and contingency

[3]Federal Emergency Management Agency, National Preparedness Directorate, Office of Mobilization Preparedness, Mobilization *Preparedness—An Overview*, March 1989.

[4]Edward v. Badolato, Deputy Assistant Secretary for Energy Emergencies, U.S. Department of Energy, testimony at hearings before the Senate Governmental Affairs Committee, Feb. 8, 1989, pp. 4,6.

plans, and disseminating information to States via an electronic mail system called DIALCOM. OEE has also conducted regional seminars and simulations to provide assistance to State energy planners.[5] An overview of the results of the regional seminars is given in the "State Efforts" section.

DOE has established a threat notification system to alert energy industries. Notification consists of a message describing a threat that could lead to aggressive actions. For example, notification of Iran's reaction to the reflagging of Persian Gulf vessels was sent to NERC, the American Petroleum Institute, the National Gas Association, the Interstate Natural Gas Association of American, and the National Coal Association. These organizations in turn notify their respective industry members.

Interagency Group on Energy Vulnerability/ Policy Coordinating Committee on Emergency Preparedness and Mobilization Preparedness— Because of a growing concern about international terrorism, the NSC directed DOE to establish the Interagency Group on Energy Vulnerability (IGEV). It focused on national security issues relating to the vulnerability of U.S. energy systems. The Group was charged with developing initiatives to decrease vulnerability and mitigate the impact on national security of any disruptions.[6] In late 1988, IGEV was terminated and its concerns and functions merged into a new interagency group, the Policy Coordinating Committee on Emergency Preparedness and Mobilization Preparedness, Standing Committee on Energy. Committee members include the Departments of Energy, Defense, Justice, Interior, State, Transportation, and Treasury; the Central Intelligence Agency; the Federal Bureau of Investigation; the Federal Emergency Management Agency; National Communications System; National Security Council; and the Nuclear Regulatory Commission.

National Defense Executive Reserve (NDER) Program

Authorized by Congress, the NDER is a collection of civilian executives recruited from various industries. When authorized by the President, the industry executives, called reservists, would provide information and assistance in their areas of expertise to Federal authorities. Reservists would also help coordinate industry efforts in meeting national needs. FEMA authorizes government agencies to establish NDER units and provides overall policy guidance. The Office of Energy Emergencies within DOE administers three NDER units: the Emergency Petroleum and Gas Executive Reserve, the Emergency Electric Power Executive Reserve, and the Emergency Solid Fuels Executive Reserve.

DOE indicates that these industry executives could provide invaluable assistance in assessing damage, evaluating supply capability, and coordinating repair and restoration efforts. DOE plans to have about 400 industry representatives involved in the NDER program. The reserve staff for the Electric Power unit is at 50 percent of the staffing goal and Solid Fuels is up to 80 percent, according to DOE.[7]

Since its birth in 1964, the NDER program has not been without criticism. It has been administered by several government agencies, including the Defense Electric Power Administration within the Department of the Interior, the Economic Regulatory Commission, and finally the Office of Energy Emergencies within DOE. Questions have been raised about training and recruitment, and antitrust concerns have been raised by petroleum industry officials. Consequently, the petroleum executive reserve unit has not been fully developed. Over the last few years, however, DOE has been aggressively recruiting reservists and facilitating training sessions for new reservists.

The Federal Bureau of Investigation (FBI)

The FBI is responsible for counterterrorism programs in this country. Its authority extends to dealing with terrorists attacks against energy facilities. The Bureau recently proposed a counterterrorist program that would focus on the vulnerability of the Nation's infrastructure to sabotage. The program was designed to place **70** additional agents in field offices to identify key infrastructure facilities, develop contingency response plans, disseminate information, and provide assistance to private industry. Funding for the $17 million program has not

[5]National Research Council, **Committee on State and Federal Roles in Energy Emergency Preparedness,** *State and Federal Roles in Energy Emergency Preparedness,* **prepared for the U.S. Department of Energy (Washington, DC: National Academy Press, January 1989), pp. 15-18; Badolato Testimony, op. cit., footnote 4, p. 10.**

[6]Charter of the **Interagency Group on Energy Vulnerability of the Senior Interagency Group for National Security Emergency Preparedness.**

[7]Badolato **Testimony, op. cit., footnote 4, p. 15.**

been approved. A second proposal, now under review, will use existing resources within the Bureau to develop liaisons with private industry and disseminate threat information.[8] Currently, the FBI maintains a liaison with the Department of Energy. Threat warnings are disseminated to DOE, which in turn notifies private industry.

Department of Defense (DoD)

DoD administers the Key Assets Protection Program (KAPP), whose purpose is to protect selected civilian industrial assets from sabotage during a national emergency. Selected industries are those that are deemed essential to national defense and include some industry-owned energy facilities. Key assets are not owned or controlled by DoD. The program identifies which electric power systems provide energy to vital military installations and defense manufacturing areas. In addition, critical nodes on each power system are identified in order to facilitate defense planning.

As administrator of the KAPP, the Commander in Chief, Forces Command, develops and maintains a classified Key Assets List (KAL). Facilities that are included on the list must be nominated by DoD and meet stringent criteria, which includes onsite inspections and the approval of owners. DoD also solicits nominations of infrastructure assets from other Federal department and agencies. Responsibility for ensuring the security of a facility rests with the owner/operator initially.

In the mid-1970s, the electric utility industry participated in the Defense Industrial Facilities Protection program (now KAPP). At DOE's insistence, DoD discontinued the "utility list" in 1980. The utility industry and DOE objected to DoD's need to conduct onsite physical security surveys, particularly by Defense agency personnel unfamiliar with electric power systems, and the arbitrary nature of the selection process.[9] The utility industry has not rejoined KAPP. Since then, DoD, with an initial grant from FEMA, is again attempting to identify electric ***utility critical*** nodes that support key defense facilities. Once identified, DoD will not@ owners and solicit their cooperation in improving reliability and/or security of the critical nodes. The identified nodes will not be placed on the KAL.

States

States' efforts to plan for energy emergencies vary considerably. This assessment is based on a 1988 DOE survey of State energy emergency preparedness and information collected by DOE in 1985 and 1986.[10] According to DOE, most energy emergency plans were developed under the Energy Emergency Conservation Act, which no longer exists.

DOE found that most States had established a formal authority to deal with energy emergencies and developed plans that delineate responsibilities and provide guidance. DOE noted that almost all of the plans were developed in response to the 1979 oil disruption, and only three plans have been updated since 1983. Many of the plans focus on educating the public and on conservation programs. Fewer than one-third address the social impacts of energy supply disruptions.[11]

While some authority and organizational system is in place, staffing and funding levels have decreased over the past few years. About one-third of the responding States have at most one full-time professional staff person working on energy preparedness; 58 percent have two or fewer. Most States indicated that staff are not full time. The majority of respondents noted that the decline in funding has reduced some States' response capability .12 And, in terms of intergovernmental coordination, some respondents expressed a need for more information and communication between their States and DOE.

On a regional level, energy emergency planning and preparedness varies as well. In 1988, DOE's Office of Energy Emergencies conducted four regional seminars, which included a simulation of an energy emergency. From these seminars, DOE found that energy emergency planning was just getting off the ground in the Southeastern States.[13]

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[8]Bill McGrath, Federal Bureau of Investigation, personal communication% Dec. 11, 1989.

[9]U.S. congress, General Accounting Office, *Federal Electrical Emergency Preparedness Is Inadequate,* EMD-81-50, *May 12, 1981,* p. 19.

[10]National Research Council, op. cit., footnote 5.

[11]Ibid., p. 24.

[12]Ibid., pp. 23-24.

[13]For purposes of these seminars, the Southeastern region includes: Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina, and Tennessee.

The Southern States Energy Board is a central player in this region, encouraging cooperation and coordination among State and regional energy officials. The Western States[14] had the best integrated emergency planning of all the regions, according to DOE. Emphasis is placed on interstate and regional planning, and many States conduct energy emergency exercises. Perhaps because of the danger of earthquakes, California has one of most coordinated and knowledgeable emergency planning offices in the country. California has a large staff and one member of the Energy Commission assigned to energy emergency preparedness. The State's plans are updated and tested regularly.[15] It does not appear that the inland Western States are as highly coordinated as the Pacific Coast States. The Northeast/Mid-Atlantic region[16] is the most vulnerable to energy emergencies because of its dependence on fuels produced in other regions or countries. DOE did not report on the status of emergency planning in this region. And, in the Middle West region,[17] responsibility for dealing with energy emergencies is left to the industrial sector.[18]

Public Utility Commissions

Public utility commissions normally allow utilities to recover security costs. For example, security fences and guards, and monitoring and surveillance equipment are included in the overall cost of operating a nuclear power facility. Also, spare components are typically held as an essential part of the operation and are included in the rate base. Utilities have expressed reluctance to employ additional security measures. Among the arguments they have raised is a concern that utility commissions would disallow any related expenditures. This concern is as yet untested. It is possible that utility commissions may find that no need exists for additional security against very low-probability events (e.g., concerted aggression against utility systems). If so, they would be unlikely to allow utilities to charge for such expenditures. However, if utility activities are in response to Federal emergency preparedness policy or guidelines, approval of expenditures is more likely.

STATUS OF THE U.S. ELECTRICAL EQUIPMENT MANUFACTURING INDUSTRY

The heavy electrical equipment manufacturing industry has been undergoing restructuring in recent years, resulting largely from the drastic slowdown in electric power capacity expansion and new equipment orders. Atone time, U.S. companies dominated the heavy electrical equipment manufacturing industry. Today, there are only a handful of U.S. companies. Some companies have entered into joint ventures, while others have exited the business altogether. Still others have negotiated mergers and buyouts. For example, General Electric sold its extra-high-voltage (EHV) transformer manufacturing technology to Westinghouse, which in turn formed a joint venture with ASEA Brown Boveri (ABB) in 1989.[19] Recently ABB, itself a merger of Swedish and Swiss companies, exercised its option to buy out Westinghouse. Manufacturing facilities will remain in the United States.

Currently, Westinghouse and Cooper Power Systems, a wholly owned subsidiary of Cooper Industries, are the only domestic manufacturers of very large Generation Step Up transformers (GSUs). Transformers manufactured overseas by a number of foreign companies, including Siemens of West Germany and Hitachi, are also sold here. The Westinghouse ABB facility, located in Muncie, Indiana is operating at about 50 percent capacity and has not been profitable in the last few years. However, the plant is active, with over two shifts continuing production at reduced throughput.[20] Drexel Burnham Lambert estimated that capacity utilization in the U.S. electrical equipment industry

[14] The Western region includes: Washington, Oregon, California, Nevada, New Mexico, Nevada, Arizona, Colorado, Wyoming, Montana, and Idaho.

[15] *Inside Energy/With Federal Lands*, "DOE Working With States To Improve Responses to Energy Emergencies," Oct. 30, 1989, p. 7.

[16] The Northeast/Mid-Atlantic region includes: Virginia, West Virginia, Maryland, Delaware, Pennsylvania, New Jersey, New York, Connecticut, Massachusetts, Vermont, New Hampshire, Rhode Island, and Maine.

[17] The Middle West region includes: North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri, Michigan, Wisconsin, Indiana, Illinois, Ohio, and Kentucky.

[18] The Strom Thurmond Institute, *Regional* Differences, *Common Concerns—Federal-State-Industry Roles* in *Energy Emergency Preparedness*, Regional Seminars Conference Report, Summer 1988, pp. 11-14.

[19] Meeting with Westinghouse transformer plant personnel, Muncie, IN, July 27, 1989.

[20] Ibid.

ranges from 50 to 80 percent, depending on the product line.[21]

Furthermore, EHV circuit breakers are no longer manufactured by American-owned companies, although they are produced domestically. General Electric sells Hitachi-made circuit breakers and Westinghouse markets Mitsubishi-made models. Two foreign suppliers-Siemens of West Germany and ABB—manufacture circuit breakers in U.S. factories.[22]

The restructuring trends are influenced by the declining market for electrical power equipment and subsequent profitability and the presence of foreign manufacturers. The power transformer industry, for example, has significant overcapacity because of the decline in demand, according to the Department of Commerce. Moreover, nearly 40 percent of U.S. EHV transformer production capacity has been removed in the last 3 years. At the same time, foreign manufacturers' share of the U.S. power equipment market has increased to about 20 percent and is expected to continue to rise.[23] Foreign-controlled companies have been predicted to account for about 60 to 75 percent of the market for all core electrical equipment products (distribution transformers, switchgear, transmission, construction equipment, and power generation) by 1990.[24] However, it is important to note that a larger fraction of these products will be manufactured domestically. Because of the decline in the U.S. dollar, foreign companies have found serving U.S. markets very expensive and one solution to this situation is to establish facilities in the United States.[25]

In contrast, U.S. participation in foreign markets is minimal. One reason is that electrical equipment has been excluded from GATT (General Agreement on Tariffs and Trade) jurisdiction, resulting in limited U.S. access to foreign markets. This exclusion from GATT was influenced by the close relationships among utilities, electrical equipment manufacturers and the government in European countries. Most foreign utilities are State-owned or subsidized. This government stakeholder position has made penetration of some European markets difficult. According to the National Electrical Manufacturing Association (NEMA), between 1975-88, U.S. manufacturers of large power transformers and steam turbine generators did not win a single order from a European Community (EC) purchaser with a domestic production base for these products.[26]

Recently, access to foreign markets has been the subject of discussion and negotiations among the Department of Commerce, the U.S. Trade Representative, and the EC Commission, which will control trade for its members, beginning in 1992. The EC, in late 1988, issued a directive that covers procurement in three previously excluded sectors: energy, water, and transport. The directive, which is currently under review by the European Parliament and Council of Ministers, proposes that utilities competitively procure purchases above a certain EC unit value (about $170,000 - U.S.). The utilities, however, will have considerable latitude in choosing tendering and procurement procedures, and will be allowed to exclude offers that have less than a 50 percent "EC content," which will be based on contract value.[27]

According to recent testimony by NEMA, the proposed directive provides no new right of access for non-EC suppliers. American electrical equipment manufacturers will continue to face closed utility markets in most EC member states, according to NEMA. On the other hand, U.S. markets are open to foreign suppliers.[28]

Proponents for maintaining U.S. electrical equipment manufacturing capability suggest that economic-jobs for U.S. workers—and national security considerations are two of the most compelling

[21]Drexel Burnham Lambert, "Current Perspectives on the Electrical Equipment Industry," December 1987, reported in *Electrical Marketing*, "Why Foreigners Will Control U.S. Electrical Equipment Market," vol. 13, No. 3, Feb. 5, 1988, p. 8.

[22]"The Rise of International Suppliers,' *EPRI Journal*, *vol. 13, No. 8,* December 1988, p. 7.

[23]Charles H. White, National Electrical Manufacturers Association testimony at hearings before the Senate Committee on Governmental Affairs, On Vulnerability of Telecommunications and Energy Resources to Terrorism, Feb. 7 and 8, 1989, p. 65.

[24]Drexel Burnham Lambert, op. Cit., footnote 21.

[25]Ibid.

[26]Bernard H. Falk, President, National Electrical Manufacturers Association, testimony at hearings before the House Committee on Foreign Affairs, Subcommittee on Europe and the Middle East and Subcommittee on International Economic Policy and Trade, Apr. 5, 1989, p. 2.

[27]Ibid., pp. 4-5.

[28]Ibid., p. 5.

arguments. Others maintain that without an adequate number of companies in the industry, competition will erode and a sellers market will prevail. Still others believe that the transportation of foreign-made equipment will take longer to reach the United States, which may be critical in a crisis. Some question whether standard American spares would be readily available from foreign manufacturers and wonder whether foreign manufacturers will give U.S. companies priority during a crisis. NEMA argues that an adequate domestic manufacturing capacity is needed to support a surge in demand for equipment or respond to a crisis.[29]

Others see no compelling reason for maintaining U.S. capability. Foreign companies make quality electrical products and do it in a timely manner. Many feel that foreign suppliers are committed to meeting U.S. needs. One utility executive noted that the global market is already part of the business environment, and procurement policies can address spare parts availability and other issues.[30]

[29] White, op. cit., footnote 23, p. 65.

[30] "The Rise of International Suppliers," op. cit., footnote 22.