U.S. Department
of Transportation

Flood Resilience and the FFRMS

November 14, 2024

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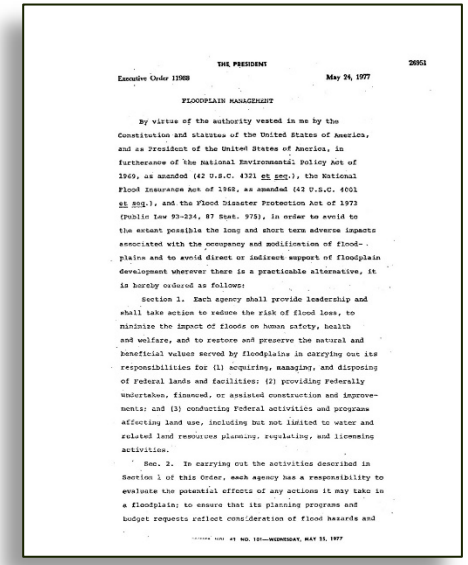
Need for Increased Flood Resilience

U.S. Department of Transportation

Evolution of Floodplain Management and the FFRMS



THE PRESIDENT

Executive Order 11988

May 24, 1977

FLOODPLAIN MANAGEMENT

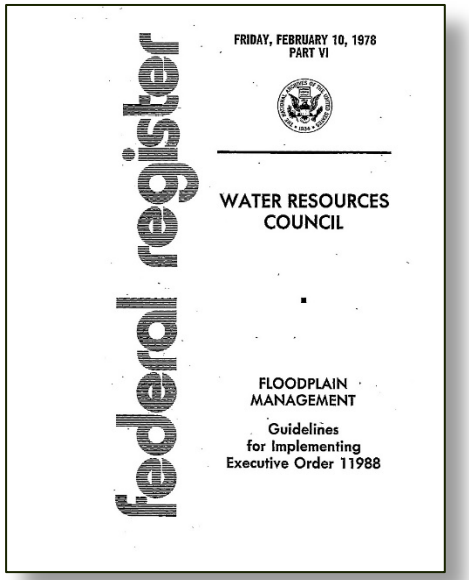
By virtue of the authority vested in me by the Constitution and statutes of the United States of America, and as President of the United States of America, in furtherance of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.), the National Flood Insurance Act of 1968, as amended (42 U.S.C. 4001 et seq.), and the Flood Disaster Protection Act of 1973 (Public Law 93-234, 87 Stat. 975), in order to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of flood-plains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative, it is hereby ordered as follows:

Section 1. Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

Sec. 2. In carrying out the activities described in Section 1 of this Order, each agency has a responsibility to evaluate the potential effects of any actions it may take in a floodplain; to ensure that its planning programs and budget requests reflect consideration of flood hazards and

1977 – Executive Order 11988

- Federal Agencies must develop floodplain management policies to:
  - Reduce Flooding
  - Minimize Impact of Flooding
  - Restore or Preserve Floodplain Values
- Base Floodplain
  - 100-year Flood



federal register

FRIDAY, FEBRUARY 10, 1978
PART VI

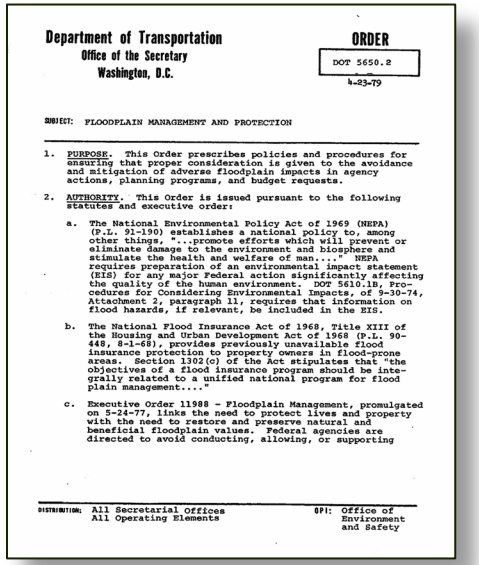
WATER RESOURCES COUNCIL

FLOODPLAIN MANAGEMENT

Guidelines for Implementing Executive Order 11988

1978 – WRC issues "Guidelines"

- Floodplain Management Guidelines for Implementing E.O. 11988
- Eight Step Process



Department of Transportation
Office of the Secretary
Washington, D.C.

ORDER
DOT 5650.2
4-23-79

SUBJECT: FLOODPLAIN MANAGEMENT AND PROTECTION

1. PURPOSE. This Order prescribes policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests.

2. AUTHORITY. This Order is issued pursuant to the following statutes and executive order:

a. The National Environmental Policy Act of 1969 (NEPA) (P.L. 91-190) establishes a national policy to, among other things, "...promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man...." NEPA requires preparation of an environmental impact statement (EIS) for any major Federal action significantly affecting the quality of the human environment. DOT 5610.1B, Procedures for Considering Environmental Impacts, of 9-30-74, Attachment 2, paragraph 11, requires that information on flood hazards, if relevant, be included in the EIS.

b. The National Flood Insurance Act of 1968, Title XIII of the Housing and Urban Development Act of 1968 (P.L. 90-448, 8-1-68), provides previously unavailable flood insurance protection to property owners in flood-prone areas. Section 1302(c) of the Act stipulates that "the objectives of a flood insurance program should be integrally related to a unified national program for flood plain management...."

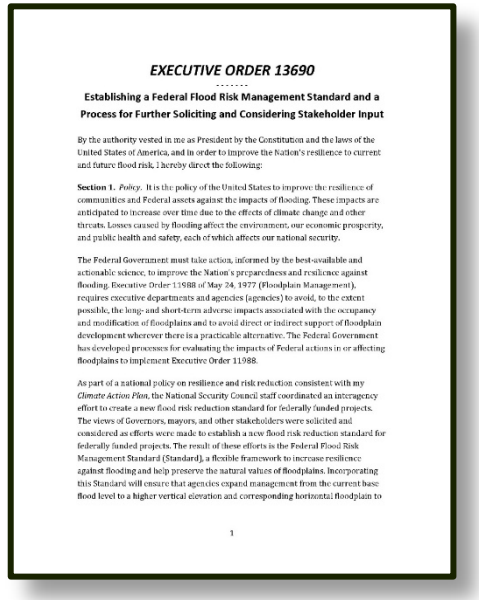
c. Executive Order 11988 - Floodplain Management, promulgated on 5-24-77, links the need to protect lives and property with the need to restore and preserve natural and beneficial floodplain values. Federal agencies are directed to avoid conducting, allowing, or supporting

DISTRIBUTION: All Secretarial Offices
All Operating Elements

OPI: Office of Environment and Safety

1979 – USDOT Order 5650.2

- Gave each DOT Operating Administration Authority to develop their associated floodplain guidance or regulation



EXECUTIVE ORDER 13690

Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input

By the authority vested in me as President by the Constitution and the laws of the United States of America, and in order to improve the Nation's resilience to current and future flood risk, I hereby direct the following:

Section 1. *Policy.* It is the policy of the United States to improve the resilience of communities and Federal assets against the impacts of flooding. These impacts are anticipated to increase over time due to the effects of climate change and other threats. Losses caused by flooding affect the environment, our economic prosperity, and public health and safety, each of which affects our national security.

The Federal Government must take action, informed by the best-available and actionable science, to improve the Nation's preparedness and resilience against flooding. Executive Order 11988 of May 24, 1977 (Floodplain Management), requires executive departments and agencies (agencies) to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. The Federal Government has developed processes for evaluating the impacts of Federal actions in or affecting floodplains to implement Executive Order 11988.

As part of a national policy on resilience and risk reduction consistent with my *Climate Action Plan*, the National Security Council staff coordinated an interagency effort to create a new flood risk reduction standard for federally funded projects. The views of Governors, mayors, and other stakeholders were solicited and considered as efforts were made to establish a new flood risk reduction standard for federally funded projects. The result of these efforts is the Federal Flood Risk Management Standard (Standard), a flexible framework to increase resilience against flooding and help preserve the natural values of floodplains. Incorporating this Standard will ensure that agencies expand management from the current base flood level to a higher vertical elevation and corresponding horizontal floodplain to

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2015 – Executive Oder 13690

- Amends EO 11988
- Adds Nature Based Solutions
- Focuses on "Future Floods"
- Base flood (aka 100-year) resulting from climate change
- Introduces "FFRMS Floodplain"

See: https://floodstandard.climate.gov/

The Federal Flood Risk Management Standard (FFRMS)

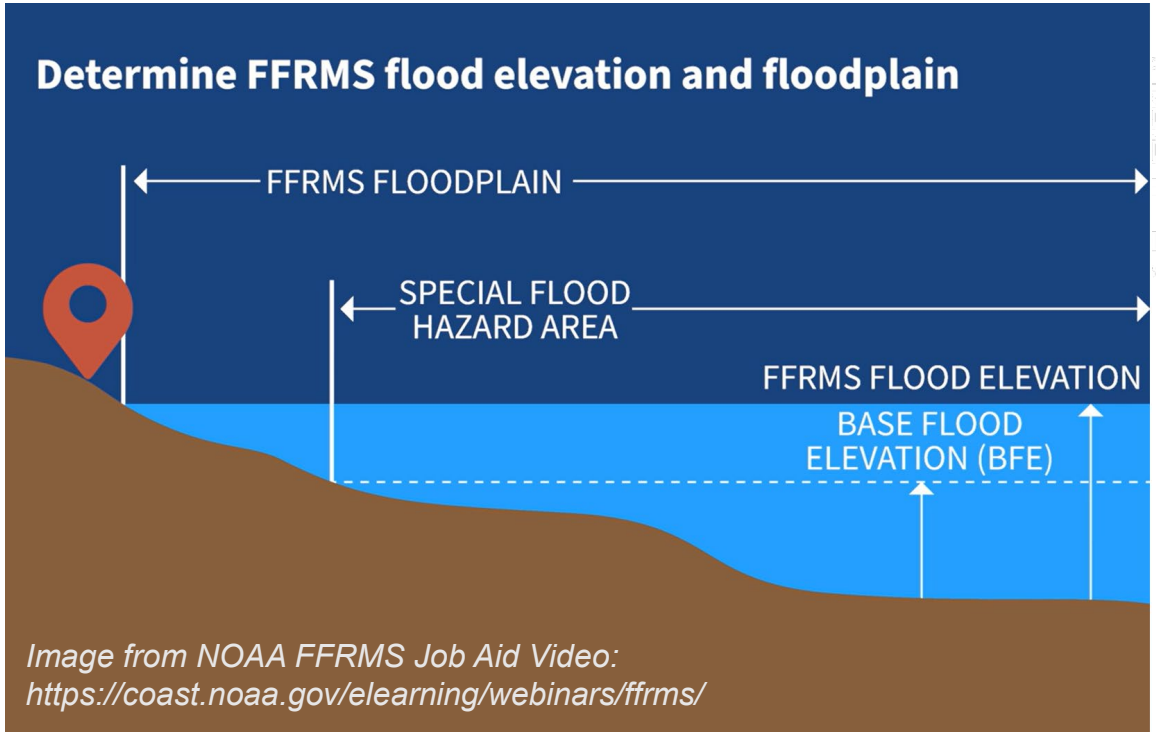


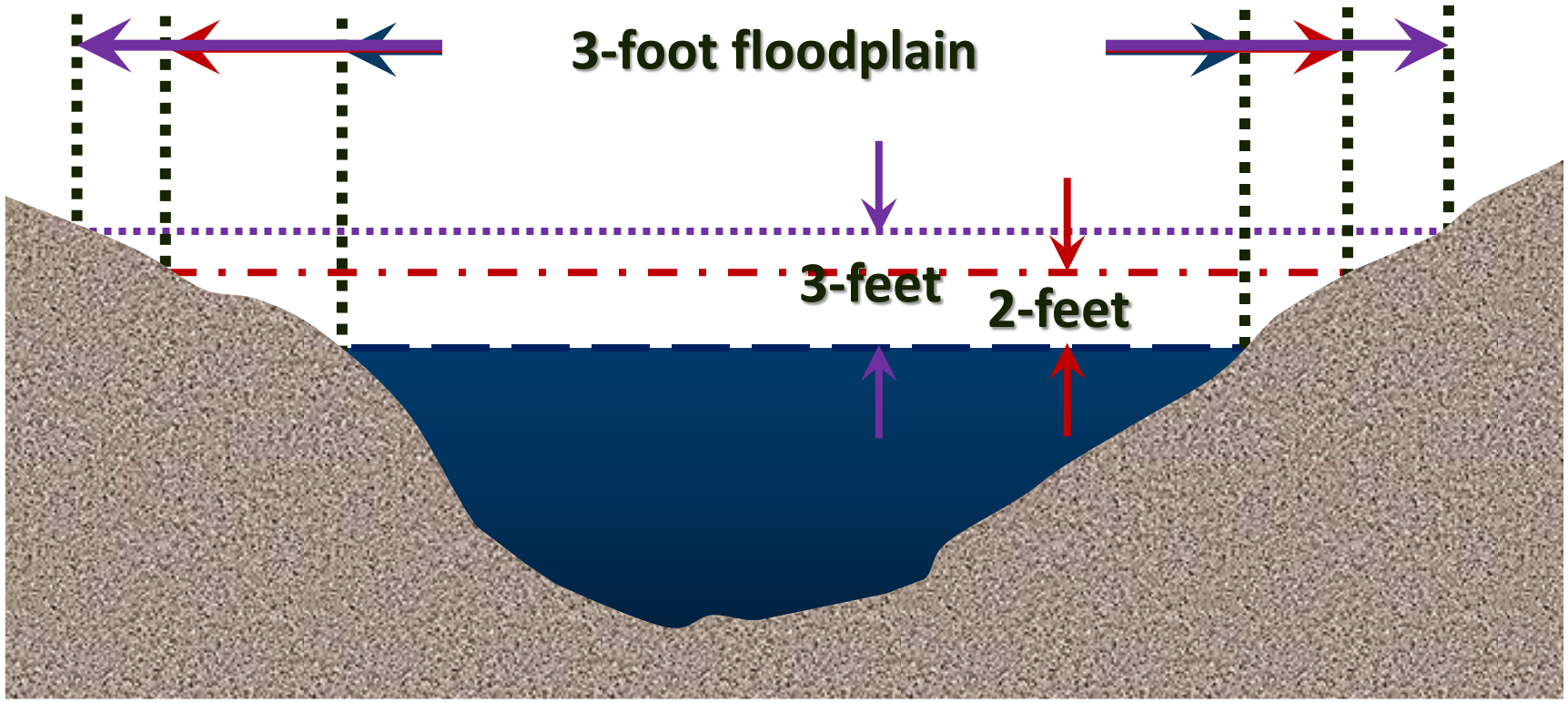
Image from NOAA FFRMS Job Aid Video: https://coast.noaa.gov/elearning/webinars/ffrms/

- Established to encourage federal agencies to consider and **manage current and future flood risks**.
- Requires agencies to determine **a higher and wider floodplain** to ensure resilience.
- Applies to federally funded projects.

- Allows for 3 approaches:
  - Climate Informed Science Approach (CISA)
  - Freeboard Value Approach (+2ft above BFE for non-critical/ +3ft above BFE for critical)
  - 500-yr floodplain (0.2% chance of flooding or 0.2 Percent Value Approach)

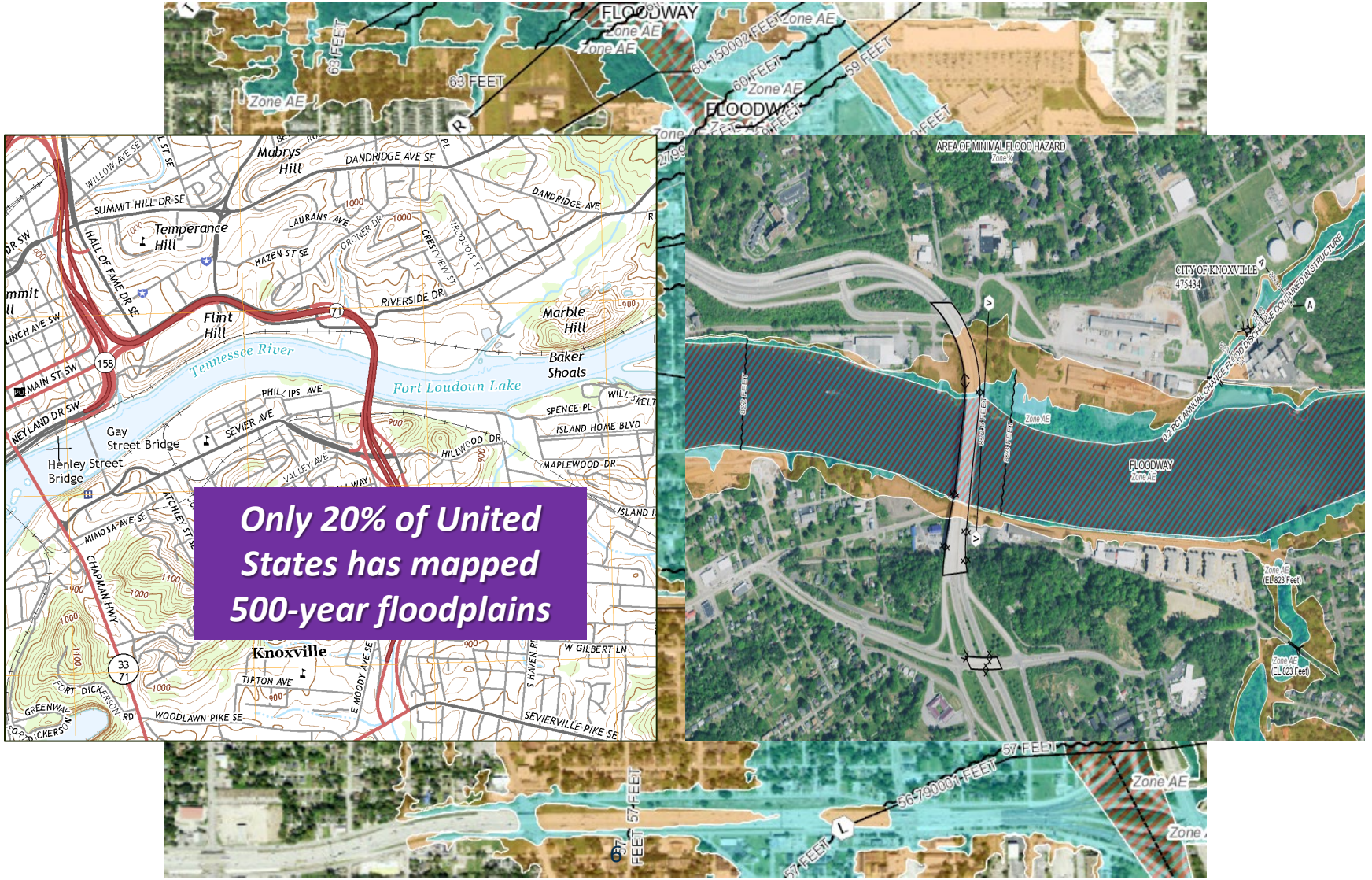
Freeboard Value Approach

+2ft above BFE for non-critical/ +3ft above BFE for critical)



500-Year Floodplain Approach

Use 500-yr floodplain (0.2% chance of flooding or 0.2 Percent Value Approach)



Climate Informed Science Standard

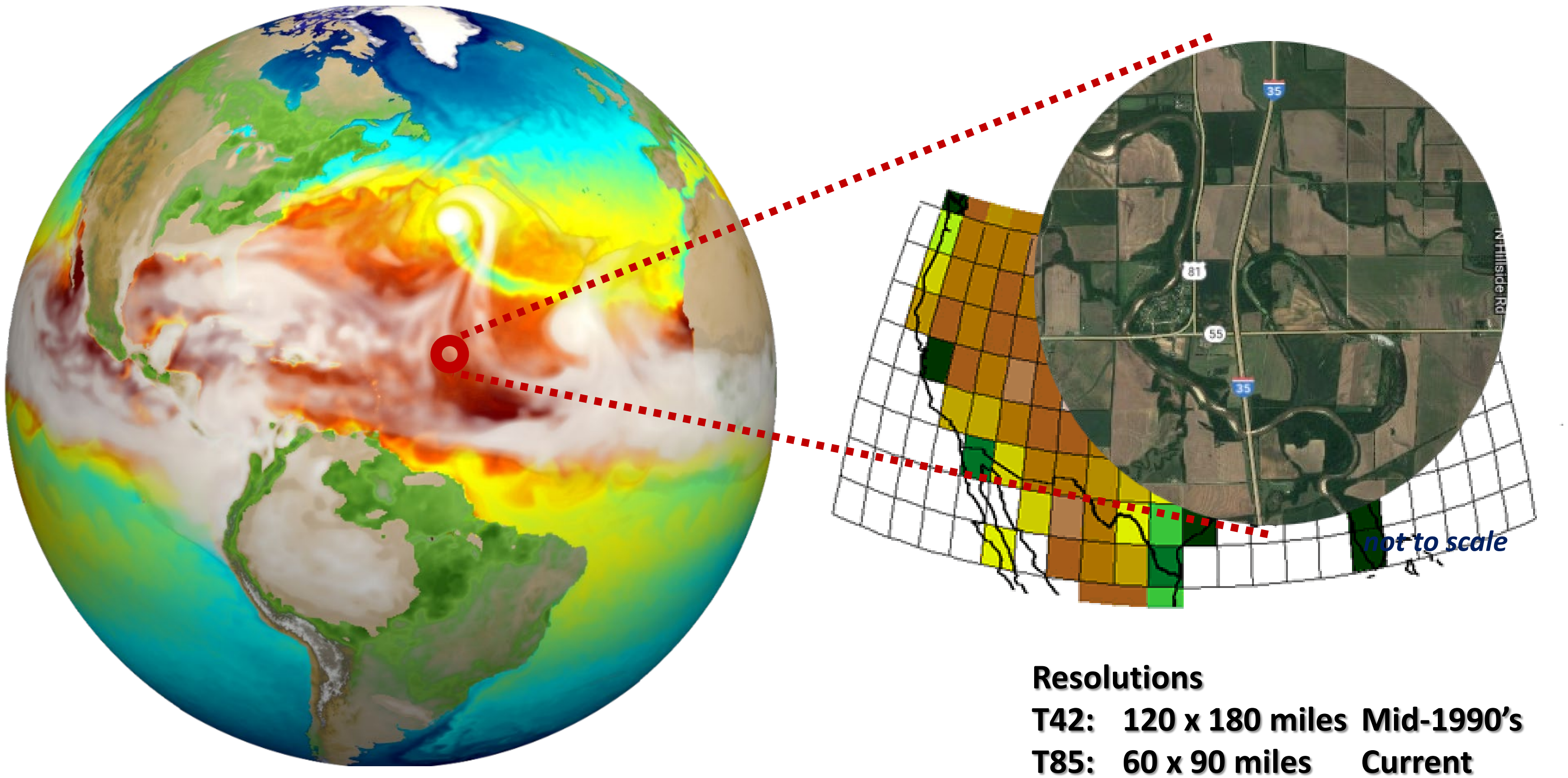


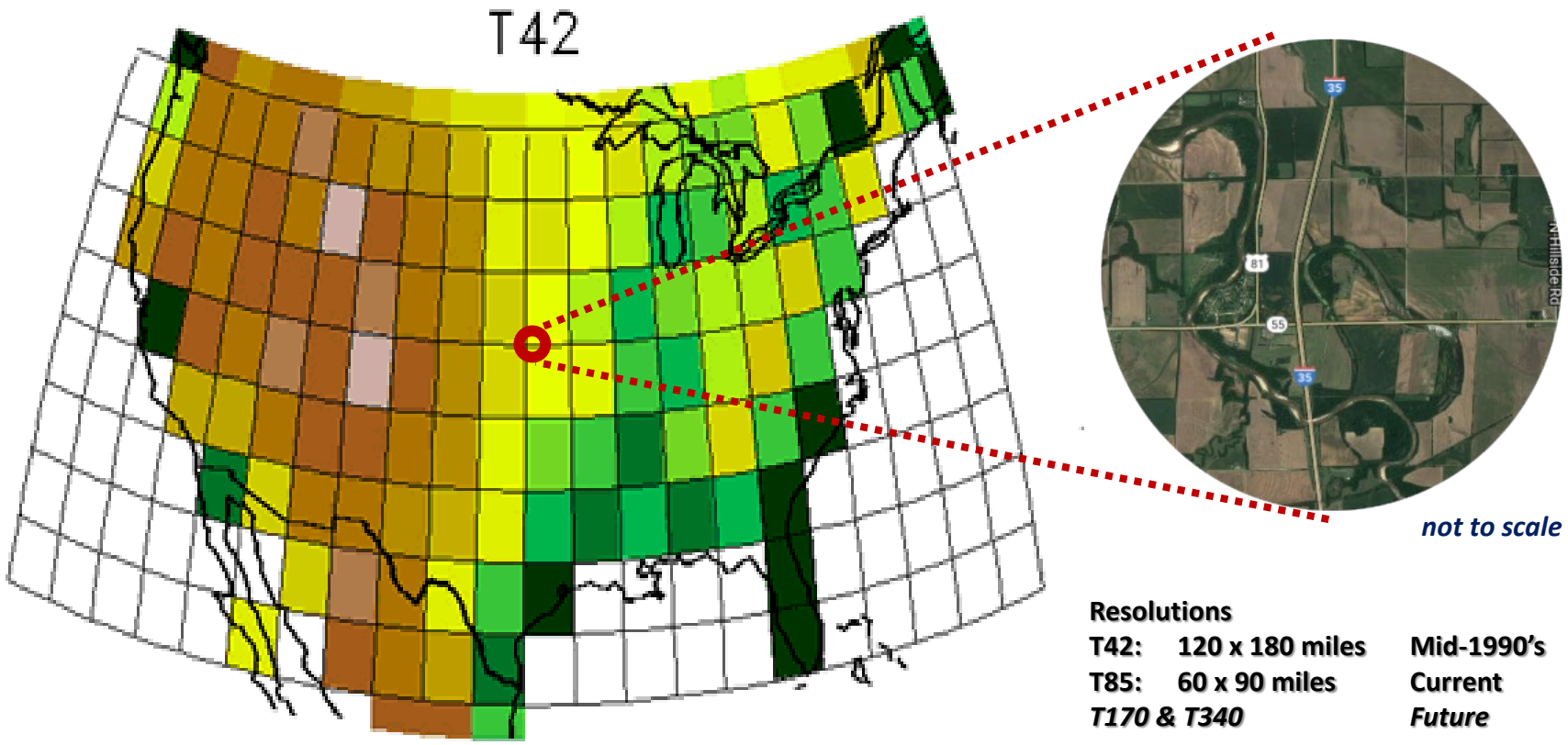
Image Courtesy of: Mathew Maltrud (LANL), Energy Exascale Earth System Model (E3SM), E3SM.org

Resolution map: Warren Washington, NCAR
https://scied.ucar.edu/longcontent/climate-modeling

Resolutions

T42:	**120 x 180 miles**	**Mid-1990's**
T85:	**60 x 90 miles**	**Current**
T170 & T340		***Future***

Climate Informed Science Standard



not to scale

Resolutions

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Resolution map: Warren Washington, NCAR
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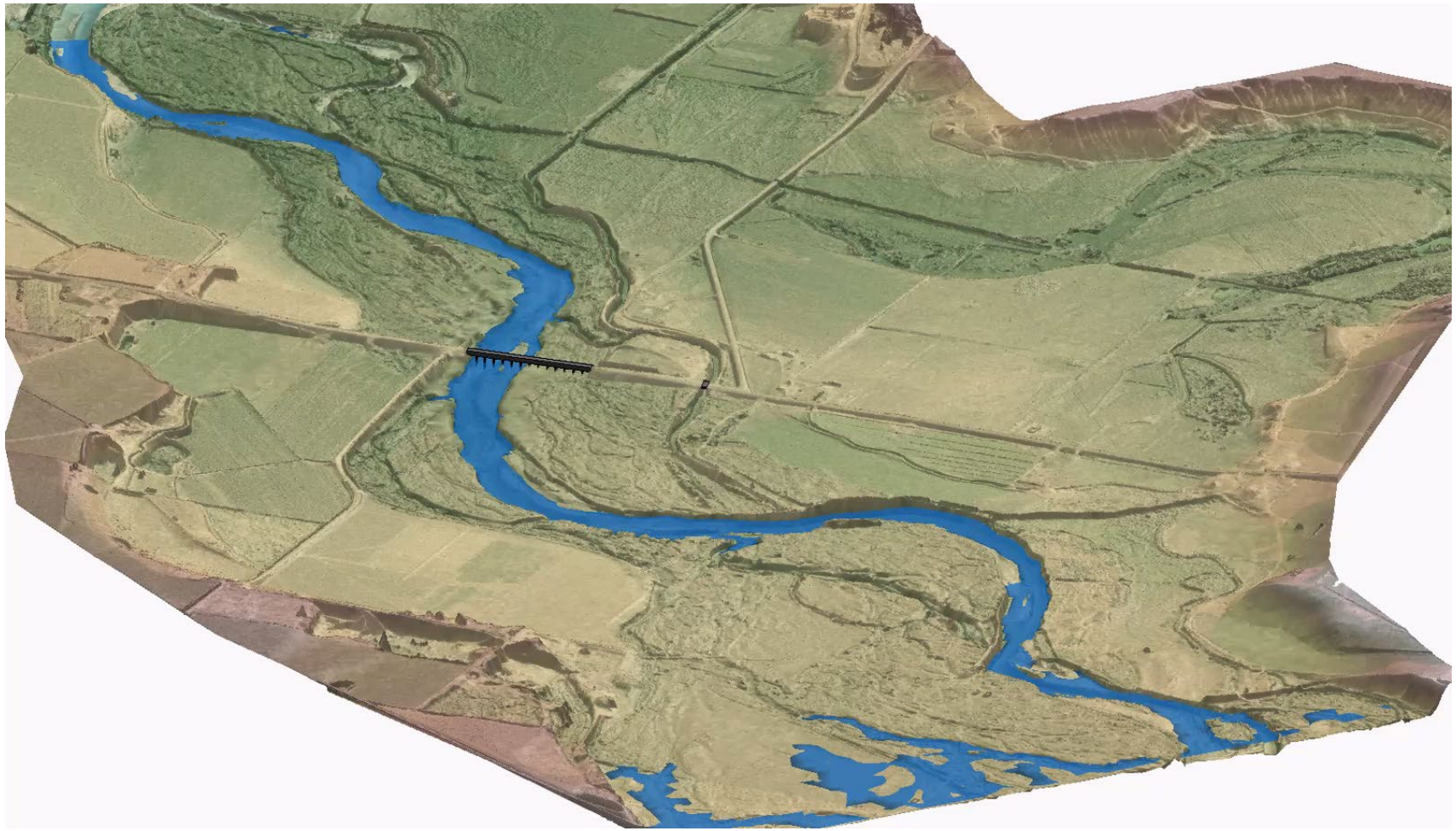
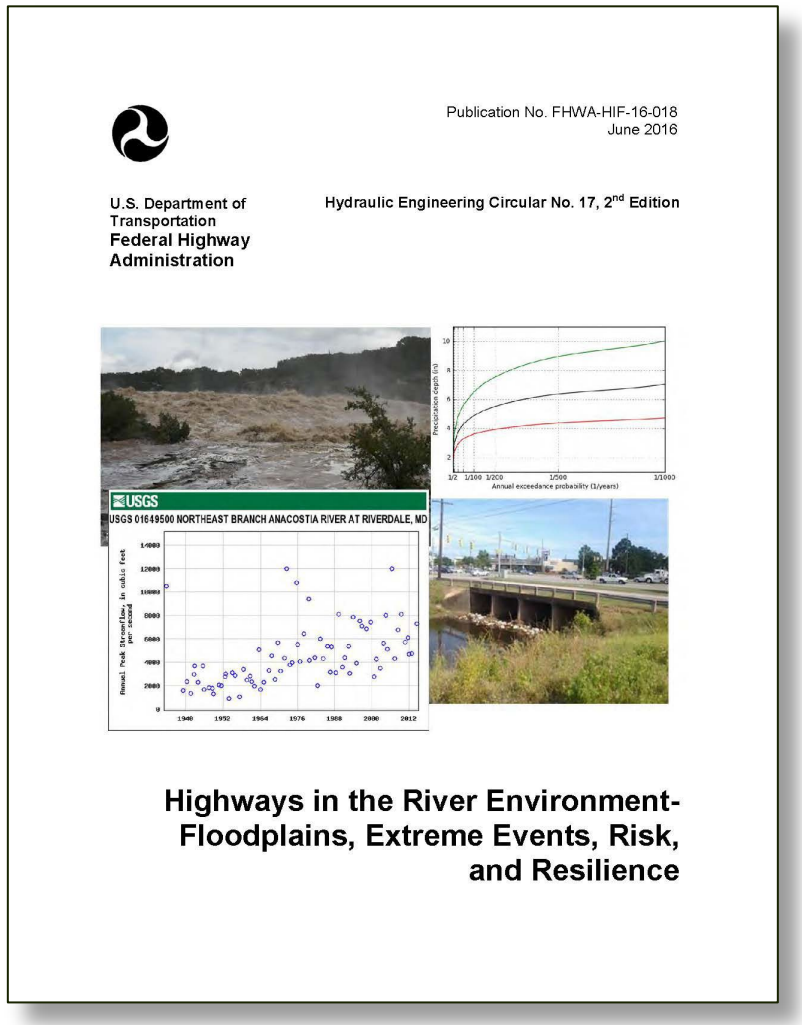
Climate Informed Science Approach

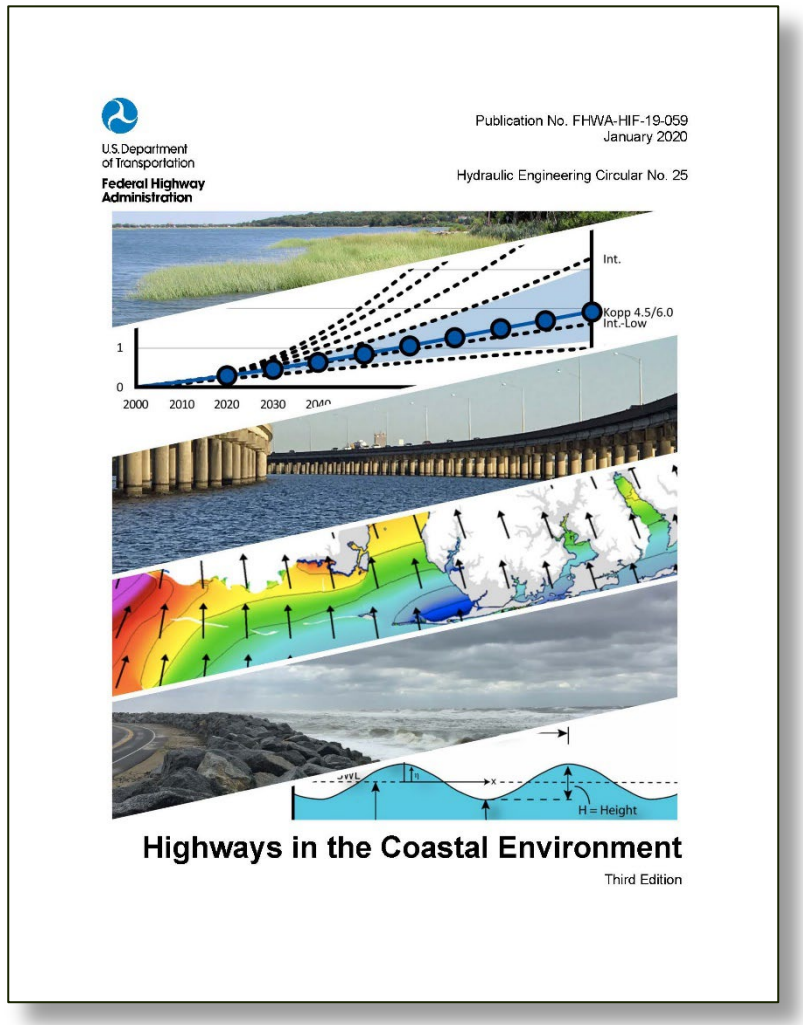
Advanced Modeling Tools



Climate Informed Science Approach

Available Frameworks



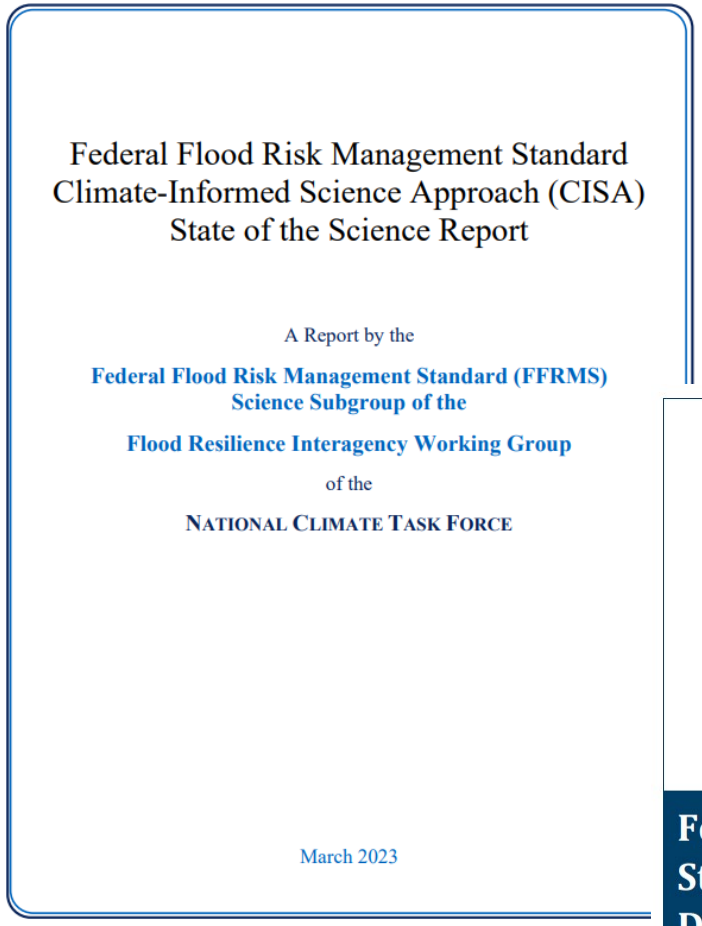


Resources to Support FFRMS Implementation

Available Now:

- FFRMS Climate-Informed Science Approach (CISA) State of the Science Report (March, 2023)

- FFRMS Floodplain Determination Job Aid + video (August, 2023)


Federal Flood Risk Management Standard
Climate-Informed Science Approach (CISA)
State of the Science Report

A Report by the

Federal Flood Risk Management Standard (FFRMS)
Science Subgroup of the

Flood Resilience Interagency Working Group

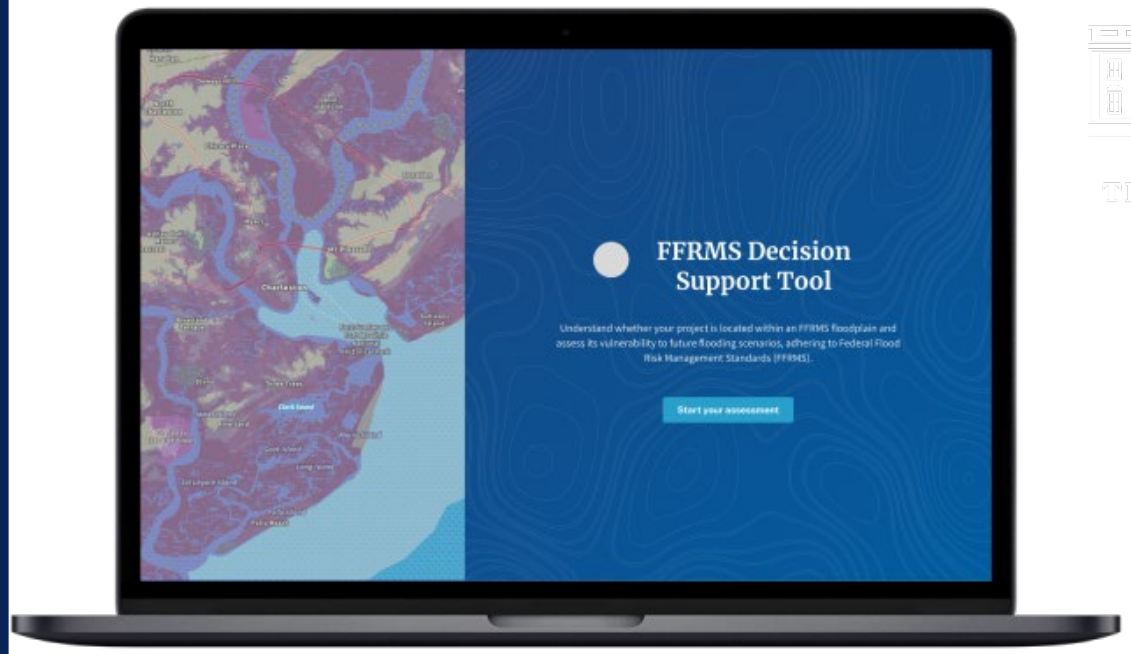
of the

NATIONAL CLIMATE TASK FORCE

March 2023

https://www.fema.gov/floodplain-management/intergovernmental/white-house-flood-resilience-interagency-working-group

Federal Flood Standard Support Tool (FFSST)

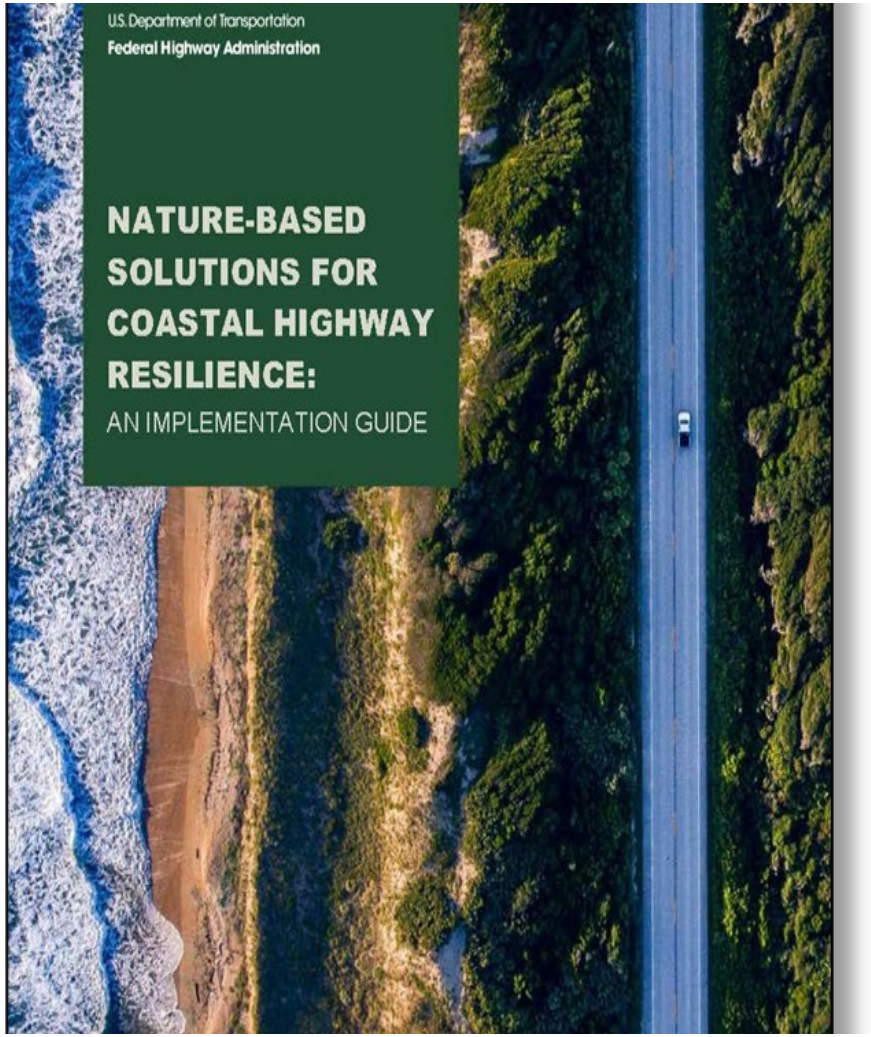


https://ffrms.climate.gov/

- FEMA, NOAA, and HUD, in partnership with CEQ and OSTP, have developed a decision support tool to enable users to identify the FFRMS floodplain more easily.
  - GIS-based
  - CISA is available for coastal areas
  - Freeboard elevations and boundaries are included
- For all approaches, the FFSST helps users determine the appropriate vertical flood elevation and corresponding horizontal FFRMS floodplain.

Integrating Nature-Based Solutions

- FFRMS encourages the use of nature-based solutions (NBS)
- Information on integrating NBS into FFRMS projects is included in the Federal Flood Standard Support Tool website
- Many agencies offer resources on NBS



USDOT FFRMS Interim Guidelines

- USDOT has issued Interim Guidelines in order to
  - Advance the goals of the FFRMS
    - USDOT encourages all actions (i.e., the construction or reconstruction of a Federal or federally financed, licensed, or approved transportation improvement) to determine if that action is within the FFRMS floodplain
    - USDOT prefers the CISA to establish the FFRMS floodplain when data to support such an analysis is available
  - Outline the steps DOT is taking to fully implement the FFRMS across the Department

- During this interim period, USDOT encourages the public to submit questions and provide feedback via regulations.gov