



Risk Reduction Actions: Building & Infrastructure Projects

Resilience Action Matrix Summary

ID:	Resilience Strategy:	Climate Change Effects Addressed:								Climate Change Impacts Addressed:						Source Document:	
		Decreased Air Quality	Decreased Water	Drought	Extreme Weather	Increasing Precipitation	Ocean Acidification	Rising Temperatures	Sea-Level Rise	Health and Well-Being	Coastal Communities	Ocean and Marine Life	Ecosystems and Wildlife	Socially Vulnerable Populations	Infrastructure		Agriculture and Food Supply
BI_01	Alternative Transportation During Catastrophes	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_02	Archaeological Assessment of Vulnerable Historic Resources	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_03	Create a Decentralized Electric Grid	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	APA Planning for Infrastructure Resilience
BI_04	Develop Petroleum Set-Aside Program	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_05	Ensure Backup Power Generation for Critical Facilities and Infrastructure	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions



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BI_06	Evaluate Changes to Road Maintenance and Construction Materials Based on Climate Change	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_07	Integrate Climate Change into Transportation Design, Building And Maintenance	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_08	Manage Compressed Liquified Natural Gas Sites and Fueling Stations Before and During Hazards; Improve Resiliency in Related Infrastructure	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_09	Provide Additional Fuel Storage Capacity for Wastewater Systems	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_10	Replace Exterior Building Components with Hazard-Resistant Materials	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions



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BI_11	Secure Propane Tanks	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_12	Upgrade Communication Infrastructure	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	FEMA HMA Mitigation Action Portfolio
BI_13	Use Gis to Map Hazard Areas, At-Risk Structures	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_14	"Harden" Fuel Terminals	×	×	×	×	✓	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_15	"Harden" Wastewater Treatment Facilities with Various Methods	×	✓	×	×	✓	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions



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BI_16	Abandon Transportation Infrastructure	×	×	×	×	✓	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_17	Accommodate Infrastructure in Place	×	✓	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_18	Build Small flood Control Structures to Prevent flood Damage	×	×	×	×	✓	×	×	✓	×	✓	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_19	Complete 3-D Laser Documentation of Flood Risk Area	×	×	×	×	✓	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_20	Create Flood Friendly Culverts	×	×	×	×	✓	×	×	✓	×	×	×	×	×	✓	×	Naturally Resilient Communities



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BI_21	Use Bioengineered Bank Stabilization Techniques	×	×	×	×	✓	×	×	✓	×	✓	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_22	Improve Reliability of Emergency Communications During Severe Weather	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_23	Increase Communication Between Water Suppliers and Downstream Municipalities	×	✓	×	×	×	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_24	Elevate or Retrofit Structures	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_25	Floodproof Residential And Non-Residential Structures	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural



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BI_26	Retrofit Residential Buildings to Withstand Wind Damage	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_27	Acquire And Demolish or Relocate Structures Located in High-Risk Areas	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_28	Alternative Road De-Icer	×	✓	×	×	×	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_29	Aquifer Storage and Recovery	×	×	✓	×	×	×	×	×	×	×	×	×	×	✓	×	FEMA HMA Mitigation Action Portfolio
BI_30	Armor Certain Transportation Infrastructure	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions



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BI_31	Conduct Feasibility Studies for Raising Structures and Building Barriers for Infrastructure	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_32	Consider Retreat	×	×	×	×	×	×	×	✓	×	✓	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_33	Construct Seawalls or Other Structures To Protect Critical Facilities Located on the Shoreline	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_34	Construct Wet Weather Bypass	×	×	×	×	×	×	×	✓	×	✓	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_35	Constructing Groins to Capture Material Along the Shoreline in order to Trap and Retain Sand	×	×	×	×	×	×	×	✓	×	✓	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural



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BI_36	Create Defensible Space Around Structures and Infrastructure	×	×	×	×	×	×	✓	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_37	Depending on its Infrastructure Capabilities, Use Check Valves, Sump Pumps, And Backflow Prevention Devices in Homes and Buildings.	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_38	Design and Reconstruct Roadways	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_39	Elevate or Retrofit Utilities	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_40	Elevate Roads and Bridges	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural



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BI_41	Ensure Emergency Water Connections and Supplies	×	✓	×	×	×	×	×	×	✓	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_42	Evaluate Emergency Response to the Sewer Treatment Plant in case of Flood	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_43	Evaluate Pipes Ability to Withstand Heat and Cold	×	×	×	×	×	×	✓	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_44	Expand Sewer District	×	✓	×	×	×	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_45	Expand Surface Water Storage	×	✓	×	×	×	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions



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BI_46	Finance City Flood Dock Mitigation Project	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_47	Floodproof Water and Wastewater Treatment Facilities Located in Flood Hazard Areas	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_48	Identify Alternative Evacuation Routes	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_49	Identify Stormwater Structures that Flood	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_50	Increase Drainage or Absorption Capacities with Detention and Retention Basins, Relief Drains, Spillways, Drain Widening/Dredging or Rerouting, Logjam And Debris Removal, Extra Culverts, Bridge Modification, Dike Setbacks, and Flood Gates and Pumps	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural



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BI_51	Increase Long-Term Community Resilience and Disaster Recovery Through Distributed Renewable Energy and Battery Storage Systems	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_52	Increase Reservoir Capacity	×	✓	×	×	×	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_53	Increase Resilience and Structural Stability of Drinking Water Systems	×	✓	×	×	×	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_54	Install Catchment Filtration System	×	✓	×	×	×	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_55	Install/Upgrade Stormwater Pumping Stations	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural



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BI_56	Installing Geotextile Sand Tubes to Trap Sand or Protect Beachfront Properties	×	×	×	×	×	×	×	✓	×	✓	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_57	Integrate Combined Surface And Groundwater Impacts Into The Evaluation of At-Risk Infrastructure And The Prioritization of Adaptation Improvements	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_58	Inventory Water and Wastewater Infrastructure	×	✓	×	×	×	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_59	Maintain Potable Water Pressure	×	✓	×	×	×	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_60	Prioritize Adaptation Investments to Reduce the Impact of Flooding and Sea Level Rise on Transportation Infrastructure, Particularly on Evacuation Routes	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions



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BI_61	Promote Maritime Industries	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_62	Protect Power Lines and Infrastructure	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_63	Protect Pumping Stations from Flooding	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_64	Realign Transportation Assets	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_65	Relocate Wastewater Treatment Facilities	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions



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BI_66	Remove Existing Buildings and Infrastructure from Erosion Hazard Areas	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_67	Reorient Near-Shore Roads so they are Parallel (Not Perpendicular) to the Beach to Prevent the Channelization of Storm Surge and Wind Inland	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_68	Require New Road/Stream Crossings to Comply With New Guidelines	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_69	Require that All Critical Facilities Including Emergency Operations Centers (Eoc), Police Stations, and Fire Department Facilities Be Located Outside Of Flood-Prone Areas	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_70	Resurface Impervious Pavement	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions



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BI_71	Retrofit At-Risk Structures With Ignition-Resistant Materials	×	×	×	×	×	×	✓	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_72	Retrofit Critical Facilities to Withstand Predicted Sea Level	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_73	Retrofit Public Buildings and Critical Facilities To Withstand Wind Damage	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_74	Retrofit Sewer Infrastructure	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_75	Retrofit Water Supply Systems	×	×	✓	×	×	×	×	×	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural



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BI_76	Retrofitting Critical Facilities to Be 1 Foot Above the 500-Year Flood Elevation (Considering Wave Action) or The Predicted Sea Level Rise Level, Whichever Is Higher.	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural
BI_77	Strengthen Resilience at Ports	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions
BI_78	Use Wastewater Treatment Equipment That is Repairable or Replaceable	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	×	NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Alternative Transportation During Catastrophes

ID: BI_01

Description:

Identifies transportation alternatives (like bus service) during times of storm surge, etc.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Archaeological Assessment of Vulnerable Historic Resources

ID: BI_02

Description:

Identifies vulnerable cultural resources and determines risk from flooding and other natural disasters.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Create a Decentralized Electric Grid

ID: BI_03

Description:

An electric grid that is located closer to the communities it serves is less susceptible to natural hazards.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

APA Planning for Infrastructure Resilience



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Develop Petroleum Set-Aside Program

ID: BI_04

Description:

Ensures essential public needs are met during severe fuel shortage, such as hospitals, police, and fire stations.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Ensure Backup Power Generation for Critical Facilities and Infrastructure

ID: BI_05

Description:

Backup hospitals, nursing homes, police, fire, etc., especially if located in high-risk areas.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✓
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Evaluate Changes to Road Maintenance and Construction Materials Based on Climate Change

ID: BI_06

Description:

Recognize future conditions that may require renovation or modification for road.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Integrate Climate Change into Transportation Design, Building And Maintenance

ID: BI_07

Description:

Integrate climate resiliency into transportation design, construction, reconstruction and maintenance.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Manage Compressed Liquefied Natural Gas Sites and Fueling Stations Before and During Hazards; Improve Resiliency in Related Infrastructure

ID: BI_08

Description:

Prevent disruptions in liquid fuel supply during storms and other events.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Provide Additional Fuel Storage Capacity for Wastewater Systems

ID: BI_09

Description:

Provide additional fuel-storage capacity at wastewater systems to maintain self-sufficient standby power during outages.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Replace Exterior Building Components with Hazard-Resistant Materials

ID: BI_10

Description:

Helps buildings withstand intense storm events.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Secure Propane Tanks

ID: BI_11

Description:

Improves propane tank securement to protect them during storms, preventing pollution.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Upgrade Communication Infrastructure

ID: BI_12

Description:

Install new fiber optic cables to prevent signal and service disruption during storms.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

FEMA HMA Mitigation Action Portfolio



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Use Gis to Map Hazard Areas, At-Risk Structures

ID: BI_13

Description:

Maps hazard areas to better understand and assess local vulnerability.

Climate Change Effects Addressed:

- Decreased Air Quality ✓
- Decreased Water Quality ✓
- Drought ✓
- Extreme Weather ✓
- Increasing Precipitation ✓
- Ocean Acidification ✓
- Rising Temperatures ✓
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ✗
- Coastal Communities ✗
- Ocean And Marine Life ✗
- Ecosystems And Wildlife ✗
- Socially Vulnerable Populations ✗
- Infrastructure ✓
- Agriculture and Food Supply ✗

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: "Harden" Fuel Terminals

ID: BI_14

Description:

Ensure fuel terminals have taken hardening and resilience measures to protect facilities from storms.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: "Harden" Wastewater Treatment Facilities with Various Methods

ID: BI_15

Description:

Retain water with construction walls and dikes; waterproof by installing submersible pumps and water resistant electrical enclosures; install flood proof doors; temporary flood barriers.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	✓
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Abandon Transportation Infrastructure

ID: BI_16

Description:

Abandon infrastructure in vulnerable or indefensible areas, and site new facilities in less vulnerable locations.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Accommodate Infrastructure in Place

ID: BI_17

Description:

Accommodate rising tides with increased culvert size, planning pavement materials to minimize lifecycle cost, and enhance scour protection on bridges.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	✓
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	✓

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Build Small flood Control Structures to Prevent flood Damage

ID: BI_18

Description:

Using minor structural projects that are smaller and more localized (e.g., floodwalls or small berms) in areas that cannot be mitigated through non-structural activities or where structural activities are not feasible due to low densities. Using revetments (hardened materials placed atop existing riverbanks or slopes) to protect against floods.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	✓

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	✓
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Complete 3-D Laser Documentation of Flood Risk Area

ID: BI_19

Description:

Document flood risk area using lasers.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Create Flood Friendly Culverts

ID: BI_20

Description:

Whether simply out dated or inadequately designed, culverts can become pinch points during storm events and, potentially, result in flooding of adjacent areas or significant impacts to the transportation system. Therefore, identifying undersized road and rail crossings, updating design standards to account for increased water flow, and replacing outdated or inadequate crossings results in less disruption to the transportation system and a reduction in flood impacts on neighboring properties.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

Naturally Resilient Communities



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Use Bioengineered Bank Stabilization Techniques

ID: BI_21

Description:

Using bioengineered bank stabilization techniques.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	✓

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	✓
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Improve Reliability of Emergency Communications During Severe Weather

ID: BI_22

Description:

Inventory phone land lines; identify vulnerabilities and options.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Increase Communication Between Water Suppliers and Downstream Municipalities

ID: BI_23

Description:

Advance common goals and communication between water suppliers and downstream municipalities; ensure downstream flood mitigation.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	✓
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Elevate or Retrofit Structures

ID: BI_24

Description:

Elevating structures so that the lowest floor, including the basement, is raised above the base flood elevation. Elevating and anchoring manufactured homes or, preferably, keeping manufactured homes out of the floodplain.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Floodproof Residential And Non-Residential Structures

ID: BI_25

Description:

Floodproofing techniques may protect certain structures from flood damage, including:

- Wet floodproofing in a basement, which may be preferable to attempting to keep water out completely because it allows for controlled flooding to balance exterior and interior wall forces and discourages structural collapse.
- Encouraging wet floodproofing of areas above base flood elevation.
- Using water resistant paints or other materials to allow for easy cleanup after floodwater exposure in accessory structures or in a garage area below an elevated residential structure.
- Dry floodproofing non-residential structures by strengthening walls, sealing openings, or using waterproof compounds or plastic sheeting on walls to keep water out.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Retrofit Residential Buildings to Withstand Wind Damage

ID: BI_26

Description:

The following types of modifications or retrofits to existing residential buildings can reduce future wind damage:

- Improving the building envelope.
- Installing hurricane shutters or other protective measures.
- Retrofitting gable end walls to eliminate wall failures in high winds.
- Replacing existing non-ductile infrastructure with ductile infrastructure to reduce their exposure to hazardous events.
- Retrofitting buildings with load-path connectors to strengthen the structural frames.
- Installing safe rooms.
- Reinforcing garage doors.
- Inspecting and retrofitting roofs to adequate standards to provide wind resistance.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Acquire And Demolish or Relocate Structures Located in High-Risk Areas

ID: BI_27

Description:

Acquiring and demolishing or relocating structures located in high-risk areas.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Alternative Road De-Icer

ID: BI_28

Description:

Protect town's water from non-flooding-related nonpoint source salination by treating roads with something other than salt during winter storms.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ✓
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Aquifer Storage and Recovery

ID: BI_29

Description:

Creating a new cost-effective water recharge system to protect water resources will ensure that critical community lifelines are not adversely impacted in a severe weather event and that cascading impacts to surrounding communities are mitigated.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ✓
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA HMA Mitigation Action Portfolio



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Armor Certain Transportation Infrastructure

ID: BI_30

Description:

Protect certain critical roads and transportation assets, with the caveat that this is not a long term solution and cannot be used all along the coast.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Conduct Feasibility Studies for Raising Structures and Building Barriers for Infrastructure

ID: BI_31

Description:

Studies feasibility of permanent structural and natural barriers, raising and redesigning public infrastructure, etc.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	✓

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Consider Retreat

ID: BI_32

Description:

Allow community to buy property or establish a Conservancy District to prohibit future development on existing parcels.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ✓
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Construct Seawalls or Other Structures To Protect Critical Facilities Located on the Shoreline

ID: BI_33

Description:

Constructing seawalls or other structures to protect critical facilities located on the shoreline.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Construct Wet Weather Bypass

ID: BI_34

Description:

"Not a desired strategy to protect the equipment but would be a preferred alternative to overflow within streets."

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ✓
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Constructing Groins to Capture Material Along the Shoreline in order to Trap and Retain Sand

ID: BI_35

Description:

Constructing groins to capture material along the shoreline in order to trap and retain sand.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ✓
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Create Defensible Space Around Structures and Infrastructure

ID: BI_36

Description:

Local governments can implement defensible space programs to reduce risk to structures and infrastructure, including:

- Creating buffers around residential and non-residential structures through the removal or reduction of flammable vegetation, including vertical clearance of tree branches.
- Replacing flammable vegetation with less flammable species.
- Creating defensible zones around power lines, oil and gas lines, and other infrastructure systems.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	✓
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Depending on its Infrastructure Capabilities, Use Check Valves, Sump Pumps, And Backflow Prevention Devices in Homes and Buildings.

ID: BI_37

Description:

Depending on its infrastructure capabilities, using check valves, sump pumps, and backflow prevention devices in homes and buildings.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Design and Reconstruct Roadways

ID: BI_38

Description:

Change design requirements for new and refurbished roadways.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Elevate or Retrofit Utilities

ID: BI_39

Description:

Raising utilities or other mechanical devices above expected flood levels and/or sea level rise levels. Relocating utilities and water heaters above base flood elevation and using tankless water heaters in limited spaces.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Elevate Roads and Bridges

ID: BI_40

Description:

Elevating roads and bridges above the base flood elevation to maintain dry access. In situations where flood waters tend to wash roads out, construction, reconstruction, or repair can include not only attention to drainage, but also stabilization or armoring of vulnerable shoulders or embankments.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Ensure Emergency Water Connections and Supplies

ID: BI_41

Description:

Assists water suppliers in developing emergency programs to address supply vulnerability among small systems, and creates interconnections to provide redundancy of supply.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	✓
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	✓
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Evaluate Emergency Response to the Sewer Treatment Plant in case of Flood

ID: BI_42

Description:

Ensure accessibility to plan is maintained and includes proper equipment for disaster response.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Evaluate Pipes Ability to Withstand Heat and Cold

ID: BI_43

Description:

Protect the water system through structural and infrastructural upgrades.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	✓
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Expand Sewer District

ID: BI_44

Description:

To avoid contamination of aquifer by septic systems, expand sewer district to residential areas.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ✓
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

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Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Expand Surface Water Storage

ID: BI_45

Description:

Develop regional and distributed surface water storage (e.g., C-51 reservoir and interconnected urban systems) to increase the potential for stormwater capture and reuse for water supply, aquifer recharge, flood management, and environmental benefits.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	✓
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Finance City Flood Dock Mitigation Project

ID: BI_46

Description:

Includes closure valves, pumping stations, new stormwater drainage pipes, and lining of existing pipes.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Floodproof Water and Wastewater Treatment Facilities Located in Flood Hazard Areas

ID: BI_47

Description:

Floodproofing water and wastewater treatment facilities located in flood hazard areas.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Identify Alternative Evacuation Routes

ID: BI_48

Description:

Protect residents by improving emergency capacity of transportation systems.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Identify Stormwater Structures that Flood

ID: BI_49

Description:

Identify existing stormwater management structures that are subject to flooding and mitigate the impacts on this infrastructure and its performance.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

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Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Increase Drainage or Absorption Capacities with Detention and Retention Basins, Relief Drains, Spillways, Drain Widening/Dredging or Rerouting, Logjam And Debris Removal, Extra Culverts, Bridge Modification, Dike Setbacks, and Flood Gates and Pumps

ID: BI_50

Description:

Rainwater and snowmelt can cause flooding and erosion in developed areas. Structural stormwater management projects that prevent this.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Increase Long-Term Community Resilience and Disaster Recovery Through Distributed Renewable Energy and Battery Storage Systems

ID: BI_51

Description:

Provide electric power backup by promoting distributed solar, battery storage, microgrids, and other techniques of distributed production and storage; prioritize power at emergency command centers, shelters, senior living centers, and multifamily affordable housing units.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Increase Reservoir Capacity

ID: BI_52

Description:

protect property and citizens downstream from the peak runoff that occurs when large rain events occur.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ✓
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Increase Resilience and Structural Stability of Drinking Water Systems

ID: BI_53

Description:

Protect residents' health through enhanced drinking water supply systems.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	✓
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Install Catchment Filtration System

ID: BI_54

Description:

Filters stormwater to reduce contaminants in groundwater.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ✓
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Install/Upgrade Stormwater Pumping Stations

ID: BI_55

Description:

Installing/upgrading stormwater pumping stations.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

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Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Installing Geotextile Sand Tubes to Trap Sand or Protect Beachfront Properties

ID: BI_56

Description:

Installing geotextile sand tubes to trap sand or protect beachfront properties.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	✓

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	✓
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Integrate Combined Surface And Groundwater Impacts Into The Evaluation of At-Risk Infrastructure And The Prioritization of Adaptation Improvements

ID: BI_57

Description:

Utilize a combination of inundation maps and stormwater models to identify areas and infrastructure at increased risk of flooding; evaluate the potential impacts of changes in groundwater levels on wastewater and stormwater systems (including septic systems, wastewater collection, and conveyance and storage systems), with consideration of water quantity and quality (including public health-related metrics).

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

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Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Inventory Water and Wastewater Infrastructure

ID: BI_58

Description:

Coordinate among city and county government public works agencies, water utilities, and other operators of water infrastructure to develop and maintain local and regional inventories of existing potable water supply wellfields, treatment and distribution systems, wastewater treatment and collection infrastructure, and septic tanks and drain fields; assess the potential for climate change impacts on each component of water infrastructure and develop adaptation strategies for affected systems, including infrastructure that may require replacement, reinforcement.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	✓
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

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Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Maintain Potable Water Pressure

ID: BI_59

Description:

If aquifers become salinated, sacrifice certain wells to inject potable water into the ground to create pressure barrier between aquifer and seawater.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	✓
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Prioritize Adaptation Investments to Reduce the Impact of Flooding and Sea Level Rise on Transportation Infrastructure, Particularly on Evacuation Routes

ID: BI_60

Description:

Identify vulnerable roadways and bridges; determine the current resilience of evacuation routes by mapping them against projected climate impacts, and redesign any evacuation routes that are threatened by potential climate impacts; integrate climate adaptation into the standards for designing transportation infrastructure.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	✓

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Promote Maritime Industries

ID: BI_61

Description:

Increase public support for maritime industries to upgrade their infrastructure and equipment.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

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Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Protect Power Lines and Infrastructure

ID: BI_62

Description:

The regular maintenance and upkeep of utilities can help prevent wind damage. Possible strategies are:

- Establishing standards for all utilities regarding tree pruning around lines.
- Incorporating inspection and management of hazardous trees into the drainage system maintenance process.
- Preemptively testing power line holes to determine if they are rotting.
- Inspecting utility poles to ensure they meet specifications and are wind resistant.
- Burying power lines to provide uninterrupted power after severe winds, considering both maintenance and repair issues.
- Upgrading overhead utility lines (e.g., adjust utility pole sizes, utility pole span widths, and/or line strength).
- Avoiding use of aerial extensions to water, sewer, and gas lines.
- Using designed-failure mode for power line design to allow lines to fall or fail in small sections rather than as a complete system to enable faster restoration.
- Installing redundancies and loopfeed.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Protect Pumping Stations from Flooding

ID: BI_63

Description:

Make vulnerable pumping stations resilient to flooding.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

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Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Realign Transportation Assets

ID: BI_64

Description:

Realign bus transportation routes, bike paths, and roads.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

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Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Relocate Wastewater Treatment Facilities

ID: BI_65

Description:

Elevate or relocate systems and equipment to higher points.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

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Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Remove Existing Buildings and Infrastructure from Erosion Hazard Areas

ID: BI_66

Description:

To prevent damage to buildings and infrastructure from erosion, consider acquiring and demolishing or relocating at-risk buildings and infrastructure and enforcing permanent restrictions on development after land and structure acquisition.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Reorient Near-Shore Roads so they are Parallel (Not Perpendicular) to the Beach to Prevent the Channelization of Storm Surge and Wind Inland

ID: BI_67

Description:

Reorienting near-shore roads so they are parallel (not perpendicular) to the beach to prevent the channelization of storm surge and wind inland.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

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Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Require New Road/Stream Crossings to Comply With New Guidelines

ID: BI_68

Description:

Calculate design storm conveyance requirements of bridges/culverts based on updated data.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Require that All Critical Facilities Including Emergency Operations Centers (Eoc), Police Stations, and Fire Department Facilities Be Located Outside Of Flood-Prone Areas

ID: BI_69

Description:

Requiring that all critical facilities including emergency operations centers (EOC), police stations, and fire department facilities be located outside of flood-prone areas.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Resurface Impervious Pavement

ID: BI_70

Description:

Resurfaces impervious pavement with pervious surfaces to help control stormwater runoff.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ✓
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Retrofit At-Risk Structures With Ignition-Resistant Materials

ID: BI_71

Description:

Existing structures in wildfire hazard areas can be protected through the use of non-combustible materials and technologies, including:

- Installing roof coverings, sheathing, flashing, skylights, roof and attic vents, eaves, and gutters that conform to ignition-resistant construction standards.
- Installing wall components that conform to ignition-resistant construction standards.
- Protecting propane tanks or other external fuel sources.
- Purchasing and installing external, structure-specific water hydration systems (sprinklers); dedicated power sources; and dedicated cisterns if no water source (e.g., lake, river, or swimming pool) is available.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	×
Ocean Acidification	×
Rising Temperatures	✓
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Retrofit Critical Facilities to Withstand Predicted Sea Level

ID: BI_72

Description:

Critical facilities to be built 1 foot above the 500-year flood elevation or predicted sea level rise, whichever is higher.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Retrofit Public Buildings and Critical Facilities To Withstand Wind Damage

ID: BI_73

Description:

Public buildings and critical facilities can be retrofitted to reduce future wind damage with the following actions:

- Improving roof coverings (e.g., no pebbles, remove ballast roof systems).
- Anchoring roof-mounted heating, ventilation, and air conditioning units.
- Retrofitting buildings with load-path connectors to strengthen the structural frames.
- Retrofitting or constructing the emergency operations center to FEMA 361 standards.
- Avoiding placing flag poles or antennas near buildings.
- Upgrading and maintaining existing lightning protection systems to prevent roof cover damage.
- Requiring upgrading of reused buildings that will house critical facilities.
- Protecting traffic lights and other traffic controls from high winds.
- Converting traffic lights to mast arm.

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Retrofit Sewer Infrastructure

ID: BI_74

Description:

Raising electrical components of sewage lift stations above base flood elevation. Raising manhole openings using concrete pillars. Installing watertight covers or inflow guards on sewer manholes. Installing flood telemetry systems in sewage lift stations. Installing back-up generators for pumping and lift stations in sanitary sewer systems along with other measures (e.g., alarms, meters, remote controls, and switchgear upgrades).

Climate Change Effects Addressed:

Decreased Air Quality	×
Decreased Water Quality	×
Drought	×
Extreme Weather	×
Increasing Precipitation	✓
Ocean Acidification	×
Rising Temperatures	×
Sea-Level Rise	×

Climate Change Impacts Addressed:

Health And Well-Being	×
Coastal Communities	×
Ocean And Marine Life	×
Ecosystems And Wildlife	×
Socially Vulnerable Populations	×
Infrastructure	✓
Agriculture and Food Supply	×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects

Individual Action Sheet

Resilience Strategy: Retrofit Water Supply Systems

ID: BI_75

Description:

Improve water supply and delivery systems to save water through actions such as: Designing water delivery systems to accommodate drought events. Developing new or upgrading existing water delivery systems to eliminate breaks and leaks.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ✓
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ×

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Retrofitting Critical Facilities to Be 1 Foot Above the 500-Year Flood Elevation (Considering Wave Action) or The Predicted Sea Level Rise Level, Whichever Is Higher.

ID: BI_76

Description:

Retrofitting critical facilities to be 1 foot above the 500-year flood elevation (considering wave action) or the predicted sea level rise level, whichever is higher.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Strengthen Resilience at Ports

ID: BI_77

Description:

Strengthen storm resilience and recover at ports through strategic partnerships and planning.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions



Risk Reduction Actions: Building & Infrastructure Projects Individual Action Sheet

Resilience Strategy: Use Wastewater Treatment Equipment That is Repairable or Replaceable

ID: BI_78

Description:

Make sure spare equipment or parts are on hand; Create contingency plans on how to replace and who to call.

Climate Change Effects Addressed:

- Decreased Air Quality ×
- Decreased Water Quality ×
- Drought ×
- Extreme Weather ×
- Increasing Precipitation ×
- Ocean Acidification ×
- Rising Temperatures ×
- Sea-Level Rise ✓

Climate Change Impacts Addressed:

- Health And Well-Being ×
- Coastal Communities ×
- Ocean And Marine Life ×
- Ecosystems And Wildlife ×
- Socially Vulnerable Populations ×
- Infrastructure ✓
- Agriculture and Food Supply ×

Source Document:

NJ Future, Local Options/Local Actions