Advancing Trails to Support Multimodal Networks and Resilient Infrastructure

Webinar Series, February 28, 2024
Housekeeping

⇒ Submit your questions

⇒ Webinar archive: www.pedbikeinfo.org/webinars

⇒ Certificates and professional development hours

⇒ Follow-up email with more details

⇒ Review previous episodes and sign up for upcoming sessions
Recreational Trails Program

• Currently a set-aside of funds from the Transportation Alternatives Set-Aside.
• Up to $84.1 million/year, apportioned at 2009 levels.
• Part of $281 million in Federal motor fuel excise tax paid annually by OHV users.
• $1.5 billion for 27,000 projects since 1993.
• Provides funds to the States to develop and maintain recreational trails for all trail uses.
• Usually administered through a State resource agency (a few DOTs).
• 80% Federal share, with flexibility.
  • RTP funds may match or be matched by other Federal funds.
  • Some in-kind may be donated prior to project approval.
• Project sponsors are encouraged to use Youth Corps. Sole source provisions apply.
• Change in BIL: New provision to treat any recreational trail project as an RTP project.
• FHWA Administrative funds support trail research.
Trails are Essential Transportation Infrastructure

- RTP Publications Page
- Links to many USDA Forest Service trail reports
- Rails-with-Trails: Best Practices and Lessons Learned
- The Future of E-Bikes on Public Lands Research Study
- Electric Bicycles: Literature Review and Case Studies
- Tribal Development of Trails and Other Dedicated Pedestrian and Bicycle Infrastructure
- Trails and Resilience: Review of the Role of Trails in Climate Resilience and Emergency Response
- Trails as Resilient Infrastructure
- Ongoing research: Rails-with-Trails Design and Engineering
- Trails are an integral part of a safe, accessible, equitable, and comfortable multimodal transportation network.
INFO BRIEF

Advancing Trails to Support Multimodal Networks

Overview: Trails Info Brief

www.pedbikeinfo.org/pdf/AdvancingTrailsToSupportMultimodalNetworks_PBICInfoBrief.pdf
Advancing Trails to Support Multimodal Networks

Overview:
Trails Info Brief
Sections that apply to your community

Communities that ...

<table>
<thead>
<tr>
<th>are pursuing some of their first trails</th>
<th>have a built a beginning network</th>
<th>have an established trail network</th>
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<tbody>
<tr>
<td>• Benefits of trails to build the case</td>
<td>Guidance on expanding the network:</td>
<td>Design guidance to create a world-class network with amenities</td>
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<td>• Building support through partnerships and community engagement</td>
<td>• Equity considerations</td>
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<td>• Planning timeline</td>
<td>• Route selection</td>
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<td>• Requiring developers to build or pay for AT infrastructure</td>
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Sections that apply to your community

Communities that ...

| are pursuing some of their first trails | have a built a beginning network | have an established trail network |

Can all use...

- Equity considerations
- Regulatory strategies to coordinate land use
- Funding opportunities
- Evaluation and management
- Ideas to promote trail use
Research on the Benefits of Trails

- Network Connectivity
- Social, Historic and Cultural Preservation
- Economic Vitality
- Community and Individual Health
- Equity
- Climate Resiliency
What’s new and useful?

- EQUITABLE TRAIL DEVELOPMENT
- MULTIMODAL NETWORKS
- CLIMATE RESILIENT TRAILS
Equity and Inclusion
Recognizing Equity Issues

Uneven distribution of trails
- Lack of trails in underserved communities
- Gaps in network exclude neighborhoods

Uneven use of trails
- People of color less likely to be trail users
- Limited knowledge of available trails

Negative effects of trail investment
- Rising property values
  - Displacement
Tips and strategies for inclusion

For Partnerships
• Demonstrate a community-specific need or benefit
• Establish a formal structure to define roles and responsibilities.
• Understand the landscape of existing plans and policies

For social inclusion
• Centering local knowledge
• Creating structures of long-term co-governance
Joe Louis Greenway

Resisting “green gentrification” and displacement

Tools for resisting displacement
• community land trusts
• public land disposition
• business tax incentives
• inclusionary zoning
• affordable housing
• rent control
• home loan and improvement programs
• owner-occupied tax relief
• business tax incentives
Multimodal Networks
For recreation and transportation

Trails are being used for a variety of reasons

By walkers, bikers, skaters, scooters, joggers, and people using assistive mobility devices

How we plan and build trails is changing
Multimodal Trail Considerations

• Trail material and width

• Managing speeds, especially if e-bike and e-scooters allowed

• Local connectors to access trail networks or previously inaccessible destinations

• Supplement existing transportation options
Climate Resiliency
Trails & Climate Change
resilience, adaptation, and mitigation
Guidebook topics/chapters

1. Introduction and Context
2. Planning and Implementation
3. Evaluating Vulnerability
4. Design and Engineering for Resilience
5. Emergency Response Planning
6. Maintenance and Management
7. Conclusion
8. Case Studies
Presentation Topics

Guidebook

1. Climate Impacts to Trails
2. Adapting Trails to Climate Impacts
3. Trails for Climate Mitigation
4. Trails for Emergency Response
5. Taking Action!
Climate Impacts to Trails
Evaluating vulnerability
River and Stream Flooding

Flooding on the Waterfront Renaissance Trail, Vancouver, WA
Image: Mark Bowder/The Columbian

Flood Damage on the Cowboy Trail, Nebraska
Image: Outdoor Nebraska Magazine
Coastal Flooding on the Mill Valley-Sausalito Path

Sausalito, CA

Image: Josh Edelson/AFP, Plan: WRT

Sea Level Rise

PREDICTED SEA-LEVEL RISE IMPACTS
EXISTING TRAIL CONDITIONS + SLR SCENARIOS

TODAY

MID-CENTURY SLR

END OF CENTURY SLR

Coastal Flooding on the Mill Valley-Sausalito Path
Sausalito, CA
Image: Josh Edelson/AFP, Plan: WRT
Wildfires

**Damage Caused by Wildfires in the United States, 1984–2020**


For more information, visit U.S. EPA’s “Climate Change Indicators in the United States” at www.epa.gov/climate-indicators.

**Change in Annual Burned Acreage by State Between 1984–2001 and 2002–2020**

States colored light gray did not have any fires that were large enough to be included in this analysis.


For more information, visit U.S. EPA’s “Climate Change Indicators in the United States” at www.epa.gov/climate-indicators.
Extreme Heat

SR 544 near Everson, WA
Image: WSDOT
The Expanding Vernal Window

Source: D S Grogan et al. (2020). Snowmelt control on spring hydrology declines as the vernal window lengthens. Environmental Research Letters, 15 114040.
Equity, Access, Displacement, and Environmental Justice

Climate Impacts

Environmental Justice

Displacement from Climate Disasters

Inequitable Access to Trails and Outdoor Recreation

Green Gentrification

www.theguardian.com/us-news/2016/may/13/California-san-joaquin-valley-Porterville-pollution-poverty
What is the top climate impact affecting trails in your community?

- More days when heat, smoke, or poor air quality impacts trail users
- More days when high temps impact trail use or extend the use season
- Heavy rain events, flooding, king tides
- Longer mud season
- Increased pressure on from insects and diseases, causing vegetation or human health hazards
Adapting Trails to Climate Impacts
Design for Drainage

Constructing Turndowns on the Houston Bayous Greenway
Image: Houston Parks Board

Green Infrastructure on the Indianapolis Cultural Trail
Image: Toole Design
Planning and Managing Trail Corridors for Fire

Vegetation Control
Bear Creek Greenway
Jackson County, OR
Image: Jackson County Emergency Management, Jackson County Parks
Design for Heat

Shade and Water on the CV Link
Coachella Valley, CA
Image: CVAG
Management & Communications

Trail Closure Sign
Image: John Meyer, Denver Post

Muddy Trail Use Etiquette
Think Before You Sink

Muddy trail use contributes to erosion and trail damage. If you are leaving a visible tire rut or foot/paw print, the trail is too muddy for use. PLEASE respect ALL closures!

Be respectful of other trail users. Ruts and deep footprints ruin the experience for EVERYONE.

Mud Season Signage
Image: Mountain Trails Foundation
Maintenance
What steps has your community/organization taken to address climate impact to trails?

- Gathered data on current issues and/or future risks
- Conducted studies or research on current issues and/or future risks
- Adapted the design of a trail or trail features
- Increased or changed trail management (closures, reroutes, limited use, etc.)
- Increased or changed maintenance practices (higher frequency, more staff, additional tasks and equipment)
Trails as a Climate Solution
Trails as Green Infrastructure
Gambles Mill Eco-Corridor
Richmond, VA
Image: Resource Environmental Solutions
Equity in Trail Work
What would help you better plan for the impacts of climate change in the context of trails (aside from funding)?

- Understanding your community/region’s vulnerabilities
- Data on trail usage and user needs
- Improved management/maintenance plan
- Specific design guidance
- A better understanding of impacts to vulnerable communities
Trails for Emergency Response
Trails for Emergency Management

Emergency Management Context

- Evacuation route redundancy
- Access to community lifelines
Trails for Emergency Management

Trails in emergency response planning

- Trail networks should be integrated into emergency response plans
  - Consider new trail development, trends in trail use, and emerging threats
  - Plan trail access points with emergency response team
  - Trail designs should accommodate emergency vehicle traffic
- Evacuation planning examples:
  - New York, NY - Hurricane Sandy; Berkeley, CA - FEMA Fire Prevention and Safety grant
Trails for Emergency Management

Emergency operations and management

- Communications & location ID
- Monitoring & data

Source: https://www.wherearethekikers.com/heatmap/
Trails as Emergency Access
Paradise Multi-use Paths
Paradise, CA
Image: Town of Paradise, CA
Trails for Emergency Management

Equity in Emergency Response

- Vulnerable populations
- Universal design standards
- Trail access
- Funding allocation
Does your community consider trails as part of emergency response or evacuation planning?

- Yes
- No
- Not sure
Taking Action!

Incorporating Resilience at Every Stage of Trail Development
Trail Development Stages

Planning

- Long range project prioritization
- Project goals
- Equity and Environmental Justice

Design + Construction

- Design for water, heat, drought and fire
- Equitable design process
- Construction methods

Management + Maintenance

- Communications
- Planning for extreme weather
- Visitor use management
- Maintenance methods
- Community stewardship
Tips for Resilient Trails

• Use durable materials and/or techniques
• Consider vulnerability to climate impacts
• Leverage trails for resilience planning
• Improve drainage and stormwater management
• Improve trail access and location identification for emergency responders
• Improve vegetation management along trails
• Add shade, water, or other amenities for the safety of vulnerable users

Gambles Mill Eco-Corridor, Richmond, VA (photo credit: RES (Resource Environmental Solutions))
What do you think is the most urgent need for additional research?

1. How different types of trails are impacted by climate change?
2. How technological advancements can better monitor and understand these impacts?
3. How can we better plan for emergency management during catastrophic events?
4. What funding sources can be leveraged to advance climate resiliency goals for trails?
5. A wider scan of case studies and the long-term effectiveness of the strategies implemented.
Thank you for joining us today. Please share your questions.