



Memorandum

Subject: **INFORMATION:** Eligibility of
Activities To Adapt To Climate Change
and Extreme Weather Events Under the
Federal-Aid and Federal Lands Highway
Programs

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In Reply Refer To:
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To: Directors of Field Services
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Extreme weather events can profoundly impact transportation infrastructure. Adaptation involves adjusting the way the transportation community plans, designs, constructs, operates, and maintains transportation infrastructure to protect against impacts caused by changes in climate and extreme weather events. This memo clarifies the eligibility of such adaptation activities for funding under the Federal-aid and Federal Lands programs.

In general, activities to plan, design, and construct highways to adapt to current and future climate change and extreme weather events are eligible for reimbursement under the Federal-aid program and for funding under the Federal Lands program. These adaptation activities can be applied to existing and planned facilities to protect and extend the useful life of Federal highway investments and conserve funding resources. Note that no new funding is being added to address adaptation needs. Program funds are limited, and their

use for adaptation purposes should be considered in the context of the overall goals of the Federal-aid and Federal Lands programs as a cost-effective means to extend and preserve the useful life of Federal-aid and Federal Lands highway facilities.

Creating a more resilient transportation system is a priority for FHWA and is consistent with a U.S. Department of Transportation (DOT) policy statement in June 2011 on climate change adaptation. (See: <http://www.dot.gov/docs/climatepolicystatement.pdf>). The policy statement noted DOT's intention to integrate consideration of adaptation into its planning, operations, policies, and programs, and also described some of the guiding principles. Title 23 identifies eligible activities and guidelines that could support adaptation goals, including planning, preventive maintenance, infrastructure preservation, and construction of highways to address present and future environmental conditions. Examples include:

- Preventive maintenance is eligible as a “cost-effective means of extending the useful life of a federal-aid highway” (23 U.S.C.116(e));
- Federally funded highway restoration, rehabilitation or resurfacing projects shall be done in such a way as to “preserve and extend the service life of highways and enhance highway safety” (23 U.S.C.109);
- Designs for new or reconstructed facilities on the National Highway System may account for the “constructed and natural environment of the area” (23 U.S.C. 109); and
- “It is in the national interest to...promote the safe and efficient management, operation, and development of surface transportation systems” (23 U.S.C. 134).

Eligible Activities

In general, division offices and Federal Lands Highway Offices may allow State DOTs, metropolitan planning organizations, local agencies, and Federal land management agencies to use Federal-aid and the Federal Lands highway funds to consider the potential impacts of climate change and extreme weather events and apply adaptation strategies, both at the project and systems levels. Examples of eligible activities include:

- Vulnerability and risk assessments of Federal aid-eligible highways related to climate change and extreme weather events;
- Consideration of climate change and extreme weather events in highway project development, environmental review and design work;
- Construction of projects or features to protect existing eligible assets from impacts and damage associated with climate change and extreme weather events; and
- Evaluation of potential impacts of climate change and extreme weather events on asset management cycles, life cycle costs, etc.

Use of funds should meet the basic guidelines for allocation of costs in 2 CFR 225, appendix A, section C.

Activities supported with Federal-aid funds must focus on the preservation of transportation infrastructure, and not on general flood control and protection or similar

activities that are not focused on eligible transportation projects. Consideration of extreme weather events, their impacts on highways and transportation systems, and development of adaptation strategies should be grounded in the best available scientific approaches. The science, engineering and planning practices to address them are evolving. As we respond, we may need to adopt new approaches consistent with our stewardship principles.

Please see the FHWA Web site (<http://www.fhwa.dot.gov/federalaid/>) for information on the Federal-aid program, including this memo and related information.

We request that you share this memorandum with appropriate staff and with all appropriate DOT, Federal land management agency, and local transportation management officials within your State. If you have any questions regarding this memorandum or would like to discuss this further, please contact Robert Kafalenos at Robert.Kafalenos@dot.gov or (202) 366-2079 in the Office of Natural Environment, Stephen Gaj at Stephen.Gaj@dot.gov or (202) 366-1336 in the Office of Asset Management, or Aung Gye at Aung.Gye@dot.gov or (202) 366-2167 in the Office of Federal Lands Highway. For issues tied to specific funding programs, please contact the program leads.

Questions and Answers: Eligibility of activities to adapt to climate change and extreme weather events under the Federal-Aid and Federal Lands Highway Programs

(September 4, 2012)

1. What is “climate change,” and how does it differ from “the weather”?

The difference between weather and climate is really a difference in the measure of time. Weather can be described as atmospheric conditions over a relatively short period of time, such as a week or a season, while climate is a measure of how the atmosphere behaves over a relatively long period of time such as 30 years or more. While weather is characterized by individual events, such as a record temperature, a severe thunderstorm or a nice sunny day, climate change refers to changes in the long term averages of daily weather such as a rise in average annual temperature or gradual changes in monthly or seasonal precipitation totals. In addition to long-term climate change, short term climate variability can be caused by such factors as volcanic eruptions and El Nino/ La Nina cycles.

For more on this, see: *What’s the Difference between Weather and Climate?* (NASA, 2005) http://www.nasa.gov/mission_pages/noaa-n/climate/climate_weather.html , and *Observing climate variability and change* (NOAA, 2011) http://www.research.noaa.gov/climate/t_observing.html

2. What climate change effects might be expected?

Changes in climate (or “climate change effects”) vary by location and include higher temperatures, longer and/or more frequent heat waves, sea level rise, changes in seasonal precipitation and the intensity of rain events, and changes in coastal storms, such as hurricanes and nor’easters. These changes can vary by geography. The U.S. has already experienced some changes in climate—particularly higher average temperatures—but for some factors, such as extreme weather events, it is less clear if changes experienced recently can be attributed to climate change, normal weather variability, or some combination of the two.

The impact of some climate effects is mitigated or compounded by other environmental processes or conditions. For example, while global sea levels will continue to rise due to higher temperatures, local changes in sea level may be higher or lower due to other factors including subsidence or uplift of the land (independent of climate change), or other factors including changes in ocean circulation.

Climate change science is an evolving field. Understanding of how exactly climate change will continue to unfold, particularly at the local level, is incomplete. It is recommended that project sponsors consult with their counterparts at State and local environmental agencies, universities, and the State climatologist for the most up to date information on projected changes in climate.

For more on climate change and climate change effects, see: *Regional Climate Change Effects: Useful Information for Transportation Agencies* (2010). http://www.fhwa.dot.gov/hep/climate/climate_effects/, and *Overview of Climate Change* (US DOT) <http://climate.dot.gov/about/overview/science.html>

3. What are “extreme weather events”?

The term “extreme weather” includes severe or unseasonable weather, heavy precipitation, a storm surge, flooding, drought, windstorms (including hurricanes, tornadoes, and associated storm surges), extreme heat, and extreme cold. Extreme weather events can be described as rarely occurring, weather induced events that *usually* cause damage, destruction, or severe economic loss (e.g., a prolonged drought). It is less clear if extreme weather events experienced recently can be attributed to climate change, normal weather variability, or some combination of the two. Regardless, preparing for impacts associated with extreme weather events can help create a more resilient transportation system. Extreme weather events should not be confused with extreme events such as earthquakes or tsunamis, which are not linked to weather or climate change.

Extreme weather events may be intense and limited in scope, such as a tornado, or may be less intense but persistent and spread over a large region, such as a flood. Some extreme weather events such as hurricanes are both intense and can spread damage over large regions, as well. Combinations of extreme weather conditions can produce extreme events, such as heightened flooding due to heavy spring rains on a heavier than normal accumulated winter snowpack, or when drought causes die off of vegetative cover and causes soils to harden, any rainfall could result in increased flood risk.

4. What are some examples of impacts on the highway system associated with climate change and extreme weather events?

Climate change and extreme weather impacts vary by location and are not all negative. Impacts to the highway system can include:

- Higher temperatures or increased exposure to storm events can cause asphalt degradation, resulting in shorter replacement cycles and higher maintenance costs.
- Longer term flooding can damage the substructure of roads (as occurred in Louisiana following Hurricane Katrina in 2005), requiring earlier replacement.
- Strong rain storms, changes in precipitation intensity, changes in precipitation type (e.g., a change from snow to rain), or changes in snow melt timing can result in flooding of roads and damage to culverts and other drainage infrastructure.
- Strong rain storms, tropical storms, and/or sea level rise can cause more frequent or severe flooding of low-lying infrastructure and underground tunnels, requiring increased pumping activity or culvert repair.
- Coastal storms can dump debris or sand on roads, requiring cleanup.
- High winds can cause damage to signs, sign posts, signals, and highway lighting.
- Beneficial effects include longer construction seasons in northern regions and reduced frequency of freeze-thaw cycles in some regions experiencing warming.

5. What is “adaptation,” and what are “adaptation measures”?

Adaptation is a process that leads to reduction of harm or risk associated with the impacts of climate change (and, in this case, extreme weather events). Adaptation can be anticipatory or

proactive, taking place before impacts are observed; or it can be reactive, taking place after impacts have occurred. Adaptation activities that further preventive maintenance of a Federal-aid eligible facility or are incorporated into design and construction and are a cost effective means to extend the useful life of a Federal-aid eligible facility may be considered a form of preventive maintenance eligible for funding under 23 U.S.C. 116(d).

Adaptation measures are individual or groups of actions that contribute to the robustness of human or natural systems in the face of climate change and extreme weather events. Examples of adaptation measures for transportation facilities or networks include:

- Accounting for projected future climatic conditions in the design of new or rehabilitated facilities;
- Building protections for existing structures;
- Relocating vulnerable transportation facilities, whether existing or planned;
- Considering climate changes in asset management planning;
- Conducting a climate change vulnerability and risk assessment of the relevant transportation asset or transportation system; and
- Consideration of vulnerabilities and/or risk of impacts in transportation planning.

Adaptation measures may offer cost-effective solutions to increase transportation resilience and protect critical transportation services, and thereby reduce the vulnerability of human systems. (In certain circumstances, mitigation of adverse impacts on the environment may also be eligible. See 23 CFR 771.105(d)). Among other things, proactively adapting transportation systems to climate change and extreme weather events can serve to promote safety and also help ensure optimal use of financial resources at multiple levels of government. For example, by accounting for future changes in climate when rebuilding a road, culvert size could be increased; the more robust road would then be better able to handle a larger rain event, thus reducing flooding impacts, accidents and maintenance costs.

6. What is a “scientific approach” to addressing climate change and extreme weather events?

Viable assessments of vulnerabilities and risk and development of adaptation options should be based on sound scientific and engineering approaches. Adaptation activities need to be based on the current understanding of weather patterns affecting the location of a project or region, as well as projected changes in climate.

7. Can I use Federal-aid funding for efforts related to adapting to climate impacts including vulnerability/risk assessments and systems level studies?

Yes, in general. Some Federal-aid funding programs (Metropolitan Planning (PL), Statewide Planning (SPR), and Surface Transportation Program (STP)) can be used to conduct vulnerability or risk assessments for an area’s transportation system. State DOTs and MPOs should coordinate with their counterparts in the FHWA division office. As an example, FHWA recently sponsored several vulnerability assessment pilots around the US;

similar efforts could be eligible for federal-aid funding. (For more information on these efforts, please see: <http://www.fhwa.dot.gov/hep/climate/pilots.htm>)

State DOTs and MPOs should apply consistent and integrated adaptation strategies across a State DOT or MPO's core policies, planning, practices, and programs. This includes multidisciplinary involvement to ensure achievable, cost effective, and realistic application of the strategy.

8. Can I use Federal-aid funding to evaluate potential impacts of climate change and extreme weather events on asset management cycles, life-cycle costs, etc.?

Yes, in general. State DOTs and MPOs should coordinate with their counterparts in the FHWA division office. Over the longer term, by applying a strategic and systematic process, cost-effective adaptation strategies can be focused on facilities that are most vulnerable to climate change and extreme weather impacts. This includes assessment of risk and the importance of the facility, and the consequences of failure. It acknowledges that adaptation strategies may not be suitable for all projects, activities, or applications.

Risk-based asset management methods and tools can help to identify, assess, and prioritize options to reduce vulnerability to potential environmental, social, and economic implications of climate change and extreme weather events.

9. Can I use Federal-aid funding for activities that incorporate considerations tied to climate change or extreme weather events in my project development, environmental review, and designs?

Yes, in general. Project sponsors can consider projected changes in climate and extreme weather events when locating or designing a road, highway, or other facility eligible under a Federal-aid highway program. This could include factoring in projected future temperature impacts on pavements, deciding how high to build a bridge to protect it from rising water levels or storm surge, providing extra protection for embankments and around bridges or sizing culverts to account for changing precipitation patterns. In coastal areas, this could include studies of shoreline erosion, land subsidence, flooding, and storm surge related to a particular highway project. State DOTs and MPOs should coordinate with their counterparts in the FHWA division office.

10. Can I use Federal-aid funding to implement projects or treatments that assist in protecting new or existing assets from impacts and damage caused by climate change or extreme weather?

Yes, in general. These costs may be eligible, if properly justified as part of the design and construction of specific projects that would be otherwise eligible for design/construction funding. State DOTs and MPOs should coordinate with their counterparts in the FHWA division office.

11. Can I use Federal-aid funds to proactively protect an existing roadway or structure that has been determined to be vulnerable to climate impacts or extreme events?

This would be an eligible use of Federal-aid funds, and a valid preventive maintenance activity, if properly documented to be a cost effective means of extending the useful life of a Federal-aid eligible facility. State DOTs and MPOs should coordinate with their counterparts in the FHWA division office.

12. Do the projects supported with Federal-aid funds have to be focused on transportation infrastructure or can they be applied to related efforts?

To be eligible for Federal-aid funding, activities must be focused on and benefit the preservation of transportation infrastructure. For example, flood control efforts are not normally eligible (see the FHWA memo on [Highway Embankments versus Levees and other Flood Control Structures](#).) However, other floodplain or shoreline stability efforts needed for a particular Federal-aid highway may be eligible. Where protection of a Federal-aid highway is part of a larger area-wide effort that benefits both the preservation of the Federal-aid eligible highway and also serves another purpose, the costs must be appropriately allocated between both objectives. Determinations on such activities would be made on a case-by-case basis with HIF/HEP.

13. How should costs be allocated for Federal-aid funded projects?

Costs for work tied to conducting adaptation activities must be appropriately allocated across Federal-aid and other benefiting funding sources. While Federal-aid funds can be used to support all or most of the activities behind a vulnerability or risk assessment focused on a transportation project eligible for Federal-aid funds, it would be inconsistent with government-wide cost regulations applicable to Federal financial assistance programs to fund original research to develop climate change projections solely with Federal-aid funds. State DOTs and MPOs should coordinate with their counterparts in the FHWA division office.

14. If weather damage occurs to a Federal-aid highway, could a State choose to rebuild a highway differently to prevent future damage, whether ER funds are involved or not?

Roadways and bridges that are on a Federal-aid highway or on a Federal road that are damaged as a direct result of an approved natural disaster are eligible for Emergency Relief (ER) funds. In general, ER funds are provided to restore the facility to its pre-disaster condition. If an eligible facility has been severely damaged and substantial portions need to be reconstructed due to flooding, replacement of the damaged sections at a higher elevation to reduce the risk of future damage could be eligible for ER funding, if the FHWA Division Office has determined it to be a cost-effective betterment. The analysis would consider the connection between the betterment and the type of damage, the frequency of previous damage and the likelihood of future damage. States may also use their regularly apportioned Federal-aid funds for the incremental cost to raise the grade of the damaged sections where the betterment cannot be justified with ER funds and to make changes to undamaged sections.

15. Where can I find useful information on projected changes in climate?

Understanding climate change, projecting extreme weather events, assessing vulnerability of transportation to climate change and extreme weather events, and developing adaptation

options are all evolving fields. The FHWA and others agencies are conducting continuing work in this area to enhance the data available for transportation agencies to use in addressing climate change and extreme weather events.

The FHWA summarized available information on climate change projections in *Regional Climate Change Effects: Useful Information for Transportation Agencies* (2010). http://www.fhwa.dot.gov/hep/climate/climate_effects/. This report was based in part on *Global Climate Change Impacts in the United States* (USGCRP, 2009), which provides a comprehensive look at climate change effects and impacts by region and sector for the United States.

Project sponsors should decide what information to use, including the applicability of projected changes in climate, with input from local and regional experts in environmental and transportation issues. Sources of such local and regional expertise may include:

- **NOAA Regional Climate Centers** – These focus on historical observations of climate. <http://www.ncdc.noaa.gov/oa/climate/regionalclimatecenters.html>
- **Department of Interior Regional Climate Centers** – These focus on issues related to ecology and public lands. <http://nccwsc.usgs.gov/csc.shtml>
- **NOAA’s Regionally Integrated Sciences and Assessments Centers (RISAs)** – Each center pursues themes related to environmental issues in its respective region; however, climate has emerged as an important issue among many RISAs http://www.cpo.noaa.gov/cpo_pa/risa/
- **State climatologists** – Many States have a climatologist that serves as a resource for acquiring and interpreting regional historical climate data, and in some cases, future projected data. <http://www.stateclimate.org/>
- **State and local environmental departments** – These are often given the responsibility of addressing climate related issues and may have useful regionally-specific information.
- **University climate centers** – Many universities have developed research centers to address regional issues related to climate change.
- **Consulting firms** – A variety of private and non-profit firms have expertise in developing and applying climate data.

In addition, online tools have been developed to help users find and view climate data for their area. A few of the tools that may be relevant for transportation include:

- **NOAA Climate Services Portal.** Links to numerous NOAA data sources and tools for displaying climate information. <http://www.climate.gov/#climateWatch>
- **U.S. Army Corps of Engineers Sea Level Rise Calculator.** Complementing its sea level rise guidance (see references below), the USACE has made available an online sea level change calculator that can be tailored for specific locations: <http://www.corpsclimate.us/rewwceslcurves.cfm>
- **CalAdapt.** A collaboration of State agencies, universities, and the private sector, the CalAdapt website provides a variety of tools and viewers for evaluating climate change projections specific to California. <http://cal-adapt.org/tools/>

16. Can you give me some examples of relevant background documents on this topic?

A large number of studies on climate change adaptation have been done by government agencies, academic organizations, and nonprofits. A few of the reports that may be particularly helpful for transportation agencies in the U.S. include:

- *America's Climate Choices* (National Research Council, 2010)- Comprehensive assessment of climate change science, projections, and adaptation choices facing the U.S. <http://dels.nas.edu/Report/Americas-Climate-Choices/12781>.
- *TRB Special Report 290: Potential Impacts of Climate Change on U.S. Transportation* (National Research Council, 2008). Synthesis of how climate change may impact transportation in the U.S. <http://onlinepubs.trb.org/onlinepubs/sr/sr290.pdf>
- *Impacts of Climate Variability and Change on Transportation Systems and Infrastructure: Gulf Coast Study, Phase 1* (Climate Change Science Program, 2008). Study of how climate change may impact transportation in the central Gulf Coast region. http://www.fhwa.dot.gov/hep/climate/gulf_coast_study/index.htm
- Caltrans, *Guidance on Incorporating Sea Level Rise: For use in the planning and development of Project Initiation Documents*, May 16, 2011. Caltrans guidance on incorporating sea level rise into transportation project planning. http://www.dot.ca.gov/hq/tpp/offices/orip/Updated_Climate_Change/Documents/Sea_Level_Guidance_May2011.pdf
- U.S. Army Corps of Engineers, *Sea-Level Change Considerations for Civil Works Programs* (EC 1165-2-212), November 2011. Guidance on incorporating sea level rise into USACE infrastructure programs. <http://planning.usace.army.mil/toolbox/library/ECs/EC11652212Nov2011.pdf>.

More information on climate change adaptation and transportation may be found at the FHWA Website (<http://www.fhwa.dot.gov/hep/climate/index.htm>). More information on the Federal-aid highway program can be found at: <http://www.fhwa.dot.gov/federalaid/projects.cfm>.

Information by funding category: Eligibility of activities to adapt to climate change and extreme weather events under the Federal-Aid and Federal Lands Highway Programs
(August 22, 2012)

The purpose of this document is to discuss the types of activities considered eligible for funding adaptation to climate change and extreme weather events related to Federal-aid and Federal Lands highways by funding category. This is not an exhaustive list; State DOTs and Metropolitan Planning Organizations (MPOs) should contact their FHWA Division Offices and Federal Lands Highways Offices to discuss eligibility under each funding category.

This document discusses eligibility for these funding programs:

Planning Funds

- Metropolitan Planning (PL)
- State Planning and Research (SPR)

Project Funds¹

- Interstate Maintenance Funds (IM)
- National Highway System Program (NHS)
- Surface Transportation Program (STP)
- Emergency Relief (ER)
- Highway Bridge Program (HBP)
- Congestion Mitigation and Air Quality Improvement Program (CMAQ)
- Federal Lands Highway Program (FLHP)

Planning Funds

Metropolitan Planning, State Planning and Research

Transportation planning elements tied to climate change adaptation in the metropolitan or State planning processes that are deemed necessary to support the planning process are eligible for PL (MPO) and/or SPR (State DOT) funds. The FHWA provides States and MPOs the discretion and flexibility to apply planning funds, subject to Division Office approval. All activities should be included in the appropriate State or metropolitan work program. If the work involves construction and implementation of the findings in any eligible studies, other Federal funds for which the proposed work is eligible should be used. Examples include:

- Conducting vulnerability or risk assessments of the transportation assets in a particular area or region.
- Updating and digitizing datasets on the elevation (or other characteristics) of an area's roads, highways, bridges, etc.

¹ Note that under MAP-21, which goes into effect in FY13, several changes will be implemented. For example, Interstate Maintenance, National Highway System and part of the Highway Bridge Program will be subsumed under a new National Highway Performance Program. As we move ahead with implementation of MAP-21, we plan to update this document to reflect the changes in the funding categories. However, in general the discussion of eligibility is expected to remain unchanged.

- Support for a reasonable portion of the costs needed to develop information on climate change effects, in cooperation with other stakeholders²

Project Funds

Interstate Maintenance Funds

- Consideration of climate change and extreme weather events in project development, including environmental review and design work.
- Right of way acquisition and construction of projects or features to protect existing eligible assets from impacts and damage associated with climate change and extreme weather events.
- Limited to certain Interstate routes, see website below.
- Cannot fund new capacity.
- More information on use of IM funds is available at:³
http://www.fhwa.dot.gov/federalaid/guide/guide_current.cfm#c42

National Highway System Funds

- Consideration of climate change and extreme weather events in project development, including environmental review and design work.
- Right of way acquisition and construction of projects or features to protect existing eligible assets from impacts and damage associated with climate change and extreme weather events.
- Planning activities in accordance with 23 U.S.C. 134 and 135.
- Limited to National Highway System routes.
- More information on use of NHS funds is available at:⁴
http://www.fhwa.dot.gov/federalaid/guide/guide_current.cfm#c50

Surface Transportation Program Funds

- Consideration of climate change and extreme weather events in project development, including environmental review and design work.
- Right of way acquisition and construction of projects or features to protect existing eligible assets from impacts and damage associated with climate change and extreme weather events. (See item 12 in the companion Qs and As document for further discussion.)
- Surface transportation planning activities.
- Limited to Federal-Aid highways.
- More information on use of STP funds is available at:⁵
http://www.fhwa.dot.gov/federalaid/guide/guide_current.cfm#c78

² See 23 U.S.C. 134, 135 and 505

³ See 23 U.S.C. 119

⁴ See 23 U.S.C. 103 and 104

⁵ See 23 U.S.C. 133

Emergency Relief

- Provides for repair and restoration of highway facilities to pre-disaster conditions.
- Betterments involving added protective features can be eligible only if economically justified to prevent recurring damage. The economic justification must be based on an analysis weighing the cost of betterment versus the risk of eligible recurring damage and the cost of future repair.⁶
- Examples of betterments that have been approved after an economic analysis tailored to each specific instance include:
 - Raising roadway grades
 - Relocating roadways
 - Stabilizing slide areas and slopes
 - Installing riprap
 - Lengthening or raising bridges to increase waterway openings
 - Deepening channels
 - Increasing the size or number of drainage structures
 - Replacing culverts with bridges
 - Providing scour countermeasures at bridges
 - Adding spur dikes.
- Limited to Federal-aid highways.
- More information on use of ER funds is available at:⁷
http://www.fhwa.dot.gov/federalaid/guide/guide_current.cfm#c20
<http://www.fhwa.dot.gov/reports/erm/ermchap2.cfm#d2f>

Highway Bridge Program

- Provides for the replacement or rehabilitation of eligible highway bridges, and the systematic preservation of all highway bridges.
- Consideration of climate change and extreme weather events in project development, including environmental review and design work.
- Installation of scour countermeasures.
- Eligibility of other bridge betterments that mitigate the effects of climate change and extreme weather as part of an HBP project will be considered on a case-by-case basis.
- Justification of betterment is to be based on accepted scientific principles and sound engineering judgment.
- More information on use of HBP funds is available at:⁸
http://www.fhwa.dot.gov/federalaid/guide/guide_current.cfm#c29

⁶ See 23 CFR 668.209(f)(3)

⁷ See 23 U.S.C. 125

⁸ See 23 U.S.C. 144

Congestion Mitigation & Air Quality Improvement Program

- Consideration of climate change and extreme weather events in project development, including environmental review and design work.
- Program funds must reduce emissions of criteria pollutants for which the area is designated as nonattainment or maintenance.⁹
- Cannot fund new single-occupant vehicle capacity that is not constructed primarily as a high-occupancy vehicle (HOV) facility.
- More information on use of CMAQ funds is available at:¹⁰
http://www.fhwa.dot.gov/environment/air_quality/cmaq/policy_and_guidance/ for program guidance.

Federal Lands Highway Program

- Consideration of climate change and extreme weather events in project development, including environmental review and design work.
- Right of way acquisition and construction of projects or features to protect existing eligible assets from impacts and damage associated with climate change and extreme weather events.
- Planning activities in accordance with 23 U.S.C. 134 and 135.
- Limited to eligible Federal Lands facilities.
- More information on use of FLHP funds is available at:¹¹
<http://flh.fhwa.dot.gov/programs/transportation.htm>

⁹ See 23 USC 149(b)

¹⁰ See 23 U.S.C. 149

¹¹ See 23 U.S.C. 204