Operational and Business Continuity Planning for Prolonged Airport Disruptions

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AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP REPORT 93

Operational and Business Continuity Planning for Prolonged Airport Disruptions

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AIRPORT COOPERATIVE RESEARCH PROGRAM

Airports are vital national resources. They serve a key role in transportation of people and goods and in regional, national, and international commerce. They are where the nation's aviation system connects with other modes of transportation and where federal responsibility for managing and regulating air traffic operations intersects with the role of state and local governments that own and operate most airports. Research is necessary to solve common operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the airport industry. The Airport Cooperative Research Program (ACRP) serves as one of the principal means by which the airport industry can develop innovative near-term solutions to meet demands placed on it.

The need for ACRP was identified in *TRB Special Report 272: Airport Research Needs: Cooperative Solutions* in 2003, based on a study sponsored by the Federal Aviation Administration (FAA). The ACRP carries out applied research on problems that are shared by airport operating agencies and are not being adequately addressed by existing federal research programs. It is modeled after the successful National Cooperative Highway Research Program and Transit Cooperative Research Program. The ACRP undertakes research and other technical activities in a variety of airport subject areas, including design, construction, maintenance, operations, safety, security, policy, planning, human resources, and administration. The ACRP provides a forum where airport operators can cooperatively address common operational problems.

The ACRP was authorized in December 2003 as part of the Vision 100-Century of Aviation Reauthorization Act. The primary participants in the ACRP are (1) an independent governing board, the ACRP Oversight Committee (AOC), appointed by the Secretary of the U.S. Department of Transportation with representation from airport operating agencies, other stakeholders, and relevant industry organizations such as the Airports Council International-North America (ACI-NA), the American Association of Airport Executives (AAAE), the National Association of State Aviation Officials (NASAO), Airlines for America (A4A), and the Airport Consultants Council (ACC) as vital links to the airport community; (2) the TRB as program manager and secretariat for the governing board; and (3) the FAA as program sponsor. In October 2005, the FAA executed a contract with the National Academies formally initiating the program.

The ACRP benefits from the cooperation and participation of airport professionals, air carriers, shippers, state and local government officials, equipment and service suppliers, other airport users, and research organizations. Each of these participants has different interests and responsibilities, and each is an integral part of this cooperative research effort.

Research problem statements for the ACRP are solicited periodically but may be submitted to the TRB by anyone at any time. It is the responsibility of the AOC to formulate the research program by identifying the highest priority projects and defining funding levels and expected products.

Once selected, each ACRP project is assigned to an expert panel, appointed by the TRB. Panels include experienced practitioners and research specialists; heavy emphasis is placed on including airport professionals, the intended users of the research products. The panels prepare project statements (requests for proposals), select contractors, and provide technical guidance and counsel throughout the life of the project. The process for developing research problem statements and selecting research agencies has been used by TRB in managing cooperative research programs since 1962. As in other TRB activities, ACRP project panels serve voluntarily without compensation.

Primary emphasis is placed on disseminating ACRP results to the intended end-users of the research: airport operating agencies, service providers, and suppliers. The ACRP produces a series of research reports for use by airport operators, local agencies, the FAA, and other interested parties, and industry associations may arrange for workshops, training aids, field visits, and other activities to ensure that results are implemented by airport-industry practitioners.

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The authors make no representation or warranty as to the accuracy, applicability, appropriateness, or sufficiency of the plans and procedures described in this guidebook or generated by the accompanying business continuity planning software tool. The authors make no representation or warranty about the capacity of the plan that the tool generates, if followed, to avert or diminish the effect(s) or impact of any disruptions experienced by any user of the plan, or to imply that recovery from any disruption will be effective, appropriate or successful—since positive outcomes depend upon material and information input into the tool by the users and on their future actions—to which the authors are not privy. Users of this guidebook and any plan that is developed using the accompanying software tool agree to hold harmless the authors and their staffs, officers, contributing consultants, and Boards of Managers from and against any and all claims, disputes, actions and/or damages made or asserted by any party, as a result of any use of the information contained herein or the plan(s) generated by the tool.

FOREWORD

By Theresia H. Schatz
Staff Officer
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ACRP Report 93: Operational and Business Continuity Planning for Prolonged Airport Disruptions provides a guidebook and software tool for airport operators to assist, plan, and prepare for disruptive and catastrophic events that have the potential for causing prolonged airport closure resulting in adverse impacts to the airport and to the local, regional, and national economy. This guidebook and the accompanying software tool include concise guidelines to provide operators of all sizes and types of airports with a resource to assess, plan, and prepare for a recovery that includes infrastructure, managerial, business, and operational sustainability and continuity. This resource identifies industry practices and develops a critical path framework to identify immediate and long-term needs and establish recovery priorities in the preparation for catastrophic events.

Airports are an integral part of the transportation system and have a major impact on the global economy. Prolonged airport disruptions resulting in the loss of critical managerial, operational, and business functions can hamper and degrade service in all segments of the aviation market including commercial air carriers, general aviation, military, and other tenants that use the facility. Airport operators are experts at emergency response. Most incidents experienced by airports last less than a day; however, if an airport were to experience a catastrophic event lasting several days or weeks, the impact on the airport, local, regional, and national economy would be great. In a prolonged disruption, lasting several weeks to possibly months, managerial, operational, and business changes would be necessary. While many airports have airport emergency plans, additional information is needed to develop managerial, operational, and business continuity plans. The ACRP Project 03-18 research team developed a guidebook and tool to assist airport operators in planning consistently and effectively for continuity during a prolonged disruption. This guidebook and tool complement rather than duplicate or replace an airport emergency plan.

This research was conducted under ACRP Project 03-18 by Risk Solutions International LLC. As part of the research, the firm surveyed approximately 40 representative airports as well as industry trade groups and associations and federal agencies to identify issues, problems, resources, and funding for facilitating operational and business continuity planning.

A separate contractor's final report, which provides background on the research conducted in support of the guidebook, has been posted on the ACRP Project 03-18 web page that can be found by searching the TRB website (www.trb.org) for *ACRP Report 93*.

CONTENTS

PART 2 Using the Airport Business Continuity Planning Software Tool

Note: Many of the photographs, figures, and tables in this report have been converted from color to grayscale for printing. The electronic version of the report (posted on the Web at www.trb.org) retains the color versions.

PART 1

Business Continuity Planning at Airports

Overview of Business Continuity Planning at Airports

The likelihood that incidents will occur threatening to disrupt the continuity of business and operations at airports creates significant risk and obliges airports to develop recovery strategies and plans.

Whether these disruptive incidents are specific to an airport or the result of broader circumstances, it is the airport's and fixed base operator's (FBO's) responsibility to plan for possible impact on its operations. Planning enables organizations to assure their customers, stakeholders, and regulators that they can maintain some minimal service level during disruptions and recover fully afterward.

To minimize the impact of potential interruptions on operational continuity, airports can develop and maintain a business continuity plan. Business continuity plans equip airports to recover their mission-essential functions as quickly as possible after any kind of material or prolonged disruption.

Recovery is particularly important in the airport environment because airports—as part of the critical national infrastructure—play an outsized role in connecting people, supporting commerce, sustaining communities and economies, and protecting the national interest.

This guidebook is a resource that airports and FBOs can use to do the following:

- Gain an understanding of business continuity planning
- Create a management structure to sponsor and support the process
- Name a team to develop a plan
- Institute a process to create business continuity awareness and a preparedness culture throughout their organizations

This guidebook was written and designed to function seamlessly with the accompanying *CRP-CD-140: Airport Business Continuity Planning Software Tool,* which is bound into this book or which can be burned onto a CD-ROM from an ISO image located at www.trb.org/Main/Blurbs/169246.aspx. The tool is a detailed interactive survey that enables users to create a basic, customized business continuity plan quickly by answering a series of detailed questions about their operations.

Definition of Business Continuity Planning

Business continuity planning (BCP) is the process of developing a roadmap for continuing operations under adverse conditions and during disruptions caused by all types of incidents, emergencies, and crises. BCP is a process or methodology that documents how business is conducted *during* a disruption and how essential functions, processes, and resources are optimally recovered and restored *after* a disruption. BCP focuses on recovering data, information, operations, and processes in every essential organizational function. It is a holistic process that should be applied across the business and operations footprint of the entire entity.

Airports and FBOs that have achieved a state of business continuity are those that have rigorously embraced the BCP process, developed a "living" business continuity plan, adopted a business continuity mindset and discipline throughout the enterprise, and regularly exercise and update their plans.

What Business Continuity Planning Is Not

BCP is quite distinct from other emergency-related programs and processes in the airport environment, although other processes may be tangentially related to business continuity. The distinctions among these other processes and their relationships with BCP are described below.

Emergency Management

Emergency management is the process of preventing controllable incidents that threaten life, property, and physical

assets; mitigating the impact of incidents that actually occur; responding to these incidents; and physically recovering from them. Emergency management is incident-specific and deals with all types of risks, hazards, and emergencies, both natural and man-made. It includes incident action plans (IAPs), which are incident-specific strategies for dealing with each unique emergency situation.

Business and operational disruptions to airport operations may well be caused by emergency incidents. Unlike emergency management, however, BCP is not concerned with the type of incident or emergency that *causes* disruptions or with the likelihood of its occurrence. The focus of BCP is on the *impact* of such an emergency incident on the continuity and resilience of the essential functions and processes that are regular, routine airport operations. The kinds of resources used to respond to emergencies are very different than those used to recover business operations.

Information Technology Disaster Recovery

The information technology (IT) department's Disaster Recovery (DR) plan addresses how technology infrastructure, applications, and resources will be optimally recovered after disruption and in what order these elements will be restored to support the business requirements of the organization.

The IT DR plan is a component part of a comprehensive BCP process. Optimally, DR plans are aligned with the business continuity plan through the business impact analysis (BIA). This analysis assigns relative recovery priority to all business and operational functions, and, in turn, the BIA defines the demand for the recovery of IT support for the most critical functions. The BIA ranks the priority of business functions for IT resources through two measures—the tolerance each function has for loss of data and the amount of time these functions can be unavailable to the airport before there is material negative impact to their mission and to the airport.

Crisis Management

Crisis management consists of methods used to respond to both the reality and perception of a crisis, the establishment of metrics to define which scenarios constitute a crisis and should therefore trigger the necessary response mechanisms, and the communications that occur within the response phase of emergency management scenarios and persist afterward.

Crisis management is the strategic overlay to how airport organizations think about and deal with critical incidents that can affect elements like operations, regulatory assurances, financial performance, reputation, and legal circumstances. BCP plays a role as a component of the crisis management strategy, specifically supporting both the resilience of essential functions during those crises that cause disruptions and the recovery of these functions after the crisis passes.

Irregular Operations

Irregular operations (IROPS) are events that disrupt normal flight schedules, causing problems for airports, airlines, and passengers. IROPS are usually caused by extreme weather conditions or mechanical issues and can vary widely among airports. Negative impacts can include tarmac delays, passenger surges in terminals, and extended stays in airports. Creating a comprehensive contingency plan helps airports comply with related government regulations and improve overall customer service during IROPS events.

BCP addresses how to recover and restore normal airport operations after a material disruption of any kind. "Normal operations" refers to how the airport routinely runs its myriad functions and activities when the *operating environment is stable.* IROPS, on the other hand, encompass airports' contingency plans during *abnormal circumstances* in the aviation system and with air carriers that impact passengers at the airport. IROPS are operations during times when the systemic air traffic environment is fundamentally in chaos.

ACRP Report 65: Guidebook for Airport Irregular Operations (IROPS) Contingency Planning is available to assist airports in developing, continually evaluating, and updating contingency plans and procedures during IROPS periods that may cause significant disruptions to the traveling public.

Disaster Operations Groups

Disaster operations groups (DOGs) are regional airport-to-airport voluntary mutual aid compacts that offer operational assistance during large-scale disasters. These groups offer effective "airport-centric" response during disasters, including specific relief and operational, technical, and logistic support. A typical DOG response could include the cooperative provision of services such as the following:

- Liaison
- Needs assessment
- Skilled personnel
- Relief services
- Specialized equipment
- Basics (food, water, personal needs, fuel trucks, and jet fuel)
- Airfield equipment (regulators, generators, lighting, and signage)
- Public safety items such as law-enforcement officers (LEOs) and aircraft rescue and firefighting (ARFF) personnel and equipment

- Assessment and advisory teams
- Shared emergency operations center (EOC) facilities to coordinate relief efforts

DOGs, such as Southeast Airports Disaster Operations Group (SEADOG) and Western Airports Disaster Operations Group (WESTDOG), are essentially emergency management cooperatives that recognize that airports may be the entities best equipped to help other airports respond to large-scale regional crises such as hurricanes. DOGs can play an important business continuity role because they provide potential alternative resources to support operational continuity for some airport activities until the affected airport can recover its own capacity.

Business Continuity Planning—A Strategic Priority for Airports

Critical National Infrastructure

Airports are a key part of the critical national infrastructure in the United States. Airports efficiently move people and cargo, support commercial activity and economic development, enable response to emergencies and crises in a timely way, and provide infrastructure that helps protect the country. They provide the vital commercial and general aviation backbone connecting communities and people across the nation's span of urban, rural, and remote localities.

It is in the national interest that members of the critical air transportation sector develop a sustainable internal capacity for operational resilience. Ensuring the continuity of airport operations is important—not just at large and medium hubs and cargo airports, but also at non-hub, reliever, commercial service, and general aviation airports. It is also important to ensure continuity of operations for the companies that are FBOs and specialized aviation service operators (SASOs) at airports.

Because each of the thousands of public and private aviation entities serves as a vital element in the lives and livelihoods of Americans everywhere, the extended or prolonged loss or disruption of function and capacity at any facility poses a significant community, regional, or national threat. The U.S. economy and way of life depend on a vital and uninterrupted aviation sector, and airports are critical to that imperative.

Good Business Practice

Good Strategy

That BCP is strategically important as a good business practice and as a risk management imperative, is perhaps the best reason to initiate BCP at airports. As federally certificated transportation and commercial centers serving and supporting local and regional economies for the public good, airports' strategic business plans should include the capacity and capability to provide continuous operations in the service of their stakeholders.

Risk Management

Business continuity is a natural adjunct to airport enterprise risk management (ERM) and insurance programs because it documents risk mitigation efforts that the airport has adopted and assures underwriters that tangible contingency planning is in place. BCP can help organizations quantify the economic cost of business interruptions so that they can understand, document, and plan for the impact in terms of lost revenue, contractual or regulatory penalties, or contingent cost implications. Airports are organizations that may be exposed to enhanced operational continuity risk because many of their operating assets are concentrated in a single physical location with severely limited or non-existent aeronautical relocation options.

Contractual Obligations

BCP may also help airports meet service level agreements (SLAs) with and contractual obligations to their business partners and maintain compliance with loan or funding covenants. Airline tenants may require the development of a business continuity plan by the airport as a condition to (or prerequisite for) locating or continuing flight operations at that airport. Because airports depend on complex "supply chains"—symbiotic networks of vendors, contractors, tenants, and concessions—for their mission-critical services, resources, and capacity, they may encourage airlines to coordinate their own contingency plans with those of the airport. Airports should establish BCP programs to address the operational resilience of each of their partners in order to mitigate single points of failure in their integrated networks and help these partners meet their own continuity objectives.

Compliance

Regulation and Oversight

Airports must comply with numerous federal, state, and local regulations; directives; rules; and oversight. These may directly or indirectly obligate airports to implement BCP. Many states have statutes requiring that departments, agencies, and other arms of government comply with continuity of operations planning (COOP) directives for operational resilience and sustainability (e.g., the capacity to recover after disruptions and remain operational). To the extent that

airports are considered government organizations, government COOP directives may require BCP at airports in their jurisdictions. Indirectly, compliance with specific FAA certification requirements (such as maintaining ARFF index levels) may be enhanced with BCP.

Industry Standards

Whether airports develop business continuity plans for business reasons or to comply with governmental mandates, there is a body of business continuity standards that has been developed and widely adopted to define recommended process and practice. Government COOP mandates usually reference these standards. A voluntary BCP compliance program of the U.S. Department of Homeland Security aligns with these standards. Many business continuity "leading practices" are consistent with them. These business continuity standards are further detailed in Appendix A.

Liability Management

BCP may be adopted at airports as a mechanism to support organizations' efforts to limit their (or the airport operator's or governmental jurisdiction's) exposure to liability for claims, lawsuits, and contractual penalties related to operational losses.

Why Business Continuity Planning Has Been Poorly Embraced—Findings from the Research

The research that preceded the development of this guidebook and software tool amplified the original premise behind ACRP Project 03-18: that relatively few American airports have adopted BCP and that they need a better understanding of BCP as well as a basic roadmap and tool to help them implement it. The research confirmed that although some airports have implemented various levels of BCP, a majority of them have not made BCP a critical priority.

The research concluded that airports need a process, along with supporting information, to equip them to address business continuity with the same rigor and expertise that they address emergency management. The key findings of the research are summarized below.

Business Continuity Planning Not a Strategic or Business Priority at Most Airports

A minority of airports have included comprehensive BCP in their strategic business plans or supported BCP from the top of the organization by establishing a steering committee to oversee it. Few have formally named a person who is qualified to lead a business continuity effort. Those that have made some progress in BCP may have instituted the process at a non-strategic level of their organizations. For some, responsibility for BCP may reside in City Hall, the county office building, or with the airport operator. Until someone of rank and authority publicly prioritizes and endorses BCP, it is unlikely to be embraced or to compete effectively for scarce airport resources.

Minimal Awareness of Business Continuity and Inconsistent Operational Understanding

The U.S. airport industry is largely unaware of BCP, and the discipline is generally misunderstood. There is a paucity of reliable sources of information in the industry about BCP and no apparent or dedicated provider of training or best practices on the topic. The top aviation schools do not address BCP in their textbooks, curricula, or classrooms, so young airport executives arrive at their first jobs with no grounding in the process. Until the inception of ACRP Project 03-18, BCP had not been a topic, track, or item presented from the podium at industry conferences or workshops, and BCP is rarely addressed in industry publications or resource lists.

BCP is not widely practiced at airports, so most airport employees do not get exposure to the topic on the job. There is very little in the available press or online that addresses business continuity within an airport context. Because BCP is uncommon in the airport sector, even a small step forward will represent significant progress for airports.

Emergency Management versus Business Continuity Planning

One core reason for the lack of understanding of BCP is widespread confusion about the terms "emergency management" and "business continuity." Airports are very good at emergency management because they are "genetically" focused on emergencies, accidents, and safety and are extremely resourceful and competent at preventing, preparing for, mitigating, and recovering from emergencies. Airports are also good at emergency response because they have sufficient management, staffing, training, funding, regulatory impetus, emergency supplies and equipment, federal assistance, and memoranda of understanding (MOUs) for regional collaboration through local emergency services and DOGs. Airports have benefitted from no regulatory basis, funding, and support for business continuity activities.

Challenges of Business Continuity Planning in the Complex Airport Operating Environment

Airports are host to a unique mix of critical and supporting activities, roles, and responsibilities spread across multiple entities at fixed locations. Key functions are managed by airport staff, commercial contractors, tenants, FBOs and SASOs, or by airport operator personnel (e.g., city or county employees). Creating a business continuity plan that takes into account a broad assortment of independent or quasi-independent public, private, or government entities makes the BCP process more challenging than it would be if all airport functions were controlled centrally.

Because most airports are operations-centric entities with staffing and resource constraints, their institutional knowledge often rests in the hands (and heads) of a single manager, a small group of executives, or highly specialized personnel. Because this knowledge may be undocumented, when there is a "succession situation"—such as dismissal, relocation, death, retirement, or sickness—single points of failure may exist at many airports, increasing the risk of failure during prolonged disruptions. While essential functions at some airports may be supported by recovery strategies that are well understood, documented, and exercised by their staffs, many airports have no formally written and rehearsed plan. Responsibility for business continuity management, like other airport functions, may reside with the airport operator, adding another layer of complexity to the challenge.

Business Partner Interest in Airport Business Continuity Plans

Airports are co-dependent with a number of stakeholders with whom they maintain symbiotic relationships. Airlines, as the single most important operating tenants at airports, maintain corporate business continuity plans. Yet, as carriers who are dependent upon efficient airport recovery, airlines need to understand what they can expect when the host airport activates its recovery plan.

Similarly, all other commercial tenants, FBOs, and concessions need to develop and maintain their own business continuity plans and align them with the airport's recovery plan. The general aviation community is enthusiastic about airports having a commitment to operational recovery because private and business aviation fundamentally depend on continuity of available airport services, assets, and facilities.

Airport BCP and exercises should involve tenants, FBOs, concessionaires, and general aviation interests appropriately. Some of them (corporate flight departments and recreational pilots, for example) have both choice and mobility; they can relocate their activities to alternative airports that have better plans for operational resiliency.

No Federal Mandate for Airport Business Continuity

One of the reasons why BCP is not a core practice at airports (notwithstanding the standards and federal guidance summarized in Appendix A) is that no federal mandate specifically requires airports to develop a business continuity plan. No grant specifically funds airport BCP. Having a business continuity plan is neither an official obligation in consideration of grant assurances nor is it funded by any aviation program at the federal level. While the absence of a mandate should not be a reason for any airport to delay the development of a plan, this absence undermines the industry's understanding and embrace of BCP.

Challenges to Developing Airport Business Continuity Plans

Although the unique operating environment at airports and the broad mix of airport types, sizes, and missions makes widespread adoption of BCP somewhat more challenging, it also renders the results more beneficial. The complex interplay of aeronautical, non-aeronautical, commercial, non-commercial, government, military, and support activities provided by numerous independent entities makes coordinating recovery planning important.

Because contractors, commercial tenants, federal agencies, and FBOs often perform essential functions instead of airport employees, authority and control are dissipated and divided among these contractually connected organizations. The multi-organizational structure at airports makes BCP more complex because the chain of command is indirect, and plans must rely heavily on the operational continuity planning of each distinct entity. The lines of demarcation that separate operational responsibilities among these various entities can blur, varying greatly from airport to airport.

This level of complexity makes the BCP process at airports understandably challenging because so many core functions are out of airports' control. The tools available to airports to ensure that a disparate group of interdependent stakeholders optimally coordinate business and operational recovery may be limited to contractual provisions with commercial partners, MOUs with governmental entities, or simply strong administrative coordination. The complexities that make BCP a challenge for airports are closely related to the roles each constituent plays and its vested interest at the airport, including ownership, commercial tenants, government agencies operating at airports, and FBOs and SASOs.

Ownership

The ownership dynamics of U.S. airports contribute to the business continuity challenge because, for publicly owned airports, responsibility for numerous business functions may lie with departments at City Hall, the county office building, or the airport operator such as a port authority or even the state. In these cases, airport business departments in areas such as finance and administration (F&A), human resources (HR), or payroll may actually be extensions of the larger city or county departments. If airport employees are formally considered employees of the municipality, for example, then the airport's payroll, labor relations, or HR function may be actually housed and performed at City Hall, not at the airport. Likewise, grants, funding, government relations, bond issues, and many other essential airport activities may be coordinated jurisdictionally, with the airport as the beneficiary, but with operations centrally coordinated or controlled.

The implications for BCP include extending the management commitment process, assessment, planning process, and training and exercises beyond the boundaries of the airport to each of those core functions that are managed by the airport operator or a governmental department or agency, wherever it may be physically located. This adds a level of complexity and demands inclusion, coordination, and integration for two reasons.

First, the city or county COOP needs to be considered during the airport's BCP process to understand the extent to which it defines and documents what the airport can expect for departmental recovery priorities and resources for those externally managed and located functions.

Second, the airport plan must take into account those externalities to which its recovery planning is exposed because many city or county (i.e., non-airport-related) disruptions can partially or fully bring operations in these offsite business departments to a halt. These non-airport disruptions can still impact airport operational continuity because of the airport's dependence on those department functions that are essentially outsourced.

Commercial Tenants

Just as some essential airport *business* functions may rest with local government, many airport *operating* functions are controlled under contract, commercial lease, or land lease by tenants. Commercial flight operations are the responsibility of airlines; general aviation operations are run by the FBO; fueling services may be provided by an FBO or into-plane fueling agent; parking may be the responsibility of a parking contractor; rental car service is the province of the national car rental companies; and public safety may be outsourced to a private security contractor.

While airports likely maintain strong and cooperative relationships with private operational contractors and commercial lessees, the airport's influence on the BCP practices of these companies may be limited practically to contractual leasehold provisions that require that these outside firms adopt and maintain their own business continuity plan.

Large, well-funded, national companies such as commercial airlines, car rental companies, and hotels probably practice BCP at the corporate level. The question for the airport is whether those plans have recovery systems and processes in place for airport-specific operations (e.g., "what is Acme Parking's plan for operational recovery at *my* airport?"). Those essential airport operating functions that are contractually controlled through commercial relationships present the challenge of how to ensure an orderly recovery of functions that the airport itself does not directly control.

Contractors that may not have any plan for recovering their operations at the airport present airports with an even more serious problem; the airport business continuity plan may be unable to address critical third-party functions that must be recovered in order for the larger airport to function smoothly.

Consequently, airport business continuity planners need to inform the process through inquiries into the local recovery capacity and plans of its essential commercial tenants and contractors. The airport BCP team should be in close contact with its counterparts at hotels and car rental companies, among others, so that, ideally, the airport's plan can be integrated with the business continuity plans and recovery goals of their partners and expectations are as cohesive as possible.

If the airport decides to add a BCP provision or requirement to its commercial leases and agreements, such a contractual requirement should be applied fairly and equally across all similar types of agreements and leases in order to maintain compliance with FAA requirements.

Government Agencies Operating at Airports

Several mission-critical airport functions are the responsibility of independent federal agencies that are not part of the airport organizational or management structure. At many airports, the FAA is responsible for some aeronautical operations, air traffic control (ATC) activities, navigation aids (NAVAIDS), and related inspections and certifications in areas like ARFF operations. To minimize flight safety risk, the TSA screens all passengers, baggage, and cargo, coordinating enforcement activities with the airport's public safety department. The U.S. Customs and Border Protection Agency (CBP) and the Immigration and Customs Enforcement Agency (ICE) clear inbound passengers from international flights, inspect their declarations for prohibited materials, and enforce immigration laws. In some airports, the U.S. Department of Agricul-

ture (USDA) screens and isolates potentially harmful organic and agricultural substances to protect the U.S. food chain and public health.

The airport does not control the functions these agencies provide. However, without the recovery of FAA, TSA, CBP, ICE, and USDA functions after disruptions, aviation operations are impossible: departing passengers cannot board, arriving international passengers cannot legally enter the United States, and harmful substances and dangerous people may not be detected and their entry interdicted. Downtime or partial or complete loss of any of these essential airport functions can massively impact airports and their tenants. The result could be an escalating crisis—thousands of stranded passengers who require food, restroom facilities, and access to medical facilities, sleeping quarters, and transportation; massive flight delays and cancellations with far-reaching impact on airlines' flight networks; or flight and passenger diversions to alternative international arrival airports.

While airports have no direct responsibility for the operational processes of the key federal agencies operating in an airport, each agency relies on airport-provided space, infrastructure, utilities, and access in order to perform its activities there. Hence, the airport's business continuity plan must provide for the recovery of any *supporting services and infrastructure* the airport provides federal agencies, and it must take into consideration their airport-specific operational contingency plans.

Fixed Base Operators and Specialized Aviation Services Operators

At most airports, FBOs (and sometimes SASOs) singlehandedly manage complex responsibilities such as general aviation operations, aircraft maintenance, or the fueling function. The entirety of operations and management at some smaller airports may be handled by an FBO managed under contract with the municipal or county airport operator; this places extraordinary responsibility for essential airport functions in the hands of private-sector companies.

FBOs and SASOs should implement and exercise a site-specific, scope-specific recovery planning process for each fixed base operation they provide at airports. Functional business and operational recovery after disruptions may "look different" at each unique airport where FBOs and SASOs operate, with widely varying priorities and considerations based on each airport's mission, strategy, resources, and recovery capacity.

Overcoming Challenges and Inertia in Business Continuity Planning

Airport operators and management have a duty of care to all their constituents to run the airport soundly, as a local or regional resource upon which thousands and sometimes hundreds of thousands of people and organizations depend for their livelihoods, mobility, and recreation. Airports are an important element of the public good—macrocosms of economic, social, and government activity. Their operational continuity is invaluable to their owners, tenants, contractors, and customers. If the airport breaches public trust by failing to implement a BCP process for expedited recovery after disruptions, it introduces unacceptable risk to the common good.

Hurricanes Katrina and Sandy, the 9/11 attack, rolling regional black-outs, floods and tsunamis in Asia, transit strikes, data center and network crashes, and other catastrophes have taught an important lesson. Disruptive incidents and emergencies happen to all economic entities with seemingly increased regularity, severity, and negative impact.

The collective appreciation for enhanced risk management, in turn, obligates airports to take concrete steps to ensure that their constituents can always rely on the operational resilience of the airport. To be able to deliver credibly on that implicit promise, airports should embrace accepted practices for operational continuity planning as one of the rational and effective management disciplines available to them.

Airports should embrace BCP because it is a wise business practice. They should adopt BCP to comply with related standards. They should implement BCP as a fundamental risk management practice and rely on it to reduce liability exposure. With so many disruptive incidents in the relatively recent past, choosing *not* to embrace resilience planning for reasonably predictable business and operational disruptions introduces unnecessary risk and causes unnecessary harm. At the very least, such willful ignorance may amount to operator and managerial incompetence. At its worst, it may rise to the level of negligence and failure.

This guidebook and accompanying software tool can be the catalyst that helps introduce U.S. airports to BCP and helps them start the process in earnest.

Preliminary Steps in Business Continuity Planning

Creating a Risk Profile

Scenario Planning

Scenario planning is the process of identifying the range of specific threats that an airport faces based on its mission, ownership, geographic location, operating environment, and many other factors that define the airport's risk profile and the types of disruptive incidents that the airport might encounter. Walking through the most pressing and likely crisis scenarios as part of a disciplined organizational process can help airport management better understand how disruptive incidents might be triggered or develop and how their impact might negatively affect essential operating and business functions.

It is the *impact* of disruptions on essential processes and functions that is important to the business continuity process rather than the probability of their occurrence. Assigning probability or likelihood, however imprecise, is addressed during the risk assessment. Scenario planning addresses the impact of incidents regardless of their chance of occurring.

Risk Assessment

Airports and FBOs can also create a risk profile, which will inform the business continuity plan, by conducting a risk assessment. This assessment can be done internally or be performed by outside engineering, IT, or risk management consulting firms. It can have a broad scope (e.g., ERM) or a narrow scope (e.g., technology risk, engineering risk, or facilities risk). Most assessment methodologies use some combination of these elements: type of incident, probability of occurrence, risks to the airport, impact on the airport (e.g., life safety, facilities/physical plant/infrastructure, operational, financial), and the acceleration and duration of incidents or their impact.

The most helpful or productive business continuity risk assessments focus on the impact of predictable and less-predictable incidents on the core mix of resources that enable each essential airport function. These resources include staff (employees or contractors), plant and equipment (the facilities that staff need to perform and the tools, supplies, materials and vital records, and files they require), technology that enables or supports staff efforts, and other processes upon which many functions depend.

Effective business continuity risk assessments consider the functional impact to these four types of resources *if* disruptive events occur, rather than attempting to predict how likely they may be to occur. For example, rather than consuming time predicting the likelihood of winter storms, or a transit strike, or a power outage, business continuity risk assessments should address the *impact* of those incidents on the ability of people to get to work and do their jobs, on the availability of essential tools and equipment, on the availability of space and facilities, and on the availability of processes upon which other processes depend.

Because every important airport function depends upon some mix of these types of resources, it is the impact of incidents on the *availability* of these resources that should be the focus of the business continuity risk assessment. Impact assessment helps direct the business continuity plan toward preparation for the most impactful resource disruptions, which can degrade essential airport functions, activities, and processes or bring them to a halt. BCP then addresses how to mitigate impact risk with alternative ways to keep important functions operational during disruptions and recover full capacity afterwards.

Developing the Scope of the Plan

A combination of several factors establishes the parameters and scope of an airport business continuity program. Each organization should consider these factors in defining and funding their BCP efforts: number of locations, number and complexity of operating functions, IT DR, partner

network or "supply chain," departmental depth, and strategic business objective.

Number of Locations

If the business continuity plan is being driven by an airport operator responsible for more than one airport, it should include an individual plan for each airport. Airport locations might include only the airport operator's key terminal(s), other on-site and offsite facilities, and back-office operations. Alternatively, the plan might include non-aviation properties and businesses that the airport operator may own and operate (if these are material to its mission). Plans might also be expanded to include resilience preparedness at locations operated by the contractors and third parties that perform essential airport functions as independent entities.

Number and Complexity of Operating Functions

The set of operating functions to be analyzed also determines the scope of the business continuity plan for the airport. Small, general aviation, commercial service, or reliever airports may have a relatively modest number of departments or functions. This narrows and simplifies the planning scope. Larger hubs and cargo airports are likely to have a more comprehensive mix of functional groups, implying a more complex and integrated planning process. Identifying these functions requires a comprehensive analysis of how the airport is organized; how it conducts its daily activities; and which departments, offices, contractors, processes, and activities compose the entire operation.

Information Technology Disaster Recovery

If the IT department's DR plan is included in the scope of the business continuity plan, there will be added complexity in the process necessary to align the business recovery requirements of each department or function with the IT department's technology recovery plan. At technology-dependent airports, reliance on supporting technology significantly impacts the recovery expectations of many business and operating functions.

The business continuity and DR plans are inherently linked, or should be, as many business and operating functions depend on the technology provided and supported by the IT department. These plans are also linked by the synchronization that should take place between each department's recovery point objectives (RPOs) (tolerance for loss of supporting data) and its recovery time objectives (RTOs) (tolerance for functional "downtime") and the provisions in the DR plan for recovering essential hardware and network infrastructure and applications.

Partner Network or "Supply Chain"

Airports may extend their BCP initiative to key business partners that operate at the airport. Depending on the extent and complexity of those relationships with airlines, lessees, suppliers, FBOs, and contractors, the scope of the planning process may be commensurately broader and more complex.

Departmental Depth

The BCP program scope is also influenced by how deeply the process goes into departmental organizations. Business continuity plans can delve deeply into each function or department, covering multiple levels of sub-departments, and adding granularity to the scope of the plan. Conversely, they can take a more high-level approach.

Strategic Business Objective

The "end game" of the BCP process may be narrow—including only a BIA, a gap analysis, or a strategy development document—or it may be a far more comprehensive process, culminating in the documentation of a full-scale business continuity plan or an IT DR plan. The scope of BCP may be influenced by its primary goal, whether this is developing a sound operations management approach to resilience; providing required sustainability documentation to regulators, airlines, or funding sources; or addressing a negative comment in the auditor's report.

Identifying the Stakeholders

Airports are variously accountable to many types of stakeholders, according to each airport's ownership, mission, and whether it is publicly or privately held. Other factors affecting an airport's accountability to stakeholders are its inclusion within a governmental jurisdiction or its employment of unionized personnel. Stakeholders—those groups whose interests are fundamentally affected when an airport's routine operations are compromised and disrupted—typically include the following:

- Elected officials
- Regulators or authorities
- Shareholders
- Employees
- Federal agencies
- Workers' unions
- Trade associations
- Insurers or insurance brokers
- Customers
- Business partners (tenants, contractors, suppliers, FBOs, and general aviation users)
- The general public

BCP at airports should comprehensively identify critical stakeholders, appropriately communicate with them about the process, and include them when relevant. Airports should consider whether stakeholder groups should be part of the process or simply be included in the communications plan to keep them apprised of BCP at the airport.

Forming a Business Continuity Planning Leadership Team

A critical step in initiating the BCP process at the airport is naming the appropriate participants in the process, the BCP leadership team. Naming the BCP leadership team ideally includes identifying an executive sponsor, a project steering committee, a project manager or coordinator, business process owners, and plan administrator(s).

Executive Sponsor

The sponsor is typically the most senior manager who (1) coordinates the scope of the process, (2) often leads or participates as a member of the project steering committee, (3) ensures that the program has an adequate budget or funding, (4) communicates to the other airport stakeholders that BCP is an organizational priority, and (5) motivates others within the organization to participate as necessary, at the executive level.

BCP projects can easily fail or become meaningless exercises without strong executive sponsorship by airport management. Ideal executive sponsors might come from the arenas of internal audit, F & A, compliance, risk management, or IT. Someone in a chief-of-staff or senior operating role could also be a sponsor.

Steering Committee

The BCP steering committee should comprise a manageable number of departmental leaders representing the breadth and scope of airport departments and organizations that are within the process scope. The committee oversees the BCP process and ensures the necessary internal cooperation and support and availability of resources at the functional level to meet the project's objectives. Assigning formal departmental roles for BCP and including participation as a metric in staff performance plans may be required to achieve the best results.

Project Manager

Reporting to the steering committee, the project manager coordinates the day-to-day work on the BCP program. This person may be an internal manager from the office of the airport director or another department with airport-wide knowledge and perspective, such as those suggested above and in the following section titled "Assembling the Right Expertise." The project manager might also be a BCP expert hired from the outside on a temporary consulting or advisory basis. BCP is a complex process, so the ideal project manager will excel in cross-functional process management.

Business Process Owners

Staff members who have responsibility for entire departments or specific functions or processes within departments are known as business process owners. They can be high-ranking staff members (e.g., the Chief Financial Officer) or lower-level staff members, such as the persons responsible for accounts payable, accounts receivable, treasury, or cash management.

Plan Administrator(s)

Plan administrators are staff members assigned by the steering committee or project manager to coordinate business process owners in keeping the plan up to date on an established basis (i.e., annually) or as circumstances change and operations evolve.

Assembling the Right Expertise

Departments such as internal audit, risk management, F & A, operations, or IT often spearhead BCP projects internally because these departments typically have a broad financial, technical, or functional perspective on the airport's overall operations, which puts them in a good position to facilitate the process.

Airports may additionally choose to use the planning, oversight, guidance, or involvement of professionals who are certified in the discipline of BCP by organizations like the Disaster Recovery Institute International (DRII) in the United States or the Business Continuity Institute (BCI) in Europe. Trained BCP practitioners carry designations such as Certified Business Continuity Professional (CBCP), Master Business Continuity Professional (MBCP), Member—Business Continuity Institute (MBCI), Specialist—Business Continuity Institute (SBCI), Fellow—Business Continuity Institute (FBCI), or Certified—Business Continuity Institute (CBCI).

Airports may hire business continuity professionals as part of their staff or retain them as outside consultants. BCP specialists can help ensure that the planning process follows industry practices and complies with relevant BCP standards.

This guidebook and accompanying software tool were developed by certified BCP professionals. The tool includes a truncated, self-directed process that when completed will generate a customized business continuity plan that aligns with accepted BCP practice.

The Business Continuity Planning Process

BCP includes a core set and general order of activities and processes, each of which is a building block of the finished plan. After taking the preliminary steps described above, airports and FBOs will have prepared the organizational and funding framework necessary to begin the process of developing their actual plans.

Conventional BCP follows a generally accepted process from conceptualization through plan development, exercising, and plan maintenance (see Figure 1). Each process phase includes several steps.

Project Management

The BCP project management phase should start with project initiation activities and continue until the airport's planning process has been completed. A project kick-off meeting should formally initiate the process when the steering committee establishes goals, objectives, and timelines; identifies roles and responsibilities; develops and finalizes a project plan; and establishes management and status reporting tools and escalation procedures.

At this stage, it is important for the steering committee to define the strategic and business priorities at the airport; these will be used to establish how the airport will qualitatively and quantitatively measure impact from the disruption and downtime of its essential functions. Without a common measure of disruption impact, the job of prioritizing recovery among widely disparate functions that contend for scarce resources can be extremely challenging and politically divisive. The steering committee typically examines the effects of disruption on the following:

- Loss of revenue
- Fines, penalties, and lawsuits
- Brand image
- Customer satisfaction and attrition
- Regularity impact
- Competitive advantage
- Employee morale
- Stakeholder confidence

The steering committee should also define a recovery timeframe scale that the airport can tolerate, measured in hours, days, or weeks. For example, RTOs for the most critical functions might be measured in minutes or hours, while RTOs for less critical functions might be measured in days or weeks. Recovery of the least critical functions might be measured in months. A consistent scale should be applied across all business and operating functions.

Establishing Planning Objectives and Assumptions

Defining the Business Continuity Planning Objectives

The objectives of the BCP process should be to document the organization of the recovery, individual and functional roles and responsibilities, and the associated resources required to minimize the effect of a disruption on airport operations. Additionally, the business continuity plan should detail the procedures that will be carried out by the individual functions operating at the airport in the event of a disaster that affects airport facilities. The plan should provide for testing, maintenance, and overall planning standards.

The end result should be a plan to facilitate the recovery of critical operations, functions, and technology in a timely and organized manner and to ensure the availability of supporting resources, so that the organization can continue as a viable airport facility.

The plan should identify the primary objectives for the recovery planning process, which may include the following:

- Maintaining customer service commitments
- Preserving the reputation of the airport

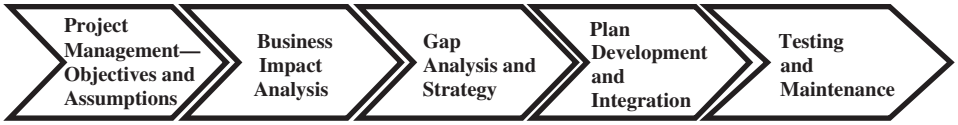


Figure 1. The business continuity process.

- Maintaining financial controls
- Maintaining compliance/regulatory status
- Improving risk management
- Maintaining employee commitments
- Meeting contractual covenants

Defining Planning Assumptions

In order to document the recovery requirements and detailed tasks and responsibilities provided in the airport's business continuity plan, key planning assumptions should be identified and documented. Identifying planning assumptions will ensure a consistent basis for identifying the requirements for all functions to recover efficiently from a disruption at the airport. Each airport should construct its own assumptions, based on its unique circumstances. Examples of planning assumptions are the following:

- The disaster will affect a specific facility only, rather than the region as a whole.
- There will no longer be access to the airport facility, and all documents and equipment at the facility will be inaccessible for some assumed number of weeks.
- Recovery or relocation resources will be unaffected by the same disaster.
- Qualified personnel will be available to continue operations.
- IT recovery plans are in place, and IT can meet the RTOs of all other airport departments.

The types of operational assumptions an airport makes will define much of the scope, breadth, duration, and complexity of its plan.

Assessing the Organization—The Business Impact Analysis

Conducting the assessment, or BIA, is the foundational step that usually drives the development of the business continuity plan. The BIA generally consists of these general steps:

- Identify essential business functions and operations at the airport—those core operations, processes, and functions that are critical and routine in running the airport (and FBO functions at the airport) during normal circumstances.
- Analyze and document how these essential functions work and what human, technology, physical, and process resources these functions require to do what they are expected to do.
- Determine the sensitivity of each essential function to downtime and the loss of supporting data by establishing RTOs and RPOs.
- Rank the relative recovery priority of each function based on the strategic and business objectives of the organization established by the steering committee.
- Review the results and make management adjustments, if necessary, to most accurately reflect the recovery imperatives at the airport.

Identifying Critical Business Functions

An airport's essential functions are those that are fundamental to the core mission and operation of the airport or FBO. Some functions may be essential to most airports, such as uninterrupted power and sufficient back-up power, adequate water supplies to support ARFF functions, and payroll processing. The criticality of other functions, however, may differ markedly among airports. For example, winter operations will be a critical operating function in airports in Minnesota, while flood control may be essential to those in Florida and the Gulf states, where storms frequently inundate airside operations areas. Maintenance of the aeronautical operations assets of a co-located military unit at the airport may be critical to supporting its defense mission. For airports that make significant revenue from parking operations, the maintenance of parking garages and payment equipment may be deemed critical.

Essential functions may exist in every department or office and may also exist within the agencies or departments of the local government or airport operator, to the extent that these functions (such as payroll or human resources) are managed there. By answering the question "How do we do what we do to run the airport?", the BCP project team can begin to identify what is essential in aeronautical operations, environmental compliance, governmental reporting, human resources, cargo operations, ARFF, purchasing, and every other core function that is critical for the airport to continue as a viable operating entity.

Many departments may have multiple essential functions. When identifying critical functions in the BIA process, it is not uncommon for airports to recognize how essential even

obscure, "minor" functions, processes, or operations can be to their viability. Many other, more obvious, airport functions can be predicated on seemingly inconsequential processes. For example, contracting with a back-up provider of diesel fuel to run back-up generators may, during a disruption, be the function that ensures that the secondary generators are able to provide power to runway and taxiway lights. Essential functions can include operating, business, and support and infrastructure functions.

Good places to start in identifying essential airport functions include the organization chart; the strategic business plan; risk management assessments; FAA or state aviation authority mandates; and the historic record of incidents, claims, emergencies, and disruptions that have occurred at the airport.

Analyzing and Documenting Functions

Every important activity that takes place in every function at the airport involves some mix of resources—human resources, physical plant and equipment, technology, and processes. The first step in documenting how essential functions at the airport operate is to create a critical resources inventory. This list describes the people that are required to operate the function or department and complete the task or manage the process. The list also describes the tools, equipment, supplies, facilities, space, and vital records needed to accomplish each function and the technology and automation that supports the function.

Creating a critical resources inventory involves dissecting every essential function into a set of sub-functions and processes, each of which is accomplished with a specific mix of resources, and documenting these through a discovery process as part of the BIA.

The following questions should be asked regarding the **people** involved in each function and documented to help identify and describe their airport role:

- How many people do we need to perform this airport function?
- Are they airport employees, government employees, or contractors?
- Do they require any special training, licensing, or certifications to do their jobs?
- Are they union members? Is there any union-specific process for replacing employees who may become unavailable?
- Must they possess any job-specific skills, such as language fluency, or meet strength or height thresholds in order to do their jobs?
- How long does it take to find replacements for them if they are absent?
- Do the jobs that require special knowledge include succession plans, so the airport's institutional knowledge is documented in case it loses someone?

Each of these kinds of questions informs the BCP process about the appropriate mix of human resources required for every essential function. These requirements help identify the staffing needed to manage each function during disruptions and to recover them afterward. The responses establish a framework for thinking through what must be done to plan for and ensure that essential functions and activities can be staffed appropriately during significant operational disruptions.

Regarding the **processes** involved in each function, the following questions should be asked:

- What do the essential people in each airport function do to complete the core functions for which they are responsible?
- How do they do them?
- What processes have they established, and what processes do they, in turn, depend on in their roles?
- Can they initiate or complete a job activity if a predecessor activity or process has failed or if they lose technology or automation?
- Has the airport identified those predecessors for each essential function and does it understand who or what organization is responsible for providing them?

Answering these questions helps define each essential function and puts it into context relative to other activities at the airport or activities performed by others outside the airport. This helps document exactly what processes have to be recovered and sheds light on how the operations of these functions might be temporarily possible during disruptions if they have to be done without the technology upon which they normally depend. It also helps to document how interdependent many processes are and, consequently, how much contention there may be over resources during periods of disruption.

Regarding **plant and equipment,** the following questions should be asked:

- What kinds of facilities or physical space does each department need in order to perform its essential functions at the airport?
- How many gates, hard stands, square feet, or acres of space are required? How much ramp space is required?
- What support or characteristics must this space have (e.g., access to special critical infrastructure, proximity to another operational area at the airport, or special security considerations)?
- What equipment, tools, devices, or vehicles does the department or function need to do its essential work?
- Are there any mission-critical supplies without which departments cannot function appropriately?
- Does the airport store enough at normal usage rates to ensure that it can weather a disruption?

These questions help define the tangible "physical plant" components that are required by every function to operate satisfactorily. Many airport operating functions are equipment-centric (e.g., the maintenance and repair department) and space-centric (e.g., public parking or aeronautical operations) by the very nature of their missions. Essential plant and equipment inventories for these will always be very important components of the airport business continuity plan.

Essential supplies are also important to identify. These may not be run-of-the-mill, ubiquitous supplies such as office supplies, bathroom supplies, or cleaning supplies. Rather, these are supplies that are fundamental to the capacity of departments to perform essential functions. For example, if public safety officers are armed, their ammunition is a critical supply item. Diesel fuel is mission-critical to the back-up power function, and supplies of jet fuel are crucial to the fueling function; likewise, fire-retardant foam is a key supply item for the ARFF function.

Regarding **technology,** the following questions should be asked:

- What are the technology requirements of each of the airport's essential business and operating functions?
- Does the function require computer or communications hardware, and, if so, how many of which kinds of devices?
- From which hardware and software vendors or systems integrators does the airport procure devices and hardware if it needs more?
- Which software and applications do the functions require and depend on in order to perform their roles?
- Has the airport documented where these applications reside in the organization and how to gain access to them in a disruptive situation?
- How long can the airport do without these essential applications?
- What kind of network, communication, and storage infrastructure does the airport need to support each function?

Many airports are highly automated and make extensive use of technology across their operational footprint. Knowing the specific technology requirements of departments is important in BCP because it helps establish how the IT department must plan for support, availability, and redundancy. An awareness of technology needs also helps identify how every core technology-dependent activity might be accomplished for a short period of time if the technology these activities depend on is "down" during disruptions.

For airports that have, or plan to move to, a shared infrastructure services model, the requirement for technology resources may be even more acute because entire automated systems may depend on functioning technology—for instance, baggage handling, a common car rental center, or airport-owned gate operations.

Defining Recovery Time Objectives

The BIA process at the airport should objectively assess how long every essential business and operating function can withstand partial degradation of capacity or a complete loss of function before it is incapable of doing its job, meeting its goals, or providing functional output to the larger organizational entity. The important question is, how long can a function be down before there is real pain and negative consequences?

This tolerance to downtime is referred to as each function's RTO. Functional RTOs can be measured in minutes, hours, days, or weeks, based on level of criticality, seasonal or cyclical imperatives, and other factors. Identifying RTOs provides a comprehensive perspective into which functions are truly mission-critical and how the interdependencies among these functions affect other "upstream" or "downstream" functions. For example, payroll (obviously, an essential function) cannot be run until the time management system reports on the number of hours employees worked during the pay period. That is an internal dependency. An example of an external dependency is when airport services such as electrical, water, or sewage utilities are provided outside the airport; when disruptions in service occur because of events such as a regional black-out or water utility emergency, the airport can be affected.

The qualitative and quantitative parameters established during BCP kick-off by the steering committee are important in determining RTOs because they provide a unified definition of how disruption impact is measured at the airport. These parameters may be very different among different airports or types of airports. Negative impact can be measured many ways: reduction in revenue; increase in fines or penalties; failure to meet loan covenants or regulatory requirements; damage to the airport's brand, image, or reputation; and so forth. Defining negative-impact benchmarks uniformly across the airport forces the assignment of RTOs based on a common denominator, which is important in aligning relative recovery priority among widely disparate types of functions.

Defining Recovery Point Objectives

In the BIA process, the organization should also identify for each essential function a finite measure of its tolerance for loss of data that are essential to the function's role and mission at the airport. Tolerance for the loss of data needed to support activity in a function is referred to as the function's RPO. The RPO is an indication of the amount of time the function can continue without supporting data before the productivity of the function is materially impacted. Data dependence can be profound for critical financial and reporting applica-

tions; supervisory control and data acquisition (SCADA) systems; and hardware, network, database, or communications infrastructure.

A function's RPO is affected by factors such as how often a process must run or be activated (e.g., running payroll semimonthly) or how long it can use data processed or produced earlier (e.g., composing reports to the FAA or EPA using the last period's data if the supporting process is currently down or paying the parking contractor using last period's data if the current period's credit card data are unavailable).

RPOs can be affected by whether there are viable functional alternatives for temporarily running the process without the usual technology support. These are called "manual workarounds," and they are a very important part of departmental recovery plans. A remarkable number of technology-dependent functions may be available temporarily with manual workarounds. These short-term fixes may seem inelegant, but they might suffice for a few hours, a few days, or a week before the absence of new data is fatal to the ongoing function.

For example, the TSA can still accomplish its security mission if power is lost. It can perform hand pat-downs, open and inspect baggage, use battery-powered scanning wands, and deploy canine teams. The process will still work, but possibly at a quickly escalating cost to the airport and airlines in the form of missed flights, crowd management crises, and overtaxed personnel resources.

RPOs are also influenced by whether seasonal or cyclical circumstances render functions more or less critical at certain times (e.g., winter operations are only seasonally critical; payroll is critical only twice per month; baggage systems are critical only during aviation operations hours). RPOs can vary widely, from minutes to months, based on these factors.

Ranking and Reviewing Recovery Priorities

When each essential function has been analyzed and RTOs and RPOs established by those responsible for them, it is important to create a system that prioritizes functions, subfunctions, processes, and activities. This helps airport management understand the recovery priorities among many different kinds of functions that may be completely unrelated or, alternatively, highly interdependent.

The recovery ranking process can be difficult because it requires some kind of system that can order the recovery priority among functions as different and seemingly unconnected as payroll, wildlife management, parking systems, ARFF, baggage management systems, procurement, and fueling. The difficulty is compounded because many of these critical functions are the responsibility of a third-party contractor or a government agency.

The airport's BCP project team and steering committee should establish a relative ranking approach that works for the airport's unique needs and circumstances. Ideally, ranking should be driven directly from a set of qualitative and quantitative factors that reflect the strategic business priorities of the airport.

A recovery ranking system based on these priorities provides the underlying basis for assigning to any given function a higher or lower priority than another function. Creating a model for ranking relative recovery priority requires analysis, negotiation, and patience because process "owners" and function managers may each see their responsibilities as more important than someone else's. Centrally defining the ranking factors helps reduce these disagreements.

Because airports have common basic roles, such as sustaining commercial and general aviation operations, and may be certificated by the FAA based on their sustained capacity to comply with regulations and meet minimum standards, there is a basis for establishing recovery priorities. The functions, processes, activities, and technology that need to be recovered more quickly than others should be those that enable and sustain aeronautical operations, protect the revenue stream and financial viability of the airport, help the airport meet its contractual obligations, and help it maintain its certification. Beautiful grounds may be an airport objective, but recovering the maintenance department so that it can meet this objective is less important than recovering aircraft fueling operations.

Based on these parameters, it seems critical to recover the water supply if it is disrupted for any reason because compromising the airport's ARFF index can lead to de-certification or a shutdown of flight operations. Likewise, recovering the capacity to provide infrastructure and support services to the FBO(s), airlines, contractors, and tenants that operate under contract at the airport is important because penalties and contractual "give-backs" can materially impact the airport's financial position.

Similarly, recovering the power supply after a black-out or providing sufficient back-up power is important because power loss darkens the runway, stops elevators and escalators from moving people, shuts down flight arrival and departure monitors and signage, and makes printing boarding passes and passenger and cargo manifests impossible. Planning for how to keep or replace airport employees or contractors who may be highly specialized or may possess critical operating knowledge that has not been documented is important because loss of these people to retirement, relocation, health issues, or death can remove vital institutional or functional knowledge from the airport.

Notwithstanding these obvious recovery priority drivers, every airport and FBO has a different mix of business parameters that helps their organizations rank priorities across the breadth of their operations. There is no such thing as a standard recovery priority format or model; each organization is unique.

Critical Path Framework for Determining Recovery Priority

Recovery priority depends on determining those operating and business functions that are essential to the airport's mission. The greater the negative impact is on the airport when a particular operating or business function is disrupted, the greater priority the recovery of that operating or business function should have. This can differ widely among airports based on what is important to their unique operating and business model. Figure 2 provides a logical framework to use in evaluating and determining criticality of functional recovery.

When the impact of disrupted airport functions could lead to a shutdown of airport operations, the affected functions should be considered essential functions and be assigned the shortest RTOs. Examples include the following:

- The disruption of the aeronautical operations area that shuts runways
- The loss of ARFF index due to loss of essential ARFF resources or supplies
- Power outage or loss of back-up power that blacks out runway lighting, NAVAIDS, and airport systems

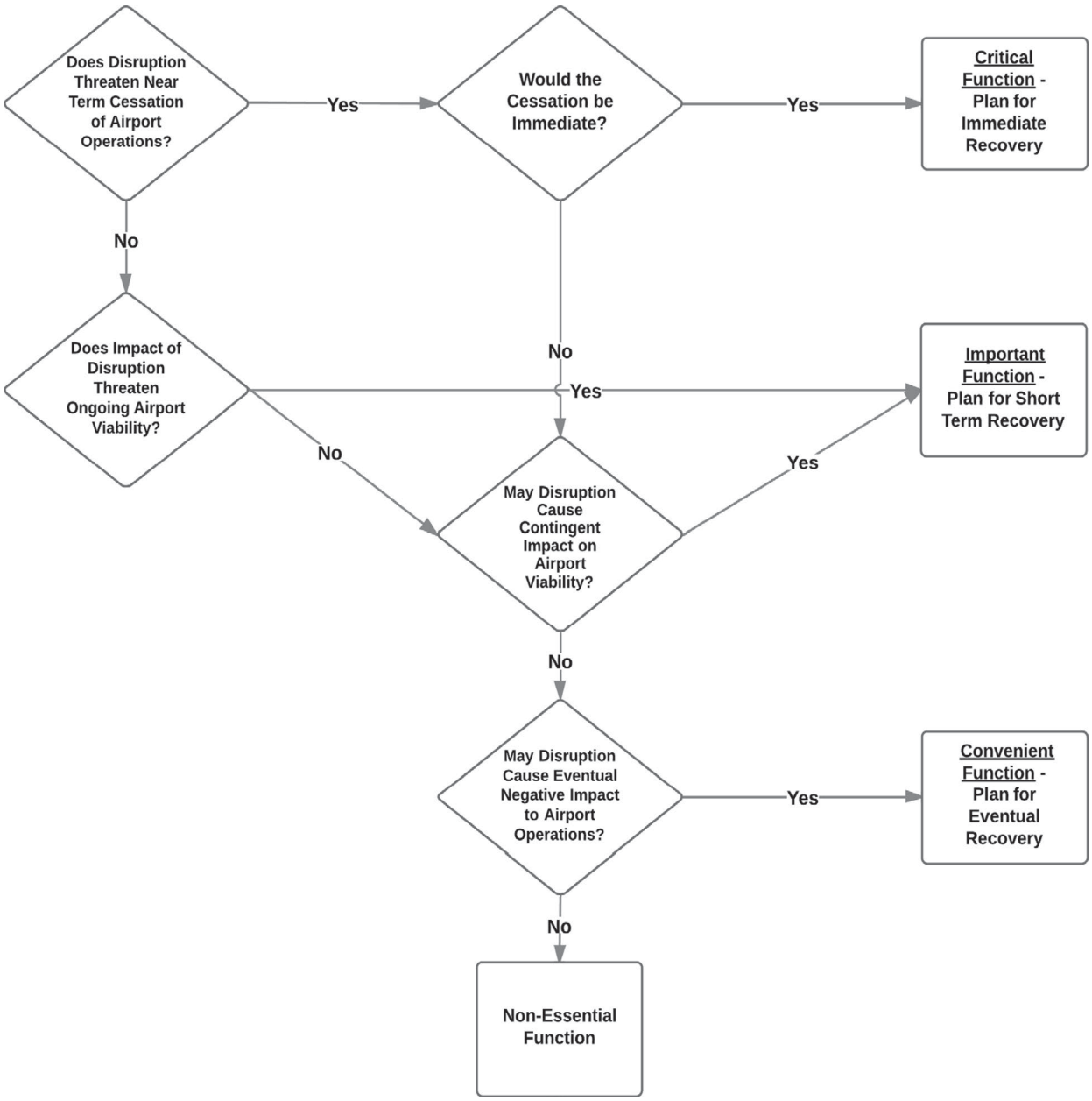


Figure 2. Critical path framework for recovery priority.

- The widespread absence of key operations staff due to pandemic, strike, or regional catastrophe
- Loss of winter operations equipment during a major snowstorm

Loss of these functions may result in a statutory or rule-based airport shutdown or an incident-specific shutdown. Loss or significant degradation of capacity of any function that can result in airport closure should be assigned a very short RTO, one measured in minutes or hours. BCP should take into account seasonality and cyclicality in assigning some RTOs. For example, recovery of the winter operations function is critical during winter storm months, but non-critical during summer months. Loss of payroll on or around payday may require immediate recovery, but this function can be recovered less quickly during the days when payroll is not being run.

The negative impact of many functional disruptions may not be as immediate, but may nonetheless threaten the viability of the airport by severely cutting services, by exposing the airport to regulatory fines and penalties or contractual penalties and claw-backs, by degrading the airport's customer service capacity, or by materially damaging the airport's image and reputation. While these impacts may be less immediate, they may be severely damaging if disrupted functions are not recovered in an appropriate timeframe. These functions should be assigned reasonably short RTOs, possibly measured in hours or days. Examples include the following:

- Loss of the infrastructure maintenance function could impact airport services by causing non-working elevators, escalators, and moving sidewalks.
- Loss of recharging stations for electric people movers might cause elderly and immobile passengers to face difficulties moving within the airport.
- Loss of power to TSA screening stations could necessitate manual scanning, luggage searches, and pat-downs, creating long lines of angry passengers and problems with airlines, who expect smooth security screening.

Loss or disruption of other functions may not directly or severely impact the airport, but may trigger *contingent* disruptions that, in turn, cause severe impact. These contingencies are examples of internal and external dependencies. The BIA process should identify critical dependencies so RTOs can be appropriately assigned based on the potential contingent impact of disruption. Losing the system that reports employee hours worked may not itself be critical, but its sustained outage may in turn render the payroll system inoperable. A strike that includes employees or contractors with highly specialized skills or training on unique equipment might be tolerable until those skills are required in critical path operations in the aeronautical operations area. Degradation of general aviation services may result in corporate flight operations moving to an alternative airport.

Negative impact from the loss of other airport functions may be less severe or may manifest over a longer term, and thus these functions are less important to recover. The impact of disruption of these functions might be felt over time, but the airport can afford to restore them over several weeks or even months. For example, recovering the grounds maintenance function can wait as its impact is largely aesthetic. Recovering non-aeronautical businesses or concessions may not require immediate action if they are not crucial to airport operations or consolidated revenue.

If the impact of the loss of a function is minimal or manifests very slowly, the BCP might classify it as a non-essential function, per se, and therefore leave its disruption unaddressed.

Reviewing, Adjusting, and Finalizing the Results

The BCP steering committee and senior airport management should be prepared to provide oversight and direction to the process of ranking recovery priorities by reviewing the results and making management adjustments, if necessary, to reflect their view of the recovery imperatives at the airport. These adjustments are needed to "break the ties" when two or more functions argue for recovery primacy. Adjustments should be made against a fact-based backdrop that looks to the severity of impact should a given function or process become degraded or completely lost, in these typical areas:

- Revenue impact—does the loss materially affect the income statement?
- Regulatory or legal impact—will the loss result in fines, penalties, lawsuits, negative court orders, or loss of grants?
- Contractual impact—might the loss trigger breach of contract, claw-backs, or penalties?
- Customer or stakeholder impact—will the loss degrade capacity to serve tenants, lessees, and flying customers?
- Reputational impact—is the loss likely to negatively affect the airport's or the airport operator's image, brand, or reputation?
- Employee morale—will the loss materially impact staff attitude?

Gap Analysis and Strategy Development

The BIA is an essential precursor to the component of gap analysis and strategy development (which helps the airport identify potential areas of mitigation). The BIA examines the interdependence of the various components of airport

operations and prioritizes those functions the airport absolutely requires in order to continue its day-to-day activities. For every function at the airport, the BIA catalogs how things are done at the airport. The BIA evaluates which mix of resources is required for every function to sustain a minimal operational level and shows the relative priority of the essential functions that need to be recovered for normal operations to resume after material disruptions. The BIA process also assesses where IT resources should be most quickly directed to support recovery.

Gap Analysis

In the follow-on gap analysis phase, the airport should analyze its set of required functions, as defined by the BIA, and compare it to both the resources currently available to aid recovery and the current plans or procedures for doing so. The gap (or difference) between recovery needs and capacity and resources available to sustain operations is addressed by the airport's business continuity strategy and is defined for every essential operational element.

Current General Resources

Understanding the general resources available at the airport might include a review of departmental plans and procedures such as the following:

- The human resources staffing process
- The existence of succession plans in key departments and delegation of authority for critical roles
- The facilities plan
- The procurement and requisitioning process
- The alert notification procedures used to call relevant stakeholders
- The location of, and access to, vital records, files, and data
- The IT DR plan

In its gap analysis, the airport should look at the various elements of current practice and capacity and document disparities between what is required by each essential function to recover operations (based on priority) and what resources are currently available to do so. Closing those gaps (or deciding to live with the risk of not doing so) is part of a well-thought-out business continuity plan.

Current Technology Resources

Because many airports and FBOs are technology dependent, it is important to align the technology requirements of essential functions to the IT department's DR plan, which documents how the IT department will provide resources and services and restore them to full operational status after disruptions. The gap analysis should assess the back-up and restoration policies and procedures for key data files and application systems used in the essential functions of the airport. The analysis should also include a comparison by the IT department of the minimum equipment configuration required in the data center for delivering those technology resources and sustaining current operations as required versus its current data center configuration.

Critical Resources Inventory

An important step in BCP is to identify and inventory all the critical resources that are necessary to accomplish each essential airport function. These resources are addressed in these categories:

- People (for specific duties)
  - Number of staff
  - Special certifications, licenses, or training they require
  - Other job-specific qualifications, such as height requirements to operate equipment or strength requirements for ARFF staff
  - Status as employees or contractors and contractual replacement restrictions that may be present with union members
- Plant and equipment
  - Physical space required to perform the function such as office space, operating space, shop space, and storage
  - Necessary office equipment such as workspaces, desks, copiers, and fax machines
  - Equipment that is mission essential such as tools, vehicles, and heavy equipment
- Materials and supplies
  - Minimum on-hand inventory required such as office supplies, parts, fuel, and so forth
  - Minimum quantity for reorder
- Systems and processes
  - Assemblages of permanent equipment and assets that work together to support any essential function such as shared services baggage handling system
- Information technology
  - Network infrastructure
  - Computers and laptops
- Mutual aid and assistance
  - Essential resources that are contractually available from outside organizations such as local first responders, DOGs, and disaster services vendors

The gap analysis matches essential functions with the inventory of resources that support these functions. The BCP strategy that follows should address the gaps between the RTOs of each essential function and the organization's capacity to

execute recovery within the RTO. Airports should close those gaps that they determine to be critical by investing in a mix of essential resources that will enable the organization to predictably recover its essential functions within their RTOs.

Business Continuity Strategy Development

The airport's business continuity strategy will be its approach to mitigating or minimizing interruptions to its operational continuity and recovering its mission-essential functions as soon as possible after significant disruptions. The strategy should include a detailed and granular recovery plan for each function or department as part of an airport-wide perspective that takes into account the interdependencies among operations and processes. The airport's plan itself will be the resulting documentation of recovery resources and procedures that address the organization's recovery priorities for bringing critical processes to a minimum threshold level of effectiveness during and after disruptions.

Contention for Recovery Resources

A major part of the business continuity strategy should be an analysis of the critical resources required by each function, so airport management can plan a cohesive strategy for their combined needs for space and facilities, staff, equipment, supplies, and technology during and after disruptions of any kind. When all departmental inventories of resource requirements are considered *en masse,* contention for resources such as staff, space, and technology may result. For example, several departments may plan to relocate physically to the same space in the case of disruption, unaware that the space may not be able to accommodate them all. Several departments may vie during a disruption for a limited number of airport vehicles; demand for those vehicles might then exceed the supply. More than one department that plans to relocate to alternative space may claim prepositioned office equipment although there is not enough to be used by more than a single entity.

Recovery priority helps define the "triage" system for these resources. However, airport management should take into account competing and overlapping needs as it develops its business continuity plan and provisions recovery resources. This process of defining priorities for resource contention is sometimes known as de-confliction, because it forces a comprehensive solution to resource conflict across airport functions and departments.

Manual Work-Arounds

Another key step of the airport's business continuity strategy is documenting manual processes for performing a function that is normally performed using technology. During times of disruption, this documentation can guide each airport department in manually performing some essential functions when it has lost access to technology or automation or to some other process that is necessary to those functions. Because contention for technology may escalate during disruptions and because IT budgets may be constrained, defining viable manual work-arounds for as many essential processes as possible can make the difference between operational continuity and functional failure.

Alternatives to the Status Quo—Processes and Technology

Many essential functions at airports depend to some degree on the support of technology, IT infrastructure, and technology-driven processes. If a disruption debilitates or degrades critical supporting technology processes, the business continuity plan should document ways that dependent functions can be provided or maintained when technology is partially or completely absent. Some functions may be completely dependent on technology and thereby impossible to recover in its absence. However, many essential functions can be provided at some basic level or for a minimal amount of time without this infrastructure.

For example, running payroll may normally be an automated process managed by a payroll application. Nonetheless, the airport may be able to document an alternative payroll process that it can manage for one or two pay periods when the payroll software is down, whereby it calculates compensation and deductions manually, based on the last period's data, and writes payroll checks by hand.

A thoughtful analysis of each critical function makes it possible to describe and document similar manual work-around processes for use when the expected technology processes fail or are fully or partially unavailable. **Note that the business continuity process does not focus on why technology is down (electrical storm, failure of the data center, internal sabotage, malware infection, or an external distributed denial of service [DDOS] attack). What matters is recognizing that the technology upon which a core process or activity normally depends may not be available and documenting how the process or activity can be performed manually during the period of operational duress.**

While many essential functions can be performed at least partially or for a short period of time without supporting technology, many may not be recoverable until predecessor technology processes are themselves recovered following a disruption.

When faced with the loss of a core process, the airport's business continuity plan can consider several kinds of responses:

- **Abbreviate the process.** If accounting runs its general ledger process each night, a decision can be made that during

major disruptions accounting can get by with running the ledger process every fortnight, if the impact of the reduction in frequency can be tolerated. If mowers are broken, the maintenance department can cut the grass every 2 weeks instead of every week for an extended period of time.

- **Complete the process manually.** If a technical resource for accomplishing an activity becomes unavailable in some way, the airport should devise manual processes to use until the supporting resources become available again. For example, if the power to jet bridges is lost, crews can use manually moveable stairs to deplane passengers. Similarly, if a shared services baggage claim carousel is down, extra handlers could be directed to deliver arriving luggage manually, using hand-operated dollies. The cost to the airport in terms of passenger frustration, long lines, crowd control, and pressure on bathroom and food service establishments in the arrivals area may be great, but the airport can meet its baggage delivery obligations for a short time by manually moving luggage with extra staff and rolling stock.
- **Live without it.** The airport may be able to suspend many processes during prolonged disruptions. The business continuity plan should identify every process that the airport or FBO can afford to suspend temporarily until normal operations are recovered. For example, if a disruption causes overcrowding of an airport terminal, can the use of courtesy people movers (normally used to transport those with special mobility needs) be curtailed since they cannot move through the crowds? (If so, the manual work-around might be to hire more red caps to use hand-pushed wheelchairs as temporary replacements.)

Similarly, when technology is unavailable as the result of a disruption, the airport's business continuity plan can also consider various responses:

- **Transfer loads to back-up sites.** Bringing up a "warm" or "hot" IT site that may be situated on a different power grid can help airports recover technology capacity with minimum downtime. System crashes that require sometimes lengthy restart routines can present the airport with the requirement for a gradual recovery of numerous IT-based applications; this in turn necessitates a plan for the orderly recovery of applications based on the criticality of the application and its interdependencies with other applications and processes (as documented from the BIA).
- **Transfer to back-up vendors.** The airport can pre-plan transfer of technical services to back-up vendors using stand-by or just-in-time MOUs and contracts that define when and how the replacement vendor's systems must be prepared to be made available. For example, if payroll is down, airports might alternatively process checks with one of the large payroll processing vendors for 2 weeks until recovery.
- **Trigger manual work-arounds.** Some processes at the airport that depend on technology can be accomplished manually, at least for some abbreviated period of time during disruptions. While the payroll application example is a highly automated process, for airports with smaller staffs, the accounts payable department may be able to write paper checks for one or two pay cycles while waiting for the technology to come back online. Highly labor-intensive manual delivery of checked baggage can be planned for a scenario in which the automated baggage moving system fails.
- **Live without it.** There may well be a number of applications that airports can simply manage without for a brief period of time, with acceptable loss of service and capability. The business continuity plan should identify each of these technologies and how long they can remain unavailable before more profound damage is done.

Airports operating in a shared services model, where key resources, functions, and technology are centrally operated and used by airlines and other lessees on a per-use basis, should focus their business continuity strategy on technology systems redundancies.

Alternatives to the Status Quo—Physical Location

Every department in the airport or FBO has a primary location for staff, office furnishings, tools, equipment, computers, and supplies. The business continuity process should address how the airport plans to move its essential functions to alternative locations if a disruption renders primary locations unusable or unavailable.

One role of the plan is to document the places to which each essential function, office, or operation would be relocated if a disruption made their normal location inaccessible or unsuitable. Relocation plans should take into account the size of the staff that would be relocated and, if the relocation site currently houses another group, whether that site is large enough to accommodate both. Contention for relocation space should be resolved in the de-confliction portion of the airport's plan so that a workable space is available for every function.

Plans should also document which essential equipment, tools, and supplies will have to be moved to the alternative location (or prepositioned there) in order for each department to be functional in the new location. Plans should also document how the staff is expected to get to the alternative location, whether by personal or public transportation or by using airport-provided transportation. Each essential airport or FBO function should have a designated primary and secondary relocation site, assessed for viability by the staff's

answers to questions about how essential people, processes, plant and equipment, and technology can also be relocated there or effectively used elsewhere.

Disruptions can present airports with the loss of physical assets and infrastructure ranging from the fundamentally critical (e.g., loss of a runway due to flooding or power failure) to minor and inconvenient (e.g., loss of one of its three parking garage exits). In these instances, airport management can respond in one of several ways:

- **Temporarily work around the loss.** In the lost parking example, increasing staff and activating additional exit stations or kiosks at one of the alternative exits can provide extra capacity until repairs can be completed on the one that is damaged and unavailable.
- **Schedule dependent activities differently.** If an airport runway or taxiway is unavailable, for example, the airport can pre-plan with the FAA how to manage flight operations with the remaining operational runway configuration. Long-term parking lots can be used until the short-term lot is available, using additional buses. Alternative offsite city or county parking facilities may also be accessible.
- **Offload the activity to an alternative resource.** The airport can establish one or more alternative resources to help it manage until it recovers the lost assets, vehicles, or equipment. In large regional incidents, the airport might rely on MOUs for support from a DOG to move some airport functions and capacity to neighboring facilities or obtain emergency resources, in coordination with any affected carriers and the FAA.
- **Use back-up suppliers.** Airports can create and maintain a list of stand-by resources and vendors that offer just-in-time services such as disaster management and recovery vendors that can ship in trailer-based assets (e.g., technology, back-up power sources, etc.); these can be brought online within hours.

Alternatives to the Status Quo—Skilled Staff Availability

When disruptions affect the availability of essential staff in any core airport function, the challenge is how to replace this particular talent pool, temporarily or over the long term, so that operations for which they are responsible will not go unperformed.

This is a special business continuity challenge when affected staff members are highly specialized, maintain unique skills, or have job-specific training, certifications, or professional status. Many airports have employees with a high level of institutional knowledge (of processes, policies, practices, or contact information for key people) that has not been documented. This makes the recovery of staff after disruptions critically important because the absence of these knowledgeable people can bring functions to a halt.

At airports, risk is elevated because these responsible, knowledgeable people may not actually be located at the airport, but at the airport operator or government office if key airport functions are managed there. They may also be employees of commercial tenants and contractors who perform certain essential airport functions. Any lack of cross-training or documentation of these people's job knowledge creates a very real risk that while one or two key *people* may know how a function is performed, the *airport organization* may not know how it is done or how to recover the function if the most knowledgeable people become unavailable during a disruption.

Routine personnel reductions and normal staff attrition from death, relocation, retirement, sickness, or dismissal increase business continuity risk because specialists who become absent for any reason represent single points of failure if no one else knows what they do or how they do it. If a pandemic impacts the availability of a large portion of the staff, entire airport departments could cease to function appropriately for days or weeks until the return or replacement of vital personnel.

The possibility of disruption in the availability of essential staff is why the airport or FBO business continuity plan should document essential functions, processes, procedures, and call trees so that they are accessible to replacement staff and management in the absence of the specialists who normally are available.

The business continuity plan should identify these skilled staff requirements or determine that, for an abbreviated period, a particular function can be performed by someone who is not fully credentialed. The business continuity plan should also document how to locate and acquire the services of replacement staff with commensurate skills, attributes, certifications, and professional credentials.

For example, essential financial roles at the airport may require the replacement of certified public accountants (CPAs). Replacing staff for planning, design, structural, or infrastructure positions may be require professional architects, licensed engineers, or people certified in computer-aided design (CAD) applications. Heavy equipment operators or other skilled airport maintenance workers may need to have apparatus-specific certifications or to be licensed tradesmen. Public safety staff may have to be sworn law-enforcement officers. ARFF staff might require certification on the use of specific firefighting apparatus. Employees in the airport infirmary might have to be registered nurses or licensed nurse practitioners. Planning for the replacement of these types of personnel during disruptions must take these requirements into account.

Some jobs may require specific demographic attributes: operators of some vehicles or equipment might have to be of a minimum height; firefighters may have to be capable of carrying a personal equipment load of a certain weight up ladders or meet other endurance tests; some security roles may require staff who are fluent in another language or of a particular gender. Essential workers may have to be members of a particular union. Union contract rules may not only require replacements with certain skills, seniority, or trade skills, but also may legally limit where union workers can be asked to relocate and work, even during workplace disruptions.

The airport's business continuity plan should consider all such limitations to the airport's ability to replace skilled staff and document how it will overcome these limitations so the organization understands exactly how it will replace specialists of all kinds if the disruption makes the current staff unavailable for any impactful length of time.

When faced with not enough of the right people to adequately perform each core function identified in its business continuity plan, airport management can decide to take several types of actions:

- **Do it differently.** Management can ask different people (who have been cross-trained) to perform the function or find someone who can perform an automated process manually. The recovery plan for each airport function should address whether and how staff members from a related department should be cross-trained to perform temporary tasks.
- **Do it less often or less thoroughly.** Similarly, managers should consider questions such as these:
  - Can we perform this task or run this process weekly instead of daily?
  - Can we complete the process with a sample of incidences instead of all instances?
  - Can we monitor this procedure for exceptions, rather than confirm every completion?

  Any of these approaches reduces dependence on people who are unavailable for a period of time.
- **Do not do it at all.** When considering the importance of a task or process and recovery priority, managers might ask these questions:
  - Is this process absolutely critical in a time of duress?
  - Can we get by for an hour, a day, or a week without someone doing it?
  - Do we put the operating certification of the airport at legal or regulatory risk if we stop doing this?
  - Do we put people at unacceptably high levels of risk if we stop doing this?
  - Do we abrogate our responsibilities under our leases or loan covenants, to significant legal detriment, if we temporarily stop doing this function?

Determining what *not* to do during disruptions can help mitigate the requirement for strained human resources.

Effective business continuity plans include two processes for ensuring the availability of essential replacement staff during disruptions:

- **Delegations of authority.** These are formal assignments of specific authority to make defined decisions, such as approving leaves of absence, expenditures, timesheets, and travel. If a staff member is unavailable during a disruption, his or her authorities should pass seamlessly to a primary, secondary, or even tertiary replacement, so essential decisions can continue to be made.
- **Succession planning.** If an essential staff member is permanently unavailable as part of a disruption (i.e., is disabled or deceased), a formal succession plan should pre-establish who will take over the job.

Fundamental to both delegations of authority and succession planning is the BCP objective of identifying and documenting how every element of every essential function in a job description is accomplished, ensuring that successors to the function know exactly how to operate the function when called upon to do so during disruptions. This establishes sustained institutional knowledge that cannot be lost if essential staff members become unavailable.

During prolonged airport disruptions, the business continuity plan should detail an approach to managing all essential airport or FBO functions by replacing lost people, processes, and plant and technology resources, or managing without them at some minimally acceptable level.

By analyzing each airport function and documenting its resource mix and recovery priority, the BIA process equips the airport BCP team to identify alternative resources that the airport might call on in order to perform key tasks a different way.

Requiring Contractors, Tenants, and Suppliers to Have Business Continuity Plans

Because airports often rely on outside, non-employee firms for many essential functions and processes, it is important that airport management require these key, third-party companies to develop their own proprietary business continuity plans. This can be done by contractually requiring vendors, contractors, and lessees to develop continuity plans for the essential functions they perform at the airport (fueling, general aviation management, maintenance, security, etc.) so the airport has confidence that their functions include a recovery and restoration process after disruptions occur. It is a good idea to attach these plans as appendices to the airport's final

plan for reference and to invite third-party firms to participate in business continuity exercises and testing.

Documenting the Business Continuity Plan

The documentation of the business continuity strategy for all an airport's business and operating functions should be integrated into a plan that includes the following types of information.

Administrative Content

Administrative content should include the following:

- **Plan confidentiality statement.** This limits the accessibility of the plan to those personnel that the BCP team and airport or FBO management specifically designate. Limits on distribution are important because business continuity plans contain a great deal of highly confidential information.
- **Introduction and overview.** This section should define the purpose and scope of the business continuity plan and document the assumptions made in developing the plan; this section should also describe the "Concept of Operations," which provides the structure and operational guidelines for using the plan.
- **Organizational chart and responsibilities.** Three relevant types of organizations should be named and described, the crisis management team (CMT), the damage assessment team, and the business recovery teams. The airport's CMT evaluates disruptive events that impact the airport and makes decisions as to the deployment of recovery resources for the entire airport. The damage assessment team identifies the extent of the physical damage and helps determine the resulting duration of the outage. The business recovery teams manage and coordinate each department's or function's response to and recovery from any disruptive crisis that affects it. The names and mandates of these organizations may vary widely among airports.
- **Emergency contact information.** The plan should establish a dial-in number and/or website or social media page(s) that enable employees and relevant stakeholders to access updated information about the disruption and recovery.

Business Continuity Plan Elements

This should be the main section of the business continuity plan. For FBOs or small airports, it might be relatively limited, based on the size and complexity of the organization. For larger hubs, this section will be far more extensive.

In order to develop this core part of the plan, organizations should assemble the following information for each essential business and operating function at the airport:

- List of the essential functions performed in the department, the person(s) responsible for each, and a sense of the relative recovery priorities for the functions
- List of any essential functions that are outsourced to a tenant, contractor, or vendor; the person or company responsible; and a list of any essential "inputs" to these functions that the airport must provide to the responsible contractor
- A description of "manual work-arounds" essential for functions—in other words, how these functions are accomplished if the technology upon which they normally depend is absent—and who is assigned to these work-arounds
- List of files or vital records required to perform essential functions, their locations, and recovery priorities
- Any data control requirements for information used in the functions
- Identification of audits, validation, or formal approvals required to complete essential functions, and who or what entities perform these reviews or audits
- The names assigned to the business recovery team for each essential function, their roles, and contact information
- Number of staff members or full-time equivalents needed to perform each essential function and any specific licenses, training, certification, or qualifications required for replacement personnel in those roles
- Names of the entities that provide this licensing or certification
- An estimate of how long it would take to replace essential staff
- List of any external personnel, contracting agencies, or unions and their contact information
- Identification of essential staff members, their primary and secondary replacements, and licensing/certification, union membership, or contractor information
- List of everyone in the department, or outside of it, who must be notified if the essential functions are disrupted, along with contact information
- The normal location at which the function is located, managed, or coordinated and the normal location at which any "field operations" take place for the function
- At least one alternate location for the function in case the primary location is unavailable; the address, capacity, and number of departmental staff required to locate there; and information on whether the airport provides transportation to the alternate location

- Types of any function-specific physical facilities required at alternate locations, the sources of these facilities, and their specifications
- List of any special infrastructure support services required by the function, their sources, and specifications
- Any special security measures required by the functions, their sources, and specifications
- List of any function-critical materials and supply items, minimum quantities required to be on hand, minimum reorder quantities, their sources, and specifications
- List of any function-specific equipment or tools, order quantities, minimum quantities, sources, and specifications
- Number of computers used in the function, their types, quantities, sources, and specifications
- List of function-essential software applications, where they are stored or hosted, the criticality of recovery for each, the suppliers, and their contact information
- List of function-essential communications devices, quantities required, sources, and specifications
- List of essential office equipment, quantities required, sources, and specifications
- Description of any other function-critical devices, quantities required, sources, and specifications
- List of all organizations, agencies, or entities that need to be contacted during prolonged operational disruptions, the criticality and timeliness required for contacting them during disruptions, and their contact information

Recovery Time Objectives

The RTO for each of the airport's business and operating functions should be listed in a table. The RTO is the amount of time each function's operations can be suspended before the resulting negative impact becomes unacceptable. It is the tolerance for downtime for a particular function. RTOs can be stated in minutes (for functions that must be recovered at once), hours, days, or weeks, based on priority. Each organization will establish RTOs that meet the requirements of their unique circumstances.

Alternate Work Space

If the decision is made by the airport's CMT to activate the business continuity plan, the Alternate Work Space section of the business continuity plan instructs each function to follow the business relocation procedures as documented in their section of the plan. It defines both the relocation that will take place immediately after the declaration of a disruption through some airport-specific timeframe and medium- to long-term relocation strategies. This section of the plan also addresses recovery site activation and tasks the appropriate team with communicating the appropriate instructions for relocation to each of the airport's business recovery teams.

Essential Operating Functions

This section of the plan should include a subsection for each business and operating function that is included in the business continuity plan. Every subsection should include this content:

- Overview and basic information about how the function operates
- Table of the business recovery team members and emergency call lists
- Complete list of the essential services provided by this airport function
- Definition of the recovery priority of the function as a whole and each of the key components of the function (expressed in RTOs or some similar ranking methodology)
- Lists or tables of essential resource requirements for the function—staffing, services, equipment, communications devices, office equipment, technology, and vital records
- Delegation of authorities and succession plans
- Alternate location information for recovering functional operations elsewhere during disruptions
- Functional recovery procedures
- Continuity plans for outside third-party companies that operate essential airport functions and processes under contract

Additional Business Continuity Planning Information

Business Continuity Planning Team Responsibilities

This section should describe and clarify the roles and responsibilities of the various BCP teams and their leaders to minimize any confusion among plan constituents.

Definition of Disruptive Incidents

Each airport and FBO should define what it considers to be disruptive incidents in terms of their impact on essential operations. The airport or FBO should distinguish among those disruptions that may be non-impactful emergencies and those that are likely to cause material disruption of key functions.

Phased Approach Strategy

This should be an airport-specific strategy for defining its overall RTOs—the maximum amount of time that each function at the airport can be suspended before causing a

severe impact to one of the airport's recovery objectives (such as meet contractual commitments, maintain regulatory compliance status, preserve reputation, maintain financial and operational controls, and maintain employee commitment and morale).

In this section, the airport should establish standard RTO intervals (e.g., 4 hours or 2 days); this will optimize consistency among the business units in determining functional criticality and recover priority. Standard intervals enable each airport function to evaluate resource needs and facilitate the allocation of recovery resources in the event of a site outage affecting multiple business and operating units. Consistency reduces the risk that a less important function may recover before one that is more critical.

Plan Activation

This section should define the factors that will prompt the organization's management to activate its business continuity plan. The triggers for activating the plan may be obvious—loss of power (because it can eliminate all systems), loss of water pressure (because it can reduce critical ARFF capabilities), or an IT network failure. Activation triggers may also be less obvious—a growing pandemic degrades availability of critical staff, a local transit strike keeps many workers at home indefinitely, or meteorologists predict a high wind and flooding event within 2 weeks.

Plan De-activation

In some cases, when the kinds of elements that trigger business continuity plan activation are eliminated, the plan is de-activated. Restoration of power or water supply, network restoration, or the end of a pandemic are examples. However, the closure of the triggering event may not *automatically* mean that contingent systems, equipment, or technology impacts that were a result of the primary triggering event have been addressed. Plan de-activation may be delayed until these dependent impacts can be resolved and essential functions associated with them restored. For example, the IT department may have restored the data center, but the data required to be recovered for other essential functions may not be restored for another day or week. In this case, it would be premature and counterproductive to de-activate the plan until all necessary elements are back in place.

Plan Distribution

Airports should use this section to document the people to which the plan will be distributed and how in order to control access and to maintain confidentiality.

Plan Testing and Maintenance

This critical section of the plan should describe the airport's testing objectives for its business continuity plan. This section should also define the type and scope of exercises the airport intends to facilitate to keep the plan current and well practiced, establish a formal test/exercise schedule, and define the components of the tests. A more detailed discussion of plan testing and maintenance is presented in following section, "Plan Testing, Exercises, and Maintenance."

Stakeholder Recovery Plans

Because so many essential airport functions may be the responsibility of contractors, FBOs, and government agencies, the airport's business continuity plan should incorporate copies of the contingency plan or COOP of each of those outside partners for the functions it specifically performs at the airport.

Plan Testing, Exercises, and Maintenance

When the business continuity strategy is developed and the plan is documented, it should be continually maintained and regularly tested and exercised. This is to ensure that it remains up to date, reflecting periodic changes in the airport or FBO operating circumstances, and that employees and other stakeholders understand the plan and how to use it during prolonged disruptions.

Ideally, business continuity should be an airport-wide process. While the plan itself may be developed by the members of the BCP project team, it is important for airport management to socialize the plan and provide training well into senior departmental ranks so everyone in the organization, as well as its other stakeholders, is aware of the plan and understands its implications and their specific roles and responsibilities during disruptions.

Maintaining a state of business continuity preparedness depends on the airport regularly testing its plan and the assumptions built into the plan and running periodic exercises that simulate the various types of disruptions that the airport may face.

Without such exercises, the business continuity plan is nothing more than a documented compendium of information. Its effectiveness during real disruptions may be compromised if the airport has not tested the effectiveness of the plan through exercises that familiarize the staff with its provisions and reveal areas of the plan that can be improved.

Plan testing should be used to do the following:

- Determine the state of readiness of the recovery organization to respond to and recover from a disruption to business, operations, and systems

- Determine whether the required resources for recovery are available at recovery locations
- Determine whether the business continuity plan has been properly maintained to reflect changes in the airport's business, operations, and technology
- Manage the expectations of the business units at the airport regarding what they can expect in the event of an actual disruptive incident
- Instill a sense of calm and confidence across the airport by showing that there is a demonstrable state of readiness for a potential disruption of services
- Demonstrate compliance with applicable regulatory requirements and good airport industry practices

Exercises are classified based on the extent of the actual resources being employed and the manner in which they are tested. Airports should consider using three types of exercises: a structured walk-through, component testing, and an integrated simulation/full operations test.

Structured Walk-Through

A structured walk-through is a paper evaluation of the airport's business continuity plan or a portion of the plan. It is designed to exercise the plan's effectiveness without incurring the expenses or using the personnel resources associated with performing a full test.

The objectives of the structured walk-through are to do the following:

- Verify the contents of the plan
- Prepare for simulation testing
- Train new members and create employee awareness
- Maintain preparedness while limiting use of resources
- Confirm that the strategy documented in the plan is viable
- Educate critical personnel on their responsibilities during a disruption
- Confirm that the information in the plan is current and accurate
- Identify areas of the plan that need revision or updates

A structured walk-through exercise is a cost-effective method for evaluating the adequacy of a plan. This exercise can be performed regularly on different parts of the plan and under different disruption scenarios.

Component Testing

Component testing is an off-hours exercise that airports should use to test a particular part of their recovery plan more aggressively. It serves to verify the correctness of operating procedures, hardware components, and the ability to restore a business unit's critical functions. An example of this type of test is a limited systems restoration and a connectivity test at a function's recovery site.

Component testing differs from the structured walk-through in that it involves actual recovery activities being exercised. It differs from a full operations test in that it does not require the use of the actual recovery sites.

The objectives of component testing are to do the following:

- Demonstrate the accuracy of the execution of the plan
- Verify the appropriate operating and incident escalation procedures
- Train and increase awareness of personnel
- Validate previous modifications of the BCP, including the DR plan

Integrated Simulation/Full Operations Testing

Integrated simulation/full operations testing should be performed at the airport's actual recovery site(s) and should use the resources for the specified tasks of the test (i.e., recovery site systems and workspace). This method of testing requires some processing activities to be performed at the recovery sites and requires the most advance preparation of all the test types. Integrated simulation/full operations testing demonstrates the adequacy of systems and business recovery procedures as well as the compatibility of back-up resources, providing validation of the time needed to restore critical airport functions.

The objectives of integrated simulation/full operations testing are to do the following:

- Test the entire plan or a portion of the plan under emergency scenarios
- Validate operational effectiveness and business unit interdependencies
- Provide measurable technical and administrative results

It is advisable to schedule an exercise of this proportion after hours or during a weekend.

There are three test categories that are classified by the extent of the overall plan that is being tested. *Element testing* exercises a particular part of the airport's plan, such as its call trees. *Business unit testing* exercises the recovery plan of an individual business or operating unit, such as winter operations. *Full process (integration) exercises* test business unit interdependencies and the integration of departmental plans with supporting business processes, along with how parts of the plan work together as a complete disruption response.

Test Schedules

The senior business continuity officer should coordinate the administration of the review, maintenance, and testing schedules. This person should also be responsible for following up on any revisions to the plan that may be required as a result of tests. The business continuity steering committee should review and approve any revisions.

As a matter of regulatory compliance, many airports should test their operational recovery capabilities on an annual basis. They should use the preceding year's test results as a basis from which to develop the test objectives for the current year. Consideration should be given to changes to the airport's RTOs and resource requirements, the inclusion of new business units and processes, business units experiencing significant personnel changes, regulatory changes, and changes to the airport's IT environment from the previous year.

Conducting Tests

Preparation, execution, and review of test results are the key components of a successful airport BCP testing program. (See Appendix D for a sample test evaluation form.)

What the Business Continuity Plan Should Look Like

Effective business continuity plans should include the elements listed below (based on accepted business continuity standards and practice) applied intelligently to each airport's specific operating environment. While plans can be documented in hard copy, it is increasingly popular to develop them using a software tool so that they remain easy to access, update, and distribute and can be more effectively used for training and exercises.

Cover Page

The cover page includes the date, version number, and official declarations:

- **Date**—the date of the plan as subsequently updated
- **Version number**—so every update is recorded
- **Official declarations**—indicating approved uses (e.g., "official use only") or any necessary disclosure approvals or permissions

Introduction

The introduction includes organization of the plan, distribution and access, mission statement, scope, objectives, and assumptions:

- **Organization of the plan**—describes and defines the plan's sections and layout
- **Distribution and access**—defines to whom (people, roles, and organizations) the plan is distributed and provides any official access restrictions to the plan
- **Mission statement**—defines the plan and what it is meant to accomplish for the airport
- **Scope**—defines what the business continuity plan covers, in terms of the following:
  - Impact to identified functions that are essential to the continuity of the airport's operations
  - The facilities that the plan covers
  - The number and identity of the business and operating functions addressed by the plan
- **Objectives**—describes the goals set by the airport for the business continuity plan and distinguishes it from other plans (e.g., the emergency management plan, crisis communications plan, IROPS plans, etc.)
- **Assumptions**—describes the following:
  - The extent of the plan activation (i.e., how long it will take to recover disrupted functions when following the plan)
  - The factors addressed in the plan (essential functions, resources, and support)
  - Any exclusions (i.e., that the emergency management plan, the IT DR plan, or the crisis communications plans are not part of the business continuity plan)
  - How the plan is integrated with other incident management plans that the airport maintains
  - How staff members who have responsibilities under the plan are to be trained and prepared
  - How the plan will be regularly exercised, updated, and maintained

Concept of Operations

Concept of operations includes roles and responsibilities, individual plans for functional recovery, functional recovery prioritization, plan activation, and plan deactivation.

- **Roles and responsibilities**—the responsibilities of all staff with formal recovery roles on various teams when the business continuity plan is activated:
  - Steering committee, plan manager or coordinator, business process owners, and plan administrators
  - Crisis management team
  - Damage assessment team
  - IT recovery team

  - Functional recovery teams—team leaders, members, and those with financial, crisis management, or public safety or security roles during recovery activities
- **Individual plans for functional recovery—**an explanation that the master airport plan is a "roll-up" of the recovery plans and requirements of the essential business and operating functions at the airport is given in this section
- **Functional recovery prioritization—**a listing of the many essential departments and functions operating at the airport or supporting it with a general recovery prioritization
- **Plan activation—**a section defining those incidents or disruptions that will result in official activation of the business continuity plan
- **Plan de-activation—**conversely, a section defining events that will de-activate the plan and return staff and departments to normal roles and responsibilities

Functional Recovery Plans

This section is the "meat" of the business continuity plan. It documents the recovery plans and the resources that are essential to the recovery of every essential function at the airport. For each function, this section provides a functional description or overview, mission-essential functions and recovery priorities, business recovery teams, critical resources, vital records and data, alternate facilities, delegations of authority, succession planning, and alert notification procedures and call lists:

- **Functional description or overview—**a definition and description of the department or function
- **Mission-essential functions and recovery priorities—**including the following:
  - Identification and prioritization of all sub-functions or business processes within the function
  - RTOs
  - RPOs
  - Internal interdependencies
  - Any special safety and security measures required during recovery
- **Business recovery teams—**identifies those within the function who are formally assigned roles and responsibilities for recovery
- **Critical resources—**an inventory that documents the mix of systems, plant and equipment, materials and supplies, personnel, mutual aid and assistance, and technology resources that are essential to the operation of the function or business process
- **Vital records and data—**an inventory that documents all the electronic and hard-copy files, data, and vital records that are essential to the operation of the function or business process
- **Alternate facilities—**including the following:
  - Pre-established facilities and space to which the function will relocate if it cannot use its current space (including prepositioned equipment, supplies, materials, and furnishings)
  - Emergency acquisition procedures for alternate space if the primary relocation facility is unavailable
  - Provisions and procedures for working from home, when possible
  - Relocation procedures and procedures for taking essential equipment, supplies, materials, and furnishings to the new facility
- **Delegations of authority—**formal assignment of authority and approval of leave, travel, procurement, time sheets, contracts, and so forth, if the person who normally provides these becomes unavailable
- **Succession planning—**formal plan for assuming the positions, roles, and responsibilities of someone who is permanently unavailable
- **Alert notification procedures and call lists—**lists of internal and external contacts who should be notified or consulted during functional disruptions, including staff, family contacts, suppliers and vendors, contractors, airport operator personnel, first responders, and others, as well as information on preferred methods and means of communication

Devolution

This section describes in detail what will occur if the business continuity plan fails to recover the function. It provides for temporarily transferring the administration, rights, powers, property, and responsibility for the function to an outside organization or entity, such as the airport operator, the city or county, another airport, the military, or another appropriate entity.

Reconstitution

This section describes how the airport overall (or each function per se) will return to its normal operation once the business continuity coordinator determines that the disruption has ended, all danger is over, and the plan is de-activated. This requires a damage and situational assessment of the essential elements that make up and support the function or the airport. Some disruptive incidents may have caused extensive damage that precludes speedy reconstitution of some airport functions.

When the airport returns to normal operations, a designated person from each function should notify the coordinator of its business continuity activation and relocation status, operational and communication status, and the time necessary to return to its normal location. Plans are described for

allocating space and moving people, equipment, supplies, materials, records, files, and furnishings to their normal locations—in coordination with local government, mutual aid agencies, DOGs, and even state or federal emergency support agencies.

Employee claims (workers' compensation, overtime, etc.) associated with the dislocation and relocation must be provided for in this phase, as well as a system of accounting for all personnel throughout the recovery process.

Plan Testing, Training, and Exercises

This section of the business continuity plan should describe how staff is trained on the plan; how the plans or segments of the plan are tested and improvements are integrated into a plan revision; and how often, to what extent, and over what scope the plan will be exercised. The provision for regular testing, training, and exercises is critical to the plan's effectiveness in meeting its mission of supporting the resilient operation of the airport. Without these regular improvement activities, the business continuity plan may become irrelevant "shelf-ware" that fails to provide effective and realistic recovery guidance or to prepare staff adequately.

Plan Review and Maintenance

This section describes the timetable for the official review of the business continuity plan, as well as provisions for maintaining it as the airport's operations evolve and as real disruptions and exercises reveal the need for edits, updates, and improvements to the plan.

Business Continuity Plan Appendices

The appendices to the plan can include information such as the following:

- Lists of airport staff assigned to various business continuity groups or committees
- Recovery plans of various contractors, lessees, and suppliers that operate essential airport functions, or support them
- Employee preparedness plans to support them and their families during incidents
- Employee support information or policies
- Plan maintenance calendar
- Testing, training, and exercising calendar
- Lists of vital records, applications, data, and other supporting elements

Using the Resulting Business Continuity Plan

Creating the business continuity plan is only the starting point of the larger objective of actually ensuring the organization's readiness and capacity to provide operational continuity during and after disruptions. The business continuity plan itself is nothing but a printed document, a website, or a software application, and its quality is dependent on the level of support it receives from senior management. To optimize the effectiveness of BCP, airports should make BCP a fundamental part of departmental goals and objectives, exercise plans regularly, and maintain and update them as the airport or FBO evolves and its imperatives change.

The business continuity plan should be a framework for operational recovery, for responding to the impact of any type of disruptive incident or event. The plan should include a comprehensive inventory of essential resources that are required to operate effectively and be a reference document that defines core functions. It should align with the business continuity or contingency plans of the contractors, government agencies, vendors, and commercial tenants that are responsible for many essential airport functions. Finally, the plan should remain a flexible, living document that evolves along with the airport.

It is important to appreciate that the business continuity plan is *not* an incident-specific action plan that describes for all BCP participants the steps they should take for recovery of their disrupted business and operational processes. Incident-specific action plans can most effectively be generated once the particulars of the disruptive emergency have been established and confirmed.

Instead, the business continuity plan is more of a framework and inventory that describes how every essential function works at the airport, how important things get done, and what mix of resources are required to do so. That information provides airport management and the BCP team with the information they need to determine a specific course of action in response to the particulars of any type of incident.

PART 2

Using the Airport Business Continuity Planning Software Tool

Introduction to the Software Tool

CRP-CD-140, which accompanies this guidebook (or which can be accessed from an ISO file at www.trb.org/Main/Blurbs/169246.aspx), contains a business continuity software tool that has been developed to aid airports and fixed base operators (FBOs) in developing and documenting their business continuity plans or revising their current plans in light of this guidance. The tool "compresses" and automates the business continuity planning (BCP) process described in the first part of this guidebook. Using a detailed questionnaire, it generates a printable business continuity plan that is customized to each organization and includes the plan components described in the first part of this guidebook.

The tool is designed to be used by airports and FBOs of every size, location, mission, and level of complexity. It is intended to be used to assemble a great deal of data from each airport business and operating function (see the list in the section called "Business Continuity Plan Elements" in the first part of this guidebook). The data are entered into the tool through answering a comprehensive series of straightforward questions.

The tool has been constructed with the assumption that users are not likely to be BCP professionals or trained experts, although it works just as well if they are.

How the Software Tool Approximates the Business Continuity Plan Process

Conventional BCP follows a generally accepted process from conceptualization through plan development, exercising, and plan maintenance (see Figure 3).

The software tool included with this guidebook provides a questionnaire-based process that essentially combines the essence of the middle three of the five BCP phases shown in Figure 3, from the business impact analysis (BIA) through plan development. It is up to each airport and FBO using the tool to develop training, exercising, and maintenance programs after a plan has been developed.

When complete, the questionnaire will generate a basic business continuity plan that is the product of the unique combination of answers each respondent gives to an intensive set of up to 2,200 questions presented in up to 34 functional sections.

Approximating Recovery Priority

The questionnaire utilizes a scale (shown in the section titled "Determining Functional Recovery Priority") that respondents will use to rank the criticality and recovery priority of each of the business and operating functions that are present and essential at their airport sites. This

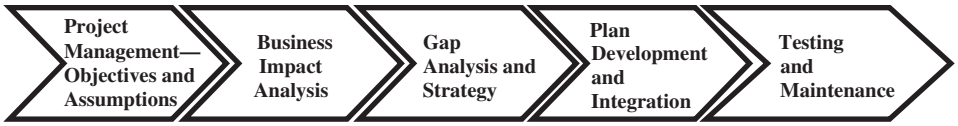


Figure 3. The business continuity process.

scale is used in the software, instead of specific recovery time objectives (RTOs) and recovery point objectives (RPOs), to approximate the relative importance of each essential airport or FBO function.

Respondents may later choose to go beyond the capabilities of the software tool and develop their own RTOs and RPOs through a traditional BIA process.

Basic Business Continuity Plan—Only the First Step

Airport managers and questionnaire respondents should appreciate that truncating a very complex BCP process into a professionally unaided survey that is equally relevant to every type of user will produce a basic, competent business continuity plan that will be as relevant to each airport or FBO as their answers are accurate and complete.

Users should consider the business continuity plan that results from the questionnaire to be a beginning step in their evolving awareness and practice of BCP. They should actively and continuously amend, edit, improve, and test their plans to ensure that they are up to date and that they remain relevant and responsive to changes in their operational environments.

Ease of Use

This guidebook and the software tool have been designed to be user friendly. The tool is somewhat biased toward those smaller, operationally less sophisticated, and less-well-funded airports, general aviation airports, and the FBO community that may never have formally addressed BCP. Because the tool was developed to accommodate the majority of those airports that are just starting the business continuity process, it is not needlessly complex or overly sophisticated. The tool and this part of the guidebook have been constructed with a step-by-step, "how to" approach that is intended to have broad utility and practical applicability.

If this guidebook and the software tool help airports and FBOs to initiate BCP and help them to develop even a modestly improved business continuity capability, these resources will have achieved their objective of making a very important and positive impact on the operational resilience of the industry.

Organization and Intended Use

Organization

The software tool is a comprehensive, interactive questionnaire or survey composed of a total of approximately 2,200 potential questions. The questions guide respondents through a process that identifies how it is that they accomplish their essential functions and activities and what resources are required to do so—the basis of good BCP.

Conditional Presentation

The questions in each section are presented in a logical order. Many are navigationally related and either will be—or will not be—presented to respondents based on how respondents answered a preceding question. Respondents will be asked to answer the unique set, number, and order of questions that they are presented, based on how they answer conditional questions injected throughout the survey that "toggle" other questions (or entire sections of questions) on or off.

Therefore, it will be rare that any respondent will actually see the full 2,200 questions. For smaller, less complex organizations, the actual survey may include significantly fewer than 2,200 questions. FBO respondents may navigate through much of the questionnaire or only a single section; this will be determined by the FBO's role and scope of responsibility at an airport.

Question Sections

The questionnaire is divided into 35 question sections. The first section contains introductory questions about the responding airports or FBOs and the importance these respondents assign to the operating and business functions represented in the other 34 sections. Of the 34 follow-on sections, 13 deal with *business* functions at an airport and 21 address *operational* functions. If, in answering the nine introductory section questions, respondents define any of the 34 groups of functions as "unimportant" or "non-existent at the airport," the software tool will skip those sections and not present them to users at all.

Examples of operational functions that may not be important to or exist at many airports and would be eliminated by the software tool for those airports are cargo operations, shared infrastructure services, winter operations, or supporting a co-located military air wing at the airport.

Questionnaire sections are the following:

1. Co-located Military
2. Aircraft Rescue and Firefighting
3. Back-Up Power Sources

38 Operational and Business Continuity Planning for Prolonged Airport Disruptions

4. Commercial and Aviation Lessees
5. Environmental Operations
6. Finance and Accounting
7. Fixed Base Operators
8. General Aviation
9. Government Security and Controls
10. Government Relations
11. Grants and Projects
12. Human Resources
13. Infrastructure and Utilities
14. Legal and Contracts
15. Other Property Management
16. Passenger Management
17. Payroll and Benefits
18. Public Parking Operations
19. PR and Marketing Communications
20. Public Safety
21. Retail Concessions
22. Winter Operations
23. On-Site Fuel Supply
24. Aeronautical Operations Support
25. Ramp and Hangar Operations
26. Airport Maintenance and Repair
27. Purchasing, Receiving, and Supplies
28. Groundside Transportation
29. ATCT Operations and NAVAIDS
30. Shared Infrastructure
31. Cargo Operations
32. Terminal Buildings
33. Information Technology
34. Financial Reporting

Each of these sections includes questions about how the activities in the section are performed and what mix of resources—people, process, plant and equipment, and technology resources—is required to manage the function during normal or routine operations.

Aligning Survey Sections to the Airport Organization

Respondents should *not* expect the 34 functional groupings to match the airport's management or departmental structure exactly. Further, it is not to be expected that these groupings will precisely align with the airport's organizational chart or its reporting structure or that the software tool will use nomenclature that is necessarily consistent with the airport's terminology.

The software tool was developed to address the operational scope of every U.S. airport that chooses to use it in their business continuity efforts. Because of the vast differences among the country's thousands of airports, no single functional grouping scheme can accurately match every airport's organizational structure. Instead, the tool groups like functions in convenient sections of like or related activities.

Some of the questionnaire sections include functions and activities that are rather homogeneous and present at most airports, such as Payroll and Benefits, Human Resources, Environmental Operations, or Aircraft Rescue and Firefighting (ARFF).

Other sections tend to be heterogeneous groupings of more disparate functions and activities. For example, the Passenger Management, Aeronautical Operations Support, and Infrastructure and Utilities sections each include questions that address a mix of activities that may be part of one or more actual departments at the respondent's airport. The result is that there may be some unavoidable double counting of essential resources that occurs with use of the questionnaire. This redundancy should be minimized (to the greatest extent possible) or eliminated altogether (whenever possible).

Fixed Base Operators

Because FBOs have various operating models and different functional or operating scopes at their various airport sites, the software tool addresses them in two ways. FBOs that essentially run the entire airport under contract to the airport operator should use the tool as if they were an airport, answering all relevant questionnaire sections.

FBOs with a narrower operating scope—for example, those that run the general aviation operations or fueling operations at an airport—should answer questions only in the FBO section of the questionnaire.

Intended Use

Airports and Fixed Base Operators

The software tool and this guidebook were developed specifically for use by airports and FBOs for their airport-specific operations. These resources deal exclusively with airport-specific functions, activities, responsibilities, processes, and resources, regardless of what entity provides them.

Airport Contractors and Lessees

Non-Airport Operations

The tool is *not* intended or constructed for corporate use by the companies that contractually provide or manage many essential airport functions—airlines, commercial tenants and contractors, or retail concessions. Nor is it intended for use by businesses that operate within the airport's "economic footprint," such as car rental companies or hotel chains.

Each of those privately or publicly held businesses should have their own corporate business continuity plan that addresses their own enterprise operational resiliency as independent companies. Many undoubtedly do have such plans; although some may not.

Airport Operations

It is not the airport's role to mandate that these contractors, vendors/suppliers, and lessees have *corporate* business continuity plans. However, it is clearly the airport's responsibility, and a good business practice, to ask that these companies develop and maintain business continuity or contingency plans *for their operations at the airport* under contract or lease agreement with the airport.

Many of these third-party, site-specific operations compose essential airport functions under a contractual relationship and, from that perspective, should be included as appendices in the airport's own business continuity plan. The loss of any essential operating function could negatively affect the airport and its strategic business interests, regardless of whether it is a direct airport function or one indirectly provided by one of these tenants or outside contractors. Including those

40 Operational and Business Continuity Planning for Prolonged Airport Disruptions

companies' recovery plans in the airport's business continuity plan helps manage the expectations of airport officials and align the airport's recovery process with those of these key partners.

Referencing Contractors' Contingency Plans

In each section of the questionnaire, respondents will be asked several questions that identify the contractual providers of essential airport functions. They will be asked if their leases and contracts include a provision requiring contractors to develop and maintain business continuity plans for those business or operational activities they provide or perform for the airport.

The software tool will repeatedly recommend that the airport add copies of these contractor business continuity plans as appendices to the airport's overall operational continuity and recovery plan. That way, each of those plans will be documented and widely available to airport managers, so they will know exactly what to expect from each contractor or lessee in the way of their critical recovery plans and procedures at the airport.

In cases where these contractors do not have such contingency plans, the airport's business continuity plan will establish a goal to develop a contractual requirement for such plans from the airport's key contractors and will fairly and consistently apply this requirement as a contractual or leasehold provision across each of its relevant agreements.

Using the Software Tool and Guidebook Together

The software tool is designed so that respondents can be self-sufficient, interfacing directly with the tool itself. Unless users do not understand a question, even those with no background in BCP should be able to complete the questionnaire without referring frequently to this guidebook. The pop-up information dialog boxes shown in Figure 9 provide context-specific information about many of the survey questions.

This guidebook is designed to provide respondents with a description of business continuity, an explanation for why it is important in their operations, and a conceptual and process framework for implementing BCP in their locations. Additionally, the guidebook offers background information, professional insight, a glossary, a list of abbreviations and acronyms, and a template for exercises. This guidebook also describes the survey questions in more detail to help respondents work through the software tool as they create their customized business continuity plans.

More comprehensive guidance can be found in this guidebook if further explanation of a question is necessary or if users want an explanation of why certain questions are being asked, how they apply to airport business continuity, why they are important, or how their answers will contribute to the airport's plan. The guidebook uses screen illustrations throughout as visual references to help users.

Recommended User

The ideal "official" user or respondent for airports and FBOs is someone who has a broad purview of operations, who has worked in numerous departments, or who has had responsibility for multiple functions. This person needs to know how the airport operates function by function and how to obtain answers and data for input into the questionnaire.

If the airport has appointed someone to be in charge of business continuity, or has a formal business continuity function, then a respondent from that function is ideal. For those entities that do not have a formal business continuity function, ideal candidates may come from the airport manager's staff, internal audit, risk management, compliance, finance and administration, or operations.

The staff member assigned by the airport to complete the questionnaire should become familiar with the questions by exploring the questionnaire and reviewing the question types in this guidebook. Once users feel comfortable with the survey, they can brief each department head about the information that is required to be entered into the software, so that each function can collect and document the necessary data and provide these data to the official respondent for entry into the tool.

Time Required to Complete the Questionnaire

The time required to complete the business continuity questionnaire will vary among respondents based on the size and complexity of their operations and the number of internal personnel whose help is needed in gathering data for the plan.

For medium and larger hubs, the introductory section and questions in each of the 34 operations sections may have to be answered. Smaller airports and ones that focus on general aviation (and FBOs) may be presented with some fraction of this number of sections.

If management makes completion of the survey a priority, the time required to complete the survey may be a matter of weeks or 1 to 2 months. However, if the survey is completed piecemeal or shelved, it could take longer.

Features and Functionality

Tool Installation and Features

The software tool is fully self-contained on *CRP-CD-140,* provided with this guidebook, or available as an ISO file from www.trb.org/Main/Blurbs/169246.aspx. Because it does not require the user to maintain a subscription to an Internet service provider, the questionnaire software will run locally on most personal computers (PCs) or laptops that run reasonably current versions of Microsoft software "out of the box."

The software is currently only supported on PCs. It is not supported on Apple Macintosh devices.

It is important that any computer on which the software is installed be updated with the most recent Microsoft updates, so that Microsoft .Net 4.0 is operational.

The installation is a "per-machine" installation. The software will work on computers running Windows XP (SP3) and Windows 7. To install the software, the user must control the computer or have "Administrator" privileges.

To install the software, respondents should simply locate the installation executable file on *CRP-CD-140* and run it (an ISO image of *CRP-CD-140* is available at www.trb.org/Main/Blurbs/169246.aspx). Respondents can run "setup.exe" by double clicking on it from Windows Explorer. **Note that these steps may vary, depending on the browser used.**

There may be some older computer models that are not optimal for running this software, but the software developers attempted to provide a tool that will run on a number of personal computers still operational in the market today. These should include stand-alone laptops and PCs as well as enterprise-administered workstations (with "Administrator" assistance).

Critical Software Icons

Once loaded, the software tool will be indicated on respondents' desktops with an icon (illustrated in the upper left-hand corner of the screen shown in Figure 4). When the installed survey tool is open, two "process icons" will coincidentally appear in the respondent's task bar (two XUL Runner icons, one with text and one without). These process icons are also illustrated along the bottom of the screen shown in Figure 4.

To close the survey application at any time, respondents should simply exit out of the application using the familiar red "X" in the upper right-hand corner of the application (see Figure 4). This will also shut down the related processes and process icons. All responses will be saved. **Note that the user must never directly close any of the process icons themselves, or the software program will stop working.**

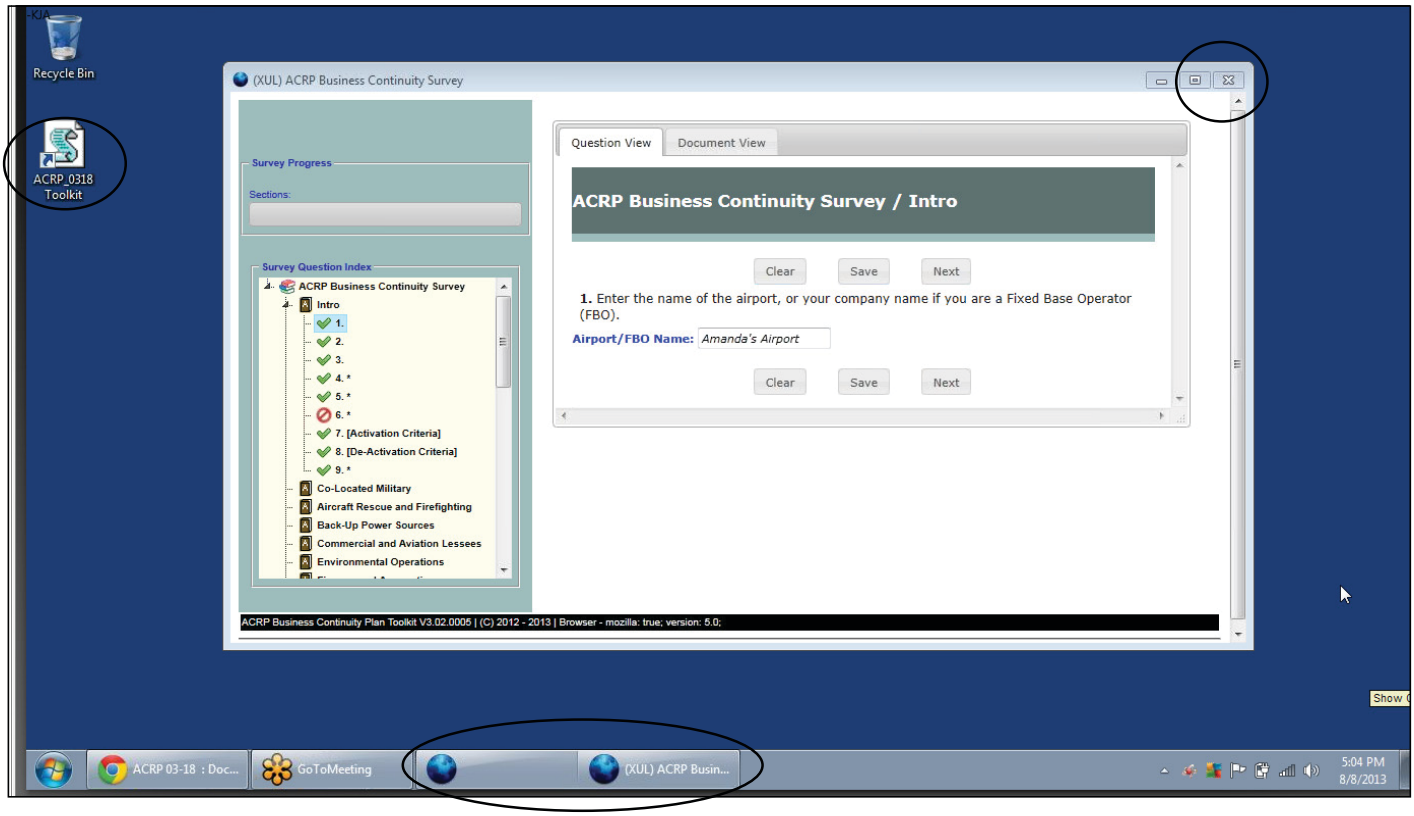


Figure 4. Survey application icon, process icons, and exiting.

Functionality

Technical Components

To deliver the functionality of this questionnaire in a self-contained tool, a Firefox browser engine has been embedded in the software in a way that emulates an online browser experience without any requirement for access to the Internet. **This browser engine will not interact in any way with the browser(s) already installed on users' computers.** Additionally, the software includes a stand-alone content server (Node JS). Integrated with these two components are a range of software packages and tools that handle the operation of the questionnaire and generation of the resulting business continuity document.

Basic Capabilities

Respondents can begin responding to the questionnaire, save changes, and continually come back to it to complete it, as they assemble the answers to the questions. They can navigate around the questions and skip questions and entire sections to which they can return later. As users respond to the questionnaire, they can preview on their screens the custom business continuity plan that the software is developing in response to their answers. When users have completed the questionnaire and are satisfied with their answers, they can save and print their airport or FBO business continuity plan as a portable document format (PDF) document for airport distribution.

Single Computer Installation

The business continuity software tool was designed to be installed on a single computer at each airport. This is because, as a tool that is not hosted on the Internet, critical root data

44 Operational and Business Continuity Planning for Prolonged Airport Disruptions

files, template files, and response data directories are stored locally on this computer by the software.

Because of this design, participants should either keep the software installed and running on a single computer that is made accessible to multiple departments or install and use it on a single laptop that is passed around among department respondents. The staff member who is assigned to complete the questionnaire should invite a knowledgeable manager from each relevant business or operational function at the airport to help answer questions pertaining to the processes within that department or function. Departmental managers should assemble the information listed in the section called "Business Continuity Plan Elements" in the first part of this guidebook prior to meeting with the person who will complete the questionnaire.

Alternatively, the respondent may preview the questions in advance with each relevant department head, so the departments can gather the appropriate information for entry into the questionnaire. In the upcoming section titled "Explanation of Basic Question Types," the basic question types are presented and discussed, so respondents may share them ahead of time with each airport function.

How the Tool Works

The software tool is an integrated questionnaire that asks respondents to answer a series of questions about how each essential function operates. The questions focus on the four types of resources that business and operating departments require in order to function at a minimally acceptable level—the unique combination of human resources, technology, plant and equipment, and processes that enables each essential function to perform as expected as part of the airport's operating model.

The information derived from the questions is fundamental to developing the airport's business continuity plan. The information does the following:

- Helps determine the relative importance and recovery priority for every function and subfunction in every department
- Feeds a series of critical resources lists and helps airports define how these resources can be restored or replaced during disruptions
- Addresses airports' dependence on numerous agencies, contractors, and tenants that may be contractually or statutorily responsible for the operation of some of the airport's essential functions

As questions are answered, the software allows respondents to preview the developing business continuity plan (in HTML format) on their screens. When all questions have been answered, the tool will create a complete, customized business continuity plan based on the answers entered into the questionnaire by a respondent and will make the plan available for distribution and printing as a PDF document.

Question Formats

The questions in the questionnaire come in four distinct forms—radio buttons, text boxes, check boxes, or drop-downs—each of which performs a unique function in building the business continuity plan.

Radio Buttons

Radio button questions ask a specific declarative question and provide two or more choices to the user, only one of which may be selected (see Figure 5). Many of these are "yes/no" questions. Based on the user's response, the questionnaire presents the user with additional questions. **Radio button questions are mandatory questions that may also trigger the software tool to include relevant content in the business continuity plan.**

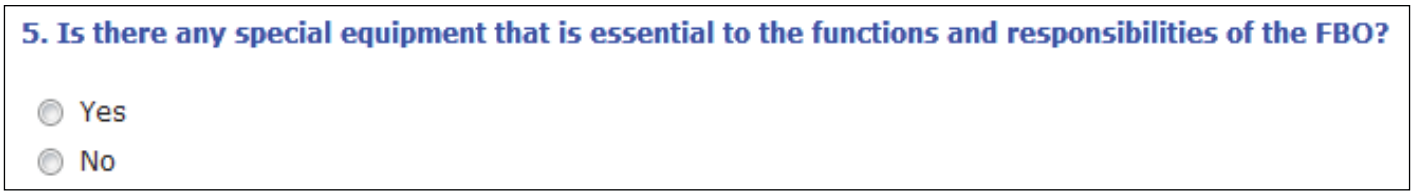


Figure 5. Example of a radio button question.

Text Box

Text box questions ask respondents to enter data into one or more boxes—free form information, addresses, contact information, and so forth (see Figure 6). The software incorporates this information into the business continuity plan, so that it documents specific information about recovering essential functions and resources in every department.

Check Box

Check box questions present users with the ability to select one or more answers from a list of choices (see Figure 7). These questions display many choices, with no limit to those that can be checked or indicated. Check box questions typically generate tables of key data that become part of the business continuity plan. **It is mandatory to check at least one choice**.

Drop-Downs

Within check box or text box questions, respondents will sometimes see drop-down boxes presenting them with a set of defined choices from which to choose in answering the question

Figure 6. Example of a text box question.

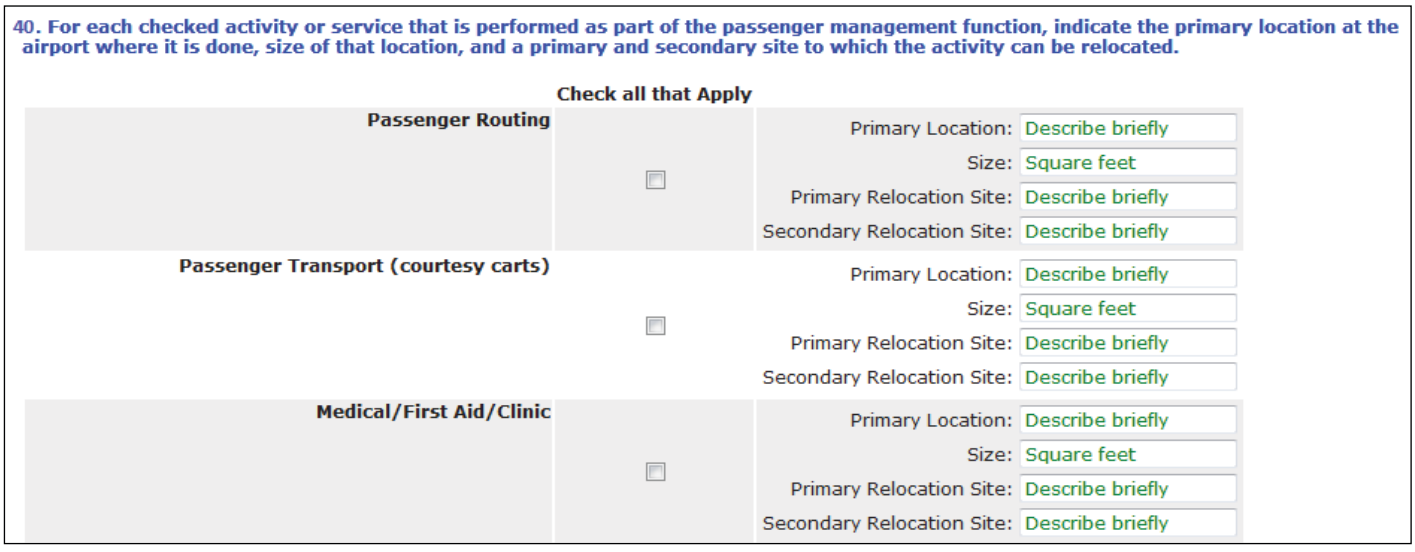


Figure 7. Example of compound check box questions.

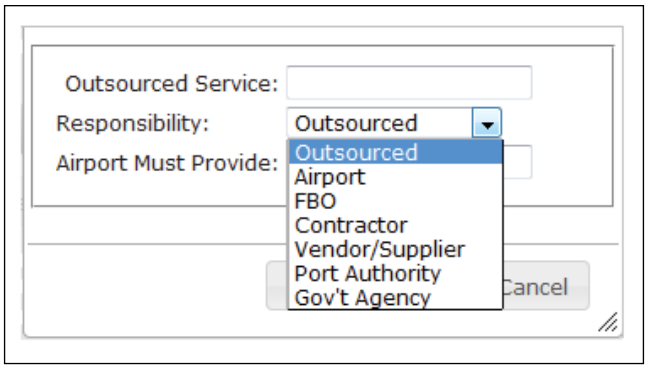


Figure 8. Example of a drop-down question.

(see Figure 8). The resulting choice then populates the related text box and is inserted into tables that will appear in the resulting business continuity plan.

Getting Additional Information

Throughout the questionnaire, the information symbol (ⓘ) appears alongside every question for which there is a further or more complete explanation or an example that will help respondents answer with the most accuracy. When users let their cursors "hover" over these information symbols (ⓘ), a question-specific or line-specific explanation will appear in a pop-up dialog box, as shown in Figure 9.

These "information" dialog boxes typically appear at the top of the respondent's screen. Some dialog boxes contain enough information that respondents must scroll down or sideways to view all of the information. The box disappears when respondents move the cursor off the information symbol.

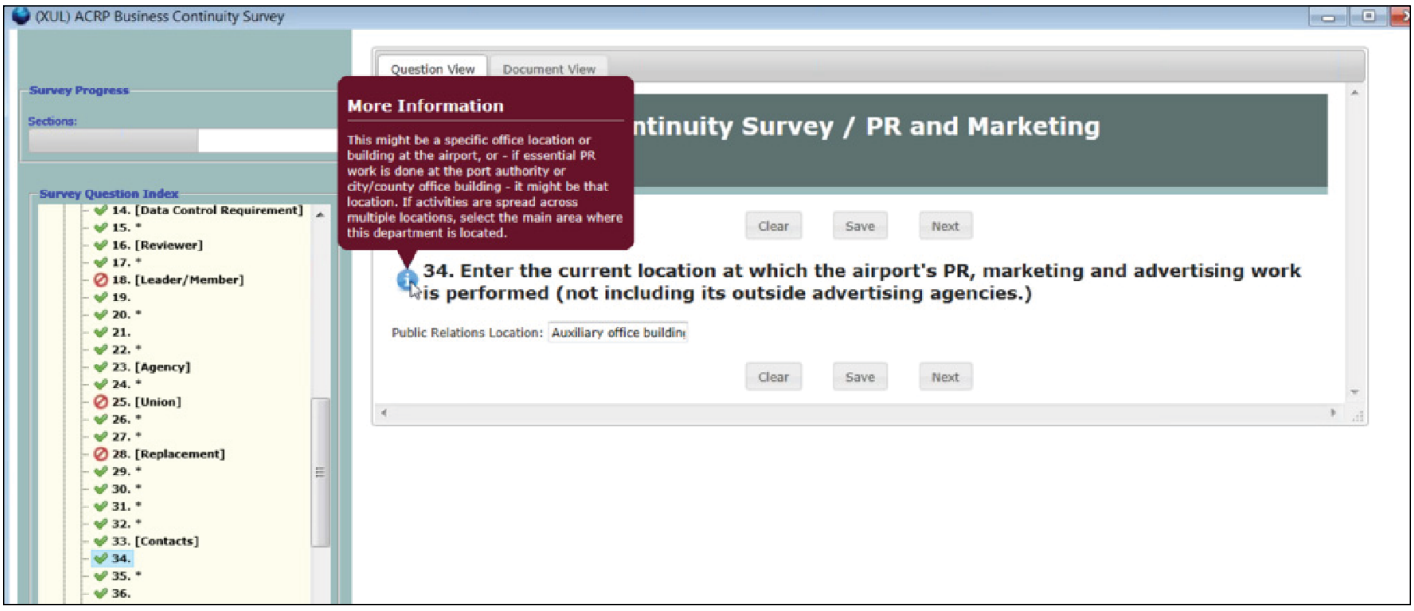


Figure 9. Example of an information pop-up dialog box.

48 Operational and Business Continuity Planning for Prolonged Airport Disruptions

Navigation

After respondents have installed the questionnaire software locally and have launched the application, they will see the screen shown in Figure 10. **Note that each time respondents start or restart the application, it will take up to 30 seconds (more or less based on computer speed) for the application to be ready for use.**

Viewing Modes

Respondents will have two viewing functions as they use the software tool. These are shown at the top of the screen as two tabs: "Question View" and "Document View" (see Figure 10).

Question View

In the "Question View," respondents can choose from three action buttons ("Clear," "Save," and "Next") displayed at both the bottom and top of the screen:

- The "Clear" button clears an answer just entered (without changing any prior response), so respondents can reconsider and re-enter the answer.
- The "Save" button saves the answer as entered, but does not advance the respondent to the next question.
- The "Next" button moves respondents from the current question to the next appropriate question and automatically saves the last answer.

Document View

In the "Document View," the "Render Document" button can be used at any point while respondents are completing sections of the questionnaire. Respondents use this button to view

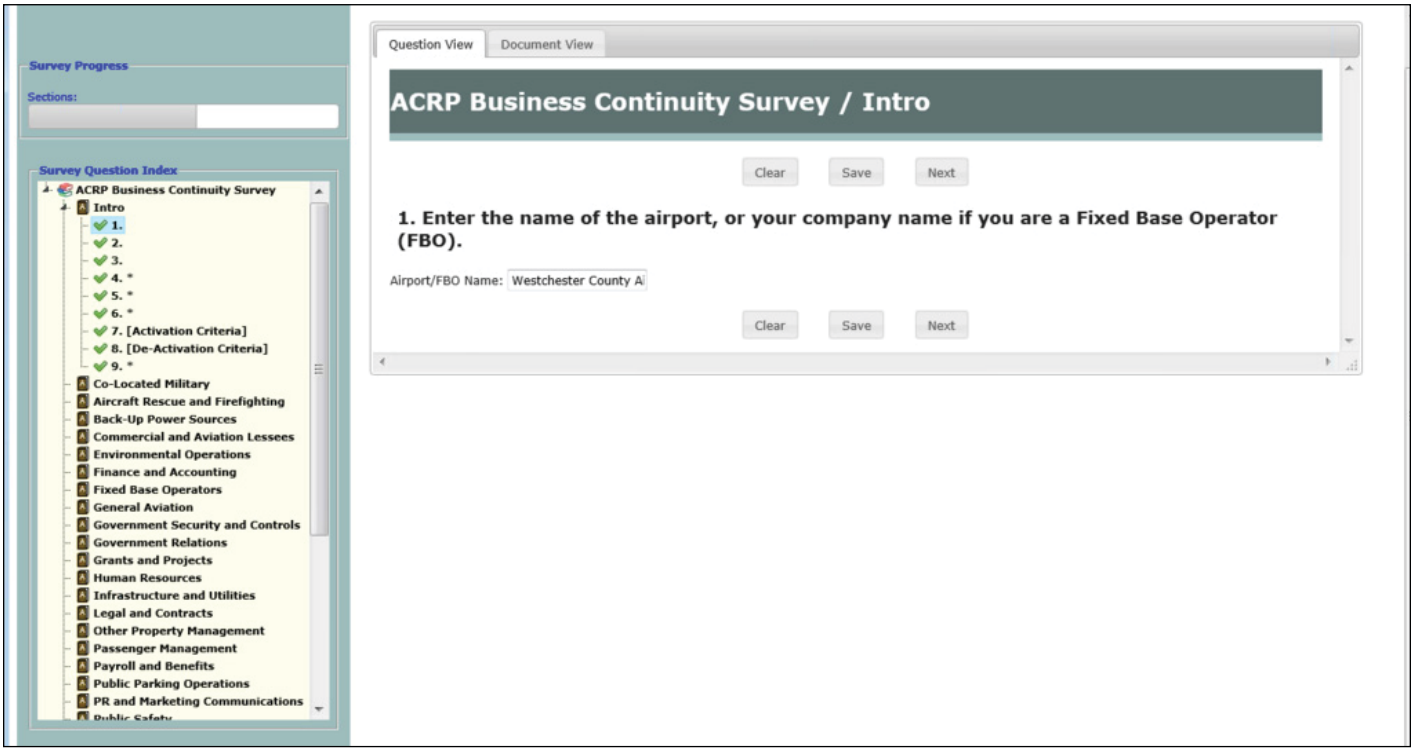


Figure 10. Screenshot of "home" page of the software tool.

their developing business continuity plan in HTML document format or as a PDF document. This feature enables them to become comfortable with how their answers become integrated into their plans. Rendering drafts or final documents always starts at the beginning of the plan document.

Respondents have four radio button choices in the left column to select the format of their rendered document, giving them several options for reviewing their work as they move toward completion. Only one can be selected at any one time. To the right of these radio buttons are four square check boxes that are not operational, but that highlight for respondents the features of each rendering choice on the left. To the right of these square check boxes appears the "Render Document" button that triggers the rendering choice that has been made. Each of these features is described below and illustrated in Figure 11.

The "Draft (On Screen)" button renders a plan document in HTML format that automatically highlights in blue all text substitutions and insertions made by the respondent in answering the survey questions (denoted by the checked "Highlite Substitutions" box). This format is not paginated, but features a table of contents with active links to each main section header.

Respondents should use this format to see the raw results of their answers highlighted in their plan document, in a "work in process" view, to check for its accuracy.

The "Draft (PDF)" button renders a plan document in PDF format that also highlights all substitutions and insertions and is paginated (denoted by the checked "Highlite Substitutions" and "Generate PDF" boxes). The generated document contains a table of contents with page numbers unidentified.

Respondents should use this format to see the results of their answers highlighted in their plan document in a more "finished" view.

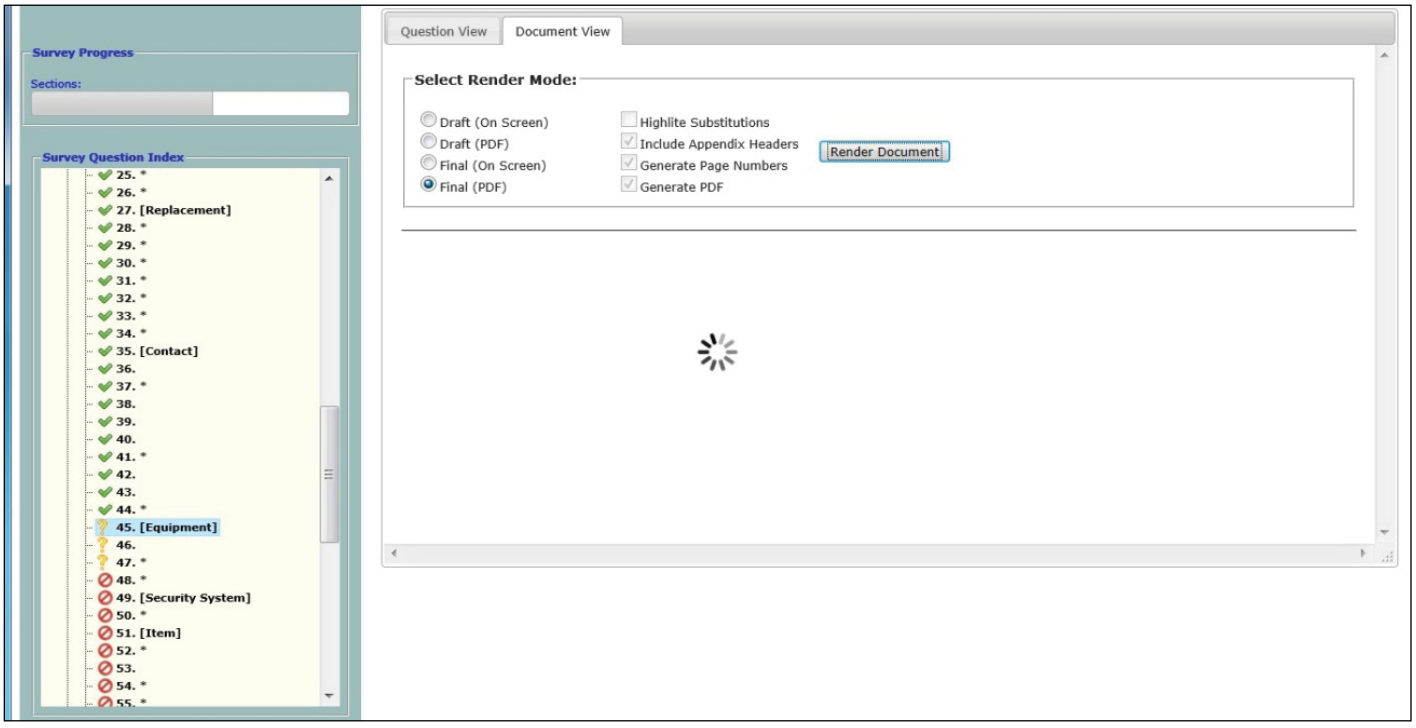


Figure 11. Screenshot of "Document View" in progress.

50 Operational and Business Continuity Planning for Prolonged Airport Disruptions

When respondents render their draft plan in a PDF file, they will see a drop-down dialog box that asks them to either open or save the resulting Adobe Reader file:

- If respondents select "Open," they can view their draft plan on screen, then save it themselves to the folder or location of their choice. This is recommended.
- If respondents select "Save," the file will automatically save either to their desktop or to a "download" location, based on the type of computer they are using.

The "Final (On Screen)" button renders a plan document in HTML format that incorporates all text substitutions and insertions in black so they are not highlighted and automatically inserts an appendix page header for every survey section (denoted by the checked "Include Appendix Headers" box). This format is not paginated, but features a table of contents with active links to each main section header.

Respondents should use this format to see the results of their answers incorporated into their plan document and to see the appendix sections that the airport will use to add relevant additions to their final plan.

The "Final (PDF)" button renders the completed plan document in a paginated PDF format without highlighting substitutions and insertions, includes all appendix page headers, and also adds the final accurate pagination to the table of contents.

Respondents should use this format at the end of the plan development process to see their completed plan document in its final form with an accurately paginated final table of contents.

When respondents render their final plan in a PDF file, they will see a drop-down dialog box that asks them to either open or save the resulting Adobe Reader file:

- If respondents select "Open," they can view their plan on screen, then save it themselves to the folder or location of their choice. This is recommended.
- If respondents select "Save," the file will automatically either save to their desktop or to a "download" location, based on the type of computer they are using.

Note that when an operation such as plan rendering in PDF format takes a few minutes, respondents will see either a circular spoke symbol (shown in Figure 11) indicating that the program is loading or a drop-down dialog box (shown in Figure 12).

When the document rendering process is finished, respondents will see their actual airport or FBO business continuity plan on their screens in HTML format, as shown in Figure 13, or in PDF format, as shown in Figure 14.

Document sections that are related to survey questions that have *not yet been answered* by participants will appear in the preview with messages highlighted in pink reading "WARNING: Missing survey response for section: XXX." As shown in Figure 15, these warnings, preceded by a series of words in green text starting with "{{CONDITIONAL_TEXT . . . }}," remind participants to go back and answer the associated survey question in order to complete the section and make it look like a normal text section of the document. Participants will only see these warnings if they preview their document before finishing the section or if they have skipped questions.

Answering Questions

When respondents begin the questionnaire, they must answer a short set of initial questions. (See the upcoming section titled "Introductory Questions" to preview these questions.) Introductory questions are very important because a respondent's answers to these define several critical factors on which later questions will be based. Questions 5 and 6 may take a few moments to "calculate" once respondents enter their answers because complex operations are occurring in the background.

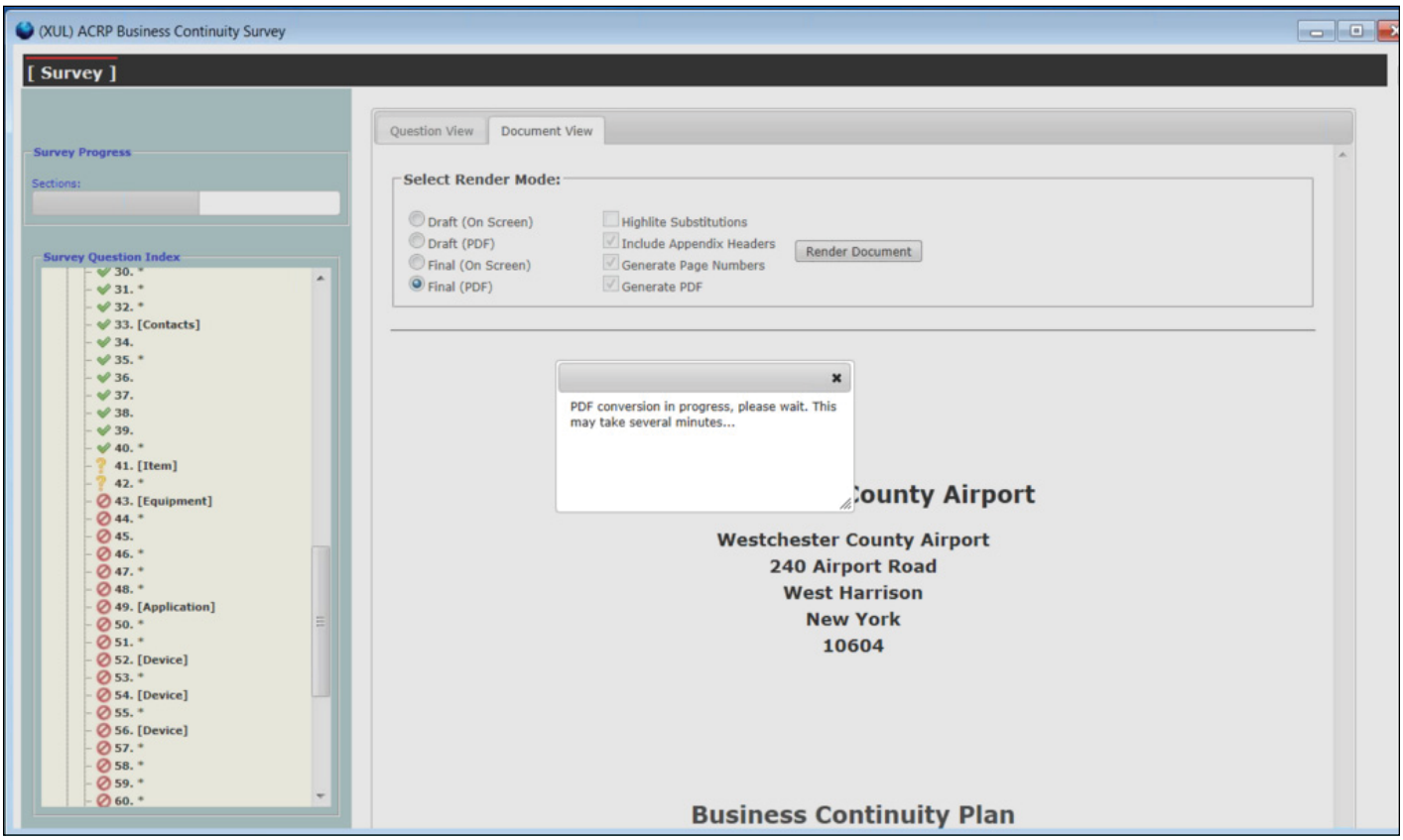


Figure 12. Screenshot of "PDF conversion in progress" warning.

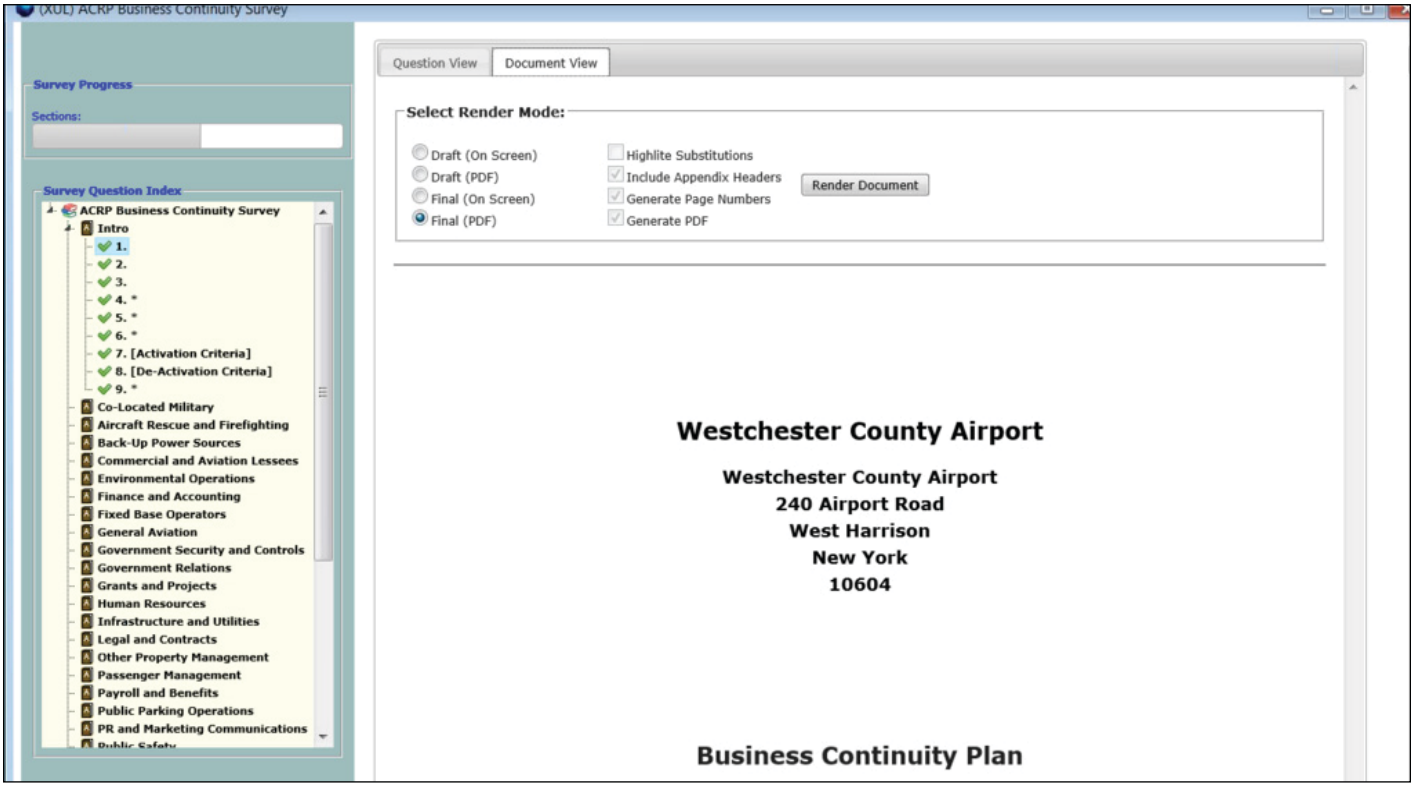
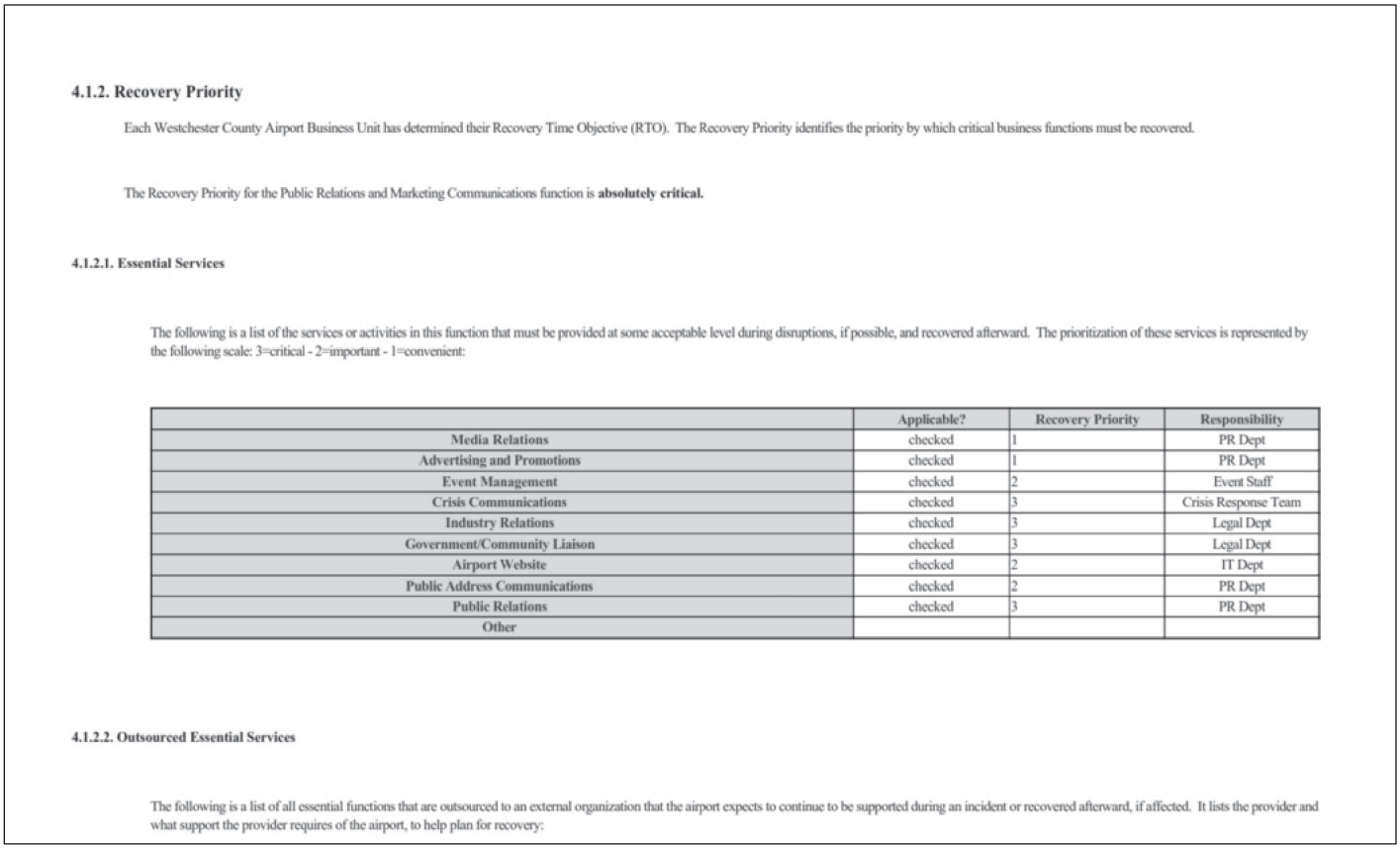


Figure 13. Screenshot of a rendered business continuity document.



4.1.2. Recovery Priority

Each Westchester County Airport Business Unit has determined their Recovery Time Objective (RTO). The Recovery Priority identifies the priority by which critical business functions must be recovered.

The Recovery Priority for the Public Relations and Marketing Communications function is **absolutely critical.**

4.1.2.1. Essential Services

The following is a list of the services or activities in this function that must be provided at some acceptable level during disruptions, if possible, and recovered afterward. The prioritization of these services is represented by the following scale: 3=critical - 2=important - 1=convenient:

	Applicable?	Recovery Priority	Responsibility
Media Relations	checked	1	PR Dept
Advertising and Promotions	checked	1	PR Dept
Event Management	checked	2	Event Staff
Crisis Communications	checked	3	Crisis Response Team
Industry Relations	checked	3	Legal Dept
Government/Community Liaison	checked	3	Legal Dept
Airport Website	checked	2	IT Dept
Public Address Communications	checked	2	PR Dept
Public Relations	checked	3	PR Dept
Other			

4.1.2.2. Outsourced Essential Services

The following is a list of all essential functions that are outsourced to an external organization that the airport expects to continue to be supported during an incident or recovered afterward, if affected. It lists the provider and what support the provider requires of the airport, to help plan for recovery:

Figure 14. Screenshot of a PDF-formatted business continuity document.

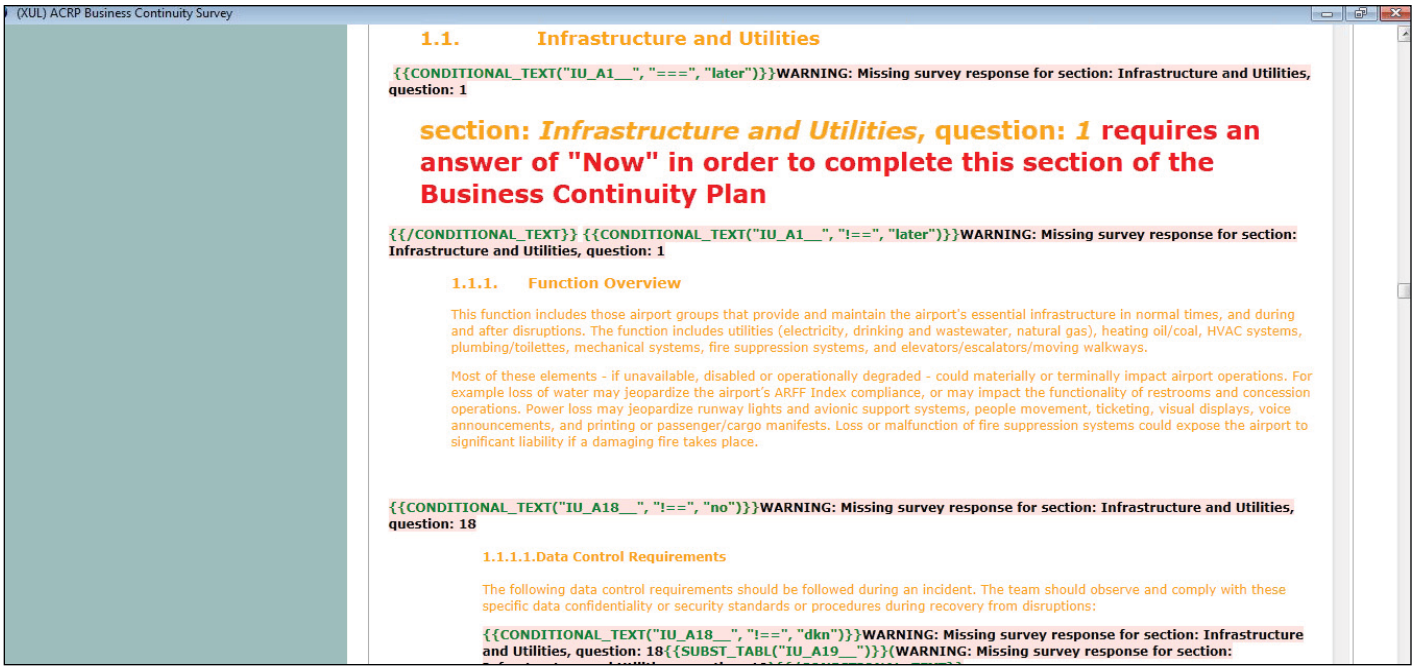


Figure 15. Screenshot of rendered document with missing questions.

Once the initial questions are completed, respondents will be presented with sections of questions about operations and business functions. The software tool will automatically save respondents' current results so that when respondents resume the questionnaire later, they can begin answering where they left off and will not see the initial questions again.

Mandatory Questions

Survey questions denoted with an asterisk (*) are mandatory. Attempts to skip these questions result in a drop-down dialog box indicating "End of Summary Reached." Radio button and check box questions require an answer and cannot be skipped by respondents. They are mandatory because answers to these questions "turn off" or "turn on" subsequent related questions, informing the software of what to present next. However, many of these mandatory questions will present respondents with a "Don't Know Now" choice. If the respondent selects this option, the survey presentation will skip any subsequent questions that depend on either of the other possible choices. Respondents can then return later to complete these bypassed groups of questions. When respondents select the "Don't Know Now" choice, they will see a message in large red text in their HTML document preview reminding them that the question requires an answer.

Skipping Questions

Respondents may skip questions that are not radio button, check box, or marked with an asterisk. However, when questions are skipped or not completed, the respondent's on-screen document will appear incomplete. Respondents should make every effort to answer each question completely so that their resulting business continuity plan is complete.

Skipping Sections

The introductory questions ask respondents to rank the importance or relevance of each of 34 functions to their airport or FBO. If respondents rank any of the functions "0" (indicating that they are either non-essential or non-existent at the airport), the software tool will bypass the questions that are relevant to that function, and respondents will not see these questions. These "unreachable" questions will be denoted with the "no" (Ø) symbol in the Survey Question Index on the left side of the respondent's screen. (See Question 6 in the upcoming section titled "Introductory Questions.")

For the remaining "reachable" sections, respondents can choose to skip a section by answering the "Complete Now or Later?" question with the "Later" choice. This prompts the questionnaire to skip forward to the next section. Respondents can then return to the skipped (but still accessible) sections later and complete them. When respondents select the "Later" choice, a message in the HTML plan document will inform respondents that the entire section has not yet been completed. (For FBO respondents, unless they are FBOs that operate an entire airport under contract and will therefore answer many sections just like an airport, the survey tool does not offer a "Complete Now or Later?" question in the FBO survey section because the *only* section that will be answered *is* the "FBO" section.)

Survey Question Index

As respondents navigate through the questionnaire and answer or skip single questions or entire sections, their progress is presented in the Survey Question Index, a navigation panel on

54 Operational and Business Continuity Planning for Prolonged Airport Disruptions

the left side of the survey screen. The panel identifies a respondent's current location in the survey and informs the respondent about the state of all questions in the survey.

The Survey Question Index uses color coding of question numbers to denote their availability and completion status. Currently active questions are highlighted in light blue. Those denoted with an asterisk (*) require an answer. If respondents attempt to answer questions appearing *after* a required question, a drop-down dialog box appears to remind them that the current question is "unreachable" and that they must answer the previously required question before proceeding.

Only one section of survey questions can be open (or will be displayed) at a given time in the Survey Question Index. Respondents can collapse the list of questions to be answered in an open survey section shown in the Survey Question Index by clicking on the small triangle icon (◢) shown to the left of each survey section header.

When respondents click on the top-most selection in the Survey Question Index ("ACRP Business Continuity Survey"), the tool takes them to the first question in the survey. Likewise, when respondents click on any section header in the Survey Question Index (e.g., "Aircraft Rescue and Firefighting"), the tool takes them to the first question in the specific section they are in. If respondents click on a section header in the Index that is not active because of prior responses, they will see a drop-down dialog box indicating that their choice is currently "unreachable."

All survey questions and their "reachability" are denoted in the Survey Question Index by one of three symbols (see Figure 16):

- The check symbol (✓) is shown for questions that have been answered.
- The question mark (?) is shown for questions that are available to respondents (reachable), but have not yet been answered.

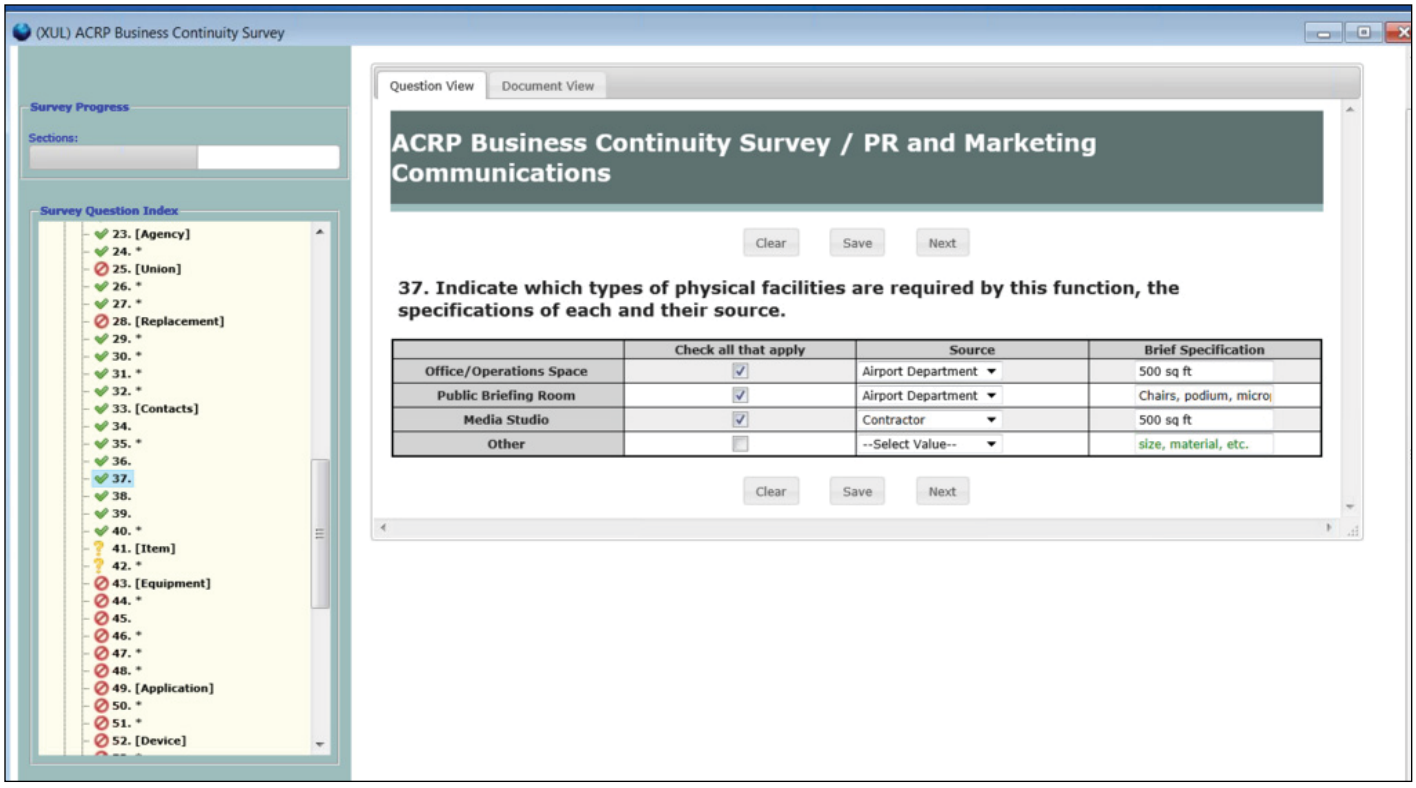


Figure 16. Screenshot of symbols in the Survey Question Index (left side of screen).

- The "no" symbol (Ø) is shown for questions that are not available (unreachable) to respondents because they have either been eliminated by a previous answer or have become unavailable until a predecessor question is answered.

Progress Bars

Throughout the process of completing the questionnaire, respondents can view the progress bar on the top of the Survey Question Index to gauge their completion percentage.

The progress bar indicates the percentage completed of the available questions in the entire survey. The bar constantly adjusts to reflect the total number of reachable questions, which changes in response to survey users' answers.

The result is that entire sections of questions that have been eliminated from the survey and questions residing within included sections that are temporarily or permanently unreachable and denoted with the "no" symbol (Ø) are actively eliminated by the tool from the percentage completed calculation to ensure that respondents' progress is accurately indicated.

As available questions are answered, the gray progress bar fills in the progress slot moving from left to right, indicating increases in the percentage of the survey that is completed.

Explanation of Basic Question Types

This guidebook describes and illustrates each kind of question respondents will be asked in the software questionnaire. Each of these basic questions is repeated in virtually every one of the 34 core question sections. The "official" respondent should provide this explanation of the questions to each business process owner, function chief, or department in advance or provide the list of information shown in the section titled "Business Continuity Plan Elements" in the first part of this guidebook, so that the required information can be gathered and provided to the respondent for easy entry.

Determining Functional Recovery Priority

Recovery Priorities Are Unique

BCP is about managing operations during disruptions with limited or unavailable resources and recovering or restoring essential functions in a prioritized order or sequence that meets the unique requirements of each airport or FBO. Recovery planning is based on the airport's determination of how critical each function, sub-function, and process is to the satisfactory operation of the overall business of the airport.

Because the operating and business scope of every airport is different, and each airport faces unique options, constraints, and considerations, every respondent using this software to develop a basic business continuity plan will rank the recovery priority of their essential functions differently.

Approximating RTOs and RPOs in the Software Tool

The recovery priority ranking process in the software tool is built to approximate two measures of criticality for every function. The RTO measures the time span within which each function or process must be recovered in order for the function or process to meet its obligations or fulfill its mission at the airport. The RPO measures each department's or function's tolerance for losing data on which it normally depends. These two measures help determine recovery priority among disparate functions and how the organization should think about providing resources to support recovery after a prolonged disruption.

The business continuity software tool simulates or approximates the determination of recovery priority by applying a "criticality" scale. In the introductory questions, respondents are required to indicate the relative recovery criticality of 34 business and operations functions at their airports. Similarly, in each section of questions, respondents are asked to indicate the criticality of the sub-functions or processes within functions or departments.

Table 1. The recovery priority scale.

Score	Value	Definition	Factors	Resolution Priority
3	Critical	Loss of these functions causes immediate closure of airport.	FAA certification revocation, loss of core aviation capacity/infrastructure, terminal penalties.	Must resolve immediately.
2	Important	Loss of these functions causes significant negative impact and threatens long-term airport viability.	Significant revenue loss, penalties, unsustainably higher cost structure, serious reputation damage, violation of legal covenants and service level agreements.	Must resolve within one week.
1	Convenient	Loss of these functions causes modest or tolerable level of negative impact.	Moderate but recoverable negative impact.	Should resolve when feasible.
0	Non-Existent or Non-Essential	These functions are not present at airport, or not at all essential.	N/A	N/A

These questions are presented as an iterated set of radio button questions that ask respondents to define the relative importance and criticality of recovery for every function, based on the scale shown in Table 1.

This scale helps users to define recovery priority relative to how severely disruption would impact important airport strategic and business factors across multiple, highly differentiated functions.

Introductory Questions

Every respondent will be asked the following introductory questions to initiate the interactive questionnaire process:

1. **Enter the name of the airport, or your company name if you are a Fixed Base Operator (FBO).**

   This mandatory question (see Figure 17) inserts the entity name—just as it is entered—onto the cover page of the business continuity plan that will be developed using the software tool.

2. **Enter the airport or FBO's address.**

   Answering this question (see Figure 18) inserts the entity's address onto the cover page of the business continuity plan.

Figure 17. Question to identify airport or FBO.

58 Operational and Business Continuity Planning for Prolonged Airport Disruptions

Figure 18. Question asking for the airport or FBO address.

3. **Insert the name of the person at the airport or FBO who is responsible for completing this questionnaire.**

   This optional question, shown in Figure 19, asks for the name of the user at the airport or FBO who is completing the questionnaire or coordinating its completion. The name of this person will be inserted on the bottom of the cover page of the business continuity plan.

4. **Is airport or FBO management comfortable with including network and application user login and password information in the business continuity plan?**

   Documentation of critical technology resources in a business continuity plan includes a list of mission-critical or function-critical applications that must be restored in a timely manner. In each question section that follows the introductory questions, a question asks users to complete a list of these essential applications for each department or function. In the information technology (IT) section, the survey asks the respondent to list all enterprise-wide critical applications and services along with the user IDs and passwords associated with each.

   Because this information may be highly confidential and its use or disclosure restricted, Question 4 asks the responding entity to consider whether the IT department, legal counsel, or senior management are comfortable with this access information being documented and published in the business continuity plan being developed with this software tool (see Figure 20). This is a policy question that should receive appropriate attention because if that documentation is entered into those questions that ask for it, the plan will assemble the documentation into a table and present it in the plan. As convenient as it may be to have that information listed in one place in a post-disruption recovery context, management may choose to strengthen its security by not publishing it.

Figure 19. Question for adding preparer's name.

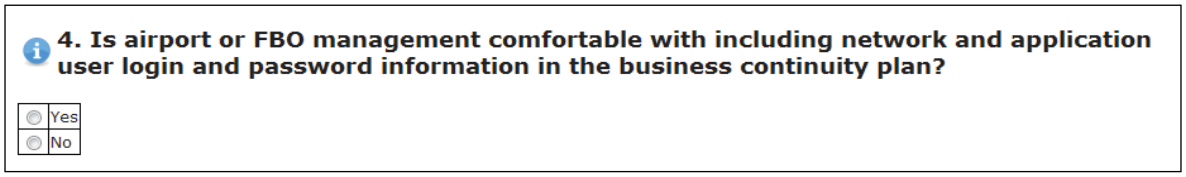


Figure 20. Question related to including IT security information in the BCP.

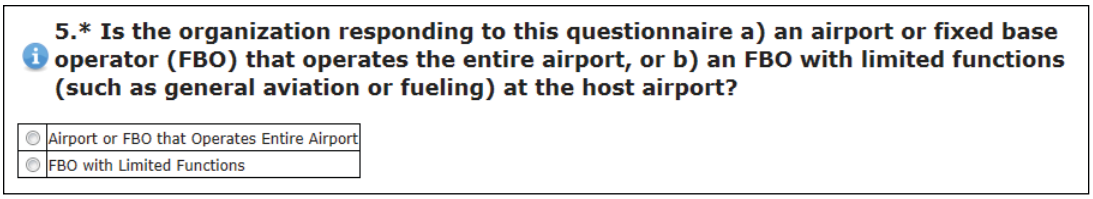


Figure 21. Question to distinguish airport and FBO respondents.

5. **Is the organization responding to this questionnaire a) an airport or fixed base operator (FBO) that operates the entire airport, or b) an FBO with limited functions (such as general aviation or fueling) at the host airport?**

   If the response to Question 5 (see Figure 21) identifies the responding organization as an airport or FBO with complete functional responsibility at an airport, the survey takes the respondent to all airport operations sections that are relevant to its operations (Question 6) and omits the FBO section. If the responding organization is an FBO that only operates airport functions such as general aviation, aircraft maintenance, or fueling, the survey takes the respondent to the FBO section *only* and omits all other question sections. Once this question is answered by the respondent, the software requires several moments to calculate due to the complex operations that are triggered.

   Note. FBOs that respond to this questionnaire should do so only from the perspective of their functional airport-specific role. The survey is not designed to be used by the FBO's corporate office as a tool for its corporate business resiliency planning.

6. **Rate each operational function's importance to your airport:**

   - **"Critical" function's loss causes imminent airport closure and must be resolved immediately (e.g., those losses prompting FAA revocation of operating certificate or causing loss of core aviation capacity or infrastructure.)**
   - **"Important" function's loss causes significant negative impact and threatens long term viability of the airport and must be resolved within one week (e.g., those that imply significant revenue loss, penalties, unsustainable costs, or material violations of legal covenants or service level agreements.)**
   - **"Convenient" function's loss causes modest or tolerable negative impact; the loss of the function can be resolved when feasible.**
   - **If a function is not present or non-essential, a "0" eliminates it from the survey.**

   This mandatory question uses the criticality scale described in the previous section titled "Determining Functional Recovery Priority." This question asks respondents to rank the importance and recovery of each business and operating function or groups of like functions. Determining whether recovery is critical as defined above requires active consideration by senior airport management from a strategic, business, and regulatory perspective. Measures and elements of criticality vary among organizations based on numerous factors, such as location, size, aeronautical operations model, airport financial model, and many more.

   Assigning a "0" defines the functional area as "not important" (and thus low on the recovery triage list) or non-existent at the airport. Airports located in the Sun Belt may rank the winter operations section as "0," and airports that do not host a co-located military base will define that functional area as "0" as well. **Assigning a "0" eliminates the entire section from the questionnaire, so those assignments should be carefully considered. Not only will those questions not be presented, they will be excluded from the business continuity plan when it is completed.**

All operating and business sections that receive ratings of "3," "2," or "1" in Question 6 will remain in the respondent's survey and will be included in the business continuity plan. When deciding those functions that are most critical, it is important to think about whether their loss is likely to precipitate an airport closure, decertification, or loss of essential aeronautical capacity.

For example, if highly specialized staff members are unavailable, their absence might imply significant risk. Possible reasons for specialized staff being absent might include strike, pandemic, natural disaster, or deliberate absenteeism to protest the loss of payroll processing. If the airport's capacity to provide FAA-required services (such as ARFF) are impacted by the loss of resources (people, water, foam, or rolling firefighting apparatus), these are critical elements. If loss of resources impacts the airport's fundamental ability to support flight operations (loss of power to lighting, tower, or NAVAIDS, for example), recovery should be rated "critical."

To help respondents understand how the questionnaire defines each of the 34 functional groups and which activities or processes the questionnaire includes in each of them, the (ⓘ) symbol next to each choice displays a drop-down dialog box that clearly defines the function when respondents put their cursor over the symbol. These definitions are the same as those shown in the upcoming section of this guidebook titled "Questionnaire Sections in Detail." See Question 6 illustrated in Figure 22.

If airport respondents attempt to skip this question, they will see a drop-down dialog box halting further survey progress until this question is completely answered.

7. **Given the criticality of the airport's operating and business functions that you have determined, what event or disruption criteria would trigger the activation and use of the business continuity plan that will be developed from this questionnaire?**

   This question (see Figure 23) prompts respondents to list the criteria established by the airport for formal activation of its business continuity plan. Ideally, responses to this question should include specifically defined disruptive circumstances, thresholds, and states that will trigger activation of the recovery plan. Defining these triggers is an important part of the plan process. Example triggers might include cessation of aviation operations lasting more than 2 hours, power outage exceeding the airport's back-up generator capacity, or any situation in which over 15% of critical airport employees or contractor personnel are absent.

8. **What conditions at the airport will have to be met in order for the airport to de-activate the business continuity plan and return to normal operations?**

   Question 8 (see Figure 24) asks respondents to describe the circumstances that might cause the airport to de-activate its plan, such as the restoration of power, the resumption of aeronautical operations, the restoration of the ARFF index, or full access to the airport for key employees. A critical de-activation trigger should also be the full recovery of all critical airport operations, as the business continuity plan will document. However, the plan may not be de-activated until all contingent impact has been addressed, even if the incident that triggered plan activation has been resolved.

9. **Does the responding organization agree to hold harmless the authors and producers of this software tool in the event of any negative impact as a result of a disruption of any kind?**

   The business continuity plan that will be developed from this software tool (and guidebook) is advisory in nature and based on the information provided and inserted by the respondent. Emergencies and disruptions can be expected to occur at airports. The actions that the airport

6.* Rate each operational function's importance to your airport:

- "Critical" function's loss causes imminent airport closure and must be resolved immediately (e.g., those losses prompting FAA revocation of operating certificate or causing loss of core aviation capacity or infrastructure.)
- "Important" function's loss causes significant negative impact and threatens long term viability of the airport and must be resolved within one week (e.g., those that imply significant revenue loss, penalties, unsustainable costs, or material violations of legal covenants or service level agreements.)
- "Convenient" function's loss causes modest or tolerable negative impact; the loss of the function can be resolved when feasible.
- If a function is not present or non-essential, a "0" eliminates it from the survey.

	Critical 3	Important 2	Convenient 1	Non-essential 0
Co-Located Military	○	○	○	◉
Aircraft Rescue and Firefighting	○	○	○	◉
Back-Up Power Sources	○	○	○	◉
Commercial and Aviation Lessees	○	○	○	◉
Environmental Operations	○	○	○	◉
Finance and Accounting	○	○	○	◉
General Aviation	○	○	○	◉
Government Security and Controls	○	○	○	◉
Government Relations	○	○	○	◉
Grants and Projects	○	○	○	◉
Human Resources	○	○	○	◉
Infrastructure and Utilities	○	○	○	◉
Legal and Contracts	○	○	○	◉
Other Property Management	○	○	○	◉
Passenger Management	○	○	○	◉
Payroll and Benefits	○	○	○	◉
Public Parking Operations	○	○	○	◉
PR and Marketing Communications	○	○	○	◉
Public Safety	○	○	○	◉
Retail Concessions	○	○	○	◉
Winter Operations	○	○	○	◉
On-Site Fuel Supply	○	○	○	◉
Aeronautical Operations Support	○	○	○	◉
Ramp and Hangar Operations	○	○	○	◉
Airport Maintenance and Repair	○	○	○	◉
Purchasing, Receiving and Supplies	○	○	○	◉
Groundside Transportation	○	○	○	◉
ATCT Operations and NAVAIDS	○	○	○	◉
Shared Infrastructure	○	○	○	◉
Cargo Operations	○	○	○	◉
Terminal Buildings	○	○	○	◉
Information Technology	○	○	○	◉
Financial Reporting	○	○	○	◉

Figure 22. Question that ranks recovery priorities for every airport function.

or FBO takes in response to these critical incidents will be the result of independent decisions made by management at each facility and the result of the nature of each disruption.

The authors of the tool and guidebook require that respondents affirm that the authors will have no role in the business continuity plan or in respondents' actions related to disruptions and that respondents will indemnify and hold the authors harmless from and against any and all claims, demands, liabilities, damages, and expenses related in any way to their business continuity plans developed using the software or to any results and outcomes from their related actions. Answering Question 9 (see Figure 25) in the affirmative is mandatory.

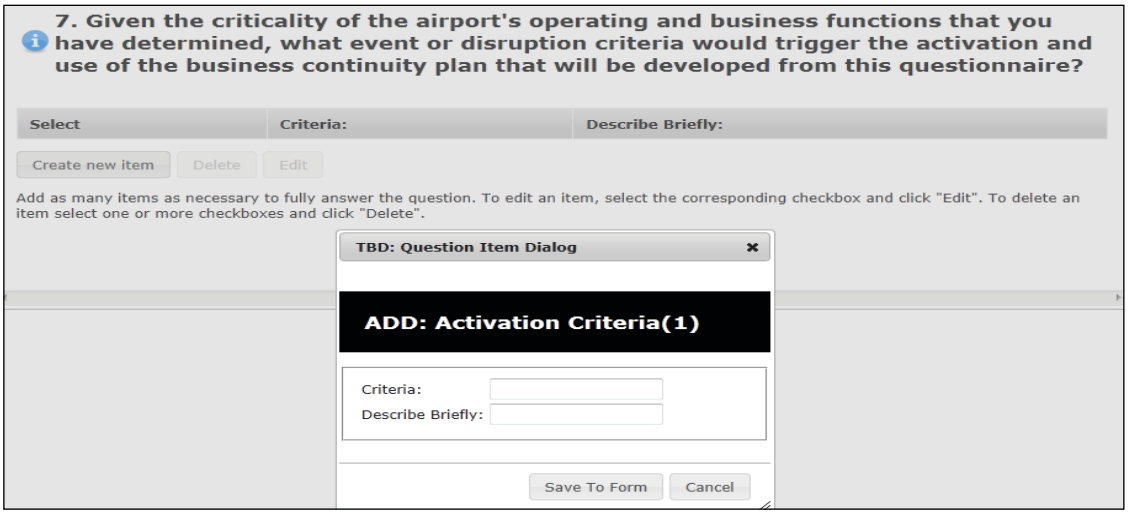


Figure 23. Question relating to disruption criteria that trigger business continuity plan activation.

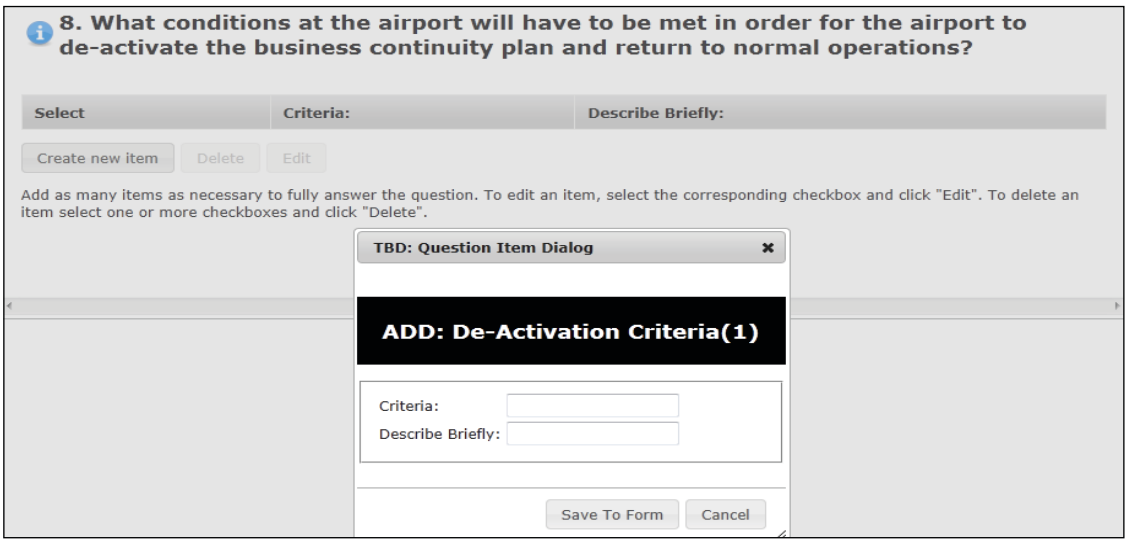


Figure 24. Question to define criteria that trigger BCP de-activation.

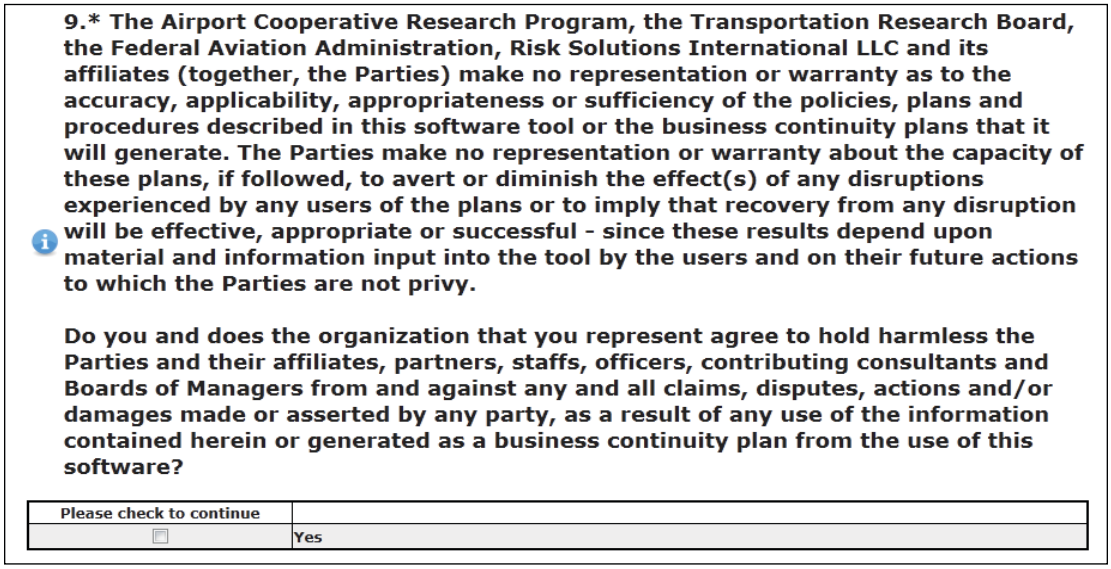


Figure 25. Question asking respondents to agree to hold authors and producers of software tool and guidebook harmless from claims resulting from use of tool and guidebook.

Common Questions

Eliminating Sections and Questions

Respondents will answer a set of approximately 50 to 75 substantive questions in each of the 34 business and operating sections that they rank (in Question 6) as "critical," "important," or "convenient" in recovery priority to the airport. Those sections that receive a "Not Essential" or "Not Present" ranking will be eliminated from the respondent's questionnaire completely by the software tool. Based on the specific operational circumstances at the airport or FBO, therefore, respondents will be presented with all or some subset of the 34 question sections.

Similarly, the answers provided to some questions will effectively nullify certain follow-on questions, leaving some airports or FBOs with fewer relevant questions in each section. For example, when a question asks if a contractor provides an essential function, an affirmative answer will result in several follow-on questions about the identity of the contractor(s), while a negative answer will result in skipping those follow-on questions entirely.

Explanation of Each Type of Question

For each function or department, each of the 34 sections asks the same kinds of questions regarding:

- How the function works
- Essential personnel
- Physical plant and equipment resources
- Essential technology

All sections end with a question regarding critical communications during disruptions. These core question types are described and illustrated below using the core questions in the Passenger Management section as examples in order to provide more detail and a richer context for users than is possible in the software tool information dialog boxes.

Many survey sections include several function-specific questions in addition to these base questions. **These function-specific questions will be identified and described in the upcoming section of this guidebook titled "Questionnaire Sections in Detail."**

Respondents may want to provide a copy of these core question types to each department leader, function head, or business process owner, so that they can assemble their answers for insertion by the respondent into the questionnaire.

Core Questions Regarding How a Function Works

In every section, the first set of approximately 18 questions addresses the function and how it works. These questions are discussed below.

1. **Do you want to complete this section of questions now or later?**

   This first question (see Figure 26) is asked in each section. Even though respondents will have already rated the importance of the function in the introductory questions, they may need to compile more information or consult a person knowledgeable about the function before completing the remaining questions in the section.

   If the response to Question 1 is "later," the survey software moves the respondent to the next section of questions. Respondents can then return and complete the section that they skipped when they are ready. If respondents elect to continue, they will see all of the remaining questions in the section.

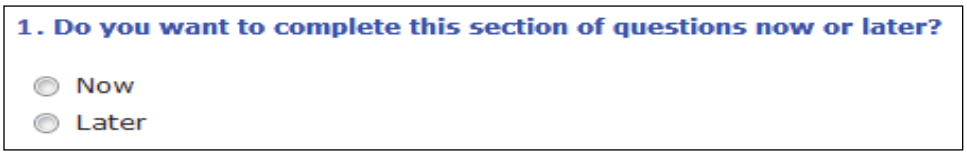


Figure 26. Question that enables respondents to skip entire sections.

2. **Indicate all essential services and activities that are part of the function, rank the relative importance and recovery priority of each (using the 3=critical, 2=important, 1=convenient scale), indicate who, or which airport department, provides it.**

   This question identifies a number of sub-functions, services, or processes that may be part of the overall function, and provides check boxes for the respondent to select for each of these sub-functions.

   For example, in the Passenger Management section the choices include these items (see Figure 27):

   - Passenger Routing
   - Passenger Transport (courtesy carts)
   - Medical/First Aid/Clinic
   - Complaint Management
   - Public Address System
   - Red Caps
   - Local Information/Concierge
   - Chapels
   - Infant Changing Facilities
   - Lost and Found
   - Self-Service Baggage Carts and Racks (Smart Carte)

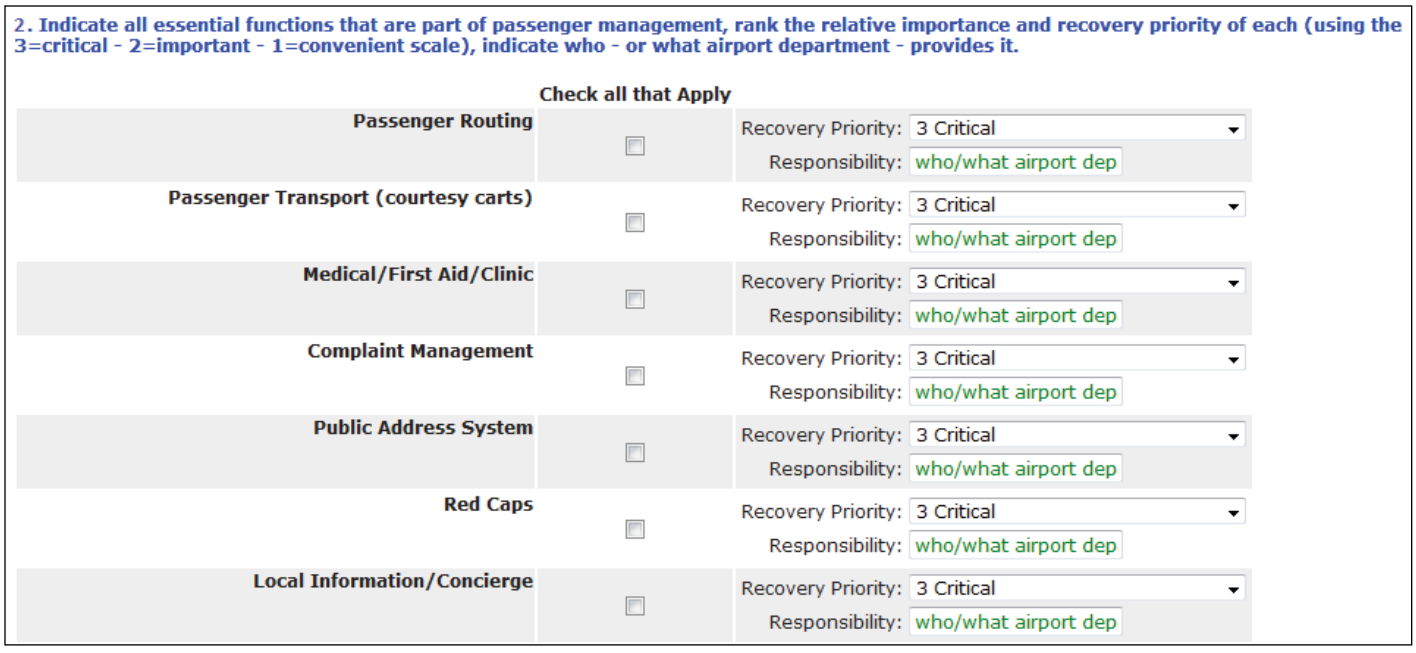


Figure 27. Question to rank recovery priority of sub-functions in Passenger Management section.

The choice of "Other" is included in all sections because some airports may offer services additional to the ones listed. A drop-down box entitled "Recovery Priority" enables the respondent to select one of these choices: Critical (3), Important (2), or Convenient (1). In a text box labeled "Responsibility," respondents can indicate which person or department bears responsibility for a given service.

Question 2 enables the respondent to rate how essential each of the listed services or functions are to the airport, in terms of the impact on the airport if they cannot be performed during, or as a result of, a prolonged disruption. Each such question includes a pop-up dialog box that suggests examples of possible impacts from disruption, based on the effect of the loss of the function. Impacts include the fall-out from the loss of the function in terms of passenger/public reaction, crowd control issues, security concerns, negative press coverage, and inquiries or audits. Impacts also can be financial, legal, contractual, or regulatory in nature. The airport's inability to provide services can result in fines, contract claw-backs or penalties, unwanted regulatory oversight or audits, loss of FAA certification, lawsuits, and lower airport or FBO revenues.

The services and processes considered "critical" are typically those which must be the focus of the 24-hour period immediately following a substantial disruption, the "response" stage, when attention is usually on public safety, assessment of the extent of the disruption, and control activities. The airport's emergency response plan and teams are active in this stage. Physical and operational (functional) damage is assessed by each department, as well as negative impact from the disruption on commercial lessees, concessionaires, and contractors.

The levels of recovery priority serve in the software tool as a general approach to RTOs and RPOs. As the airport or FBO becomes more sophisticated and granular in its BCP, it can replace this 3-2-1 recovery priority scale with well-defined RTOs and RPOs for each essential function and build its plans around the recovery priorities they suggest.

3. Are any essential functions in this department outsourced to a contractor?

Question 3 (see Figure 28) provides three radio button choices: "yes," "no," and "don't know now." The selection of "no" results in respondents skipping past several additional questions that have to do with who the contractors are, what they do, and how the relationship between them and the airport works.

If "yes" is selected, respondents are presented with up to three additional questions about its contractors in this set of functions. This is very important in airport business continuity because so many essential business and operating functions may be outsourced to a specialist commercial or governmental contractor, tenant, or supplier. The business continuity plan must document information about those entities because they are responsible for recovery of their contracted functions.

Figure 28. Question to determine functional outsourcing to a contractor.

4. **For each essential function, service, activity or process that is outsourced, who or what entity is responsible for providing it, and what must the airport provide to the contractor in order for that contractor to operate the function for which it is responsible?**

   This question (see Figure 29) enables respondents to list all those functions in each area or department that are considered essential or mission-critical to the department. Minor functions, even if outsourced, should be omitted. The list may be short, or there may be numerous essential functions. Beside each identified function, a drop-down box offers choices denoting what kind of entity the contractor is. Contractors can be "outsourced," "airport," "FBO," "contractor," "vendor/supplier," "port authority," or "gov't agency."

   Finally, for each essential outsourced function, the software asks what kind of support the airport must provide in order for the contractor to be able to perform the function(s) for which it is responsible. For example, the municipal payroll department may be the agency the airport contracts with to supply payroll and benefits administration; tower operations may be provided by the FAA, an FAA-certified, air traffic control tower (ATCT) operator, or by the co-located military squadron at the airport; food service may be provided by one or more local or national restaurants or chains; and public parking may be provided by a parking contractor.

   Many of these contractors may depend on the airport for support that is critical to their ability to perform. Air traffic control (ATC) operations depend on the provision of utilities and back-up power that may be the responsibility of the airport. The FBO that performs general aviation functions may require security and snow removal from the airport parking facilities in order to operate the general aviation terminal. City or airport operator payroll functions may require the semi-monthly provision by the airport of accurate employee pay rates and hours in order to run payroll and provide paychecks or electronic fund transfers to staff.

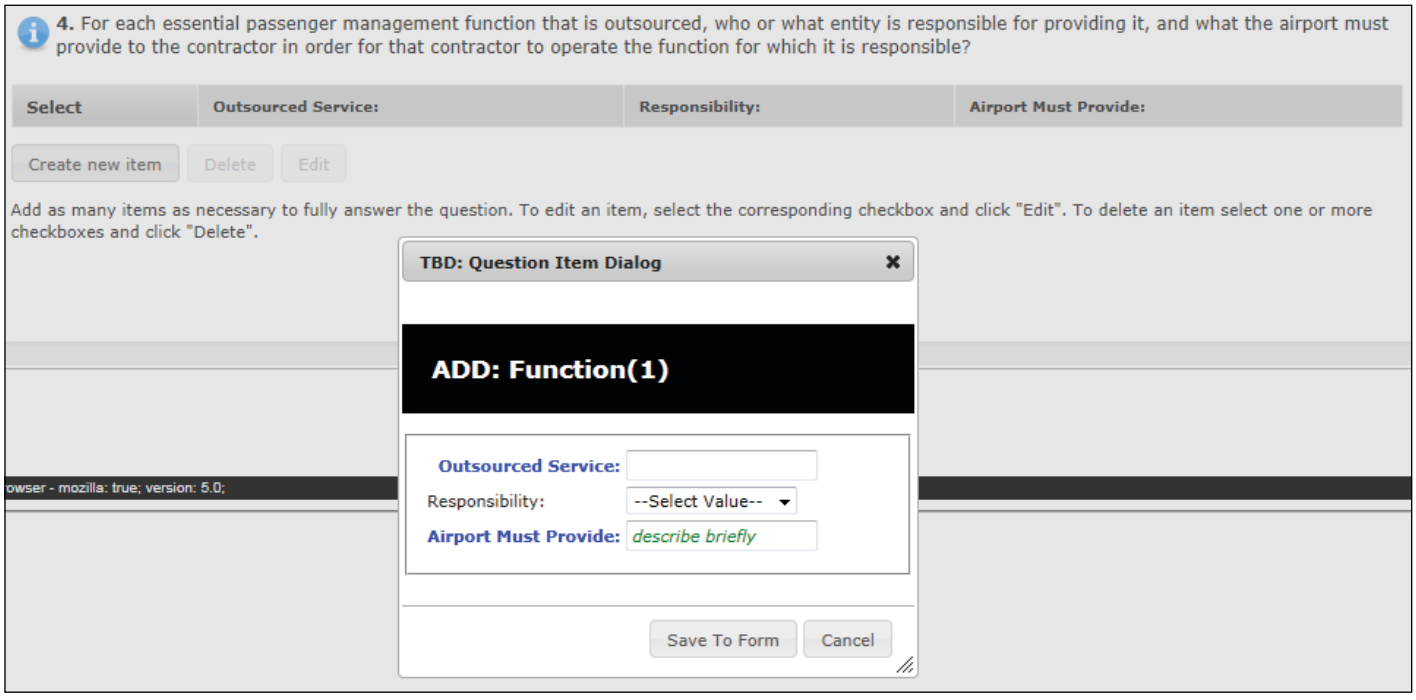


Figure 29. Question asking for documentation of outsourcing responsibilities.

In these cases, both the airport and its contractors have operational responsibilities that must be recovered after prolonged disruptions. Responses to this question are displayed in the business continuity plan in a table or list of essential contractor-provided functions and information about how the airport supports its contractors with essential resources.

5. **In its agreements with these contractors, does the airport require them to have an operative business continuity plan for their functions?** (**See Figure 30.**)

   When essential functions or processes are outsourced to contractors, in whole or in part, the airport must depend on these contractors for its own functional recovery. Therefore, it is extremely important that in its leases and contracts the airport or FBO require its contractors and tenants to have a working business continuity plan or contingency plan of their own to support their operations at the airport. Without this documentation, the airport may be knowingly putting the continuity and resilience of essential functions at risk.

   To the airport's stakeholders, regulators, funding sources, and users, disruptions and recovery at the airport are the airport's responsibility, regardless of which entities actually perform the individual functions under contract. It is the airport's reputation and brand that is at stake, not those of its contractors. It is the airport that faces potential contingent business interruption liability when core functions operated by its contractors fail.

   It is therefore advisable for the airport's leases and contracts to require fairly and uniformly that contractors develop, exercise, and document site-specific recovery plans and provide the airport with current copies as part of its overall business continuity plan. If such a contractual requirement is not part of the airport's leases, it should become one.

6. **Please print a copy of this/these business continuity, contingency or continuity of operations plan(s), and insert them as an Appendix in the final airport plan that will be generated from this survey.**

   The final question (see Figure 31) dealing with contractors' contingency plans directs respondents who indicate that they do require plans of their contractors to locate copies of these contractors' business continuity plans, print them, and attach them as appendices in the appropriate sections of the airport business continuity plan that will be printed upon completion of the questionnaire. The most effective practice is for every contractor to have and file with the airport an active recovery plan and procedures for the core functions for which they are responsible.

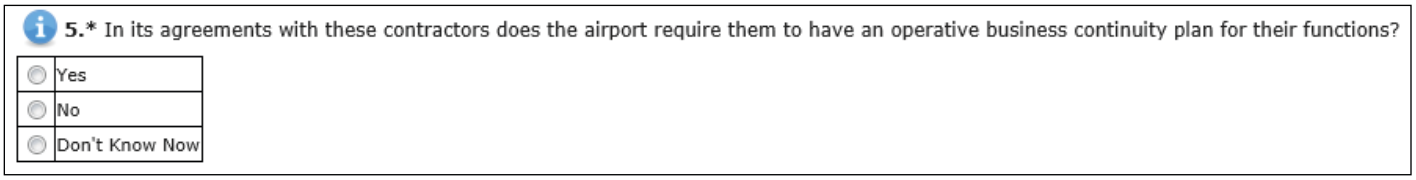


Figure 30. Question to determine whether contractors have their own business continuity plans.

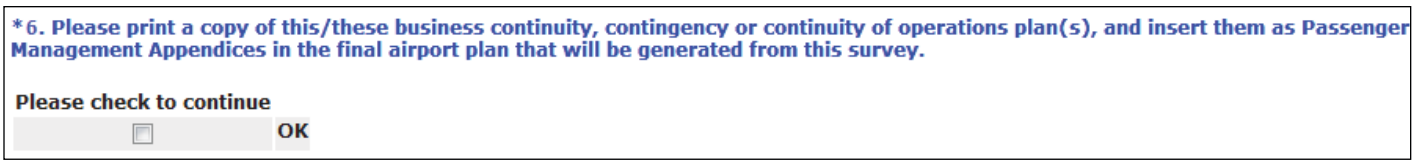


Figure 31. Question directing respondents to print contractor business continuity plan(s) in appendix.

7. **Are there any technology components routinely used in the functions that are essential to their adequate performance?**

   The next group of four questions (within the 18 questions regarding how a function works) addresses how much a department or function at the airport depends on technology or automation. While some functions may require no critical technology, many do. Passenger management is more difficult without electric people movers for mobility-impaired passengers; operating concierge or information kiosks is difficult if the airport's computers or Internet access are non-functional; baggage claim operations may require conveyor systems that depend on automation; pumping jet fuel may require technology-based measurement and controls; and public parking may depend on credit card readers and electronic gate mechanisms.

   If the answer to the question shown in Figure 32 is "No," then respondents will skip over the next three questions (see Figures 33, 34, and 35).

8. **Can the function(s) be provided manually without these components?**

   Many or most critical functions at airports today require technology to operate effectively. BCP is about operating during disruptions and recovering afterwards. Since technology failures or downtime are common, it is important to understand whether those responsible for performing essential airport functions have developed methods to manually operate those functions in the absence of the technology upon which they normally rely. These manual processes are called "manual work-arounds."

9. **Documented steps that assist in the continuation of essential functions—in spite of the partial or complete loss of supporting technology resources—are called "manual**

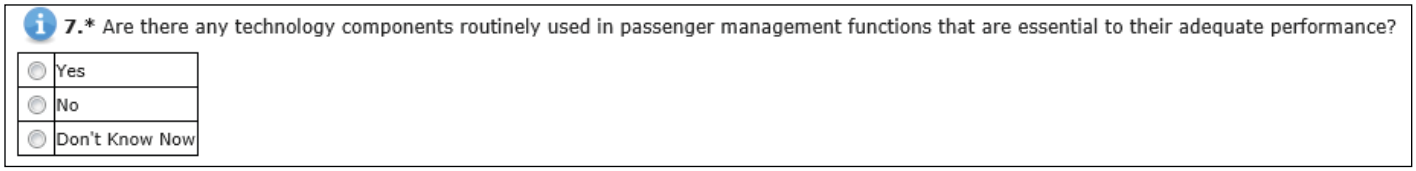


Figure 32. Question to document whether technology is critical to each function.

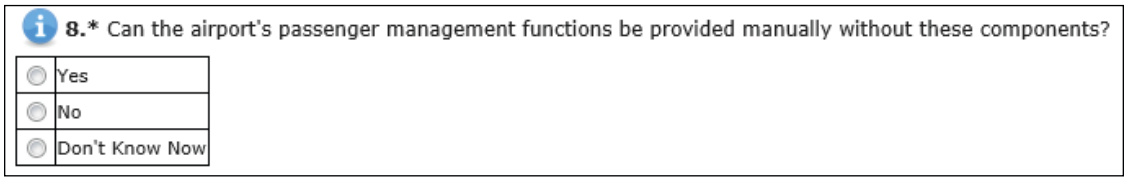


Figure 33. Question to determine whether functions can be performed without technology.

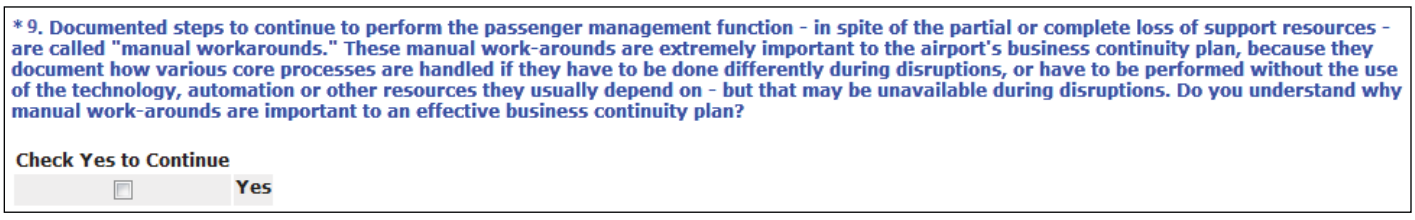


Figure 34. Question that emphasizes the criticality of manual work-arounds.

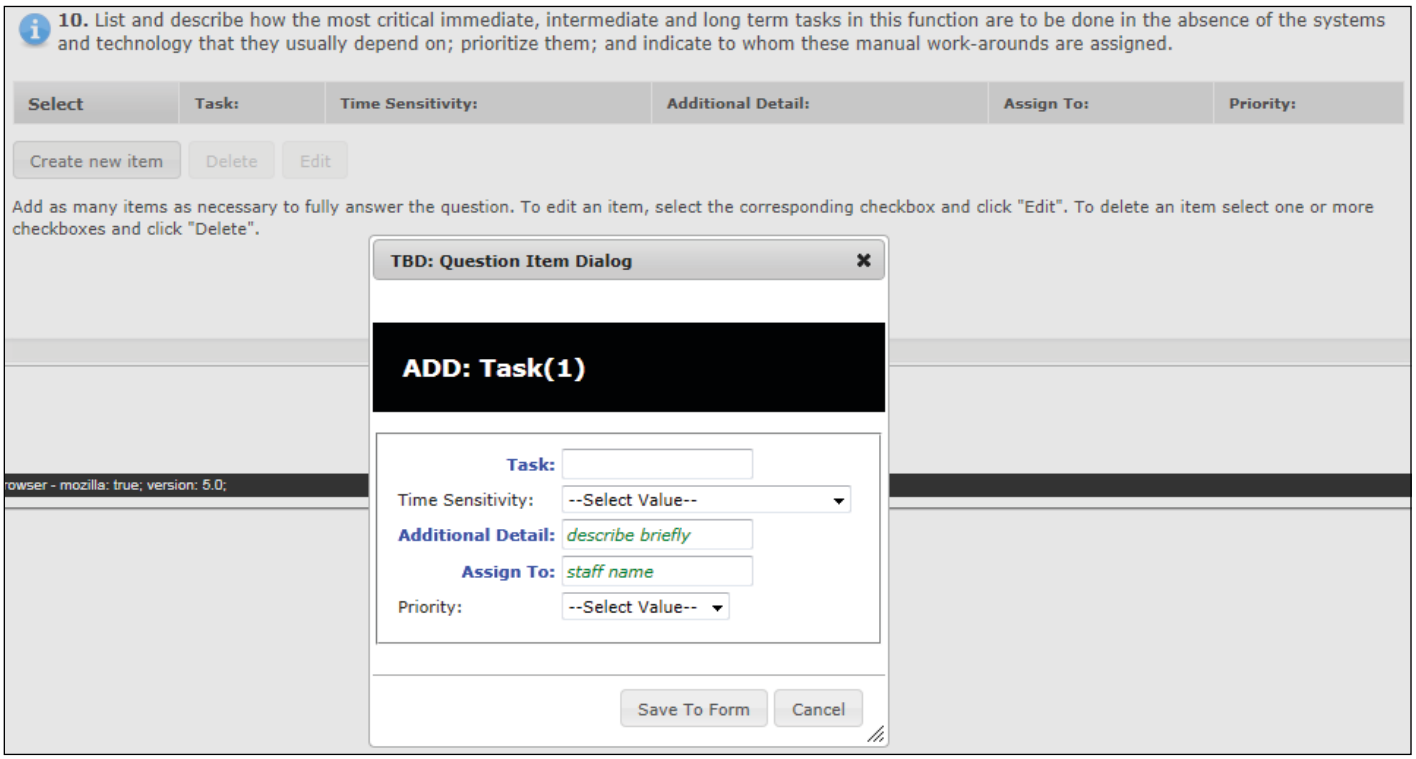


Figure 35. Question that documents manual work-arounds and their priorities.

work-arounds." Manual work-arounds are extremely important to the airport's business continuity plan, because they document how various core processes are handled if they have to be done differently during disruptions or have to be performed without the use of the technology, automation, or other resources they usually depend on but that may be unavailable during disruptions. Do you understand why manual work-arounds are important to an effective business continuity plan?

Because the development and documentation of manual work-arounds are so critical to functional recovery in automated processes at most airports, this question provides emphasis and requires respondents to acknowledge their importance with a single check box.

10. **List and describe how the most critical immediate, intermediate, and long term tasks in this function are to be done in the absence of the systems and technology that they usually depend on; prioritize them, and indicate to whom these manual work-arounds are assigned.**

Many airports have developed innovative manual processes or work-arounds to support core functions in a disruption environment. These may be processes developed through trial and error over the years, and they may be well known to departmental specialists, staff members, or managers. Nonetheless, effective BCP requires that these manual processes be specified, defined, and documented in each department's plan to ensure that they are clear and can be followed by other staff members, new hires, replacement employees, managers, supervisors, or contractors who may be required to take over operations during emergencies or disruptions. Manual processes may not restore functions completely, but manual processes may provide enough capacity to help an airport get by until automation is restored.

This question asks respondents to describe key manual work-arounds briefly and to select their time sensitivity for recovery from the following list—"Immediate Tasks (Critical),"

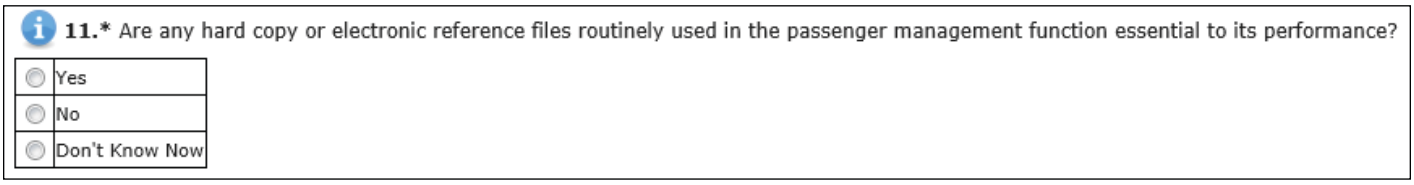


Figure 36. Question that determines the importance of vital records.

"Intermediate Tasks (Important)," and "Long-Term Tasks (Convenient)." This question also asks for any additional detail about the manual process, identification of the staff person to whom the manual process is assigned, and priority ("High," "Medium," or "Low"). The question populates a table with this information in the airport's business continuity plan.

Example manual work-arounds include hand writing paychecks until the payroll system is back up and running, using extra Red Caps with wheelchairs if electric people mover carts are unavailable, using rolling stairs at gates if jet bridges are non-functional, or calling in conventional fuel tanker trucks if the underground pumping system is down.

11. **Are any hard copy or electronic reference files routinely used in the function essential to its performance?**

    This question (see Figure 36) refers to essential reference files that contain data necessary to perform the function. These essential files or vital records can be paper-based, resident on electronic media such as CD-ROMs or flash drives, housed on computers, or stored in the "cloud."

    Airport concierge or information stations may require databases of local travel, hotel, dining, and entertainment options. Maintenance may require operator's manuals for heavy equipment or tools. A lost and found registry may be necessary for operating an effective lost and found office. Payroll may not be functional without personnel timesheets and payment rate records. Fueling charges may be impossible to calculate without delivery volume data. Aviation operations may require constant access to leases with airlines, just as managing retail concessions could require similar access to concession leases. The potential list of essential files may be very long at some airports.

12. **Describe these files or vital records, enter the physical department(s) or location(s) or the computer or network location(s) where these files can be found, and indicate their recovery priority (using the 3=critical, 2=important, 1=convenient scale).**

    This follow-on question (see Figure 37) asks respondents to document the vital records and files upon which the function relies, to document exactly where the files reside, and to indicate the recovery priority of each. Vital records might be located in a supervisor's file cabinet, on a staff member's laptop, on a departmental computer, on an airport or airport operator server or mainframe, or even in a virtual location in the "cloud." It is critical to BCP that vital records and files can be found during or in the wake of a disruption, so that department operating capacity and functionality can be restored.

    The data entered into this question will be formatted into a table in the appropriate section of the business continuity plan that the software will ultimately generate. Describing and locating mission-critical files during and after disruptions is more important than finding other records that can be restored later. This question formats this list of vital records and inserts it into the plan that is developed through the survey.

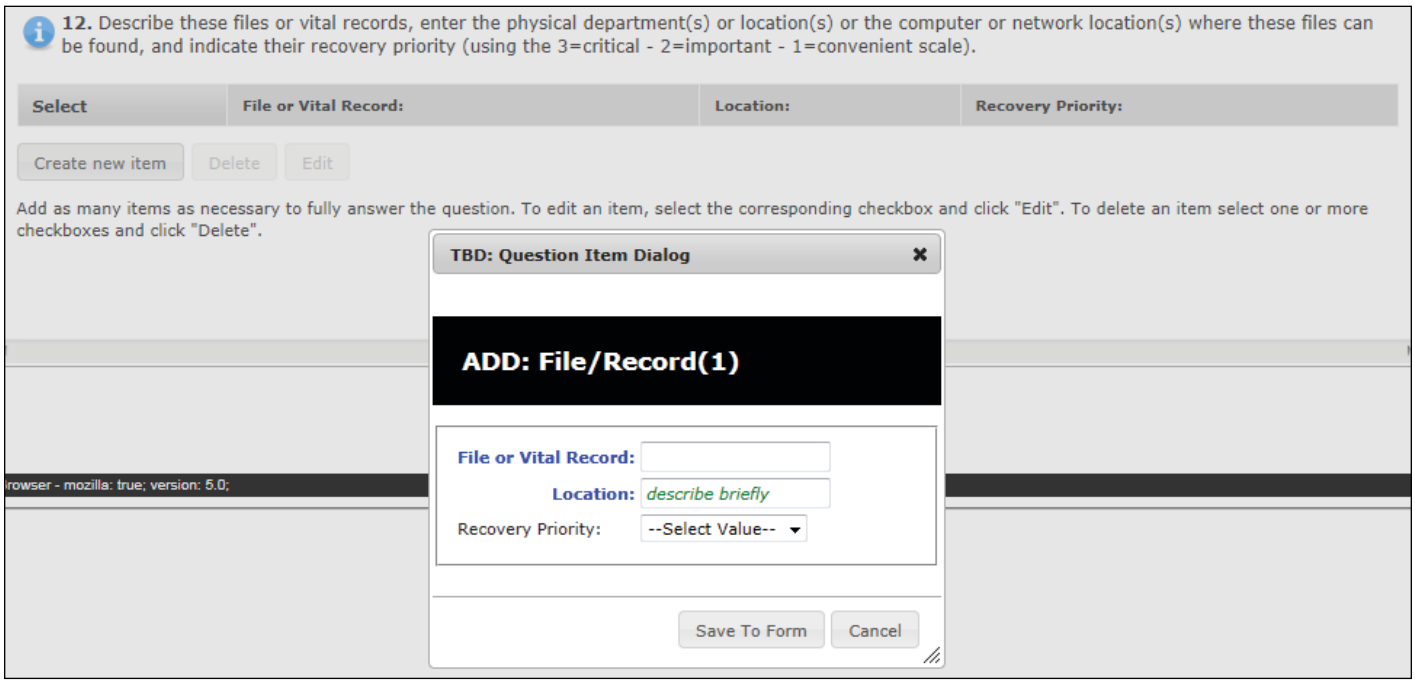


Figure 37. Question that documents the recovery priority of vital records.

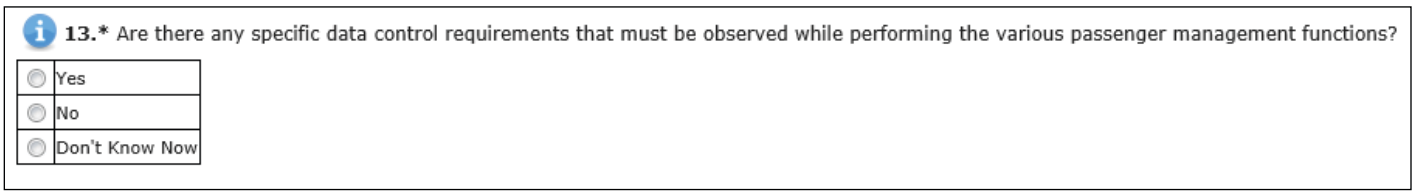


Figure 38. Question that determines data control requirements.

13. Are there any specific data control requirements that must be observed while performing the function (see Figure 38)?

Department staff may be required to observe specific standards regarding access to or security of confidential data that are generated or used in the course of the airport's operations. These data control requirements may vary widely among business functions at the airport and operating functions.

Examples might include records of medical treatment incidents in the infirmary or first aid station, personnel records, leases and other legal documents, official communications with the FAA or responses to its inquiries or requirements, or credit card information from parking and retail concessions. Each may be subject to legal requirements and penalties for misuse.

Respondents might inquire about these requirements in the airport legal office, internal audit department, compliance office, or finance and administration department.

14. Describe any data control requirements imposed on the function's data.

If data control requirements do exist, (i.e., the answer to Question 13 is "Yes"), the next question (see Figure 39) asks respondents to list and describe the key data control requirements

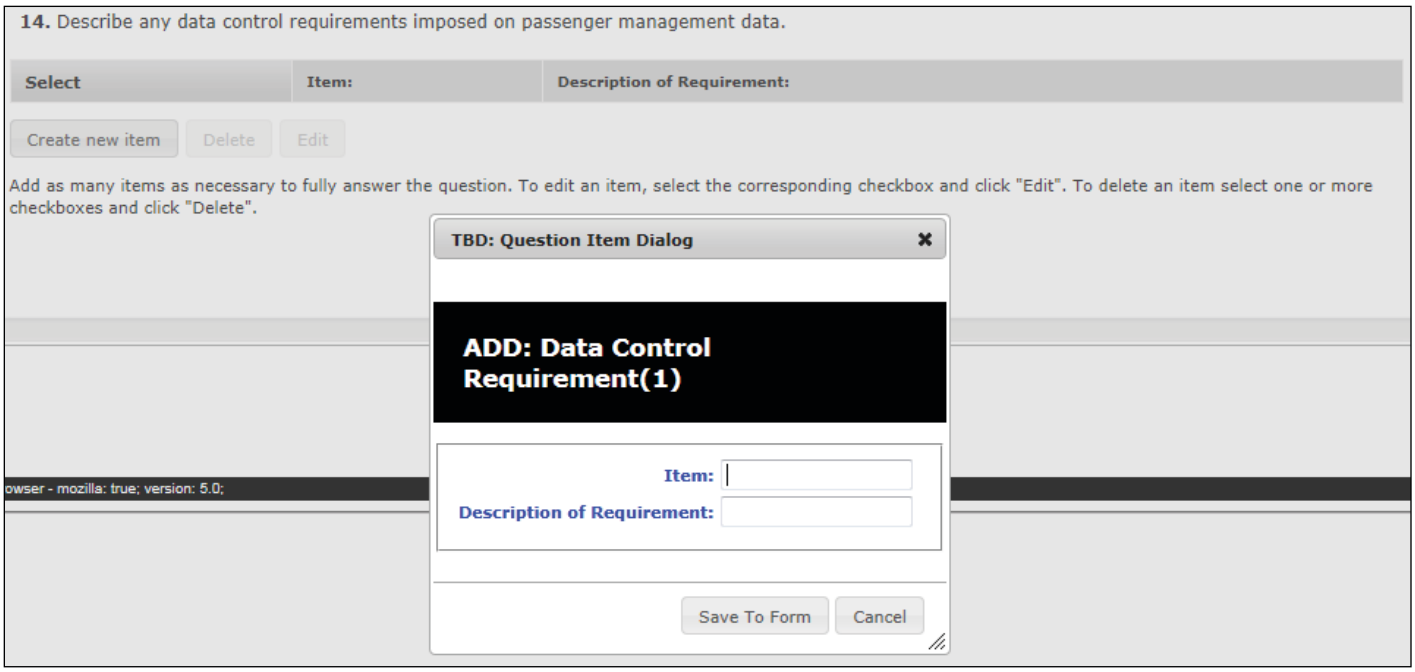


Figure 39. Question that documents data control requirements.

that will be listed in the resulting business continuity plan. This documentation informs others of information controls that must be observed during disruptions and recovery and the manual work-arounds that bridge the two.

15. **Are any of the function activities subject to any validation, auditing, or approval to monitor the accuracy, integrity, or quality disposition of services?**

This question (see Figure 40) inquires about activities, processes, and work in each function at the airport or FBO that may be subject to some level of official oversight and formal approval. Audit or validation or confirmation of accuracy, integrity, or quality can take many forms and may be the role of an internal airport group, such as internal audit, accounting, or compliance. These tasks may also be the responsibility of outside boards, bodies, or offices, such as an airport operator auditing function; the city or county controller; a bank (as part of financial due diligence); a legal monitor; the FAA; or other federal, state, or local government agency.

Examples might include labor issue monitoring that is the contractual right of a local union, financial auditing by the municipal finance department or the airport's independent accountant, confirmation of process standards by the airport operator, approval of runway repairs or ARFF response times by the FAA, or the confirmation of work quality by a professional engineering body.

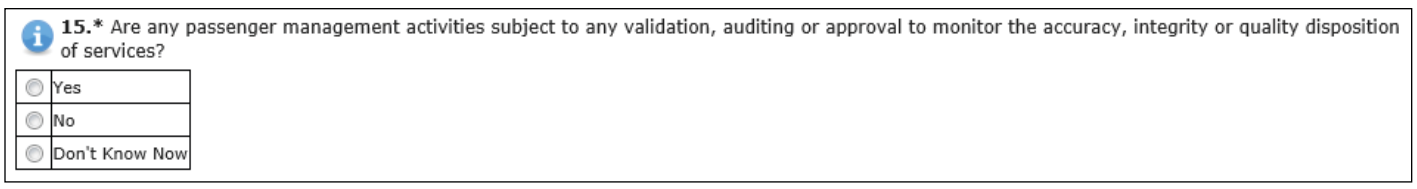


Figure 40. Question that determines the auditing requirements of each function.

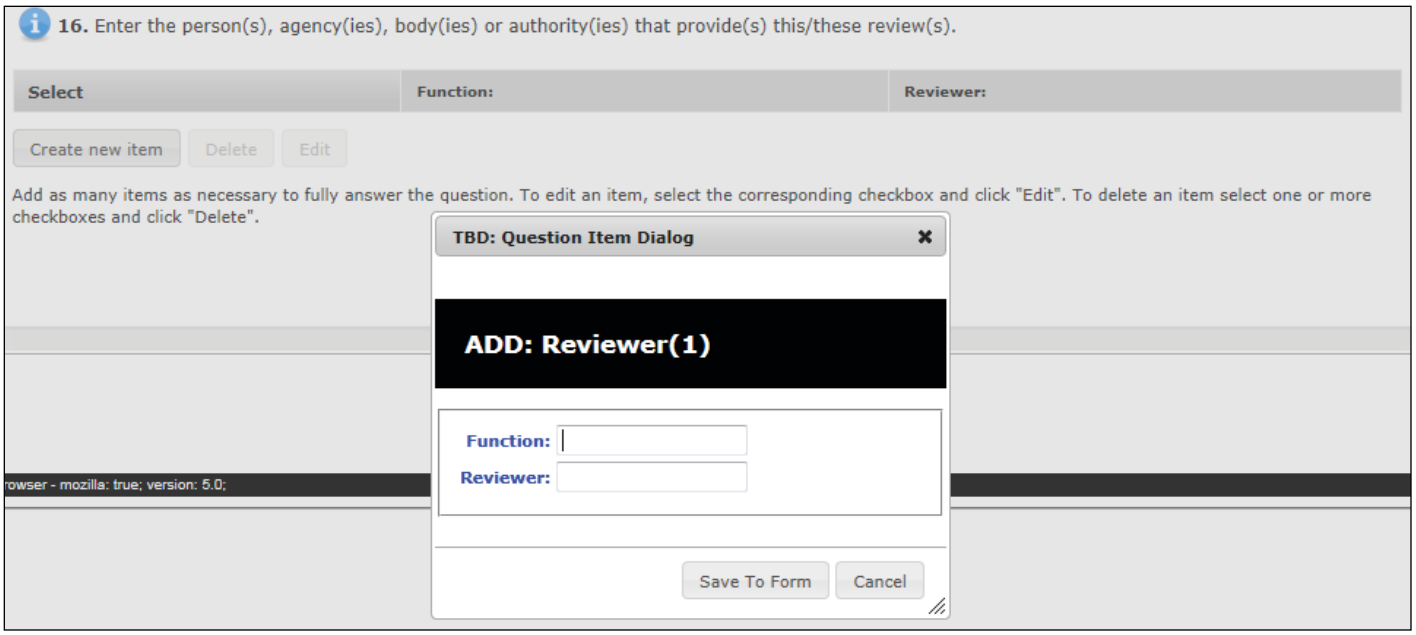


Figure 41. Question that documents auditing responsibility.

16. Enter the person(s), agency(ies), body(ies) or authority(ies) that provide(s) this/these review(s).

This follow-on question (see Figure 41) asks respondents to indicate those essential operations at the airport that are subject to audit, approval, or certification, and which people or entities actually provide that approval. Understanding the processes and work that come under such scrutiny and approval is critical to the effectiveness of the resulting business continuity plan. Information supplied in answer to this question enables the airport to document important requirements and relationships so that anyone assigned to areas that are subject to approvals builds oversight into their recovery plans or negotiates alternative oversight requirements during disruption scenarios. Answers to this question are displayed in a table included in the airport's business continuity plan.

17. Has the function named a business recovery team that is responsible for recovering its essential functions during a time of crisis and disruption (see Figure 42)?

Each function or department should assign recovery responsibilities to the specific staff members who make up its formal business recovery team. The role of this team is to spearhead the recovery of the function's or department's most critical operations based on their criticality to the function and their recovery priority. The team should include members who have developed specific recovery plans and processes and, ideally, have rehearsed or practiced them so that they can provide some information to airport management about recovery priorities, timelines, and resources.

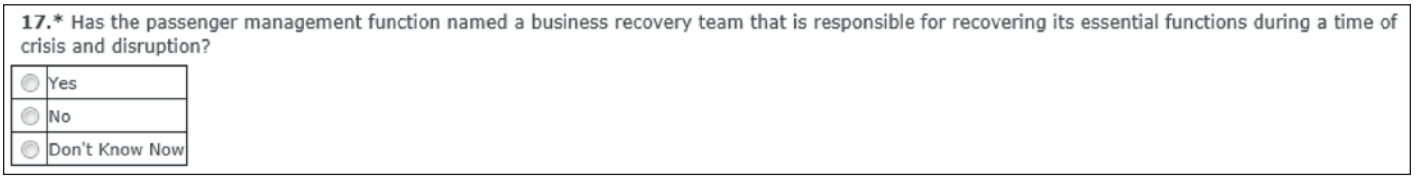


Figure 42. Question that determines whether a business recovery team has been named.

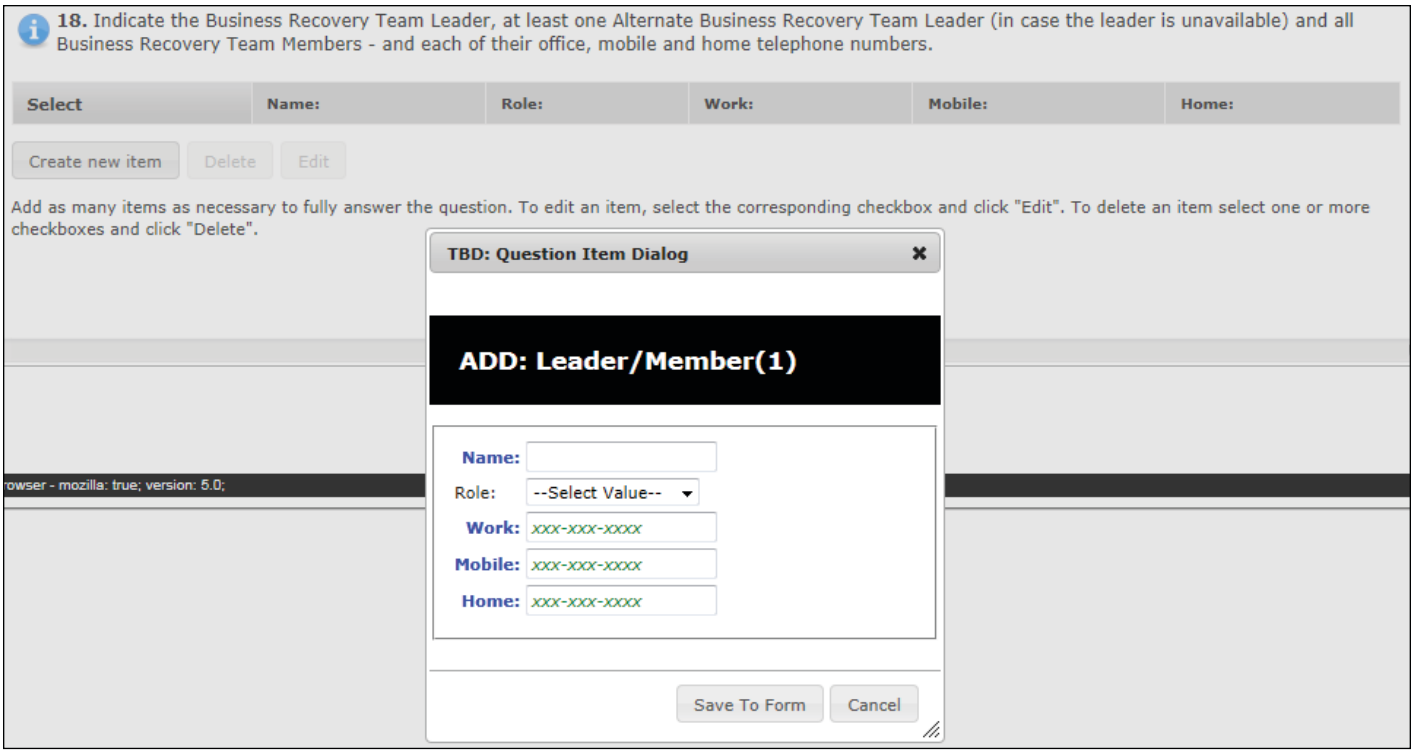


Figure 43. Question that documents recovery team information.

18. Indicate the Business Recovery Team Leader, at least one Alternate Business Recovery Team Leader (in case the leader is unavailable), and all Business Recovery Team Members—and each of their office, mobile, and home telephone numbers.

This follow-on question (see Figure 43) enables respondents to document business recovery team leadership, alternate leaders, and team members so that airport management, stakeholders, and other interdependent functions know exactly whom to contact during disruptions. Naming this team formalizes roles and responsibilities, making it more likely that recovery will be planned, rehearsed, coordinated, predictable, and orderly. The responses to this question are displayed in a table in the business continuity plan with the business recovery team names and contact information.

Core Questions Regarding Essential Personnel

The next approximately 17 questions in the survey focus on human resources—the people in each function or department who are essential to its operational continuity. The first five questions deal with essential qualifications of the staff.

19. During normal operations, how many staff members or full time equivalents (FTEs) are essential to providing essential services or managing the operation of the function?

This question (see Figure 44) asks respondents to enter the number of staff members that are critical to the operation of the function during normal times. This number should represent the minimum number of staff (e.g., 5, 12, or 62) involved in performing the function in routine operating situations. An FTE is a single staff member working full time or two part timers whose combined roles can be considered one FTE. The number of staff members should include service delivery staff who are airport employees as well as supervisory and management staff. This number is important in the business continuity plan because it documents the minimum level of staffing required to perform the function adequately; the number will be inserted into appropriate places within the airport's plan.

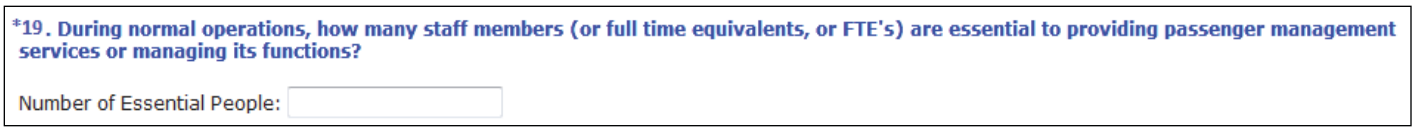


Figure 44. Question that documents normal functional staffing.

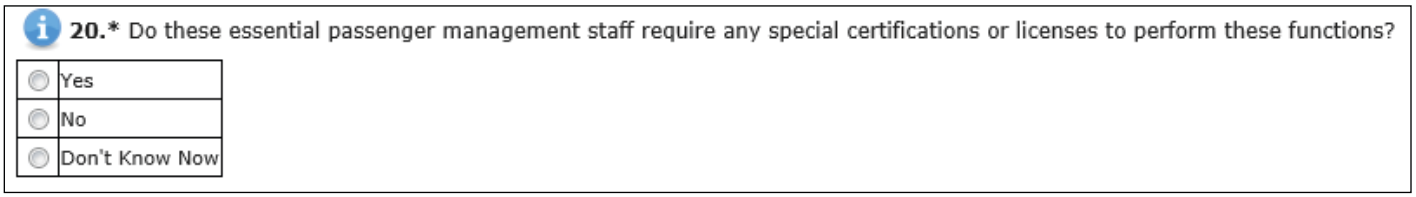


Figure 45. Question that determines staff credential requirements.

20. Do these essential staff require any special certifications or licenses to perform these functions?

This question (see Figure 45) is important because it establishes whether some or all of the function's essential staff must be credentialed, certified, or licensed professionally in order to do their jobs. When recovering each function after disruptions, the department must find similarly credentialed replacements, establishing skill thresholds.

For example, people mover drivers or heavy equipment operators may require a special vehicle training certificate; medical aids might require certification as an emergency medical technician (EMT), a registered nurse, or a nurse practitioner. Financial staff may be required to be certified public accountants (CPAs), and other jobs may be required to be filled only by professional engineers or licensed electricians, mechanics, or carpenters. Some personnel may be required to pass special training courses. The existence of these job requirements in each department limits the flexibility the airport may have in finding appropriate replacements, an important business continuity consideration when planning recovery timeline expectations and targets.

21. Which entity(ies) provide(s) this licensing or certification?

If the answer to the question shown in Figure 45 is "Yes," the survey moves to the question shown in Figure 46 that directs respondents to describe each required certification, license, or credential and indicate where such credentials must be obtained. This information is required in order to document which entities, bodies, or professional organizations the airport must be prepared to contact in order to find replacements with the skills that are required of each essential job within the function. This information will be inserted by the software tool into the airport's business continuity plan in a table.

22. Do any of the activities in the function require demographic specificity (see Figure 47)?

Equally important to each function's recovery plan is identifying whether essential personnel are further required by the type of job they perform to maintain a threshold level of capacity, a special skill, or a demographic characteristic that is required by the job. In some markets, essential jobs exist that can only be filled by those fluent in languages other than English, in order to be effective with customers, passengers, and other staff that do not speak English.

Some airport jobs may be gender-specific, such as medical staff and security staff that may have to come into physical contact with people (e.g., during physical examinations or security pat-downs). Jobs in maintenance, supplies, engineering, ARFF, or construction might

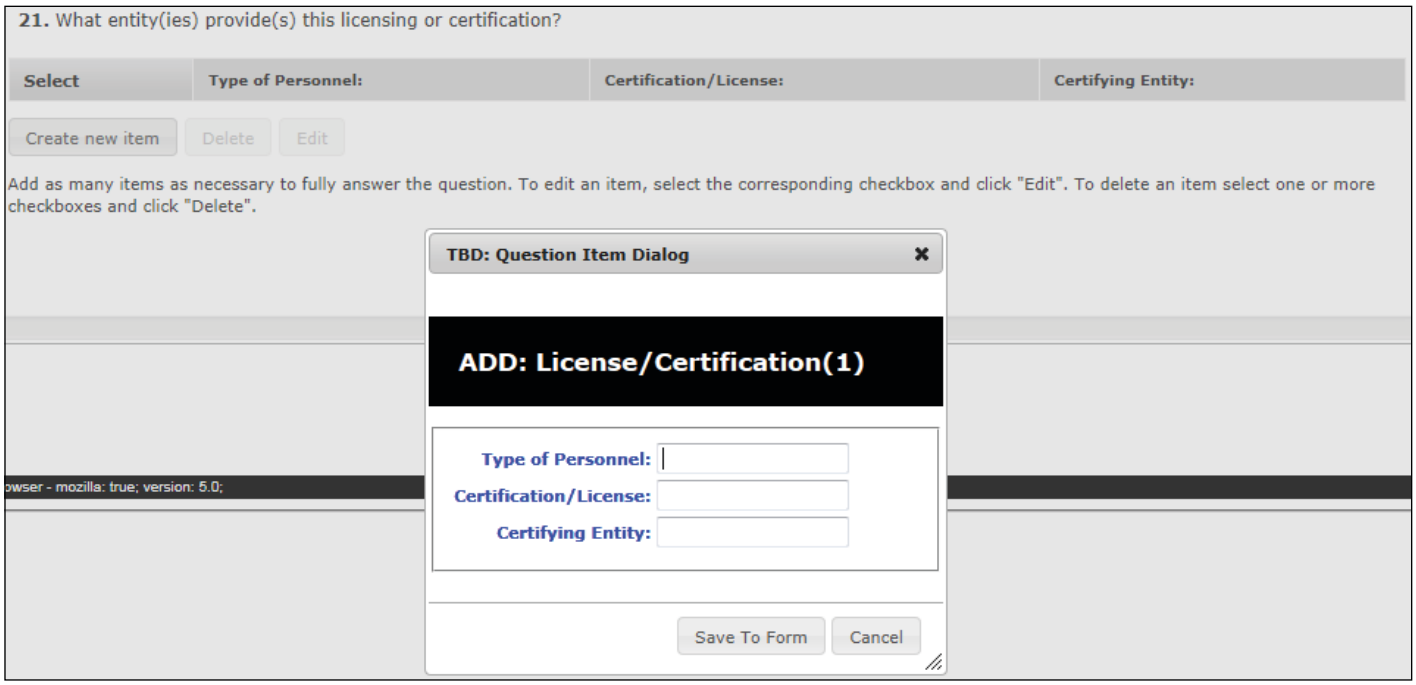


Figure 46. Question that documents staff credentialing requirements.

Figure 47. Question that determines demographic requirements.

require that some staff pass and maintain strength or height tests in order to perform their jobs carrying heavy firefighting equipment, operating heavy equipment, or lifting minimum weights, for example. This information is also important to the business continuity plan because it restricts replacement staff and requires recovery with personnel who pass those threshold requirements.

23. How long would it take—in days—to replace the function's or department's staff?

This question (see Figure 48) asks respondents to estimate the length of time (in days) required to obtain replacements for essential jobs in each function, taking into account the special certifications, skills, languages, licenses, and demographics that may be required of essential staff. If a job can only be performed by a female practical nurse fluent in both English and Spanish, then the business continuity plan must document these requirements so that recovery planning can take them into account.

The next five questions address the organizations through which the airport locates and hires replacement staff.

Figure 48. Question that documents how long it would take to replace staff.

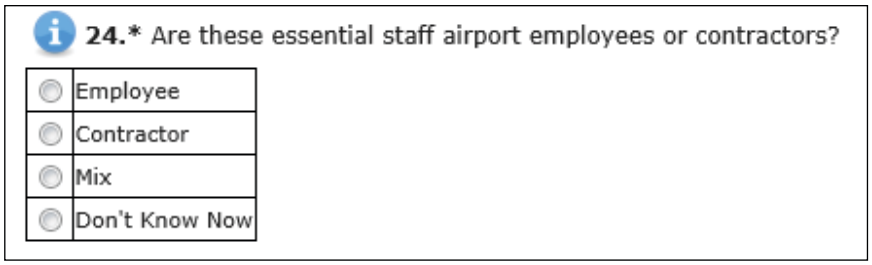


Figure 49. Question that determines status of staff.

24. Are these essential department staff airport employees or contractors (see Figure 49)?

There may be a significant difference between how an airport replaces direct employees and how it replaces contractors. Employee staffing may be straightforward, while locating and hiring qualified staff who are employees of contractors may be far more difficult, as the relationship is indirect.

25. What is/are the external contracting agency(ies)?

If respondents indicate that workers who perform a given function are either contractors' personnel or a mix of airport employees and outside personnel, this question (see Figure 50) asks respondents to indicate the contact information of the contractor or agency that must be contacted to request essential replacements during disruptions and recovery. The software tool will insert this information into the appropriate section of the resulting business continuity plan. Indirectly acquired staff may represent an added level of complexity and potential delay in recovery staffing.

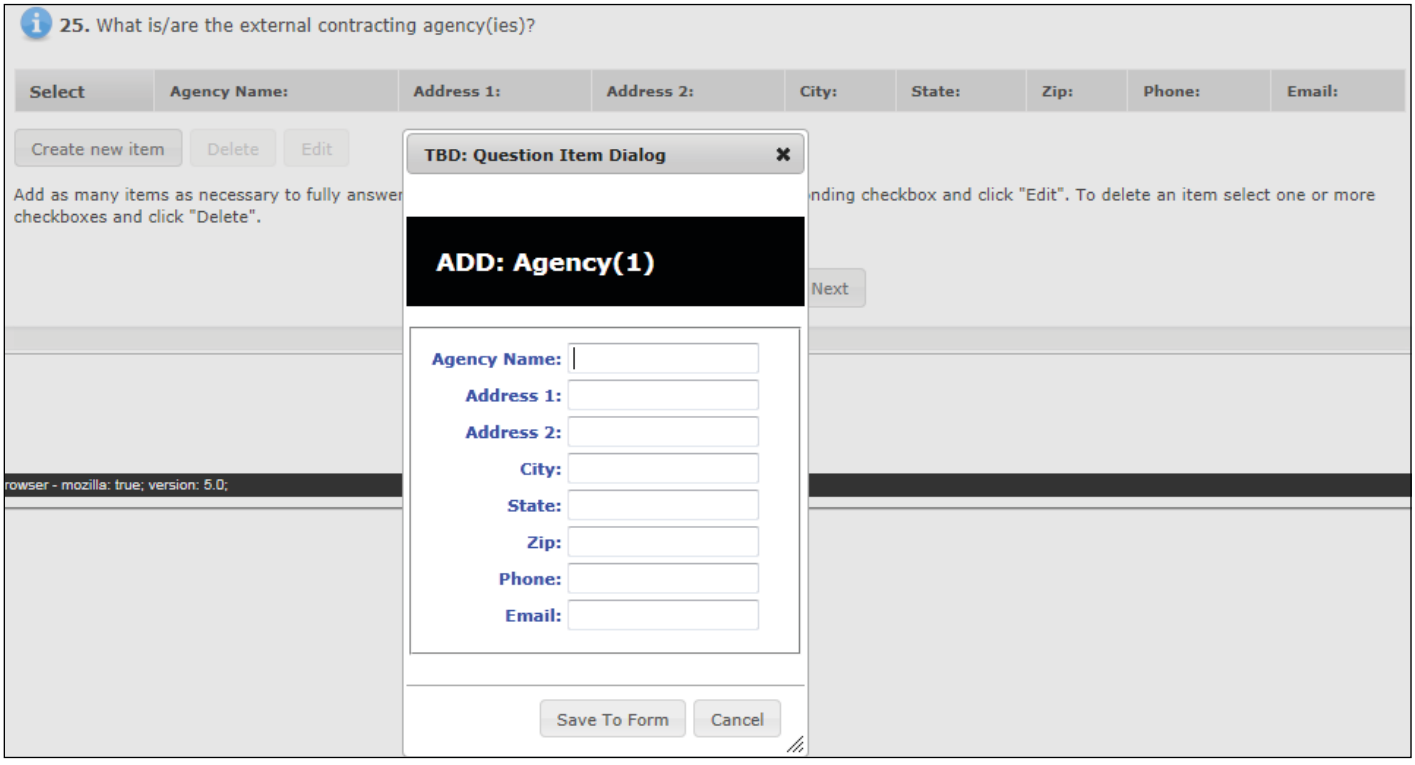


Figure 50. Question that documents contractor organizations.

Figure 51. Question that determines union relationships.

26. Are any essential staff members in the function covered by any collective bargaining agreement(s)?

Staffing for disruptions and recovery phases of disruptions can become further constrained by the provisions, restrictions, and dictates of union contracts. This question (see Figure 51) determines whether any such constraints exist.

27. What is/are the name(s) and address(es) of the local union(s)?

If essential staff at the airport or FBO work under collective bargaining agreements (as do public service workers and members of trade unions such as the International Brotherhood of Electrical Workers or the Teamsters, for example), the replacement process may be defined by the contract. This question (see Figure 52) inserts into the airport's business continuity plan the names and contact information for the unions with which the airport must coordinate work during disruptions and during recovery.

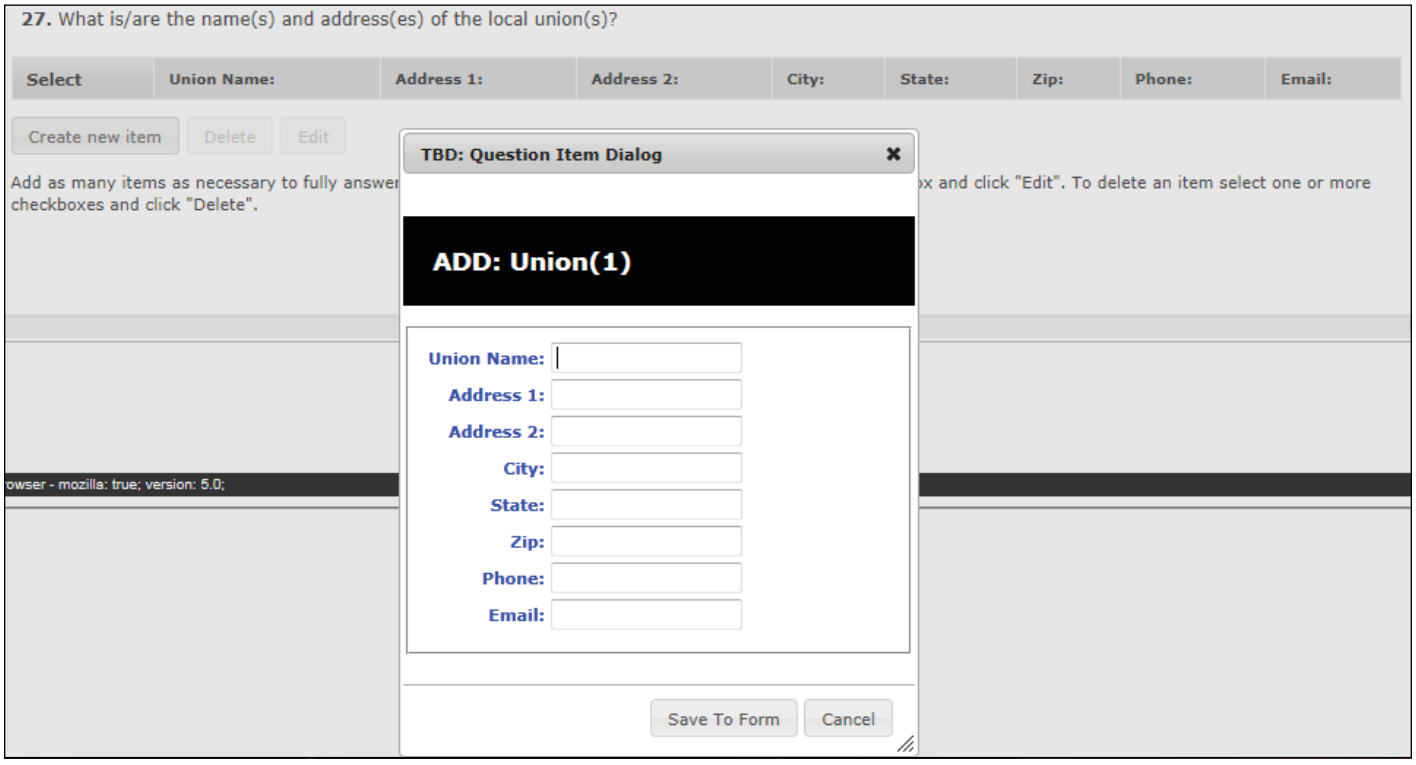


Figure 52. Question that documents union information.

28. Does their condition of employment or union contract contain a no-strike clause or is striking prohibited by law in your jurisdiction?

The Human Resources (HR), Labor Relations, or Legal departments of the airport or FBO may be the best source of the information requested in this question (see Figure 53). If job actions are permitted under any circumstances by collective bargaining agreements or by labor statute, there may be operational and business recovery implications in the form of extended periods without the availability of essential or specialized employees. This can impact the speed of recovery for functions that rely on union workers. However, if striking is prohibited in the airport's contracts or by law, this staffing complexity may be minimized.

The next seven survey questions (of the 17 related to human resource needs) focus on how the airport or FBO prepares for critical staffing around a disruption.

29. Is there a succession plan for the essential people in the function?

This question (see Figure 54) asks respondents to indicate whether there is a succession plan formally identifying the person(s) who will take over managing each function or filling specialized roles in the event that the staff members who normally perform it are unavailable to do so. Such a plan formally delegates responsibility to someone else when the usual person is not available. The succession plan for the process, function, or department should be limited to those individuals who are critical to its successful operation. This may well include managers and supervisors but may also include highly specialized employees within the function that have unique skills, knowledge, experience, or credentials critical to the function.

30. For each essential staff member required to recover this function after a disruption, indicate their primary and secondary replacements, special licenses/skills/certifications they must possess, if they are or must be union members and, if they are contractors, the name of the contractor which can fill the position.

The succession plans that become part of the airport's business continuity plan should formally name specific replacements for all essential job titles and roles, imparting official responsibility and defining reporting relationships and job scope during disruptions.

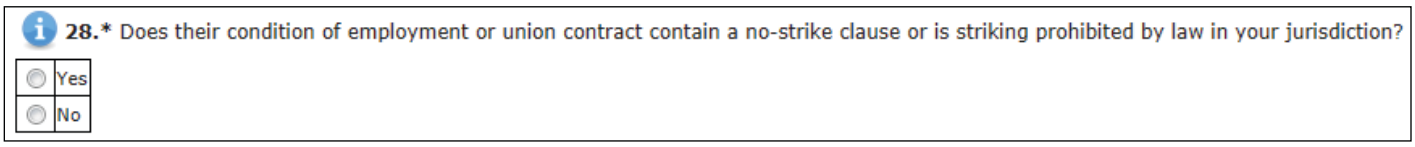


Figure 53. Question that determines strike prohibition.

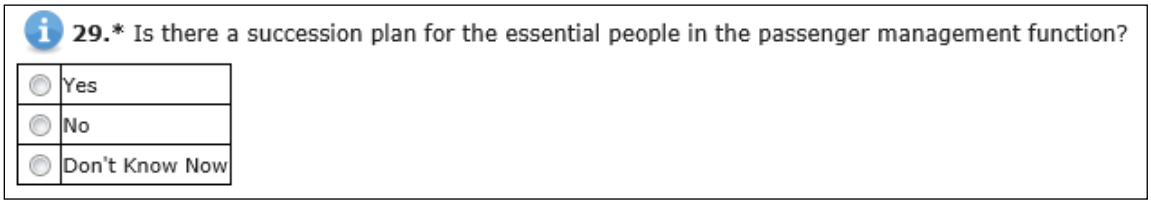


Figure 54. Question that determines whether succession plans are in place.

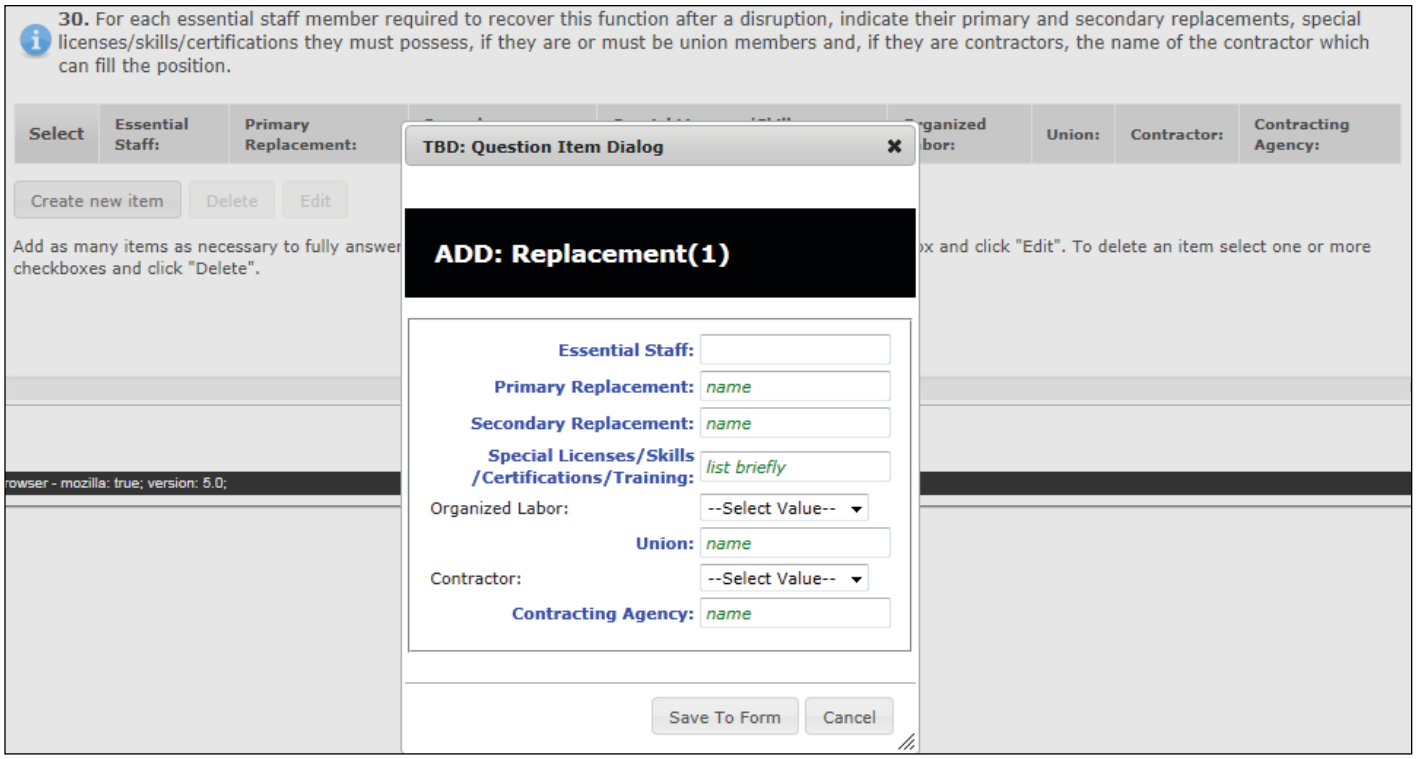


Figure 55. Question that documents staff succession information.

When completed, this question (see Figure 55) inserts up to two replacements for every essential job in the function; identifies special qualifications, skills, and certifications that replacements must possess; and identifies the contractors or unions with whom they must maintain employment or membership. This information makes it clear in the business continuity plan exactly how the airport will go about replacing essential staff that become unavailable for any reason.

31. Do the essential activities in the function span multiple shifts (see Figure 56)?

Some airport work in certain jobs may routinely stop at the end of the employee's shift, to be resumed by another employee in the succeeding shift. Alternatively, some functions may require the employee to continue working on until the process is complete, even if that moves the employee into an overtime category. An example of this might be someone running snow removal equipment who works an extended shift because of the immediacy of the requirement to provide safe access to parking lots, aviation operations areas, and terminal buildings. This is important in business continuity because it speaks to how staff can be deployed and work "extended" hours in some activities of the function during disruptions.

Figure 56. Question that determines whether multiple shifts are used in each function.

32. Can this work be assigned to other shifts to provide additional capacity?

The corollary to the preceding question asks if work by staff on essential functions can be divided and some activity performed on an alternate shift where there may be additional available resources (see Figure 57). Again, this goes to the business continuity issue of how the airport thinks about staffing, linking shifts, or utilizing cross-trained staff to add manpower during disruptions.

33. Are people in the function required to obtain and carry physical credentials in order to perform their airport duties?

This question (see Figure 58) is important to the further identification and qualification of prerequisites in providing essential airport staff during and after prolonged disruptions. The question asks respondents to indicate whether the function's staff members are required to have physical credentials in order to perform their jobs. These can be identification badges; secure identification display area (SIDA) badges; biometric tokens; radio frequency identification (RFID) cards; or visible professional credentials that identify EMTs, nurses, or members of the press. When airports think about how fast they can recover functions and processes, these required credentials must be taken into account, as well as the length of time it is likely to take to hire appropriately credentialed replacements when others are unavailable.

34. Do any of the individuals in the function regularly bring home any job-essential airport-provided implements, materials, files, or technology?

This question (see Figure 59) is important to business continuity because functional recovery may depend on access to equipment, tools, files, vehicles, or laptops an employee or contractor may have appropriately taken home, but that need to be retrieved as part of recovery in the department.

Airport public safety officers may routinely drive home their squad cars; employees may remove files or vital records on laptops or hand-held terminals or work with them at home; engineers may take home CAD drawings, schematics, or blueprints; or maintenance staff may take home tools and implements.

If recovery requires access to these items, the airport's business continuity plan needs to provide a process or mechanism for locating them and retrieving them within its time requirements, decide to restrict the practice, or implement a tracking system for locating them.

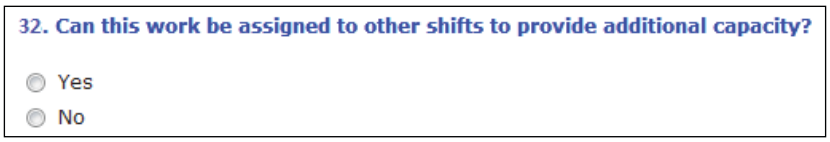


Figure 57. Question that determines whether shifts can be added during disruptions.

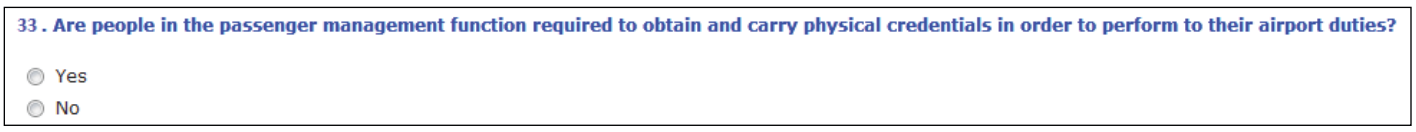


Figure 58. Question that determines the requirement for physical credentials.

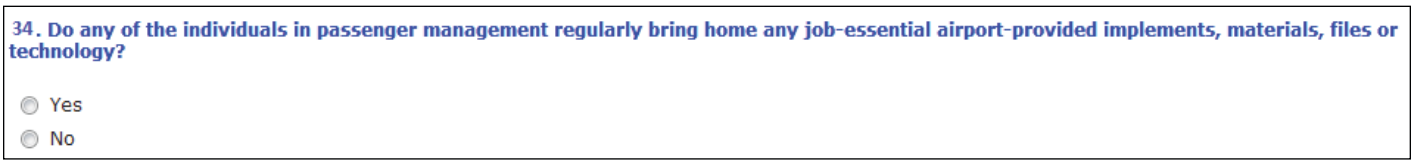


Figure 59. Question about staff removing resources from airport property.

35. Indicate—from highest to lowest priority—everyone who must be notified if the department's essential functions have been disrupted and are either partially or completely "down." Include those actually in the department or function, those at other departments at the airport and airport management, and those at any agencies or organizations outside the airport with a need to be informed if the work of this department is disrupted.

This question (see Figure 60) enables respondents to enter the department's "call list" of key persons, departments, agencies, contractors, regulators, and other stakeholders that should be notified if there has been an operational disruption of any kind. Each entity or key person with a need to know or a vested interest in the disruption should be included on this list. This might include city officials, the port authority or airport operator, suppliers, affected lessees, unions, the press, or the airport's bank, for example.

It is this call list that documents in the airport's business continuity plan, for every core function, which people should be alerted and kept informed because of their need to know or role in the airport's recovery. The list will be formatted and incorporated into the plan for quick access. Telephone numbers and contacts at various stakeholder entities can change often; so should this list.

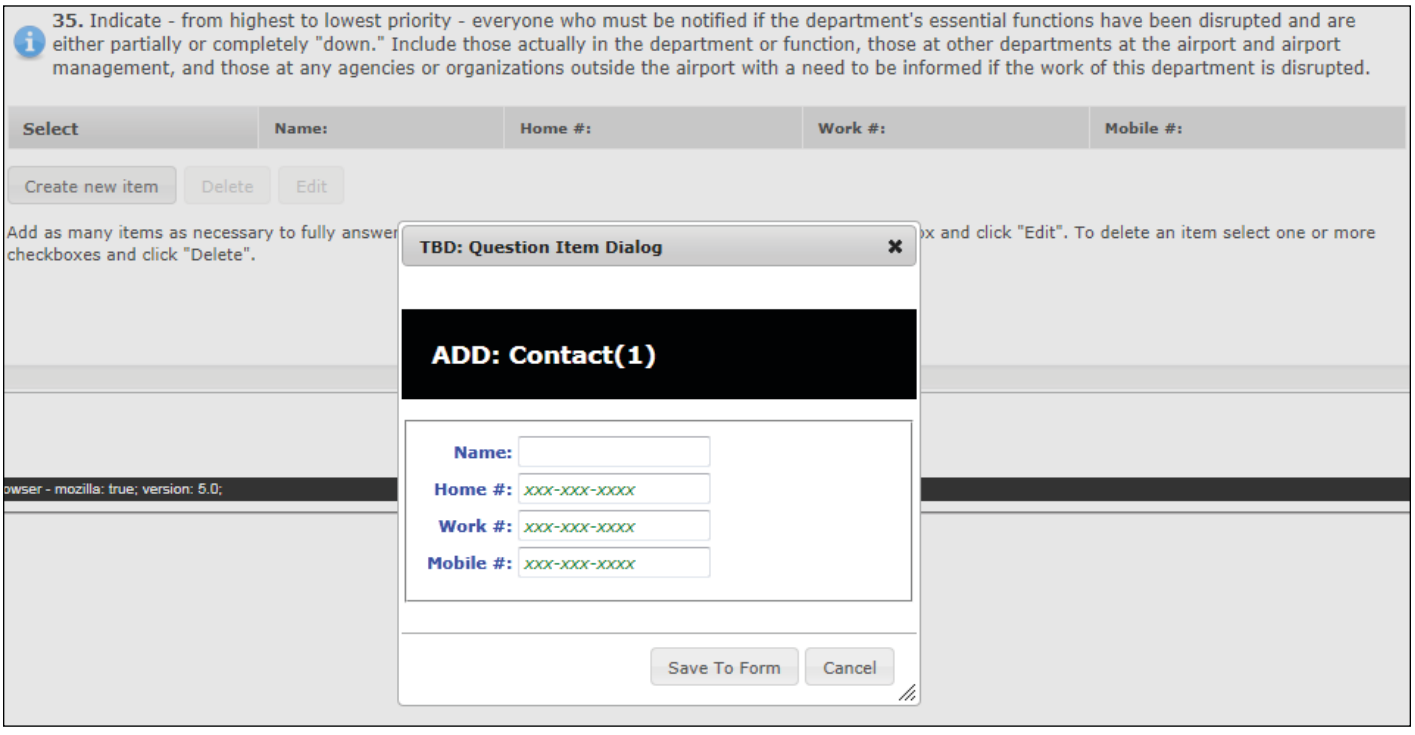


Figure 60. Question that documents the disruption notification list.

Core Questions Related to Physical Plant and Equipment Resources

The next group of approximately 12 survey questions addresses the physical plant and equipment resources that are essential to the department's function and role. The first five of these questions focus on the physical location of management and operations facilities and how best to relocate them during times of disruption.

36. Enter the current location at which the function is managed and coordinated.

This question (see Figure 61) asks respondents to indicate the location at the airport or elsewhere where each function is directed and managed. This might be a specific office location, wing, or building in the terminal or elsewhere at the airport. If the function is the responsibility of another office or agency or of the airport operator, the function might be directed and managed at the port authority, city hall, or county office building.

If management activities for the function are distributed across multiple locations, this question asks that the main management location be selected. Documenting the location of all essential functions and activities in the business continuity plan helps establish acceptable relocation alternatives.

37. Can the essential activities that take place in this management office or department be performed in an alternate location?

Fundamental to business continuity is the identification of alternate work locations should a prolonged disruption render the normal one unusable. If the respondent answers this question (see Figure 62) in the affirmative, the survey then asks the follow-on question below.

38. For the current location of the management function and for its primary and secondary alternate locations to which it could be moved during disruptions, list the address and size of each, the number of people who would have to be located or co-located there, and whether the airport would provide transportation of staff to the alternate locations during a disruption.

Data supplied in response to this question (see Figure 63) is populated into the business continuity plan as a table or list of alternate locations to which the function could be moved if necessary. The list includes the address and square footage of each site, as well as the number of staff that would have to be relocated there and whether or not it is the airport's responsibility to provide the staff with transportation to the alternate sites.

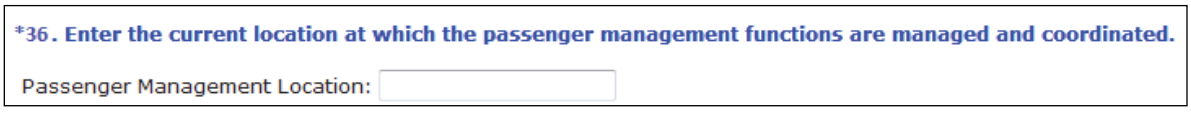


Figure 61. Question to document the physical location of each function.

Figure 62. Question about departments operating from alternate locations.

38. For the current location of the passenger management function and for its primary and secondary alternate locations to which it could be moved during disruptions - list the address and size of each, the number of people who would have to be located or co-located there, and whether the airport would provide transportation of staff to the alternate locations during a disruption.

	Location	Street Address	City	State	Zip	Size	Staff Co-located There	Airport Provides Transportation?
Current Location	☐					square feet	number	--Select Value--
Primary Alternate Location	☐					square feet	number	--Select Value--
Secondary Alternate Location	☐					square feet	number	--Select Value--

Figure 63. Question that documents details for viable alternate work locations.

The data pertaining to the size of the staff being relocated are important because viable relocation sites must be large enough to house not only the employees that would be relocated there, but also those (perhaps from other departments) who might already work at these locations. Other airport functions may assume that they, too, can relocate to these locations, so the overall business continuity plan should contain every department's relocation site assumptions; management should review these and ensure that relocation redundancies do not exist.

If it is the airport's responsibility (or policy) to help its employees or contractors get to alternative work sites during disruptions, the business continuity plan should account for this obligation and plan accordingly to supply the necessary transportation resources.

39. Indicate which types of additional physical facilities are required by this function, the specifications of each, and their source.

Some airport functions or departments may be managed from a single office or location but also require other fixed locations or facilities at the airport to fulfill their missions. For example, the passenger management function may operate a chapel, an infirmary, concierge kiosks, and a lost and found, each of which may require fixed operating sites of their own.

Similarly, the maintenance department may use several facilities (storage rooms, shops, and garages) to perform its function, and the aeronautical support functions likely use multiple facilities for various activities (wildlife control, noise abatement, aviation operations area [AOA] repair, and debris removal, for example). This question (see Figure 64) asks respondents to list these additional facilities, along with the basic specifications of each (size, materials, and locations) and the source or provider of the facilities (i.e., which airport department, airport operator, city, or contractor).

39. Indicate which types of additional physical facilities are required by this function, the specifications of each and their source.

	Check all that apply	Source	Brief Specification
Office/Operations Space	☐	--Select Value--	size, material, etc.
Passenger Transport (courtesy carts) Storage and Re-Charge	☐	--Select Value--	size, material, etc.
Medical/First Aid/Clinic	☐	--Select Value--	size, material, etc.
Complaint Management Location	☐	--Select Value--	size, material, etc.
Red Caps Staging/Locker Area	☐	--Select Value--	size, material, etc.
Local Information/Concierge Kiosks	☐	--Select Value--	size, material, etc.
Chapel	☐	--Select Value--	size, material, etc.
Infant Changing Facilities	☐	--Select Value--	size, material, etc.
Lost and Found Location	☐	--Select Value--	size, material, etc.
Other	☐	--Select Value--	size, material, etc.

Figure 64. Question that documents requirements for alternate locations.

40. For each checked activity or service that is performed as part of the passenger management function, indicate the primary location at the airport where it is done, size of that location, and a primary and secondary site to which the activity can be relocated.

	Check all that apply	Primary Location	Size	Primary Relocation Site	Secondary Relocation Site
Passenger Routing	☐	describe briefly	square feet	describe briefly	describe briefly
Passenger Transport (courtesy carts)	☐	describe briefly	square feet	describe briefly	describe briefly
Medical/First Aid/Clinic	☐	describe briefly	square feet	describe briefly	describe briefly
Complaint Management	☐	describe briefly	square feet	describe briefly	describe briefly
Public Address System	☐	describe briefly	square feet	describe briefly	describe briefly
Red Caps	☐	describe briefly	square feet	describe briefly	describe briefly
Local Information/Concierge	☐	describe briefly	square feet	describe briefly	describe briefly
Chapels	☐	describe briefly	square feet	describe briefly	describe briefly
Infant Changing Facilities	☐	describe briefly	square feet	describe briefly	describe briefly
Lost and Found	☐	describe briefly	square feet	describe briefly	describe briefly
Self-Service Baggage Carts and Racks (Smart Carte)	☐	describe briefly	square feet	describe briefly	describe briefly
Other	☐	describe briefly	square feet	describe briefly	describe briefly

Figure 65. Question that documents relocation site information.

40. For each checked activity or service that is performed as part of the function, indicate the primary location at the airport where it is done, size of that location, and a primary and secondary site to which the activity can be relocated.

This question (see Figure 65) asks respondents to document exactly where the other departmental facilities will relocate if their current sites become unavailable.

The next seven questions (of the 12 physical plant questions) focus on the mission-essential infrastructure, security, equipment, and supplies required by each function, so that the airport's business continuity plan addresses these requirements as critical elements of recovery.

41. What special infrastructure support services are required by the function? Briefly describe their specifications and source.

Identifying the essential infrastructure support services that each function requires to fulfill its mission helps planners prepare for the continuous provision of these services and assess the viability of relocation sites. This question (see Figure 66) is not about the basic or standard infrastructure that every department assumes will be available, such as seating, telephone service, electrical power, restroom facilities, and air conditioning. Instead, it identifies special infrastructure requirements that are essential to the work of the department.

41. What special infrastructure support services are required by the passenger management function? Briefly describe their specification and source.

	Check all that apply	Source	Specification
Local/wide area network (LAN/WAN)	☐	describe briefly	describe briefly
Internet	☐	describe briefly	describe briefly
Dedicated Lines to Car Rental and Hotel	☐	describe briefly	describe briefly
High Voltage Power	☐	describe briefly	describe briefly
Physical Proximity within Terminal	☐	describe briefly	describe briefly
Electrical Battery Recharge Stations	☐	describe briefly	describe briefly
Other	☐	describe briefly	describe briefly

Figure 66. Question documenting requirements for special infrastructure services.

42. What security measures are required by the various passenger management functions? Briefly describe its specification and source.

	Check all that apply	Specification	Source
Access Control	☐	describe briefly	describe briefly
CCTV	☐	describe briefly	describe briefly
Locks	☐	describe briefly	describe briefly
Other	☐	describe briefly	describe briefly

Figure 67. Question that documents requirements for security measures.

These requirements could include the need to be located in certain areas (e.g., visual sight lines or proximity to the AOA); special utilities (e.g., high voltage electrical service for shops or compressed air); high-capacity exhaust systems (e.g., for restaurant concessions with cooking hoods); or industrial-level heating, ventilation, and air conditioning (HVAC), or ventilation (e.g., for hangars or shops with painting and repair activities), for example. This question asks respondents to identify special infrastructure requirements and describe both the specifications for and providers of those services (e.g., airport maintenance, an Internet provider, or a specialty vendor). Responses to this question document these requirements in the business continuity plan.

42. What security measures are required by the function? Briefly describe its specification and source.

The identification of the security requirements of each function or department is also important to the business continuity plan. To ensure operational continuity and the capacity to relocate functions to alternate sites during disruptions, an inventory of these security requirements is incorporated into the plan when respondents complete this question (see Figure 67).

Security requirements vary widely across airport functions. Measures can include card or token-based access control systems, biometric systems, closed circuit television (CCTV) cameras, perimeter security, roving security personnel or canine teams, enhanced locks, motion detection, heat detection, glass breakage detection, infrared systems, or substance detection. These measures might be provided by the airport security or public safety department, facilities and engineering, maintenance and repair, or an outside security consultant or systems integrator. It is important to document the providers so that they can be contacted during disruptions.

43. Must any of these areas or facilities be located at ground level?

In the appropriate sections of the questionnaire, this question (see Figure 68) asks respondents to consider whether the current sites of a function or those to which a function might be relocated during disruptions need to be on ground level or have heavy-capacity-ramp access to ground level.

Departments and functions such as facilities, maintenance, winter operations, aeronautical support operations, and receiving are likely to require locations that either operate at ground level or have ground-level access in order to accommodate heavy equipment and rolling stock. For these functions, viable operating locations must provide this proximity or access to the ground level.

43. Must any of these areas or facilities be located at ground level?

- ○ Yes
- ○ No

Figure 68. Question that determines requirement for ground-level location.

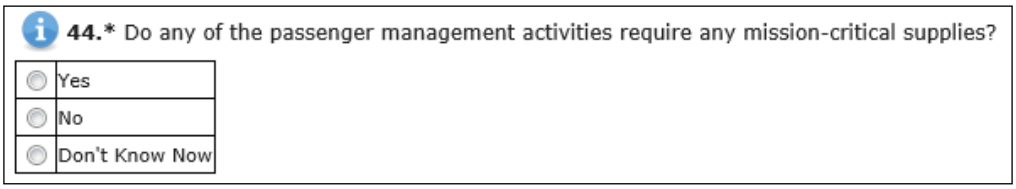


Figure 69. Question that determines requirement for critical supplies.

44. Do any of the passenger management activities require any mission-critical supplies?

Like the preceding set of questions, this one (see Figure 69) asks respondents whether each department or function relies on any special types of supplies that are critical to its operating function and mission to the airport. Everyday supplies, such as pens, paper, or staples, should not be included in this accounting. Instead, this question deals with job-specific supplies that make or break the department's ability to perform its role. Numerous functions will be able to identify some—or many—such supply items.

45. Complete the following for each critical supply item.

This question (see Figure 70) creates and incorporates into the resulting business continuity plan the inventory of essential supply items for each business and operating department. Essential items might include medicines and bandages for the infirmary, ammunition for public safety, foam for ARFF, sand for winter operations, rolls of credit card receipts for public parking, or large-format paper for the engineering department for printing architectural drawings.

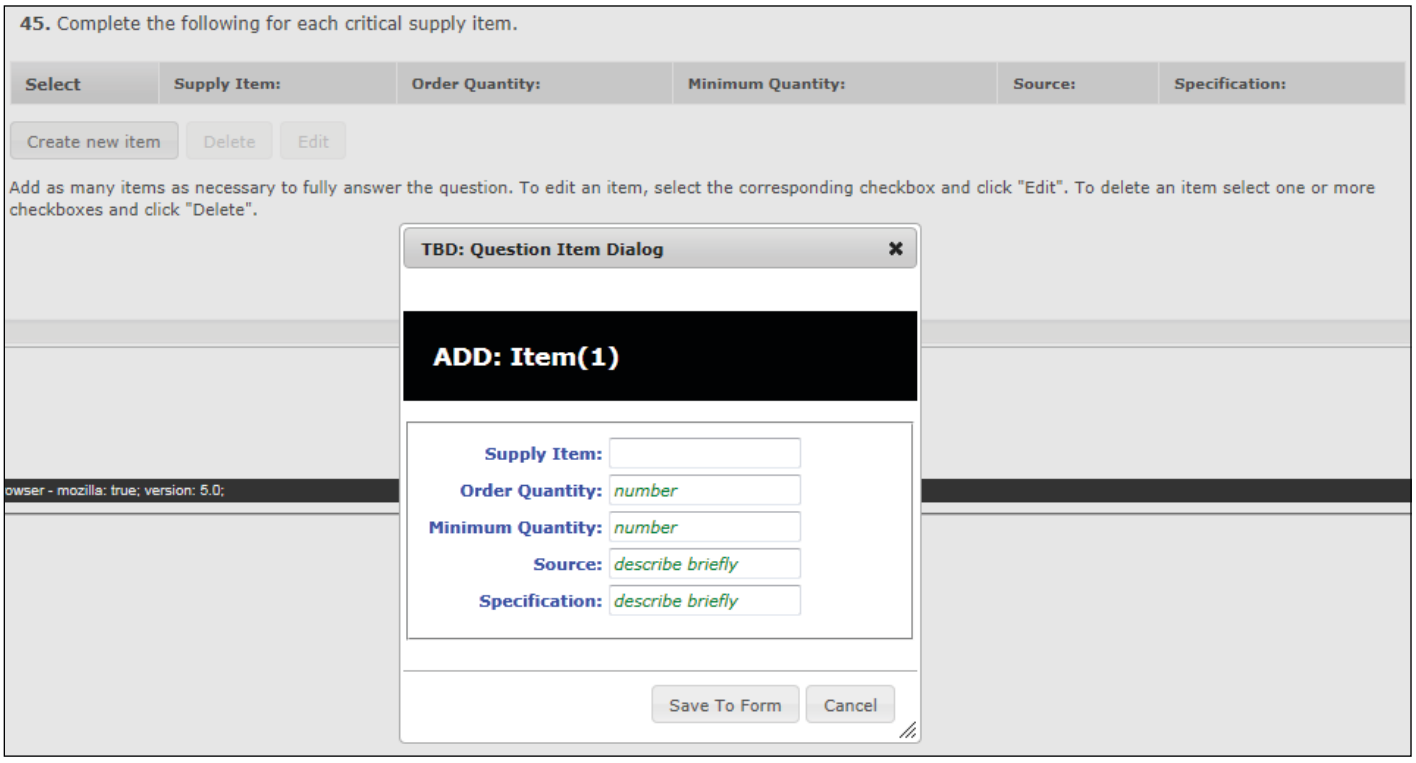


Figure 70. Question that documents critical supplies requirements.

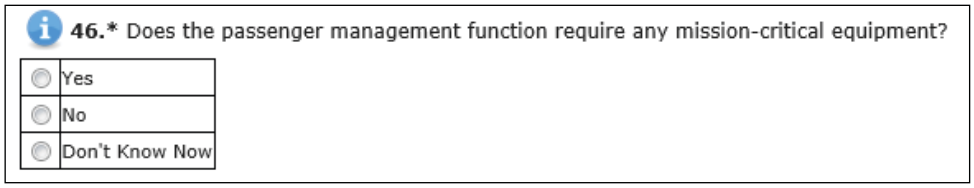


Figure 71. Question that determines requirement for special equipment.

46. Does the function require any mission-critical equipment?

When respondents answer this question (see Figure 71) about equipment that is essential to each airport function, the software tool triggers the next question, which asks respondents to create a list of this critical equipment. This question focuses on vehicles, heavy equipment, tools, and so forth, which are critical to the department's ability to perform its function. (**Note that this question does not deal with technology equipment, such as computers, which is addressed in another set of survey questions.**)

47. Complete the following for each item of special equipment.

Some functions, such as finance and accounting or grant writing, may not have any essential equipment. On the other hand, many other departments at the airport depend heavily on mission-essential equipment. Public safety uses police vehicles, ARFF requires firefighting apparatus and personal protective equipment, maintenance and repair operates heavy equipment and uses numerous tools and implements, winter operations relies on snow melting and removal equipment, and cargo operations depends on lifting and conveyor systems.

The inventory compiled in response to this question—essential equipment items, along with their sources and specifications—becomes an important part of the airport's business continuity plan because affected functions cannot recover from disruptions without these items (see Figure 72).

Core Questions Regarding Essential Technology

The next approximately 20 survey questions address the requirements of each function for essential technology. For organizations that rely heavily on technology across their business and operating functions, this section of the questionnaire is important in quantifying and qualifying their reliance on technology as part of their functional recovery plans. This section of questions addresses the computers, networking, applications, communications and specialty devices, and data security processes that an organization relies on.

The first eight questions in this set address the requirement for computers, connectivity, and software applications.

48. Do essential activities in this function require computers?

Some departments or functions in smaller airports may not depend on computers, although the vast majority of them likely do. This question (see Figure 73) links respondents to the next question, which asks them to provide information about those computers.

49. What are the types and quantities of computers used by this function? Indicate their specifications and sources.

In this question (see Figure 74), respondents are asked to provide an inventory of the personal computers (PCs), Macintosh computers (Macs), and terminals that are

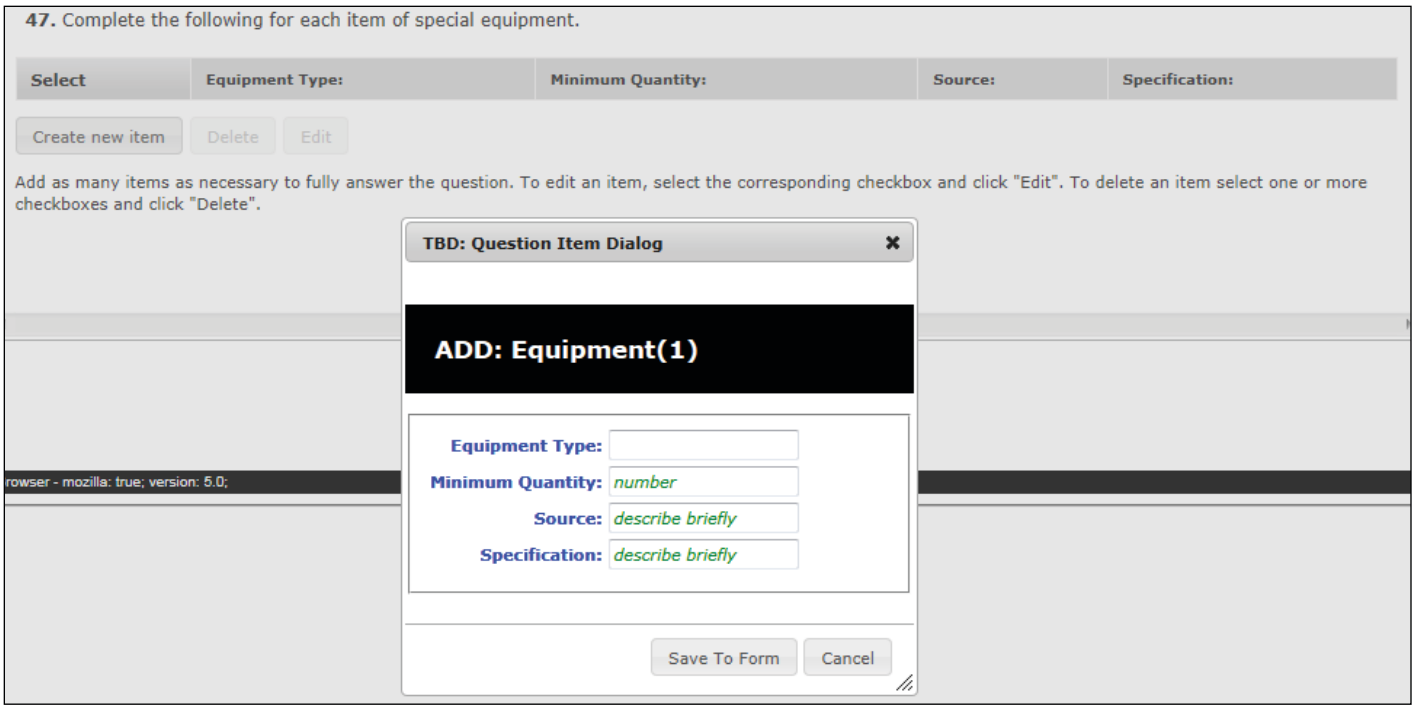


Figure 72. Question that documents special equipment requirements.

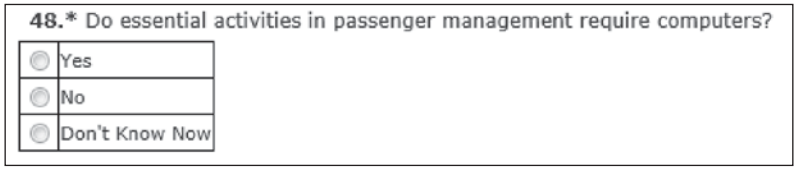


Figure 73. Question that determines the requirement for computers.

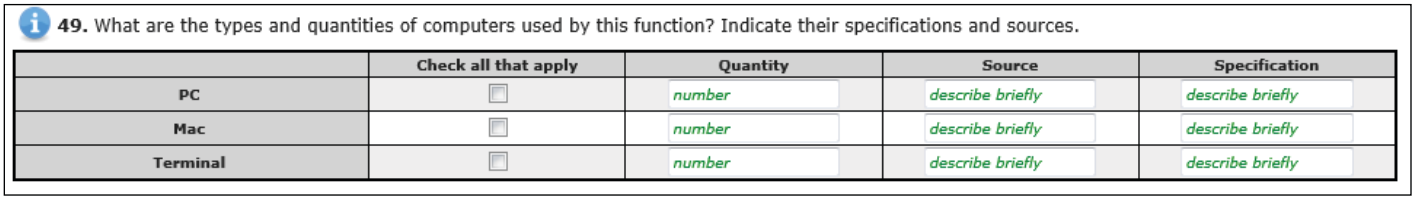


Figure 74. Question that documents computer requirements.

required by each airport or FBO function for it to perform as expected. The inventory that is incorporated into the airport's business continuity plan will include the sources (or providers) of each type of computer along with their general specifications. Post-disruption recovery may depend on sourcing additional devices for operational continuity.

50. Are the function's computers linked to the Internet?

If departmental computers and their users depend on Internet connectivity, the business continuity plan must document that dependence and include plans for restoration of connectivity to support functional recovery. This question (see Figure 75) requests that information.

Figure 75. Question that determines requirement for Internet connectivity.

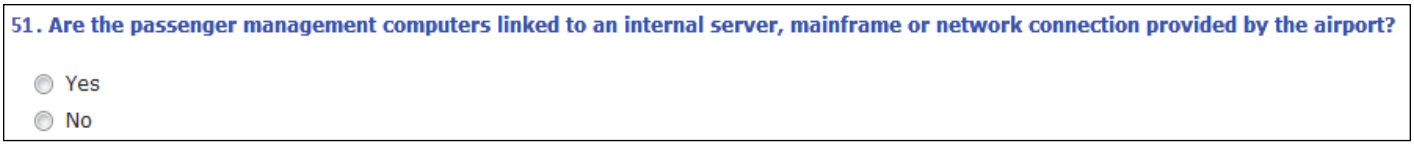


Figure 76. Question determining requirement for internal network connectivity.

Figure 77. Question determining requirement for external network connectivity.

51. Are the function's computers linked to an internal server, mainframe, or network connection provided by the airport?

Likewise, the plan must note departmental dependence on (and linkage with) central or distributed airport servers and systems, document that dependence, and include plans for restoration of connectivity to support functional recovery. This is accomplished via the question in Figure 76.

52. Are the function's computers linked to a server or mainframe outside of the airport?

Finally, responses to this question (see Figure 77) allow the business continuity plan to document departmental requirements for connectivity with servers or mainframes outside the airport or in the "cloud." As with all other links, the dependence must be documented, and plans must be included for restoration of connectivity to support functional recovery.

53. What software applications are used on the various function computers?

As important as the computing devices are to departmental function, many of the software applications they rely on to support their necessary processes, actions, and decision making are also mission essential. For highly automated airports and FBOs, this is especially true.

This question (see Figure 78) asks respondents to complete an inventory of those applications that are essential to functional performance, with a description of how they are used, ranking of their recovery priority, identification of where they are deployed (e.g., local computer, laptop, server, mainframe, the cloud, and so forth), and the name and contact information of the vendor. Each function is likely to know the local applications it routinely uses, while the IT department is likely to know the server-based and enterprise applications in use at the airport. Software will vary widely among departments. When incorporated into

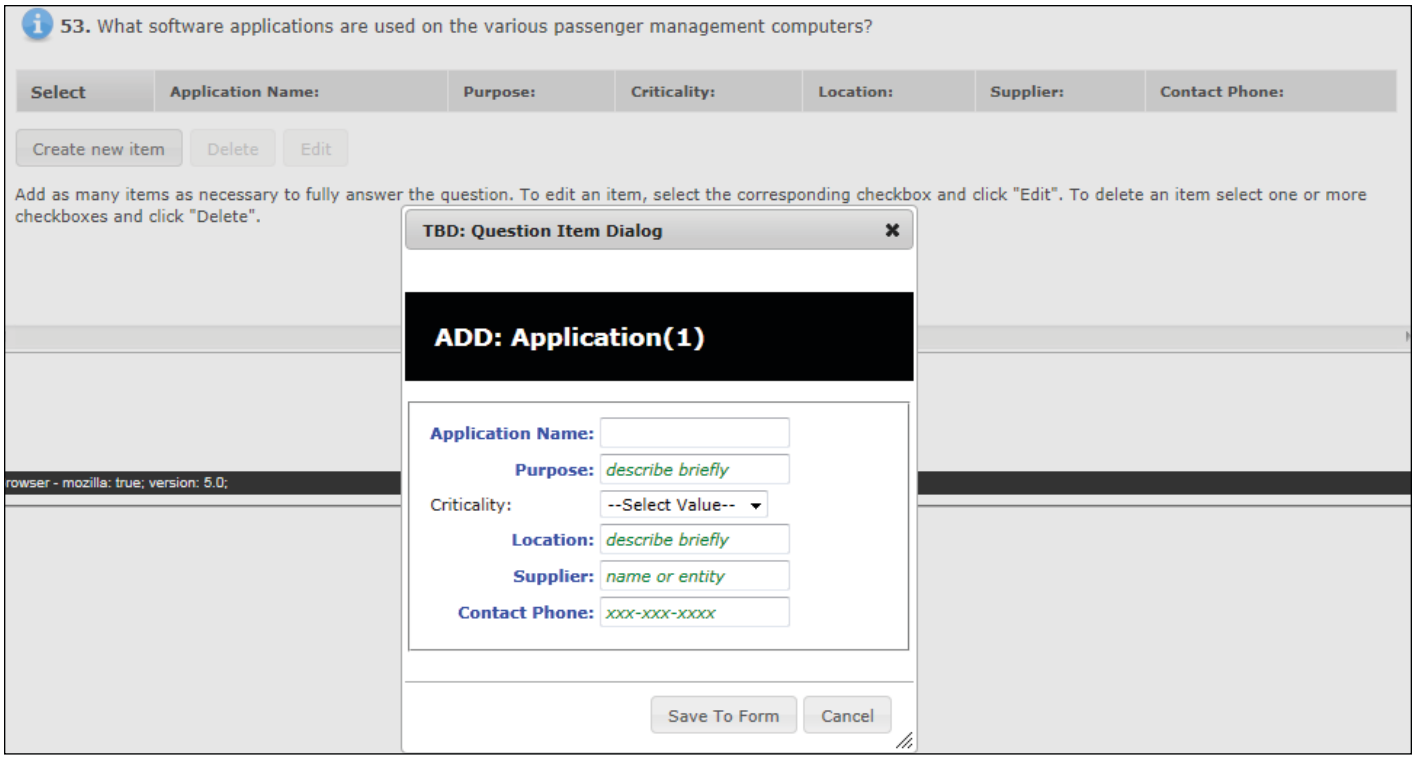


Figure 78. Question documenting recovery priority for critical applications.

the airport business continuity plan, this list supports replacement of critical applications if current versions are unavailable to their users.

54. Are passwords documented and stored in a safe central location?

Effective operational recovery for every function that relies on software also requires documentation of user authentication—login information and passwords. As this question (see Figure 79) implies, each department should be able to answer "Yes" to having documented and securely stored this essential authentication and access information for the essential software applications that it uses. **The survey does not create a list of these locations for the departments because that information may be highly sensitive and restricted. In the IT section, alone, this inventory is further addressed.**

55. Do recovery plans exist for the essential applications used in this function?

This question (see Figure 80) addresses the existence of specifically documented plans for recovering each department's mission-essential software applications. Reliable business

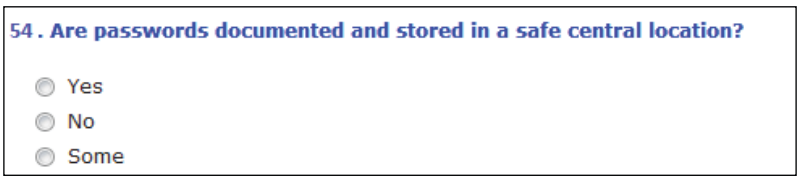


Figure 79. Question that determines whether access control information is safely stored.

92 Operational and Business Continuity Planning for Prolonged Airport Disruptions

Figure 80. Question that determines the existence of application recovery plans.

continuity depends on each airport or FBO function (or the IT department for those organizations that have one) maintaining a disaster recovery (DR) plan that aligns application and technology recovery with functional business recovery priorities. If these are not aligned, there is a risk that airport departments will expect software availability to be recovered more quickly than is possible.

DR plans should align with the recovery priorities defined across the entire airport or FBO by the business and operating functions, so that the most critical have priority for restoration. If the airport does not have a DR plan, developing one should become a top priority.

The next six survey questions (of the 20 questions related to essential technology) pertain to the requirements of each function for other types of technology and communications devices. Three questions ask respondents if the function or department relies on the routine use of different classes of technology devices—communications, office equipment, and other mission-critical technology devices.

These questions are each followed by a question that asks respondents to create an inventory of those devices that are critical to the performance of the department; this inventory is then made a part of the airport's business continuity plan. As with other essential resources, the plan should document these needs so that post-disruption recovery can ensure the availability of essential technology devices.

56. Do activities in this function normally require the use of any radios, smart phones, or voice communication devices?

Many functions with operations dispersed across the airport likely depend on a variety of essential communications devices, while traditional office or business functions may not. Responses to this question (see Figure 81) detail the function's need for essential communication devices.

57. Complete the following for each type of essential communications device, if known.

Respondents to this question (see Figure 82) complete an inventory of communications devices that may be critical to the continued functioning of particular departments. For example, radios may be critical equipment for the activities of public safety, facilities, and airfield operations staff. Some departments may carry devices that allow mobile access to key applications. Smart phones may be essential equipment for many business functions at the airport.

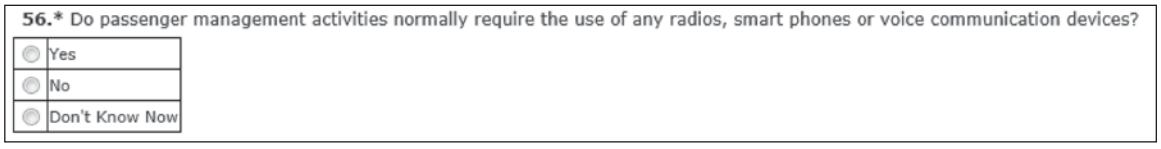


Figure 81. Question that determines requirement for communications devices.

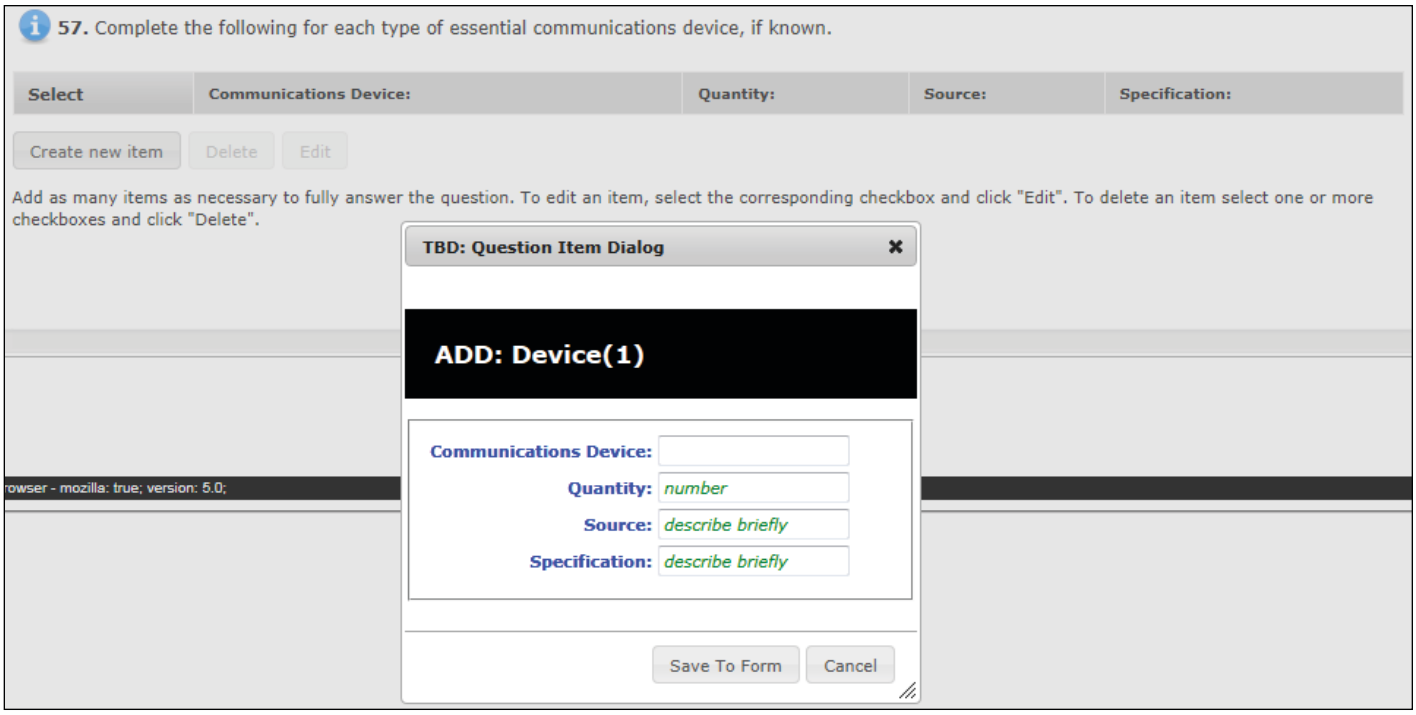


Figure 82. Question that documents requirements for communications devices.

58. Is the use of a copier, fax machine, or scanner critical to the function?

Based on the department's responsibilities, office equipment may either be a convenience or it may be mission-critical. For business continuity purposes, this question (see Figure 83) and the question that follows deal only with situations of criticality. Some departments may rely on office equipment that is fundamental to their responsibilities, for example, large-format printers used by the engineering or construction department.

59. Complete the following for each essential piece of office equipment, if known.

This question (see Figure 84) asks respondents to list office equipment that is essential to effective functioning of each department. Many departments probably require some access to scanners, fax machines, photocopiers, and possibly presentation equipment such as binders or hole punchers. Other departments, including design, engineering, construction, or facilities, might require large-format printers for blueprints and schematics.

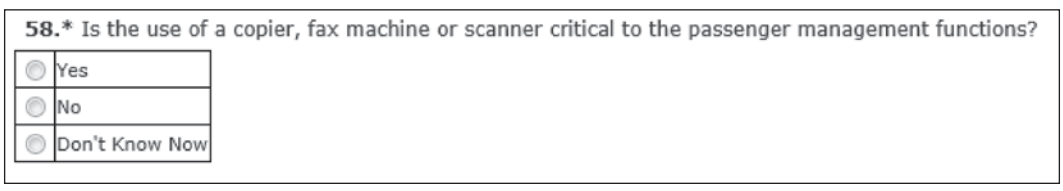


Figure 83. Question that determines requirements for office equipment.

94 Operational and Business Continuity Planning for Prolonged Airport Disruptions

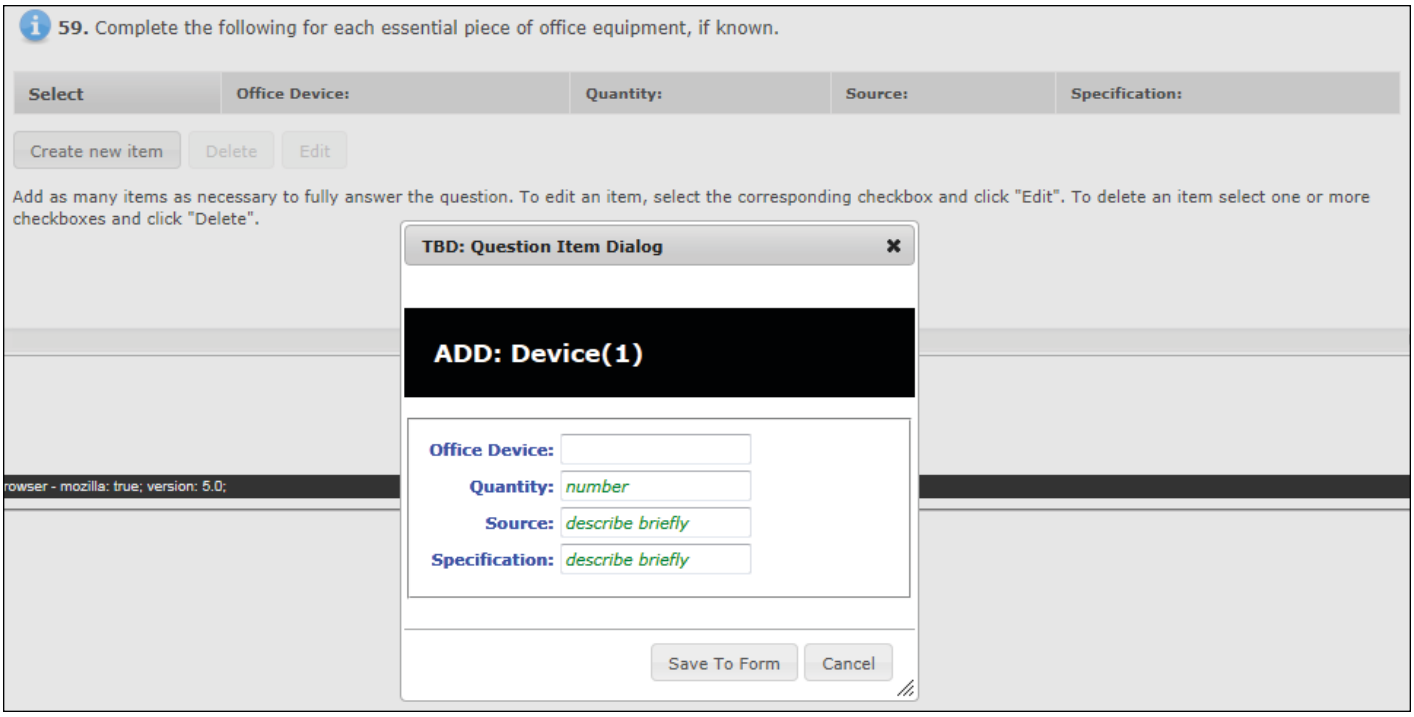


Figure 84. Question that documents office equipment requirements.

60. Does the function normally require the use of any other critical electronic devices (see Figure 85)?

Some airport functions may rely on other technology devices that are unique to their missions. Examples include surveying and measuring devices for engineering and planning, mirrors for public safety, decimeters for noise measuring and abatement, or specialty medical devices in the infirmary.

61. Complete the following for each type of other critical device, if known.

This question (see Figure 86) asks respondents to list any other miscellaneous items that are mission-critical, which may not have been supplied in the preceding inventories. While many departments and functions will have no requirement for specialty devices, some depend on these devices for their essential functions. For example, design, engineering, and construction processes may require special surveying devices. Security might require digital camera wands to scan the undercarriages of visiting vehicles. The environmental staff might require special digital sensors to do their work.

The next five survey questions (of the 20 related to essential technology) ask about data security and availability.

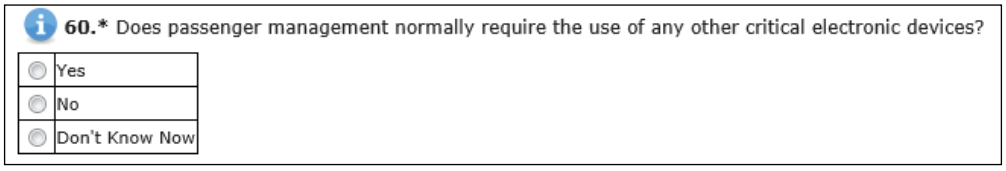


Figure 85. Question that determines requirement for special electronic equipment.

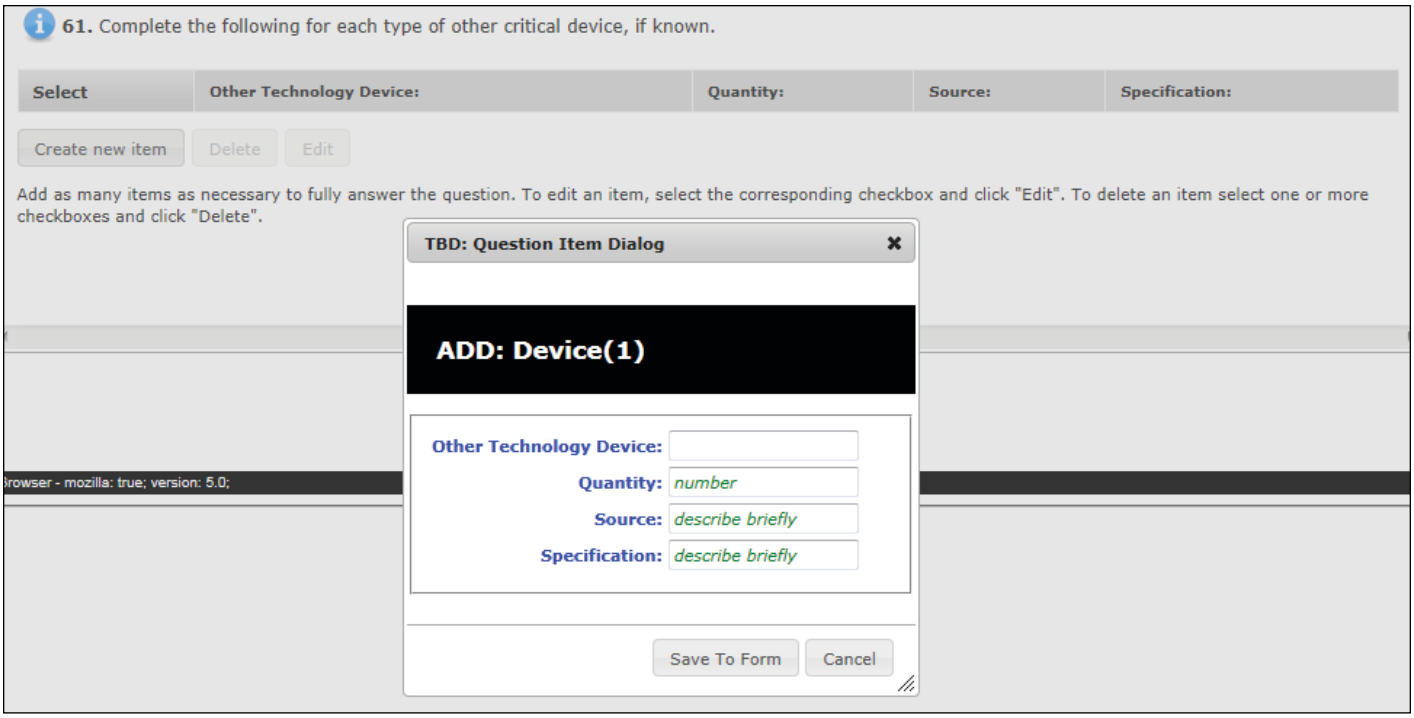


Figure 86. Question that documents requirement for special electronic equipment.

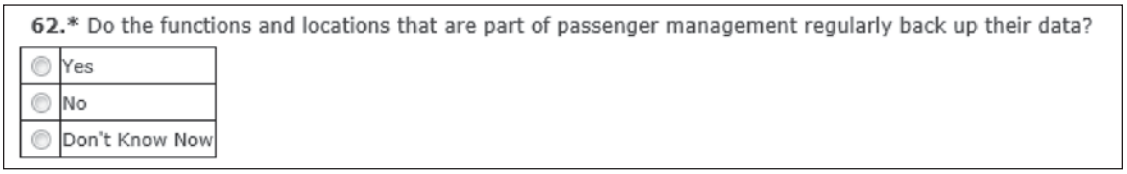


Figure 87. Question that determines whether functional data are backed up.

62. Do the functions and locations that are a part of this department regularly back up their data?

This is a very important question (see Figure 87). If critical data are not backed up locally, systemically, or in the "cloud," the operational impact of a disruption resulting in the loss of data may be devastating. It is important to remember that, while airport disruptions may be caused by serious weather-related incidents, they may just as likely be caused by IT-related incidents. If systems crash—for reasons of weather, hacking, denial of service attacks, or internal sabotage by a disgruntled former airport or city employee—data can be permanently lost if they are not backed up, and this loss may have serious results.

63. How frequently are these backups performed?

The answer to this question (see Figure 88) incorporates documentation of the frequency of data back-ups for each function into the airport's business continuity plan. Functional leaders and department heads should take notice if they or their staff cannot answer this question definitively, and they should either find out the answer or implement a policy that addresses it. **Note that the IT department may be the only source for answering this question if it automatically backs up all other departments' data.**

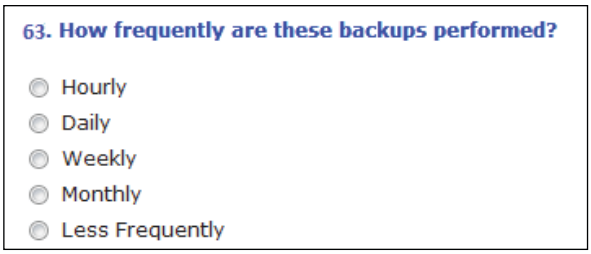


Figure 88. Question that determines the frequency of data back-ups.

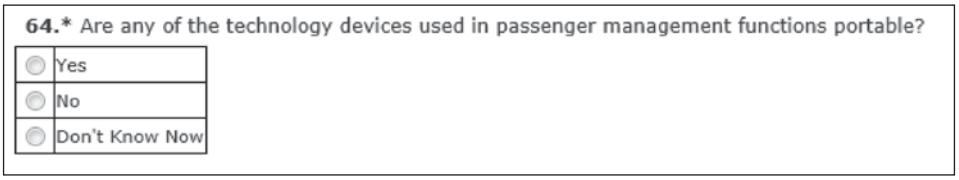


Figure 89. Question that determines the use of portable technology.

64. Are any of the technology devices used in the function portable (see Figure 89)?

Portable devices in use by each airport or FBO function are specifically noted in the business continuity plan because they carry risks of their own that can impact recovery after disruptions. Many airport functions are spread across a large physical footprint and thus are likely to make significant use of portable devices.

65. Do the portable devices store sensitive or confidential data?

This question (see Figure 90) asks if the portable devices store data that are considered sensitive, confidential, or subject to access controls. This might include medical treatment records, employee information, maintenance and repair records, budgets, incident reports, and many other kinds of sensitive or protected information. This question leads into the following one that asks how often the data hosted on portable devices are backed up.

66. How often is data that is on these portable devices generally backed up?

The answer to this question (see Figure 91) will be inserted into the appropriate place in the resulting business continuity plan, documenting current departmental or airport policy.

Critical Communications During Disruptions

67. What other organizations, agencies, or entities does the function need to contact or call during a prolonged operational disruption? Include all stakeholders—airlines, unions, regulators, partners, suppliers, auditors, lessees, and concessionaires.

Figure 90. Question about confidential data on portable devices.

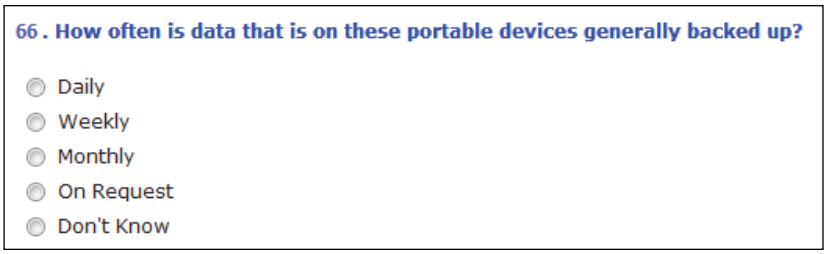


Figure 91. Question determining frequency of data back-ups on portable devices.

This final question (see Figure 92) in each section of the survey asks respondents to collect and enter the departmental call list. This list is important in documenting the wide mix of stakeholders that should be notified when there is a functional or widespread operational disruption.

The authors recommend that this list include everyone, including every other department, partner, supplier, agency, and office that has a significant need to know about the disruption because of its potential impact on them.

Answering this survey question adds into the business continuity plan a table or list documenting the identity and contact information of the organization to be notified, the nature of the notification, and its priority and time sensitivity.

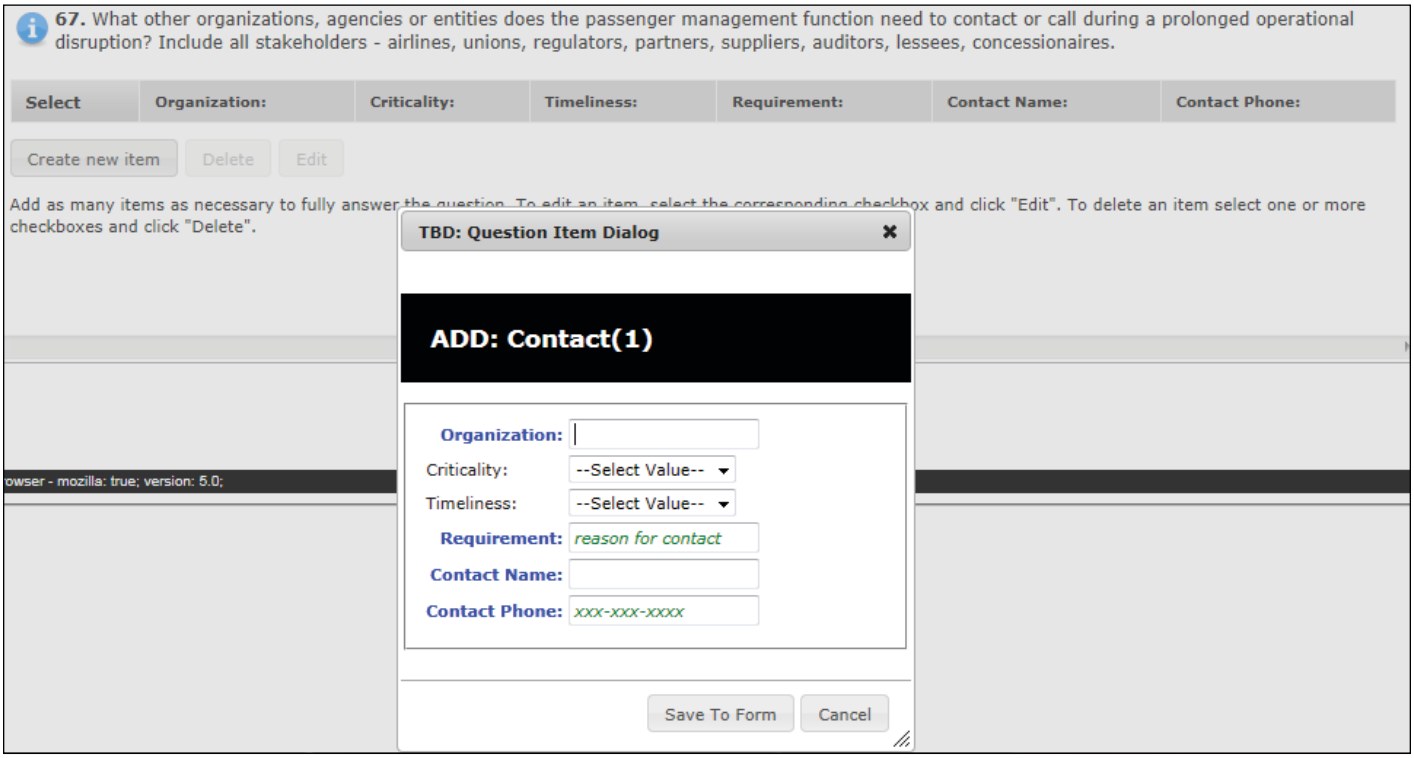


Figure 92. Question that documents departmental call lists during disruptions.

Questionnaire Sections in Detail

This section of the guidebook defines each section of survey questions and describes which airport activities are included therein. It also describes questions that are unique or specific to some of the particular functions and are presented to respondents in addition to the "standard" questions described in the previous section.

Co-Located Military Units

Some CFR Part 139 airports (at least one in each state) host military flying units known as "airfield management sections." There are 12 military squadrons in the United States that are contracted by the FAA to be available to operate the ATCT at their host commercial airports if necessary during significant emergencies. These squadrons are capable of running all flight operations at their airports and can re-open civilian airports under conditions of national-scale emergencies, such as Hurricane Katrina.

Air National Guard, State Guard, Coast Guard, Air Force, Army, or Marine air operations facilities, bases, or air wings (or a military air traffic control squadron) co-located on greater airport property might be considered an essential function for the airport. This could be the case if the military lease revenues are significant to the airport, if the military provides essential services to the airport during normal civilian operations, or if the airport could face legal or financial problems if it failed to support the military co-located there adequately.

Questions specific to co-located military units are presented below.

1. **Does the airport lease facilities to the military unit(s) operating at the airport?**

   The answer to this question helps determine whether other questions related to military presence at the airport are presented to respondents. These facilities may include parking, buildings, hangars, ramps, taxiways, runways, and non-movement AOA space, for example.

2. **Is the revenue from this military lease material to the airport's profit and loss statement (P&L)?**

   Financial materiality helps define business continuity criticality and the priority of recovery.

3. **As part of its lease, does the airport depend on the military to routinely provide any essential capabilities, resources, and services to the airport as a contractor?**

   The military might provide the airport with services such as ARFF, conventional firefighting, security or law enforcement, maintenance of AOA movement or non-movement areas, facilities maintenance, or tower operations. If this is the case, then airport recovery of these operations depends on the military's capacity as a contractor to ensure that recovery.

4. **Indicate any essential airport services the military provides under contract or barter to the airport during normal civilian operations.**

   This question asks respondents to document those essential services the military provides as part of the airport's business continuity plan.

5. **Does the airport's lease agreement with the military include airport-specific rules and procedures for handling and storing all explosive ordnance on airport property and procedures for accident prevention, response, and recovery?**

6. **Are essential airport assets, facilities, and personnel situated, and do they operate outside the known blast zone of military explosives?**

   Questions 5 and 6 demonstrate that airports hosting military units should understand the potential disruption impact on their overall operations from live explosive ordnance that the military may store and handle at the airport. Ideally, there should be contractual agreement about ordnance and related contingency plans, to the extent permitted by federal or state law.

7. **Is the airport responsible for providing maintenance, repair, and upkeep for any of the military's facilities—ramps, taxiways, runways, hangars, and other facilities?**

   To the extent that support of the physical plant and aeronautical operations areas used by the military are the responsibility of the airport, this capacity should become a consideration in documenting its recovery obligations.

8. **In wartime or hostile action situations, can the airport be used by the military to stage logistics operations?**

   If the airport is one at which its co-located military unit may support logistics or supply chain operations in wartime activities, commercial business continuity and recovery capacity may be materially affected if military activities preclude the use of runways, taxiways, tower operations, and airspace.

9. **Does the military require a dedicated AOA or an aviation movement area that is separate and distinct from the airport's civilian AOA?**

   This question establishes whether the airport's business continuity plan must take into account the aeronautical operations requirements of its co-located military units in planning for functional recovery.

10. **If this area is rendered unavailable, can the airport accommodate routine (not emergency) military movements and aviation operations in its civilian AOA?**

    This question implies that normal commercial aviation operations may well be impacted if it is the airport's responsibility to permit military use of its commercial AOA, recovery of which after a disruption may then take on a more pronounced imperative.

11. **Does the military provide for its own security measures, or must the airport provide some level of security for the military?**

    If the airport is additionally responsible for providing security and public safety services to its military units, the business continuity plan of the public safety department should reflect the resulting impact on requirements for staffing and equipment.

Aircraft Rescue and Firefighting (ARFF)

The ARFF function at the airport is defined by the five indexes related to the airport's capacity to respond to aircraft emergencies. The five indexes are based on the size of aircraft that can be accommodated by the size of the runway and movement areas and by the ramp specifications

at the airport. Maintaining ARFF index capacity should be considered by air carrier airports (as opposed to general aviation facilities) as a highly essential function, since its loss could subject the airport not only to restrictions or cessation of aviation operations by the FAA, but also to regulatory actions or penalties and damage lawsuits by airlines and relatives of passengers who are casualties or fatalities of aircraft accidents.

Questions specific to the AARF function are presented below.

1. **Is your airport ARFF indexed?**

   This question relates to the following one about voluntary ARFF operations. Airports should be ARFF indexed if they meet CFR Part 139 requirements and have been given an index certification by the FAA. Being indexed implies the ability to functionally recover a very specific level of operational capacity and resources.

2. **Does the airport voluntarily provide ARFF services, but is not CFR Part 139 certified?**

   Voluntary provision of ARFF services may be a requirement of the airport's, city's, or county's emergency management plan or a local firefighting requirement from the municipality or county. Voluntary provision of ARFF services may imply somewhat less stringent recovery capacity, but still establishes the basis for post-disruption recovery targets.

3. **Indicate the airport's ARFF index (or effective ARFF index if it is voluntary).**

   The five ARFF indexes establish very specific recovery thresholds for personnel, equipment, fire-inhibiting materials, and apparatus, based on the size of aircraft operating at the airport—Index A (< 90 ft), Index B (90 ft to < 126 ft), Index C (126 ft to < 159 ft), Index D (159 ft to < 200 ft), and Index E (200 ft and longer). These benchmarks help respondents think through the resources required to recover ARFF to those threshold levels.

4. **Does your airport have the capability to drop an ARFF index level using a "notice to airmen" (NOTAM) advisory?**

   The circumstances under which this could occur might include a temporary reduction of staffing, lack of essential supplies and equipment, or reduced capacity. This reduced ARFF status can only be declared for up to 24 hours before either a restoration of services or airport shutdown, so this question should inform the first 24 hours of a department's business continuity plan.

5. **Does the airport have the capacity and resources to train and certify ARFF personnel on site or must training take place at other, offsite locations?**

   The department's business continuity plan should take this question into account because it deals with recovery of essential training requirements that help maintain the ARFF index at the airport from a training and response time perspective. Offsite work may imply longer recovery times for essential firefighting capacity.

6. **Are other airport workers cross-trained to perform ARFF duties and available for large-scale crises or periods of lower ARFF staffing?**

   This question is important to business continuity because cross-trained workers can be considered in answering the department's questions about available staffing levels and the recovery of their operational capacity.

Back-Up Power Sources

Electricity is fundamental to aviation operations and the operation of many essential systems, equipment, technology, and tools at the airport; therefore, maintaining a sufficient back-up power capacity should also be a priority. In power loss situations (black-outs, brown-outs),

back-up power may drive the key airport functions—lights critical to illuminating runways, all electronics within the airport, ticketing, signage, and elevators and escalators—that are critical to the airport's operational continuity. Back-up power sources and processes can include emergency supply contract provisions with local utilities, standby mobile generator delivery agreements, permanent/portable diesel/gasoline generators, uninterruptible power supply (UPS) or standby power supply (SPS) batteries for systems and IT-related technology, and renewable energy sources.

Potential impacts from lack of back-up power during power failures include inability to illuminate runways and land aircraft, provide electronic signage, pump jet fuel, support retail and commercial concessions, support the TSA's screening roles, or manage airport operations.

Questions specific to back-up power sources are presented below.

1. **Does use of any type of backup power supply require authorization from any federal, state, or local authority or utility commission?**

   Active use of back-up electric generators may require periodic filings with state or local authorities to maintain compliance with pollution control regulations or with the FAA. If so, the business continuity plan should document those requirements as part of its recovery process.

2. **Are there any commercial lessees, contractors or concessionaires—or any federal agencies such as FAA, TSA, ICE, or CBP—operating at the airport that are contractually or statutorily responsible for providing their own backup power?**

   If any of these entities are required to provide their own back-up power sources, then any such provision may relieve the airport from this responsibility. Nevertheless, it may still be in the airport's interest to plan to provide back-up power to these organizations after disruptions to support its overall recovery capacity.

3. **For all other airport operations, whether provided by the airport or a contractor, does the airport maintain a priority or triage list for providing back-up power, based on some measure of criticality?**

   A triage or priority list would require the airport to formulate and disseminate a formal ranking model that ensures back-up electric power for those functions that support core aviation operations, life safety, ARFF capacity, or other priorities. This is a good idea because it sets expectations among internal departments, lessees, and contractors, and helps them provide for their own back-up power.

4. **Is their rank on this power triage plan noted in the commercial leases of affected contractors?**

   If the airport implements a power triage model, it should include that ranking in its contracts and leases to formalize them and limit liability.

Commercial and Aviation Lessees

Many of the most essential commercial activities at the airport are provided under commercial service leases or business contracts by many types of service providers and contractors. **The lessees addressed in this section are NOT the retail concessions that take money from the public (stores, banks, restaurants), independent businesses owned and operated by the airport itself, or the public parking concession. These lessees will be addressed in their own sections.**

102 Operational and Business Continuity Planning for Prolonged Airport Disruptions

Commercial lessees include airlines, FBOs, general aviation operators, and contractors to the airport for all other airport functions not performed by the airport itself with its own employees. Lessees can include the following:

- Specialized aviation service operators (SASOs)
- Operations contractors (providing private security services, passenger support, information desk, cleaning, snow removal, or environmental services)
- Business services contractors providing IT, payroll, accounting, and so forth
- Other commercial enterprises, such as warehouses, light manufacturing, and so forth
- Recreation facilities operators and health clubs
- Shopping malls
- Hotels, casinos, and conference centers
- Airport business centers or commercial office buildings
- Houses of worship
- Aeronautical museums

The essence of the commercial lessees' group of functions is the delivery of core airport aviation and support services and the revenue generated from these commercial relationships and contracts. Their criticality for post-disruption recovery may be measured by the amount of revenue they bring in for the airport or by the extent to which the loss or disruption of these operations might trigger de-certification or a significant closure of fundamental airport facilities and services. That, in turn, could cause a serious negative public reaction or open the airport to fines, penalties, or contract-based revenue give-backs. Although the airport may not be directly responsible for the functions provided by commercial lessees, it must provide for their support and should require each contractor to maintain its own contingency plans for operating during disruptions.

Questions specific to commercial and aviation lessees are presented below.

1. **Is the airport the lessor with which these commercial enterprises contract and complete lease or operating agreements, or is some other entity the lessor?**

   If lease agreements and contracts are struck between the aviation and non-aviation businesses or contractors and the airport, then leasehold operating obligations become part of recovery planning for the airport. If these contracts are negotiated directly with the airport operator, municipality, county, or state, then those obligations may be the responsibility of a non-airport entity, relieving the airport of some liability.

2. **What reports, information, audits, and input must the airport provide this other leasing entity in order for it to manage these commercial leases effectively and accurately?**

   If the answer to the previous question is that an outside public jurisdiction enters into commercial leases, then the airport's responsibility for operational recovery may extend to providing information that supports billing and compliance, such as fuelage data, gross weight of landings/take-offs, enplanements, accident reports, and so forth.

Environmental Operations

This set of functions includes the airport's activities and process for dealing with all environmental issues and related reporting requirements, including bird strike management, noise abatement, fluid spills, electrical transformer and fire suppression system leaks, water spills, hazardous material (HAZMAT) issues, and aviation fuel dumping incidents. Loss or degradation of environmental reporting capacity at the airport during or after a disruption might impact its regulatory compliance and expose the airport to lawsuits, fines, penalties, restrictions, loss of funding, or reputational damage.

Finance and Accounting

Typical finance functions might include general ledger, accounts payable and receivable, treasury/cash management, budgeting, fixed asset accounting, project accounting, financial analysis, long-term planning, or even fuel hedging. Negative impact to the airport from the loss of these functions or the degradation of their capacity from disruptions could include the inability to track and report revenue from parking or calculate fuelage surcharges; the inability to track and report revenue from retail and commercial concessions; or failure to meet payroll, loan covenants, or contractual or legal obligations. Each of these could potentially expose the airport to default, audits, official inquiries, hearings, and unwanted political scrutiny.

Fixed Base Operators

FBOs can run an entire airport under contract to a government or private owner or, more narrowly, operate the general aviation activities, services, physical plant, and infrastructure at the airport. The airport *should not* complete this FBO question section, as it is intended only for FBOs themselves. The software tool addresses the interests of FBOs in two ways. FBOs that are under contract with the owning municipality, county, state, or private airport owner to *run the entire airport fully,* should complete the entire business continuity questionnaire as if they were an airport. They should answer the relevant questions for their specific operations at a single specific airport, not as the corporate FBO organization itself.

FBOs that play a limited role as *contract provider of aeronautical services* such as general aviation, fueling, hangaring, tie-down and parking, aircraft rental, aircraft maintenance, and flight instruction at host airports should only answer this "Fixed Base Operators" section of questions. Again, they should answer the relevant questions for their specific operations at a single specific airport, not as the corporate FBO organization itself. (**Corporate FBO entities that operate at numerous airports across the United States should formulate their own independent corporate business continuity plans, but this software tool is not appropriate for that purpose.**)

FBOs operate as for-profit businesses, serving a range of private or corporate general aviation operations at the airport and paying the airport rent and fees. The airport's FBO operations can support and accommodate the following:

- Part 135 charter operators, air taxis, and commuter operators
- Part 91 fractional operators and corporate flight facilities
- Private aviation activities
- Flight jumping schools
- Recreational aviation
- Agricultural aviation
- Emergency aviation that may support activities such as firefighting and urgent medical transport

The FBO's general aviation services may include operating an aviation services center and providing aircraft management, maintenance, repair, and fueling services.

Even though they are independent commercial contractors to the airport, FBOs may depend on the airport, their lessor, for a range of fundamental services such as grounds maintenance, access roads and parking, perimeter security, snow removal, utilities hook-ups and infrastructure, and ARFF. Because the prolonged disruption of any core services that FBOs provide to their customers can materially impact the bottom line of the FBO, the impact can directly affect the airport as well. If the disruption of services, capacity, and resources lasts long enough, general aviation customers can terminate their use of the facility, which drives revenue down, or relocate their aviation activities to competing airports, causing a reduction in rents and

104 Operational and Business Continuity Planning for Prolonged Airport Disruptions

activity-based billing to the airport. Failure to provide services may trigger leasehold penalties from the airport, as well.

General Aviation

The airport itself should complete this general aviation question section. General aviation operations at an airport may range in scope from airports with entire operations that are predominantly general aviation (and may be essentially run under contract by an FBO) to airports that directly manage some or all of their general aviation facilities and operations.

General aviation activities, services, physical plant, and infrastructure accommodate the following:

- Part 135 charter operators, air taxis, and commuter operators
- Part 91 fractional operators and corporate flight facilities
- Private aviation activities
- Flight schools
- Aircraft rental, skydiving activities
- Recreational aviation
- Agricultural aviation
- Emergency aviation that may support activities such as firefighting and urgent medical transport

The general aviation function may also include operating an aviation services center and providing aircraft management, maintenance, repair, and fueling services.

Because general aviation operations are such a critical part of the U.S. aviation infrastructure, touching and connecting thousands of communities, loss of all or part of this capacity at the airport due to a prolonged disruption may negatively or terminally impact many small aviation operators, businesses, and individuals and threaten livelihoods. At larger airports, the general aviation facilities market may be highly competitive in terms of fuel pricing, service levels, support, and amenities; loss of general aviation capacity or function may well cause aviation users to choose to relocate to alternative airports. Revenue to the airport from the FBO lease(s) may be significant enough that the effect of a general aviation disruption may be financially impactful to the airport's bottom line, and loss could negatively impact the local economy.

One question is unique to general aviation:

Does the airport manage the general aviation operations, activities, facilities, and services at the airport, or are the general aviation operations outsourced to one or more FBOs?

If general aviation operations are outsourced to an FBO, the airport's responsibility for recovering numerous types of resources after disruptions may be far less onerous than if the airport itself runs general aviation. Based on responses to this question, respondents either skip past appropriate follow-on questions or are required to answer them.

Government Security and Controls

Federally mandated security and control functions that may operate in an airport include the TSA, Customs and Border Protection (CBP), Immigration and Customs Enforcement (ICE), or the U.S. Department of Agriculture (USDA). The criticality of their missions makes the continued function of these entities essential. Loss of the TSA function, for example, may effectively halt aircraft boarding and departures, just as loss of ICE could curtail international arrivals. Some of the USDA's functions at the airport might include deploying canine teams trained to

detect organic materials or organisms that could severely threaten agriculture and the food supply in the United States. If these federally mandated security and control functions become nonfunctional, impacts may include massive air traffic re-routing, flight delays and cancellations, political fact-finding investigations, and crowd control and processing issues for the airport.

Even though the missions of federally mandated security and control functions are not the responsibility of the airport, the airport must provide essential supporting resources in order for these agencies to function—utilities, physical space, security, and back-up power. The federally mandated security and control functions listed above are all examples of critical airport functions not under direct control of the airport, whose partial or complete loss could directly impact the airport. For that reason, these functions should be included in an airport's BCP.

Questions specific to government security and control functions are presented below.

1. **Does the airport maintain a function, department, or staff tasked with managing, coordinating with, or supporting the routine operations of the TSA, ICE, CBP, or the USDA at the airport?**

   Some airports may not have these federal agencies operating on site or may not have an office or department to manage the airport's relationships with these agencies. A negative answer moves respondents past a number of follow-on questions that are irrelevant in this case.

2. **Is the airport responsible for providing to the TSA, CBP, ICE, or the USDA contingents any of the active systems and equipment or other components or items that are critical to the missions and functions of those agencies?**

   This question gets to the heart of the airport's dependence on federal agencies for essential functions critical to smooth airport operation. Perhaps these agencies are responsible for sourcing, installing, and maintaining all of the equipment that they use (scanners, wands, and so forth). Nonetheless, for business continuity reasons, it is important to know whether the airport has any level of responsibility for this equipment, which goes hand in hand with recovery responsibility for such equipment after disruptions.

3. **Indicate the types of TSA operations, their primary locations, size of that location or area, and a primary and secondary site to which the TSA activities can be relocated. These might be existing TSA stations that can absorb more volume, or new sites, based on the nature of the airport disruption. Relocation points must be able to accommodate TSA officers, scanning equipment, and support operations. Areas must support the mission-specificity of the TSA's work there, so viable relocation areas have to meet both the TSA's requirements and the airport's available capacity. Locations must support disabled passengers, and have some means to get scanned passengers to their gates if relocation is to another terminal or concourse, for example. Cargo imaging relocation sites may require location-specific sites at ground level, for example.**

   Asking respondents about the scope of TSA operations at the airport—for instance, checked baggage screening/intake, passenger screening, SIDA-located checked baggage screening, fixed or mobile vehicle and cargo imaging systems or portals, kennels for canine teams, excretion monitoring systems, detention/holding rooms or administrative offices—makes it easier to understand the extent of the airport's responsibility for providing the supporting infrastructure that these systems rely on, such as power, physical space, and utilities.

4. **Indicate the types of CBP, ICE, or USDA operations, their primary locations, size of that location or area, and a primary and secondary site to which these government security and control activities can be relocated. These might be existing stations at other terminals**

106 Operational and Business Continuity Planning for Prolonged Airport Disruptions

at the airport that can absorb more volume, or new sites, based on the nature of the airport disruption. Relocation points must be able to accommodate CBP, ICE, or USDA officers, technology, equipment, and support operations. Viable relocation areas have to meet both the requirements of these federal agencies and the airport's available capacity. Locations must support disabled passengers, arriving international flights, and passenger exit/ground transportation, for example.

Like the preceding question, this one asks about the operational footprint and requirements of other federal security agencies that may be operating at the airport. They may require passport control and customs inspection areas, quarantine areas, cargo impoundment areas, and some of the other items listed in the previous question. This question helps the airport document its responsibilities associated with these federal activities.

Government Relations

This question section addresses the importance of government relations to the satisfactory operation of the airport. Government relations encompass monitoring, lobbying for/against, and influencing important legislation, regulations, policy and rule-making (government relations at the community, local, county, or federal levels) and actively contributing to positions taken on behalf of the airport by representative trade groups such as the AAAE and the ACI–NA.

Impact to the airport from the loss of the staff, systems, or capacity to conduct legal, regulatory, policy, and rule-making activities at the federal, state, and local government levels and with community boards and key industry associations might be tolerable in the short term, but the impact would be less so over time, depending on the particular situation of the airport and how it is owned, operated, and impacted by oversight and regulation.

Grants and Projects

This group of functions deals with the airport's capacity to write grants; conduct engineering, planning, and technical analysis; design and architect capital projects; conduct site and risk analysis; conduct feasibility and environmental impact studies; and manage expansion and construction. Some of these functions and processes might be considered essential to the airport for their impact on revenue, grant standing, bond issues, regulation, contractual obligations, reputation, or liability. If the airport manages continuous capital projects and their funding as part of its strategic or business operations plan, these would undoubtedly be essential at some level of criticality. Adverse impact from a disruption could include loss of grant or bond funding monies, construction cost overages and fines/penalties for project overages, or legal or political complications.

Human Resources

HR processes can include personnel requisitioning, recruiting, benefits enrollment and administration, employee assistance, employee data management, compensation and performance management, labor relations, 401(k) and other savings plan administration, Equal Employment Opportunity Commission (EEOC) process administration, and employee exits. Loss of HR capacity could play out as the inability to interview, hire, or remove staff; prepare federal and state filings; or provide necessary assistance to employees. Benefits administration could be disrupted, and the impact to the airport workforce could be substantial.

Infrastructure and Utilities

This question section comprises the functions that provide and maintain the airport's essential infrastructure in normal times as well as during and after disruptions. The questions address utilities (electricity, drinking water and wastewater, natural gas), heating oil/coal, HVAC systems, plumbing/toilets, mechanical systems, fire suppression systems, and elevators/escalators/moving walkways.

If unavailable, disabled, or degraded, most of these elements could materially or terminally impact airport operations. For example, loss of water may jeopardize the airport's ARFF index compliance or may decrease the functionality of restrooms and concession support. Power loss may jeopardize runway lights and avionic support systems, people movement, ticketing, visual displays, voice announcements, and printing of passenger/cargo manifests. Loss or malfunction of fire suppression systems could expose the airport to significant liability if a catastrophic fire takes place.

Questions specific to Infrastructure and Utilities are presented below.

1. **Does the airport generate its own electricity, either 100% or a significant portion of its power requirements for normal operations?**

   Large airports may own and operate their own electricity co-generation plants, either consuming all or part of the output or selling power back into the local grid. This may place far more burden for recovery of this capacity on the airport or airport operator because the airport may not be able to expect local utilities to meet its power needs after prolonged disruptions. Anything related to electrical power is critical because so much infrastructure and so many systems, functions, and facilities rely on electricity.

2. **Is the airport a top triage priority for electricity if brown-outs or black-outs force the local utility to ration power?**

   To the extent that the airport relies on the local electrical utility for its power, an important consideration for its business continuity plan is the reliability of its power supply. If the utility maintains a power-rationing plan, it is critical for the airport to understand where it lies on that triage list.

3. **Does the airport operate its own water utility system (potable, wastewater, or both, from groundwater, surface water, desalination, or a combination) that provides a significant portion of its water requirements for normal operations and ARFF index requirements?**

   Similarly, the division of responsibilities between the airport and the local water district or authority has important implications for the recovery of this mission-critical resource. If bathrooms, kitchens, infirmaries, and ARFF lose water, the negative impact to airport operations may be terminal.

4. **Is the airport a top triage priority for water supplies if emergencies force the local utility to ration supplies?**

   If an airport relies on a water utility for water supplies, and the water authority or district maintains a rationing plan during outages, emergencies, or droughts, the airport should know where it lies on that triage list.

Legal and Contracts

Airport legal and contract functions include activities such as contract writing, negotiating, and administration; management and administration of lease and operating agreements; regulatory filings; FAA, state, and local compliance matters; labor negotiations; and litigation. Examples of negative impact on the airport from disruptions of legal capacity include the inability to

108 Operational and Business Continuity Planning for Prolonged Airport Disruptions

review and advise on legal filings, issues, and regulatory matters; the inability to develop, negotiate, and draft contracts or leases or meet other legal obligations; and the inability to respond to government or FAA regulatory or fairness inquiries.

Other Property Management

This section of questions deals with the function that manages, oversees, and supports any airport-owned businesses that are distinct from the airport itself, such as recreation facilities (playing fields, batting cages, go-cart or race tracks, water parks, driving ranges, etc.), health clubs, shopping malls, hotel/casino/conference centers, airport business center/commercial office buildings, aeronautical museums, and concert halls or music venues. It also addresses transient use of airport property for temporary civic, cultural, music, or religious events; the leasing of airport property to the local public works or utility companies for staging equipment and supplies during weather incidents; and the leasing of airport AOA areas to airlines for temporary aircraft storage caused by system-related incidents. **This section does not deal with the retail stores and service companies that rent space in the airport itself, the retail concessionaires, or with commercial lessees.** It deals with businesses actually owned by the airport that are not directly related to the airport's regular function as a certificated aeronautical facility.

Impact to the airport if these businesses or properties are disrupted would be loss of contributed revenue or cash flow, loss of important functions and services that support the airport's transportation mission, and loss of capacity to provide revenue-generating entertainment and support for the public.

Questions specific to Other Property Management are presented below.

1. **Does the airport host transient entertainment (music, circus, etc.), religious, political, civic, or cultural events in its facilities or on its grounds?**

   This question addresses the operational impact of non-airport-related events that the airport may host by leasing its space and grounds to third parties. Revenue to the airport from these transient leasing activities might be significant, and the airport's responsibilities for supporting them with resources should be considered in the business continuity plan in this "Other Property Management" section.

2. **During local or regional weather-related emergencies that are common to your area, does the airport lease its grounds or movement or non-movement AOA to utility companies or the department of public works/sanitation to use as staging areas for vehicles, supplies, and equipment?**

   Another factor in non-aviation-related revenue functions at some airports is the use of airport grounds as emergency staging areas during normally expected weather events, like hurricanes, winter storms, or tornadoes. Because these incidents typically force cessation of aviation operations, leasing movement space within the airport's security perimeter may constitute a significant non-aviation revenue source to the airport. As such, these other revenue activities and the resources required to coordinate and support them should also be considered in the business recovery planning.

3. **Are the financial results of any of these enterprises consolidated with those of the airport itself?**

   Many airports operate other businesses and properties (e.g., recreation facilities such as playing fields, batting cages, go-cart or race tracks, water parks, or driving ranges; health clubs; shopping malls; hotels/casinos; conference centers; airport business centers; commercial

office buildings; aeronautical museums; concert halls or music venues; transient entertainment; religious, political, civic or cultural events; or regional emergency leases) whose financial performance may be material and may be consolidated into the airport's P&L. If this is the case, the recovery and business continuity efforts and resources to manage these outside businesses should become part of the airport's business continuity plan.

4. **Indicate the businesses whose financial results are consolidated with those of the airport.**

   Respondents are asked in this question to document those outside businesses described in the previous question for incorporation into their business continuity plans.

5. **Do the airport's resources (people, equipment, supplies, technology, etc.) constitute a substantial percentage of the consolidated operations?**

   This question addresses the role that airport resources play in the operation of these businesses (i.e., whether these businesses are quasi-independent or whether they operate with their own resources, staffing, and so forth). The business continuity implications may be additional airport responsibility for resources (people, technology, equipment, and processes) that help these outside airport businesses thrive.

Passenger Management

This is a heterogeneous group of functions that include the convenience and support services that the airport provides to passengers, travelers, and visitors at the airport. It includes services such as the following:

- Passenger routing advice
- Indoor passenger transport carts
- Medical/first aid capabilities or on-site medical facilities
- Complaint management
- Public address systems
- Red cap services
- Local information/concierge kiosks
- Chapels
- Infant changing/lactation facilities
- Lost and found
- Self-service baggage carts and racks (e.g., Smart Cartes).

These services may be essential because they support the airport's ability to provide comfort, help, and assistance to passengers within the airport. If these functions are degraded or unavailable, then impact from a prolonged disruption might include negative/severe passenger reaction to the lack of mobility assistance, local information, or health/medical services or even liability if medical emergencies became fatal because services were unavailable. Secondary impact could include customer service or crowd control issues, as well as extra expense to deliver these services using alternative resources.

Payroll and Benefits

Activities in this question section include running payroll, benefits administration, benefits sourcing, regulatory reporting, and tax liability management. These might be handled by the airport or be outsourced to an external service provider or contractor, such as ADP or Paychex, or to the city or county payroll department. Whether payroll and benefits functions are directly managed by the airport or by contractors or a government department, the questions in this

110 Operational and Business Continuity Planning for Prolonged Airport Disruptions

section address how essential the function is in terms of the impact to the airport if it cannot be performed.

Impacts of loss of the payroll function could include the inability to distribute paychecks, initiate and execute payroll electronic funds transfers, calculate deductions accurately, or meet labor contract obligations. All airports require the services of knowledgeable people who perform unique and specialized tasks; if staff cannot be paid, the potential risk to the airport may include prolonged individual or group "no-shows" and widespread personal or "sick" days, potentially putting key airport functions and responsibilities at risk of shutdown.

Public Parking Operations

This section covers the airport's public parking function for passengers and visitors. **This section does not address staff parking operations for airport, contractor, concession, lessee, FBO or government employees, or ground transportation; each of these are addressed in other sections**. This section includes functions such as short-term parking, permit management, valet/VIP parking, long-term parking, event parking, lot maintenance (lighting, line painting, asphalt coating), deck structural engineering, lot security/surveillance, snow removal, and flood/water control.

Examples of impact to the airport from the loss of the public parking function include loss of parking revenue, public relations emergencies, and significant transportation costs to bring passengers to the airport. For airports with revenues substantially driven by parking fees, the recovery and continuity of the public parking function may be mission-critical.

PR and Marketing Communications

This section of questions deals with how important the management of all routine public relations (PR), advertising, and marketing communications to external audiences and constituencies is to the airport, in terms of the impact to the airport if these cannot be performed. Functions include activities such as media relations, crisis communications and public service announcements, social media policy, advertising and promotions, event management, industry relations, government/community liaison, airport website, public address communications, and public relations.

Disruption in this functional area could result in the airport becoming unable to issue public status updates, work proactively with local media outlets during airport incidents, launch marketing or advertising campaigns, deal effectively with media inquiries, or make timely announcements to the traveling public or airport visitors—in short, the loss of the airport's voice to the outside world.

Public Safety

Airport activities in the public safety function may include policing, crime prevention, counterterrorism, law enforcement, investigations, arrest and detention, background checks, access/door security, perimeter/grounds/cargo security, crowd control, transportation/traffic control, supporting high-security movements with federal agencies, and security camera monitoring. When determining how important the public safety function is to the airport, it is important to consider the impact of the loss of the public safety function to the airport. The safety, confidence, and security of its visitors, contractors, and workers is at stake, as well as the department's effectiveness in its complementary role supporting government safety and security agencies such as the TSA. Loss of the public safety function may violate a local statutory requirement or a condition for FAA certification, if left unaddressed for long, or subject the airport to unwanted political scrutiny.

Questions specific to the public safety function are presented below.

1. **Can public safety staff members be re-deployed off-airport by the local government jurisdiction during area or regional emergencies or contingencies?**

   If the airport's law-enforcement officers are also responsible for police duties in the municipality or county to which they could be called during incidents, their potential absence may impact airport business continuity because they may become unavailable during disruptions, extending the recovery time of this essential airport function.

2. **Are any public safety staff members restricted to specific areas or buildings at the airport?**

   If some public safety or security personnel are assigned to specific airport areas or buildings (versus patrolling the entire airport), their limited availability for recovering public safety operations should be taken into account by the department.

3. **Can any local law-enforcement jurisdiction call airport public safety officers to incidents that take them away from the airport at any time?**

   This personnel-related question is similar to Question 1 above, addressing potential demands that other law-enforcement agencies may have the authority to make for relocation of airport personnel that could result in slower recovery after a disruption.

4. **Indicate the type of special secure areas required by the public safety department, the primary location of each, their size, and where these secure areas would be relocated, if required.**

   Some airport public safety departments may operate areas that require high levels of security, such as a gun or evidence locker, a holding cell or detention center, or an area where security credentials are produced. Viable relocation sites after a disruption might include similarly secure facilities at city or county law-enforcement facilities, for example.

5. **Do any of these vehicles require special holding or storage locations?**

   This question references a preceding one that asks respondents to inventory all the vehicles that are essential to public safety. For functional recovery, for example, any horses used by public safety officers require stables, and boats require docks or moorings.

6. **Is the public safety department responsible for sourcing and operating exterior security systems?**

   If public safety has responsibility for exterior security systems (mechanical security barriers; gates; perimeter fences; remote sound, motion, heat, breakage, or ultraviolet [UV] sensors; and response systems), these should be included in its answers in this survey section. (Alternatively, these may be the sourcing, operation, and maintenance responsibility of airport maintenance or airside operations.)

7. **Complete the following for each exterior security system.**

   This question asks respondents to inventory each of these relevant systems as part of the physical plant obligations of the public safety department.

Retail Concessions

This section of questions assesses how essential the management and support of retail concessions is to the operation of the airport. The software tool defines retail concessions as those establishments or people who take money from the public for products and services within the

112 Operational and Business Continuity Planning for Prolonged Airport Disruptions

airport or on its property. **This section does not deal with public parking contractors or independent businesses owned and operated by the airport itself (these are addressed in other sections of the survey).** This section does include restaurants/bars, hotel chains, retail stores (news, bookstore, souvenir, sunglasses, candy, clothing), personal services (massage, shoe shine), banks, currency exchange, kiosks, vending machines, and car rental agencies.

This function may be essential to the airport to the extent that revenue generated from retail leases accounts for a significant percentage of the airport's income. This function may also be essential in the sense that unavailability of these retailers might cause a serious negative public reaction or open the airport to serious operational risk, fines, penalties, or revenue give-backs for breach of retail lease contracts. Like many other essential functions, retail concessions are only indirectly the airport's responsibility, but their loss can have an outsized negative impact on the airport nonetheless.

Questions specific to retail concessions are presented below.

1. **What entity or organization is the lessor?**

   If retail leases are contracts between the retail lessees and the airport, then it is the airport's responsibility to provide contractually defined services as part of its recovery planning. However, if the lessor is some other entity, such as the airport operator, port authority, municipality, county, or state, then those responsibilities may not be borne by the airport itself.

2. **Does the airport also provide any type of fee-based shared services or central receiving function that includes space and facilities for unloading and storing deliveries for retail concessions and to which their garbage is removed and processed?**

   If the airport provides central logistics services to its retailers, these need to be specifically documented in its business continuity plan.

Winter Operations

If the airport is located in a region that routinely experiences significant inclement winter weather, then well-executed winter operations strategies will be essential to the resilience of the airport's flight or cargo operations, airport brand reputation, and avoiding contractual or regulatory penalties from airlines or the FAA. Essential functions include airside/landside snow removal; chemical melting; mechanical melting; de-icing; structural snow removal; winterizing equipment and mechanical systems; sanding; and equipment storage, maintenance, and staging. Loss of some of this critical capability could virtually halt essential landside and airside activity.

Questions specific to winter operations are presented below.

1. **Does the airport "share" municipal, county, or port authority snow removable resources (e.g., workers, equipment, and chemicals) with other facilities, airports, and jurisdictions in your area?**

   If the availability of the airport's equipment and personnel for winter operations is subject to the competing needs of the city, county, or state, then the airport's ability to recover its capacity in storms may be diminished, negatively impacting overall airport operations during winter months.

2. **Is the airport a priority for these resources, based on a service contract or memorandum of understanding with the local jurisdiction?**

   The airport's business continuity plan should be built around its expectation for access to these essential winter operations resources.

3. **Can the port authority or the municipal or county jurisdictions make a call on your airport's winter operations resources—people, supplies, equipment—and require them to be sent to other priority locations?**

   If the airport's winter operations assets are subject to confiscation by the local government under which the airport operates for non-airport uses, this could reduce certainty in the airport's recovery plan associated with this essential operational area.

On-Site Fuel Supply

The criticality of the airport's aircraft fueling capacity and function can be measured in a number of ways. One way to prioritize importance is to look at the revenue the function produces for the airport; the mandatory aviation operations it supports under contractual service level agreements with airlines, FBOs, and users of the airport's general aviation infrastructure and services should also be considered. Penalties, contractual remedies, or reputational damage that the airport might suffer if loss of fueling capacity disrupts flight operations should also be taken into account. This section includes not only the aircraft fueling function, but also the non-aviation fueling function for airport vehicles and equipment of all kinds—diesel fuel and gasoline for airport vehicles and equipment, recharging stations for electric or hybrid vehicles, or liquid natural gas for compressed gas vehicles used by the airport. Fueling is a function that may be shared in many unique models among the airport itself, one or more FBOs, and third-party contractors. Regardless of how operational responsibility is apportioned, the airport has a critical stake in the continuity of this mission-critical function, even if it plays more of a supporting role than a direct one.

Questions specific to the airport's aircraft fueling capacity and function are presented below.

1. **Does the airport's contract with the FBO or contractor include fueling-related performance thresholds or service level agreements?**

   Because the fueling function is so critical to aviation operations, recovery and business continuity can be greatly enhanced if contractual service level agreements are negotiated with the airport's fueling contractor.

2. **Does the airport maintain a back-up agreement with another FBO or contractor for taking over the aviation fueling function if the primary FBO's services are unavailable?**

   Here again, having pre-established back-up fueling agreements can be critical to operational recovery of this mission-essential function—from a perspective of airport revenue, contractual guarantees and potential claw-backs, and the loyalty of general aviation stakeholders.

3. **Identify the back-up FBO or contractor(s) that can provide the aviation fueling function if the primary contractor cannot.**

   This follow-on question asks respondents to document which vendors or contractors are in line to back up the main fueling provider(s).

Aeronautical Operations Support

This broad group of activities is associated with maintaining the availability and capacity of movement areas and the airport's capacity to accommodate normal flight operations and movements, as well as the airport's procedures for securing access to the AOA from "outside the fence." This section deals with areas such as maintaining runways and movement areas, accommodating FAA inspections and NTSB investigations, airfield construction/maintenance management, noise abatement and environmental compliance activities, wildlife management, airside

114 Operational and Business Continuity Planning for Prolonged Airport Disruptions

transportation, aircraft staging/storage during routine weather events, non-aircraft vehicle and equipment staging for utilities during expected weather emergencies, high-security movements and operations within the AOA, repair to blast fences, cleaning aviation fuel spills, and foreign objects and debris (FOD) removal.

Because this section covers so many disparate activities, it is unlikely that it will directly match up to a particular airport's departmental structure for some of the activities in the section. Loss or degradation of these activities and functions can result in airport closure and can negatively impact aviation-related revenue, adherence to regulations, meeting contractual obligations, or limiting commercial liability, for example. **Note that other airport functions critically relevant to aviation support, such as fueling operations, FAA and ATCT operations and supporting avionics systems, environmental control and reporting, or general aviation activities, are all addressed in other sections**.

Questions specific to aeronautical operations support are presented below.

1. **Can routine emergency repair work that impacts flight operations or movement capacity be accelerated by working after flight operations cease for the night, or by adding extra shifts, so impact is minimized?**

   This question examines the airport's resources and capacity to recover essential AOAs on an accelerated basis, given their fundamental importance. This should be documented in the business continuity plan.

2. **Are any runways restricted to landing aircraft of a certain gross weight, based on dimensions, maximum structural weight loads, or flight path configurations?**

   Loss of some runways may be more problematic than loss of others, based on the operating constraints. Aircraft-restricted operations capacity can effectively eliminate flight operations of airlines' largest aircraft, likely requiring immediate NOTAM communication to incoming aircraft (and airlines) so affected pilots can divert to an airport with the requisite specialized capacity. This should be a major consideration in the airport's operational recovery plan.

3. **List each runway and main taxiway and their dimensions as an indicator of normal aviation operations capacity; also indicate whether these are restricted to landing aircraft with a certain gross weight, dimensions, maximum structural weight loads, or flight path configurations.**

   Answering this question documents in the business continuity plan the airport's physical aeronautical capacity and important constraints. If aeronautical operations are optimized to these movement options, locations, and dimensions, loss of any part of this capacity may radically impact the airport's mission and contractual obligations to commercial, general aviation, and military aviation lessees.

4. **If it is available, please print a copy of a map of the airport's aeronautical area with all relevant AOA dimensions and insert it as an Aeronautical Support Operations Appendix in the final airport plan that will be generated from this survey.**

   Documenting the "aviation physical plant" with a visual representation of the airport's active aeronautical area is important so that decisions about runway and taxiway availability during disruptions can be made with confidence.

Ramp and Hangar Operations

Owning, managing, and leasing hangar space, ramps, jetways, and the non-movement areas adjacent to them to airlines, fuelers, FBOs, cargo operators, interline baggage handlers, and general aviation operators is one of the fundamental operating responsibilities at the airport. These

functions may represent a significant part of the airport's revenue, even if ownership and control are shared among the airport, airlines, and other contractors. This section of questions addresses how these airport operations are managed and what the alternatives may be for recovering operational, maintenance, and storage capacity and restoring it to commercial lessees during or after prolonged airport disruptions.

The importance of this capacity to the airport and the resulting impact to the airport if it becomes unavailable can be measured in terms of lost revenue; breaches of commercial contracts that materially impact airlines, FBOs, and their customers; potential degradation of ARFF or cargo operations capacity; associated airport reputational damage; or violations of FAA certification and potential penalties.

Questions specific to ramp and hangar operations are presented below.

1. **Are ramp and hangar space owned and controlled by the airport as shared infrastructure; by airlines, FBO and commercial operators/contractors; or by a mix of both?**

   The airport is responsible for the operational continuity and recovery only of those facilities that it owns, operates, provides, or supports under contract with airlines. To the extent that airlines operate their own such facilities under operating lease or land lease, it is their responsibility to recover those assets after disruptions.

2. **What ramp and hangar leasing model(s) are used by the airport? Check all that apply.**

   If the airport operates ramps and hangars as shared infrastructure facilities and leases use of them on a per-use basis to all airlines that operate there, then responsibility for recovering these facilities rests with the airline unless it outsources that duty to contractors. Per-use leases imply that the airport may concomitantly suffer revenue loss if facilities go unusable for long, as revenue-generating activity would not be possible during those periods if capacity is limited.

3. **Does the airport lease significant non-movement space to airlines for routine temporary parking, staging, and repositioning of their aircraft during system delays, storms, and so forth?**

   If respondents answer affirmatively, this means that the business continuity plan should address which resources it takes to recover that leasable space because if it is unavailable, potential revenue opportunity may be diminished.

4. **How much commercial-gate-contiguous ramp capacity—measured in total number of gates—is the airport contractually responsible for providing to its airline lessees?**

   It is important for the business continuity plan to document the contractually obligated fixed ramp capacity rates for the commercial airlines operating at the airport. This ramp capacity is a highly essential, finite physical resource, which can have material negative revenue and liability impact on the airport if it becomes unavailable during and after disruptions.

5. **How much hard-stand ramp capacity (measured in number of hard stands) is the airport contractually responsible for providing to its airline lessees?**

   This question documents how much total remote (non-gate-contiguous) ramp capacity the airport is contractually obligated to provide.

6. **How much hangar capacity (in square feet) is the airport contractually responsible for providing to its airline or FBO lessees?**

   This question documents the total hangar capacity (in square feet) that the airport is obligated to lease to all operating lessees. Recovery plans should map to those requirements.

116 Operational and Business Continuity Planning for Prolonged Airport Disruptions

Airport Maintenance and Repair

Functions and responsibilities in this section of questions include supporting and maintaining many types of plant and equipment:

- Airport-owned or leased terminal buildings
- Hangars
- Outbuildings and temporary/mobile structures
- Repair bays and shops
- HVAC and mechanical systems
- Toll booths and garage structures
- Runways, taxiways, jetways, and ramp areas
- Equipment
- Plumbing
- Infrastructure
- Heavy equipment and vehicles
- Conveyers, belts, and lifts
- Furniture and fixtures
- Infrastructure for retail concessions and commercial lessees
- Grounds maintenance

The importance of ensuring the uninterrupted resources and capacity to maintain and repair this broad array of physical assets can be illustrated in the potential negative impact to the airport if these activities are disrupted or not recovered:

- The inability to use airside and landside facilities and infrastructure
- Violations of leasehold agreements
- Forfeiture of lease revenues
- Potential fines or revenue claw-backs
- Negative FAA, city, or county scrutiny
- Airport closure
- Loss of airlines operating at the facility
- Reputational damage

Purchasing, Receiving, and Supplies

Supplies defined in this section are *everyday supplies* that support the indoor and outside maintenance and cleaning of airport buildings and grounds. This section also covers office and business supplies and supplies for passengers who may become stranded overnight or indefinitely due to flight cancellations and other emergencies. These everyday supplies include the following:

- Supplies for maintenance and food service
  - Light bulbs
  - Cleaners, abrasives, and disinfectants
  - Mops, sponges, and buckets
  - Ladders
  - Food and beverages (if the airport operates a cafeteria or commissary)
  - Uniforms
  - Soap, toilet paper, and paper towels
  - Changing station supplies
  - First aid supplies
  - Lawn maintenance supplies

- Office supplies
  - Paper and stationery
  - Pens, markers, and pencils
  - Compact disks (CD-ROMs)
  - Software
  - Laptops and PCs
  - Post-It notes
- Supplies for delayed or stranded passengers
  - Cots
  - Baby formula
  - Bed sheets/blankets
  - Diapers
  - Potable water
  - Quick-serve boxed meals

The procurement, receiving, storage, and distribution of these supplies might be essential to the airport for their impact on passenger and staff comfort and safety; disease prevention; airport cleanliness; appearance and reputation; meeting contractual requirements with contractors, lessees, and concessions; and for limiting airport liability due to accidents. (The recovery importance of all *mission-critical supplies* for every other airport department or function in this survey is addressed separately in each of those sections.)

Groundside Transportation

This section of questions includes functions such as staff (employees and contractors) parking and all means of groundside (or landside) transportation for staff, contractors, and the public. Services and assets typically include staff parking facilities, access, transportation, and security. They also include the following:

- Public shuttles, buses, and vans
- Subway, tram, and rail systems
- Access roads
- Operating agreements with city/county public transportation locations defining responsibility for route stops
- Terminals and facilities on airport property
- Traffic management and enforcement
- Ground transportation shelters and signage
- Taxi dispatch systems, shelters, driver food service areas or kiosks
- Restroom facilities

The impact on the airport if some of these resources, services, and capabilities were lost or their capacity significantly degraded could include high-cost replacement transportation modes, poor passenger relations, reputational damage from negative media coverage, legal costs of defending against passenger lawsuits for missed flights, and contractual reparations from contractors that cannot get staff members to their job locations. If loss of transportation resources leads to serious shortages of key employee and contractor personnel with unique knowledge, skills, and qualifications, other critical airport functions could be impacted.

ATCT Operations and NAVAIDS

The ATC system and facilities at the airport are critical to the continuity of the airport's aeronautical operations and should be a top priority for recovery after disruptions. The loss of FAA, or FAA-approved, services operated from the tower or the avionics and navigation aids

118 Operational and Business Continuity Planning for Prolonged Airport Disruptions

(NAVAIDS) systems that support flight operations and FAA-controlled ground movements can bring aviation operations to an immediate halt.

Recovery of physical facilities or relocation to a space that is avionics capable and communications capable is paramount. While the airport may not be responsible for the tower operations per se or the flight control and communications equipment located there and throughout the airfield, uninterrupted provision of the access management, utilities and communications infrastructure, and maintenance support services that keep those FAA operations viable should be a critical airport recovery priority.

Should this support capacity not be recovered in a timely manner or ATC operations not restarted at a back-up facility, negative impact could include a cessation of aviation operations, FAA sanctions, effective airport closure, aircraft accidents, contractual penalties from airlines and other commercial and retail lessees, liability for lessees' business interruption or contingent business interruption expenses, fines or penalties, and reputational damage.

Questions specific to ATCT operations and NAVAIDS are presented below.

1. **Are there any essential technologies, tools, systems, or forms used by the airport to provide support for the FAA, the ATCT, and FAA's avionics at the airport?**

   Just as airports often support the operations of other federal agencies on the airport premises, an airport may support the FAA's ATCT, avionics, and NAVAIDS facilities and operations with services, resources, and assistance. This question addresses only those items that are the responsibility of the airport—not those that the FAA provides itself.

2. **Does the airport (or the FAA) have an alternate or temporary ATCT or avionics control area that would be activated in the event of a loss of the primary location?**

   Absence of such an alternative ATC facility or capability would likely force the management of the airport's airspace and aviation operations to relocate to a regional FAA center. While this back-up may suffice, it may force operational slow-downs in flights because of the loss of local visual contact with the airfield and immediate airspace. This can have considerable impact on the airport's ability to support and recover its contractual aviation operations in times of disruption.

Shared Infrastructure

For airports that have implemented shared services and infrastructure systems models, total or partial loss of these systems represents a critical disruption because airlines and general aviators operating there are completely dependent on these core services to function properly. Shared services may include airport-owned and -operated flight arrival/departure displays, common ticketing operations, a centralized baggage handling system, interline baggage management, floating gate and airside movement operations (including management and operation of airside rolling stock), a common flight status public address system, or cargo operations.

Impact from the loss or degradation of any of these common services provided by the airport could include flight delays, terminal confusion caused by lack of flight information, baggage delays, cargo movement back-ups, and inefficient use of gate and movement areas. Each of these could mean lawsuits, regulatory citings, fines, contract breach with airlines and lease claw-backs, loss of revenue, public anger, and negative publicity.

Questions specific to shared infrastructure are presented below.

1. **Indicate for each of the shared infrastructure services that the airport provides the estimated volume/speed/capacity requirements.**

This question provides a way for the airport to document in its business continuity plan the metrics it must meet at normal processing times for the shared services it provides to airlines and contractors. This metric might be the normal volume of a shared system (e.g., bags per minute), its minimum process speed, its load capacity (e.g., size or weight), and the location of the nearest replacement system, if one is available. This defines the airport's resource obligations in order for each shared system or component to keep up with typical airport activity and volume. For example, gates operated by the airport might have the normal capacity of a certain number of specific types of aircraft per day and a minimum capacity per day that they must be able to accommodate; they may only be able to accommodate certain aircraft sizes and can be replaced during disruptions by other gates on a specific concourse or in other terminals at the airport.

2. **Do airlines or other organizations have procedures in place and the operational capacity to provide services if the airport's shared infrastructure services are disrupted and unavailable for a prolonged period of time?**

   If airlines do not have operational alternatives (to airport-provided, shared services that might be disrupted), then the business continuity implications for the airport may be more costly. As part of their plans, airlines may require that their own procedures, resources, and assets be ready and available at host airports, even if the airport provides equivalent services, in case they are forced to provide this back-up capability.

   For example, airlines may be able to bring in emergency baggage handling crews if the airport's shared system is unavailable, or the airlines may have portable monitors that they can use to show flight arrival/departure information to passengers, should the airport's shared services system go down. (This airline recovery capacity can be seen as a manual work-around if airport shared systems are unavailable.)

3. **Does the shared services function normally require the use of any other devices that monitor or control processes?**

   Systems that monitor or control processes (such as baggage routing, gate assignments, or receiving and distribution, for example) are sometimes referred to as "supervisory control and data acquisition" (SCADA) systems. Responses to this question document the use of such systems by the airport in the fulfillment of its shared infrastructure services responsibility.

4. **Complete the following for each type of other critical device, if known.**

   In answering this question, respondents are documenting for the airport's business continuity plan other critical monitoring systems and devices, their specifications, the airport's inventory, and the vendors from which replacements can be procured for operational recovery.

Cargo Operations

Cargo operations at the airport may be managed by third-party contractors or may be a shared service that the airport manages itself. If cargo volume and the revenue to the airport from logistics contractors is important to the airport, whether cargo is flown and handled by commercial carriers or by cargo-specific carriers, loss of this capacity can have an important negative impact in the form of lost revenue; lawsuits; mishandling of goods; contact breaches and penalties; and, ultimately, the relocation of cargo traffic and operations to alternative airports. The airport may be responsible for or may simply have an obligation to support (with utilities, systems, and infrastructure) physical facilities, cargo loading, unloading and interline operations, cargo documentation processing, bonded warehousing, CBP/USDA liaison and processing, and scanning and inspection services.

Terminal Buildings

This section of questions addresses how the airport provides and operates all of its terminal buildings, hangars, concourses, and general aviation facilities and what it does to support those other buildings that may be owned and operated by commercial lessees, such as airlines and FBOs, which may contractually depend on essential services and utilities to operate effectively.

The importance of terminal buildings to the recovery of the airport after a prolonged disruption may be measured in how damaging their loss or partial availability would be. Without available terminal space, airline ticketing, baggage, cargo, and gate operations may not be accessible, leading to potential airline contractual penalties, negative public reaction to flight cancellations and delays, and FAA sanctions. Retail concession leases could require revenue give-backs from the airport if terminals that house their stores are unavailable and they lose business. Aviation and retail services provided in fixed base capital facilities are not easily relocated elsewhere, so downtime could be extensive, with economic impact on all parties.

One question is specific to terminal buildings:

Are any of the essential airport buildings owned by, or is responsibility for any of them the role of an airline, FBO, the military or contractor?

As with other classes of airport facilities, the airport's recovery plan should concern itself mainly with those terminal structures that are the airport's responsibility. Airlines own and are responsible for their own terminals at many airports, but it may still be the airport's role to provide support services, infrastructure, and utilities.

Information Technology

The airport's IT capacity, resources, and support may be critical to a large number of systems and processes:

- Airline liaison and administration
- Passenger services
- Terminal operations and communications
- Airside and landside operations
- Legal and contracts
- Grants and projects
- Baggage and cargo management
- Human resources
- Personnel scheduling and assignment
- Finance and accounting
- Payroll
- Infrastructure
- Communications with and reporting to outside entities
- Purchasing
- Inventory and supply management
- Public safety and law-enforcement operations
- ARFF readiness
- Fueling operations

The IT function encompasses hardware, networking systems and components, communications and bandwidth, transport operations, customer/user support, engineering, technical support, enterprise systems, enterprise applications infrastructure, workgroup solutions, interactive training, and information security. The more automated and dependent the airport is on IT

resources, the more important the IT department's DR plan becomes. This DR plan should align with the recovery priorities established by all other airport departments and functions so that airport managers (and all those contractors, commercial lessees, and retail concessionaires that depend on the airport for their operations) are confident that the IT department has a plan to support the airport's business and operational recovery priorities.

Full or partial loss of IT function and capacity can halt critical automated systems and processes, rendering the airport virtually non-operational. Damage could be severe in the form of contract breach, public inconvenience, regulatory citations and fines, lost revenue, public embarrassment, and loss of brand equity.

Questions specific to IT are presented below.

1. **Does the airport's IT department equip and operate a data center or centralized computer function?**

   If the airport has a computer room that is built to house and operate central computers, servers, or control components that are connected to individual computers in each department, then this question moves respondents to the following question to inventory equipment there. This only applies to IT equipment that is the responsibility of the airport. Respondents should not include in their answers any control tower facility or other area that is equipped by the FAA, TSA, ICE, CBP, or other agency that supplies its own IT resources at the airport.

2. **Does IT have a current inventory of technology components that it uses in its offices, the data center, or throughout the airport? Do not include desktop or portable computers that are used by other departments in conducting their business; these are inventoried in each of their respective questionnaire sections.**

   In preparation for this question, respondents should ask the IT department to assemble a list of its technical components for the data center and network operations, including processors, disk drives, tape units, routers, firewalls, high speed printers, and desktop computers used by the IT staff (not those placed in user areas, which are being counted in other sections).

3. **Complete this current inventory in as much detail as possible. What are the types and quantities of computers, servers, data center and network components used by IT? Indicate their specifications and sources.**

   This follow-on question asks respondents to list these components, their specifications (briefly), the number of each used in the data center, and the suppliers. It is important to document this inventory of IT components in the airport's business continuity plan so that there is a basis and plan for replacing these technical resources after a disruption.

4. **Please identify who at the airport can manage the repair of connections to the Internet, to internal networks, and to external servers or mainframes for all airport departments.**

   Because it is likely that the IT department provides user support services to other airport departments and employees, this question asks respondents to enter the name(s) and contact information of the person(s) at the airport who can locally diagnose and repair problems with the Internet and restore internal and external network connections across the airport. Recovery and restoration of many or most technology-dependent departments and functions may depend on the business continuity plan to specify how to contact the help desk and request essential technical support.

5. **Enter the location where passwords and/or access codes are stored.**

   The only section in which the survey asks respondents to identify and enter the place where passwords or ID can be retrieved is in the IT section. This location information should be

documented by IT, so others know where to find it after disruptions. This may be a desk, cabinet, or safe for documented lists, or it can be a digital location such as a network or computer file, a personal digital assistant (PDA), or other portable digital device.

6. **Input the system administration user IDs and passwords needed for Internet, internal and external networks, and all purchased and installed applications for all data center management functions at the airport.**

   If airport management and the head of the IT department determine that it is appropriate for the airport's published business continuity plan to include a list of this authentication information, then this question should be completed. Each airport should individually evaluate the risk that critical information could fall into the wrong hands as a result and allow damage to be done to the airport's IT infrastructure and the information it hosts. While having a single secure location for this information is an important element of business continuity, the decision to include it in the plan is an important policy decision requiring careful thought.

7. **Does the IT department maintain and enforce compliance with airport data privacy regulations or policies for all airport departments?**

   Mission-critical data reside on the airport's systems, networks, and computers that may be located in numerous offices and departments across the airport; therefore, having an information security policy that conforms to relevant airport, airport operator, or government regulations and guidance is important to business continuity. Data loss or accessibility to unwarranted persons can place the airport and its stakeholders in danger, cause financial damage, and expose it to liability and sanctions.

8. **What other companies, organizations, agencies, or entities does the IT function need to contact or call during a prolonged operational disruption? Please include all stakeholders, vendors, integrators, consultants, contractors and outsourcing relationships that should be notified.**

   This question is important to the IT department's business continuity plan because its resources support many or most other airport functions. If IT systems crash and become unavailable, even for short periods of time, collateral damage to many other airport functions that depend on IT resources could be considerable.

Financial Reporting

As (mostly) government-owned and -funded entities with an extremely high level of public responsibility and regulatory oversight, airports should view their financial reporting obligations as important functions. Their various obligations extend to the FAA; the city, county, or state government jurisdiction to which they belong; the airport operator of which they are a part; financial institutions that help fund them; unions and other entities with which they are contracted; the local or regional economy of which they may be an important part; and the public at large.

Each of the entities listed above has a stakeholder interest in the airport's sound management, finances, and operation. Airports are required to report on a broad range of financial activities—bond issues, cash management, investments, budgeting, capital projects, grants, loans and employee compensation, and benefits. Loss of this important airport function can trigger audits, new regulatory proposals, fines, penalties, and public/political exposure to management practices and controls.

The Business Continuity Plan Generated by the Tool

The business continuity plan that will be generated by the software tool will be formatted "on the fly" by the tool and converted from native HTML into a PDF file document for printing and electronic distribution. Because every airport and FBO that will complete the survey operates with a unique business model based on their location, environment, ownership, strategy, and culture, every plan generated by this tool will be site specific, based on how each question has been answered.

Business Continuity Plan Contents

Each plan will consist of the first three sections shown in Figure 93 (i.e., "Plan Introduction," "Recovery Organization—Roles & Responsibilities," and "Business Recovery Function Strategies"). Recovery plans for each function that is present at the airport and for which survey questions have been completed will be documented in Section 4, "Airport Functional Recovery Plans."

Each of the airport business continuity plans generated by the software tool will include Section 5, "Plan Testing," and Section 6, "Plan Review and Maintenance" (shown in Figure 94), as well as several appendices that address other important elements of business continuity.

The plan will *not* be incident-specific because business continuity planning is an incident-agnostic process for business and operational recovery regardless of the cause of the disruption. The plan will *not* be an operations guidebook that tells the airport or FBO exactly what to do after a specific event, because disruptions are impossible to accurately define, identify, or predict; recovery must be planned around each specific disruption.

The plan *will* be a basic framework for approaching the recovery of those functions that are most critical to the minimal viability of the airport or FBO after any kind of prolonged disruption triggered by some kind of incident. The plan will provide recovery teams with inventories of essential resources that may need to be restored after disruptions including staff; processes that drive critical functions; and the technology, plant, and equipment upon which they depend (see Figure 95).

The plans will be based on generally accepted business continuity practice and principles, and will help their users develop their own management processes, including BCP as a factor in their strategic and business operating plans, budgeting, and training.

How to Benefit from the Plan

Using the Plan

The business continuity plan that will be generated by the software tool is just the start. Every airport and FBO should continue to improve the plan and mold it to their unique operating environments.

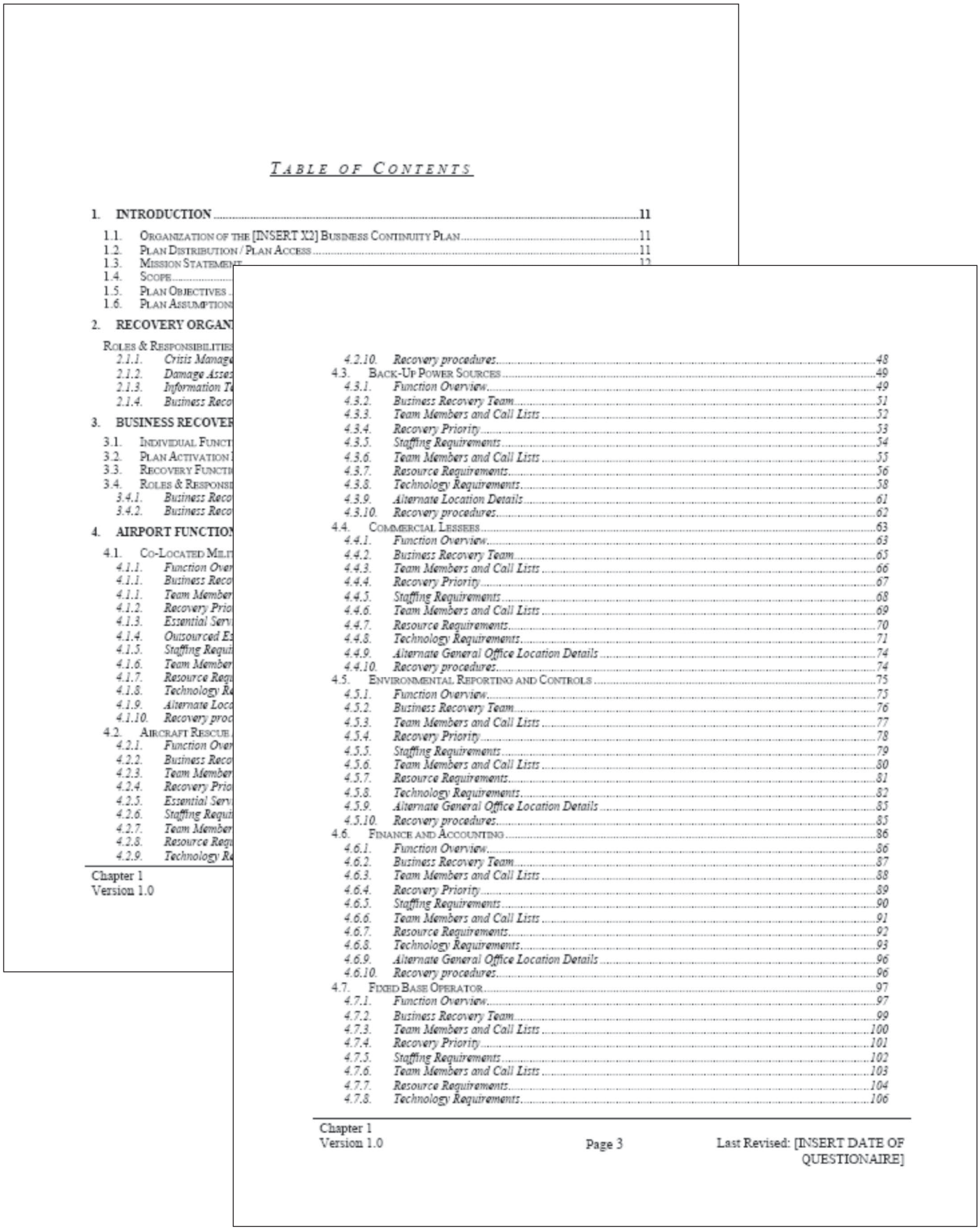


TABLE OF CONTENTS

Figure 93. Sample business continuity plan table of contents.

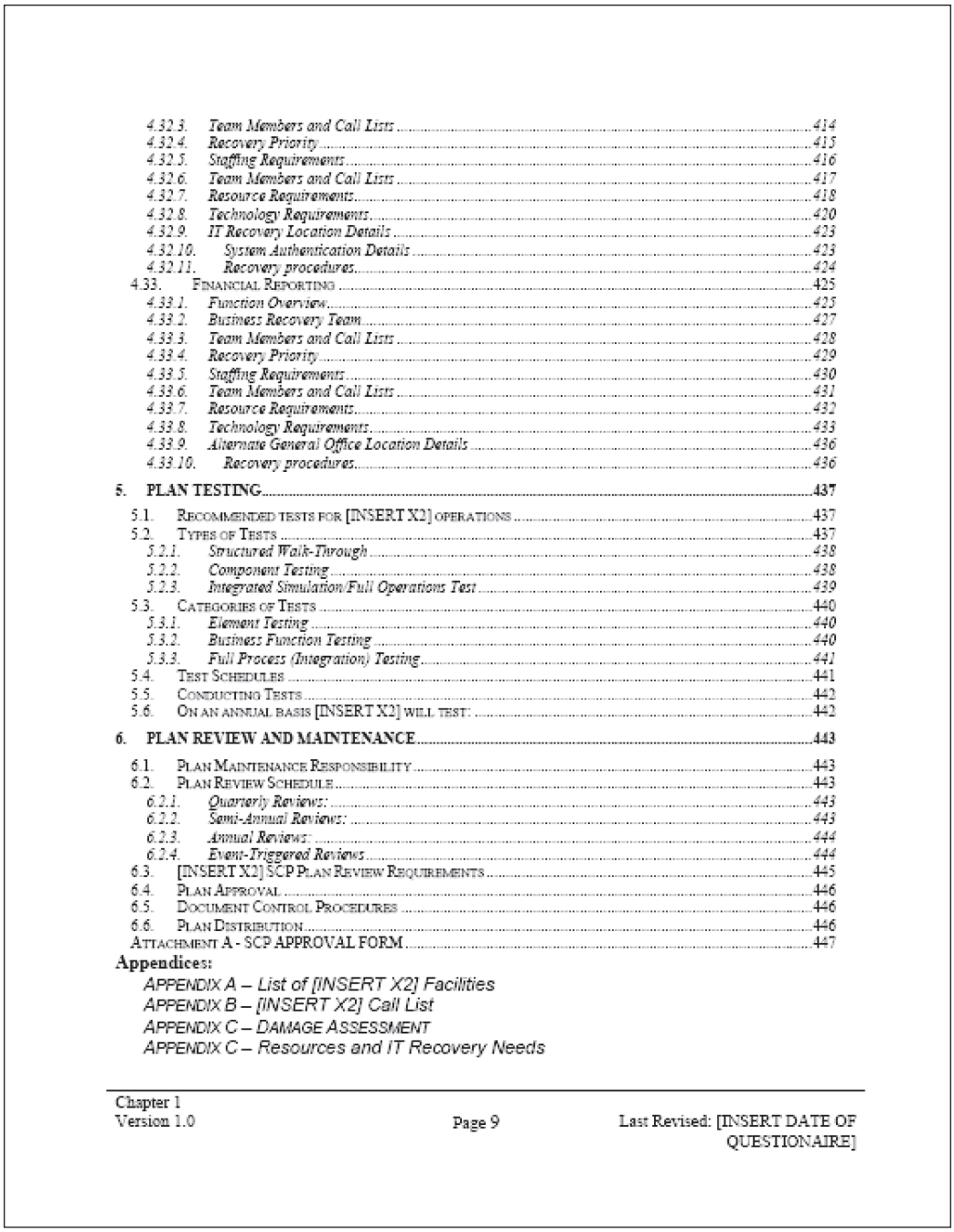
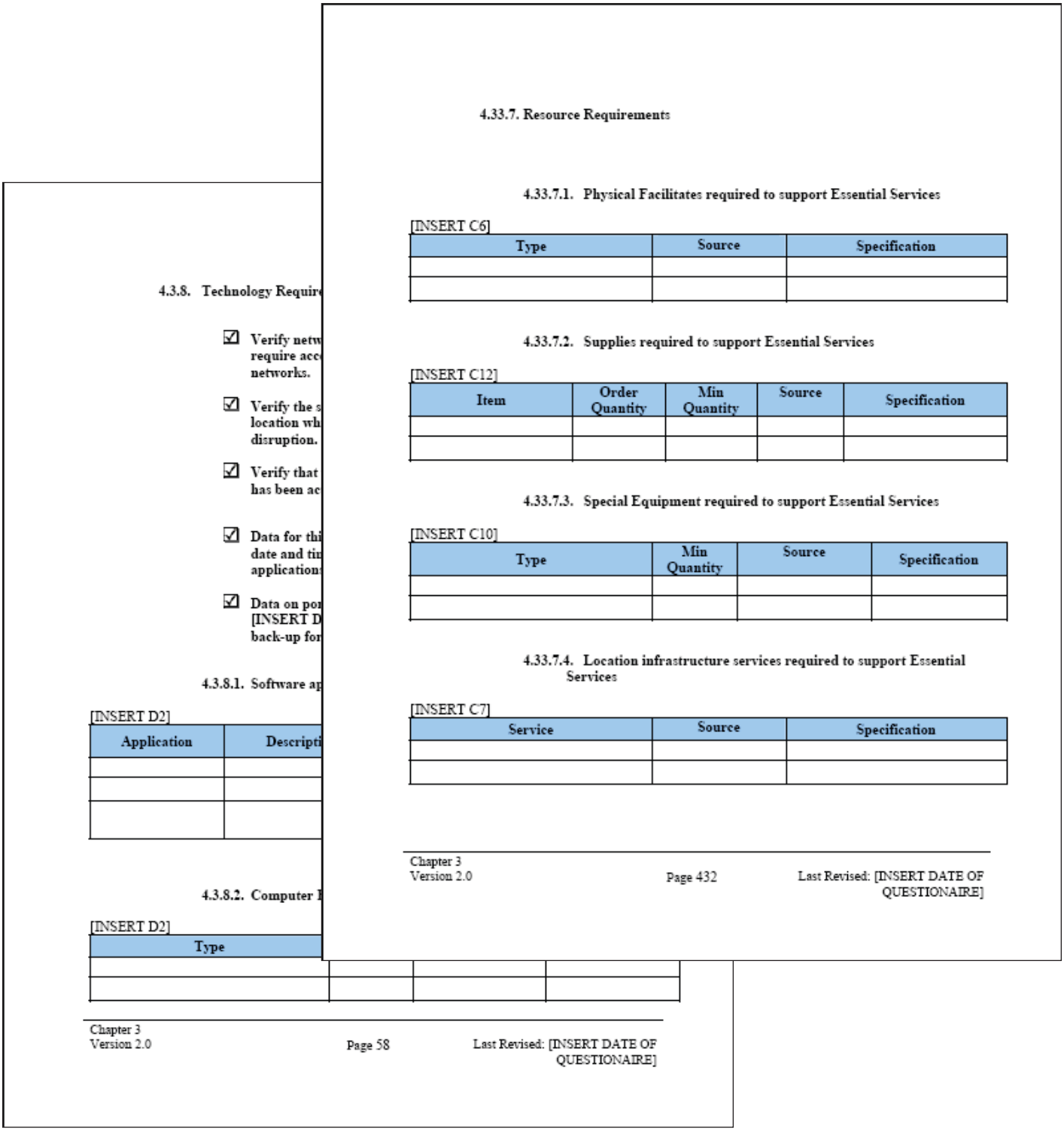


Figure 94. Sample table of contents showing Sections 5 and 6.

126 Operational and Business Continuity Planning for Prolonged Airport Disruptions



4.3.8. Technology Requir

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4.3.8.1. Software ap

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Type			

Chapter 3
Version 2.0

Page 58

Last Revised: [INSERT DATE OF QUESTIONAIRE]

4.33.7. Resource Requirements

4.33.7.1. Physical Facilitates required to support Essential Services

[INSERT C6]

Type	Source	Specification

4.33.7.2. Supplies required to support Essential Services

[INSERT C12]

Item	Order Quantity	Min Quantity	Source	Specification

4.33.7.3. Special Equipment required to support Essential Services

[INSERT C10]

Type	Min Quantity	Source	Specification

4.33.7.4. Location infrastructure services required to support Essential Services

[INSERT C7]

Service	Source	Specification

Chapter 3
Version 2.0

Page 432

Last Revised: [INSERT DATE OF QUESTIONAIRE]

Figure 95. Sample of insertion of recovery resources requirements.

At its most basic, this plan will enable airports or FBOs to document a great deal of information that is important to have readily available during disruptive incidents; this will greatly increase the ability of airports or FBOs to manage operations during these incidents and restore operations afterwards. Every airport or FBO should use the framework that is developed to set priorities and allocate resources where they can be most effective during and after prolonged disruptions and to close gaps in airport preparedness.

Making the plan work at the airport or FBO is the job of management. Participation in the planning process should be required of every manager and senior executive as a fundamental part of their job descriptions.

The business continuity plan can be used to train new employees or contractors in the essential building blocks and processes of their departments. The plan can be used to upgrade legal agreements with contractors, vendors, service providers, business partners, lessees, and concessionaires—establishing uniform business continuity requirements for various classes of stakeholders. It can also be used to assess, screen, and select new business partners that are recovery aware.

The plan can be used to inform the IT department's technology support strategy and its DR plan. The business continuity plan can be used to demonstrate to financial services companies and funding sources the airport's formal resolve and focus attention on operational resilience as part of financing or loan covenants. The plan can be used to refine internal processes and controls, making them stronger and more efficient. It can be used to strengthen compliance with city, county, or state continuity of operations plan (COOP) requirements and with FAA regulations.

Training and Exercising

At least annually, management should test the business continuity plan by conducting one or more of the types of exercises (described in the section titled "Plan Testing, Exercises, and Maintenance") that simulate a disruption environment at the airport or FBO and enable staff to respond in a non-threatening setting. Exercises can expose areas of the plan that can be improved through a post-exercise after action report (AAR). Based on this testing, changes to the plan should then be made and the plan updated with new information. (See a sample exercise evaluation form in Appendix D.)

APPENDIX A

Business Continuity Standards

Because business continuity is a mature professional process, it has developed around an evolving set of standards that are internationally recognized and practiced by business continuity professionals.

The federal government encourages the adoption of business continuity planning (BCP) (often referred to in the public sector as continuity of operations planning, or COOP), through the National Security Presidential Directive—51, NSPD 51, and Homeland Security Presidential Directive—20 (HSPD 20), issued in 2007. These directives for government agencies assist airports in establishing their own continuity plans in two ways.

For those airports that are considered entities of municipal, county, or state government jurisdictions, the impetus to adopt BCP derives from this federal guidance.

For airports that are non-government entities, a joint effort of the Federal Emergency Management Agency (FEMA) and DHS provides federal guidance around a voluntary framework for business continuity and disaster recovery called private sector preparedness or PS-PREP. It is a voluntary program of accreditation and certification of private entities using standards adopted by DHS that promote preparedness in the private sector, including business continuity programs, as directed in NSPD 51/HSPD 20.

The program provides a mechanism by which private sector entities can be certified by an accredited third party as having business continuity plans that conform to one or more of these three well established preparedness standards that have been adopted by DHS:

- ASIS International SPC.1-2009 Organizational Resilience: Security Preparedness and Continuity Management System—Requirements with Guidance for Use (2009 edition)
- British Standards Institution (BSI) 25999 (2007 edition)—Business Continuity Management. (BS 25999:2006-1 Code of practice for business continuity management and BS 25999: 2007-2 Specification for business continuity management)
- National Fire Protection Association (NFPA) 1600-Standard on Disaster/Emergency Management and Business Continuity Programs, 2007 and 2010 editions

While the presidential directives, PS-PREP, and the three referenced standards specifically address the needs of airports, these standards provide the basis for this guidebook and the accompanying software tool. Both the guidebook and the tool will help airports develop operational continuity plans that provide for these elements required in the federal directives:

- The continuation of essential functions during emergencies until normal operations can be resumed and the capability to be fully operational at alternate sites
- Succession orders and pre-planned devolution of authority

- Safeguarding and providing access to vital resources, facilities, and records
- Obtaining the resources necessary to continuity operations
- Planning for redundancy in critical communications at alternative sites with stakeholders
- Having the capability to reconstitute, recover, and resume normal operations after disruptions
- Ensuring that capable personnel are assigned, trained, and prepared to manage operational relocation

APPENDIX B

Glossary

Business continuity planning: the process of creating a plan for operating essential operational and business functions at an organization during a disruption and recovering those functions when the disruptive incident is over.

BCP leadership team: a general term describing the business continuity project manager or coordinator, the steering committee, business process owners, and plan administrators.

Business impact analysis: the process of "dissecting" each essential function and determining its tolerance (minutes, hours, weeks, or months) for downtime and loss of supporting data before the negative impact is unacceptable.

Business process owner: a person who is responsible for a distinct essential business or operational process.

Business recovery team: staff members assigned to manage and coordinate each department's or function's recovery from any disruptive crisis that affects it.

Business unit testing: exercises the recovery plan of an individual business or operating unit.

Component testing: an off-hours exercise that organizations use to aggressively test a particular part of their recovery plan; it serves to verify the correctness of operating procedures, hardware components, and the ability to restore a business unit's critical functions.

Contingent disruption: a business or operational interruption that is caused by an upstream disruption.

Continuity of operations plan (COOP): terminology for a business continuity plan typically used in the public sector.

Crisis management: methods used to respond to both the reality and perception of a crisis, to establish metrics to define which scenarios constitute a crisis, to trigger the necessary response mechanisms, and the communications that occur within the response phase of emergency management scenarios and persist afterward.

Crisis management team: the people who are formally assigned roles and responsibilities for crisis management, who evaluate disruptive events that impact the organization, and who make decisions about the deployment of recovery resources.

Damage assessment team: the group that identifies the extent of physical damage to a facility and helps determine the corrective action required to repair or replace damaged property.

Deconfliction: the BCP process for identifying and resolving resource contention (during recovery) among more than one department or business process.

Delegation of authority: a formally documented plan that passes the legal responsibility and authority for specific approvals and decisions from one person to another when the incumbent is unavailable.

Devolution: transferring the administration and rights, powers, property, and responsibility for a function (or all functions) to another department or entity, when the organization's plans are insufficient to continue to operate those functions the way they historically operated.

Disaster operations groups (DOGs): regional airport-to-airport voluntary mutual aid compacts that offer operational assistance during large-scale disasters.

Disaster recovery plan: a plan by the IT department for recovering systems, applications, and network infrastructure in a way that optimizes support for the business units' requirements for technology resources. A disaster recovery plan documents the sequencing and detailed component recovery instructions for systems recovery.

Element testing: exercises a particular part of the organization's business continuity plan such as its call trees.

Emergency management: the process of preventing, mitigating, responding to, and recovering from all types of hazards and incidents that can threaten life and property.

Enterprise risk management: a risk-based approach to managing an enterprise with methods and processes used as a framework to proactively manage risks (e.g., assessing risk and impact, determining response, and monitoring progress) and address strategic opportunities.

Executive sponsor: a senior executive who drives an organization's BCP program and ensures that it has management support and adequate funding.

Gap analysis: an assessment of the difference between the resources required by mission-essential functions during recovery and the actual capability of the organization to support those requirements.

Incident action plan: an incident-specific plan developed to respond to a particular disruptive incident or emergency, utilizing all the appropriate resources and capabilities of the organization.

Integrated simulation/full operations testing: a complex exercise that tests an entire business continuity plan under emergency scenarios, validates operational effectiveness and business unit interdependencies, and provides measurable technical and administrative results; this testing should be performed at the organization's actual recovery site(s) and should utilize the resources for the specified tasks of the test (i.e., recovery site systems and workspace).

Irregular operations (IROPS): airports' contingency plans during abnormal circumstances in the aviation system and with air carriers that impact passengers at the airport; operations during times when the systemic air traffic environment is fundamentally in chaos.

Manual work-around: a documented procedure for operating a process, function, or activity without the underlying automation or technology that it usually depends on.

Memorandum of understanding: an agreement or contract between two organizations typically specifying the provision of assistance, support, or resources under a specified set of circumstances.

Mission-essential function (or mission-critical function): those functions and business processes that are important to the core operation and business of an organization, without which the negative impact would be unacceptable.

Official obligation in consideration of grant assurances: FAA-mandated obligations and conditions that qualify airports for grant assistance.

Operational resilience: the general capacity and capability for sustaining an organization's business and operations in spite of risks, emergency incidents, crises, and disruptions.

Plan administrator: staff members that are assigned to manage the business continuity plan and various activities associated with the plan.

Reconstitution: the process of returning to normal operations after it is determined that a disruptive emergency situation has ended.

Risk assessment: a process for determining relative risk to an organization from a group of hazards, exposures, or threats and ranking them in some combination of probability, level of impact, acceleration, and duration.

Scenario planning: the process of identifying the range of specific threats that the airport faces based on its mission, ownership, geographic location, operating environment, and many other factors that define its risk profile and the likely types of disruptive incidents that it could face.

Service level agreement (SLA): a contractual agreement that obligates a party to a specific level of response and support.

Steering committee: a group of departmental leaders representing the breadth and scope of departments, business processes, and organizations that are named within the scope of the BCP project.

Structured walk-through exercise: a paper evaluation of the organization's business continuity plan or a portion of the plan designed to exercise its effectiveness without incurring the expenses or utilizing the personnel resources associated with performing a full test.

Succession planning: a formally documented plan that specifically names one or more persons who will assume the job, position, or responsibilities of an incumbent who is no longer in the position.

APPENDIX C

Abbreviations and Acronyms

AAR	After Action Report
AOA	Aviation Operations Area
ARFF	Aircraft Rescue and Firefighting
ATC	Air Traffic Control
ATCT	Air Traffic Control Tower
BCI	Business Continuity Institute
BCP	Business Continuity Planning
BIA	Business Impact Analysis (or Assessment)
BSI	British Standards Institute
CAD	Computer-Aided Design
CBCI	Certified—Business Continuity Institute
CBCP	Certified Business Continuity Professional
CBP	U.S. Customs and Border Protection
CCTV	Closed Circuit Television
CD	Compact Disk
CFR	Code of Federal Regulations
CMT	Crisis Management Team
COOP	Continuity of Operations Plan(ning)
CPA	Certified Public Accountant
DDOS	Distributed Denial of Service
DOG	Disaster Operations Group
DR	Disaster Recovery
DRII	Disaster Recovery Institute International
EEOC	Equal Employment Opportunity Commission
EMT	Emergency Medical Technician
EOC	Emergency Operations Center
ERM	Enterprise Risk Management
F&A	Finance and Administration
FBCI	Fellow—Business Continuity Institute
FBO	Fixed Base Operator
FEMA	Federal Emergency Management Agency
FOD	Foreign Objects and Debris
FTE	Full Time Equivalent
HAZMAT	Hazardous Materials
HR	Human Resources
HSPD	Homeland Security Presidential Directive
HTML	Hypertext Mark-Up Language
HVAC	Heating, Ventilation and Air Conditioning

IAP	Incident Action Plan
ICE	U.S. Immigration and Customs Enforcement
IROPS	Irregular Operations
ISP	Internet Service Provider
IT	Information Technology (Department)
LEO	Law-Enforcement Officer
Mac	Macintosh (Series of Personal Computers from Apple)
MBCI	Member—Business Continuity Institute
MBCP	Master Business Continuity Professional
MOU	Memorandum of Understanding
NAVAIDS	Navigation Aids
NFPA	National Fire Protection Association
NOTAM	Notice to Airmen
NSPD	National Security Presidential Directive
P&L	Profit and Loss (Statement)
PC	Personal Computer
PDA	Personal Digital Assistant
PDF	Portable Document Format
PR	Public Relations
PS-PREP	Private Sector Preparedness
RFID	Radio Frequency Identification
RFP	Request for Proposals
RPO	Recovery Point Objective
RTO	Recovery Time Objective
SASO	Specialized Aviation Service Operator
SBCI	Specialist—Business Continuity Institute
SCADA	Supervisory Control and Data Acquisition (Systems)
SEADOG	Southeast Airports Disaster Operations Group
SIDA	Secure Identification Display Area
SLA	Service Level Agreement
SPS	Standby Power Supply
UPS	Uninterruptable Power Supply
USDA	U.S. Department of Agriculture
UV	Ultraviolet
VIP	Very Important Person
WESTDOG	Western Airports Disaster Operations Group

APPENDIX D

Template for Exercises

This is a template for a tabletop walk-through of the business continuity plan. Tabletop exercises are typically facilitated in a single location where participants can assemble, such as a conference room, learning center, or technology lab. Participants should include members of the Business Continuity Leadership Team, with representation from each airport or FBO function that is "in scope" for the exercise.

A facilitator should provide the disaster scenario that creates the operational disruption for the exercise. The participants should be instructed to use the contents of their departmental or functional business continuity plans to describe to the group the actions that would be taken in their areas of responsibility at defined time segments (e.g., within the first 2 hours after the disruptive incident, within 1 day, 1 week, 2 weeks, or 1 month).

This open discussion should help the airport identify issues, challenges, and plan inconsistencies, and illustrate the potential for contention for recovery resources. It should not be a "test" or a competition, but rather a learning effort that promotes recovery planning, plan editing, and updating so that when real disruptions occur, the airport is better prepared. A staff member should be assigned to take detailed notes from the exercise and draft an after action report (AAR) that captures the process and documents the group's conclusions, "take-aways," and "to-dos."

Business Continuity Plan Exercise/Walk-Through Form			
Exercise Date:		Completed By:	
Plan(s) Exercised:			
Description of Disruptive Incident:			
Participants (list names and positions or roles):			
How did your team prepare for the exercise?			
Write a description of how the exercise was conducted. Be sure to mention any business partners or other teams that were involved.			

Record your general observations about the team's response during the exercise:	
Strengths	
Weaknesses	

For each of the following success measures, rate the exercise on a scale of 1–10, with 10 being best and 1 being worst:

Command Structure – Everyone knew their roles, responsibilities, what they had the authority to do and not do, whom to report to, whom to get reports from.									
1	2	3	4	5	6	7	8	9	10
Course of Action – The team developed a course of action before beginning response activities, everyone understood what the intent and key tasks were, and recovery activities aligned with the intent and course of action.									
1	2	3	4	5	6	7	8	9	10
Plan Efficacy – The procedures and instructions in the plan were clear and easy to follow and were useful/applicable to the response.									
1	2	3	4	5	6	7	8	9	10
Issue Management – Issues and problems were identified and escalated in a proper and timely fashion.									
1	2	3	4	5	6	7	8	9	10
Morale and Participation – Team members supported one another and actively participated with a sense of realism. Leadership provided motivation, direction and encouragement.									
1	2	3	4	5	6	7	8	9	10

How can the team improve and better prepare for the next exercise (or incident)? What will you do differently the next time you perform or facilitate an exercise?

Please summarize the most critical issues and/or lessons learned from the exercise:

Issue	Tasks to Resolve Issue	Person/Team Responsible	Due Date

Table D-1. Business continuity exercise review form.

Issue	Tasks to Resolve Issue	Person/Team Responsible	Due Date

Abbreviations and acronyms used without definitions in TRB publications:

A4A	Airlines for America
AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
MAP-21	Moving Ahead for Progress in the 21st Century Act (2012)
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation