The Nature Conservancy

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# Climate Smart Transportation Network: mandate, planning and natural infrastructure solutions

CTC Policy Workshop
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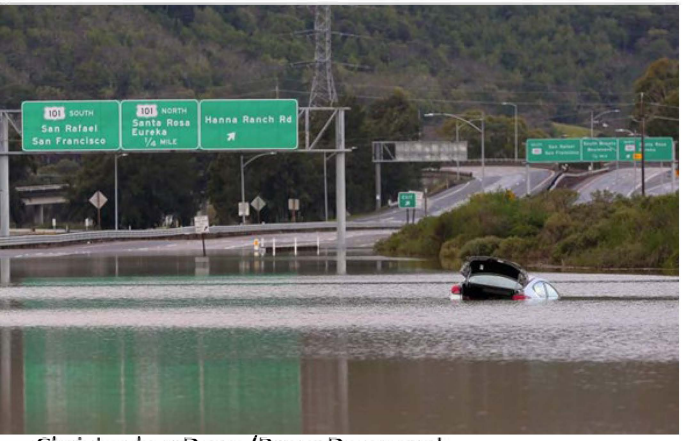
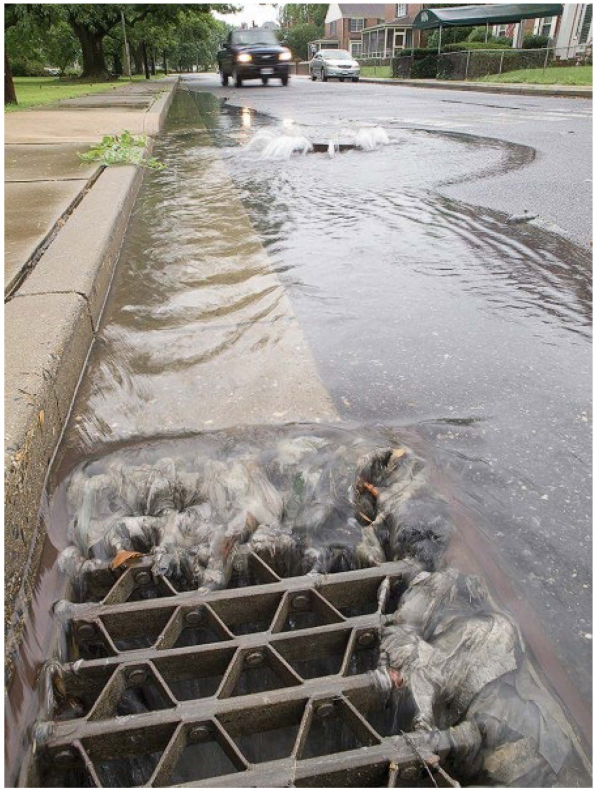


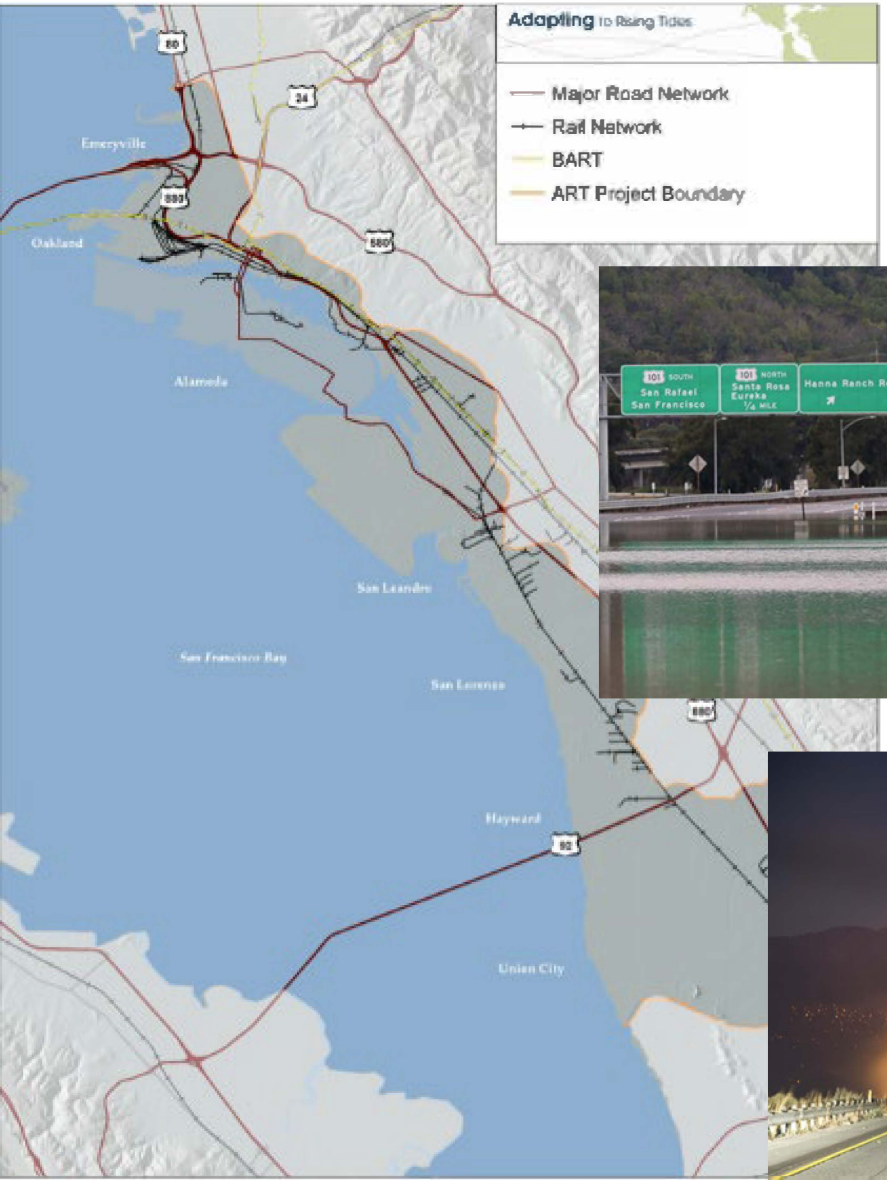

Christopher Dunn/Press Democrat

Stuart Palley/KPCC

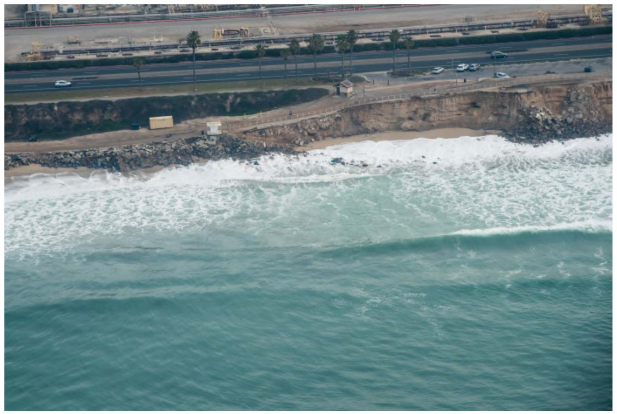
Caltrans



# Climate Change: Threats to Transportation



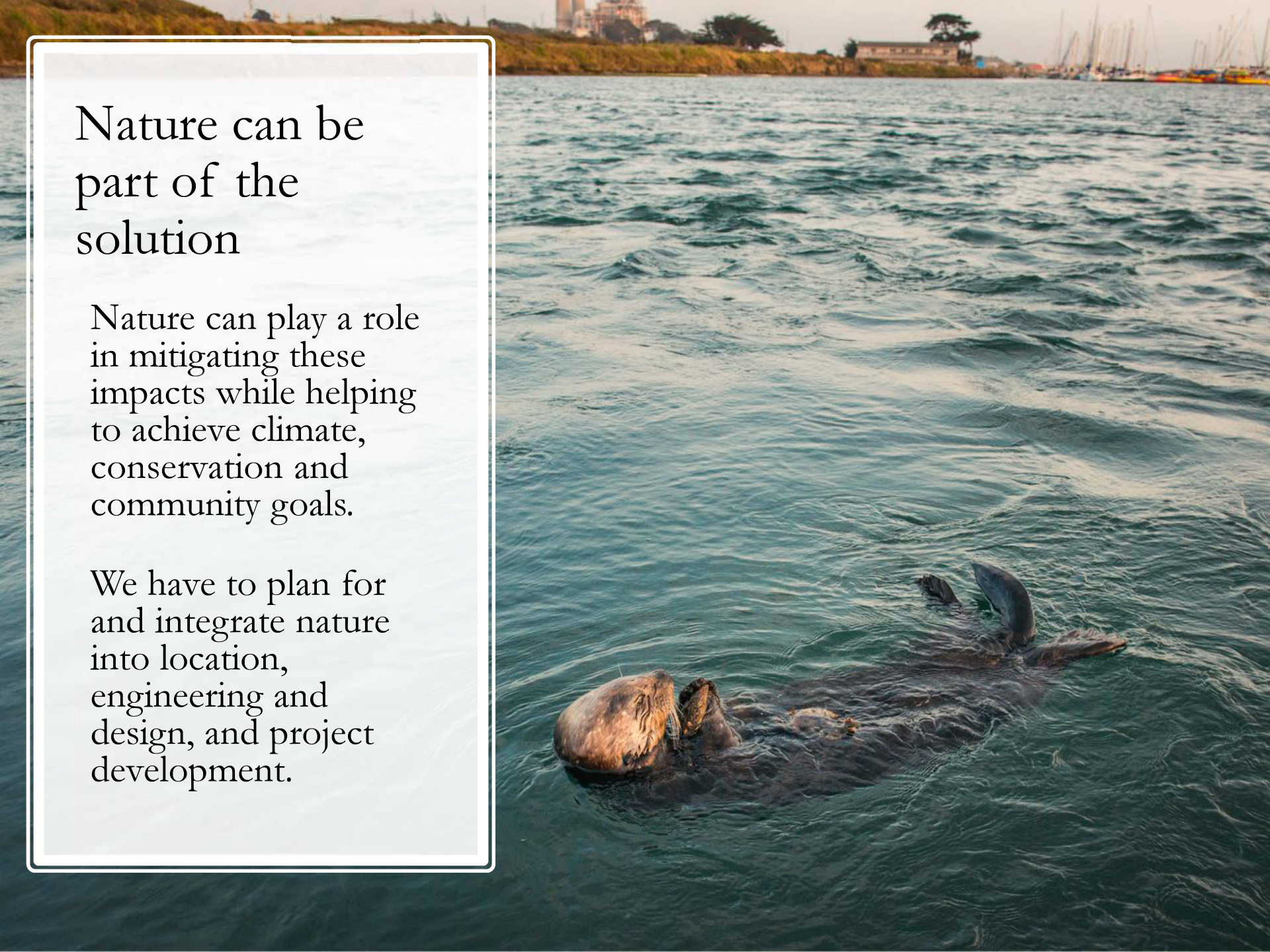




# Nature can be part of the solution

Nature can play a role in mitigating these impacts while helping to achieve climate, conservation and community goals.

We have to plan for and integrate nature into location, engineering and design, and project development.



# "Climate Smart Transportation Network"

An integrated network that:

- Considers climate vulnerability
- Addresses vulnerable hot spots
- Applies climate smart planning principles
- Includes nature-based solutions for multiple benefits

# Federal Highway Administration Sustainability and Resilience

U.S. Department of Transportation
Federal Highway Administration

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## Sustainability

- Resilience
  - Adaptation Framework
  - Case Studies
  - Ongoing & Current Research
  - Pilots
  - Policy & Guidance
  - Publications
  - Tools
  - Webinars
  - Workshops & Peer Exchanges
  - Related Links
- Sustainable Highways Initiative

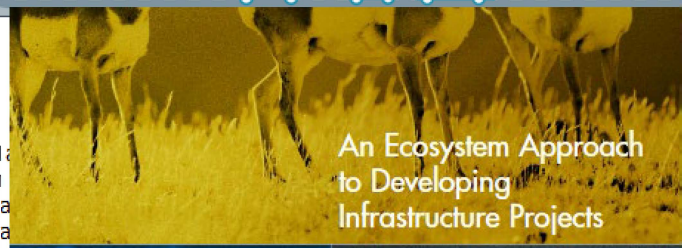
FHWA → Environment → Sustainability → Resilience → Ongoing And Current Research

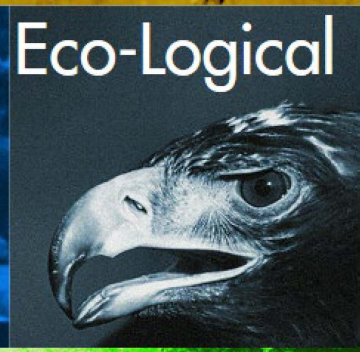
### Nature-based Resilience for Coastal Highways

Transportation agencies must protect expensive public infrastructure from coast
especially as rising sea levels, higher storm surges, urbanization, and ecosystem
complexity to already dynamic coastal systems and communities. An integrated a
risk reduction includes natural and nature-based features in addition to structura
structural measures.

Nature-based features mimic characteristics of natural features and processes bu
by human design and engineering. Examples include dunes, wetlands, maritime fo
beaches, and reefs. These features can protect coastal highways from the brunt
surges and waves. Some can adapt to sea level rise by accreting sediment or mig
They can also provide benefits such as recreation opportunities, habitat needed f
fisheries, and a healthier environment.

FHWA is producing research and technical assistance that will enable transportat
to use natural and nature-based features, also called natural infrastructure or gr
infrastructure, to improve the resilience of transportation systems. FHWA sponso



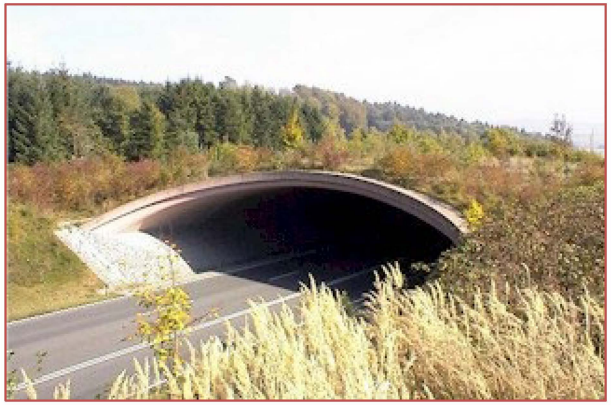




# Nature Based Solutions

- Resilient
- Cost Effective
- Sustainable
- Multi-purpose
- Easier to permit
- Enhances quality of life
- Preserves our natural resources
- Enables climate mitigation AND adaptation

Credit: Sonoma Land Trust


Concept for protecting Bay Bridge, Oakland, CA, Credit: MTC



# Natural Infrastructure Examples

# Policy Drivers: examples


EXECUTIVE ORDER B-30-15

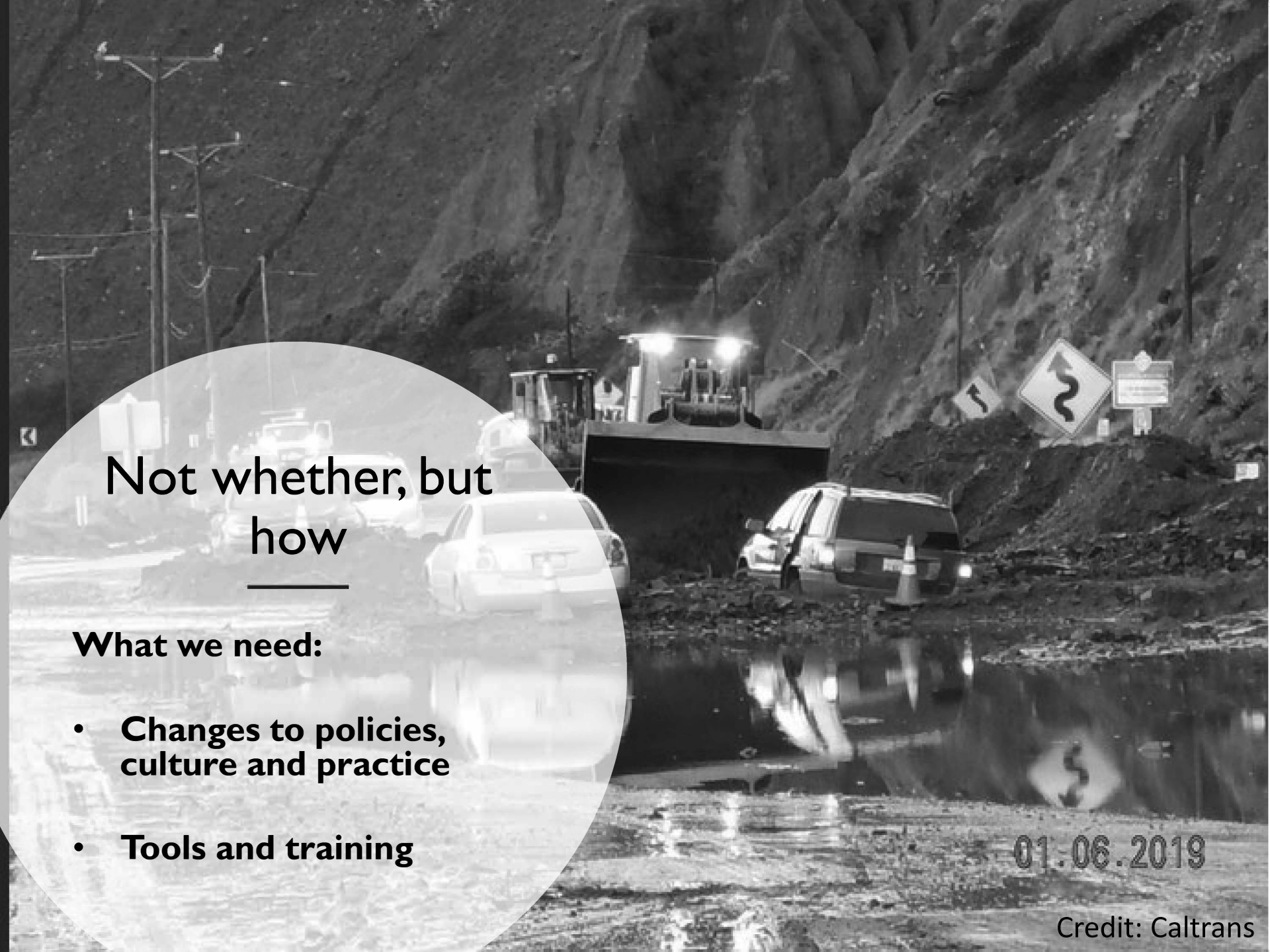
**7.State agencies' planning and investment shall be guided by the following principles:**

**--Natural infrastructure solutions should be prioritized.**

SB1:

- $20m Climate Change Adaptation Planning Pilot
- RMRP program: Climate resilience features in projects
- Advance Mitigation Program

SB 246 (Wieckowski, 2015)
Integrated Climate Adaptation and Resilience Program

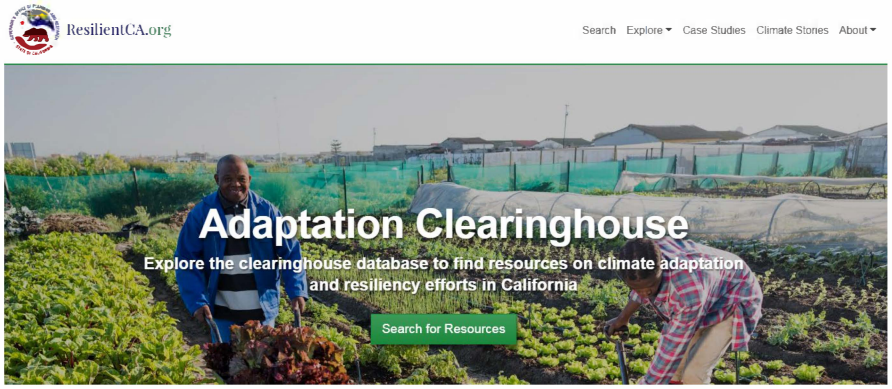



# Not whether, but how

**What we need:**

- **Changes to policies, culture and practice**
- **Tools and training**

Credit: Caltrans


**T-4.4.** Use both structural and natural infrastructure solutions such as wetland restoration and creation, as well as rock revetments and seawalls, to protect transportation assets.

**T-4.4a.** Investigate methods to blend the structural and natural solution techniques to achieve multiple benefits, such as groundwater recharge, stormwater management and flood prevention, mitigation of the urban heat island effect, neighborhood beautification, a more pleasant environment for pedestrians and bicyclists, and protection of transportation facilities.

# Policy Recommendations

1. Require resilience planning; fund planning grants and demonstrations

2. Incentivize natural infrastructure solutions

3. Provide a strong mandate to enable effective change

# Resilience Planning and Demonstrations

Require programmatic and project level resilience planning and incorporate results

- Tighten SB 1 language: make non-compliance a high bar
- Develop and assess scenarios and long range impacts
- Cost of adaptation/resilience must be included in project cost
- Align with existing plans (greenprints, climate action plans)

# Resilience Planning and Demonstrations

## Re-fund climate adaptation planning grants

# Incentivize Natural Infrastructure Solutions

Require consideration of natural infrastructure solutions in planning and project design

Ensure eligibility - natural infrastructure solutions for resilience

Use full life-cycle cost methodologies with long-term horizon

Develop metrics for ecosystem outcomes

Training and collaboration on best practices

# Strong Mandate for Durable Change

Enabling legislation with a mandate for a climate smart, adapted, sustainable transportation network

Robust focus with deep integration across functions; collaborate internally and externally

Provide training on elements such as integrated planning, natural infrastructure and best practices

Adopt metrics on resilience and adaptation


Thank You
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