

# Building Resilient Transportation Systems

NMDOT Resilience  
Improvement Plan

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# Increasing threats/disruptors to our infrastructure

- Wildfire
- Rockfall and mudslide
- Flooding/debris flow
- Dust storms
- Extreme heat



# Resilient Infrastructure

An aerial photograph of a large wildfire. The fire front is visible as a bright yellow and orange line, with a massive plume of white smoke rising from it. The surrounding landscape is dark and charred, with some green vegetation still visible in the upper left corner.

***Infrastructure designed to avoid, anticipate, absorb, adapt to, and/or rapidly recover from current and future hazards.***

Calf Canyon + Hermit's Peak Fire complex

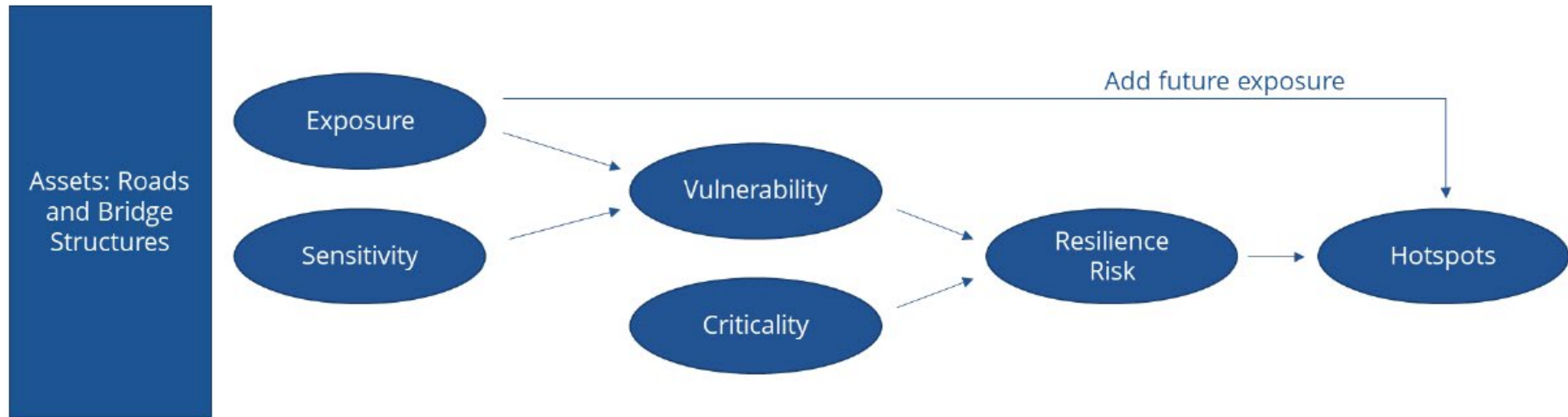
# Transportation Resilience Improvement Plan (RIP)

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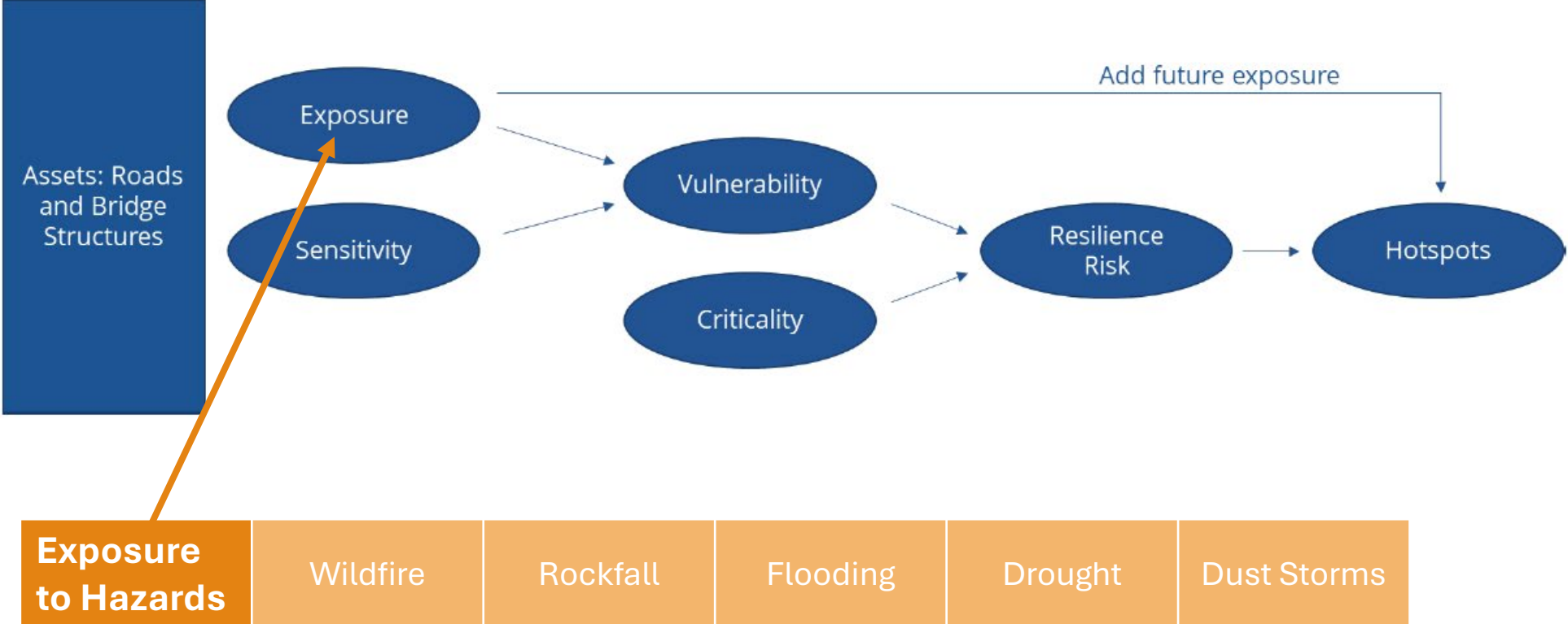
- Early resilience efforts, trainings and plans focused on coastal areas - sea level rise, flooding, etc.
- 2021 NMDOT Resiliency Study – identified data gaps and needs in NM
- 2021 Bipartisan Infrastructure Law (BIL) - introduced the concept of DOT RIPs and federal funding for resilience projects
  - Demonstrates a systemic approach to transportation system resilience and includes a risk-based assessment of vulnerabilities of transportation assets and systems to current and future weather events and natural disasters.
  - RIPs are optional/voluntary, not federally mandated
  - Approved RIPs result in a reduction of match amounts for federal resilience funds (PROTECT)
- 2024 NMDOT RIP was approved by FHWA July 2024

# NMDOT Resilience Improvement Plan (2024)

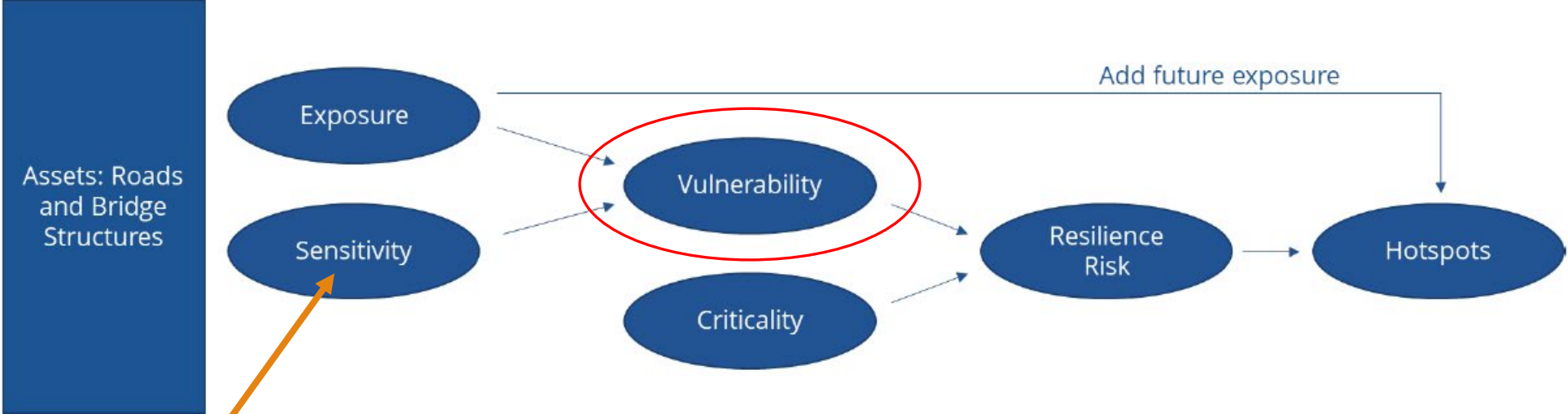
- Data-driven analysis of NMDOT assets
- Identifies assets that are **at the most risk** for damage from environmental and natural hazards



# NMDOT Resilience Improvement Plan (2024)

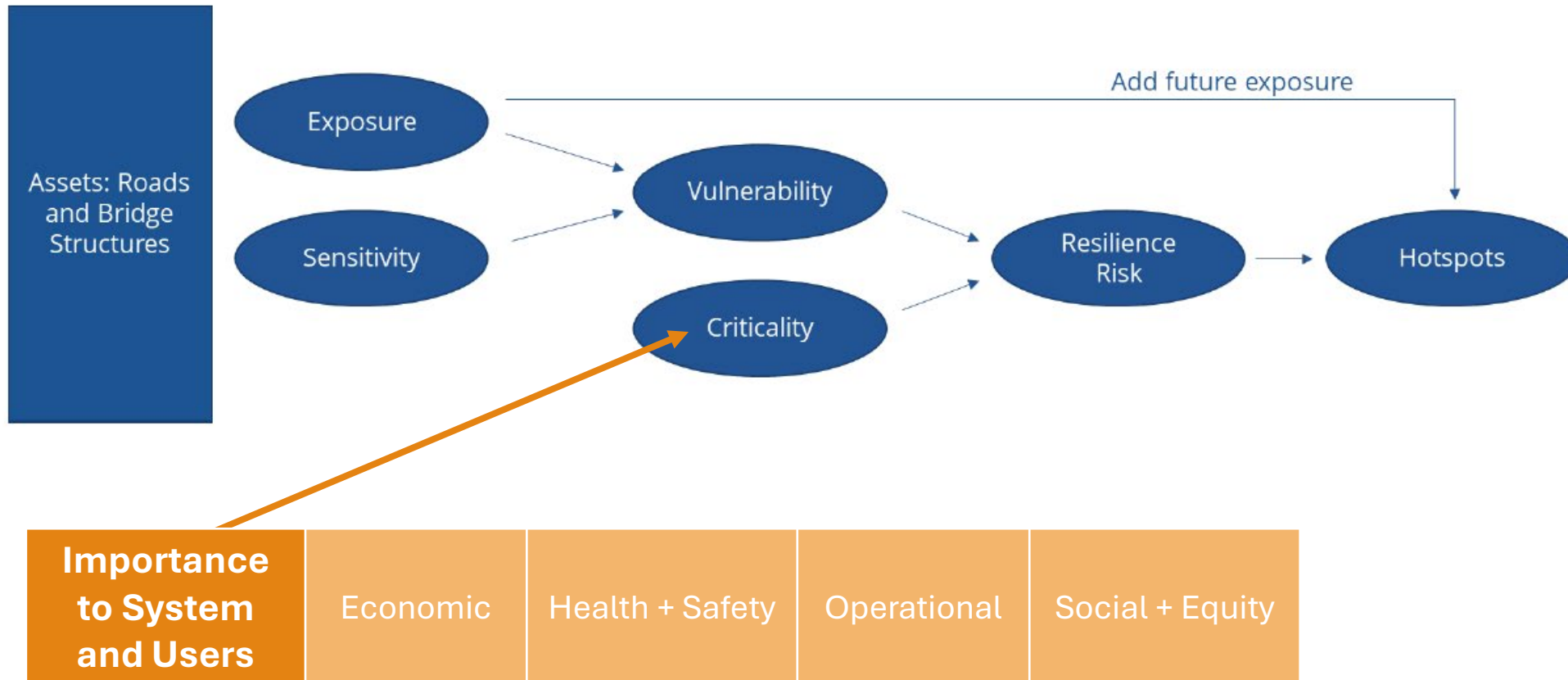


# NMDOT Resilience Improvement Plan (2024)



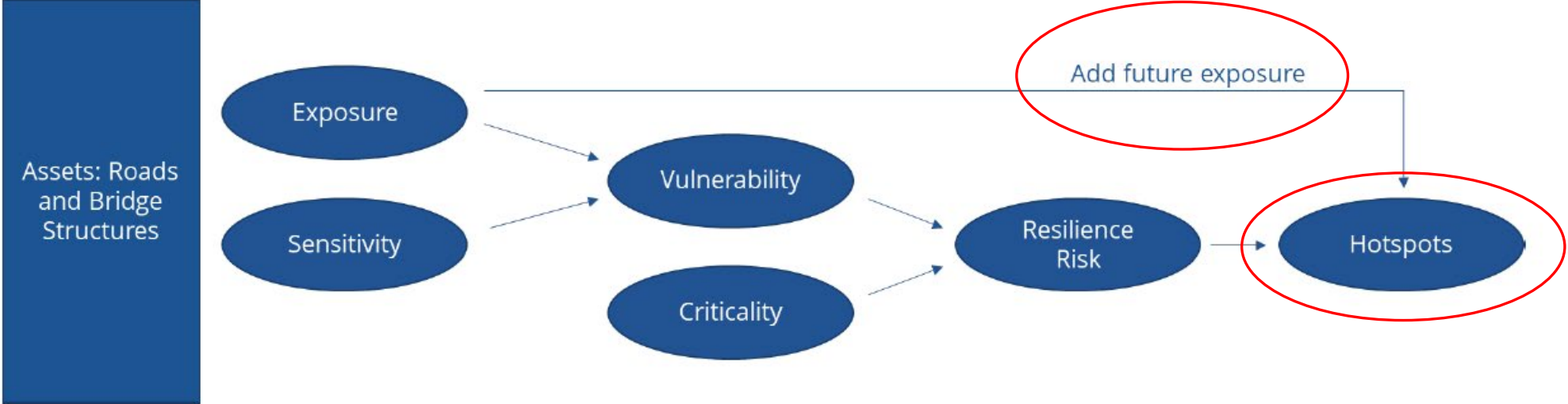
<b>Asset Condition</b>	Pavement condition (roads)		Asset condition (structures)		Age
<b>Exposure to Hazards</b>	Wildfire	Rockfall	Flooding	Drought	Dust Storms

# NMDOT Resilience Improvement Plan (2024)





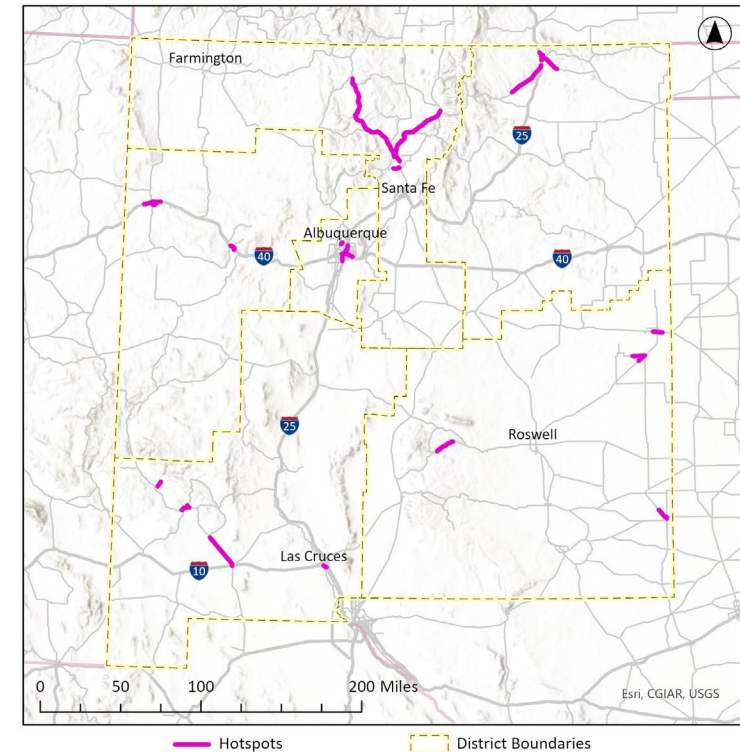
# NMDOT Resilience Improvement Plan (2024)



# NMDOT Assets | what's at risk?

**District Risks - % of District Road Miles by Risk Type**

	Low Risk	Medium Risk	High Risk	Very High Risk
D1	53%	36%	9%	3%
D2	55%	29%	13%	3%
D3	37%	34%	19%	10%
D4	42%	37%	17%	4%
D5	29%	35%	22%	14%
D6	39%	44%	11%	5%



# Resilience Explorer Map

Filtered Features

36,169

Filter Districts ▼

Filter Counties ▼

Search Roads and Structures

Show Structures Only

Filter by a Single Resilience Consideration.

Show All Resilience Considerations
▼

Low
≥ 1
High

Reset Filters

Summary Information

Filtered Districts	6
Filtered Counties	33
Filtered Roads	1,538
Filtered Structures	2,916

Resilience Risk	Count (Approximate)
A: Low Risk	6,800
B: Medium Risk	5,500
C: High Risk	2,200
D: Very High Risk	800

# PROTECT: Funding for Resilient Infrastructure

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- PROTECT: Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation
- Established in the 2021 Bipartisan Infrastructure Law (BIL)
- NMDOT receives \$13,381,990 (total = federal + state match)/year
- 2% set aside required for planning projects - \$267,640 (total = federal + state match)
- PROTECT formula funds are only available to the NMDOT for DOT-led projects on DOT-owned/maintained infrastructure
- PROTECT grant funds are available to DOT and tribal and local public agencies

CN	District	Title	PROJECT TYPE	2024	2025	2026	2027
2104930	D2	District Rockfall Mitigation Study	Resilience Improvement - Planning	\$ 500,000			
U900870	Statewide	Technical Capacity Building for Resilience	Resilience Improvement - Planning	\$ 150,000			
1101361	D1	Reversing Desertification along I-10	Resilience Improvement - Natural Infrastructure (68)		\$ 1,000,000	\$ -	\$ -
1102220	D1	Gila River PROTECT Project	Resilience Planning (65)		\$ 1,962,339	\$ -	\$ -
2104760	D2	NM 246 SBC	Resilience Improvement - Highway Project (66)		\$ 4,872,413	\$ -	\$ -
2104940	D2	NM 532 Gabion Basket Repair	Resilience Improvement - Highway Project (66)		\$ 5,600,000	\$ -	\$ -
4101950	D4	Calf Canyon/Hermit Peak Flood Mitigation	Road - Reconstruction (6)		\$ 4,750,000	\$ -	\$ -
1102270	D1	I-10 Corridor Culvert Improvements	Resilience Improvement - Highway Project (66)		\$ 1,706,200	\$ 793,800	
LC00330	D1	Bridge Replacement	Resilience Improvement - Highway Project (66)		\$ -	\$ 1,000,000	\$ -
4101951	D4	Calf Canyon/Hermit Peak Flood Mitigation Phase II	Resilience Improvement - Highway Project (66)		\$ -	\$ 5,800,000	\$ -
1102271	D1	I-10 Corridor Culvert Improvements	Resilience Improvement - Highway Project (66)		\$ -	\$ 912,404	\$ 7,187,595
1102221	D1	Gila River PROTECT Project	Resilience Improvement - Natural Infrastructure (68)		\$ -	\$ -	\$ 5,037,661
4101952	D4	Calf Canyon/Hermit Peak Flood Mitigation Phase III	Resilience Improvement - Highway Project (66)		\$ -	\$ -	\$ 1,450,000
2105090	D2	Brady Canyon CMP Replacement/Upper Canyon Erosion Control	Resilience Improvement - Highway Project (66)		\$ 1,000,000	\$ 1,000,000	\$ -
5101930	D5	US 64 Hogback Rockfall Mitigation Project	Resilience Improvement - Highway Project (66)		\$ -	\$ 2,000,000	\$ -
			Total Programmed		\$ 20,890,952	\$ 11,506,204	\$ 13,675,256
			Target		\$14,052,983	\$14,052,983	\$14,052,983
			Unawarded/rollover		\$9,195,403		
			Difference +/-		\$2,357,434	\$2,546,779	\$377,727

## Examples of resilient infrastructure

- Flood debris barriers in fire prone areas
- Properly sized culverts in flood prone areas
- Preventive slope stabilization
- Windbreaks
- Heat-resistant paving
- Revegetation to mitigate dust



# Examples of resilient infrastructure

## *nature-based solutions*

- Native revegetation
- Retention ponds and bioswales
- Naturally enforced retaining walls

*These solutions serve a dual purpose of protecting infrastructure and reducing human impact on natural environments.*



# Next Steps

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- Fill the PROTECT/Resilience Coordinator position (recently vacated)
- Continue to use the RIP to identify projects for PROTECT funding
- Review NMDOT Design Standards to identify recommendations for integrating resilience
- Host national trainings on resilience to develop technical capacity of DOT staff
- Update the RIP to include culverts after completion of NMDOT Culvert Asset Mapping Plan (CAMP)



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NM RIP

<https://www.dot.nm.gov/planning-research-multimodal-and-safety/planning-division/research-and-climate-bureau/>