U.S. Department of Transportation
Federal Highway Administration

Subject: **INFORMATION:** Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program Implementation Guidance

Date: July 29, 2022

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In Reply Refer To: HEP-1

To: Division Administrators
Directors of Field Services

On November 15, 2021, the President signed the Infrastructure Investment and Jobs Act (IIJA) (Public Law 117-58, also known as the "Bipartisan Infrastructure Law") (BIL) into law. The BIL added the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program in section 176(c) of title 23, United States Code (23 U.S.C.). The attached PROTECT Formula Program Implementation Guidance provides information on funding; eligible activities, facilities, and costs; and requirements of the PROTECT Formula Program. Section 11405 of the BIL established both the PROTECT Formula and Discretionary Grant Programs. This document focuses on the PROTECT Formula Program.

Except for the statutes and regulations cited, the contents of this document do not have the force and effect of law and are not meant to bind the States or the public in any way. This document is intended only to provide information regarding existing requirements under the law or agency policies.

This document will be accessible on the Resilience Website (FHWA Resilience Website) and the BIL Website (FHWA Bipartisan Infrastructure Law Website) and through the Policy and Guidance Center (FHWA Policy and Guidance Center).

If you have any questions, please contact Rob Kafalenos (202-366-2079 or Robert.Kafalenos@dot.gov) of the Office of Natural Environment.

Attachment

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Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program Implementation Guidance
(July 29, 2022)

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A. DEFINITIONS

In this guidance, the following definitions as established in BIL apply:

Emergency event means a natural disaster or catastrophic failure resulting in:
(A) an emergency declared by the Governor of the State in which the disaster or failure occurred; or
(B) an emergency or disaster declared by the President. (23 U.S.C. 176(a)(1)).

Evacuation route means a transportation route or system that:
(A) is owned, operated, or maintained by a Federal, State, Tribal, or local government;
(B) is used—
(i) to transport the public away from emergency events; or
(ii) to transport emergency responders and recovery resources; and
(C) is designated by the eligible entity with jurisdiction over the area in which the route is located for the purposes described in sub-paragraph (B). (23 U.S.C. 176(a)(2)).

Natural infrastructure means infrastructure that uses, restores, or emulates natural ecological processes and—
(A) is created through the action of natural physical, geological, biological, and chemical processes over time;
(B) is created by human design, engineering, and construction to emulate or act in concert with natural processes; or
(C) involves the use of plants, soils, and other natural features, including through the creation, restoration, or preservation of vegetated areas using materials appropriate to the region to manage stormwater and runoff, to attenuate flooding and storm surges, and for other related purposes. (23 U.S.C. 101(a)(17)).

Resilience with respect to a project, means a project with the ability to anticipate, prepare for, or adapt to conditions or withstand, respond to, or recover rapidly from disruptions, including the ability—
(A)
(i) to resist hazards or withstand impacts from weather events and natural disasters; or
(ii) to reduce the magnitude or duration of impacts of a disruptive weather event or natural disaster on a project; and
(B) to have the absorptive capacity, adaptive capacity, and recoverability to decrease project vulnerability to weather events or other natural disasters. (23 U.S.C. 101(a)(24)).

Resilience improvement means the use of materials or structural or nonstructural techniques, including natural infrastructure:
(A) that allow a project—
(i) to better anticipate, prepare for, and adapt to changing conditions and to withstand and respond to disruptions; and
(ii) to be better able to continue to serve the primary function of the project during and after weather events and natural disasters for the expected life of the project; or

(B) that—

(i) reduce the magnitude and duration of impacts of current and future weather events and natural disasters to a project; or

(ii) have the absorptive capacity, adaptive capacity, and recoverability to decrease project vulnerability to current and future weather events or natural disasters. (23 U.S.C. 176(a)(4)).

B. PROGRAM PURPOSE

This document provides background and guidance to clarify eligibility requirements for the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program under the Infrastructure Investment and Jobs Act (IIJA) (Pub. L. 117-58, also known as the "Bipartisan Infrastructure Law" (BIL)) (BIL § 11405).

Section 11405 of the BIL established both the PROTECT Formula and Discretionary Grant Programs. The purpose of these programs is to provide funds for resilience improvements through formula funding distributed to States; competitive planning grants to enable communities to assess vulnerabilities to current and future weather events and natural disasters and changing conditions, including sea level rise, and plan transportation improvements and emergency response strategies to address those vulnerabilities; and competitive resilience improvement grants to protect:

- Surface transportation assets by making them more resilient to current and future weather events and natural disasters, such as severe storms, flooding, drought, levee and dam failures, wildfire, rockslides, mudslides, sea level rise, extreme weather, including extreme temperature, and earthquakes;
- Communities through resilience improvements and strategies that allow for the continued operation or rapid recovery of surface transportation systems that serve critical local, regional, and national needs, including evacuation routes, and that provide access or service to hospitals and other medical or emergency service facilities, major employers, critical manufacturing centers, ports and intermodal facilities, utilities, and Federal facilities;
- Coastal infrastructure, such as a tide gate to protect highways, that is at long-term risk to sea level rise;
- Natural infrastructure that protects and enhances surface transportation assets while improving ecosystem conditions, including culverts that ensure adequate flows in rivers and estuarine systems. (*See* 23 U.S.C. 176(b)(2); 176(c)(1)).

Although near-term costs may be higher, investments in resilience projects and activities can reduce long-term, life cycle infrastructure costs by avoiding future damage, maintenance, and reconstruction.

Although both the PROTECT Formula and Discretionary Grant programs share common eligible activities, this guidance focuses only on the Formula Program (23 U.S.C. 176(c)).

C. GUIDANCE ON STRATEGIC PRIORITIES AND USE OF FEDERAL-AID HIGHWAY FORMULA FUNDING

Overview: This document provides background and guidance to clarify eligibility requirements for the PROTECT Formula Program. On December 16, 2021, the Federal Highway Administration (FHWA) issued guidance, *Policy on Using Bipartisan Infrastructure Law Resources to Build a Better America*, that serves as an overarching framework to encourage the use of BIL resources for projects that advance United States Department of Transportation (USDOT) strategic priorities and will Build a Better America. That policy is available on FHWA's BIL resources implementation website at the following URL: https://www.fhwa.dot.gov/bipartisan-infrastructure-law/building_a_better_america-policy_framework.cfm.

1. Safety

Prioritizing Safety in All Investments and Projects

The National Roadway Safety Strategy (NRSS) (issued January 27, 2022) commits the USDOT and FHWA to respond to the current crisis in traffic fatalities by "taking substantial, comprehensive action to significantly reduce serious and fatal injuries on the Nation's roadways," in pursuit of the goal of achieving zero highway deaths. FHWA recognizes that zero is the only acceptable number of deaths on our roads and achieving that is our safety goal. FHWA therefore encourages States and other funding recipients to prioritize safety in all Federal highway investments and in all appropriate projects, using relevant Federal-aid funding, including funds from the PROTECT Formula Program.

The Safe System approach addresses the safety of all road users, including those who walk, bike, drive, ride transit, and travel by other modes. It involves a paradigm shift to improve safety culture, increase collaboration across all safety stakeholders, and refocus transportation system design and operation on anticipating human mistakes and lessening impact forces to reduce crash severity and save lives. To achieve the vision of zero fatalities, safety should be fully reflected in a State's transportation investment decisions, from planning and programming, environmental analysis, project design, and construction, to maintenance and operations. States should use data-driven safety analyses to ensure that safety is a key input in any decision made in the project development process and fully consider the safety of all road users in project development.

FHWA encourages State and local agencies to consider the use of funds from the PROTECT Formula Program to address roadway safety and implement the Safe System approach wherever possible. For example, PROTECT Formula Program funds can support the incremental cost needed to make a roadway that regularly floods more resilient, which would enhance safety (see section F Eligibility below). Improvements to safety features, including traffic signs, pavement markings, and multimodal accommodations that are routinely provided as part of a broader Federal-aid highway project can and should be funded from the same source as the broader project as long as the use is eligible under that funding source.

Because of the role of speed in fatal crashes, FHWA is also providing new resources on the setting of speed limits and on re-engineering roadways to help "self-enforce" speed limits. To achieve the vision of zero fatalities on the Nation's roads, FHWA encourages States to assess safety outcomes for all project types and promote and improve safety for all road users, particularly vulnerable users. FHWA recommends that streets be designed and operated to maximize the existing right-of-way for accommodation of non-motorized modes and transit options that increase safety and connectivity. Pedestrian facilities in the public right-of-way must comply with the Americans with Disabilities Act.

Complete Streets

As one approach to ensuring the safety of all roadway users, FHWA encourages States and communities to adopt and implement Complete Streets policies that prioritize the safety of all users in transportation network planning, design, construction, and operations. Section 11206 of the BIL defines Complete Streets standards or policies as those which "ensure the safe and adequate accommodation of all users of the transportation system, including pedestrians, bicyclists, public transportation users, children, older individuals, individuals with disabilities, motorists, and freight vehicles." A complete street includes, but is not limited to, sidewalks, bike lanes (or wide paved shoulders), special bus lanes, accessible public transportation stops, safe and accommodating crossing options, median islands, pedestrian signals, curb extensions, narrower travel lanes, and roundabouts. A Complete Street is safe, and feels safe, for everyone using the street. FHWA encourages States to consider the resilience of Complete Streets for all users when developing PROTECT projects.

2. **Transit Flex:** FHWA, working with the Federal Transit Administration (FTA), seeks to help Federal-aid recipients plan, develop, and implement infrastructure investments that prioritize safety, mobility, and accessibility for all transportation network users, including pedestrians, bicyclists, transit riders, micromobility users, freight and delivery services providers, and motorists. This includes the incorporation of data sharing principles and data management.

   Funds from PROTECT can be "flexed" to FTA to fund transit projects. For title 23 funds that are flexed to FTA, section 104(f) of title 23, U.S.C., allows funds made available for transit projects or transportation planning to be transferred to FTA and administered in accordance with chapter 53 of title 49, U.S.C., except that the Federal share requirements of the original fund category continue to apply (See 23 U.S.C. 104(f)(1)).

   The use of Federal-aid funding on transit and transit-related projects can provide an equitable and safe transportation network for travelers of all ages and abilities, including those from traditionally underserved communities facing historic disinvestment. PROTECT transit and multimodal projects can help improve the resilience of transportation networks serving these communities, particularly during natural disasters and evacuations. FHWA encourages recipients to consider using funding flexibility for transit or multimodal-related resilience improvement projects and to consider strategies that: (1) improve infrastructure for non-motorized travel, public transportation access,

and increased public transportation service in underserved communities; (2) plan for the safety of all road users, particularly those on arterials, through infrastructure improvements and advanced speed management; (3) reduce single-occupancy vehicle travel and associated air pollution in communities near high-volume corridors; (4) offer reduced public transportation fares as appropriate; (5) target demand-response service towards communities with higher concentrations of older adults and those with poor access to essential services; and (6) use equitable and sustainable practices while developing transit-oriented development.

3. **Transferability Between FHWA Programs:** Section 126 of title 23, U.S.C., provides that a State may transfer up to 50 percent of the amount apportioned for the fiscal year for certain highway programs, including PROTECT, to other eligible apportioned highway programs.[1] See also FHWA Order 4551.1, "Fund Transfer to Other Agencies and Among Title 23 Programs" (Fund Transfers to Other Agencies and Among Title 23 Programs). Historically, States have used this flexibility to address unmet needs in areas where apportioned funding was insufficient.

   The BIL made historic investments in highway programs including more than $300 billion in Contract Authority from the Highway Trust Fund. This represents an average annual increase of 29 percent in Federal-aid funding over the amount of Contract Authority for FHWA programs compared to fiscal year 2021. Congress also established more than a dozen new highway programs to help address urgent surface transportation needs.

   While States have the flexibility to transfer funds out of PROTECT to other apportioned programs, we encourage them to first consider the need to transfer considering the significant increase in apportioned funding and the considerable funding for new programs. States, working with FHWA, should determine the need for PROTECT Formula Program funds – including the ability to apply PROTECT Formula Program funds to eligible assets owned by local governments, counties, and Tribes and identify and prioritize projects that maximize the use of PROTECT Formula Program funding before deciding to transfer funds out of the PROTECT Formula Program.

[1] States may only transfer PROTECT Formula Program funds that are apportioned to the State net of the planning set-aside.

4. **Americans with Disabilities Act:** The Americans with Disabilities Act (ADA) of 1990 and Section 504 of the Rehabilitation Act of 1973 prohibit discrimination against people with disabilities and ensure equal opportunity and access for persons with disabilities. The Department of Transportation's Section 504 regulations apply to recipients of the Department's financial assistance (*See* 49 CFR 27.3(a)). Title II of the ADA applies to public entities regardless of whether they receive Federal financial assistance (*See* 28 CFR 35.102(a)). The ADA requires that no qualified individual with a disability shall, because a public entity's facilities are inaccessible to or unusable by individuals with disabilities, be excluded from participation in, or be denied the benefits of the services, programs, or activities of a public entity, or be subjected to discrimination by any public entity (28 CFR 35.149). A public entity's pedestrian facilities are considered a "service, program, or activity" of the public entity. As a result, public entities and recipients of Federal financial assistance are required to ensure the accessibility of pedestrian facilities in the public right-of-way, such as curb ramps, sidewalks, crosswalks, pedestrian signals, and transit stops in accordance with applicable regulations.

   For PROTECT eligible projects, funds from the PROTECT Formula Program are eligible for resilience-improvement projects that will improve accessibility and implement recipients' ADA transition plans and upgrade their facilities to eliminate physical obstacles and provide for accessibility for individuals with disabilities. FHWA will provide oversight to recipients of PROTECT Formula Program funds to ensure that each public agency's project planning, design, and construction programs comply with ADA and Section 504 accessibility requirements.

5. **Equity:** The BIL provides considerable resources to help States and other funding recipients advance projects that consider the unique circumstances affecting community members' mobility needs and allocate resources consistently with those needs, enabling the transportation network to effectively serve all community members. FHWA will work with States to ensure PROTECT Formula Program funds are considered for projects and inclusion of project elements that proactively address racial equity, workforce development, economic development, and remove barriers to opportunity, including automobile dependence in both rural and urban communities as a barrier to opportunity or to redress prior inequities and barriers to opportunity.

   Federal-aid recipients, including PROTECT Formula Program fund recipients, are responsible for involving the public, including traditionally underserved and underrepresented populations, in transportation planning and complying with participation and consultation requirements in 23 CFR 450.210 and 23 CFR 450.316, as applicable. "Underserved populations" include minority and low-income populations but may also include many other demographic categories that face challenges engaging with the transportation process and receiving equitable benefits (*See* FHWA's Environmental Justice Reference Guide for additional information). In addition, PROTECT projects can support the Justice40 Initiative under Executive Order 14008, which establishes a goal that at least 40 percent of the benefits of Federal investments in climate and clean energy infrastructure are distributed to disadvantaged communities (*See* OMB's Interim Implementation Guidance for the Justice40 Initiative or its successor for additional

information). PROTECT projects can help improve the resilience of transportation networks serving these communities, particularly during natural disasters and evacuations.

To assist with these public engagement efforts, FHWA expects recipients of PROTECT Formula Program funds to engage with all impacted communities and community leaders to determine which forms of communication are most effective. Recipients should gain insight on the unique circumstances impacting various disadvantaged and underrepresented groups so that new channels for communication may be developed. And the recipients should use this information across all aspects of project delivery including planning, project selection, and the design process.

Among other things, recipients of PROTECT Formula Program funds are also required to assure equitable treatment of workers and trainees on highway projects through compliance with Equal Employment Opportunity requirements under 23 CFR Part 230, Subpart A, as well as ensuring nondiscrimination in all of their operations on the basis of race, color, or national origin under Title VI of the Civil Rights Act of 1964. Recipients of PROTECT Formula Program funds should ensure that they have the capacity and expertise to address Federal civil rights protections that accompany grant awards.

6. **Climate Change and Sustainability:** The United States is committed to a whole-of-government approach to reducing economy-wide net greenhouse gas pollution by 2030. The BIL provides considerable resources, including new programs and funding, to help States and other funding recipients advance this goal in the transportation sector. In addition, the BIL makes historic investments to improve the resilience of transportation infrastructure, helping States and communities prepare for hazards such as wildfires, floods, storms, and droughts exacerbated by climate change. The PROTECT Formula Program plays a major role in this effort.

   FHWA encourages the advancement of projects that address climate change and sustainability. To enable this, FHWA encourages recipients to consider climate change and sustainability throughout the planning and project development process, including the extent to which projects funded by the PROTECT Formula Program align with the President's greenhouse gas reduction, climate resilience, and environmental justice commitments. Consistent with the statute and guidance below, recipients should fund projects to make surface transportation assets more resilient to current and future weather events, natural disasters and changing conditions, including sea level rise, flooding, extreme heat, wildfires and mudslides; strengthen and protect evacuation routes; strengthen coastal infrastructure; and implement natural infrastructure and/or other storm surge protections functionally connected to a transportation improvement to make it more resilient. PROTECT Formula Program funds should also be used to develop vulnerability assessments and conduct other planning activities to decide how best to invest in resilient transportation improvements and investment strategies over time. FHWA also encourages recipients to consider projects under the PROTECT Formula Program that address environmental justice concerns.

7. **Labor and Workforce:** The PROTECT Formula Program may provide opportunities to support the creation of good-paying jobs, including jobs with the free and fair choice to join a union, and the incorporation of strong labor standards, such as the use of project labor agreements; employer neutrality with respect to union organizing; the use of an appropriately trained workforce (in particular registered apprenticeships, and other joint labor management training programs); and the use of an appropriately credentialed workforce in project planning stages and program delivery. Under BIL section 25019, projects using PROTECT Formula and other Federal-aid highway program funds may be awarded with a local or other geographic or economic hiring preference, including any such preference that may be included in a prehire agreement, without the need for any prior approval from FHWA, subject to any applicable State and local laws, policies, and procedures.

   Recipients should work with FHWA/the Division Office, to the extent possible, to identify opportunities for Federal-aid highway investments to advance high-quality job creation through the use of local or other geographic or economic hire provisions authorized under section 25019 in the BIL, and Indian employment preference for projects that are located on or near Tribal reservations authorized under 23 U.S.C. 140(d), or other workforce strategies targeted at expanding workforce training opportunities for people to get the skills they need to compete for these jobs, especially underrepresented populations: women, people of color, and groups with other systemic barriers to employment (people with disabilities, formerly incarcerated, etc.).

8. **Truck Parking:** Truck parking shortages are a national concern affecting the efficiency of U.S. supply chains and safety for truck drivers and other roadway users. Jason's Law, which was passed in 2012, established a national priority on addressing the shortage of long-term parking for commercial motor vehicles on the National Highway System (NHS).

   Many Federal-aid highway funding programs have eligibility for truck parking projects, including PROTECT. PROTECT Formula Program funds can in some cases support the incremental cost needed to make a truck parking facility more resilient, which can help protect the freight system and supply chains from extreme weather and future climate change (see section F Eligibility below). FHWA anticipates that these projects may advance progress toward the achievement of national performance goals for improving infrastructure condition, safety, congestion reduction, system reliability, or freight movement on the NHS.

   States should consider working with private sector truck stop operators and the trucking community in the siting and development of specific truck parking projects. States also are encouraged to offer opportunities for input from commercial motor vehicle drivers and truck stop operators through their State Freight Advisory Committees established under 49 U.S.C. 70201.

D. GOVERNING AUTHORITIES

1. Section 11101 of the BIL authorizes Contract Authority for the PROTECT Formula Program.
2. Section 11104 of the BIL provides for apportionment of funds under 23 U.S.C. 104(b)(8).
3. Section 11405 of the BIL establishes the PROTECT Formula Program in 23 U.S.C. 176.

E. FUNDING

1. **Authorization Levels:** Estimated total PROTECT Formula Program funding under the BIL is $7.3 billion collectively for Fiscal Years (FY) 2022 through 2026. Funds are distributed to the States by a statutory formula.

	Bipartisan Infrastructure Law (BIL)				
Fiscal Year (FY)	2022	2023	2024	2025	2026
Contract Authority	$1.403 B*	$1.431 B*	$1.459 B*	$1.489 B*	$1.518 B*

* Calculated (sum of estimated individual State PROTECT Formula Program apportionments)

The BIL sets each State's initial share of Federal-aid highway program apportioned (formula) funds annually based on the share of formula funds each State received in fiscal year 2021. The methodology for calculating the apportionments for FY 2022 under 23 U.S.C. 176 is discussed in FHWA Notice N4510.858. Table 20 in the annual Supplementary Tables Notice provides information on the distribution of FY 2022 PROTECT Formula Program funds and applicable statutory references. For FY 2023 through 2026 funds, revisit FHWA's Notices website at the appropriate future time.

Certain eligible planning activities receive a set-aside from the State's PROTECT Formula Program apportionment of not less than 2 percent for each fiscal year, as discussed in Section E.5 of this guidance. (*See* 23 U.S.C. 176(c)(2)).

The Fiscal Management Information System Program Code for these PROTECT Formula Program funds are as follows:

Program Code	Program Description	Title 23 Reference
Y800	PROTECT Formula Program (net of the Planning Set-Aside)	Section 104(b)(8)
Y810	Planning Set-Aside (2 percent)	Section 176(c)(2)
Y820	40 percent limiting amount for Construction of New Capacity	Section 176(c)(3)(F)(i)
Y830	10 percent limiting amount for Development Phase Activities and other Preconstruction Activities	Section 176(c)(3)(F)(ii)

In addition, States will be required to select a resilience improvement type when obligating funds.

2. **Period of Availability:** PROTECT Formula Program funds are Contract Authority. PROTECT Formula Program obligations are reimbursed from the Highway Account of the Highway Trust Fund. PROTECT Formula Program funds are available for obligation for a period of 3 years after the last day of the fiscal year for which the funds are authorized (*See* 23 U.S.C. 118(b)). Thus, funds are available for obligation for up to 4 years.

3. **Obligation Limitation:** PROTECT Formula Program funds are subject to the annual obligation limitation imposed on the Federal-aid highway program.

4. **Federal Cost Share**

(a) *Federal share in general*. The Federal share of the cost of a project carried out using PROTECT Formula Program funds is governed by 23 U.S.C. 176(c)(3)(D). It generally shall not exceed 80 percent of the total project cost. (23 U.S.C. 176(c)(3)(D)). An exception to this general requirement is discussed in paragraph (b) below. Paragraph (c) below also discusses other Federal funds that may be used to meet the applicable non-Federal share requirement for the PROTECT Formula Program. *See also Federal-Aid Guidance Non-Federal Matching Requirements* (2019) for information on non-Federal match requirements and flexibilities.[2]

(b) *Authorized reductions in non-Federal share.* Subject to certain limitations discussed below, the non-Federal share of the cost of a project carried out using PROTECT Formula Program funds may be reduced by —

1. 7 percentage points if the State[3] has developed a Resilience Improvement Plan and prioritized the project on that Resilience Improvement Plan (23 U.S.C. 176(e)(1)(B)(i)); and
2. 3 percentage points if a State Resilience Improvement Plan developed in accordance with Section 176(e) is incorporated (directly or by reference) into the metropolitan transportation plan under 23 U.S.C. 134 or the statewide long-range transportation plan under 23 U.S.C. 135, as applicable. (23 U.S.C. 176(e)(1)(B)(ii)).

For example, a State may have a resilience project eligible under PROTECT that is prioritized in its Resilience Improvement Plan developed under Section 176(e). Provided the State meets all procedural requirements for the Resilience Improvement Plan, the scenario may result in a split of 87 percent PROTECT Formula Program funds and 13 percent non-Federal funds. In a variation of the same scenario, if the State also incorporates the Resilience Improvement Plan into the long-range statewide

[2] https://www.fhwa.dot.gov/legsregs/directives/policy/memonfmr_tapered20190515.htm#matchingrules

[3] 23 U.S.C. 176(e)(1)(B)(i)(I) also discusses other eligible entities for the PROTECT Discretionary Grant Program, such as Metropolitan Planning Organizations. However, State DOTs are the only eligible entities under the PROTECT Formula Program; therefore the reductions in Federal share under 23 U.S.C. 176(e)(1)(B) only apply to the development or incorporation of a State Resilience Improvement Plan.

transportation plan, it may result in a split of 90 percent of PROTECT Formula Program funds and a non-Federal share of 10 percent.

Maximum reduction in non-Federal share: A State may not receive a reduction in non-Federal share under Section 176(e)(1) of more than 10 percentage points for any single project carried out with PROTECT Formula Program funds. (23 U.S.C. 176 (e)(1)(B)(iii)(I)).

No negative non-Federal share: A reduction in non-Federal share under Section 176(e)(1) shall not reduce the non-Federal share of the costs of a project carried out with PROTECT Formula Program funds to an amount that is less than zero. (23 U.S.C. 176 (e)(1)(B)(iii)(II)).

See section G of this memorandum for more information on Resilience Improvement Plans and reducing the Federal share.

(c) *Combining PROTECT Formula Program funds with other eligible USDOT or other Federal funds.* PROTECT Formula Program funds may be combined with other eligible USDOT or other Federal funding for projects that support the goals of the PROTECT Formula Program if the eligibility requirements and applicable Federal share are met for each program.

A State may apply Federal funds other than Federal funds apportioned to the State under section 104(b)(8) (PROTECT Formula Program funds) toward the non-Federal share for a project funded with PROTECT Formula Program funds. (23 U.S.C. 176(c)(3)(D)(ii)). However, the non-Federal share requirements for those other Federal funds must still be met. In addition to applicable Federal share requirements, eligibility requirements must also be met for all funds involved on the project.

For example, a State may determine that because its 50-year flood elevation will increase by 3 feet it should elevate a bridge to ensure public safety and provide resilience. The State could decide to use PROTECT Formula Program funds as the main source (80 percent) of funding and match it with 16 percent Surface Transportation Block Grant (STBG) funds[4] and 4 percent State funds to meet the non-Federal share requirements of STBG. Most Federal-aid funds, including STBG, require a non-Federal match.

5. Limitations on use of PROTECT Formula Program funds

(a) *Planning set-aside*. States must set aside at least 2 percent of PROTECT apportioned funds for eligible Planning activities each fiscal year. (see F.1.A. below and 23 U.S.C. 176(c)(2) and (d)(3))
(b) *Limitation on new capacity projects*. A State may not use more than 40 percent of PROTECT apportioned funds for the construction of new capacity. (23 U.S.C. 176 (c)(3)(F)(i)).

[4] The Federal share for STBG-funded projects is governed by 23 U.S.C. 120, as amended by the BIL, and is generally 80 percent (See 23 U.S.C. 120(b)).

(c) *Limitation on development phase activities.* In addition, a State may not use more than 10 percent of such funds for development phase activities, which include planning, feasibility analysis, revenue forecasting, environmental review, preliminary engineering and design work, and other preconstruction activities). (23 U.S.C. 176 (c)(3)(E)(i)(I) and (F)(ii)).

The planning set-aside and limiting amounts are calculated on the total PROTECT apportionment rather than a net amount after transfers. The computational tables in the Funding Section of FHWA's BIL website illustrate these calculations. See table 11 of the annual computational tables, which can be found by fiscal year at https://www.fhwa.dot.gov/bipartisan-infrastructure-law/funding.cfm. See Section C.3. above for more information on transfers between FHWA Programs.

6. **Deobligations of Other Title 23 Obligated Funds**: Project Agreements should not be modified to replace another Federal fund category with PROTECT Formula Program Funds or vice versa. (See 23 CFR 630.110(a)).

F. ELIGIBILITY

This section of the guidance discusses eligible projects and activities, eligible facilities, and eligible costs on projects funded under the PROTECT Formula Program. It also addresses use of system resilience elements and certain other requirements. Subsection 1 describes the four main types of eligible activities and projects: (A) Planning activities, (B) Resilience Improvement projects, (C) Community Resilience and Evacuation Route projects, and (D) At-Risk Coastal Infrastructure projects. Subsection 2 describes the facility types eligible to use PROTECT Formula Program funding. Subsection 3 addresses System Resilience elements, such as natural infrastructure, which may be included on PROTECT Formula Program projects. Subsection 4 lists eligible project and planning costs. Subsection 5 focuses on requirements for projects in a base floodplain.

The term "resilience" is defined, with respect to a project, for all of Title 23, U.S.C. at Section 101(a)(24). See BIL Section 11103 and the Definitions section in this guidance above (Section A). This definition generally applies for the PROTECT Formula Program with respect to weather events, natural disasters, and changing conditions, such as sea level rise, flooding, wildfires, and extreme weather events. In some circumstances, the term may also be used to refer to the level of protection against other threatening conditions and disruptions such as cyber threats, terrorism, and pandemics. However, PROTECT Formula Program funds should only be used to address these other threats to the extent that the work is connected to and supports natural hazard resilience. Eligible projects that focus on natural hazard resilience can include necessary elements to secure electronic communications such as protecting data transmitted from electronic sensors installed in a slope stabilization project or to monitor water elevations on a project to raise a bridge, or Intelligent Transportation System (ITS) message boards on an evacuation route improvement project.

PROTECT Formula Program funds can only be used for activities that are primarily for the

purpose of resilience or inherently resilience related. The Program focuses on making transportation more resilient through support of planning activities and transportation projects. With certain exceptions noted in subsections 1.B, 1.C, and 1.D below, the focus must be on supporting the incremental cost of making assets more resilient. Other project components that are not inherently resilience-focused should generally be funded from other sources, including other Title 23 programs.

1. **Eligible Activities.** Subject to certain limitations for eligible facilities and eligible costs discussed below, the following eligible activities are listed in 23 U.S.C. 176(c)(1) for the PROTECT Formula Program:

   A. Planning Activities

   Eligible activities are limited to:

   - Developing a Resilience Improvement Plan in accordance with Section 176(e);
   - Resilience planning, predesign, design, or the development of data tools to simulate transportation disruption scenarios, including vulnerability assessments;
   - Technical capacity building to facilitate the ability of the State to assess the vulnerabilities of its surface transportation assets and community response strategies under current conditions and a range of potential future conditions; or
   - Evacuation planning and preparation. (23 U.S.C. 176(c)(2) and 176(d)(3)(A)-(D)).

   State DOTs should apply a comprehensive, multi-modal approach to planning and are encouraged to partner with Metropolitan Planning Organizations (MPOs) and local agencies, including counties and cities to ensure that the needs of all users across all transportation modes are addressed through planning to address climate change and extreme weather event resilience needs.

   B. Resilience Improvements

   Eligible resilience improvement activities must improve the ability of an existing surface transportation asset to withstand one or more elements of a weather event or natural disaster, or to increase the resilience of surface transportation infrastructure from the impacts of changing conditions, such as sea level rise, flooding, wildfires, extreme weather events, and other natural disasters. Eligible activities must either improve the resilience of existing surface transportation infrastructure or be designed for resilience purposes as defined above in Section A under "resilience improvement." These activities include:

   - Resurfacing, restoration, rehabilitation, reconstruction, replacement, improvement, or realignment of an existing eligible surface transportation facility eligible for assistance under 23 U.S.C.
   - Incorporation of natural infrastructure.
   - The upgrade of an existing surface transportation facility to meet or exceed a design standard adopted by the Federal Highway Administration.
   - Installation of mitigation measures that prevent the intrusion of floodwaters into surface transportation systems.
   - Strengthening systems that remove rainwater from surface transportation facilities.
   - Upgrades to and installation of structural stormwater controls.

- A resilience project that addresses identified vulnerabilities described in the eligible entity's Resilience Improvement Plan.
- Relocating roadways in a base floodplain to higher ground above projected flood elevation levels, or away from slide prone areas.
- Stabilizing slide areas or slopes.
- Installing riprap.
- Lengthening or raising bridges to increase waterway openings, including to respond to extreme weather.
- Increasing the size or number of drainage structures.
- Installing seismic retrofits on bridges.
- Adding scour protection at bridges.
- Adding scour, stream stability, coastal, and other hydraulic countermeasures, including spur dikes.
- Vegetation management practices in transportation rights-of-way to improve roadway safety, prevent against invasive species, facilitate wildfire control, and provide erosion control.
- Any other protective features, including natural infrastructure, as determined by the Secretary. (23 U.S.C. 176(c)(1) and 176(d)(4)(A)(ii)(II)(aa)-(qq)).

Eligible Federal-aid funded roadway, transit and port projects qualify for the aforementioned resilience projects; see section F.2. below. States are encouraged to work with local entities to prioritize transportation and emergency response improvements, maintenance and monitoring to address these vulnerabilities. Eligible "resilience improvements" must support the resilience aspects of surface transportation projects, whether it involves adapting existing infrastructure or new construction. See the beginning of this section for discussion of the relevant threats and hazards. To the extent that the primary purpose of a project is to address resilience, it would be eligible to be fully funded (up to the applicable Federal share) as a resilience improvement project. Many of these items may warrant full funding under this program in many circumstances. However, certain items listed and larger projects not exclusively focused on resilience should generally only receive incremental support for the resilience aspects and related work. Final determinations regarding whether an improvement is eligible for PROTECT Formula Program funding are made by FHWA.

Eligibilities for PROTECT Formula funds also include natural infrastructure and systems to remove rainwater from surface transportation facilities. This may include a range of storm water best management practices such as use of permeable pavements, bioswales and retention ponds.

FHWA encourages recipients to consider projects where the resilience upgrade also reduces greenhouse gas emissions, including projects that utilize nature-based solutions and sustainable materials.

Resilience improvement project examples. In general, PROTECT Formula Program funds could be used to increase the resilience of existing assets. For example:

- Transit Agency X plans to construct a two-mile commuter rail train extension within an existing rail ROW with total project costs at $200 million. The project includes purchase of commuter rail vehicles, construction of a new commuter rail station, and installation of new power substations and associated equipment. Transit Agency X's engineering analysis projects a three-foot increase in the base floodplain elevation over its service life. Project costs associated with raising the elevation of the facility are $10 million. PROTECT Formula Program funds should only support the incremental cost difference of $10 million for raising the stations, substations, and electrical equipment.

  Similarly, if reconstructing a highway, a valid use of PROTECT Formula Program funds should only apply to the incremental cost difference to make the highway more resilient (for example, to account for a higher flood elevation), but not the entire project cost. State Y estimates that reconstruction of a highway would cost $200 million before considering future climate change, and that elevating the reconstructed highway and associated bicycle and pedestrian facilities to withstand higher inland flooding resulting from expected changes in precipitation would add an additional $75 million, PROTECT Formula Program funds should only support the $75 million roadway elevating portions of the project. If the State did not include any resilience improvements, including the work to elevate the project, then it would not be eligible for any PROTECT Formula Program funding.

- DOT C is resurfacing a highway, but not making any other resilience improvements. DOT C is attempting to obligate PROTECT Formula Program funds for the project in FMIS, but the project does not qualify as a resilience improvement type. This project would not be eligible for PROTECT Formula Program funds, and the funds would not be authorized.

- A bicycle lane and sidewalk are subject to routine flooding, particularly during heavy rainfall events. PROTECT Formula Program funds could be used to improve drainage and incorporate bioswales or retention ponds to improve stormwater runoff. These improvements would help the bicycle and pedestrian facility withstand current and future flooding, supporting the resilience of the entire complete street.

- In 2030, a southwest transportation authority plans to resurface Arterial X as part of a schedule of pavement preservation treatments over its service life. The authority estimates that resurfacing to meet current standard specifications will be $500,000. However, the authority determines that to make it more resilient to future extreme temperature and heat waves and to reduce the embodied carbon emissions from the pavement, it should change the pavement asphalt binder grade used in the asphalt mixture, adding $50,000 to the cost. PROTECT Formula Program funds should only be used for this $50,000 increment.

- A bridge scheduled for replacement is located over the bend of a river. This location has been a maintenance concern for years, as the river bend continues to move closer to the abutments. On the outside bend the river erodes at the abutments, and on the

inside bend the river deposits sediment, leading to reduced clearance. DOT Q has done a sediment transport study and determined that it can realign the roadway to place the bridge crossing close by at a more stable location over the river. DOT Q estimates that the bridge replacement would cost $10 million and the roadway realignment better accommodating the natural river processes would cost $5 million. PROTECT Formula Program funds should only support the $5 million roadway realignment.

- DOT V is improving an urban roadway to address a safety issue. As a result, it will need to redesign the current storm drain system comprised of curb inlets and pipes at this location. After simulating increases in rainfall resulting from future climate change, it is estimated that three additional inlets will be needed and the pipe system will need to be upsized for 500 feet until the outlet. The safety improvements and moving the inlets and piping system will cost $500,000. Adding the three new inlets and increasing the size of the pipe system to the outlet will cost an additional $400,000. PROTECT Formula Program funds should only be used for the $400,000 to increase the size of the piping and add the inlets.

- A bridge on a main access route to a disadvantaged community does not have sufficient capacity for a seismic event in which the route is expected to facilitate response and recovery efforts. Adding restrainers will limit the relative displacement at expansion joints and thus decrease the chance of unseating at these locations, and therefore prevent collapse. The cost of the restrainers and corresponding installation is $200,000 and would be fully eligible for use of PROTECT Formula Program funds. It is determined that the substructure has sufficient capacity to accommodate the demand in the earthquake scenario after installation of the restrainers.

C. Community Resilience and Evacuation Routes

Eligible community resilience and evacuation route activities must strengthen and protect evacuation routes that are essential for providing and supporting evacuations caused by emergency events. Eligible activities include:

- Resilience improvements under Section 176(d)(4)(A), if they will improve an evacuation route.
- Projects that ensure the ability of the evacuation route to provide safe passage during an evacuation and reduce the risk of damage to evacuation routes as a result of future emergency events, including restoring or replacing existing evacuation routes that are in poor condition or not designed to meet the anticipated demand during an emergency event, and including steps to protect routes from mud, rock, or other debris slides
- Expansion of capacity of evacuation routes to swiftly and safely support evacuations, including the installation of communication and intelligent transportation system (ITS) equipment and infrastructure, counterflow (also referred to as "contraflow" or "lane reversal") measures, and shoulders. This activity requires prior notification from the State to the FHWA that existing evacuation routes are not sufficient to adequately facilitate evacuations, including the transportation of first responders and recovery resources. The notification should be data-driven and evidence based,

supporting the need for additional evacuation facilities, and aligning with the purpose and definition of evacuation routes (see section A, Definitions, above).

- Construction of new or redundant evacuation routes. This activity requires prior notification from the State to the FHWA that existing evacuation routes are not sufficient to adequately facilitate evacuations, including the transportation of emergency responders and recovery resources. The notification should be data-driven and evidence based, supporting the need for additional evacuation facilities, and aligning with the purpose and definition of evacuation routes (see section A, Definitions, section above).
- Acquisition of evacuation route or traffic incident management equipment or signage.
- Projects to ensure access or service to critical destinations, including hospitals and other medical or emergency service facilities, major employers, critical manufacturing centers, ports and intermodal facilities, utilities, and Federal facilities. (23 U.S.C. 176(c)(1) and 176(d)(4)(B)(ii)(I)-(VI)).

Eligible community resilience and evacuation route projects must strengthen and protect certain evacuation routes including supporting the resilience aspects of such projects, whether it involves adapting existing infrastructure or new construction. See the beginning of this section for discussion of the relevant threats and hazards. To the extent that the primary purpose of a project is to address resilience by strengthening and protecting an evacuation route, it would be eligible to be fully funded (up to the applicable Federal share) as a community resilience and evacuation route project. Repurposing of transit or school bus facilities to support evacuations would also be eligible, as would relevant planning activities under F.1.A. above.

Holistic Approach to Evacuation Infrastructure

Transportation agencies should apply a holistic approach to user needs during evacuations. They should support the evacuation of people across modes, including transit, bicycle and pedestrian facilities, and micromobility options, as well as evacuation by personal vehicles, and also consider use of school buses or other means, as appropriate. The full range of options for evacuees is important to address issues of equity and ensure all users, including vulnerable and disadvantaged populations, have the means to evacuate should the need arise. Additionally, States should plan for facilities to support electric vehicle charging and alternative fuel infrastructure along evacuation routes. The National Electric Vehicle Infrastructure (NEVI) Formula Program is an example of one source of funding that may support installation of chargers along highways.

Evacuation Routes and Contraflow Operations

In 2021, FHWA conducted a state of the practice review[5] of contraflow operations, as mandated by Section 1209 of the Disaster Recovery Reform Act (Public Law 115-254 (Oct. 5, 2018)). State departments of transportation (State DOTs) reported that contraflow implementation is typically a decision of last resort for both safety and resource reasons. States identified temporary traffic control devices, permanent traffic

[5] FHWA, Disaster Recovery Reform Act Sec. 1209 (Contraflow Provision), 2021.

control devices, ITS deployment, and adequate personnel as components of successful deployment of contraflow.

Some States identify shoulder use as a potential alternative to contraflow operations. While this approach introduces a series of additional implementation and operational elements to consider, these States see it as a technique worth considering to increase throughput during evacuations. Several States explained that while the shoulder use concept has merit, critical road sections such as bridge decks occasionally lack shoulders.

Many States have established annual evaluations of their evacuation plans, which identify any new construction, geometric changes, or potential bottlenecks, reinforce any prior season/post-incident lessons learned, and create a milestone to verify available resources. These plans may include personnel checklists and other tools.

D. At-Risk Coastal Infrastructure

Eligible at-risk coastal infrastructure activities are strengthening, stabilizing, hardening, elevating, relocating, or otherwise enhancing the resilience of highway and non-rail infrastructure, including: bridges, roads, pedestrian walkways, and bicycle lanes, and associated infrastructure, such as culverts and tide gates to protect highways that are subject to, or face increased long-term future risks of, a weather event, a natural disaster, or changing conditions, including coastal flooding, coastal erosion, wave action, storm surge, or sea level rise, in order to improve transportation and public safety and to reduce costs by avoiding larger future maintenance or rebuilding costs. (23 U.S.C. 176(c)(1) and 176(d)(4)(C)). Port facilities and public transportation facilities are also eligible non-rail infrastructure. (23 U.S.C. 176(c)(3)(B)).

As sea levels continue to rise in the future years and decades, States will face complicated decisions about whether to strengthen, stabilize, harden or elevate infrastructure in place or relocate that infrastructure. Any of these project options would be eligible under the PROTECT Formula Program.

To the extent that these activities are focused on enhancing the resilience of coastal highway and non-rail infrastructure, these activities are considered eligible to be fully funded (up to the applicable Federal share) as an at-risk coastal infrastructure project.

Example Project

Project sponsors intend to replace a bridge at its current elevation over a tidally influenced river at a cost of $20 million using other Federal-aid funding. The State's hydraulic engineering unit estimates 2 to 3 feet of relative sea level rise may occur over the service life of the replacement bridge. The additional cost of building the bridge and raising the approaches to accommodate the sea level rise would be an additional $5 million. PROTECT Formula Program funds should support this $5 million incremental cost difference.

2. Eligible Facilities

The PROTECT Formula Program also limits the expenditure of funds for projects to certain specified eligible facilities. States shall use PROTECT Formula Program funds only for:

- Highway projects eligible for assistance under Title 23, U.S.C.;
- Public transportation facilities or services eligible for assistance under Chapter 53 of Title 49, U.S.C.; or
- Port facilities, including facilities that connect ports with other modes of transportation, improve the efficiency of evacuations and disaster relief, or aid transportation (23 U.S.C. 176(c)(3)(B)(i)-(iii)).

See 23 U.S.C. 101(a)(11) for definition of "Highway." *See* 23 U.S.C. 101(a)(20) for definition of "Project."

3. System Resilience Elements

Projects carried out with PROTECT Formula Program funds may also include the use of resilience elements such as natural infrastructure or the construction or modification of storm surge, flood protection, or aquatic ecosystem elements that are functionally connected to an eligible transportation improvement. Examples include:

- Increasing marsh health and total area adjacent to a highway right-of-way (ROW) to promote additional flood storage;
- Upgrades to and installation of culverts designed to withstand 100-year flood events (See more information on this item below);
- Upgrades to and installation of tide gates to protect highways;
- Upgrades to and installation of flood gates to protect tunnel entrances;
- Improvements to the functionality and resilience of stormwater controls, including inventory inspections and upgrades to and preservation of best management practices (BMPs) to protect surface transportation infrastructure. (23 U.S.C. 176(c)(3)(C)(i)-(v)).

Culverts designed to withstand the 100-year (1 percent annual likelihood) flood event
In paragraph (B) above, FHWA interprets the term "withstand" to mean that a culvert can pass the flow from a 100-year flood event (1 percent annual likelihood), also known as the base flood, without adverse impacts, such as the water surface elevation overtopping the road, which could damage the road or embankment or interrupt operation. "Withstand" in this context does not mean that the 100-year event is the design condition for the culvert, which may be a smaller flow event, depending on applicable requirements, such as the 25-year (4 percent annual likelihood) or 50-year flood event (2 percent annual likelihood). PROTECT Formula Program funds should be used for the incremental cost of ensuring that a culvert can withstand a base flood event having a 1-percent chance of being exceeded in any given year.

System resilience elements outside the ROW
Projects can include natural infrastructure or other nature-based or nonstandard solutions described in Section 176(c)(3)(C) outside of the right-of-way (ROW) only if they are

functionally connected to an eligible transportation facility and generally serve to increase its resilience including to natural hazards. In the case of a coastal highway located in an area that is expected to experience frequent flooding, eligible nature-based solutions outside the ROW could include beach nourishment or plantings of native grass species.

Natural infrastructure / Nature-based solutions
Nature-based solutions such as wetlands that absorb floodwaters often provide the most effective and cost-effective line of defense against storms and extreme rain events. Additionally, they often have a range of co-benefits, including lower surface and air temperatures, carbon capture, cleaner water, improved flora and fauna, and increased recreation opportunities that can support tourism and the local economy. Nature-based solutions can in some cases cost less to build, be used on their own or combined with other hard/gray infrastructure solutions, and be used as part of a long-term adaptive management strategy. FHWA encourages States to coordinate with other agencies as appropriate on permitting, jurisdictional and other relevant issues related to natural infrastructure and nature-based solutions. For more information on nature-based solutions in the transportation context, see: Nature-Based Solutions for Coastal Highway Resilience: An Implementation Guide (FHWA, 2019) and the FHWA Nature-based Resilience for Coastal Highways website for related resources.

In general, State DOTs should consider how they, or others, will maintain projects over the full life cycle before deciding to construct them. State DOTs are encouraged to partner with local agencies, including counties and cities, and MPOs to support all aspects of projects. This applies for project elements built outside the ROW on land that a State DOT does not own, or to projects that a State DOT may turn over to a local authority. Maintaining projects built with Federal-Aid funds is the State's responsibility. However, for project elements located on land controlled by other entities, States shall enter into agreements with the appropriate jurisdiction to provide for maintenance. (For more, see 23 U.S.C. 116.)

Although near-term costs may be higher, investments in resilience projects and activities can reduce long-term, life cycle infrastructure costs by avoiding future damage, maintenance, and reconstruction.

Example Projects

- Example 1. A State DOT in a mountainous area has had several roads damaged by debris flows or similar events following wildfires in the area. Wildfires denuded slopes and scarred the ground, leading to increased runoff and the potential for higher frequency of debris flows and landslides. PROTECT Formula Program funds can be used to add protective features, including debris flow catchment basins, barriers, larger size culverts, and tree plantings and seeding within and outside of the State's ROW. The State has an agreement with the local authority to clean the culverts and catch basins after storms, and to care for the plantings until they are well established. PROTECT Formula Program funds may also be used for other nonstandard options described in Section 176(c)(3)(C) to stabilize the slopes and protect surface transportation assets vulnerable to such threats now and in the future.

- Example 2. In 1970, a State DOT built a culvert applying its (then effective) hydraulic design standard that specified using the 10-year flood event. Since that time, the State changed its design standards to increase the design flood event from a 10-year to a 25-year event. The State could use PROTECT Formula Program funds to replace that original culvert with a larger culvert designed to pass this current 25-year flood event. Similarly, if the State estimates that it needs a larger culvert to convey the future, projected 25-year flood event (e.g., because of urbanization or climate change), it could use PROTECT Formula Program funds to provide that additional hydraulic capacity expected during the replacement culvert's service life.

- Example 3. "Protecting Henderson Point." In 2018, the Mississippi DOT analyzed a Nature-based project as part of a FHWA sponsored pilot program. To protect the Henderson Point connector bridge on U.S. Highway 90 from storm surge, the project developed a preliminary assessment of a range of nature-based and grey infrastructure solutions. After considering both gray and green infrastructure solutions, the project selected a pair of vegetated berms as a viable nature-based solution that fit within the ROW, warranting further study. The berms would direct water away from the bridge abutment and (lower) approach spans, and towards the higher elevation spans. The berms would be relatively inexpensive, and would reduce the flow velocities and the likelihood of failure of the bridge by protecting it against the 1% annual likelihood (or 100-yr) flood event, a greater level of protection than the current design. PROTECT Formula Program funds would be eligible to fully fund this type of activity.

4. Eligible Costs

Eligible Project Costs in General
Except for planning activities eligible under Section 176(c)(2) and (d)(3), which are addressed below, eligible project costs for PROTECT Formula Program funds include: (i) development phase activities, including planning, feasibility analysis, revenue forecasting, environmental review, preliminary engineering and design work, and other preconstruction activities; and (ii) construction, reconstruction, rehabilitation, and acquisition of real property (including land related to the project and improvements to land), environmental mitigation, construction contingencies, acquisition of equipment directly related to improving system performance, and operational improvements. (23 U.S.C. 176(c)(3)(E)(i)).

Eligible Planning Costs
Eligible planning costs for planning activities eligible under Section 176(c)(2) and (d)(3) may include development phase activities, including planning, feasibility analysis, revenue forecasting, environmental review, preliminary engineering and design work, other preconstruction activities, and other activities consistent with carrying out the purposes of Section 176(d)(3). (23 U.S.C. 176(c)(3)(E)(ii)).

5. Requirements for Projects in a Base Floodplain

The PROTECT Formula Program also establishes requirements that apply to projects in base floodplains. If a PROTECT Formula Program project is carried out, in whole or in part, within a base floodplain, the State must—

(A) Identify the base floodplain in which the project is to be located and disclose that information to the Secretary; and
(B) Indicate to the Secretary whether the State plans to implement 1 or more components of the risk mitigation plan under section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5165) with respect to the area. (23 U.S.C. 176(c)(3)(A)(i)-(ii)).

Base flood means the flood or tide having a 1-percent chance of being exceeded in any given year. (23 CFR 650.105(b)). *Base floodplain* means the area subject to flooding by the base flood. (23 CFR 650.105(c)).

In addition, PROTECT projects located in floodplains must comply with FHWA's floodplain regulations at 23 CFR part 650, subpart A.

Also, consistent with Executive Order 14030, Climate-Related Financial Risk (86 FR 27967) and Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input (80 FR 6425), transportation agencies should be aware that USDOT is in the process of developing guidance and considering updates to its floodplain requirements, including redefining the base flood to account for future climate conditions.

G. RESILIENCE IMPROVEMENT PLANS

1. General

A Resilience Improvement Plan is a plan developed by a State DOT or MPO in accordance with Section 176(e) to address surface transportation system resilience to current and future weather events and natural disasters.

Developing a Resilience Improvement Plan is optional but encouraged. The PROTECT Formula Program does not require States and MPOs to develop a Resilience Improvement Plan or to incorporate a Resilience Improvement Plan in an MPO's Metropolitan Transportation Plan (MTP) or a Statewide Long-range Transportation Plan (SLRTP) (23 U.S.C. 176(e)(3)). The PROTECT Formula Program also does not require States and MPOs to develop a Resilience Improvement Plan before spending PROTECT Formula Program funds. However, a Resilience Improvement Plan can reduce the non-Federal cost share for a project by up to 10 percent. (See Federal Cost Share in Section E of this memorandum above).

2. Coordination with other Planning Activities

States and MPOs are encouraged to develop their Resilience Improvement Plans as an integral part of their transportation planning processes (See 23 U.S.C. 134 and 135; and 23 CFR 450.206(a)(9) and 450.306(b)(9)). Developing a Resilience Improvement Plan and the resulting information produced support efforts to identify vulnerabilities, develop proposed resilience solutions, and schedule and prioritize resilience improvements to meet the needs of the community and travelers. This may include an MPO's assessments of capital investment

and other strategies to reduce the vulnerability of transportation infrastructure to natural disasters developed pursuant to 23 CFR 450.324(f)(7), which may provide useful information in the development of Resilience Improvement Plans. Resilience Improvement Plans should be informed by risk-based transportation asset management plans (23 CFR Part 515), evaluations of repeatedly damaged facilities (23 CFR Part 667), and State Freight plans (49 U.S.C. 70202). If developed, Resilience Improvement Plans shall be consistent with State and local hazard mitigation plans, including as required by the Federal Emergency Management Agency (FEMA) (23 U.S.C. 176(e)(2)(B); 42 U.S.C. 5165). An existing plan, or a study, such as a vulnerability assessment, may be considered a Resilience Improvement Plan if it incorporates all of the required elements of a Resilience Improvement Plan under Section 176(e).

To support up to date and well-informed decision-making on resilience projects and programs, States and MPOs may choose to align the timeframe of their Resilience Improvement Plan development with the other relevant planning products outlined above, and with consideration of their Statewide Long-Range Transportation Plan/Statewide Transportation Improvement Program (TIP) or the Metropolitan TIP/TIP cycles. Resilience Improvement Plans could be regularly updated to include the latest information from supporting plans and contribute towards incorporating resilience into those planning products as well.

3. Contents

The PROTECT Formula Program establishes certain required contents for a Resilience Improvement Plan. The plan shall:

- Be for the immediate and long-range planning activities and investments of the State or MPO with respect to resilience of the surface transportation system within the boundaries of the State or MPO, as applicable;
- Demonstrate a systemic approach to transportation system resilience and be consistent with and complementary of the State and local mitigation plans required under section 322 of the Stafford Act (42 U.S.C. 5165); and
- Include a risk-based assessment of vulnerabilities of transportation assets and systems to current and future weather events and natural disasters, such as severe storms, flooding, drought, levee and dam failures, wildfire, rockslides, mudslides, sea level rise, extreme weather, including extreme temperatures, and earthquakes. (23 U.S.C. 176(e)(2)(A-C)).

A systemic approach should consider the risk to the system, ideally across modes, geographic regions, and critical interdependent sectors.[6] A Resilience Improvement Plan should document the geographic scale considered and the logic supporting it.

A Resilience Improvement Plan should address the full range of current and future weather events and natural disasters relevant to the transportation assets and system(s) addressed. A risk-based assessment of vulnerabilities should consider both the probability or likelihood that transportation assets within the State or MPO will

[6] See NIAC Transportation Sector Resilience Final Report and Recommendations (cisa.gov)

experience potential current and future weather events and natural disasters, and the consequences of those events.[7]

The Resilience Improvement Plan shall, as appropriate:

- Include a description of how the plan will improve the ability of the State or MPO to respond promptly to the impacts of weather events and natural disasters and to be prepared for changing conditions, such as sea level rise and increased flood risk.
- Describe the codes, standards, and regulatory framework, if any, adopted and enforced to ensure resilience improvements within the impacted area of proposed projects included in the Resilience Improvement Plan;
- Consider the benefits of combining hard surface transportation assets, and natural infrastructure, through coordinated efforts by the Federal Government and the States;
- Assess the resilience of other community assets, including buildings and housing, emergency management assets, and energy, water, and communication infrastructure;
- Use a long-term planning period; and
- Include such other information as the State or MPO considers appropriate. (23 U.S.C. 176(e)(2)(E)(i)-(vi)).

A Resilience Improvement Plan should cover a period at least as long as the relevant SLRTP, MTP, or asset management plan. A longer period that considers the service lives of relevant assets is recommended.

The Resilience Improvement Plan may also:

- Designate evacuation routes and strategies, including multimodal facilities, designated with consideration for individuals without access to personal vehicles;
- Plan for response to anticipated emergencies, including plans for the mobility of emergency response personnel and equipment and access to emergency services including for vulnerable or disadvantaged populations;
- Describe resilience improvement policies, including strategies, land-use and zoning changes, investments in natural infrastructure, or performance measures that will inform the transportation investment decisions of the State or MPO with the goal of including resilience;
- Include an investment plan that: (i) includes a list of priority projects; and (ii) describes how PROTECT Formula Program funds apportioned to the State would be invested and matched, which shall not be subject to fiscal restraint requirements; and
- Use science and data and indicate the source of data and methodologies. (23 U.S.C. 176(e)(2)(D)(i)-(v)).

A Resilience Improvement Plan may also include time frames for project implementation. Also, the States are encouraged to include measurable outcomes and goals in their plans.

[7] See Vulnerability and Adaptation Framework, 3rd Edition, Chapter 5

H. DAVIS-BACON ACT REQUIREMENTS

As provided at 23 U.S.C. 176(h), all projects funded with PROTECT Formula Program funds shall be treated as located on a Federal-aid highway. Accordingly, 23 U.S.C. 113 applies, and Davis-Bacon wage rates must be paid. In general, Davis-Bacon requires that all laborers and mechanics employed by the applicant, subrecipients, contractors or subcontractors in the performance of construction, alteration, or repair work on an award or project in excess of $2000 funded directly by or assisted in whole or in part by funds made available under the PROTECT Formula Program shall be paid wages at rates not less than those prevailing on similar projects in the locality, as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, U.S.C., commonly referred to as the "Davis-Bacon Act" (DBA).

For additional guidance on how to comply with DBA provisions and clauses, see https://www.dol.gov/agencies/whd/government-contracts/construction and https://www.dol.gov/agencies/whd/government-contracts/protections-for-workers-in-construction. See also https://www.fhwa.dot.gov/construction/cqit/dbacon.cfm.

I. PROGRAM EVALUATION

States are encouraged to incorporate program evaluation including associated data collection activities from the outset of their program design and implementation to meaningfully document and measure their progress towards meeting an agency priority goal(s). Title I of the Foundations for Evidence-Based Policymaking Act of 2018 (Evidence Act), Pub. L. No. 115-435 (2019) urges federal awarding agencies to use program evaluation as a critical tool to learn, to improve equitable delivery, and to elevate program service and delivery across the program lifecycle. Evaluation means "an assessment using systematic data collection and analysis of one or more programs, policies, and organizations intended to assess their effectiveness and efficiency." Evidence Act § 101 (codified at 5 U.S.C. § 311). Credible program evaluation activities are implemented with relevance and utility, rigor, independence and objectivity, transparency, and ethics (OMB Circular A-11, Part 6 Section 290).

Evaluation costs are allowable costs unless prohibited by statute or regulation, and such costs may include the personnel and equipment needed for data infrastructure and expertise in data analysis, performance, and evaluation. (2 CFR Part 200).

J. ADDITIONAL INFORMATION

For guidance on other Bipartisan Infrastructure Law and Federal-aid Highway Programs, please see FHWA's Bipartisan Infrastructure Law website at: https://www.fhwa.dot.gov/bipartisan-infrastructure-law/.

Please visit the FHWA Resilience website for additional information on methods and tools for assessing and addressing resilience, pilot studies and more in-depth publications, including:

- Vulnerability Assessment and Adaptation Framework, Third Edition (2017) - Serves as a guide for transportation agencies interested in assessing their vulnerability to climate change and extreme weather events. It gives an overview of key steps in conducting vulnerability assessments and uses in-practice examples to demonstrate a variety of ways to gather and process information.
- Synthesis of Approaches for Addressing Resilience in Project Development (2017) - Includes a report that synthesizes lessons learned from a variety of recent FHWA studies and pilots, and a range of engineering-informed adaptation studies.
- Highways in the Coastal Environment: Hydraulic Engineering Circular No 25, 3rd Ed. (2020) - Provides technical guidance and methods for assessing the vulnerability of roads and bridges to extreme events and climate change in coastal areas, focusing on sea level rise, storm surge, and waves.
- Hydraulic Engineering Circular 17: Highways in the River Environment - Floodplains, Extreme Events, Risk, and Resilience, 2nd Edition (2016) - Provides technical guidance and methods for assessing the vulnerability of transportation facilities to extreme events and climate change in riverine environments.
- CMIP Processing Tool Version 2.1 (2021) - Accesses and calculates climate projections for temperature and precipitation variables.
- Climate Change Adaptation for Pavements (2015) - Summarizes pavement-specific climate impacts and adaptation strategies.
- National Highway Institute Resilience Training Courses (2022) - Four one-hour web-based courses focused on resilience to climate change and extreme weather events (course numbers 142081, 142082, 142083, and 142084).
- Nature-based Resilience for Coastal Highways website.
- Sustainable Pavements Program website.

Other available resources include:

- US Army Corps' Sea-Level Change Curve Calculator helps the user estimate future relative sea level rise.
- US Army Corps Strategic Environmental Research and Development Program's (SERDP) on-line Intensity-Duration-Frequency (IDF) Curve tool.
- Climate.gov and US Climate Resilience Toolkit provide information on climate change and adapting to climate change impacts.
- Federal Emergency Management Agency (FEMA)'s National Risk Index for Natural Hazards includes information on natural hazards risks, social vulnerability and community resilience at the county and census track levels.
- National Oceanic and Atmospheric Administration (NOAA)'s Climate Explorer and Sea Level Rise Viewer (updated with regional sea level rise scenarios published in 2022) allow users to look up historic and future projected climate variables (*e.g.*, changes in temperature thresholds, sea level rise) for their region.
- The National Climate Assessment regional chapters provide broad information on climate change impacts for each US region; NOAA's 2022 State Climate Summaries provide overviews of climate change information for each state.
- NOAA-funded Sea Grant Universities provide technical assistance and outreach to support coastal resilience planning in each of the 34 coastal states (including Great Lakes).

- NOAA's Regional Integrated Sciences and Assessment (RISA) teams provide technical assistance to decision makers in each of the regions.
- NOAA's Regional Climate Change Coordinators link stakeholders with targeted resources.

If you have questions, please contact Rob Kafalenos (202-366-2079 or Robert.Kafalenos@dot.gov) of the Office of Natural Environment.