Railroad Retirement Board
Climate Change Adaptation Plan
June 2014

In accordance with Railroad Retirement Board's (RRB) climate adaptation policy and Executive Orders (E.O.) 13514, *Federal Leadership in Environmental, Energy, and Economic Performance, and* E.O. 13653, *Preparing the United States for the Impacts of Climate Change*, this document describes the RRB's climate change adaptation approach, accomplishments, planned actions, and coordination activities developed from our evaluation of climate change risks and specific vulnerabilities we must overcome to ensure mission and operational delivery in the short and long term.

This plan is a living document and will be reviewed annually and updated as needed.

Background

The RRB is an independent agency in the executive branch of the Federal Government. Our primary function is to administer comprehensive retirement-survivor and unemployment-sickness benefit programs for the nation's railroad workers and their families under the Railroad Retirement and Railroad Unemployment Insurance Acts. RRB has approximately 900 employees, 650 in our Chicago headquarters and 250 located across 53 field offices nationwide.

Our core strategic goals are:

1. Provide Excellent Customer Service
2. Serve as Responsible Stewards for Our Customers' Trust Funds and Agency Resources
3. Ensure Effectiveness, Efficiency, and Security of Operations

Climate change may have some negative impacts on our ability to fulfill these goals depending upon the specific climatic event or change. RRB is taking steps to increase its operational resiliency in the face of the expected impacts. We have carefully assessed the risks presented to our facilities and operations, identified appropriate adaptation options, and developed an initial plan of action to implement necessary changes. This report describes these efforts in more detail.

Planning for Climate Change Related Risk

Risk Assessment

RRB has focused its initial climate change risk assessment on the 364,738 square foot, 13-story headquarters building in Chicago which houses 650 employees. The majority of RRB's core functions occur at, or is managed from, this location. RRB employees not located in Chicago work in 53 district offices located in buildings across the country. These buildings are a mix of GSA-owned/managed and GSA-leased properties, therefore these facilities are not considered in RRB's climate change adaptation plan.

To assess its climate risks, RRB used the Adapting to Climate Change Application (ACCA), a tool and methodology developed by URS Corporation. ACCA combines risk, probability, and multi-criteria analysis methodologies. This enables the identification of risks, assessment of impacts and their severity, and systematic prioritization of adaptation options.

Table 1 shows the climate change related risks identified for the RRB building.

Table 1: Climate Risk Identification for RRB Headquarters Facility

Climate Change Effect	Impact	Risk (R)	Probability (P)	Influence (I)	Total Risk Score (RxPxI)
Increased storminess	Accidents and damage to buildings due to falling trees, street structures and storm debris	2	2	2	8
	Weakened roof and building façade	2	2	3	12
Rainfall decrease	Water shortages	3	2	1	6
Rainfall increase	Localised flooding	3	2	1	6
	Weakened building foundations and roof	2	2	2	8
	Reduced life of building façade materials due to water expose and damage	2	2	2	8
Temperature increase	Increased pressure on water supplies	2	2	2	8
	Urban heat island effect	3	3	2	18
	High internal temperatures in buildings leading to increased demand for cooling	3	3	3	27
	Reduced life of building materials due to solar exposure	3	2	2	12
	Heat stress on electrical equipment	2	2	2	8

Scoring Criteria:

R – Risk of the impact (1: Unknown or relatively low impact | 2: Moderate impact | 3: Significant impact)

P – Probability of the impact occurring (1: Unknown or relatively low probability | 2: Already evidence of this occurring and its magnitude is likely to increase over time | 3: Significant probability of this impact occurring/intensifying)

I – Influence and/or responsibility of the RRB to increase resilience and/or manage the effect of the impact (1: No or minimal influence/responsibility | 2: Moderate influence/responsibility | 3: Total or significant influence/responsibility)

The climate change effects on the headquarters building as identified through the ACCA analysis (increased storminess, rainfall variability and temperature increases) also have the potential to disrupt RRB's operations. RRB employees may not be able to access the building in order to adjudicate claims. Furthermore, information technology staff,

equipment and programs to maintain earnings records, calculate benefits, and process payments may be impacted by adverse climatic events.

Risk Analysis and Adaptation Option Development

RRB used the ACCA tool to assess the potential impact severity and develop adaptation options for each identified risk. Each potential adaptation option was assessed against generically weighted criteria shown in Table 2 below.

Table 2: Adaptation Option Weighting Criteria

Criteria	Scoring (1 to 3)	Weighting
Capital cost	1 = high capital cost, 3 = low capital cost	0.1
Whole-life cost	1 = high whole-life cost, 3 = low whole-life cost	0.1
Technical feasibility	1 = low feasibility, 3 = high feasibility	0.1
Risk of no action	1 = low risk, 3 = high risk	0.1
Environmental impact (adverse)	1 = significant impact, 3 = low impact	0.1
Disruption to operations	1 = high disruption, 3 = low disruption	0.075
Practicality	1 = impractical, 3 = highly practical	0.075
Level of RRB control/ responsibility	1 = no or minimal control/ responsibility, 3 = full or significant control/ responsibility	0.075
Scale / impact of the response	1 = no/ low impact, 3 = significant impact	0.075
Political acceptance	1 = not acceptable or unfavourable, 3 = highly acceptable or favourable	0.05
Public acceptance	1 = not acceptable or unfavourable, 3 = highly acceptable or favourable	0.05
Resource/ skills / knowledge available to implement the adaptation option	1 = not readily available, 3 = readily available	0.05
Future-proof	1 = not likely to be future-proof, 3 = high likelihood of being future-proof	0.05

These weights were applied to each adaptation option for the relevant climate change risk. The results are summarized in the following tables.

Table 3: Rainfall-related Risks

Effect	Impact	Adaptation Option	Score (out of max 3)
Rainfall decrease	Water shortages	Restrict water use to essential purposes only during periods of drought	2.25
		Re-use wastewater for flushing toilets etc	1.875
		Install rainwater harvesting equipment/ technologies	1.975
Rainfall increase	Localised flooding	Install soft landscape, green roofs, and sustainable drainage systems in and around the building	2
	Weakened building foundations and roof	Strengthen roof to withstand greater rainfall	2.275
		Increase vegetal cover on and around the building	2
	Reduced life of building façade materials due to water exposure and damage	Waterproof façade materials	1.8

Note: Local water sources, such as Lake Michigan, may have the potential to provide emergency and additional water resources during periods of drought. However, an increased demand on these resources may increase water supply prices and/or result in restrictions being placed on water abstraction.

Table 4: Storm-related Risk

Effect	Impact	Adaptation Option	Score (out of max 3)
Increased storminess	Accidents and damage to buildings due to falling trees, street structures and storm debris	Increase levels of maintenance of trees and structures next to the building to avoid damage	1.8
	Weakened roof and building façade	Strengthen roof and façade to withstand increased wind speeds and storms	2.275
		Strengthen windows and seal drafts	2.175

Table 5: Temperature-related Risk

Effect	Impact	Adaptation Option	Score (out of max 3)
Temperature increase	Increased pressure on water supplies	Implement measures to protect existing water supplies, e.g. manage and reduce leakage and install water meters	2.15
		Educate and raise awareness amongst building users on water use and conservation	2.525
		Install rainwater harvesting equipment/ technologies	1.975
	Urban heat island effect	Install a green roof, roofing with reflective membranes	1.925
		Install light-colourer (high albedo) walkway surfaces	1.45
	High internal temperatures in buildings leading to increased demand for cooling	Install window shading or shutters, particularly for south and west facing windows and glass doors	2.325
		Install double glazing or low-emissivity coated double glazing	2.125
		Install temperature/time controls at the room or appliance level and zone heating/cooling systems	2.175
		Install natural ventilation and night ventilation etc	2.05
		Install low energy cooling systems, e.g. chilled beams, chilled ceilings or air slab cooling	1.875
		Conduct a stress test to determine the potential changes in the demand for cooling and what that would translate to in terms of operational costs.	2.275
		Install hybrid cooling systems i.e. natural ventilation assisted by mechanical cooling during peak summertime conditions or where occupancy levels are particularly high.	1.875
	Reduced life of building materials due to solar exposure	Paint or cover building surfaces in light-colourer (high albedo) materials/ surfaces	1.525
	Heat stress on electrical equipment	Additional back-up capabilities may be required and equipment may need to be strengthened and protected from such impacts.	1.825
		Procure high efficiency, fast response electrical devices that do not emit significant amounts of heat or require high energy inputs	2.2

The options and priority levels identified by the ACCA assist the RRB in identifying and prioritizing climate change adaptation actions. These will be reviewed regularly and, if necessary, revised to respond to RRB priorities, practices and budget considerations.

Risk Management and Adaptation Planning

RRB used the risk weightings and adaptation option scores above to establish its Adaptation Plan for the RRB headquarters building. Table 6 lists the more critical Adaptation Plan Options identified in the risk assessment and their current implementation status.

Many of the adaptation options listed require coordination with and/or authorization from the building's owner, GSA. As the primary tenant, the RRB operates and maintains the building through a delegation of authority agreement with the GSA established on April 1, 1986. Under this agreement, projects over $50,000 in value and any capital improvements to the headquarters building are funded and approved by GSA.

In FY2013 RRB and GSA began development of a major project to modernize the Lipinski Federal building. The project will incorporate sustainable design principles that address and further RRB's energy efficiency and intensity, water use efficiency and management, and climate change resilience goals. Construction for the modernization project is anticipated to begin in FY2019, dependent upon congressional funding.

Due to the current lack of funding RRB will focus its FY14 and FY15 efforts on fully implementing the options slated for "Immediate Action" in the Adaptation Plan. All other options will be addressed if and when GSA receives full funding for the Modernization project.

Table 6. RRB Adaptation Plan Options and Implementation Status

Adaptation Plan Option	Score (out of 3)	Implementation Status
Incorporate climate change considerations into long term planning and operational policy	2.65	Ongoing
Educate and raise awareness amongst building users on water use conservation	2.525	Ongoing
Work with other federal agencies in the Chicago region to share best practices and resources relating to adaptation	2.425	Ongoing
Install window shading or shutters, particularly for south and west facing windows and glass doors	2.325	Completed. Ongoing maintenance as needed.
Strengthen roof and façade to withstand increased wind speed and storms	2.275	Completed. Original construction of building is more than sufficient to withstand expected increases.
Restrict water use to essential purposes only during periods of drought	2.25	Ongoing. Restrictions applied as needed.
Procure high efficiency, fast response electrical devices that do not emit significant amounts of heat or require high energy inputs	2.2	To be considered pending GSA modernization project funding.
Install temperature/time controls at the room or appliance level and zone heating/cooling systems	2.175	To be considered pending GSA modernization project funding.

Strengthen windows and seal drafts	2.175	To be considered pending GSA modernization project funding.
Implement measures to protect existing water supplies, e.g. manage and reduce leakage and install water meters	2.15	To be considered pending GSA modernization project funding.
Install double glazing or low-emissivity coated double glazing	2.125	To be considered pending GSA modernization project funding.
Install natural ventilation and night ventilation	2.05	To be considered pending GSA modernization project funding.
Install soft landscape, green roofs, and sustainable drainage systems in and around the building	2	To be considered pending GSA modernization project funding.
Increase vegetal cover on and around the building	2	To be considered pending GSA modernization project funding.

Adaptation at RRB Headquarters Facility

RRB will also work closely with GSA's Public Buildings Service to address the potential climate risk impacts to our headquarters building. Areas of coordination include building operating plans and mobility strategies. We will also address building enclosure maintenance, including requirements to retune, calibrate, or repair complex building control systems.

RRB will also take a more detailed assessment of the operation and maintenance backlog at headquarters. We recognize that a building's climate change resiliency depends greatly upon adequate operations and maintenance (O&M) funding and implementation.

Operational Adaptation

RRB has implemented telecommuting policies and various automation programs which provide greater flexibility and redundancy to critical functions within the Agency that are essential to fulfilling its missions and strategic goals. Telecommuting, flexible work policies, and toll-free services will continue to provide flexibility and redundancy to critical functions within the Agency and allow it to augment services if they are disrupted at local field offices. RRB has implemented an emergency notification/communication automated system for its headquarters employees for emergency and Continuity of Operations Plan (COOP) situations. Such emergencies may include extreme weather conditions.

RRB has also increased use of video and teleconferencing services which not only decreases travel emissions but also assists active railroad employees and the retiree population by enabling them to conduct hearings or meetings from alternate locations. While these were not designed specifically to address climate change, they clearly provide a major benefit by enabling the RRB customer service base to avoid traveling in extreme weather conditions.

Collaboration

In addition to the collaborative efforts with GSA mentioned above, the RRB actively engages with other organizations.

RRB actively participates in the Chicago Federal Executive Board (FEB) and uses this forum to collaborate with other federal agencies on national initiatives. The FEBs are a forum for communication and collaboration among Federal agencies outside of Washington, DC. FEBs accomplish their mission by fostering communication, coordination, and collaboration among Federal agencies, and also with state and local governments. FEBs provide information, referrals and guidance for intergovernmental relations and community outreach. Collaboration through FEB's Green Government in Chicago and partnership with the Environmental Protection Agency (EPA), among other agencies, can advance the climate change discussion, planning, and action beyond mitigation to also integrate resilience.

Modernizing Federal Programs and Policies to Support Climate Resilient Investment

The nature of the RRB's mission and operations is such that it is not in a position to remove barriers to investments or other actions that increase the nation's resilience to climate change. We do not fund or otherwise control programs that may increase the vulnerability of natural or built systems, economic sectors, natural resources, or communities to climate change related risks. Lastly, the RRB's mission and operations are not designed to allow it to support and encourage smarter, more climate-resilient investments by States, local communities, and tribes.