MassMutual Business Continuity Disclosure Statement

Overview

Resiliency is a high priority at Massachusetts Mutual Life Insurance Company (“MassMutual” or the “Company”). To that end, significant investments have been made to enhance data centers and workspace, develop remote working capability and spread critical functions across the country to mitigate the potential risk of regional disasters. The primary Data Center in Massachusetts has been outfitted with an uninterruptible power supply (UPS) and N+1 generation capacity. Should there be a larger issue, systems are backed up to MassMutual-owned hardware in Colorado (1,700 miles away) and a third copy of system data is also sent to Connecticut.

MassMutual’s home office location in Springfield has also been backed up with generators, capable of powering around 3,700 workstations, more than we believe would be needed for the first 30 days of a recovery event. If workspace becomes unavailable in the MassMutual home office in Springfield or the office in Enfield, Connecticut, employees may be relocated to the office not impacted or may work remotely. MassMutual also has established critical operations and workspace outside of its home office region in Boston, New York, Charlotte, Memphis and Phoenix.

Despite these steps to further harden systems and facilities, MassMutual still maintains a continuity planning program that is intended to address, among other things, facility/systems failure due to cyber threats, pandemics and 3rd party outages. This document is intended as a summary of how MassMutual’s Business Continuity Program (“Program”) has been structured, tested and is maintained.

Program Management

The MassMutual Continuity Officer reports directly to an Executive Steering Committee (“Executive Committee”) and administratively to the Chief Information Officer (“CIO”). The Executive Committee meets semi-annually to set Program direction and reaffirm the continuity planning charter/policy. In January, the MassMutual Continuity Officer (or delegate) presents the Annual State of Preparedness, which documents

“By failing to prepare... ...you are preparing to fail.”

Benjamin Franklin
the status of projects designed to enhance resiliency and any known or reasonably foreseeable risks or concerns. Annually in July, the Executive Committee receives an interim update and designates divisional Coordinators to carry out the continuity program within their span of responsibility.

Under the MassMutual Continuity Officer is a core continuity team responsible for providing program oversight against the company policy, as well as testing and consulting services. This team also manages the tools that enable situational awareness monitoring, continuity plan development and maintenance, emergency notification, and testing.

Divisional Coordinators are responsible for working with the core continuity team and individual plan leaders to monitor compliance with the Company policy, develop and maintain appropriate recovery time objectives, analyze risks and develop mitigating strategies and maintain and test all components of their program.

During emergencies, the executive management from Communications, Human Resources, Law, Information Technology and Enterprise Risk Management assemble to form the Crisis Management Team, which has authority to declare a disaster and direct recovery efforts.

### Risk Evaluation and Control

Risk assessments are completed annually for each MassMutual operating location. The risk assessment process is intended to take into account reasonably foreseeable external risks (natural and man-made disasters) and the potential for internal vulnerabilities. As new items are discovered through the risk assessment process, the core continuity team is responsible for creating “shovel-ready” project proposals. Risk and mitigation proposals are then rolled up into the Annual State of Preparedness and presented semi-annually to the Executive Committee. The core continuity team partners with Enterprise Risk Management for ongoing monitoring across the company.

### Overall Resiliency Strategy

As noted earlier, MassMutual’s recovery strategy is focused on diversification. Data Center recovery utilizes capabilities in other states, currently Colorado and Connecticut, intended to protect against the impact from regional disasters and multiple replication/backup technologies are used to protect against hardware failure. Workspace recovery is available within multiple MassMutual-owned buildings in Massachusetts and Connecticut, many of which have generator backup and diverse paths for network and utilities. Broader or diverse regional protection is provided through offices in New York, Charlotte, Memphis and Phoenix, as well as a formal agreement with a third party provider to obtain immediate property leasing in a crisis.

Finally, the ability for Company employees to work remotely is expanding and is reasonably designed to use multiple solutions that range from remote desktop capabilities, to laptops, to Citrix and virtual desktop. A diverse set of solutions are utilized with the purpose to ensure that critical processes can continue regardless of scenario. The Company’s remote strategy has been a focus since 2005 when the threat of global pandemic made headlines. Cross-training, spread prevention protocol and social distancing also play a role in ensuring the Company can continue operating during a 6-8 week stretch with 40% absenteeism rates, which is consistent with the Centers for Disease Control (CDC) standard.

### Emergency Preparedness and Response

Emergency Response Plans (“ERPs”) in each operation location document the Company’s response to business interruption and include emergency procedures for evacuation, shelter-in-place, damage assessment, disaster declaration, restoration management and internal/external communications. ERPs are modeled after FEMA’s Incident Command System, and enables the activation of the Crisis Management Team and appropriate Response Teams, as well as their specific action plans, to accomplish recovery objectives and release timely communications internally and externally. The Company utilizes a hosted
emergency notification system based in both Tennessee and Arizona for global employee communication. This system is backed up by paper-based call trees in case the hosted solution were to fail in both states.

**Business Continuity Planning**

Like many companies, MassMutual’s business continuity program was born out of Business Impact Analysis (“BIA”) results. Unlike many companies, MassMutual has opted to keep BIA results live within the body of the business continuity plan, requiring that information to be reviewed at least semi-annually and as there are changes within the business line. MassMutual’s business continuity template is intended to address six general scenarios: short-term workspace outage, long-term workspace outage, systems outage (processor, infrastructure or business application), communications outage (data, voice, e-mail, inter / intranet, paper mail), workforce outage (an event resulting in large absenteeism rates) and failure of strategic suppliers. Within each scenario, Plan Leaders provide specific information about their function and recovery strategy to respond to that scenario. Company policy states that all business functions must be covered by a business continuity plan that is maintained in the Company’s web-based planning tool.

**IT Disaster Recovery Planning**

MassMutual maintains three types of technical continuity plans: Application, Infrastructure and Processor. Recovery Time Objectives (time to restore service in a disaster) and Recovery Point Objectives (acceptable data loss in a disaster) are governed by business continuity plan priorities. Objectives are compared to actual recovery time capabilities and gaps are dealt with on a case-by-case basis until all technology is properly aligned with the needs of customers and the business. Essential applications are generally replicated using near-real-time replication to Colorado and Connecticut, while non-essential applications are backed up using virtual tape backup to Colorado and Connecticut. Essential applications are generally restored within 2–8 hours while non-essential applications can take up to three days for complete restoration. By policy, all technology in the Data Center must be covered by the appropriate technical continuity plan in the Company’s web-based planning tool.

**Strategic Supplier Oversight**

The Company’s philosophy around strategic suppliers is that continuity plans of these parties must be given the same level of oversight and scrutiny that would be applied to internal continuity planning. To accomplish this objective, contract language specific to resiliency, planning and testing is included in the Company’s Master Services and Hosted Service templates. The core continuity planning team is engaged during the negotiation of new strategic supplier engagements to conduct a risk assessment to identify any resiliency concerns to be raised to the attention of senior management prior to coming to an agreement. Site visits to strategic supplier locations are also conducted during this process, when reasonable and appropriate based on the results of the risk assessment.

Once an agreement is in place, a Supplier Relationship Manager is assigned to the engagement and is tasked with overseeing the strategic supplier’s continuity program and keeping current copies of their continuity plans and posttest reports on file. Suppliers are also required to respond to the Company’s Controls Self-Assessment process, which includes a series of detailed resiliency questions that are updated at reasonable intervals. Finally, the Company has been piloting a joint continuity exercise program and plans to roll this out further in the future.

**Awareness and Training**

Often considered the cornerstone of a solid business continuity program, awareness and training occurs on an ongoing basis at MassMutual. Prepared employees are the cornerstone of a successful continuity program. To that end, employees are exposed to continuity planning during new hire orientation and they continue to be provided with information on a periodic basis through monthly news articles on the
Company’s intranet site. Finally, continuity plan leaders have the responsibility to educate employees about their department plan(s) and each employee’s role in that plan.

If employees wish to learn more, there is a webpage connected to the Company’s intranet site that is dedicated to continuity planning and preparedness. There are also classes available through the Company’s training site to help employees become acquainted with the Company’s continuity planning system, their role in the program, or specific topics, such as workplace violence prevention and FEMA’s Incident Command System. Finally, to ensure employees receive firsthand exposure, an annual Preparedness Fair is run in September in partnership with the American Red Cross, state and federal emergency management agencies and a host of internal planning teams to demonstrate proper preparedness and to distribute educational materials and wallet cards.

Finally, members of the core continuity planning team are encouraged to pursue FEMA Incident Command System certification, CBCP (Certified Business Continuity Planner) certification through DRI International, participate in industry events (LOMA, NEDRIX, ACP) and maintain familiarity with the three voluntary standards covered under FEMA’s Private Sector Preparedness (PS-Prep) Program.

**Exercising, Auditing and Maintenance**

Exercising: Efforts to keep plans accurate and actionable take on many forms. Emergency response testing is done throughout the year and includes Crisis Management Team simulations, evacuation drills and exercising of specialized plans, such as Pandemic Response, Customer Disaster Response, Aircraft Incident and others. Information Technology disaster recovery testing is conducted on an annual basis and includes essential applications (roughly 20% of the overall application portfolio) and a rotation of non-essential applications. Finally, business continuity testing is conducted throughout the year and includes annual testing through an online simulator, division-level simulations, tabletop walkthroughs and participation in the annual IT disaster recovery test.

Auditing: In addition to planned testing, internal and external auditors have an active role in auditing continuity plans and test results across the Company. When potential issues are identified, such issues are documented, assigned an owner and tracked through to completion. Overdue issue resolution is reported to the Chairman, President and CEO. A full continuity program assessment was conducted in 2012 by internal audit with assistance from external resources and the program was found to be reliable and compliant with British Standard BS-25999, NFPA 1600, and the FFIEC IT Examination Handbook.

Maintenance: Plan maintenance is handled through regularly scheduled reviews. Emergency Response Plans and contact information are validated quarterly. Continuity plans and the hardware/application inventory in the Company’s Configuration Management Database are validated semi-annually. Finally, ongoing reviews are conducted throughout the year to ensure all processes and technology items are covered by continuity plans and to ensure they meet the Company’s Guiding Principles framework within the company policy for recovery prioritization.

**Coordination with External Agencies**

MassMutual is continuing to expand public/private partnerships. To that end, members of the core continuity team sit on the Local Emergency Planning Committee (LEPC) in Springfield, MA and Enfield, CT. This has opened the door to joint testing, where MassMutual participates in emergency responder exercises with the city, and city officials participate in crisis management exercises at the company’s home office.

The team is also active at the state and federal level and was recognized publicly for ongoing partnership by the Massachusetts Emergency Management Agency and Environmental Protection Agency in 2011. Finally, beginning in 2012, the team has become more active with the Department of Homeland Security, participating in “DHS for a Day” in August 2012 and the DHS Cyber Security Program that concludes in the fall of 2013.