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Standard Guide for Emergency Operations Center (EOC) Development¹

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1. Scope

1.1 This guide provides general guidelines for the development of an emergency operations center (EOC).

1.2 An EOC may be developed by either the public or private sector in response to the demonstrated or predicted need for a designated facility at which those involved in emergency/disaster management and the coordination of response and recovery efforts work.

1.3 This guide may also serve as a foundation for larger facilities such as a regional operations center (ROC) or state operations center (SOC) with a broader area of responsibility and more extensive needs to communicate and coordinate with others.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 NFPA Standards:²

[NFPA 90A Standard for the Installation of Air Conditioning and Ventilating Systems](#)

[NFPA 90B Standard for the Installation of Warm Air Heating and Air Conditioning Systems](#)

[NFPA 110 Standard for Emergency and Standby Power Systems](#)

[NFPA 220 Standard on Types of Building Construction](#)

[NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communication Systems](#)

[NFPA 1561 Standard on Emergency Services Incident Management System](#)

[NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity Programs](#)

[NFPA 5000 Building Construction and Safety Code](#)

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² Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-7471, <http://www.nfpa.org>.

2.2 Other Standards:

[ASCE/SEI 7-05 Minimum Design Loads for Buildings and Other Structures³](#)

[CPG-101 March 2009 \(Developing and Maintaining State, Territorial, Tribal, and Local Government Emergency Plans\)](#)

[NIMS December 2008 \(National Incident Management System\)](#)

[NRF January 2008 \(National Response Framework\)](#)

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *authority having jurisdiction (AHJ), n*—the organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure. **NFPA 1561**

3.1.2 *entity, n*—governmental agency or jurisdiction, private or public company, partnership, nonprofit organization, or other organization that has emergency management and continuity of operations responsibilities. **NFPA 1600**

3.1.3 *established EOC, n*—facility temporarily created to manage or coordinate emergency operations or like functions.

3.1.4 *standing EOC, n*—existing fixed facility that serves as a location for entities to manage or coordinate emergency operations or like functions.

3.2 Acronyms:

3.2.1 *ADA*—American with Disabilities Act

3.2.2 *AHJ*—Authority Having Jurisdiction

3.2.3 *ARC*—American Red Cross

3.2.4 *BCM*—Business Continuity Management

3.2.5 *CERT*—Community Emergency Response Team

3.2.6 *COG*—Continuity of Government

3.2.7 *COOP*—Continuity of Operation

3.2.8 *COTS*—Commercial-Off-The-Shelf

3.2.9 *EOC*—Emergency Operations Center

3.2.10 *FEMA*—Federal Emergency Management Agency

3.2.11 *HVAC*—Heating, Ventilation, and Air Conditioning

³ Available from American Society of Civil Engineers (ASCE), 1801 Alexander Bell Dr., Reston, VA 20191, <http://www.asce.org>.

- 3.2.12 *ICS*—Incident Command System
- 3.2.13 *IST*—Incident Support Team
- 3.2.14 *IT*—Information Technology
- 3.2.15 *JIC*—Joint Information Center
- 3.2.16 *JIS*—Joint Information System
- 3.2.17 *MRC*—Medical Reserve Corps
- 3.2.18 *NEMA*—National Emergency Management Agency
- 3.2.19 *PC*—Personal Computer
- 3.2.20 *PIO*—Public Information Officer
- 3.2.21 *PSAP*—Public Safety Answering Point
- 3.2.22 *ROC*—Regional Operations Center
- 3.2.23 *SAR*—Search and Rescue
- 3.2.24 *SOC*—State Operations Center
- 3.2.25 *USAR*—Urban Search and Rescue

4. Summary

4.1 It is recognized that a “one size” approach will not fit all jurisdictions. EOCs need to be developed and maintained based on the risks, vulnerabilities, capabilities, and needs of the entity. For example, some areas do not need to have seismic or hurricane response capability. However, there are common functional elements such as communications and work space that every EOC needs. This standard guide addresses processes and procedures for the development of a new EOC facility or the modification of an existing facility.

4.2 With these considerations in mind, a tiered approach should be taken that allows an entity to develop an EOC based on the particular needs and constraints of that organization and location while considering guidelines necessary for potential growth. It is important to recognize the need for alternative or backup facilities. Thus, this standard guide provides guidance for developing redundant resources.

5. Significance and Use

5.1 A critical part of developing an emergency management capability is establishing and preparing to operate an EOC. A well-designed EOC, coupled with well-trained personnel, will enable the coordination of response and recovery activities. An EOC can serve as an effective and efficient facility for coordinating all emergency response efforts and will optimize emergency communications and information management. This standard guide is intended to provide the emergency management community with practical concepts and approaches to develop an effective EOC.

6. EOC Development

6.1 *Needs Assessment*—Before beginning the planning and development of a new permanent EOC or modification of an existing EOC, a needs assessment should be conducted that includes hazard identification, risk analysis, and capability assessment. The emergency management requirements of the jurisdiction should be based on the identified hazards and the types of incidents that are anticipated for the entity, the severity of the resulting impacts of those incidents, and the possibility

of their occurrence. Other important factors are the size and type of the jurisdiction. A highly urbanized area, due to its high volume of commercial and industrial infrastructure, broad spectrum of land uses, and size of potentially-impacted populations, would require greater resources than a small rural area. However, rural areas in which unique industrial or large Federal facility operations are located may have specific risks and hazards that would have a direct impact on the size, scope, and need of an EOC facility. Additionally, a capability assessment is needed for the entity to determine whether locally available resources can respond adequately to the range of specific incidents identified in the hazard and risk assessment. It is extremely important for an entity to know the limits of the resources (personnel and equipment) under its jurisdiction.

6.2 In determining the need for, planning of, and development of an EOC, it is important to review and incorporate the emergency management and response guidance and requirements of NFPA 1600, NFPA 1561, the NIMS December 2008, the NRF January 2008, and CPG-101 that are applicable to an EOC’s design and development.

6.2.1 *Hazard/Threat Identification and Assessment*—This reflects a comprehensive analysis of the types of hazards associated with incidents that the jurisdiction might need to manage. It reflects not only the most likely events, but also those that are less likely to occur but would have significant consequences if they occurred.

6.2.2 *Risk Analysis*—This is a process in which the hazards identified in 6.2.1 are ranked based on the likelihood that they might occur, as well as the significance of the consequence should they occur. This can be a numeric rating or qualitative rating, such as likely, very likely, or less likely. The highest-scored hazards are addressed first and the lowest-scored addressed last. The degree of impact (that is, consequence) is included in the analysis for each threat. A less likely threat (low frequency of occurrence) may have a higher impact if it were to happen, and that may affect the urgency of response for that threat. The following definitions of likelihood terms can be used as a guide: An incident or event deemed “likely” to occur has a greater than 66 % probability of occurring. A “very likely” result has a greater than 90 % probability. “Extremely likely” means greater than 95 % probability, and “virtually certain” means greater than 99 % probability.

6.2.2.1 *Vulnerability Assessment*—Once hazards are identified, the vulnerability assessment is applied to determine which potential incidents or events need to be considered when establishing an EOC. For example, the Authority Having Jurisdiction (AHJ) would not want to place the EOC in an area where routine flooding occurs when it has identified flooding as a high risk, unless the facility is specifically needed in that location and sufficiently protected from such risk.

6.2.3 *Emergency Management Operations*—Consider the aspects of emergency management operations that help define an AHJ’s need for an EOC.

6.2.3.1 *Consequence Management*—Consider the impact or result of an incident, which is the primary focus of EOC activities. Each agency in the jurisdiction determines how each identified incident is addressed and determines what is needed

in terms of space allocation, equipment needs, facility systems, or other requirements of a supporting EOC.

6.2.3.2 Capability Assessment—A capability assessment reviews the ability of a government, individual or company to address identified hazards. Such an assessment should review technical ability, financial resources, legal and institutional frameworks and political will. A capability assessment can reveal gaps in existing capability for hazard response and development control, as well as highlight currently functioning mitigation activities. This assessment can help identify policy and structural changes that must be made to institutionalize mitigation. Some mitigation options may be eliminated from consideration due to barriers to implementation identified during the capability assessment. This is the AHJ's determination of its capability to provide actions and resources, and to what level these needs can be addressed by the AHJ. This will help determine the size and scope of the EOC facility.

6.2.3.3 Legal Responsibility—Incorporates the AHJ's review of all applicable laws, policies, and procedures that shape the framework of the AHJ's emergency management responsibility. This review should specifically identify any legal aspects required of the jurisdiction, what equipment is required, and any laws that address construction or facility requirements.

6.2.3.4 Vision—This defines the long-term view of what the AHJ believes needs to occur in an ideal setting. Understanding that, the AHJ must be willing to make decisions based on issues such as cost/benefit and overall financial capabilities. A typical EOC organization vision statement addresses topics such as direction and control, situational assessment, coordination, priority establishment, and resource management.

6.2.3.5 Mission—This defines what the AHJ believes is the overall purpose of the EOC organization being established.

6.2.3.6 Facility Occupancy—Occupancy can vary. The entity's EOC facility could be a stand-alone building or in a shared facility (that is, jointly with a police or fire department or the 911 center) or just a room that has been designated in an existing facility. It can be a dedicated EOC facility (permanently set up for immediate use) or one that has been modified to accept equipment and personnel (for example, prewired for additional phone lines).

6.2.3.7 Facility Use—In many cases, the EOC can be designed for multiple uses. This may include a training room, conference room, and storage. Some facilities are dedicated and therefore reserved solely for use as an EOC. The EOC can be located within a larger facility that may include usage by other organizations or departments. Consider that the EOC design plan has the option of converting normal use of space into another type of use during an incident, or as the incident requires more personnel at the facility and more space is needed. Planned use of sliding room divider walls in facility design may provide more flexibility in facility use. Alternate planned space usage during an incident can also impact facility planning regarding changes in levels of security for different areas, space requirements, storage needs, locations and size of

restroom facilities, power and other utility needs, communications and other technology, vehicle parking, and other such issues.

6.2.3.8 Facility Functionality—The key to functionality is that it works for the organizations using it. Whether the facility is dedicated or multi-use, the objective is to be able to meet the needs of the organization in the role of an EOC. For some, this might be a compromise between what is seen as ideal and what is realistically possible. The AHJ should ensure that all partners who use the facility have the opportunity to provide input.

6.3 Create an EOC Design Team—The design team should be inclusive rather than exclusive. The AHJ may want to establish a core team of key individuals who will do most of the groundwork and will have final approval authority, but the overall size of the team should not be limited.

6.3.1 Identify Team Members—The team should be comprised of members who may or will participate in operations within the EOC.

6.3.1.1 Include the Public Sector—Include the primary public sector agencies and departments within the entity's jurisdiction that would operate in the facility during an emergency. Even if the facility belongs to a private entity, the public sector can provide guidance, input, and possibly a liaison to the entity's facility. Some of the most overlooked public sector representatives are legal counsel and design professionals.

6.3.1.2 Include the Private Sector—With the growing emphasis on the essential role of the private sector in a disaster/emergency, it is critical to get the private sector involved. The AHJ may wish to include either a seat for a liaison or, in some cases, a separate room for a private sector operations center (this may be especially important in larger urban or state EOCs). Participation should be limited to private sector entities with mature EOCs and those that can provide needed support to other response entities such as telecom providers, grocery chains, hospitals, and long-term care facilities.

6.3.1.3 Include Nongovernmental Organizations—Nongovernmental organizations (NGOs) such as the American Red Cross, licensed and trained amateur radio operators or other such emergency response trained volunteer organizations may need to have a regular seat in the EOC. It is important to address their specific needs to ensure they can operate with maximum efficiency in the EOC facility.

6.3.1.4 Include Faith-based Organizations—Many faith-based organizations take a very active role in disaster response and preparedness and may need to be considered in EOC planning.

6.3.2 Identify Team Structure—Identify a team leader early in the process, and establish both a core team and a larger more inclusive review team. Utilize people's strengths and responsibilities using organizational mechanisms such as a steering committee, advisory board, and technical committee.

6.3.3 Identify Team Support Resources—Identify resources the team will need. Ensure that the AHJ includes sufficient staff to support the team. The AHJ may wish to hire full-time administrative support staff.

6.3.4 Create a Meeting Schedule—Create a timeline for the project and then develop a meeting schedule that will support the timeline but will not become a burden to team participants.

6.4 *Conduct Design Team Planning Meetings*—Every meeting should have an agenda published in advance. Keep the meetings at a reasonable length, and ensure that the right people attend. Avoid scheduling meetings if there is no action or substantive information to report. The number of members with a vote should be designated in advance. Each entity represented should have an odd number of people on the team to avoid deadlock on the resolution of entity specific issues. All potentially interested parties should be aware of the process and be kept informed as the team progresses. It is recommended that an experienced architect with proven experience in EOC design and construction be retained early in the process to be available for design team planning meetings. Strict rules on meeting conduct should be established initially and restated before each meeting. It is recommended that meetings follow *Robert's Rules of Order*.⁴

6.4.1 *Develop the EOC Vision*—Before moving to the design or construction phase, it is essential to determine a consensus vision for the project. This will create the boundaries that will help resolve issues and provide a much clearer understanding of the intended result.

6.4.2 *Continuity of Operations/Continuity of Government*—Because of the nature of the EOC, it is essential to review and incorporate the entity's continuity of operations (COOP) and continuity of government (COG) plans. These plans help delineate the boundaries and requirements of the project. The need for continuity planning for the EOC itself and for consideration of the jurisdiction's COOP plans in the design criteria is essential.

6.4.3 *Identify Services to be Performed at the EOC*—The team should consider carefully what will be done at the EOC and what is required to accomplish the objectives. Some EOCs include a command and control area while others provide coordination services. These may include coordination in logistics, communications, infrastructure, and emergency services. Critical information such as the number of incidents that require (or would have required) activation of the EOC in the last ten years, categories of response levels, number of seats needed for the largest event, and a list of major functional activities expected to be accommodated by the EOC facility provides the design team with invaluable information on the scope of services to be performed.

6.4.4 *Align Hazard/Threat Identification and Assessment*—This review and alignment will aid in the selection of the site for the EOC and help determine any special construction needs that should be included to reduce the facility's susceptibility to hazards and threats unique to the entity's particular geographic area.

6.4.5 *Align Risk Analysis*—This review and alignment will help determine which hazards and threats are likely to occur and will potentially need to be managed at the EOC because of their resulting consequence and probability of occurring. Increased protection against identified risks results in increased costs. Careful consideration of the risk/benefit/cost implications should be part of the design process.

⁴ *Robert's Rules of Order Newly Revised, 10th Edition* 2000 Robert, Henry M., William J. Evans, Daniel H. Honemann, and Thomas J. Batch, Perseus Books Group, Cambridge, MA.

6.4.6 *Space Requirements*—It is difficult to be precise about space requirements; however, it is recommended that the AHJ estimate the minimum, maximum, and average space requirements. This will help determine a size that will not only meet the entity's immediate needs but also provide room for future growth. The space requirement recommendation applies to any space the entity is considering, whether an empty lot for constructing a new facility or an existing facility.

6.4.6.1 *Space for External and Non-jurisdictional Entities*—If the AHJ is a governmental entity, do not forget the private sector. The private sector is a rapidly growing partner in all activities an AHJ undertakes. Space needs to be allocated for this important partner. The AHJ may want to limit participation of private sector partners to those that provide support and have common goals aligned with the EOC vision. However, reviving local economic capabilities is an important part of response and recovery. Therefore, some method of communication between the entity and all private sector entities needs to be included in the planning. Private sector entities need to provide a liaison to the AHJ to keep informed of actions and plans.

6.4.6.2 *Space for Public Information Office/Joint Information Center (PIO/JIC) and Media*—The PIO/JIC is critical during an incident; however, it may not be advisable to have it located immediately within the EOC. If the AHJ has the option, it may be better to have a designated location close by where media activity will not interfere with emergency management operations. The joint information system (JIS) is critical, and the JIC is merely a facility to implement this system.

6.4.6.3 *Space for Working a Virtual EOC System*—As technology evolves and becomes available, the virtual EOC will continue to grow in acceptance and usability. If the AHJ plans on operating a joint EOC, then it should consider space for those who would typically work a Virtual EOC system.

6.4.6.4 *Efficient Use of Space*—The AHJ should ensure the EOC space is used efficiently for both day-to-day and activation activities (with flexibility and commonality to include shifts and overlaps). In many cases, the EOC may be a joint facility with other non-emergency operations. If the EOC space is also used for non-emergency operations, space allocation decisions need to consider the need for these operations to remain functional even during an incident. In such cases, staff surges at shift changes may need to be considered depending on the nature and size of the incident and the function of the non-emergency operations.

6.4.6.5 *Space for Meetings*—Environmentally controlled space should be provided for policy and strategy meetings apart from the EOC. The noisy environment of a functioning EOC is not conducive to such meetings. Also consider space for executive session meetings and tactical response coordination.

6.4.6.6 *Space Required for Equipment*—Provide sufficient space for current and future equipment needs. Technology and software advances are requiring an ever-increasing amount of equipment. As an incident's need for additional management and staff increases, so will the need for additional equipment and space for that equipment. Consider storage space for portable equipment that might be set up in an incident

expansion area of the facility and used elsewhere to provide “just in time” training, breakout sessions, and additional briefings.

6.4.6.7 *Space Optimization*—Efficiency should be key in space planning and allocation. It is essential to be cognizant of size, space, sound, and lighting requirements. Consider utilizing advances in technology. For example, hardened windows can be installed or retrofitted without loss of structural integrity in work areas to contribute to the security and psychological wellbeing of the EOC staff.

6.4.6.8 *Break Area and Recreational Space*—It is essential that EOC personnel have adequate space for recreational breaks and relaxation to foster staff alertness and efficiency and avoid early burnout. The setting and colors used in the design of the break area (also shift change areas, if available) should be calming to help EOC staff relax and decompress before and after a shift.

6.4.6.9 *Space Requirements for Survivability and Operability*—The survivability of the EOC needs to be based on the entity’s hazard, threat, and risk analysis. When allocating space provide appropriate standoffs from the building. Avoid public parking areas within proximity of the facility or direct-driven access to the facility. The EOC and associated property should allow for space to perform security checks of people, equipment, and vehicles. Air, water, and fuel systems should be protected from tampering as well as be designed to survive identified hazards and threats. The EOC should be isolated from other non-related uses by a minimum of a two-hour fire separation.

6.4.6.10 *Americans with Disabilities Act (ADA)*—An EOC should be designed for compliance with the Americans with Disabilities Act to accommodate participants who may have disabilities. If the space includes access by the general public, then compliance is mandatory. Any entity creating an EOC should design the facility to meet the needs of physically or mentally challenged individuals. Although the ADA is applicable within the United States, it is a benchmark standard for the disabled community worldwide.

6.4.6.11 *HVAC and Utility Systems*—In today’s environment of potential terrorism and hazardous materials, the EOC should be equipped with an efficient HVAC system that can deliver continuous clean conditioned air to the people working in the EOC (that is, a fire-rated, blast resistant closed system capable of supplying continuous clean air). The HVAC system should be adequately designed to protect it from chemical, biological, and radiological hazard attack. Redundant air handling, heating and cooling, electrical, water, and sewer systems capabilities should be addressed. NFPA standards 90A and 90B provide additional guidance and requirements for adequate design of HVAC systems.

6.4.6.12 *Utility Design*—With the growth in new technology, space requirements for utilities such as electrical are growing. A redundant sewer system needs to be considered. Entities typically build EOCs below ground, and if the main utility is taken offline, sewer systems can back up. An emergency electrical power system (fuel and generator) also needs to be considered. Evaluate all utility systems for redun-

dancy to ensure the AHJ can continue to provide services at the EOC under all identified hazard and threat conditions.

6.4.6.13 *Shared Facility Functional Areas*—If the EOC is in a shared facility, ensure that all functional areas are sufficient. Each area will require different equipment. Emergency services areas will need enough space and equipment to accommodate a myriad of portable and tablebased radio systems. Some thought should be given to common requirements such as telephones, dry-erase boards, and computers.

6.4.6.14 *Security Systems and Security Personnel*—It is essential to ensure that the entity’s space provides adequate security measures. This includes personnel and equipment as well as hardening efforts that might be required.

6.4.6.15 *Potential Medical Needs*—Injuries and illnesses do occur during incidents. Space needs to be provided where injured or ill individuals can be located until they improve or can be transported elsewhere. Space should also be provided for medical supplies such as a defibrillator and first aid kit. Access to this space should be large enough to accommodate any incoming medical resources to include an ambulance or a wheeled litter.

6.4.6.16 *Personal Hygiene Areas to Include Shower and Laundry Facilities and Basic Related Supplies*—Some incidents may require that staff remain on duty for long periods of time. Shower space should be identified for both men and women, whether it is in the EOC or in a nearby location (for example, at a hotel, dorm facility, or similar off-site facility).

6.4.6.17 *Sleep Areas*—Some incidents may require staff to remain on duty for long periods of time. Sleep areas need to be provided. Sleep areas can be in the EOC itself or in a nearby facility, such as a hotel or shelter. If the AHJ plans on locating sleeping areas in existing rooms designed for other purposes, it should ensure that the sleeping areas have adequate storage space for sleeping supplies as well as proper ingress and egress. Some laws require additional entrances and exits for sleeping areas.

6.4.6.18 *Supplies Adequate for Continual Operations for up to 30 Days*—Adequate storage should be designed into the facility from the beginning. Sufficient storage space needs to be considered to store enough supplies for survival up to 30 days. This includes food storage and preparation space and equipment (for example, refrigerators, freezers, microwaves, and stoves). If nearby facilities are utilized, it should be confirmed that such facilities are appropriately prepared with back-up power, water supply, functional sewer/septic systems, laundry facilities, accessible parking, communications, security, and emergency medical access.

6.4.6.19 *Amateur Radio Considerations*—Designate specific space for amateur radio operations as well as other communications capabilities. Amateur radio operators have access to local and regional telecommunication systems that, in the event of an emergency can be used to supplement and augment government/public-sector radio communication assets. The location of antennas, cables, and power supplies required for amateur radio operations within the EOC must be considered during the initial design stage.

6.4.6.20 *Other Trained Volunteers (for example, American Red Cross [ARC], Community Emergency Response Team*

TABLE 1 Technology Decision Tree

	YES	NO	ACTION
1. Does the entity require submission of disaster reports and requests in a particular format?	See question 2	See question 4	
2. Must its submission be through a particular computer program?	See question 3	See question 4	
3. What is the program? Who supplies the program? How much does it cost? How many computers does it need in the EOC with the program to supply the data?	Take action based on answers to questions.		Use information to determine mandated/minimum EOC technology needs.
4. Does the entity want to use a computerized reporting system?	See Table 2	See question 5	
5. Are there current paper forms that meet the reporting needs?	Take action	Create forms and take action	Acquire forms, determine copies needed, produce copies as budget allows, and stock the EOC

[CERT], Search and Rescue [SAR], Structural Engineers Emergency Response (SEER) Team, and Medical Reserve Corps [MRC])—With the growing use of volunteer groups, it is important to provide space for these services or at least a liaison from these types of groups.

6.4.6.21 *Partners Such as Corporations Aiding Logistics*—Consider space allocation for this critical function. Most entities now use just-in-time delivery processes that require coordination with third-party logistics. Preplan to have space for these partners and adequate space for the equipment they will bring.

6.4.6.22 *Records Retention*—Records retention is another storage issue. The protocol of the entity should include assessment of every piece of paper, including papers to be discarded, to ensure that it does not include critical information. There will be volumes of records that may need to be retained for future reference or as documentation for financial reimbursement.

6.4.6.23 *Facility Logistics*—The entity needs to consider space to perform facility logistics. Space for facility logistics includes space for janitorial closets, loading docks for deliveries, and garbage bins. EOCs require constant upkeep when in use during activation as compared to daily operations. Anticipate the need for the space and services to at least double during an incident because of the high volume of people at the facility.

6.4.6.24 *Laws, Ordinances, Standards, and Operating Procedures Required for Facility*—Various building codes require certain equipment to be installed for entrances and exits. All facilities should have emergency lighting equipment. Planners should review all laws, ordinances, standards, and operating procedures to identify additional equipment requirements. A professional architect can aid in this review process.

6.4.7 *Technology*—Technology trends are toward miniaturization and software-based applications. Technology envisioned now or in the future will more than likely require space and other support. The AHJ should plan for these additional needs, which include sufficient space and size of utilities, HVAC, IT equipment, and cabling and power chases. It is recommended that the AHJ acquire the services of a qualified communications/information technology (IT) consultant to assess and establish equipment requirements. This will determine the space needed for technology. Emergency manage-

ment is a group approach, and some members may have specialized technology needs that require space and linkage. NFPA 110 provides additional insight and requirements for emergency and standby power systems.

6.4.7.1 *Communications Analysis*—A complete communications analysis should be conducted to help determine space and utility requirements. When reviewing communications, review all applicable laws, ordinances, standards, and procedures. Certain communications equipment, such as secured communications rooms require specialized shielding.

6.4.7.2 *Technology Decision Tree Review*—A technology decision tree (**Table 1**) is an aid developed to assist emergency managers in determining basic technology needs. The intent is to prompt entities in developing useful systems as well as redundancy.

6.4.7.3 *Computer and Software Checklist*—Once general technology needs have been identified, the entity should look at computers and software in more detail. The computer and software checklist (**Table 2**) is an aid developed to assist the entity in identifying more specific needs.

6.4.7.4 *Communications Oversight/Control*—To ensure enough space is available for equipment, identify a lead entity that will establish communications and equipment oversight and control. This can be an existing organization or a newly developed subcommittee. Strive for a good balance of functionality and security.

6.4.7.5 *Information Exchange*—Information flows both vertically and horizontally. If everyone on the team is educated about how the information is to flow, he/she can assist the entity in identifying communications media and equipment needs. Information management includes not only formal but also informal communications. Entities also need to consider incorporating soundproof rooms in which critical or secure communications can take place.

6.4.7.6 *Remote Operation*—In a technology-enriched environment, emergency management functions can be conducted in multiple locations. The entity should build in the capability to operate in a remote location virtually as well as at the EOC.

6.4.7.7 *Interoperable and Integrated Communications*—Communication systems need to be interoperable. Interoperability ensures the ability of a system to work with, or use the parts or equipment of, another system. For example, the EOC