CEQ's Draft Guidance on the Impacts of Climate Change in NEPA Reviews

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New CEQ Requirement (Dec. 2014): Impacts of Climate Change on the Project Area

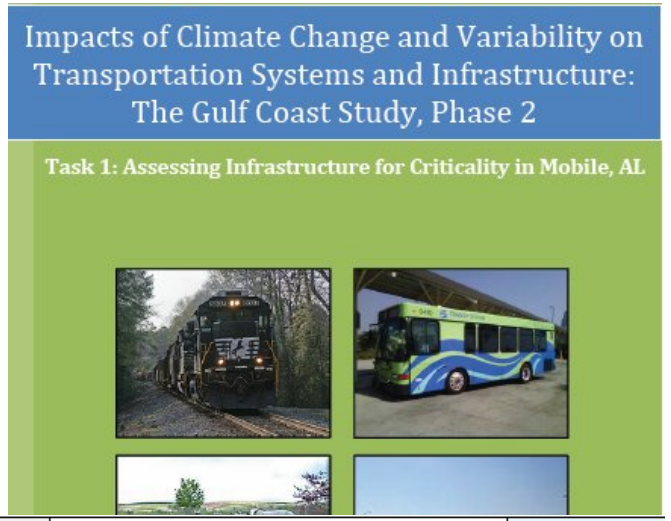
- **Requires analysis of the effects of climate change on the "environmental consequences" of a proposed action**
  - Includes climate change impacts on a proposed project from sea level rise, increased heat, drought, and extreme events such as intense rainfall and storm surge
    - Time horizon: Expected project lifespan
  - And climate impacts on the environment affected by the proposed project (habitat loss, endangered species, etc.)
    - Essentially a cumulative impacts analysis

Presentation Overview

- **Why is assessing climate impacts an important question?**
- **Why is this an important question under NEPA?**
- **How do we approach the analysis?**
- **Example:**
  - Tongue River Draft EIS

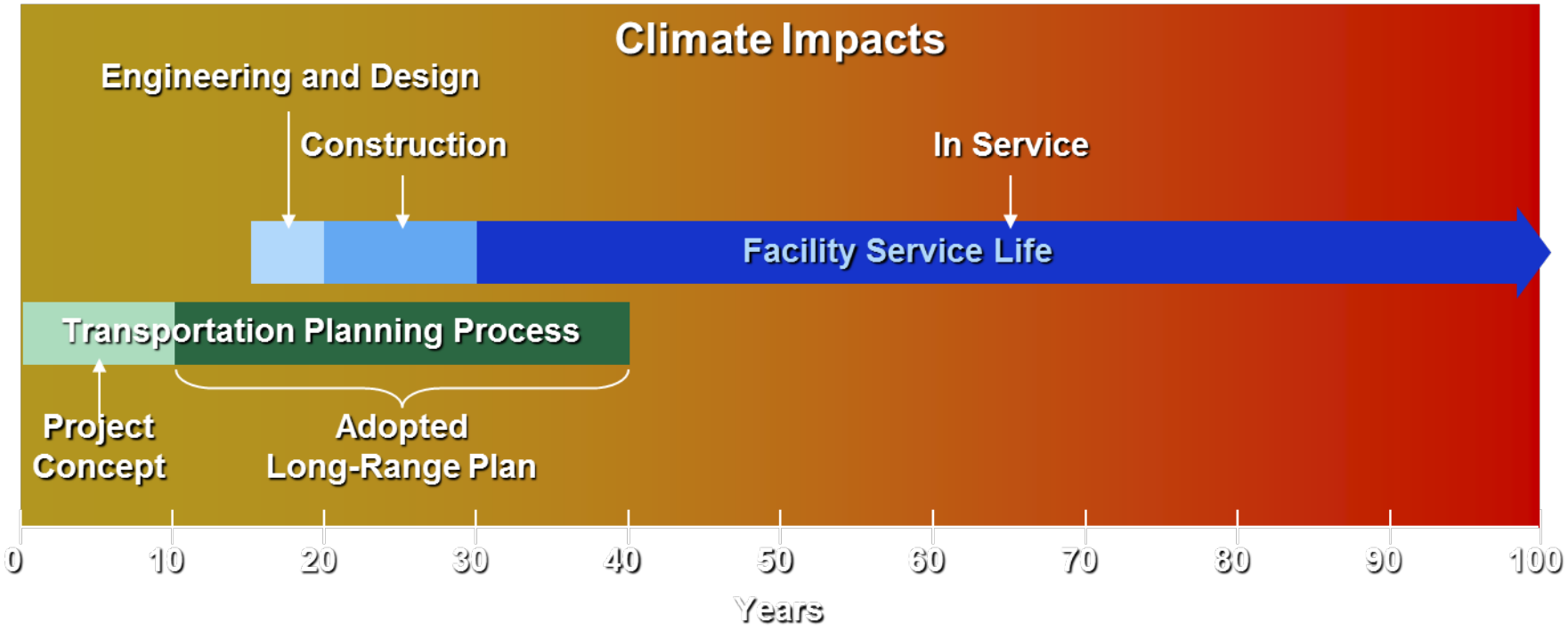
Impacts of Climate Change on the Project Area – Why is this an important question?

- Climate impacts are already occurring
- Infrastructure is vulnerable to climate impacts
- Investment decisions made today will impact service tomorrow
- Health, business, the environment and quality of life are affected when disruptions occur



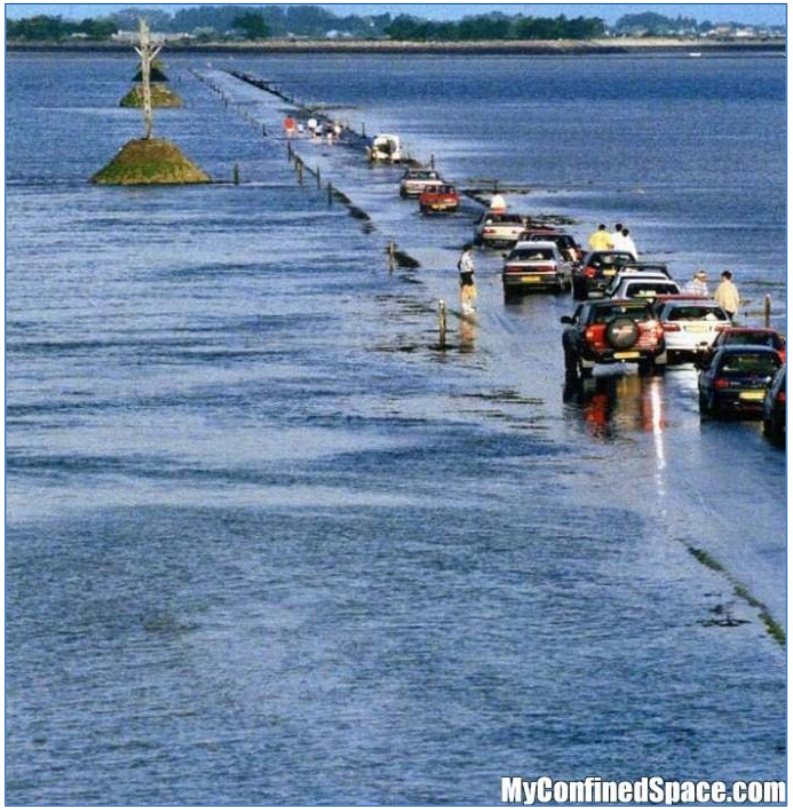
Asset Categories		Precipitation			Tempe
Mode	*Sub-Mode*	Incremental change in the mean (+/–)	Increase in frequency or duration of heavy	Drought	Incremental increase in the mean
Railroads	Electrical Equipment (gates/flashers and signal bungalows)		If exposed, inundation of equipment can lead to electrical damages due to inundation of equipment.		Risk to electric rail compone temperatures equal to or exc
	Railroad Tracks, Ties, and Ballast		Immersion of wooden ties in water softens/expands the wood, weakening its ability to support tracks. Erosion of supporting systems (such as ballast and other nearby ground) can threaten track stability.		For steel railroad tracks: at S slowed to prevent buckling; l pronounced above a thresho degrees F.
	Railroad services (i.e., operations)		Heavy precipitation or any flooding can cause damage. Just a couple of inches of flooding can short out locomotive motors.		Health and safety risks for w greater than 105 degrees F c delays.

Why is this an important question?
Infrastructure is in service for a long time



Why is this an important question?
Climate impacts can disrupt operations and service

- Increased flooding of assets from sea level rise and intense rainfall
  - Increased erosion and washouts
  - Increased potential for landslides
  - Redesign of drainage structures
- Water crossings – changes in hydrology and scour from increases in stream flow
- Increases in very hot days could compromise above ground materials and equipment
- Increased wildfire potential
- Many others



Why is this an important question?
Requirements are growing in multiple areas

Administration of Barack Obama, 2014

Executive Order 13677—Climate-Resilient International Development
September 23, 2014

By the authority vested in me as President by the Constitution and the laws of the United States of America, and to safeguard security and economic growth, protect the sustainability and long-term durability of U.S. development work in vulnerable countries, and promote sound decisionmaking and risk management, it is hereby ordered as follows:

Section 1. Policy. The world must reduce greenhouse gas emissions to prevent the most dangerous consequences of climate change. Even with increased efforts to curb these emissions, we must prepare for and adapt to the impacts of climate change. The adverse impacts of climate change, including sea-level rise, increases in temperatures, more frequent extreme precipitation and heat events, more severe droughts, and increased wildfire activity, along with other impacts of greenhouse gas emissions, such as ocean acidification, threaten to roll back decades of progress in reducing poverty and improving economic growth in vulnerable countries, compromise the effectiveness and resilience of U.S. development assistance, degrade security, and risk intranational and international conflict over resources.

Executive Order 13514 of October 5, 2009 (Federal Leadership in Environmental, Energy, and Economic Performance), and Executive Order 13653 of November 1, 2013 (Preparing the United States for the Impacts of Climate Change), established a strong foundation for coordinated and consistent action to incorporate climate-resilience considerations into policies and procedures throughout the Federal Government. Executive departments and agencies (agencies) with international development programs must now build upon the recent progress made pursuant to these orders by systematically factoring climate-resilience considerations into international development strategies, planning, programming, investments, and related funding decisions, including the planning for and management of overseas facilities.

This order requires the integration of climate-resilience considerations into all United States international development work to the extent permitted by law. Dedicated U.S. climate-change adaptation funds are critical to managing the risks posed by climate-change impacts in vulnerable countries. Coping with the magnitude of the consequences of accelerating climate change also requires enhanced efforts across the Federal Government's broader international development work. Consideration of current and future climate-change impacts will improve the resilience of the Federal Government's broader international development programs, projects, investments, overseas facilities, and related funding decisions. The United States will also promote a similar approach among relevant multilateral entities in which it participates.

By taking these steps and more fully considering current and future climate-change impacts, the United States will foster better decision-making processes and risk-management approaches, ensure the effectiveness of U.S. investments, and assist other countries in integrating climate-resilience considerations into their own development planning and implementation. Collectively, these efforts will help to better optimize broader international development work and lead to enhanced global preparedness for and resilience to climate change.

The international climate-resilience actions required by this order complement efforts by the Federal Government to reduce greenhouse gas emissions at home and globally. The more

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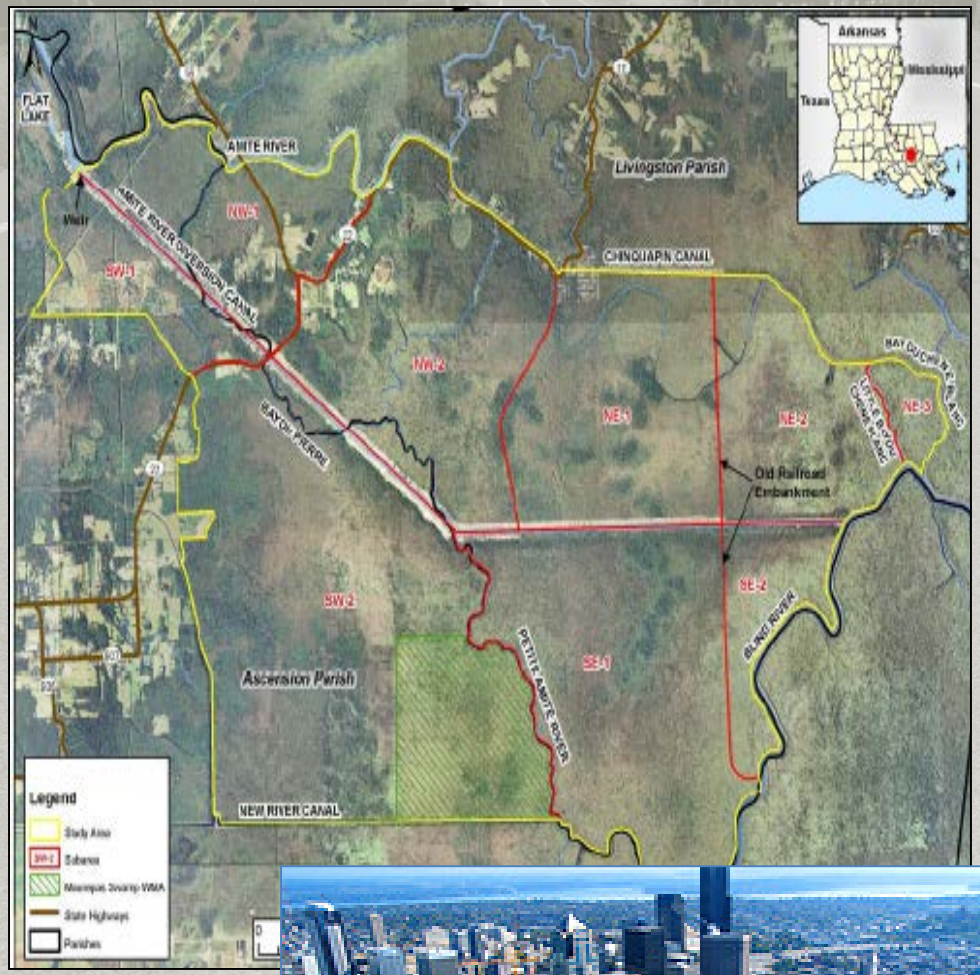
- ***Executive Order 13677 --- Climate-Resilient International Development (Sept. 2014)***
- ***Executive Order 13690 --- Establishing a Federal Flood Risk Management Standard (Jan. 2015)***
  - ***Amends E.O. 11988 (1977)***
  - ***FEMA Implementing Guidance (Oct. 2015)***

Executive Order 13677 --- Policy

- **Consideration of current and future climate-change impacts will *improve the resilience of the Federal Government's broader international development* programs, projects, investments, overseas facilities, and related funding decisions.**
- **This order *requires the integration of climate-resilience considerations* into all United States International development work to the extent permitted by law.**
- **Collectively, these efforts will help to better *optimize broader international development* work and lead to *enhanced global preparedness* for and resilience to climate change.**

Impact Analysis in Project Development - Examples

- Tongue River Railroad
- Alaskan Way Viaduct
- Amite River Diversion Canal
- Morriset Road
- SR 522
- Columbia River Crossing



Dawei Seaport and Industrial Zone, Burma, $8.6 Billion

Dam Construction: Transition Wall and Slap Casted Progress (Source: ITD, 2013).

Project Components

- Deep seaport
- Small port
- 132 km highway
- Rail links
- Oil and gas pipelines
- Industrial complex
- Residential housing
- Coal-fired powerplant
- Dam and reservoir
- 1040 MW hydropower project

Potential Climate Impacts on the Project

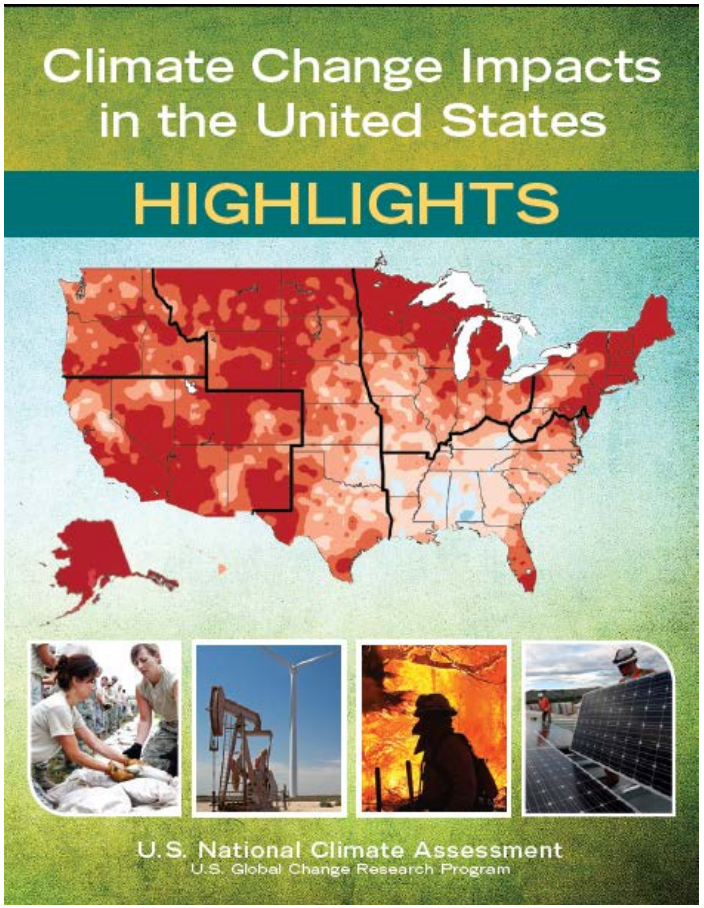
- Increased Temperature
  - Extreme heat damaging paved surfaces and metal structures
  - Increased pests, rust, mold – leading to spoilage of foods
  - Increased demand for energy and potential for outages
  - Safety risks for workers
- Increased Heavy Precipitation
  - Coastal flooding – expedite facility deterioration
  - Riverine flooding – disrupt transportation
  - Reduced visibility of port operations
  - Damage of stored goods
- Sea Level Rise and Tropical Cyclone Intensity
  - Coastal facility inundation
  - Damage and destruction of facilities

Why is this an important question under NEPA?

- ***CEQ's draft NEPA Guidance requires this type of analysis***
- ***Resource Agencies are requesting this during NEPA Scoping/Review***
- ***Good practice as part of project development and planning to insure robust service over project life***

How do we approach the analysis?

- Historical impacts: What have the temperature and precipitation trends been in the region?
- Regional climate changes – What are the likely impacts and how certain are they?
- Vulnerabilities – How is the project vulnerable to climate impacts? How might environmental impacts be exacerbated?
- How much detail is needed to identify adaptation needs and strategies?



Tongue River Railroad EIS

- Tongue River Railroad Company, Inc. (TRRC) filed an application with the Surface Transportation Board to construct and operate a new rail line in southeastern Montana

- Purpose is to transport low-sulfur, subbituminous coal from mine sites to be developed in Rosebud and Powder River Counties, Montana

- TRRC would construct and BNSF would operate the rail line

Study Area

- **Facilities associated with operation of the rail line include:**
  - Railroad and associated infrastructure
  - access roads
  - telecommunications towers
  - railway signs and signals.
- **Affected environment includes:**
  - primary watersheds crossed by the build alternatives and
  - a study area matching the width of biological, water, land, cultural and historical resources, and geology and soils used in the EIS

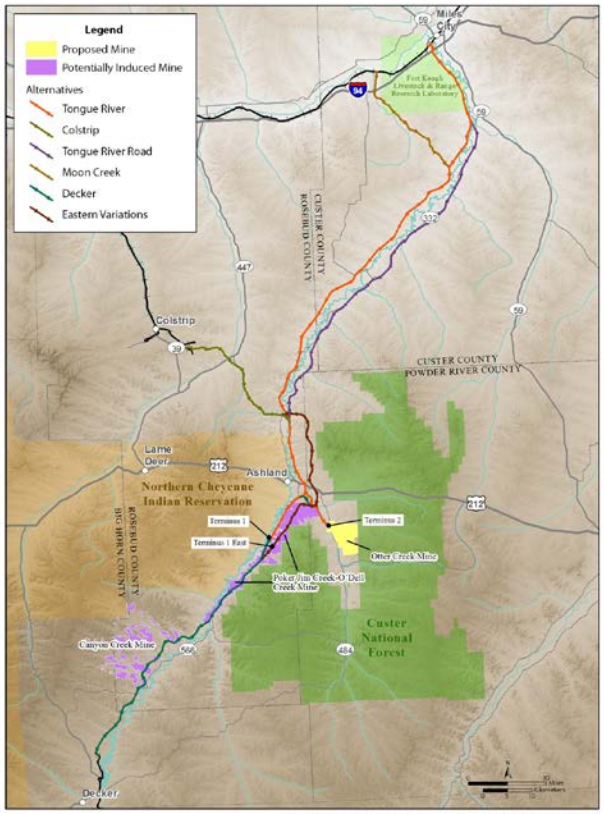


Figure 2-10. Proposed and Potentially Induced Mines

Source: Draft EIS, 2015

Findings – Potential damage and service disruptions

- **Increased flooding:** Changes in precipitation in the Tongue River, and other basins could lead to flooding and damage the rail line, wash out ballast, cause scour at water crossings and culverts, place debris in ROWs, and disrupt service along the railway
- **Landslides and increased soil erosion:** Changes in precipitation could affect the likelihood of soil slumping and landslides in some locations
- **Increased frequency of wildfires:** Increased temperatures and drier conditions in summer could increase the likelihood of wildfires
- **Higher extreme temperatures:** Could lead to increased risk of rail buckling and worker heat exhaustion

Findings – Affected Environment

- **Altered landscapes**
  - EIS impacts on vegetation, habitat loss and degradation, wildlife displacement could be exacerbated by contributing to soil erosion, and increasing stress to migrating species through more intense snow events and higher temps
- **Water depletion and degradation**
  - Impacts on water quality (degradation and depletion) could be increased by drought and higher water temperatures further stressing terrestrial and aquatic wildlife and vegetation
- **Spread of invasive species and noxious weeds**
  - Increased spread of invasive species and noxious weeds could be exacerbated by warmer winter temperatures, higher summer temperatures, and drier summer conditions

Sources of Information

- **NEPA.GOV**
  - https://ceq.doe.gov
  - "Current Developments"
  - "CEQ Releases Revised Draft Guidance on Greenhouse Gases and Climate Change"

- **WHITEHOUSE.GOV**
  - www.whitehouse.gov/administration/eop/ceq
  - "Initiatives"
  - "Steps to Modernize and Reinvigorate NEPA"
  - "Revised Draft Guidance for GHG Emissions"

- **Federal Register**
  - https://federalregister.gov/a/2014-30035
  - 79 FR 77801 (December 24, 2014)

Thank you!

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