



Climate Action Plans and Long-range Transportation Plans in the Pacific Northwest

A Review of the State of the Practice in Adaptation Planning

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Abstract

Research efforts in the last decade have produced a wealth of knowledge regarding the likely impacts of climate change on transportation infrastructure — impacts witnessed to date, as well as those anticipated in coming decades. This research summarizes the findings of surface transportation climate change literature and explores the efforts underway in the transportation planning realm with respect to adaptive preparations of transportation infrastructure for the effects of climate change, with a specific focus on transportation facilities and operations in the Pacific Northwest region of the U.S.

Objectives

1. Explore how agencies in the Pacific Northwest are preparing for climate change in their climate action plans (CAPs)
2. Investigate how the goals and recommendations of CAPs are reflected in long-range transportation planning (LRTP) documents, and
3. Identify key resources and strategies which agencies may adopt in order to ensure that the anticipated impacts of climate change on transportation are addressed in transportation planning documents.



- 2-3°C increase in average annual regional temperatures
- Precipitation increases overall and seasonal changes
 - More extreme storm events
 - More rain than snow
 - Increased wildfire risk

Acknowledgements

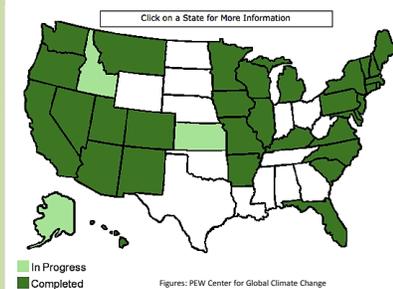
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Study Elements

The study included a broad **literature review** of climate change planning nationwide with a focused review of climate action plans (CAPs) and Long-range Transportation Plans (LRTPs) created in the Pacific Northwest (Alaska, Oregon, Washington, and Idaho). In addition to literature review, an **online survey** was conducted in the Fall 2009/Winter 2010 followed by **phone interviews** with select respondents.

Climate Action Plans



Adaptation Plans

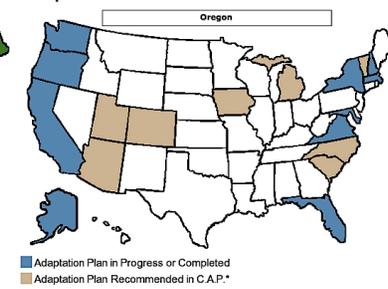


Figure 1. States with Climate Action Plans and States with Climate Adaptation Plans

Literature Review

While there is still no federal policy to address climate change, 36 states and many local agencies are taking action at a local level to address climate change, most commonly through the development of Climate Action Plans (CAPs). These plans are very diverse in their content and generally address climate change in a variety of sectors, including transportation. However, these plans overwhelmingly focus on climate change **Mitigation – Policies and strategies that reduce greenhouse gas emissions and/or enhance greenhouse gas absorption and storage** and very little on **Adaptation – Measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects**. At the time of the study, only 10 states had completed Adaptation Plans. The trend in the Pacific Northwest is largely the same. In both CAPs and Adaptation plans there is currently relatively little discussion of preparing transportation infrastructure for the effects of climate change.

We also reviewed Long-range Transportation Plans (LRTPs) to see how policies from the CAPs were integrated in to long-range planning. These plans are the guiding documents for agency transportation planning and are typically used as reference in planning and design decisions. Theoretically, they would be the ideal place to discuss climate change and insert guidance from the Climate Action Plans. However, most LRTPs fail to mention climate change in any regard, even when the Climate Action Plan for the jurisdiction included transportation specific language. Overall, there was a disconnect between what was in the Climate Action Plans and what was in the LRTPs. We wanted to find out some of the reasons these disconnects were occurring.

Online Survey & Follow Up Interviews

In Fall 2009, we launched a short internet-based survey to find out what activities transportation agencies were undertaking in order to prepare for climate change as well as the barriers they experience in incorporating climate change adaptation in their plans. Using a convenience sample professionals at state, regional and local transportation agencies were invited to complete the survey and could indicate whether they were available for a follow-up phone interview.

<p>Q4: Rank the importance of the following resources needed for your agency to conduct studies on potential climate change impacts to your agency's transportation facilities and/or operations?</p> <p>Methodology/Guidance Staff Resources/Expertise Financial Resources Political/Institutional Support Local Data</p>	<p>Q7: Does your agency have a method to identify facilities vulnerable to flooding, major storm events, or wildfire?</p> <p>Q2: What climate change planning activities is/has your agency engaged in?</p> <p>Mitigation Adaptation Both Neither</p>
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Table 1. Sample Questions from the Online Survey

Survey & Interview Results

24 completed surveys were received representing 22 different agencies. All but one of the respondents were located in Washington and Oregon.

- Nearly half of respondents indicated their agency was involved in both mitigation and adaptation planning activities.
- The most common activities taking place by surveyed agencies include climate change research and strategy meetings, followed by location-specific efforts (e.g., considering potential impacts of climate change for a particular project site).
- Less common activities included scenario testing, both to identify facilities that may be impacted under different climate change impact assumptions and to inform the location or design of planned transportation facilities.
- Nearly a third (seven) of respondents indicated they were not engaged in activities to identify potential impacts to their transportation system resulting from climate change.
- On average, the availability of projected climate change impacts at the local level was rated as most important by respondents in terms of resources required by agencies to effectively assess the impacts of climate change on agency facilities, followed by staff expertise and financial resources. Overall, respondents rated methodology guidance resources as less important than other resources.
- Two-thirds of respondents reported that their transportation facilities had been impacted by flooding and major storm events in the last decade. Half of the respondents also reported erosion effects on facilities.
- Only six of the respondents specified that their agency collects cost data associated with the above events, and four indicated that their agencies have a mechanism for recording the frequency with which facilities are impacted. Nearly half of the respondents indicated that their agencies have methods to identify facility vulnerabilities to the above events.

Recommendations

- Conduct **Outreach and Education**
- **Cooperate** Across Disciplines and Agencies
- **Collect Data** on Impacts Already Observed
- **Inventory System Vulnerabilities** and Identify **Critical Infrastructure**
- **Develop Locally Relevant Climate Change Projections**

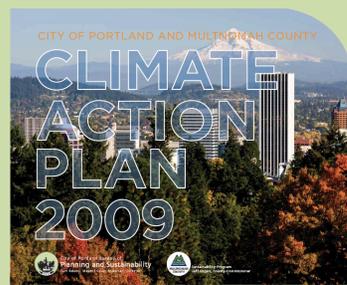


Figure 2. Climate Action Plan for the City of Portland & Multnomah County